



AUTO RADIO SERVICE DATA

++AR-291++

Boman BM-1490

Chrysler 4048363

Craig T604 Grundig GCM-4700A

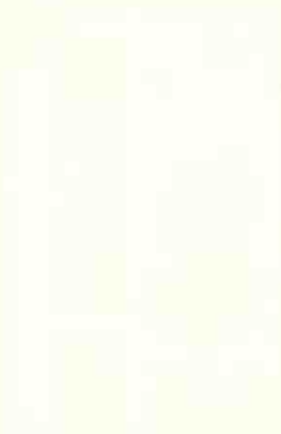
Motorola 3RV3705/4816/6701

Panasonic CQ-6800EC/EU

RCA 20C205/305

Tenna RR2013CMX

THE
WORLD



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AUTO RADIO SERVICE DATA

AR-291

REPRODUCED THROUGH THE COURTESY OF THE MANUFACTURER



HOWARD W. SAMS & CO., INC.
INDIANAPOLIS INDIANA

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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 PROCEDURE

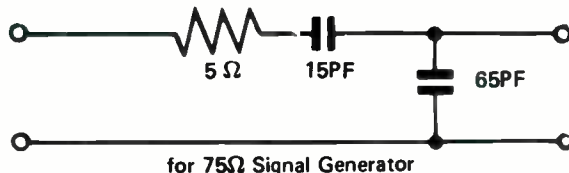
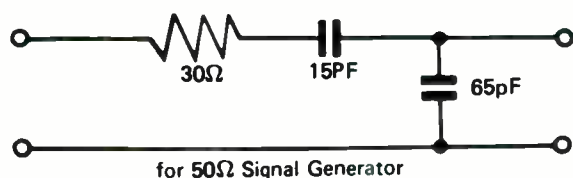
INSTRUMENTS REQUIRED

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

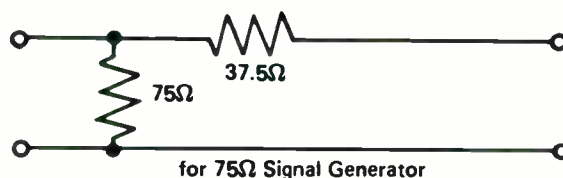
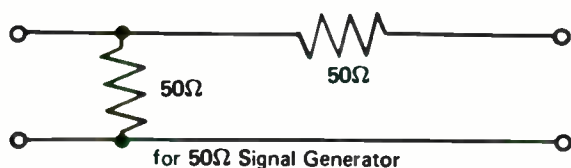
IMPORTANT

- Use non-metallic tools for correct alignment.
- Set generator signal level as low as possible to avoid signal clipping or saturation.
- Use RF generator signal 30%, 400Hz sine-wave modulation.
- Employ dummy antenna between generator and receiver for impedance matching.
- Allow at least five minutes to stabilize the instruments and the receiver prior to the alignment.

AM Dummy Antenna



FM Dummy Antenna



AM ALIGNMENT

Alignment	Instrument Connection	Generator Frequency	Dial Setting	Adjustment
IF	Sweep and Marker Generators loose coupled to TP-B. Oscilloscope to AM Det. output. (See Fig. 1)	455 kHz	High end	T601, T602 and T603, T604 to maximum output.
BAND	AM Signal Generator thru AM Dummy Ant. to the antenna jack. VTVM to Audio Power output terminal. (See Fig. 2)	510 kHz (mod.)	Low end	L602 located in the tuner pack to maximum output.
TRACKING	ditto	1400 kHz (mod.)	1400 kHz	Ant. Trimmer to maximum output.

FM and MPX ALIGNMENT

Alignment	Instrument Connection	Generator Frequency	Dial Setting	Adjustment
IF	Sweep and Marker Generators to TP-A. Oscilloscope to TP-1 (See Fig. 3)	10.7 MHz	Quiet Area near High end	T401 and T402 to symmetrical "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)	109.5 MHz (mod.)	High end	C416(FM OSC Trimmer) to maximum gain.
CALIBRATION OF FREE RUNNING FREQ.	Frequency Counter loose coupled to TP-2. (See Fig. 5)			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	R443 (After R502 is adjusted for 19 kHz, this adjustment may not be necessary.)

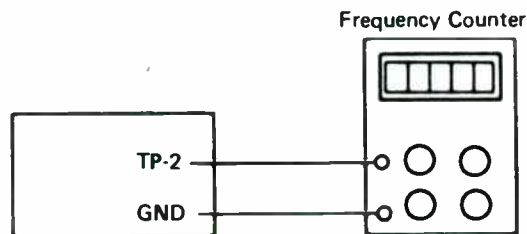
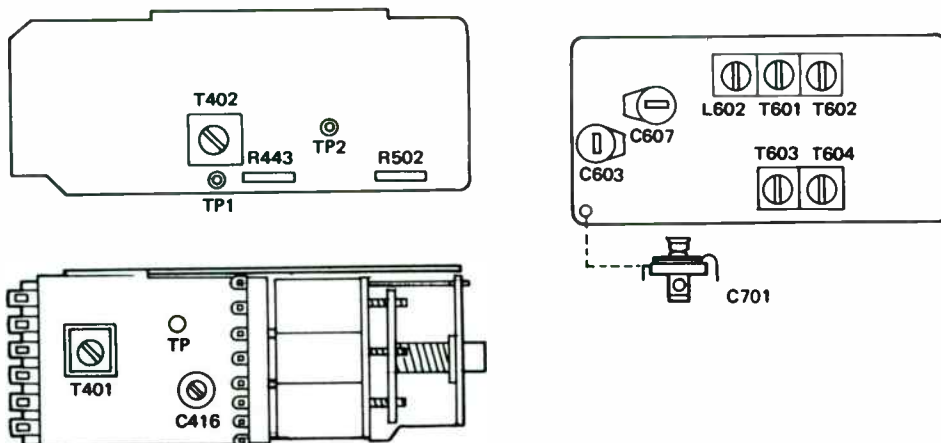


Fig. 5

ADJUSTMENT POINTS



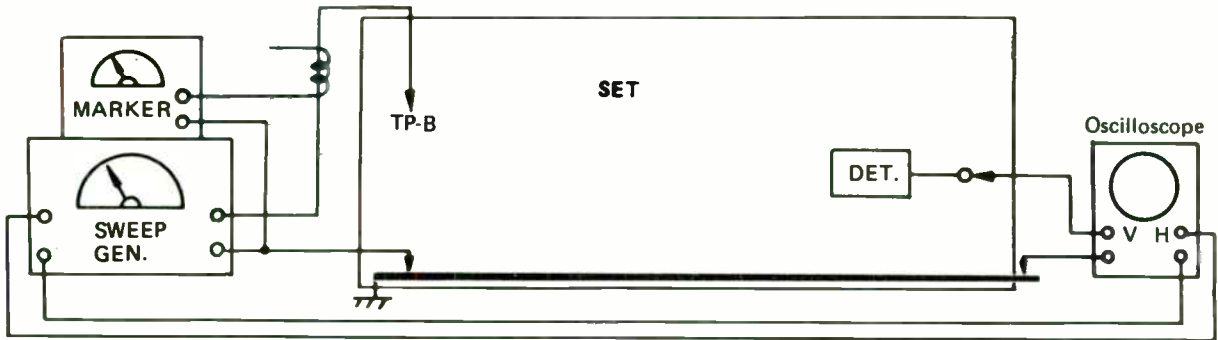


Fig. 1

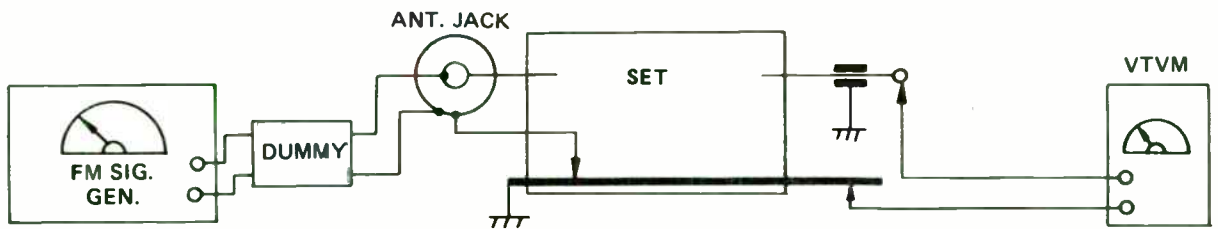


Fig. 2

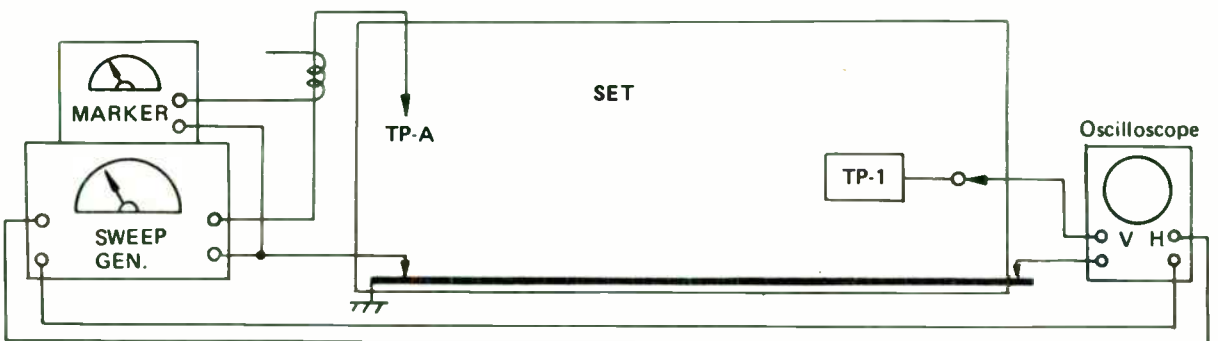
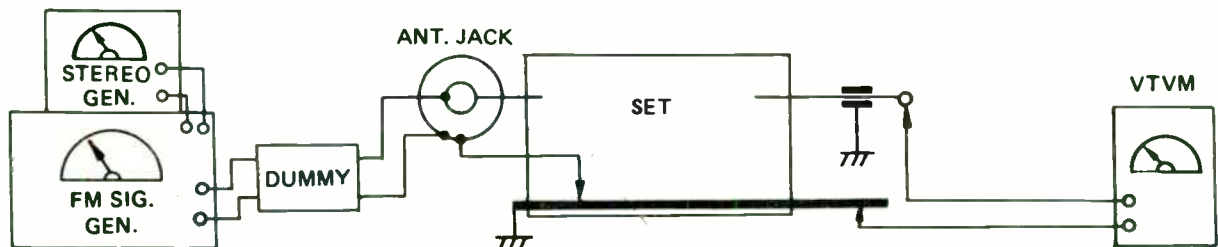


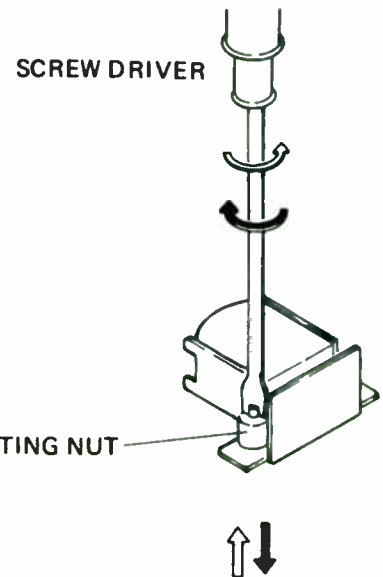
Fig. 3



MECHANICAL ADJUSTMENT

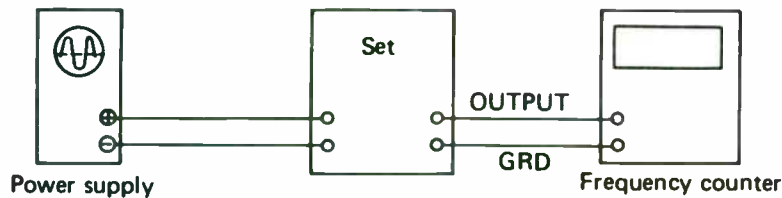
Head Azimuth Adjustment

Load the unit with a 6.3 kHz test tape.
Set the Volume and Tone controls to the maximum position and Balance control to the mechanical center.
Turn Azimuth adjusting nut for maximum output on the VTVM connected to the audio output.



Tape Speed Adjustment

Load the unit with a 3 kHz test cassette.
Take a frequency counter reading. It should be 3 kHz.
If not, adjust the R366.

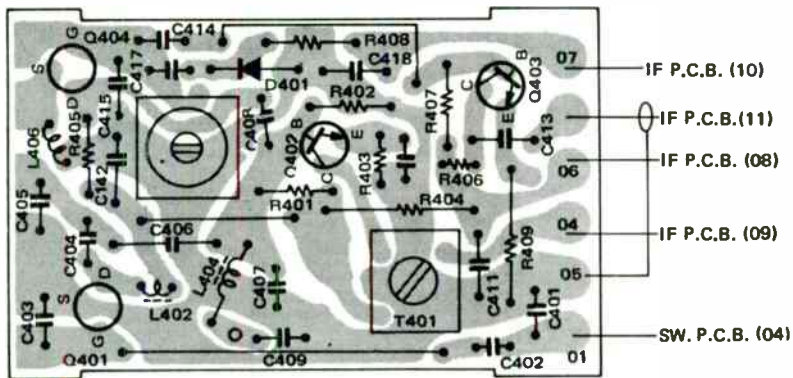


TROUBLESHOOTING

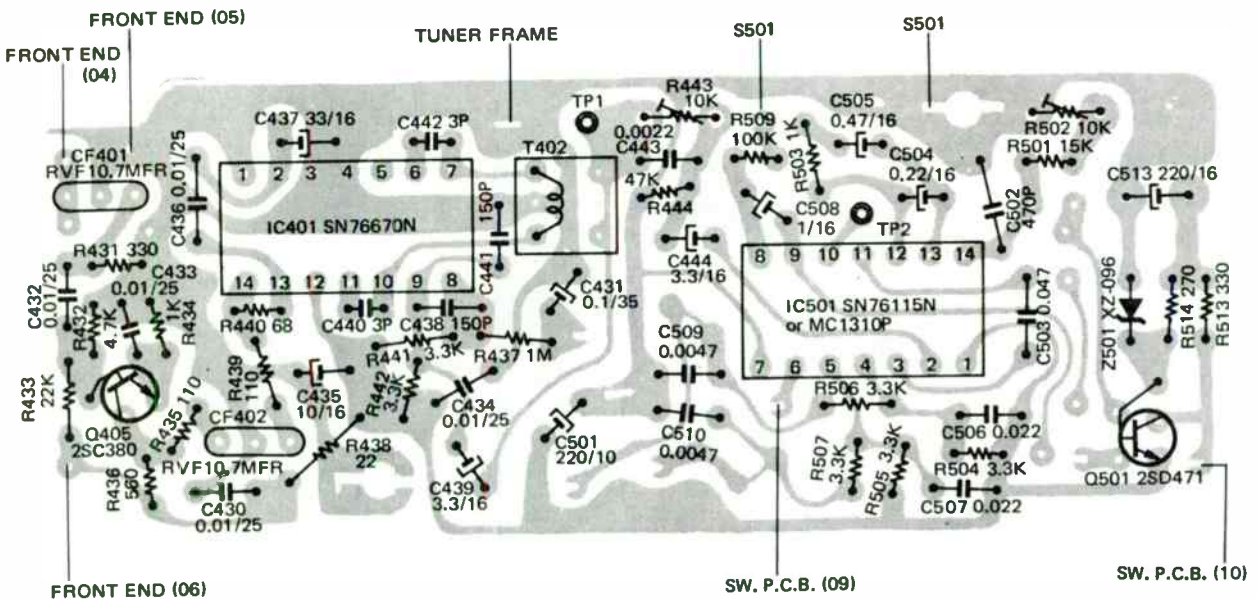
Tape no sound	Motor – no work Defective Lead – open or short Head – defective Head lead – open or short Drive belt – worn or broken	Replace Fix or replace Replace Fix or replace Replace
Noisy	Head – dirty Head – magnetized Head – out of alignment Tape – defective Power supply – includes noise	Clean Demagnetize Check azimuth adjustment Try another tape See noise suppression
Crosstalk	Head – out of alignment Head – defective	Check azimuth adjustment Replace
Left (right) poor sound	Speaker – defective Speaker lead – high resistance Head – out of alignment Amp circuit – defective Vol. or bal. control – defective Tape – defective	Replace Fix or replace Adjust Check voltage – fix – replace Replace Try another tape
Radio and tape collect automotive noise	Ignition noise Alternator noise Brush type motor noise	See noise suppression
Digital does not light	Fuse – blown Q801 – defective	Replace fuse Emitter voltage check (replace Q801)
One order digit does not light	Indicator – defective P.C. board – defective	Replace indicator Replace digital p.c. board
Does not display number	IC802 – defective Crystal – defective	Check test point Replace
Display does not hold and clock advance unduely		Check SK803 (Test hour and minute) Replace S306, 307

P.C.BOARD LAYOUT / WIRING DIAGRAM

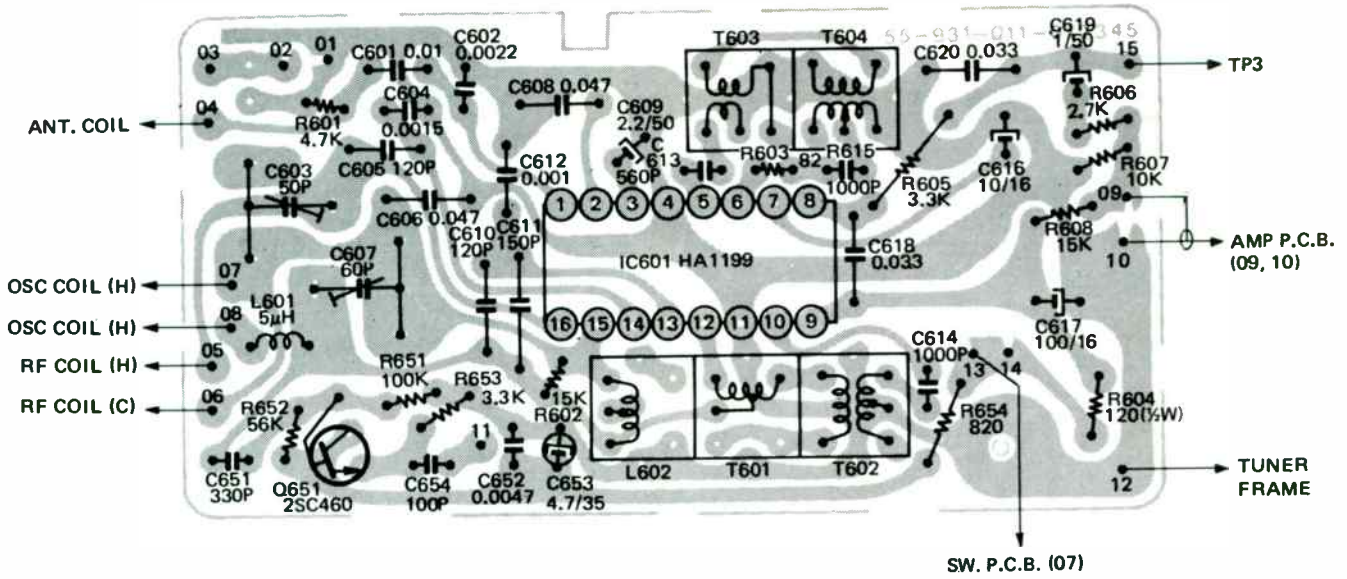
FRONT END P.C. BOARD



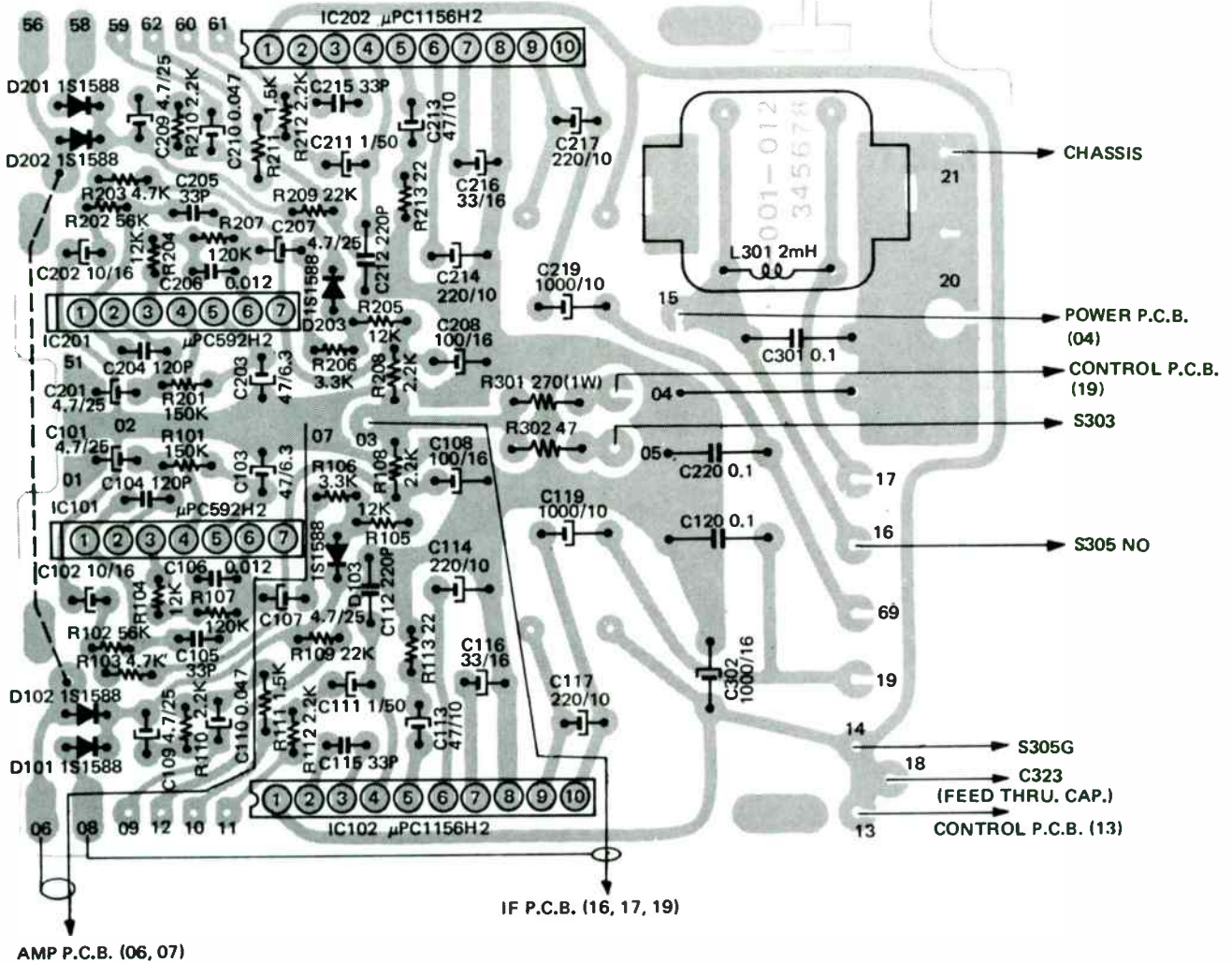
IF P.C. BOARD



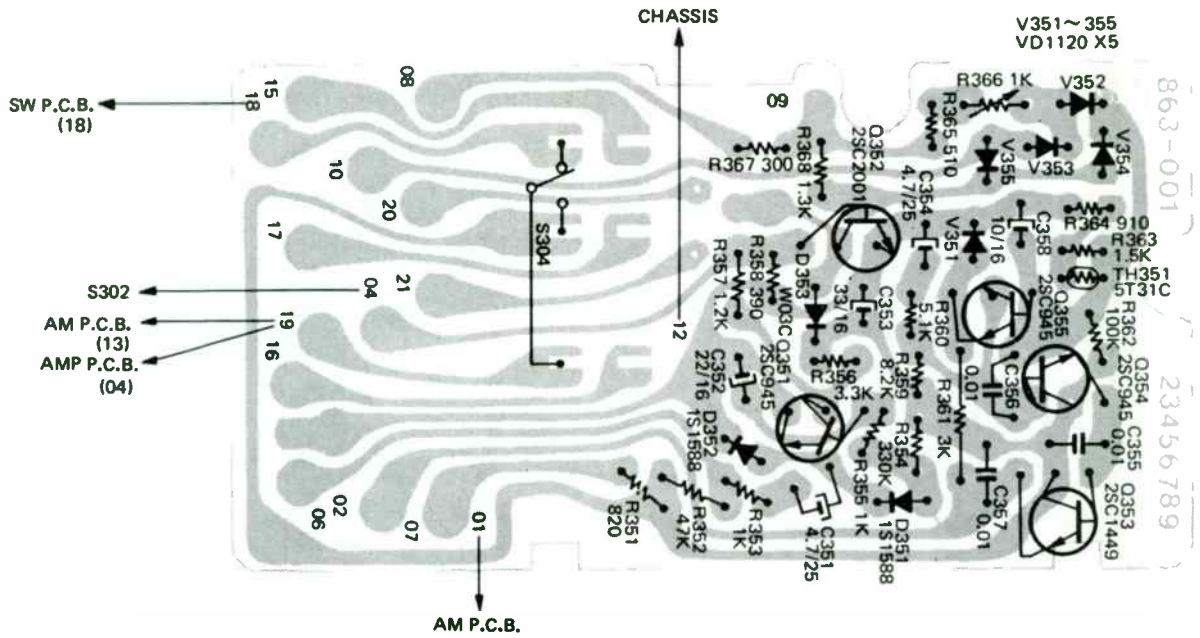
AM P.C. BOARD



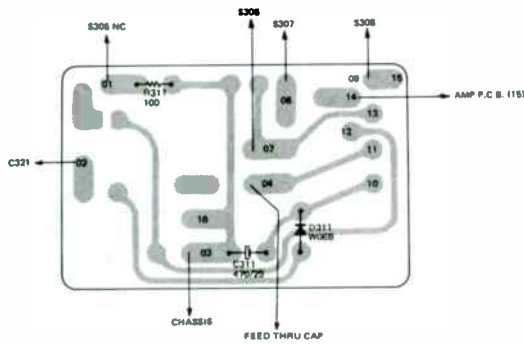
AMPLIFIER P.C. BOARD



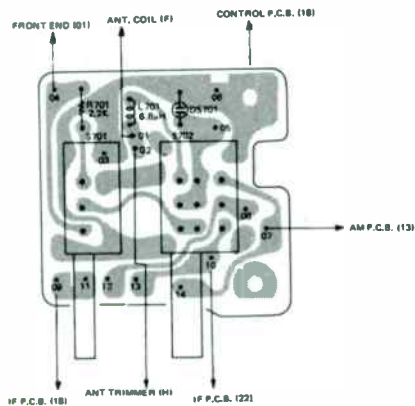
TAPE DETECTOR P.C. BOARD



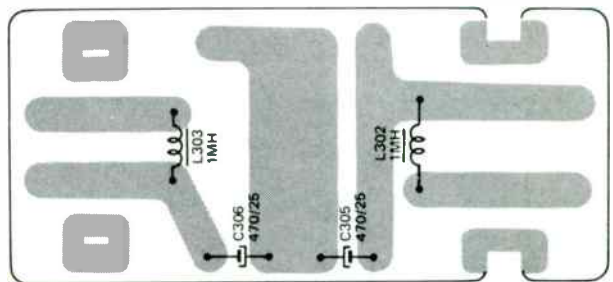
POWER SUPPLY P.C. BOARD



SWITCH P.C. BOARD

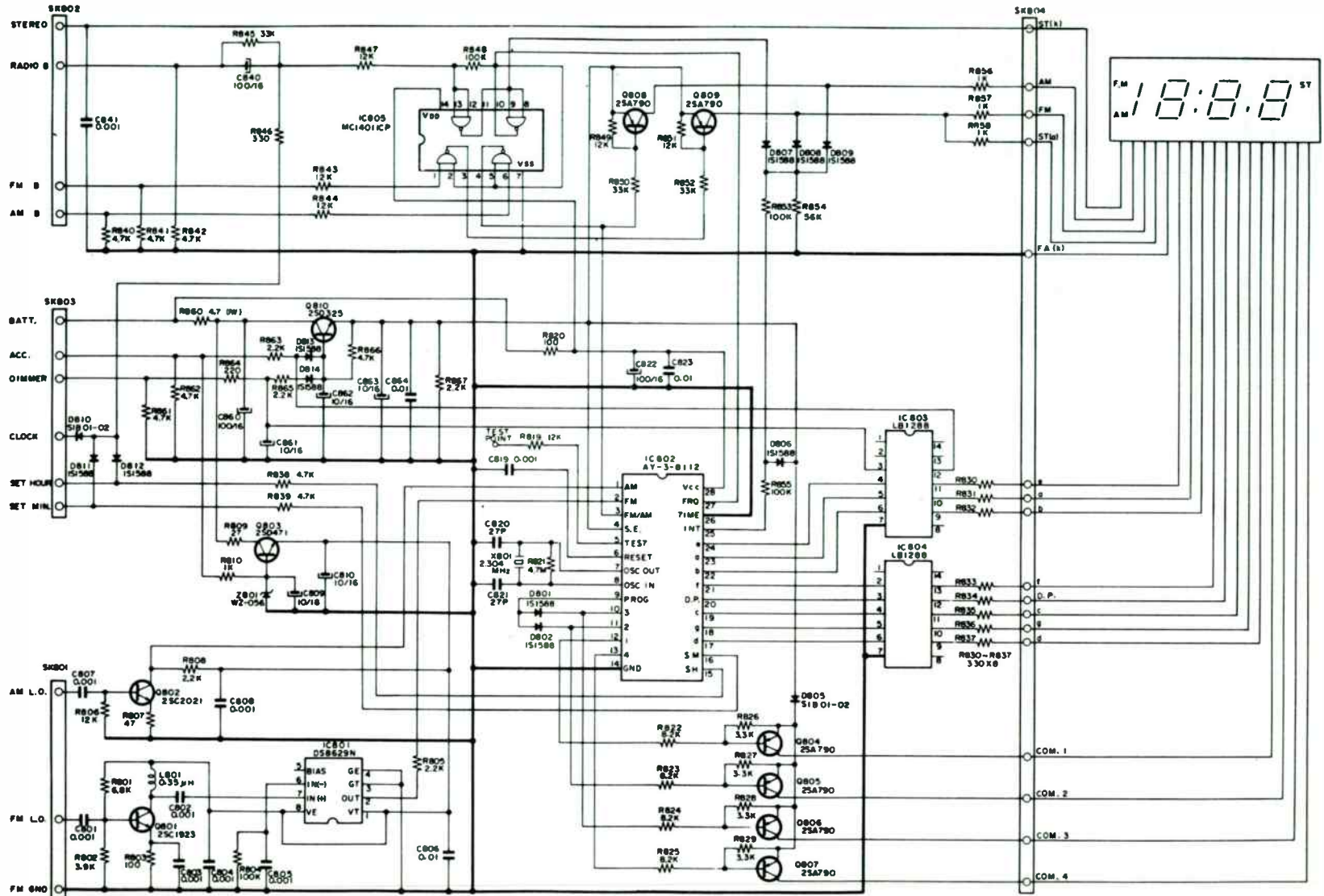


FILTER P.C. BOARD



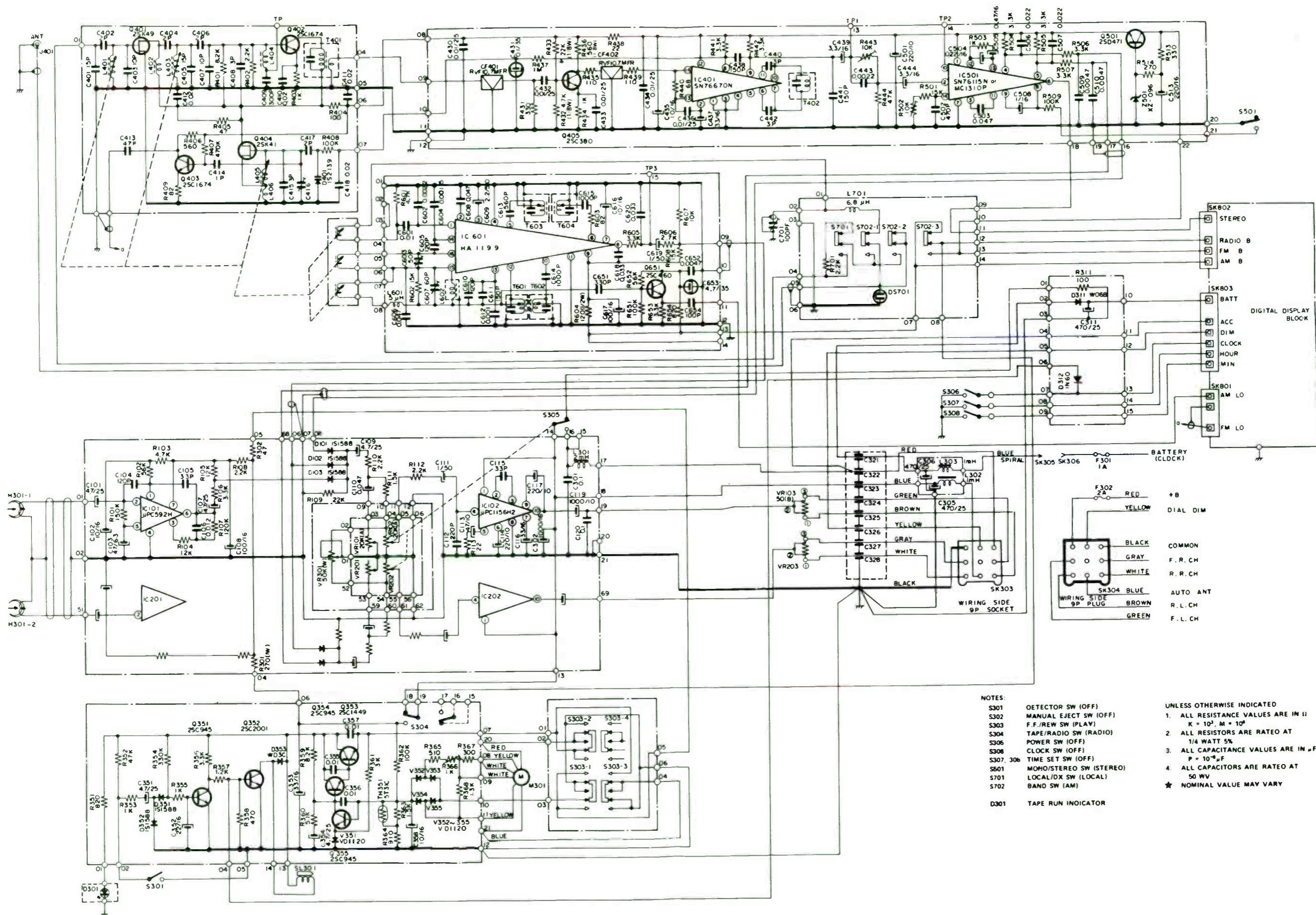
CABINET

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
	12-931-001	Radio Chassis		34-931-402	Oldham Coupler (B)
	12-141-040	Button – band selector		34-931-403	Oldham Coupler (C)
	12-141-041	Button – DX/Loc			
	20-931-017	Shield Case – top		38-933-002	Sleeve
	12-931-007	Lever (A) – DX/Loc		36-954-002	Polyester Sheet
				36-708-006	Label – black
	12-931-008	Lever (B) – FM/AM		36-141-044	Label – rating
	20-010-012	Lead Clamp		36-931-004	Label – antenna trimmer
	20-499-023	Locator – control shaft			
	20-595-034	Clamp – antenna cord		38-933-001	Tube – power harness
	20-931-001	Front Panel		37-846-002	Spring – door
				38-456-404	Spacer
	20-931-003	Bracket – cassette carrier		38-931-402	Fiber Sheet
	20-931-004	Upper Plate		38-931-550	Vinyl Tube
	20-141-030	Bracket – push switch			
	20-931-008	Bracket – display module		52-056-022	Digital Indicator
	20-931-009	Guide Plate – FF/REW lever		52-056-025	LED Ass’y
				58-010-203	Push Switch
	20-931-014	Lever – DX/Loc switch		58-010-193	Push Switch
	20-931-015	Bracket – supply p.c. board		58-010-199	Push Switch
	20-141-045	Cassette Door			
	20-931-018	Shield Case – bottom		58-040-034	Leaf Switch
	20-931-019	Shield Plate		59-010-112	Antenna Jack with Cable
				62-010-307	9P Socket Ass’y
	20-931-020	Grounding Plate		58-010-119	Selector Switch
	20-952-004	Top Cabinet		62-010-282	Power Harness
	20-952-005	Bottom Cabinet			
	20-131-001	Back Panel		62-020-008	Wire Lead
	20-952-023	Clamp – wire harness		62-020-009	Wire Lead
				76-010-031	AM/FM u-tuner
	20-952-051	Head Sink		86-910-056	Potentiometer
	25-709-001	Shaft – cassette door		87-030-006	Potentiometer
	26-931-001	Extruded Washer			
	29-408-001	Special Screw		95-960-055	Feed Thru Cap.
	34-996-007	Back Knob		96-701-028	Mica Trimmer
				97-931-001	P.C. Board – amp complete
	12-141-043	Trim Plate		97-931-008	P.C. Board – power complete
	38-931-401	Fiber		97-931-004	P.C. Board – switch complete
	34-141-066	Nosepiece			
	34-141-055	Knob – FF/REW		97-931-005	P.C. Board – display complete
	34-141-053	Button – STEREO		97-931-007	P.C. Board – filter complete
				97-931-011	P.C. Board – AM complete
	34-141-037	Button – time set		97-931-012	P.C. Board – IF complete
	12-141-042	Front Knob		550934-003	P.C. Board – volume
	34-931-401	Oldham Coupler (A)			



NOTES
 UNLESS OTHERWISE INDICATED
 1. ALL RESISTANCE VALUES ARE IN OHMS $10^3 = 1K$, $10^6 = 1M$
 2. ALL RESISTORS ARE RATED AT 1/4 WATT 5%
 3. ALL CAPACITANCE VALUES ARE IN μF , $10^{-9} = 1nF$
 4. ALL CAPACITORS ARE RATED AT 50V
 5. NOMINAL VALUE MAY VARY

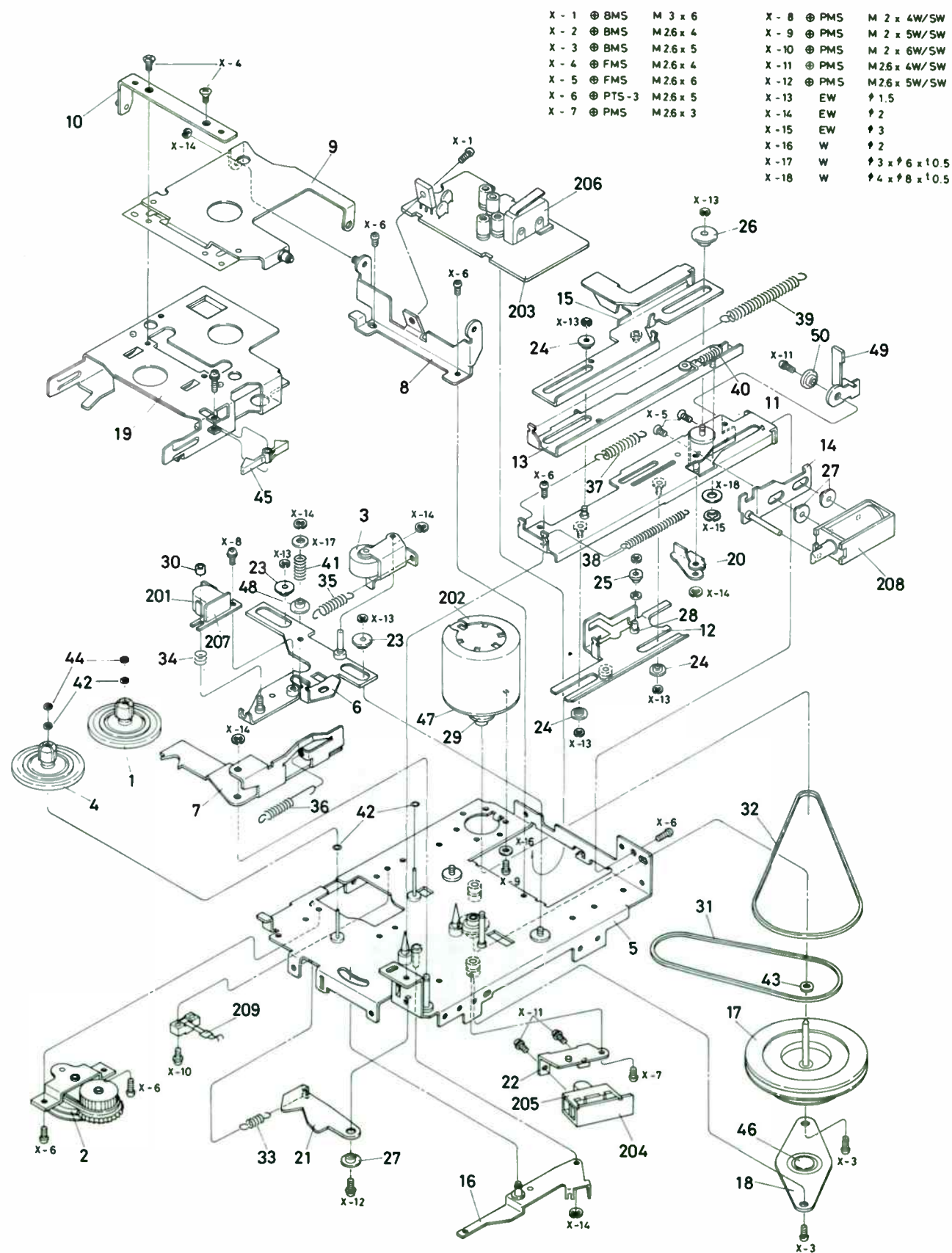
SCHEMATIC DIAGRAM (DIGITAL)



- NOTES:**
- S301 DETECTOR SW (OFF)
 - S302 MANUAL EJECT SW (OFF)
 - S303 F.F./REW SW (PLAY)
 - S304 TAPE/RADIO SW (RADIO)
 - S306 POWER SW (OFF)
 - S308 CLOCK SW (OFF)
 - S307, 306 TIME SET SW (OFF)
 - S501 MONO/STEREO SW (STEREO)
 - S701 LOCAL/DX SW (LOCAL)
 - S702 BAND SW (AM)
 - D301 TAPE RUN INDICATOR
- UNLESS OTHERWISE INDICATED**
1. ALL RESISTANCE VALUES ARE IN Ω , K = 10^3 , M = 10^6
 2. ALL RESISTORS ARE RATED AT 1/4 WATT 5%
 3. ALL CAPACITANCE VALUES ARE IN μ F, P = 10^{-8} F
 4. ALL CAPACITORS ARE RATED AT 50 WV
 - ★ NOMINAL VALUE MAY VARY

Boman BM-1490

MECHANISM EXPLDED VIEW



MECHANISM

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
1	12-595-016	Take-up Reel	31	34-595-007	Drive Belt
2	12-595-035	Idler Ass'y	32	34-863-001	Motor Belt
3	12-595-040	Pinch Roller	33	37-331-001	Spring — centering plate
4	12-840-024	Supply Reel	34	37-595-008	Spring — head adj.
5	12-863-001	Main Chassis — mechanism	35	37-863-001	Spring — pinch roller
6	12-863-002	Mounting Chassis — head	36	37-863-002	Spring — mounting chassis arm
7	12-863-003	Arm — mounting chassis	37	37-863-003	Spring — top slide plate
8	12-863-004	Bracket — cassette carrier	38	37-863-004	Spring — middle slide plate
9	12-863-005	Cassette Carrier	39	37-863-005	Spring — bottom slide plate
10	12-863-006	Fitting Plate — cassette housing	40	37-863-006	Spring — lock lever
11	12-863-007	Frame — eject mechanism	41	37-863-008	Spring — mounting chassis
12	12-863-008	Eject Slide Plate — top	42	38-010-005	Thrust Washer (1.6x3.5)
13	12-863-009	Eject Slide Plate — middle	43	38-010-006	Thrust Washer (2.2x5.0)
14	12-863-011	Slide Plate — solenoid	44	38-010-008	Thrust Washer
15	12-863-013	Eject Slide Plate — bottom	45	34-863-002	Cassette Stopper
16	12-931-002	FF/REW Lever	46	38-223-406	Thrust Washer
17	13-595-004	Flywheel	47	38-595-004	Cushion-motor
18	20-595-026	Bracket — flywheel	48	38-595-008	Retainer — spring
19	20-863-006	Cassette Housing	49	20-863-024	Lever — power switch
20	20-863-016	Lock Lever	50	27-863-009	Extruded Washer
21	20-863-018	Centering Plate — FF/REW lever	201	53-010-071	Head
22	20-863-020	Bracket — FF switch	202	54-020-057	Motor
23	27-863-001	Extruded Washer	203	55-863-001	Control p.c. board
24	27-863-002	Extruded Washer	204	55-863-002	FF Switch p.c. board
25	27-863-003	Extruded Washer	205	58-010-181	Slide Switch
26	27-863-004	Extruded Washer	206	58-020-020	Micro Switch
27	27-863-005	Extruded Washer	207	66-010-022	Terminal — head
28	27-863-010	Roller	208	70-010-033	Solenoid Plunger
29	28-519-201	Motor Pulley	209	73-010-002	Sensor — end of tape
30	29-595-001	Special Nut — head adj.			

MISCELLANEOUS

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
	20-109-018	Mounting Strap		61-010-089	Connector KSA-4X
	20-595-041	Mounting Bracket		61-010-091	Connector KSA-6X ~
	36-010-048	Label – caution			
	37-519-302	Trimmer Adj. Stick		61-010-116	Connector 17P
	38-123-601	Label – chassis No.		61-010-141	IC Socket 28P
				62-010-273	Connector Ass'y No. 273
	41-141-034	Individual Box		62-010-275	Connector Ass'y
	41-141-035	Master Carton		62-010-277	6P Connector Ass'y
	41-200-003	Poly Bag – printed matter/trimplate			
	41-200-005	Poly Bag – unit		62-010-281	Power Cord
	41-408-005	Poly Bag – 6 units		62-010-306	9P Plug Cord Ass'y
				66-010-022	Terminal – head
	41-931-001	Foamed Cushion (L)		46-010-001	Stop Card
	41-931-002	Foamed Cushion (R)		46-010-003	Boman Envelope
	41-931-005	Foamed Cushion (F)			
	46-010-030	Caution Card		46-010-005	Mail Card
	46-010-073	Hardware Bag Kit		46-010-072	Service Card
				46-499-002	Accessory Cord
	46-141-024	Instruction Manual		36-001-011	Label – FCC
	46-010-002	Warranty Card			
	61-010-088	Connector KSA-3X			

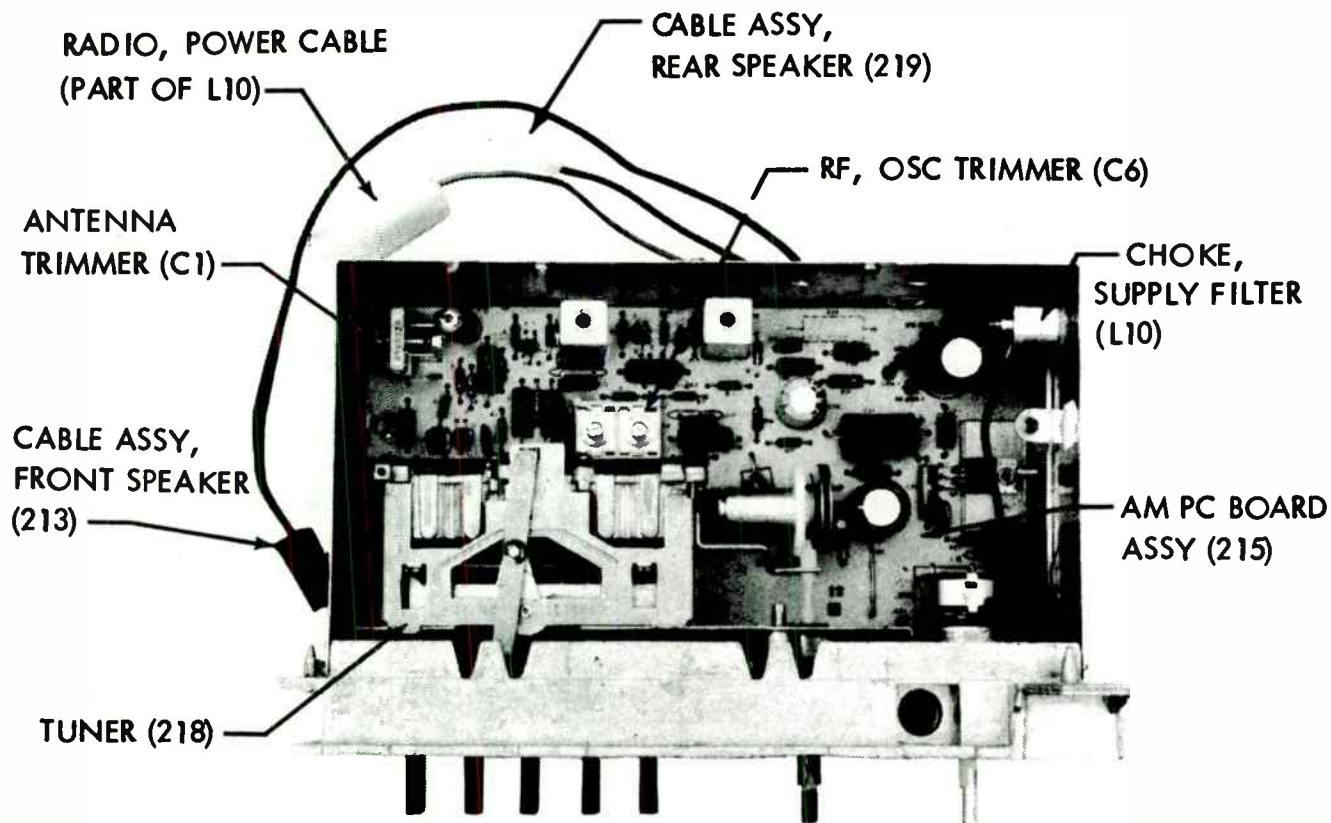
ELECTRICAL

Ref. No.	Part No.	Description
Semiconductors		
Q804, 805, 806, 807, 808, 809	52-010-120-0	Transistor 2SA790
Q301, 354, 355	52-020-114-5	Transistor 2SC945P
Q405	52-020-115-2	Transistor 2SC930 or 2SC380
Q353	52-020-186-1	Transistor 2SC1449
Q651	52-020-189-1	Transistor 2SC460A
Q352	52-020-195-0	Transistor 2SC2001
Q801	52-020-201-0	Transistor 2SC1923
Q802	52-020-203-0	Transistor 2SC2021
Q810	52-025-006-0	Transistor 2SD325
Q501, 803	52-025-012-0	Transistor 2SD471

Ref. No.	Part No.		Description	
IC401	52-040-021-0	IC	SN76670N	
IC101, 201	52-040-025-1	IC	μ -PC592H	
IC805	52-040-027-0	IC	MC14011CP	
IC501	52-040-048-0	IC	MC1310P or SN76115N	
IC102, 202	52-040-049-0	IC	μ -PC1156HZ	
IC601	52-040-051-0	IC	HA1199	
IC803, 804	52-040-065-0	IC	BA612	
IC802	52-046-019-0	IC	AY-3-8112	
IC801	52-047-004-0	IC	DS8629N	
D101, 102, 103, 201, 202, 203, 351, 352, 801, 802, 806, 807, 808, 809, 811, 812, 813, 814,	52-051-009-0	Diode	IS1588	
D805, 810	52-054-053-0	Diode	IN4003 or S1B01-02	
Z801	52-053-019-0	Zener Diode	WZ-056	
Z501	52-053-030-0	Zener Diode	XZ-096	
D311	52-054-037-0	Diode	W06B	
D353	52-054-041-0	Diode	W03C	
TH351	52-060-010-0	Thermister	5T31C	
V351, 352, 353, 354, 355	52-062-007-0	Varistor	VD1120	
Coils, Transformers & Filters				
L303	56-050-069-0	Choke Coil	2mH	
L301	56-050-036-0	Choke Coil	2mH	
L302	56-050-037-0	Choke Coil	1mH	
T402	56-050-517-1	FM IFT (Orange)		
L701	56-050-609-0	Peaking Coil	6.8 μ H	
L601	56-050-610-0	Peaking Coil	5 μ H	
L602	56-050-611-0	AM OSC Coil		
T601	56-050-612-0	AM IFT (Black)		
T602, 604	56-050-613-0	AM IFT (White)		
T603	56-050-614-0	AM IFT (Orange)		
X801	65-010-211-0	Lamp		
CF401, 402	75-010-142-0	Crystal	2304 MHz	
	75-030-017-0	Filter	RVE 10.7 MFR	
Resistors				
R820	81-110-123-1	Carbon	100 ohm	1/4W
R311	81-110-123-2	Carbon	100 ohm	1/4W
R810, 856, 857, 858, 811	81-110-223-1	Carbon	1K ohm	1/4W
R606	81-127-223-2	Carbon	2.7K ohm	1/4W
R607	81-110-323-2	Carbon	10K ohm	1/4W

Ref. No.	Part No.	Description		
R432	81-147-213-2	Carbon	4.7K ohm	1/8W
R838, 839, 840, 841, 842, 861, 862, 866	81-147-223-1	Carbon	4.7K ohm	1/4W
R803	81-147-123-1	Carbon	470 ohm	1/4W
R103, 203, 601	81-147-223-2	Carbon	4.7K ohm	1/4W
R352, 444	81-147-323-2	Carbon	47K ohm	1/4W
R821	81-147-523-1	Carbon	4.7M ohm	1/4W
R365	81-151-123-2	Carbon	510 ohm	1/4W
R360	81-151-223-2	Carbon	5.1K ohm	1/4W
R436	81-156-113-2	Carbon	560 ohm	1/8W
R854	81-156-323-1	Carbon	56K ohm	1/4W
R102, 202, 652	81-156-323-2	Carbon	56K ohm	1/4W
R440	81-168-023-2	Carbon	68 ohm	1/4W
R801	81-168-223-1	Carbon	6.8K ohm	1/4W
R603	81-182-023-2	Carbon	82 ohm	1/4W
R351, 654	81-182-023-2	Carbon	82 ohm	1/4W
R822, 823, 824, 825	81-182-223-1	Carbon	8.2K ohm	1/4W
R359	81-182-223-2	Carbon	8.2K ohm	1/4W
R364	81-191-123-2	Carbon	910 ohm	1/4W
R301	81-427-104-1	Metal Oxide	270 ohm	1W
R860	81-447-702-0	Metal Oxide	4.7 ohm	1W
VR101, 102, 201, 202	86-910-056-0	Potentiometer	20K ohm	
VR103, 203	87-030-006-0	Potentiometer	50K ohm	
R366	87-100-187-0	Trimmer Potentiometer	1K ohm	
R443, 502	87-100-191-0	Trimmer Potentiometer	10K ohm	
Capacitors				
C605	93-335-120-4	Silver Mica	120pF	50WV
C119, 219	93-523-10203	Electrolytic	1000μF	10WV
C114, 214, 501	93-523-22102	Electrolytic	220μF	10WV
C117, 217	93-523-22103	Electrolytic	220μF	10WV
C113, 213, 103, 203	93-523-470-1	Electrolytic	47μF	10WV
C102, 202, 358, 435, 616, 809, 810, 862, 863, 861	93-524-10001	Electrolytic	10μF	16WV
C108, 208, 617	93-524-10102	Electrolytic	100μF	16WV
C822, 840, 860	93-524-10103	Electrolytic	100μF	16WV
C302	93-524-10202	Electrolytic	1000μF	16WV
C352	93-524-22001	Electrolytic	22μF	16WV
C513	93-524-22101	Electrolytic	220μF	16WV
C504	93-527-22801	Electrolytic	0.22μF	50WV
C437, 353, 116, 216	93-524-330-1	Electrolytic	33μF	16WV
C439, 444	93-527-33701	Electrolytic	3.3μF	50WV
C505	93-527-47801	Electrolytic	0.47μF	50WV

Ref. No.	Part No.		Description	
C311, 305, 306	93-525-47102	Electrolytic	470 μ F	25WV
C101, 107, 109, 201, 207, 209, 351, 354	93-525-47701	Electrolytic	4.7 μ F	25WV
C111, 211, 619, 508	93-527-10701	Electrolytic	1 μ F	50WV
C609	93-527-22701	Electrolytic	2.2 μ F	50WV
C612	93-632-102-4	Polyester	0.001 μ F	50WV
C601	93-632-103-4	Polyester	0.01 μ F	50WV
C120, 220, 301	93-632-104-4	Polyester	0.1 μ F	50WV
C106, 206	93-632-123-4	Polyester	0.012 μ F	50WV
C604	93-632-152-4	Polyester	0.0015 μ F	50WV
C443, 602	93-632-222-4	Polyester	0.0022 μ F	50WV
C506, 507	93-632-223-4	Polyester	0.022 μ F	50WV
C618, 620	93-632-333-4	Polyester	0.033 μ F	50WV
C652, 509, 510	93-632-472-4	Polyester	0.0047 μ F	50WV
C503, 606, 608	93-632-473-4	Polyester	0.047 μ F	50WV
C502	93-724-471-4	Styrol	470pF	125WV
C431	93-820-101-0	Tantalum	0.1 μ F	35WV
C653	93-820-082-0	Tantalum	4.7 μ F	16WV
C110, 210	93-840-040-0	Electrolytic	0.047 μ F	25WV
C440, 442	94-333-307-9	Ceramic	3pF	50WV
C820, 821	94-353-270-3	Ceramic	27pF	50WV
C610	94-379-121-3	Ceramic	120pF	50WV
C611	94-379-151-3	Ceramic	150pF	50WV
C104, 204	94-386-121-4	Ceramic	120pF	50WV
C438, 441	94-386-151-4	Ceramic	150pF	50WV
C112, 212	94-386-221-4	Ceramic	220pF	50WV
C105, 115, 205, 215	94-386-330-4	Ceramic	33pF	50WV
C430, 432, 433, 434, 436, 355, 356, 357	95-253-103-7	Ceramic	0.01 μ F	25WV
C654	95-322-101-4	Ceramic	100pF	50WV
C614, 615, 801, 802, 803, 804, 805, 807, 808, 819, 841	95-322-102-4	Ceramic	1000pF	50WV
C651	95-322-331-4	Ceramic	330pF	50WV
C613	95-322-561-4	Ceramic	560pF	50WV
C806, 823, 864	95-352-103-7	Ceramic	0.01 μ F	50WV
C321, 322, 323, 324, 325, 326, 327, 328	95-960-049-0	Feed Thru Capacitor		
C603	96-601-005-0	Ceramic	50pF	
C607	96-601-009-0	Ceramic	60pF	
C701	96-701-028-0	Mica Trimmer	100pF	



PARTS LOCATIONS, BOTTOM VIEW, BOTTOM COVER REMOVED

A. AM ALIGNMENT PROCEDURE

A 3.2 ohm speaker or a 3.2 ohm, 10 watt resistive load must be connected across the receiver speaker leads during alignment. Connect an audio output meter across the output load. Connect a signal generator through a dummy antenna to the receiver antenna receptacle, see Figure 2. With the volume control adjusted to maximum volume, slowly increase the signal generator output from zero to a level to maintain 1.80 volts (1 watt) on the audio output meter to prevent overloading. The power source voltage should be 13.2 volts. With the top and bottom covers installed, perform the following steps for IF and AM alignment. The antenna trimer, C1 is located at the right rear corner of the radio, see Figure 3 or 4.

Step	Test Signal Connection	Test Signal Freq. (400 Hz Mod.)	Tuner Set To	Adjust for Max. Output in Order Shown
IF ALIGNMENT				
1.	Antenna recept. through dummy antenna, see Figure 2.	262.5 KHz	600 KHz	L7(Top)L8(Bottom) L5(Top)L6(Bottom)
RF ALIGNMENT				
2.	Antenna recept. through dummy antenna, see Figure 2.	1620 KHz	Hi-end Stop	C6B, C1, C6A, See Figure 3 and 4
<u>NOTE</u>				
DO NOT PERFORM STEPS 3, 4, 5, AND 6 UNLESS TUNER HAS BEEN TAMPERED WITH OR COMPONENTS HAVE BEEN REPLACED. BEFORE PROCEEDING WITH STEP 3, BACK TUNING CORES OUT OF TUNING COILS TO WHERE THEY JUST REMAIN IN COIL FORM, TO ELIMINATE THEIR EFFECT ON TRIMMER ADJUSTMENT.				
3.	Antenna recept. through dummy antenna, see Figure 2.	1620 KHz	Hi-end Stop	C6B, C1, C6A, see Figure 3 and 4
4.	Antenna recept. through dummy antenna, see Figure 2.	1000 KHz	1000 KHz	L4, L3, L2
5.	Antenna recept. through dummy antenna, see Figure 2.	1620 KHz	Hi-end Stop	C6B, C1, C6A, see Figure 3 and 4
6.	Repeat steps 4 and 5 until no further increase, then cement cores in place; last adjustment should be step 5.			
ANTENNA TRIMMER				
7.	With radio installed and antenna extended, tune receiver to a weak station at approximately 1600 KHz. Adjust the antenna trimmer C1 for maximum signal volume.			

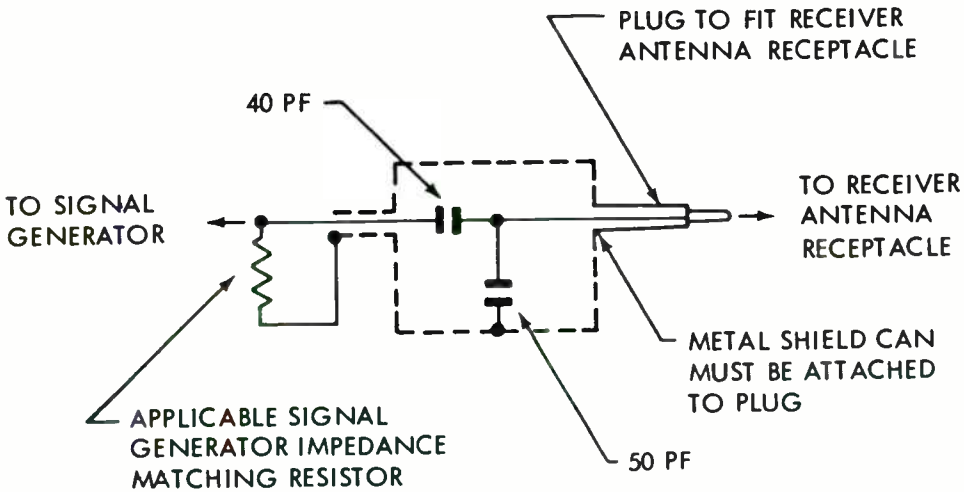


FIGURE 2. AM DUMMY ANTENNA DETAIL

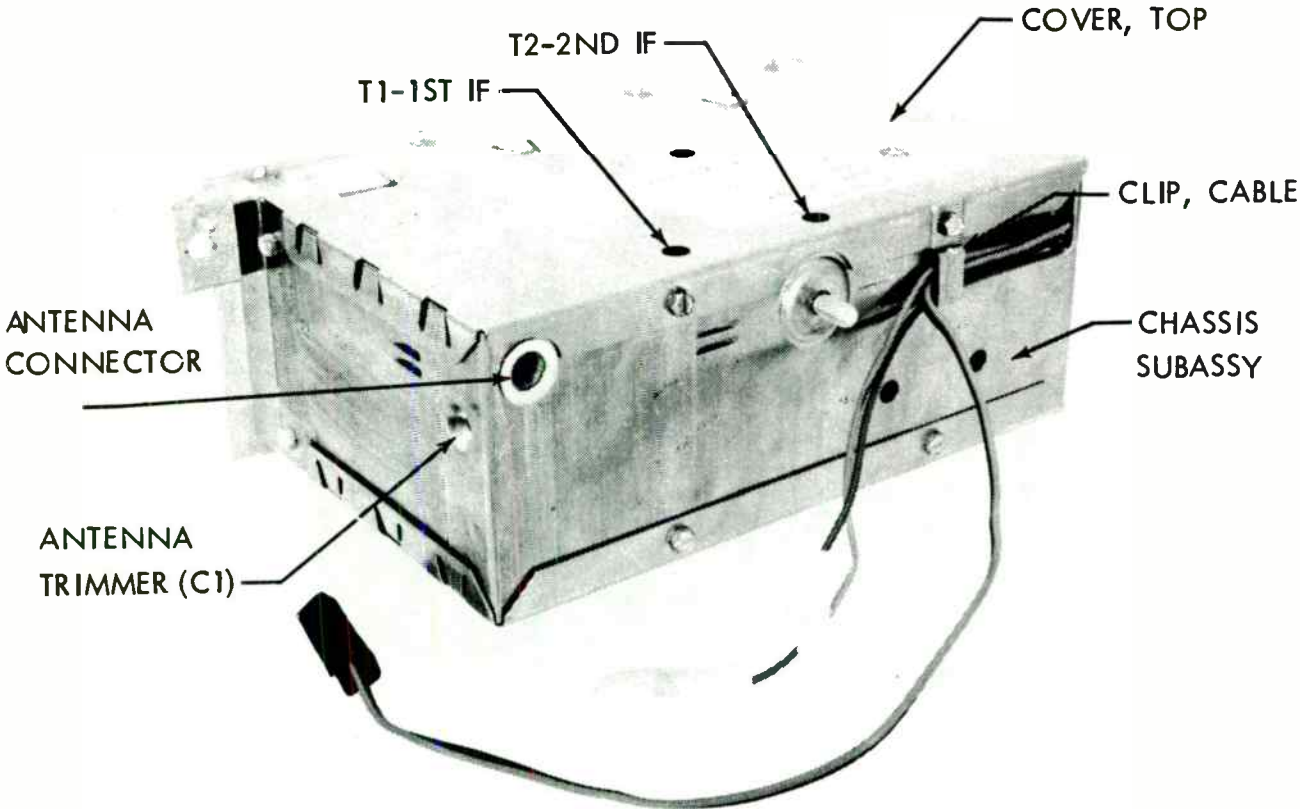


FIGURE 3. ALIGNMENT LOCATIONS, TOP VIEW

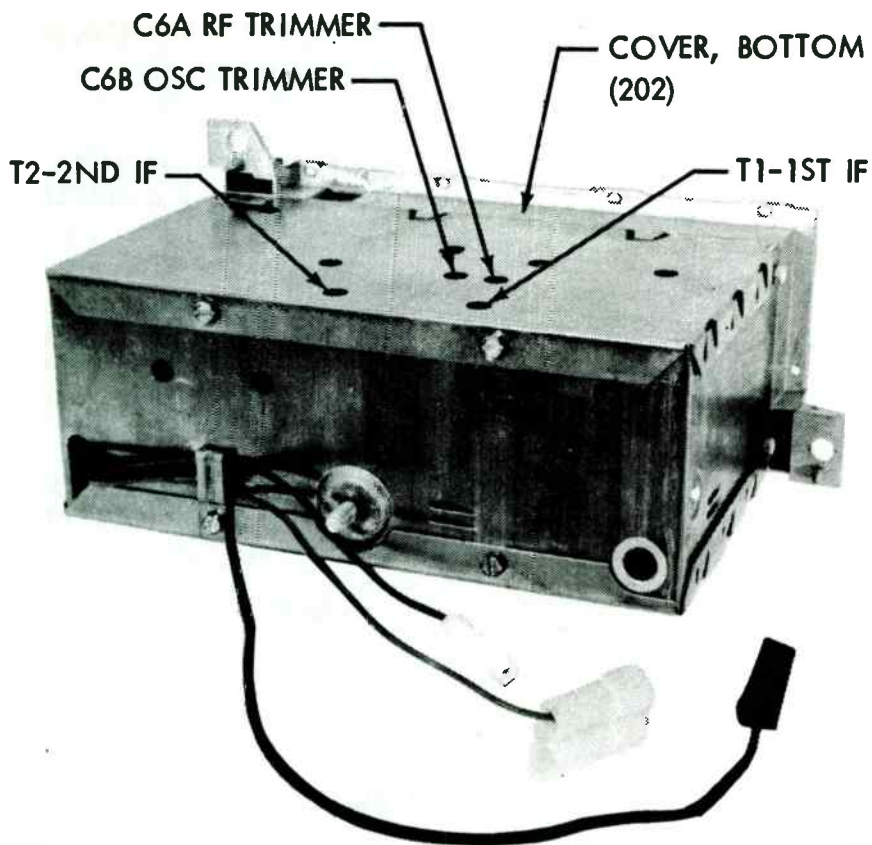
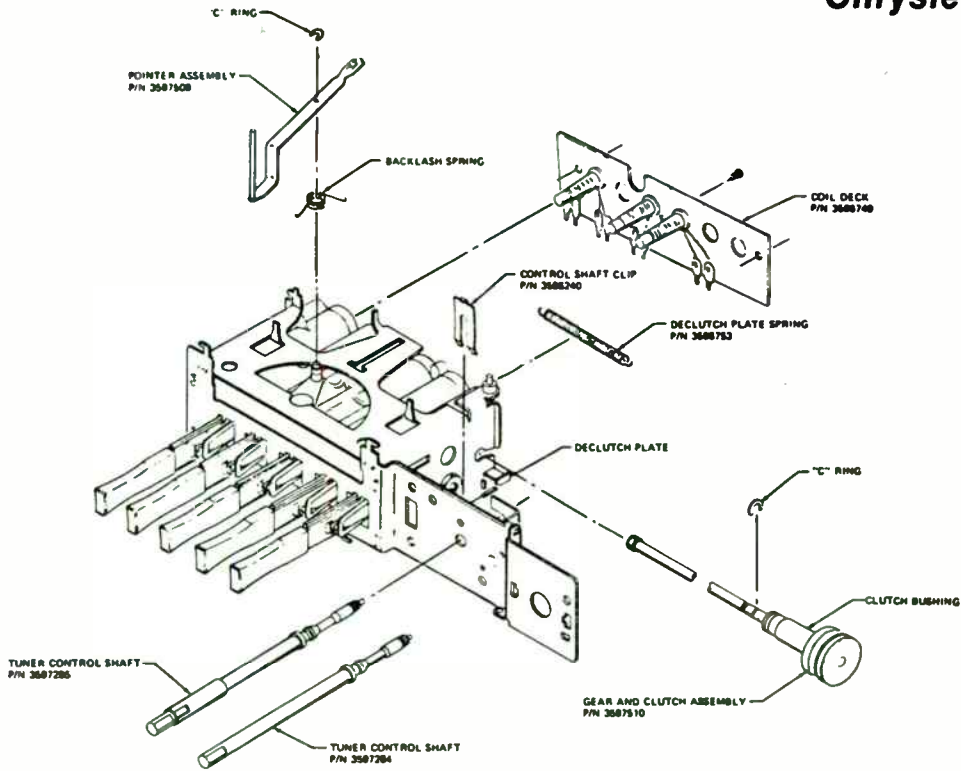


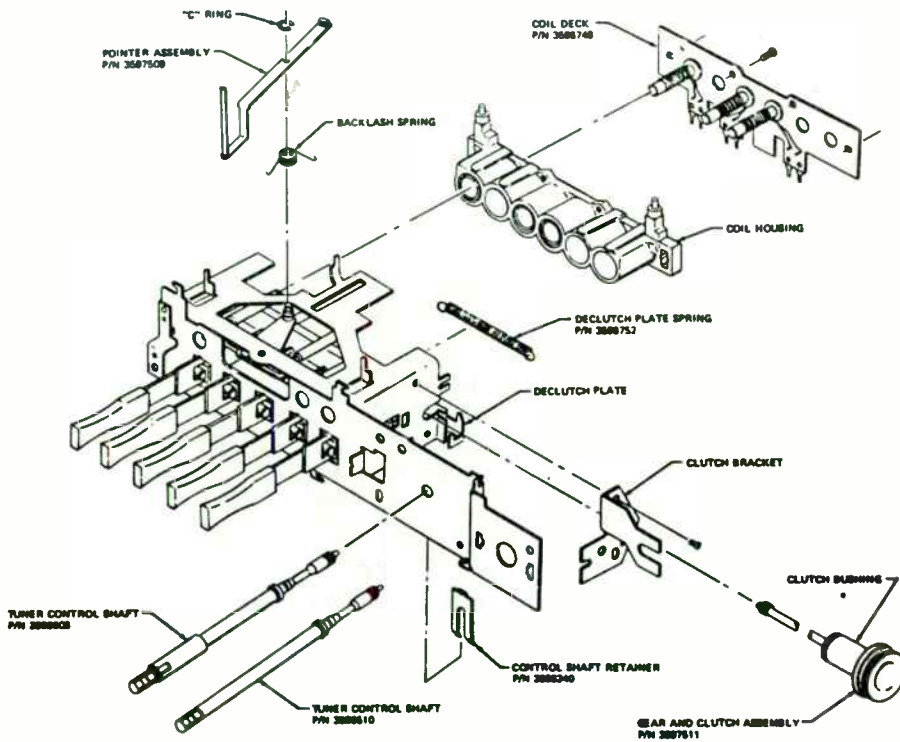
FIGURE 4. ALIGNMENT LOCATIONS, BOTTOM VIEW



FIGURE 5. PARTS LOCATIONS, FRONT VIEW



TUNER-EXPLODED VIEW (TRW)



TUNER-EXPLODED VIEW (GI)

Ref. No.	Part Number	Description
		DIODES, TRANSISTORS, IC's (AUDIO BOARD ASSEMBLY P/N 3598507)-:
X1	3596061	Diode, Silicon
X2	3596061	Diode, Silicon
Q1	3596067	Transistor, NPN, Silicon, TO-98
Q1	3596070	Transistor, NPN, Silicon, TO-92
Q2	3596068	Transistor, NPN, Silicon, TO-98
Q2	3596071	Transistor, NPN, Silicon, TO-92
Q3	3596069	Transistor, NPN, Silicon, TO-98
Q3	3596072	Transistor, NPN, Silicon, TO-92
U1	3598445	Integrated Circuit, Audio Amplifier
U1	3598520	Integrated Circuit, Audio Amplifier
		COIL, FILTERS, TRANSFORMERS (AUDIO BOARD ASSEMBLY P/N 3598507)
L1	3596331	Coil, RF
L9	3596247	Inductor, Audio Filter
L10	3599150	Choke, Supply Filter
T1	3596047	Transformer, 1F Input
T1	3596804	Transformer, 1F Input
T2	3596048	Transformer, 1F Output
T2	3596805	Transformer, 1F Output
		CAPACITORS (AUDIO BOARD ASSEMBLY P/N 3598507)
C1	3596332	Capacitor, Antenna Trimmer
C2	3596137	Capacitor, Disc, 47 PF
C3	3596138	Capacitor, Disc, .001 MF
C4	3596112	Capacitor, Disc, .0047 MF
C5	3597296	Capacitor, Disc, 130 PF, N220
C6	3596333	Capacitor, RF Osc Trimmer
C7	3596237	Capacitor, Disc, 220 PF, N470
C8	3596421	Capacitor, Mylar, .01 MF
C8	3599114	Capacitor, Tubular Ceramic .01
C9	3596254	Capacitor, Mylar, .015 MF
C9	3599129	Capacitor, Tubular Ceramic .015 MF
C10	3596421	Capacitor, Mylar, .01 MF
C11	3597507	Capacitor, Disc, 240 PF, N470 (Use with TRW and SHOJI Tuners)
C12	3596439	Capacitor, Mica, 390 PF (Use with GI Tuner)
C12	3597296	Capacitor, Disc, 130 PF, N220 (Use with TRW and SHOJI Tuners)
C13	3596422	Capacitor, Mylar .047 MF
C13	3596089	Capacitor, Disc, .047 MF
C14	3596084	Capacitor, Disc, .1 MF
C15	3596854	Capacitor, Elect, 100 MF, 16V
C15	3597043	Capacitor, Elect, 100 MF, 16V
C16	3596422	Capacitor, Mylar, .047 MF
C16	3596089	Capacitor, Disc, .047 MF
C17	3596125	Capacitor, Disc, 150 PF
C18	3596138	Capacitor, Disc, .001 MF
C19	3596419	Capacitor, Mylar, .0039 MF
C19	3598550	Capacitor, Disc, .0039 MF

NOTES:

- 1. ALL RESISTORS 1/4W ±10%, EXCEPT AS NOTED.
- 2. CAPACITANCE IN MICROFARADS EXCEPT AS NOTED.

- 3. 2W RADIO-C29 680 MF
C31 1000MF
4W RADIO-C29 1500 MF
C31 1500 MF

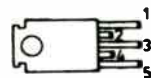
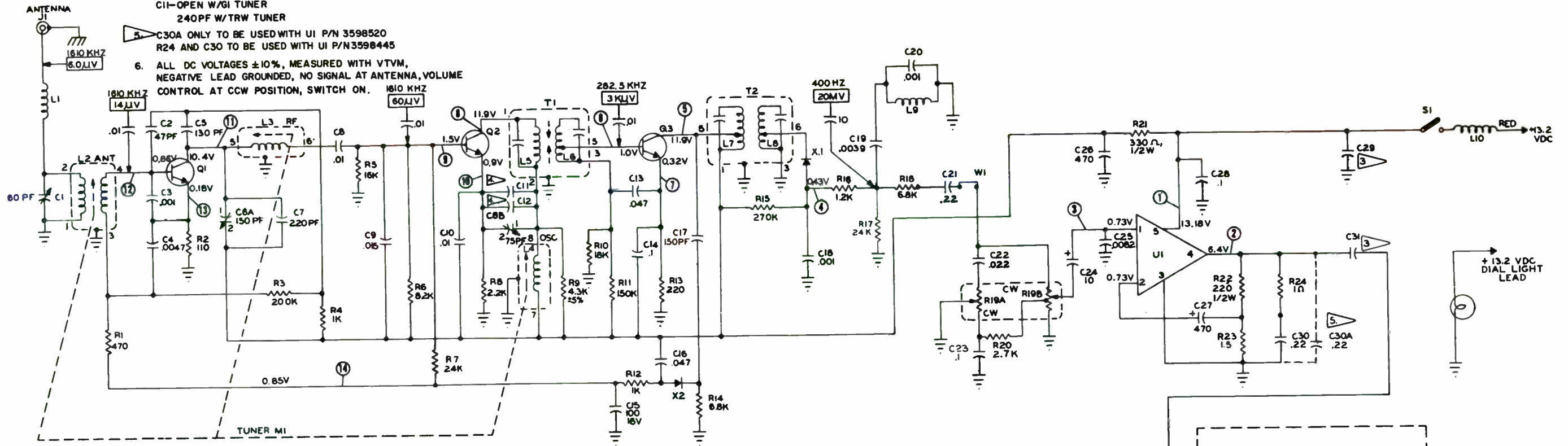
- 4. C12-390 PF W/GI TUNER
130 PF W/TRW TUNER
C11-OPEN W/GI TUNER
240PF W/TRW TUNER

- 5. C30A ONLY TO BE USED WITH UI P/N 3598520
R24 AND C30 TO BE USED WITH UI P/N3598445

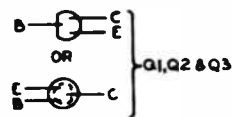
- 6. ALL DC VOLTAGES ±10%, MEASURED WITH VTVM,
NEGATIVE LEAD GROUNDED, NO SIGNAL AT ANTENNA, VOLUME
CONTROL AT CCW POSITION, SWITCH ON.

- 7. ALL AC SIGNAL CONDITIONS:
3.2 Ω LOAD, VOLUME & TONE CONTROLS MAX. CW, OUTPUT
REF. 1.0 WATT. SIGNAL GENERATOR SHOULD BE
PROPERLY TERMINATED.

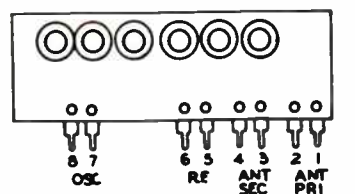
- 8. [Symbol] INDICATES SIGNAL LEVEL REQUIRED FOR ONE
WATT OUTPUT WITH MAX. VOLUME. CONDITIONS:
1610 KHZ, 400 HZ, 30% MODULATION UNLESS
OTHERWISE SPECIFIED.



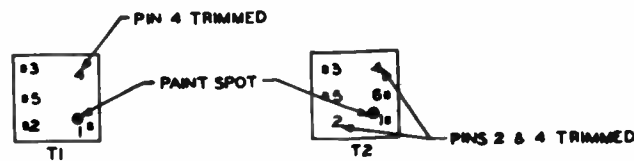
BOTTOM VIEW OF UI



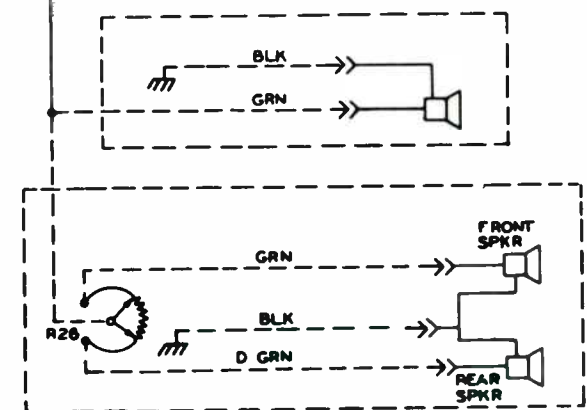
BOTTOM VIEW

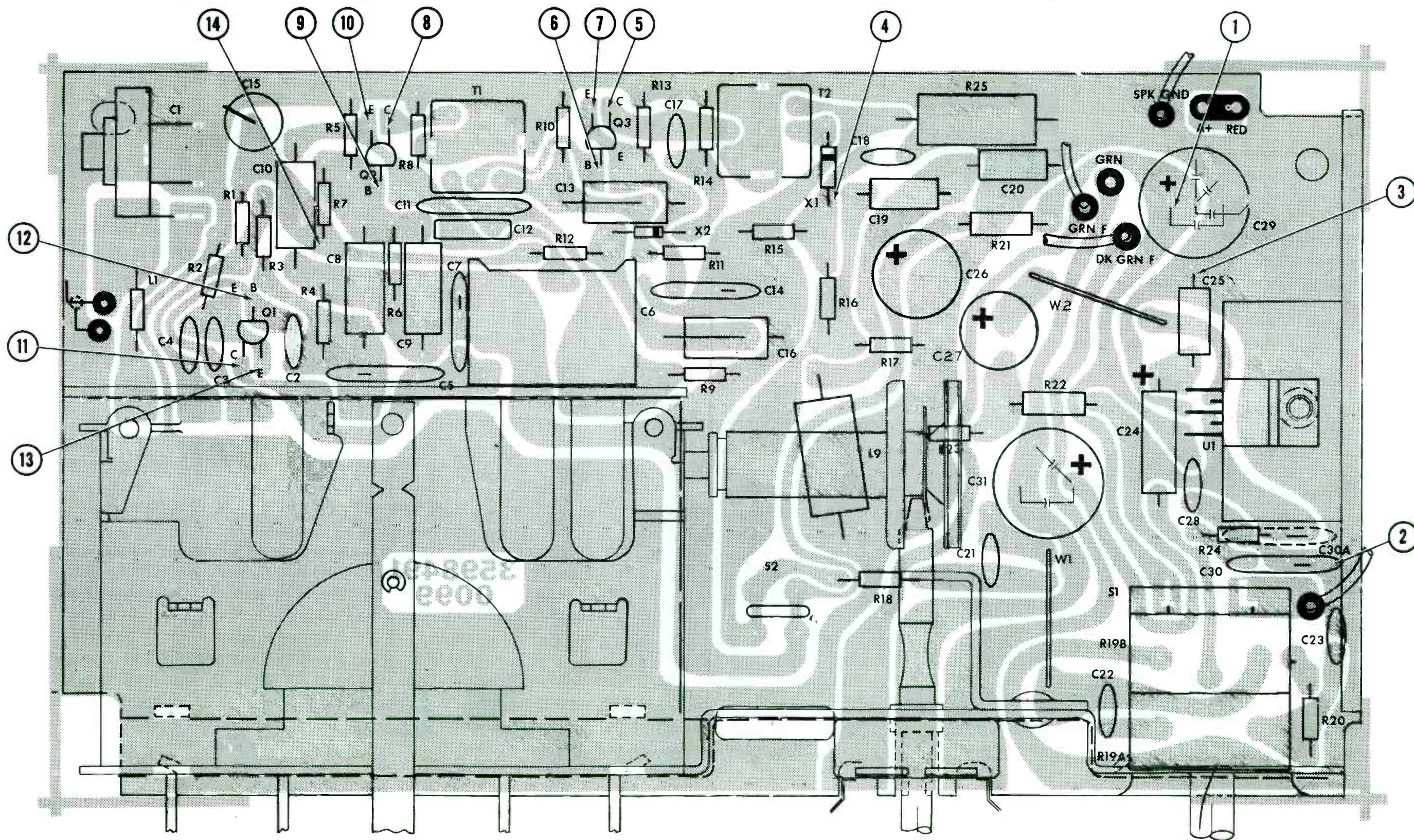


REAR VIEW OF TUNER



BOTTOM VIEWS OF T1 & T2





Ref. No.	Part Number	Description
CAPACITORS (Continued) (AUDIO BOARD ASSEMBLY P/N 3598507)		
C19	3599131	Capacitor, Tubular Ceramic, .0039 MF
C20	3596417	Capacitor, Mylar, .001 MF
C20	3598549	Capacitor, Disc, .001 MF
C20	3599133	Capacitor, Tubular Ceramic, .001 MF
C21	3598532	Capacitor, Disc, .22 MF
C21	3598536	Capacitor, Alum, .22 MF
C22	3598537	Capacitor, Disc, .022 MF
C23	3596889	Capacitor, Disc, .1 MF
C23	3598535	Capacitor, Alum, .1 MF
C24	3598539	Capacitor, Elect. 10 MF, 10V
C25	3598540	Capacitor, Mylar, .0082 MF
C25	3598548	Capacitor, Disc, .0082 MF
C25	3599132	Capacitor, Tubular Ceramic, .0082 MF
C26	3598541	Capacitor, Elect, 470 MF, 16V
C27	3599147	Capacitor, Elect, 470 MF, 6.3 V
C28	3597752	Capacitor, Disc, .1 MF
C29	3598544	Capacitor, Elect, 1500 MF, 16V
C30	3598546	Capacitor, Mylar, .22 MF (U1 3598445 Only)
C30	3598546	Capacitor, Mylar, .22 MF (U1 3598520 Only)
C31	3598544	Capacitor, Elect, 1500 MF
RESISTORS (AUDIO BOARD ASSEMBLY P/N 3598507)		
R1	3597092-471	Resistor, 1/4 Watt, 470 Ohms, +10%
R2	3597092-111	Resistor, 1/4 Watt, 110 Ohms, +10%
R3	3597092-204	Resistor, 1/4 Watt, 200K Ohms, +10%
R4	3597092-102	Resistor, 1/4 Watt, 1K Ohms, +10%
R5	3597092-163	Resistor, 1/4 Watt, 16K Ohms, +10%
R6	3597092-823	Resistor, 1/4 Watt, 82K Ohms, +10%
R7	3597092-243	Resistor, 1/4 Watt, 24K Ohms, +10%
R8	3597091-222	Resistor, 1/4 Watt, 2.2K Ohms, +5%
R9	3597091-432	Resistor, 1/4 Watt, 4.3K Ohms, +5%
R10	3597092-183	Resistor, 1/4 Watt, 18K Ohms, +10%
R11	3597092-154	Resistor, 1/4 Watt, 150K Ohms, +10%
R12	3597092-102	Resistor, 1/4 Watt, 1K Ohms, +10%
R13	3597092-221	Resistor, 1/4 Watt, 220 Ohms, +10%
R14	3597092-682	Resistor, 1/4 Watt, 6.8 K Ohms, +10%
R15	3597092-274	Resistor, 1/4 Watt, 270K Ohms, +10%
R16	3597092-122	Resistor, 1/4 Watt, 1.2K Ohms, +10%
R17	3597092-243	Resistor, 1/4 Watt, 24K Ohms, +10%
R18	3597092-682	Resistor, 1/4 Watt, 6.8K Ohms, +10%
R19	3598526	Resistor, Volume Control (Switch and Tone)
R19	3598527	Resistor, Volume Control (Switch and Tone)
R20	3597091-272	Resistor, 1/4 Watt, 2.7K Ohms, +5%
R21	3597559-331	Resistor, 1/2 Watt, 330 Ohms, +10%
R22	3597559-221	Resistor, 1/2 Watt, 220 Ohms, +10%

Ref. No.	Part Number	Description
R23	3597091-1R5	Resistor, 1/4 Watt, 1.5 Ohms, +5%
R24	3597091-1R0	Resistor, 1/4 Watt, 1 Ohm, +5% (U2 3598445 Only)
R26	3596315	Resistor, Fader Control (3598507 Only)
R26	3596318	Resistor, Fader Control (3598507 Only)
		<u>TUNER PARTS</u>
	3597511	Gear & Clutch Assembly (G.I.)
	3597510	Gear & Clutch Assembly (TRW)
	3597508	Pointer Assembly (TRW)
	3597509	Pointer Assembly (G.I.)
	3596240	Shaft Retainer
	3596748	Tuner Coil Deck (G.I.)
	3596749	Tuner Coil Deck (TRW)
	3596752	Declutch Plate Spring (G.I.)
	3596753	Declutch Plate Spring (TRW)
	3596510	Shaft (G.I.)
	3597285	Shaft (TRW)
		<u>MISCELLANEOUS PARTS</u>
	3599140	Backdial
	3596280	Cover, Top
	3596281	Cover, Bottom
	3596015	Clip, Cable
	3596294	Clip, Lens
	3596860	Pushbutton
	3597424	Sub Escutcheon
	3598508	Chassis Subassembly
	3598545	Chassis
	3596031	Antenna Connector
	3597432	Light Diffuser
	3598530	Heatsink
	3598529	Hood
	3598598	Cable Assembly, Front Sepaker
	3597420	Identification Label
	3598507	AM PC Board Assembly
	3597434	Escutcheon
	3597443	Lens (TRW)
	3597444	Lens (GI)
	3599074	Tuner Assembly (GI)
	3599077	Tuner Assembly (TRW)
	3598185	Tuner Assembly (SHOJI)
	3598597	Cable Assembly, Rear Speaker
	3597416	Escutcheon Assembly (TRW)
	3597418	Escutcheon Assembly (GI)

ALIGNMENT PROCEDURES

Alignment is performed at factory with laboratory test equipment. Therefore, before alignment is attempted the unit should be thoroughly checked for circuit troubles.

NOTE:

- 1) Signal generator output:
 - Modulation frequency: 400 Hz
 - Modulation percentage: 30%
 - Signal level just high enough to provide meter deflection.
- 2) Signal application:
 - Antenna Receptacle thru a dummy ANT.
- 3) Output meter connection:
 - Across a speaker or a dummy load (4 ohm)
- 4) Setting of Radio control:
 - Volume control at maximum .
 - Tone control at Treble.
- 5) Power supply: 14 V DC

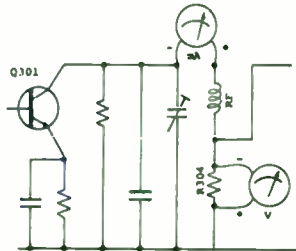


Fig. 1

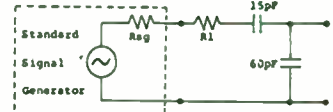


Fig. 2

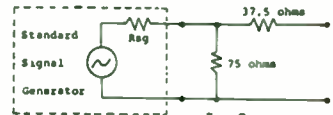


Fig. 3

R1=80-Rsg (ohms)
 Rsg: Internal Resistance of Signal Generator.



AM COLLECTOR CURRENT

STEP	ADJUSTING CIRCUIT	CONNECTIONS		FREQ'CY	DIAL SETTING	ADJUST	ADJUST FOR
		INPUT	OUTPUT				
1	AM/RF (see Fig.1)	Operate unit in AM mode. Do not connect Antenna.	Connect mA meter in series with collector of Q301 and Tuner coil RF as shown in Fig.1			R311	A reading of 600±50uA at collector of Q301.

AM/IF

1	AM/IF	Connect AM Signal Generator thru dummy Antenna. (see Fig. 2)	Connect VTVM to speaker outputs of either channel	455kHz	Low End	T303,T304 T305,T306	Maximum output
2				505kHz	Low End	T301	
3				1720kHz	High End	CT303	
4				1400kHz	1400kHz	CT301,CT302	

FM/IF

1	FM/IF	Connect FM Sweep Marker Gennerator to Antenna receptacle.	Connect Oscilloscope to TP232 and Ground.	10.7MHz		T231, (IFT)	Max amplitude & symmetrical Response curve 
2						T231	Symmetrical "N" curve. 

NOTE: 1) TP231 or Pin#4 of IC231 (M51172PA) should be grounded when making FM/IF adjustment.
 2) It is not necessary to tune the 10.7MHz marker to the center of "N" curve.

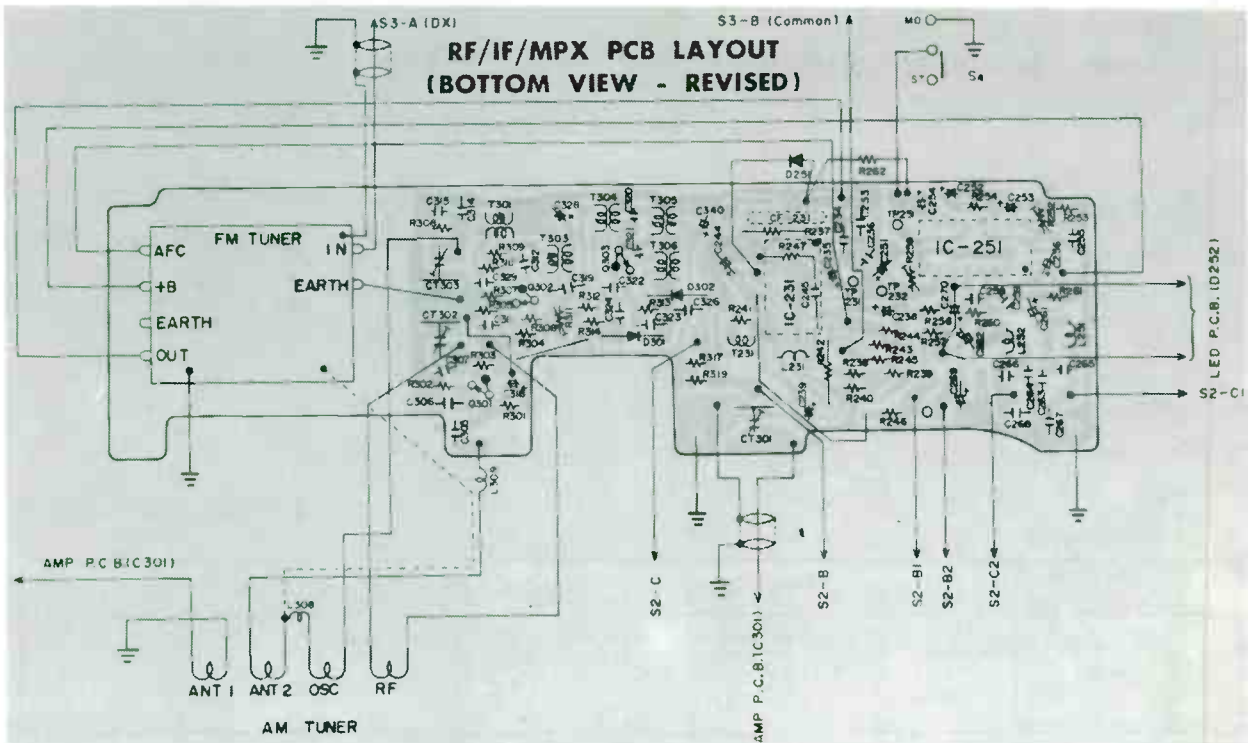
FM/RF

1	FM/RF	Connect FM Signal Generator thru dummy Antenna. (see Fig. 3)	VTVM across a speaker output	87MHz	Low End	OSC Trimmer: (OSC)	Maximum Output.
2				98MHz	98MHz	RF trimmer: (RF) Ant. Trimmer: (ANT)	
3				Confirm overall tuning range to be from 87 MHz thru 109-109.5 MHz.			

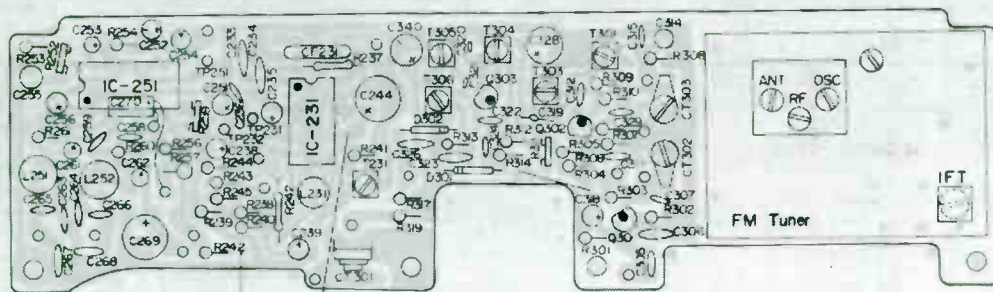
FM/MPX

1	19 kHz PILOT	NO SIGNAL	Connect Frequency counter to Pin#12 of IC251 (TP251) and Ground.	No signal		R252	19.00kHz
2	SEPARATION	Connect FM Stereo Signal Generator to Antenna. receptacle thru dummy Antenna.	Connect VTVM to Audio output of left channel.			R259	MINIMUM output on VTVM

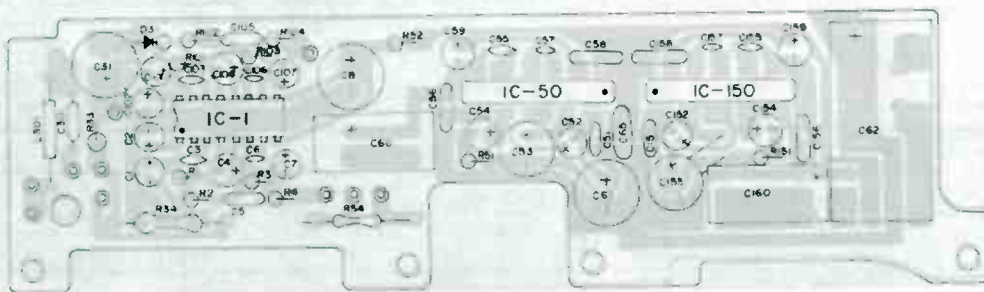
NOTE: Modulated only by pilot signal at 10% modulation and stereo signal at 30% modulation.



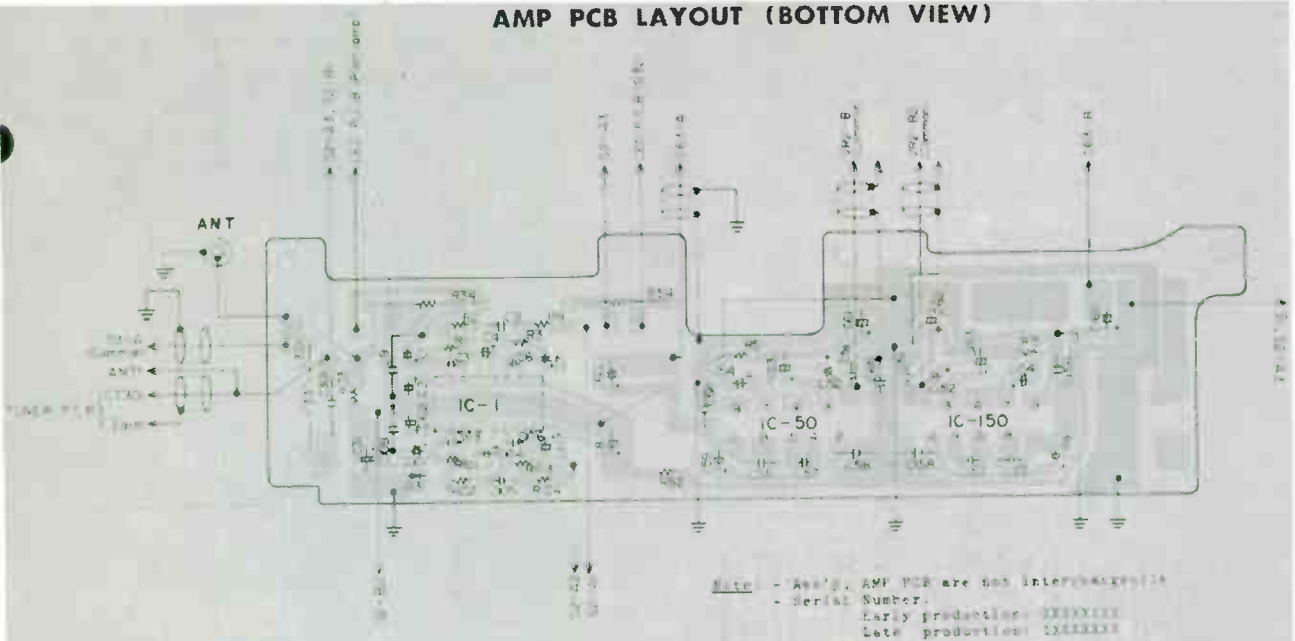
RF/IF/MPX PCB LAYOUT (TOP VIEW - REVISED)



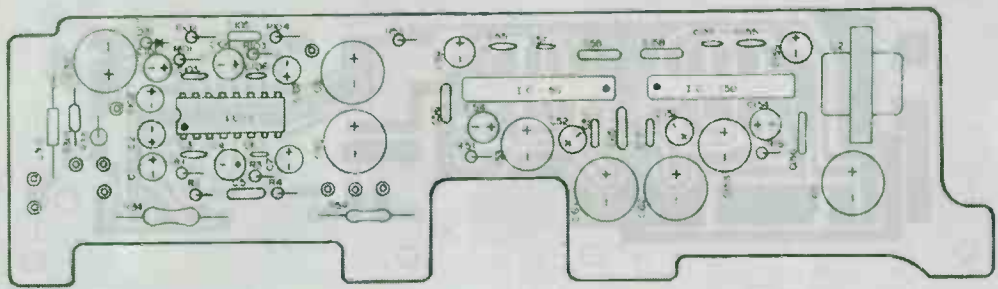
AMP PCB LAYOUT (TOP VIEW - REVISED)



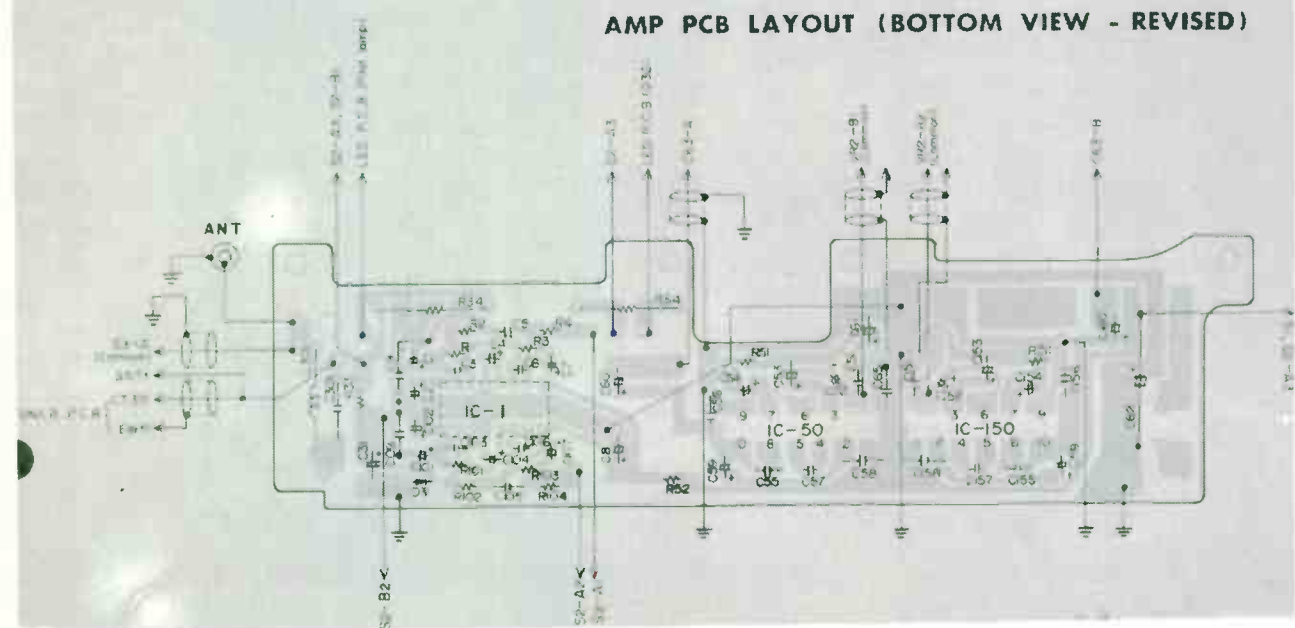
AMP PCB LAYOUT (BOTTOM VIEW)



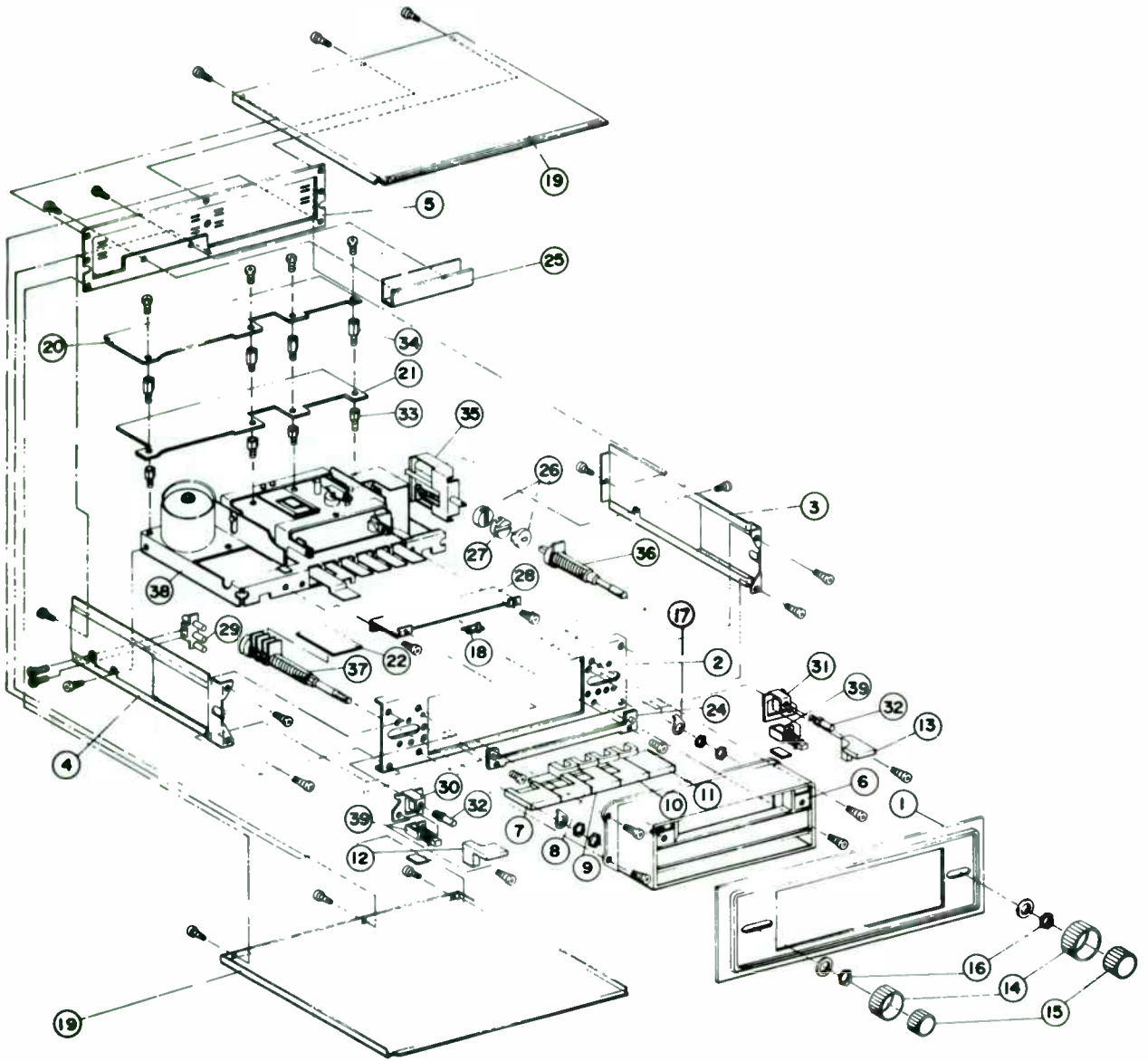
AMP PCB LAYOUT (TOP VIEW)



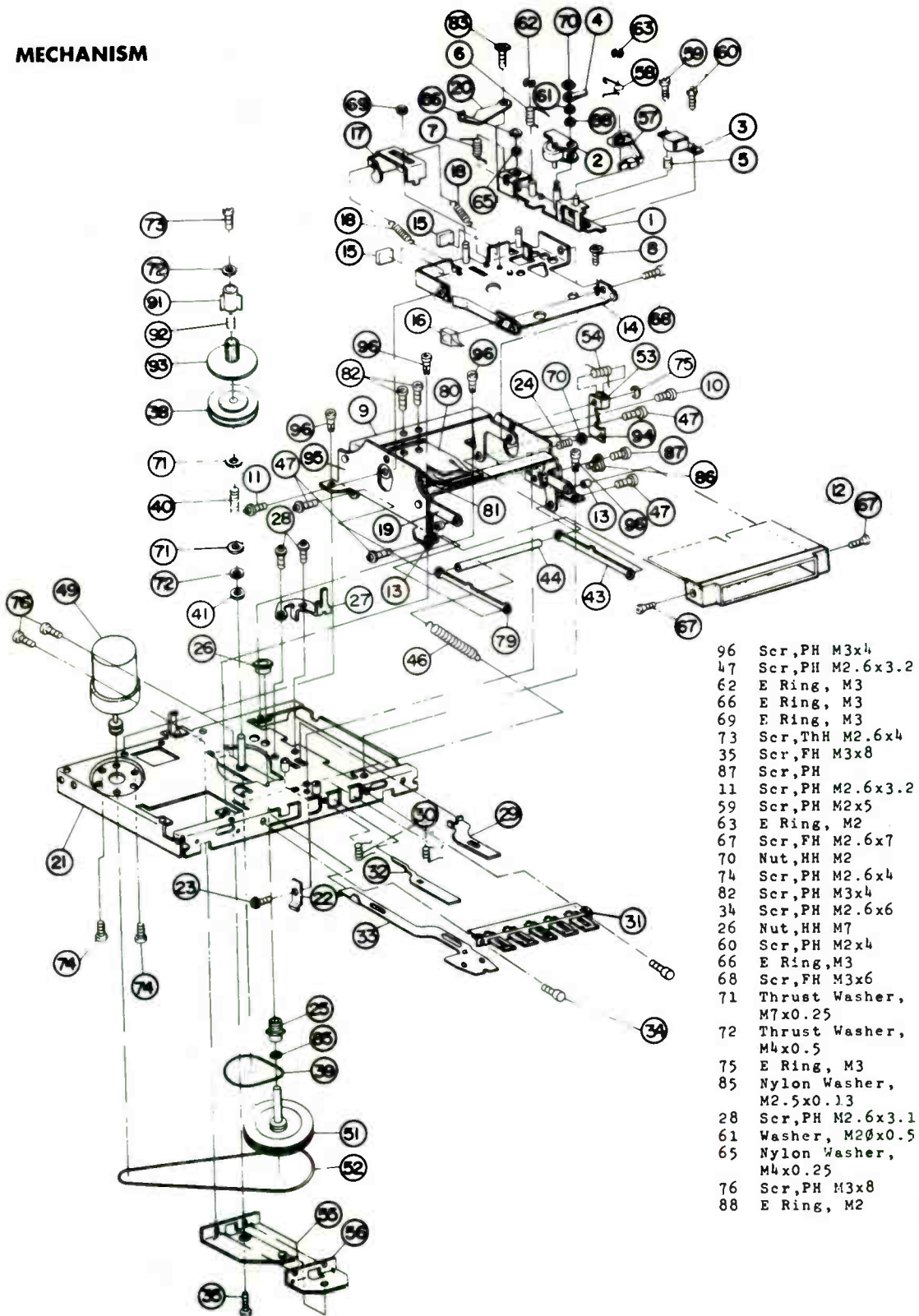
AMP PCB LAYOUT (BOTTOM VIEW - REVISED)



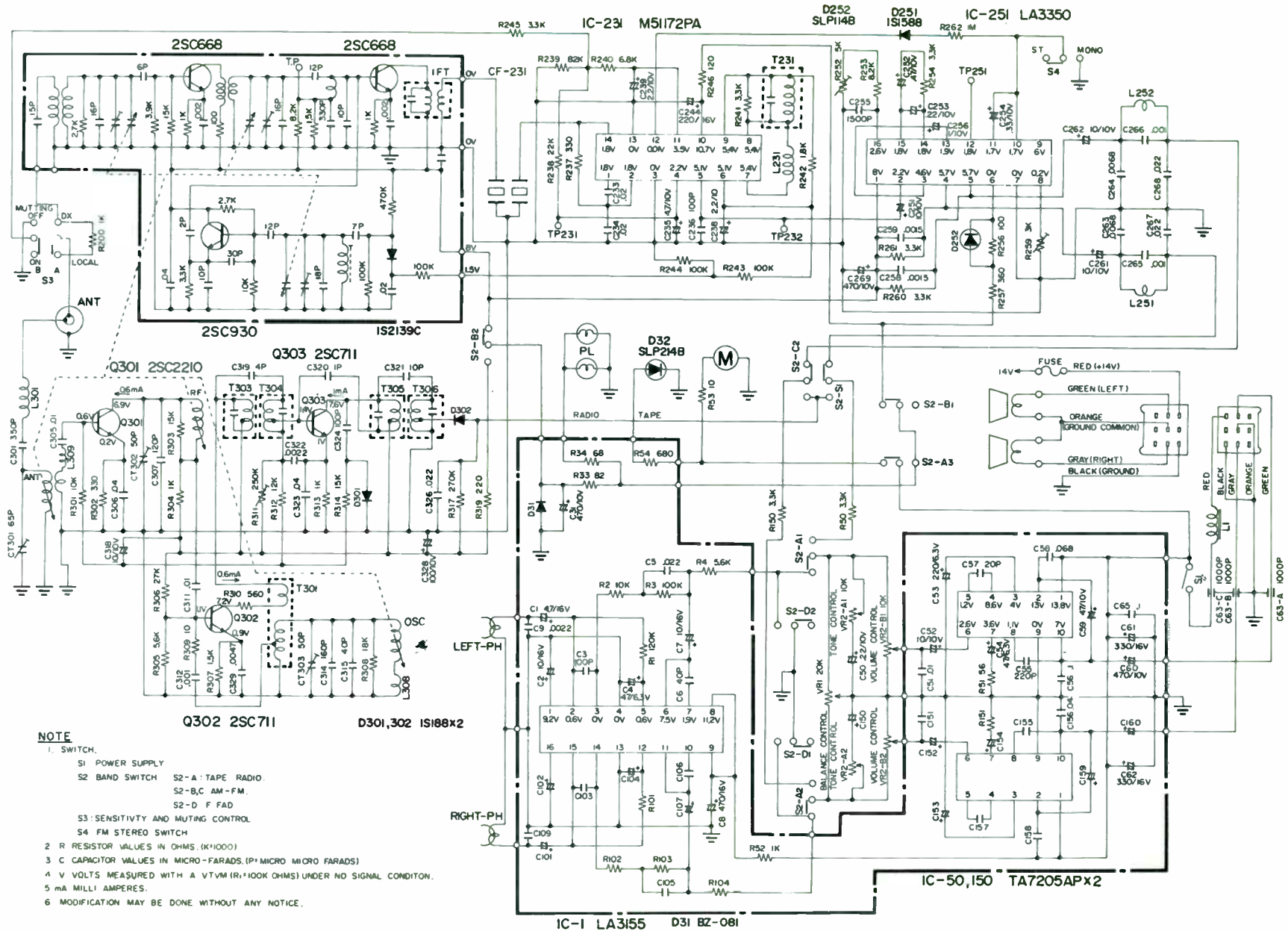
CABINET & CHASSIS



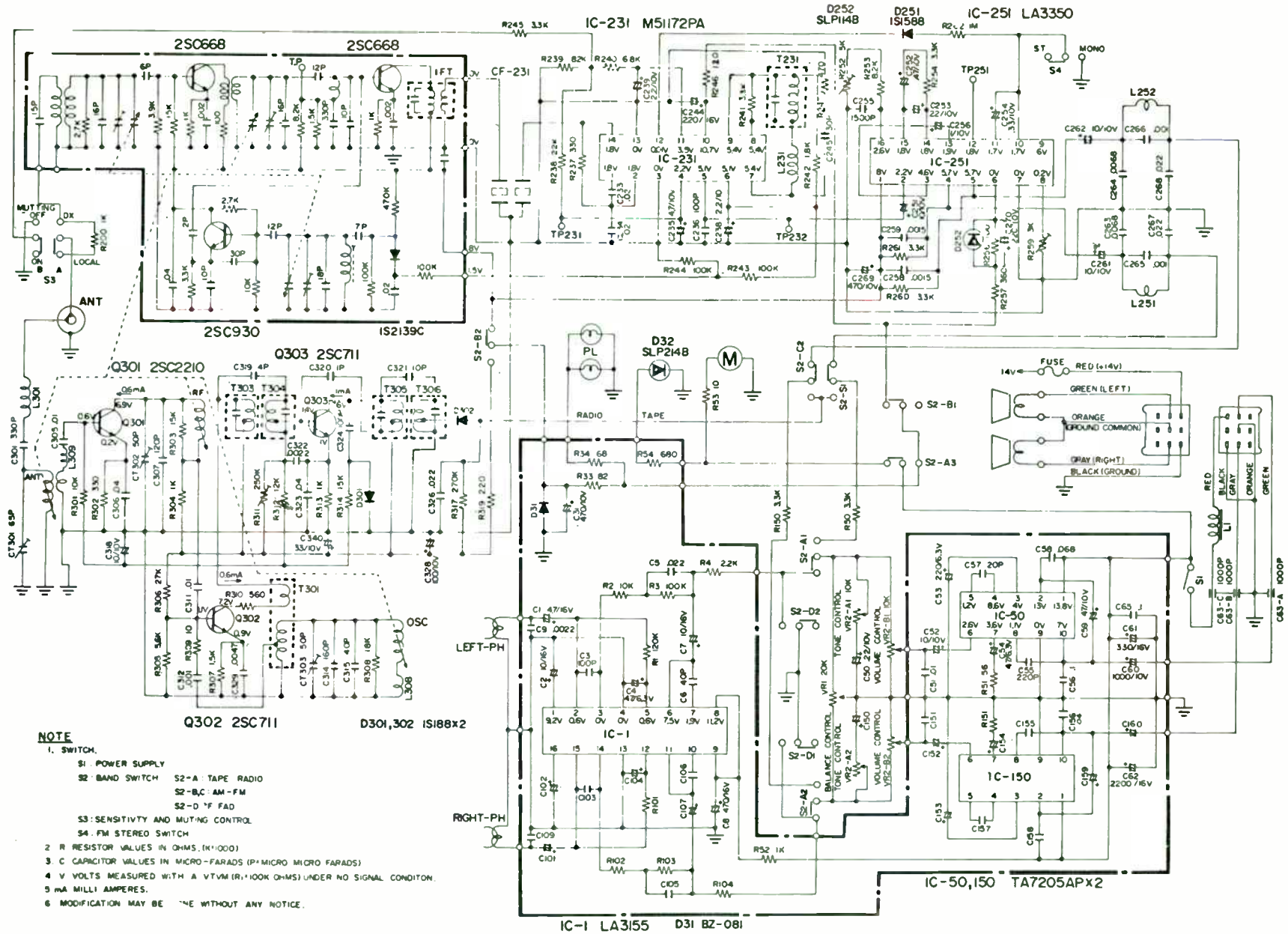
MECHANISM



- 96 Scr,PH M3x4
- 47 Scr,PH M2.6x3.2
- 62 E Ring, M3
- 66 E Ring, M3
- 69 E Ring, M3
- 73 Scr,ThH M2.6x4
- 35 Scr, FH M3x8
- 87 Scr,PH
- 11 Scr,PH M2.6x3.2
- 59 Scr,PH M2x5
- 63 E Ring, M2
- 67 Scr, FH M2.6x7
- 70 Nut, HH M2
- 74 Scr,PH M2.6x4
- 82 Scr,PH M3x4
- 34 Scr,PH M2.6x6
- 26 Nut, HH M7
- 60 Scr,PH M2x4
- 66 E Ring, M3
- 68 Scr,PH M3x6
- 71 Thrust Washer, M7x0.25
- 72 Thrust Washer, M4x0.5
- 75 E Ring, M3
- 85 Nylon Washer, M2.5x0.13
- 28 Scr,PH M2.6x3.1
- 61 Washer, M2Øx0.5
- 65 Nylon Washer, M4x0.25
- 76 Scr,PH M3x8
- 88 E Ring, M2



SCHEMATIC DIAGRAM - REVISED



NOTE

1. SWITCH.
- S1 POWER SUPPLY
- S2 BAND SWITCH S2-A TAPE RADIO
- S2-B C AM-FM
- S2-C AM-FM
- S2-D F FAD
- S3 SENSITIVITY AND MUTING CONTROL
- S4 FM STEREO SWITCH
- 2 R RESISTOR VALUES IN OHMS. (K=1000)
- 3 C CAPACITOR VALUES IN MICRO-FARADS (P=PI MICRO MICRO FARADS)
- 4 V VOLTS MEASURED WITH A VTVM (R=100K OHMS) UNDER NO SIGNAL CONDITION.
- 5 mA MILLI AMPERES.
- 6 MODIFICATION MAY BE DONE WITHOUT ANY NOTICE.

Craig T604

CAPACITORS

C253	Electrolytic,	0.22 uF/10V	C312	Ceramic,	0.001 uF,+10% /25V
C234	"	0.33 uF/10V	C320	"	1 pF,+10% /25V
C50,150	"	0.20 uF/10V	C319	"	4 pF,+10% /25V
C252	"	0.47 uF/10V	C315,6,106	"	40 pF,+10% /25V
C256	"	1 uF/10V	C307	"	120 pF,+10% /25V
C238,239	"	2.2 uF/10V	C324,326,3,103	"	100 pF,+10% /25V
C235	"	4.7 uF/10V	C57,157	"	20 pF,+10% /25V
C261,262	"	10 uF/10V	C55,155	"	220 pF,+10% /25V
C251,318	"	10 uF/10V	C312,265,266	Mylar,	0.001 uF,+30-20% /50V
C52,152	"	10 uF/10V	C258,259	"	0.0015uF,+30-20% /50V
C59,159	"	47 uF/10V	C322,9,109	"	0.0022uF,+30-20% /50V
C340 (**)	"	33 uF/10V	C329	"	0.0047uF,+30-20% /50V
C270 (**)	"	220 uF/10V	C263,264	"	0.0068uF,+30-20% /50V
C328	"	100 uF/10V	C305,311	"	0.01 uF,+30-20% /50V
C31,269	"	470 uF/10V	C326,267,268-	"	0.022 uF,+30-20% /50V
C60,160 (*)	"	470 uF/10V	C233,234,5,105	"	0.022 uF,+30-20% /50V
C4,104,54,154	"	47 uF/6.3V	C306,323,156	"	0.039 uF,+30-20% /50V
C53,153	"	220 uF/6.3V	C51,151	"	0.01 uF,+30-20% /50V
C1,101	"	4.7 uF/16V	C58,158	"	0.068 uF,+30-20% /50V
C61	"	330 uF/16V	C65,56	"	0.1 uF,+30-20% /50V
C62 (*)	"	330 uF/16V	C314	Styrol,	160 pF,+10% /50V
C8	"	470 uF/16V	C301	"	350 pF,+10% /50V
C2,102,7,107	"	10 uF/16V	C255	"	1500 pF,+10% /50V
C60,160 (**)	"	1000 uF/10V			
C62 (**)	"	2200 uF/16V			

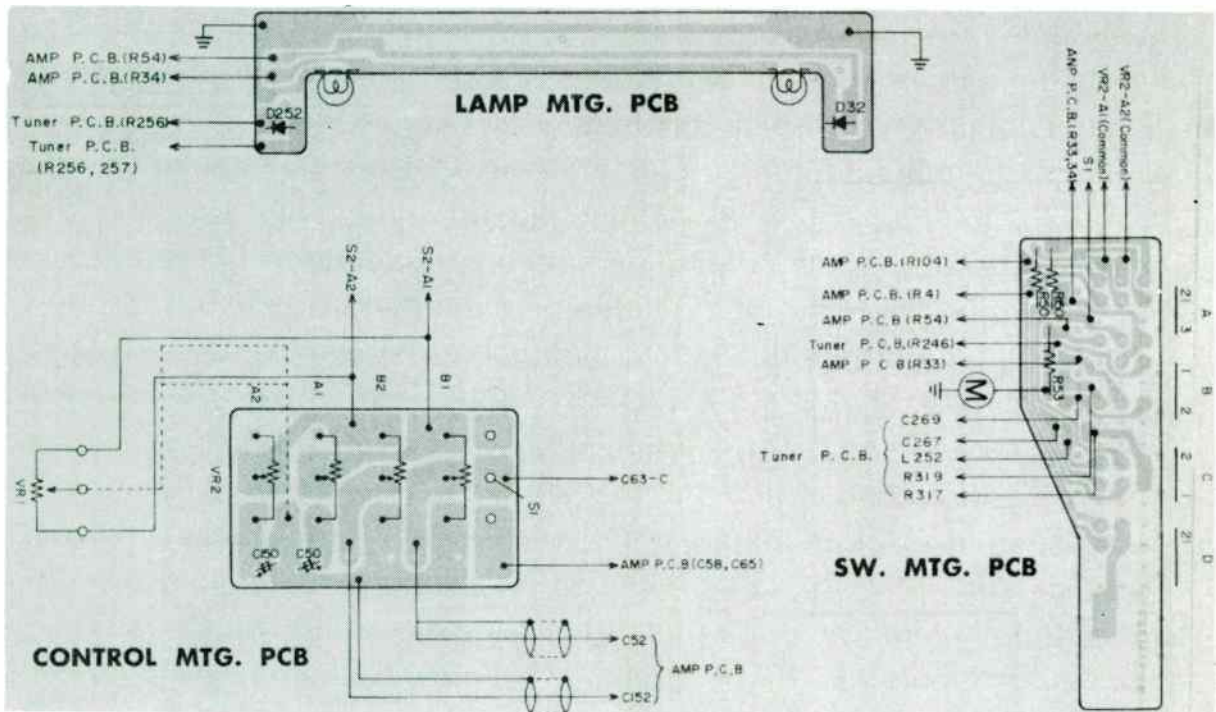
NOTE: (*) : for EARLY PRODUCTION ONLY
(**) : for LATE PRODUCTION ONLY

RESISTORS (ALL RESISTORS ARE CARBON,OHM, $\frac{1}{4}$ W, $\pm 10\%$, 25 ϕ EACH OR NOTED)

R309	10	Ohm	R52,200			R4,104 (*)	5.6k	Ohm	R239	82k	Ohm
R51,151	56	"	304,313	1k	Ohm	R240	6.8k	"	R3,103		
R246 (**)	82	"	R307	1.5k	"	R253	8.2k	"	243,244	100k	"
R256	100	"	R242	1.8k	"	R2,102		"	R1,101	120k	"
R246 (*)	120	"	R4,104 (**)	2.2k	"	301	10k	"	R317	270k	"
R319	220	"	R241,245	3.3k	"	R312	12k	"	R262	1M	"
R237,302	330	"	254,260	3.3k	"	R303,314	15k	"	R34	Metal Oxide,68 ohm	+10%,2W.
R310	560	"	261,150	3.3k	"	R308	18k	"	R33	Metal Oxide,.82 ohm	+10%,1W
R54	680	"	50	3.3k	"	R238	22k	"			
R257	Metal Oxide,		R305	5.6k	"	R306	27k	"			
	360 ohm, $\pm 10\%$,1W										

HARDWARE (25 ϕ EACH OR NOTED)

Chassis-Chassis	Scr,PH M3x6	Chassis-Mechanism	Scr,PH M3x6	Chassis-Metal Case	Scr,PH M3x5
Chassis-Mechanism	Scr,PH M3x6	Nose Panel-Chassis	Scr,PH M3x5	Switch Bkt	Scr,PH M2.3x4
Nose Panel-Chassis	Scr,PH M3x5	Heat Sink	Scr,PH M3x5	FM Pack	Scr,PH M3x4
Heat Sink	Scr,PH M3x5	Pulley	E Ring, M1.5	IC	Scr,PH M3x4
Pulley	E Ring, M1.5	Circuit Board	Scr,PH M2.6x4	Shaft	E Ring, M2
Circuit Board	Scr,PH M2.6x4	Tuner	Scr,PH M3x5	Joint	Scr,Hdis M2x3
Tuner	Scr,PH M3x5				



Ref. No.	CRAIG Key No.	Description	Ref. No.	CRAIG Key No.	Description
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CABINET & CHASSIS

1	T604083	Ass'y. Trim Plate	20	T604516	Ass'y. TUNER PCB w/Comp
2	T604061	Chassis, Front Panel	21	T604517	Ass'y. AMP PCB w/Comp (**)
3	T604062	Chassis, Right Panel		T604518	Ass'y. AMP PCB w/Comp (**)
4	T604063	Chassis, Left Panel	22	T604519	Ass'y. CONTROL PCB w/Comp
5	T604064	Chassis, Rear Panel	23	T604520	Ass'y. SWITCH PCB w/Comp
6	T604010	Ass'y. Front Escutcheon	24	T604521	Ass'y. LED PCB w/Comp
	T604077	Dial Scale	25	NSP	Heat Sink
	T604086	Reflection Plate	26	T602015	Coupling (B), Tuning Shaft
	T604087	Decoration Metal	27	T602016	Coupling (A), Tuning Shaft
7	T604026	Push Button, PLAY	28	T604395	Bkt, LED Mtg
8	T604027	Push Button, AM	29	3128082	Feed thru Cap, 1000pF x 3
9	T604028	Push Button, FM	30	T604396	Bkt, STEREO Sw. Mtg
10	T604029	Push Button, F.F	31	T604397	Bkt, LO/DX Sw. Mtg
11	T604030	Push Button, EJECT	32	T604212	Special Screw, Sw. guide
12	T604031	Push Button, ST/MO	33	T604213	Special Screw, PCB M4.4x5
13	T604032	Push Button, LO/DX	34	T604214	Special Screw, PCB M8x5
14	3148020	Knob, TONE/BALANCE	35	T604415	Ass'y. AM RF TUNER (MT307)
15	3148021	Knob, VOLUME/TUNING		T604416	Ass'y. FM RF TUNER (MT83)
16	3148117	Nut, Cont. Shaft Mtg		3510029	Drum, FM RF Tuner
17	3128042	Washer, Cont. Shaft Adj.		T602013	Spr, Dial Drum
18	3521016	Ass'y, Dial Pointer		3510039	Bkt, Shaft Mtg (short)
19	T604050	Case, Top & Bottom		3510032	Shaft (A), FM RF Tuning
36	T604570	VR 20k, BALANCE Cont.		3510033	Joint, shaft (A)
37	T604571	VR 10k, VOL/TONE Cont.		T602014	Shaft (B), FM RF Tuning
38	NSP	Ass'y, Mechanism Chassis		3128218	Pulley, Dial string
39	T604531	Push Switch (S3,S4)		3510035	Metal clip, Tuning shaft

Mounted under Tuner PCB

Note NSP: Non-Serviceable Parts (*) : Early production only (**): Late production only

MECHANISM

1	3510127	Ass'y, Head Lever	33	T604344	Lever, PLAY
2	3510128	Ass'y, Pinch Roller	31	T604530	Ass'y. Push Switch (S1,2,3)
3	3506183	<u>HEAD</u>	38	3514039	Ass'y, Pulley
19	3510143	Arm,Cass.Base (2)	39	3506224	<u>BELT</u> , Take up
5	3510130	Spr, Head Adj.	40	3510159	Spr, Take up Pulley
6	3510131	Spr, Pinch Roller	41	3514040	Spacer, Pulley
7	3510176	Spr, Head Lever	43,79	3510162	Link Arm, Cass. Base
8	3510132	Spr, Head Base Guide	44	3510163	Shaft, Link Arm Mtg
9	3510133	Ass'y, Cass. Base Arm (1)	46	T604270	Spr, Cass. Link Arm
10	T604215	Shaft, Cass. Base Arm	49	3506171	<u>MOTOR</u>
12	T604266	Ass'y, Cass. Case w/Door	51	3510169	<u>FLYWHEEL</u>
13	3510137	Spacer, Cass. Base Arm	52	3510170	<u>BELT</u>
14	3510138	Ass'y, Cass. Base	53	3510171	Mtg, Cass. Pushout
15	3510139	Cushion, Cass. Tape	54	3510172	Spr, Cass. Pushout Mtg
16	3510140	Tape Guide	55	3514042	Ass'y, Flywheel Base
17	3510141	Lever, Cass. Pushout	56	3514043	Support, Flywheel Base
18	3510142	Spr, Cass. Pushout	57	3510174	Ass'y. Auto Stop Lever
20	3514038	Lever, Cass. Pushout	58	3510175	Spr, Auto Stop Lever
21	NSP	Ass'y, Mechanism Chassis	80	3514044	Plate Spring, Cass. Pressure
22	3510145	Guide Plate, Head Lever	81	3514045	Bkt, Plate Spring Mtg
23	3510146	Special Screw	83	3514046	Special Screw, M7x3
24	3510147	Spr, Guide Plate	86	T604420	Dial Cord Guide
25	3510148	Bearing, Flywheel Capstan	91	T604321	Cass. Reel Guide
27	3510150	Lever, STOP (2)	92	T604271	Spr, Cass. Reel Guide
29	T604341	Lever, EJECT	93	T604311	Reel, Take up
30	T604342	Spr, Eject Lever Return	94	T604398	Bkt, Cass. Base Arm (R)
32	T604343	Lever, F.FWD	95	T604399	Bkt, Cass. Base Arm (L)

MISCELLANEOUS ELECTRICAL

VR1	T604415	Ass'y, AM RF TUNER (MT307)	VR2	T604416	Ass'y, FM RF TUNER (MT83)
R311	T604570	VR 20k, BALANCE	R259	T604571	VR 10k, VOL/TONE (A1,A2,B1,B2,S1)
R252	3145076	Semi-Var Res, 250k Ohms	C63	T604590	Semi-Var Res, 5k Ohms
S3,4	T604591	Semi-Var Res, 5k Ohms		3128082	Feed Thru Cap, 1000pF x 3
PL	T604531	Push Switch, LO/DX,MO/ST		T604620	9P Male Conn. (Unit side)
	T604550	Pilot Lamp, 60mA 5V		3510076	Antenna Receptacle

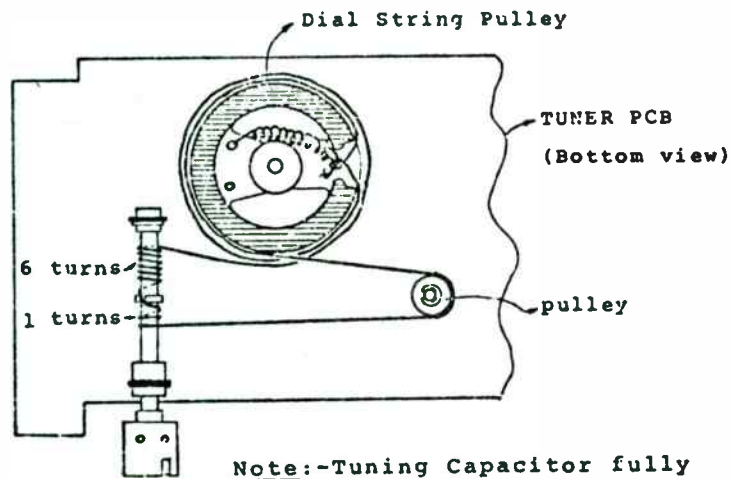
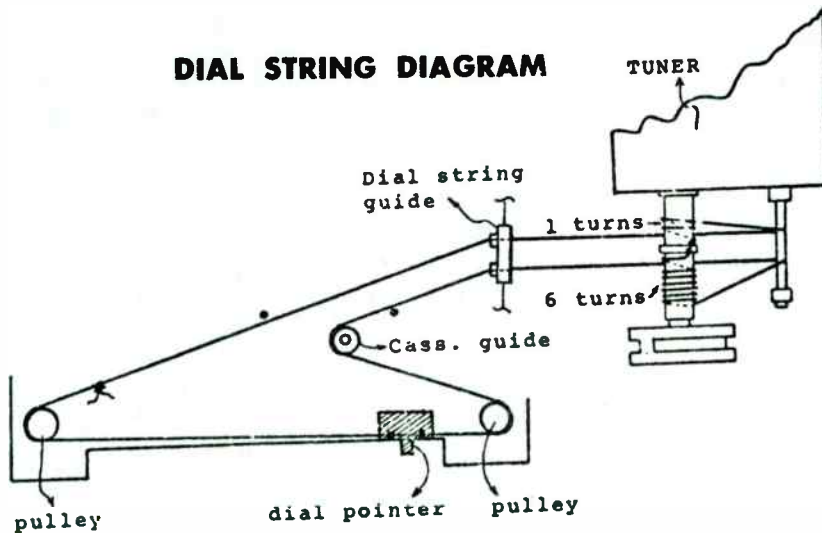
CHOKES, COILS, TRIMMERS & TRANSFORMERS

CF231	3145026	Ceramic Filter	CT302,303	3510063	Trimmer, 50pF
L308,309	T604673	Choke Coil, 6.8uH	CT301	T604570	Trimmer, 65pF
L1	3514047	Choke Coil	L301	3128057	Choke Coil, 6uH
T301	3128064	OSCO Coil	T304	3128066	IF Transformer
T303,305	3128067	IF Transformer	T306	3128068	IF Transformer
T231	T604508	IF Transformer	L231	T604671	Choke Coil, 18uH

SEMICONDUCTORS

D251	1S1588	Diode	D252	SLP114	L.E.D
D32	SLP214	L.E.D	IC50,150	TA7205AP	I.C, AMP
IC1	LA3155	I.C, PRE-AMP	D31	BZ081	Diode
IC231	M51172PA	I.C, IF	IC251	LA3350	I.C, MPX
D301,302	1S188	Diode	Q302,303	2SC711	Transistor
Q301	2SC2210	Transistor			

DIAL STRING DIAGRAM



Note:-Tuning Capacitor fully clockwise.
-Dial Pointer at FM 108MHz.

ADJUSTMENTS:

- 1/ HEAD AZIMUTH: Insert a standard 6.3kHz test tape, with unit in play mode. Adjust the azimuth adjust screw (Ref.#59 on Mechanism exploded view) for maximum output.
- 2/ AM: With the unit installed in car and antenna fully extended. Tune in a weak station near 1400 kHz and adjust CT301 for maximum output.

SUBJECT TO CHANGE WITHOUT NOTICE. USE ALL AVAILABLE NUMBERS AND COMPLETE DESCRIPTION WHEN ORDERING, INCLUDING MODEL NUMBER

REF. NO.	CRAIG KEY NO.	DESCRIPTION	REF. NO.	CRAIG KEY NO.	DESCRIPTION
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PACKAGING

T604001		Individual carton	3128053		Bkt, "L" Front Mtg set
T604002		Styrofoam set	3128054		Perforated Mtg strap
T604083		Ass'y, Trim plate	3516004		Special driver, Trimmer
T602006		Index label, TUNING/BALANCE	T602002		9P Female Conn. (car side)
T602005		Index label, OFF-VOL/TONE	T604003		Mtg hardware kit
3513400		Gasket	3506059		Capacitor, Noise suppression
XFU002		Fuse, 2A	3506060		Resistor, Noise suppression

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. 3, and vertical axis input oscilloscope to TP-203 (R251 22 k 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 IFT (T203, T204, T205, T206) to obtain the maximum and symmetrical wave form on the scope (Fig. 2), however, the peak point of the wave form may not exactly be the same as the marker point, which is dependent on the center frequency of the ceramic filter in the I.F. amplifier circuit.

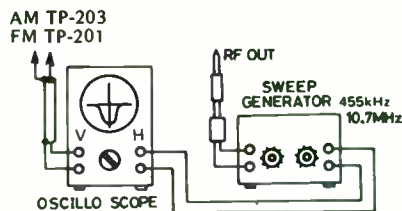


Fig. 1

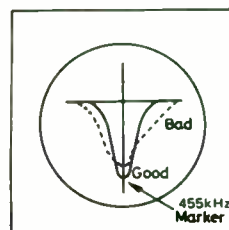


Fig. 2

(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-202 (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 1620 kHz. Then align TC-203 (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-201 and TC-202 (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.

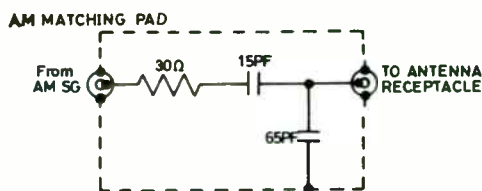


Fig. 3

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 through a matchig pad shown in Fig. 4, and vertical axis input of the oscilloscope to TP-201 (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

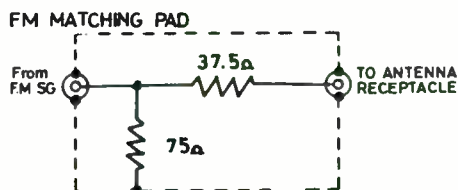


Fig. 4

that limiter of the receiver would not function to disturb the alignment.

- (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.

(B) FM MPX (Channel separation) Alignment.

- (a) Connect digital frequency counter to TP-301 as shown on Fig. 6. Then, align VR-301 (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 adjust for the maximum level difference between left and right channels, which shall be more than 25 dB with -VR302, also confirm that stereo indicator, lamp of the receiver goes on and off when stereo/mono-switch is operated.

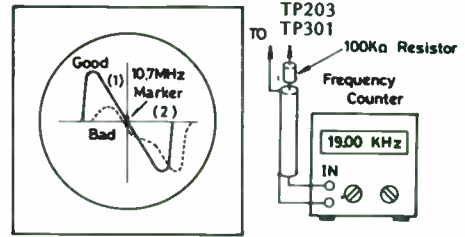


Fig. 5

Fig. 6

TAPE SECTION

Equipment Required

1. AC V.T.V.M.
2. Stabilized power supply (DC 14V)
3. 3 kHz and 6.3 kHz test tape cassettes.
4. Digital frequency counter.

(A) Head Azimuth Angle Alignment.

- (a) Connect V.T.V.M. to the speaker output of the set. And playback 6.3 kHz test tape.
- (b) Adjust volume control to medium position, and as shown on Fig. 7, align the head azimuth alignment screw with a hexagon box driver to obtain the maximum output of the set.
- (c) Repeat the same procedure also in the reverse direction tape running by operating program selector button. If the maximum output position of the alignment screw does not agree at the both tape running directions, repeat the same procedure until it minimizes the difference between the both conditions.

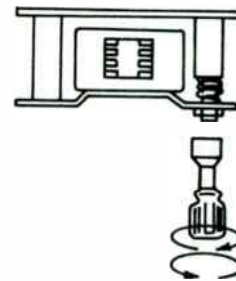


Fig. 7

(B) Measurement of Take-up reel table Torque

Equipment Required

1. Stabilized power supply (DC 14V)
2. Torque gauge or spring balance
 - (a) Place the set in PLAY condition.
 - (b) Set the torque gauge or spring balance to take-up reel table of FORWARD direction as shown Fig. 8.
 - (c) The reading of either torque gauge or spring balance should be 40 to 60 g/cm.
 - (d) Repeat the same procedure on reverse side (REWIND direction). The reading also should be 40 to 60 g/cm.
 - (e) If the torque is out of 40 to 60 g/cm, replace reel table with new one.

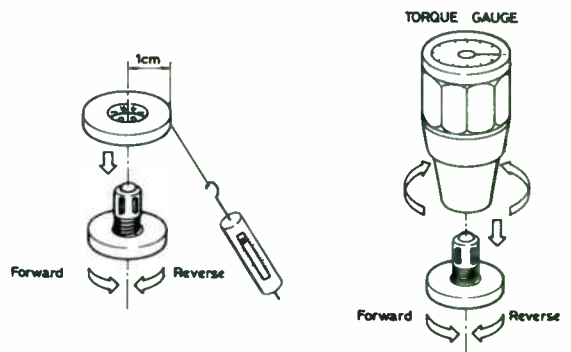
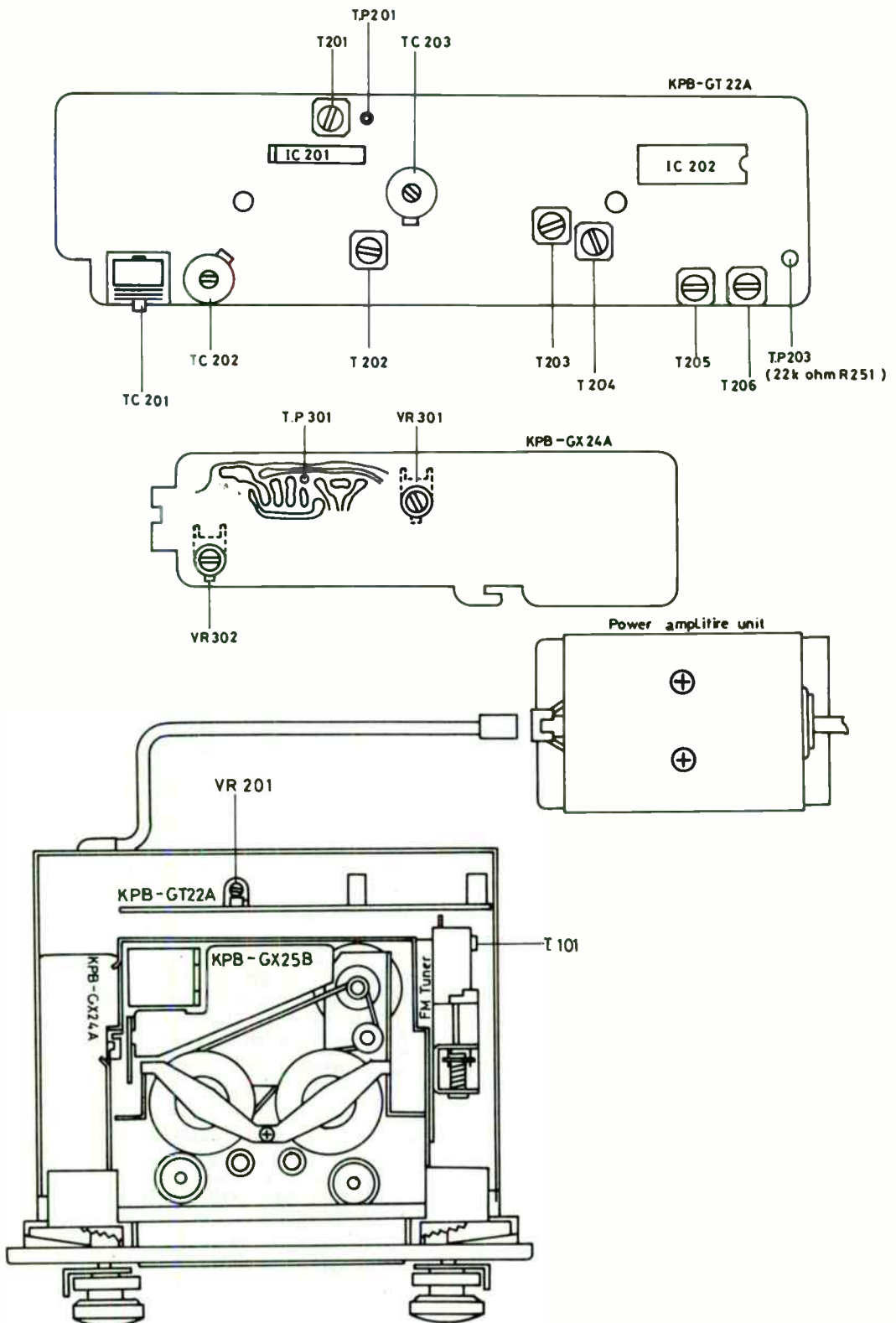


Fig. 8

ALIGNMENT INSTRUCTIONS



TROUBLE SHOOTING

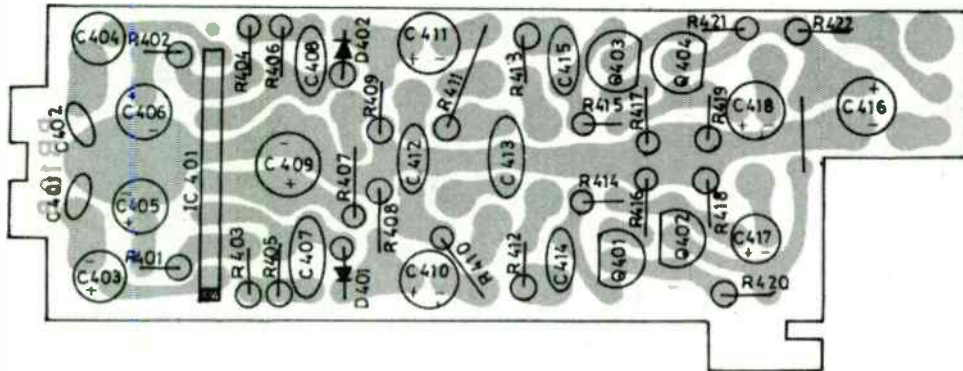
RADIO SECTION

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 S12.
		Output circuit	Radio output circuit defective. Check wiring or function switch S2.
		RF & IF circuit	Check wiring or CH1102 open. Diode D101, D103, D116 and D117 defective. Check for emitter voltage of transistor Q101, Q102, Q103, Q104 Q105 or Q106. IF transformer T101,112,102111,109,110,104,105,or108open.
	FM	Antenna input circuit	Antenna input defective. Check wiring or co-axial cable open.
		Power supply circuit	Poor supply defective. Check wiring or function switch S12.
		ESA, MPX & output circuit	IC301, IC401 or transistor Q401 defective. Check for emitter voltage of transistor and each pin voltage of IC401 or IC301.
		RF & IF circuit	RF transformer T201, T202 or T205 open. IF transformer T206, T204 or T207 open. Diode D201, D202, D203, D204, D208 or D209 defective. Check for emitter voltage of transistor Q201, Q202, Q203, Q204 and each pin voltage of IC201. 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 T111, T104, T105 or T108. Deviation in tracking alignment. Diode D123 deteriorated. Capacitor C101, C104, C106, C137 or C147 defective.
	FM	RF & IF or detector circuit	Deviation in IF transformer T206 or T204. Deviation in tracking alignment. Antenna input defective. Diode D208 or D209 defective. Ceramic filter CF201 or CF202 defective. Transformer T201, T202, T205 or T204 defective. Capacitor C205, C208 or C223 defective.
DISTORTED SOUND	AM	AGC or detector circuit	Diode D103, D117 or D123 defective.
	FM	Detector circuit	Diode D208 or D209 defective. Deviation in transformer T207 or Diode D208, D209 defective.
OSCILLATION	AM	RF & IF circuit	Capacitor C102, C118, C120 or C131 defective. Diode D123 defective.
	FM	RF & IF circuit	Capacitor C211, C222, C208 C223, C225, C226 or C227 defective.
POOR STEREO EFFECT		MPX circuit	VR401 or VR402 mis-aligned. MONO/ST switch S1 defective. MPX IC IC401 defective. Capacitor C410 defective.
ST INDICATOR LIGHT DEFECTIVE		Indicator circuit	Stereo indicator ST. LED open. Resistor R411 defective. MPX IC IC401 defective.
POOR AUTO-SEARCH TUNING		Search circuit	Memory diode MD501 defective. Deviation in IF transformer T106, T107(AM) or T204, T207(FM). Check wiring or function switch S2. Search IC IC501, IC502 defective.
POOR MANUAL TUNING		Search circuit	AUTO/MANUAL reed switch RL501 defective. Lock search switch S6 defective. Tuning resistor VR1101 defective.

TAPE SECTION

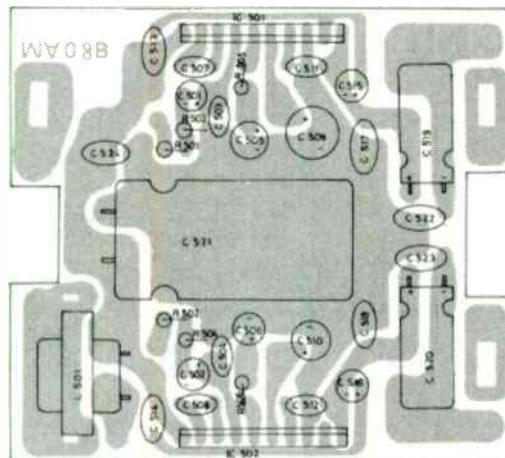
SYMPTOM	DEFECTIVE CIRCUIT	DEFECTIVE POINT AND CAUSE
NO SOUND	Power supply circuit	Fuse open. Choke transformer CH-1101 or T1005 open. C602, C1003 or C1014 short circuit. Diode D1101 or D1001 defective. Power supply switch S12 defective. Faulty connection between speaker and connecting cord.
	Output circuit	Speaker voice coil open. T1002 or T1004 open. Faulty connection between speaker and connecting cord. Main amplifier defective. Check for power transistor or input signal.
	Pre-amplifier circuit	Pre-amplifier defective. Check Pre-amplifier IC IC-701, Transistor Q701~Q704 or circuit. Head lead wire open. Faulty contact of tape/radio changeover switch S7, S8 or S13.
	Motor	Check power supply. Choke CH-601 defective. Motor defective. Motor lead open.
	A.T.R. circuit	Solenoid open or short circuit. Solenoid lead open. C-904 short circuit. Transistor Q901, Q902, Q903, Q904 or Q905 defective. Diode D901, D902 or D903 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	C1014 capacity insufficient or open.
	Output and pre-amplifier	C717 capacity insufficient or open. Capacity insufficient of external capacitors power transistor and pre-IC.
WOW & FLUTTER		Flywheel, capstan or idler defective. Reel base defective. Belt, pinchroller, idler, flywheel or pulley dirty. Motor defective.
DOES NOT REVERSE (EITHER AUTO OR MANUAL)	A.T.R. circuit	Transistor Q901, Q902, Q903 or Q904 defective. Diode D901 or D902 defective. Program selector switch S11 defective.
REVERSES BUT NOT ORDERLY	A.T.R. circuit	Reed switch defective. C902 short circuit. Transistor Q901 defective.
PROGRAM INDICATOR LAMPS DO NOT LIGHT UP	Program indicator circuit	Check power supply. Slide switch S9 defective. R1105 from S9 lead open.

PRE-AMPLIFIER COMPONENT LOCATION GUIDE



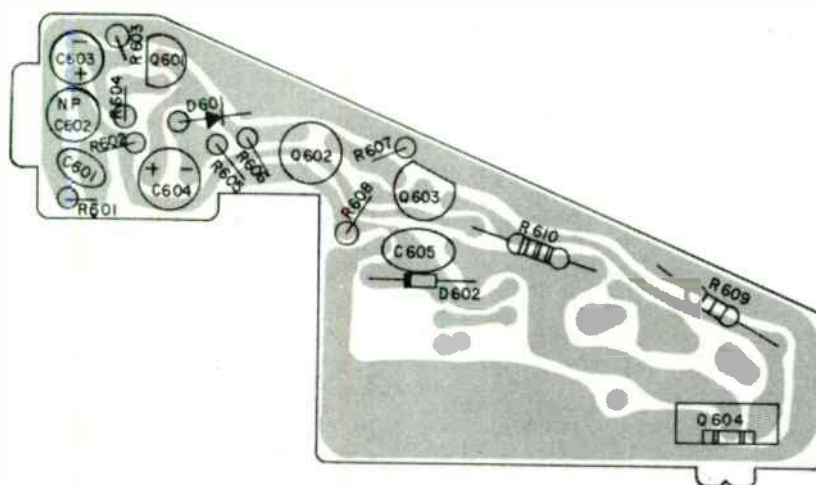
KPB-PR10B

POWER AMPLIFIER COMPONENT LOCATION GUIDE

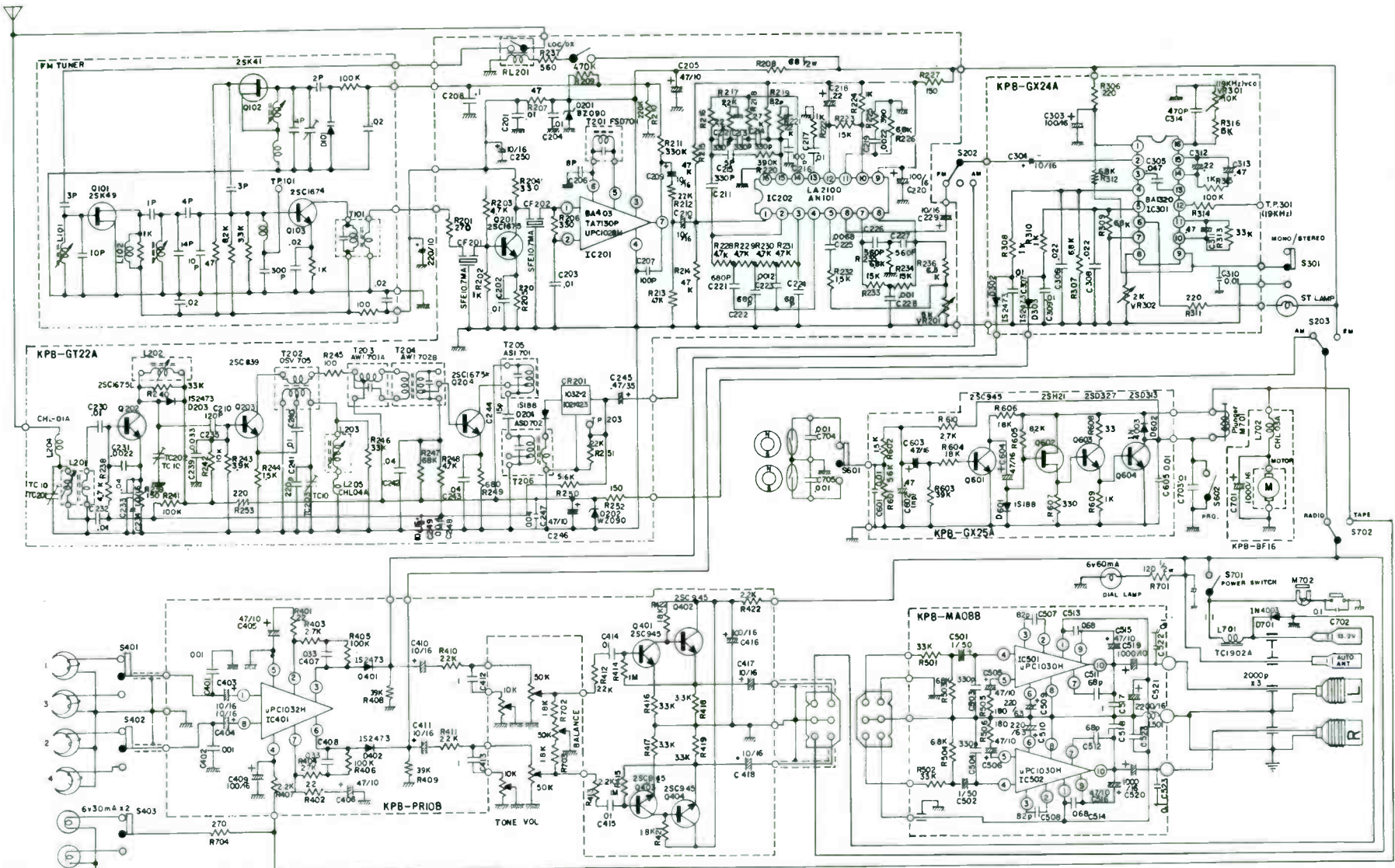


KPB-MA08B

A.I.R CIRCUIT COMPONENT LOCATION GUIDE

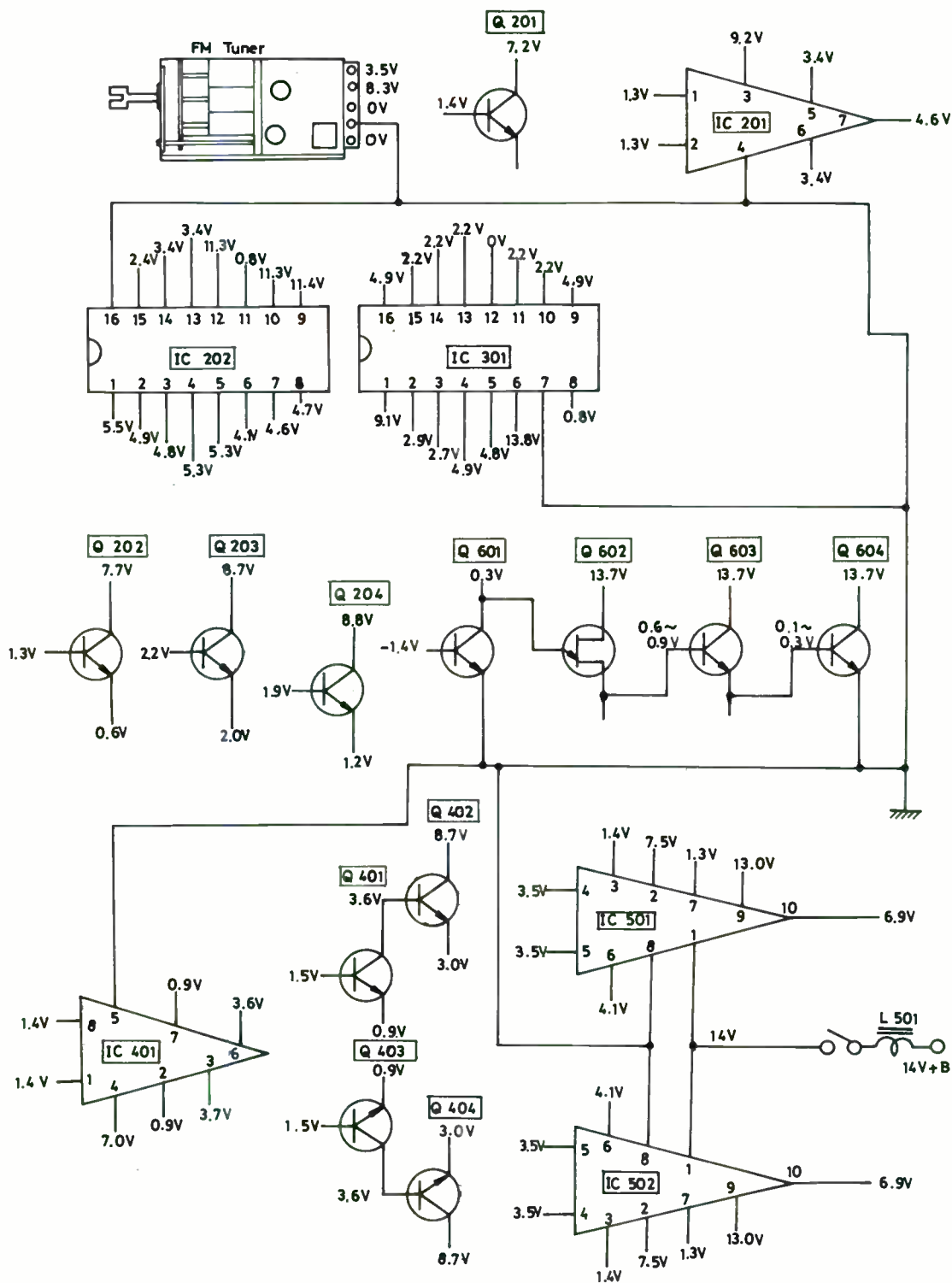


KPB-GX25B

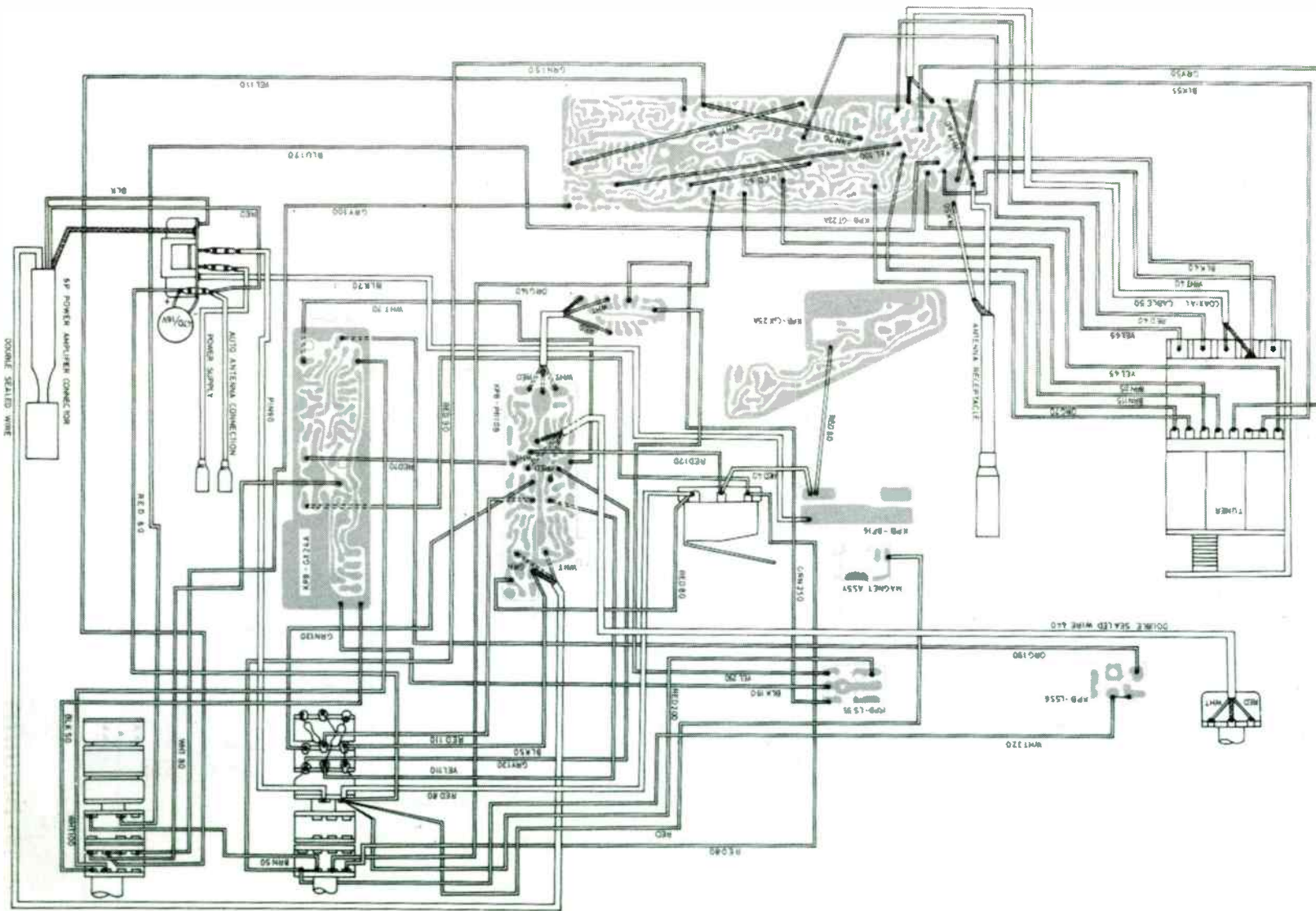


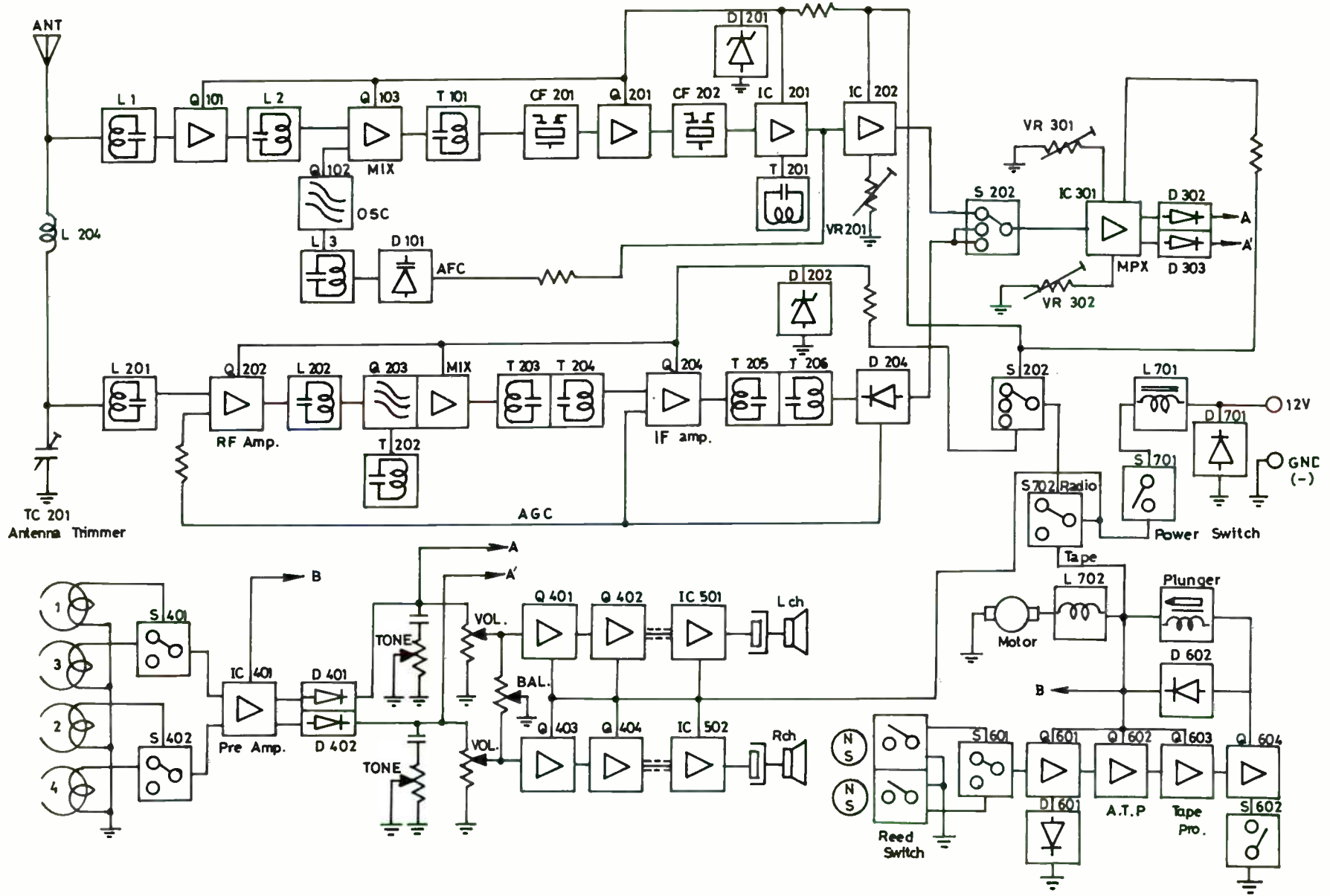
(Subject to modification)

RADIO AND AUDIO VOLTAGE

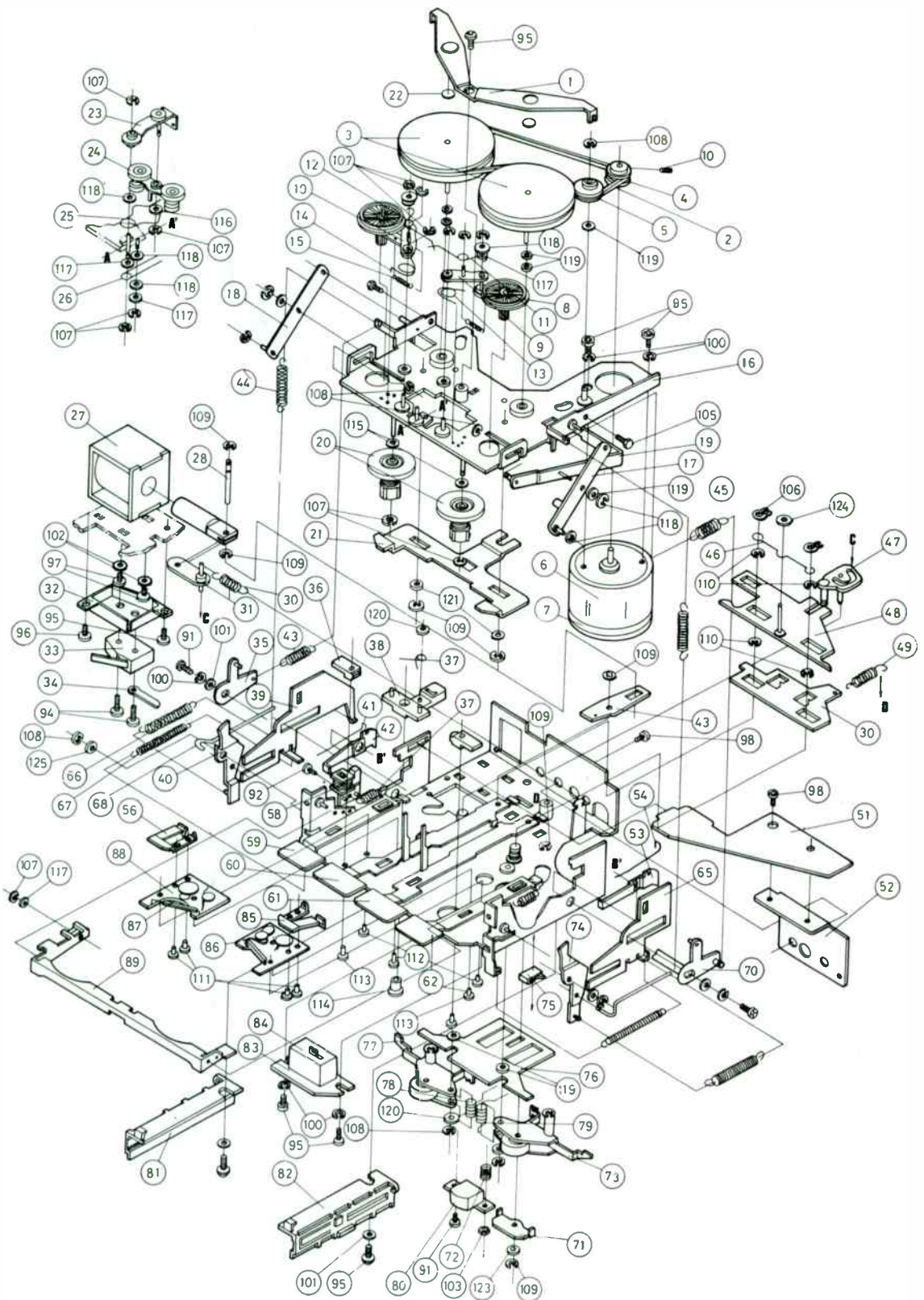


VOLTAGE READINGS TO COMMON GROUND(-) ARE MEASURED WITH DC V.T.V.M. UNDER NO SIGNAL.





EXPLODED VIEW MECHANISM (2)



MACHANICAL PARTS LIST

Ref. No.	Part No.	Description	Q'ty	Ref. No.	Part No.	Description	Q'ty
1	09 206 682 045 0	Flywheel bracket	1	71	09 206 682 051 0	FF lever stopper	1
2	09 206 714 007 0	Drive belt	1	72	09 206 772 013 0	Head azimuth spring	1
3	09 206 711 008 0	Flywheel	2	73	09 206 711 009 0	Pinch roller (L) ass'y	1
4	09 206 692 019 0	Motor pulley	1	74	09 206 681 022 0	Lift lock arm (R) ass'y	1
5	09 206 692 018 0	Tension pulley	1	75	09 206 682 056 0	Head chassis push plate	1
6	09 206 432 002 0	Motor (MMS-3RF2M)	1	76	09 206 681 018 0	Head chassis ass'y	1
7	09 206 714 008 0	Motor cushion rubber	1	77	09 206 711 010 0	Pinch roller (R) ass'y	1
8	09 206 711 006 0	Supply idler ass'y	2	78	09 206 723 007 0	Pinch roller spring (R)	1
9	09 206 681 011 0	Take-up idler lever (R) ass'y	1	79	09 206 723 008 0	Pinch roller spring (L)	1
10	09 206 681 012 0	Take-up idler lever (L) ass'y	1	80	09 206 447 002 0	PB head	1
11	09 206 723 004 0	FF lever spring (R)	1	81	09 206 662 014 0	Cassette holder (L)	1
12	09 206 723 003 0	FF lever spring (L)	1	82	09 206 662 013 0	Cassette holder (R)	1
13	09 206 722 027 0	Take-up lever spring (R)	1	83	09 206 452 022 0	Printed circuit board (KPB-LS48)	1
14	09 206 722 026 0	Take-up lever spring (L)	1	84	09 206 373 003 0	Slide switch	1
15	09 206 722 012 0	Supply idler arm spring	2	85	09 206 372 002 0	Leaf switch (R)	1
16	09 206 681 009 0	Floating chassis ass'y	1	86	09 206 452 021 0	Printed circuit board (KPB-LS37AR)	1
17	09 206 681 013 0	Lift arm (A)-1	1	87	09 206 378 002 0	Reed switch	2
18	09 206 681 014 0	Lift arm (A)-2	1	88	09 206 452 020 0	Printed circuit board (KPB-LS37AL)	1
19	09 206 681 015 0	Lift arm (B)	1	89	09 206 681 021 0	Lift lock angle ass'y	1
20	09 206 661 005 0	Reel base ass'y	2	91	09 000 553 304 1	Bind head screw M2x4	3
21	09 206 682 044 0	Idler selector	1	92	09 000 553 306 1	Bind head screw M2x6	1
22	09 206 597 003 0	Polyslider washer	2	93	09 000 553 308 1	Bind head screw M2x8	1
23	09 206 681 010 0	FF idler lever ass'y	1	94	09 000 553 410 1	Bind head screw M2.3x10	2
24	09 206 711 007 0	FF idler arm ass'y	1	95	09 000 553 604 1	Bind head screw M2.6x4	6
25	09 206 723 006 0	FF idler lever spring	1	96	09 000 553 608 1	Bind head screw M2.6x8	1
26	09 206 723 005 0	FF idler lock spring	1	97	09 000 553 705 1	Bind head screw M3x5	2
27	09 206 436 002 0	Solenoid ass'y	1	98	09 000 573 432 1	Bind head tapping screw M3x6	2
28	09 206 692 024 0	Selector lever pin	1	99	09 000 593 300 4	Spring lock washer 2φ	1
30	09 206 722 019 0	Selector lever spring	1	100	09 000 593 500 4	Spring lock washer 2.6φ	4
31	09 206 681 026 0	Selector lever ass'y	1	101	09 000 529 300 4	Plain washer 2φ	5
32	09 206 682 057 0	Switch holder	1	102	09 000 594 603 4	Toothed lock washer 3φ	2
33	09 206 377 001 0	Micro switch	1	103	09 000 582 301 4	Nut 2φ	1
34	09 206 682 060 0	Cable clamp (CR)	1	104	09 000 566 355 4	Slotted set screw M2x3	1
35	09 206 681 025 0	Slide lock arm (L) ass'y	1	105	09 000 562 804 4	Hexagon head bolt M2x4.5	2
36	09 206 662 011 0	Selector lever guide	2	106	09 206 588 001 0	Grip washer	2
37	09 206 723 006 0	FF lever spring	1	107	09 000 587 200 4	E-ring 1.2φ	15
38	09 206 662 012 0	FF lever holder	1	108	09 000 587 300 4	E-ring 1.5φ	11
39	09 206 682 053 0	Slide plate (L)	1	109	09 000 587 400 4	E-ring 2φ	7
40	09 206 681 023 0	Lift lock arm (L) ass'y	1	110	09 000 587 600 4	E-ring 3φ	4
41	09 206 726 003 0	Pinch arm stopper lever spring (L)	1	111	09 208 602 001 0	Eyelet 1.5φ x 3	4
42	09 206 682 055 0	Pinch arm stopper lever (L)	1	112	09 206 602 003 0	Eyelet 2φ x 4	4
43	09 206 681 020 0	FF reset lever ass'y	1	113	09 206 602 004 0	Eyelet 2φ x 6	2
44	09 206 722 017 0	Slide spring C	2	114	09 206 602 005 0	Eyelet 3φ x 6	1
45	09 206 722 016 0	Lift lock arm spring	2	115	09 206 597 004 0	F.T. washer 1.7φ x 3.2 t = 0.13	2
46	09 206 722 023 0	Function plate lock spring B	1	116	09 206 597 005 0	F.T. washer 1.7φ x 3.2 t = 0.25	5
47	09 206 681 017 0	Selector cam ass'y	1	117	09 206 597 006 0	F.T. washer 1.7φ x 3.2 t = 0.5	5
48	09 206 681 019 0	Function plate ass'y	1	118	09 206 597 007 0	F.T. washer 1.7φ x 6.0 t = 0.25	6
49	09 206 722 021 0	FF lock spring	1	119	09 206 597 008 0	F.T. washer 2.1φ x 4.0 t = 0.25	9
50	09 206 682 050 0	FF lock plate	1	120	09 206 597 011 0	F.T. washer 2.1φ x 4.0 t = 0.5	3
51	09 206 452 023 0	Printed circuit board (KPB-GX25A)	1	121	09 206 597 009 0	F.T. washer 3.1φ x 5.4 t = 0.5	2
52	09 206 682 061 0	Heat sink	1	122	09 206 597 012 0	F.T. washer 3.2φ x 8.0 t = 0.25	1
53	09 206 682 054 0	Pinch arm stopper lever (R)	1	123	09 206 597 013 0	F.T. washer 3.2φ x 8.0 t = 0.5	1
54	09 206 726 002 0	Pinch arm stopper lever spring (R)	1	124	09 206 597 010 0	F.T. washer 2.1φ x 9.0 t = 0.25	4
55	09 206 681 016 0	Main chassis ass'y	1	125	09 206 597 014 0	F.T. washer 4.1φ x 6.5 t = 0.25	2
56	09 206 372 003 0	Leaf switch (L)	1				
57	09 206 722 014 0	Push lever spring	2				
58	09 206 436 003 0	Magnet ass'y	1				
59	09 206 682 049 0	Select lever	1				
60	09 206 684 047 0	FF lever (L)	1				
61	09 206 682 046 0	FF lever (R)	1				
62	09 206 682 048 0	Eject lever	1				
63	09 206 683 008 0	Thrust plate	2				
64	09 206 722 018 0	Lift lock angle spring	1				
65	09 206 682 052 0	Slide plate (R)	1				
66	09 206 722 015 0	Slide spring A	2				
67	09 206 722 020 0	Slide spring B	2				
68	09 206 682 059 0	Pinch arm back pin	2				
70	09 206 681 024 0	Slide lock arm (R) ass'y	1				

POWER AMPLIFIER MECHANICAL PARTS LIST

Ref. No.	Part No.	Description	Q'ty	Ref. No.	Part No.	Description	Q'ty
1	09 212 682 079 0	Bottom case	1	9	09 208 402 006 0	Speaker cable	1
2	09 212 682 077 0	Heat sink	1	12	09 000 553 704 1	Bind head screw 3 x 4 (unichromate)	1
3	09 212 451 029 0	Assembled PCB (KPB-MA08B)	1	13	09 000 573 432 1	Bind head tapping screw 3 x 6 (unichromate)	6
4	09 212 682 078 0	Upper case	1	14	09 000 573 422 1	Bind head tapping screw 3 x 5 (unichromate)	4
5	09 212 681 027 0	Filter holder (B) Ass'y	1	15	09 000 594 603 4	Toothed lock washer 3φ	1
6	09 212 682 088 0	Line cable clamp (B)	1				
7	09 212 405 004 0	6P input-connector Ass'y	1				
8	09 212 681 028 0	Filter holder (E) Ass'y	1				

AM/FM. IF, ESA CIRCUIT BOARD PARTS LIST

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
		Printed circuit board (KPB-GT22A)	R223,233	09 000 322 663 4	Carbon film resistor 15K ohm 1/4W
IC201	09 000 312 054 0	Monolithic IC μPCI028H	234		
IC202	09 000 312 016 0	Monolithic IC LA2100	R212,221	09 000 322 683 4	Carbon film resistor 22K ohm 1/4W
Q201,204	09 000 304 024 0	Transistor 25C1675K	R240,246	09 000 322 703 4	Carbon film resistor 33K ohm 1/4W
Q202	09 000 304 024 1	Transistor 25C1675L	R213,214	09 000 322 723 4	Carbon film resistor 47K ohm 1/4W
Q203	09 000 304 040 0	Transistor 25C839	215		
D204	09 000 305 018 0	Diode 1S188AM	R247	09 000 322 743 4	Carbon film resistor 68K ohm 1/4W
D203	09 000 305 009 0	Diode 1S2473	R219	09 000 322 753 4	Carbon film resistor 82K ohm 1/4W
D201	09 000 307 001 0	Zener diode BZ090	R241	09 000 322 763 4	Carbon film resistor 100K ohm 1/4W
D202	09 000 307 015 0	Zener diode WZ090	R210	09 000 322 803 4	Carbon film resistor 220K ohm 1/4W
T205	09 206 353 022 0	AM-IFT-3 AS1701	R220	09 000 322 833 4	Carbon film resistor 390K ohm 1/4W
T206	09 206 353 021 0	AM-DET coil ASD702	R209	09 000 322 853 4	Carbon film resistor 470K ohm 1/4W
T203	09 206 353 024 0	AM-IFT-1 AW1701A	R251	09 000 322 683 4	Carbon film resistor 22K ohm 1/4W
T204	09 206 353 023 0	AM-IFT-2 AW1702B	R211	09 000 322 823 4	Carbon film resistor 330K ohm 1/4W
T201	09 208 353 019 0	FM-Peak-DET FSD701	R208	09 000 322 374 4	Carbon film resistor 68 ohm 1/2W
T202	09 206 353 025 0	MW-OSC coil OSV705	C215	09 000 334 062 1	Ceramic capacitor 5pF 50V SL
L204	09 208 352 002 0	AM filter coil CHL01A	C206	09 000 334 352 1	Ceramic capacitor 8pF 50V SL
L205	09 208 352 004 0	MW-OSC loading coil CHL04A	C244	09 000 334 102 1	Ceramic capacitor 15pF 50V SL
CF201	09 202 364 001 0	Ceramic filter 10.7 MHz SFE10.7MA	C224	09 000 334 192 1	Ceramic capacitor 68pF 50V SL
202			C241	09 000 334 262 4	Ceramic capacitor 220pF 50V RH
VR201	09 202 328 004 0	Trimmer 5K	C207,216	09 000 333 212 1	Ceramic capacitor 100pF 50V B
TC201	09 206 316 001 0	Trimmer cap. 60p (TC-10)	C235	09 000 333 222 1	Ceramic capacitor 120pF 50V B
202,203			C211,212	09 000 333 282 1	Ceramic capacitor 330pF 50V B
CR201	09 206 316 001 0	CR couplates RK1010-FG1010	213,214		
RL201	09 207 384 002 0	Reed relay CHL06CA	C226,227	09 000 333 312 1	Ceramic capacitor 560pF 50V B
R207	09 000 322 353 4	Carbon film resistor 47 ohm 1/4W	C221,222	09 000 333 322 1	Ceramic capacitor 680pF 50V B
R245	09 000 322 393 4	Carbon film resistor 100 ohm 1/4W	C228	09 000 333 342 1	Ceramic capacitor 0.001μF 50V B
R227,239	09 000 322 413 4	Carbon film resistor 150 ohm 1/4W	C223	09 000 333 352 1	Ceramic capacitor 0.0012μF 50V B
252			C219,231	09 000 333 382 1	Ceramic capacitor 0.0022μF 50V B
R205	09 000 322 433 4	Carbon film resistor 220 ohm 1/4W	C201,202	09 000 333 472 3	Ceramic capacitor 0.01μF 50V ZF
R201	09 000 322 443 4	Carbon film resistor 270 ohm 1/4W	203,204		
R204,206	09 000 322 453 4	Carbon film resistor 330 ohm 1/4W	C232,233	09 000 333 521 3	Ceramic capacitor 0.047μF 25V ZF
R225	09 000 322 463 4	Carbon film resistor 390 ohm 1/4W	237,242		
R237	09 000 322 483 4	Carbon film resistor 560 ohm 1/4W	243,247		
R249	09 000 322 493 4	Carbon film resistor 680 ohm 1/4W	248		
R202,222	09 000 322 513 4	Carbon film resistor 1K ohm 1/4W	C217,230	09 000 335 472 2	Mylar capacitor 0.01μF 50V
224			240		
R232,244	09 000 322 533 4	Carbon film resistor 1.5K ohm 1/4W	C236	09 000 335 522 2	Mylar capacitor 0.047μF 50V
R216,217	09 000 322 563 4	Carbon film resistor 2.2K ohm 1/4W	C239	09 000 335 412 2	Mylar capacitor 0.0033μF 50V
R218	09 000 322 573 4	Carbon film resistor 2.7K ohm 1/4W	C225	09 000 335 452 2	Mylar capacitor 0.0068μF 50V
R243	09 000 322 593 4	Carbon film resistor 3.9K ohm 1/4W	C208	09 000 337 013 2	Tantalum capacitor 0.1μF 16V
R203,228	09 000 322 603 4	Carbon film resistor 4.7K ohm 1/4W	C218	09 000 337 033 2	Tantalum capacitor 0.22μF 16V
229,230			C245	09 000 337 053 2	Tantalum capacitor 0.47μF 16V
231,238			C209,210	09 000 332 123 2	Electrolytic capacitor 10μF 16V
248			229,238		
R250	09 000 322 613 4	Carbon film resistor 5.6K ohm 1/4W	249,234		
R226,235	09 000 322 623 4	Carbon film resistor 6.8K ohm 1/4W	250		
236			C220	09 000 332 163 2	Electrolytic capacitor 100μF 10V
R242	09 000 322 643 4	Carbon film resistor 10K ohm 1/4W	C205,246	09 000 332 152 2	Electrolytic capacitor 47μF 10V

MAIN AMP. CIRCUIT BOARD PARTS LIST

Ref No.	Part No.	Description	Ref No.	Part No.	Description
IC501,502	09 206 452 029 0	Printed circuit board (KPB-MA08B)	C513,514	09 000 335 532 2	Mylar capacitor 0.068μF 50V
L501	09 000 312 055 0	Monolythic IC μPC1030H	C522,523	09 000 335 552 2	Mylar capacitor 0.1μF 50V
R505,506	09 206 356 003 0	Choke transformer TC1902A	C509,510	09 000 332 171 2	Electrolytic capacitor 220μF 6.3V
R503,504	09 000 322 423 4	Carbon film resistor 180 ohm 1/4W	C505,506	09 000 332 152 2	Electrolytic capacitor 47μF 10V
R501,502	09 000 322 723 4	Carbon film resistor 6.8K ohm 1/4W	515,516		
C511,512	09 000 322 703 4	Carbon film resistor 33K ohm 1/4W	C519,520	09 000 332 203 2	Electrolytic capacitor 1000μF 16V
C507,508	09 000 334 192 1	Ceramic capacitor 68pF 50V SL	C521	09 000 332 213 2	Electrolytic capacitor 2200μF 16V
C503,504	09 000 334 202 1	Ceramic capacitor 68pF 50V SL	C501,502	09 000 332 076 2	Electrolytic capacitor 1μF 50V
C517,518	09 000 334 282 1	Ceramic capacitor 330pF 50V SL			
524	09 000 333 555 4	Ceramic capacitor 0.1μF 12V ZF			

MPX CIRCUIT BOARD PARTS LIST

Ref No.	Part No.	Description	Ref No.	Part No.	Description
IC301	09 206 452 024 0	Printed circuit board (KPB-GX24A)	R313	09 000 322 703 4	Carbon film resistor 33K ohm 1/4W
D302,303	09 000 312 007 0	Monolythic IC BA1320	R314	09 000 322 763 4	Carbon film resistor 100K ohm 1/4W
VR301	09 000 305 009 0	Diode 1S2473	C307,309	09 000 335 472 2	Mylar capacitor 0.01μF 50V
VR302	09 202 328 006 0	Trimmer 10K	310		
R306,311	09 202 328 007 0	Trimmer 2K	C306,308	09 000 335 502 2	Mylar capacitor 0.022μF 50V
R308,310	09 000 322 433 4	Carbon film resistor 220 ohm 1/4W	C305	09 000 335 522 2	Mylar capacitor 0.047μF 50V
315	09 000 322 513 4	Carbon film resistor 1K ohm 1/4W	C314	09 000 336 302 2	Polystyrene capacitor 470pF 50V
R307,309	09 000 322 623 4	Carbon film resistor 6.8K ohm 1/4W	C312	09 000 337 033 2	Tantalum capacitor 0.22μF 16V
312			C311,313	09 000 337 053 2	Tantalum capacitor 0.47μF 16V
R316	09 000 322 663 4	Carbon film resistor 15K ohm 1/4W	C304	09 000 332 123 2	Electrolytic capacitor 10μF 16V
			C303	09 000 332 163 2	Electrolytic capacitor 100μF 16V

PRE. AMP. CIRCUIT BOARD PARTS LIST

Ref No.	Part No.	Description	Ref No.	Part No.	Description
IC401	09 206 452 026 0	Printed circuit board (KPB-PR10B)	R408,409	09 000 322 713 4	Carbon film resistor 39K ohm 1/4W
Q401,402	09 000 312 001 0	Monolythic IC BA329	R405,406	09 000 322 763 4	Carbon film resistor 100K ohm 1/4W
403,404	09 000 304 016 2	Transistor 2SC945	R414,415	09 000 322 893 4	Carbon film resistor 1M ohm 1/4W
D401,402	09 000 305 009 0	Diode 1S2473	C401,402	09 000 333 342 1	Ceramic capacitor 0.001μF 50V B
R401,402	09 000 322 313 4	Carbon film resistor 22 ohm 1/4W	C412,413	09 000 333 555 3	Ceramic capacitor 0.1μF 12V B
R407,410	09 000 322 563 4	Carbon film resistor 2.2K ohm 1/4W	C414,415	09 000 335 472 2	Mylar capacitor 0.01μF 50V
411,412			C407,408	09 000 335 512 2	Mylar capacitor 0.033μF 50V
413,422			C405,406	09 000 332 152 2	Electrolytic capacitor 47μF 10V
R403,404	09 000 322 573 4	Carbon film resistor 2.7K ohm 1/4W	C403,404	09 000 332 123 2	Electrolytic capacitor 10μF 16V
R416,417	09 000 322 583 4	Carbon film resistor 3.3K ohm 1/4W	410,411		
418,419			C409,416	09 000 332 163 2	Electrolytic capacitor 100μF 16V
R420,421	09 000 322 673 4	Carbon film resistor 18K ohm 1/4W	C417,418	09 000 332 076 2	Electrolytic capacitor 1μF 50V

AUTO-STOP CIRCUIT BOARD PARTS LIST

Ref No.	Part No.	Description	Ref No.	Part No.	Description
Q601	09 206 452 023 0	Printed circuit board (KPB-GX25A)	R610	09 000 322 573 4	Carbon film resistor 2.7K ohm 1/4W
Q602	09 000 302 002 0	Transistor 2SC945	R601	09 000 322 613 4	Carbon film resistor 5.6K ohm 1/4W
Q603	09 000 304 031 0	Uni-junction 2SH21	R605	09 000 322 633 4	Carbon film resistor 8.2K ohm 1/4W
Q604	09 000 304 029 0	Transistor 2SD327	R604,606	09 000 322 673 4	Carbon film resistor 18K ohm 1/4W
-a	09 206 662 015 0	Transistor 2SD313	R603	09 000 322 713 4	Carbon film resistor 39K ohm 1/4W
-b	09 206 683 009 0	Insulation bushing	R608	09 000 322 334 4	Carbon film resistor 33 ohm 1/2W
D601	09 000 305 003 0	Insulation mica	C601	09 000 333 472 3	Ceramic capacitor 0.01μF 50V ZF
D602	09 000 305 002 0	Diode 1S188	C605	09 000 333 522 3	Ceramic capacitor 0.047μF 50V ZF
R607	09 000 322 453 4	Diode 1N4003	C604	09 000 332 153 2	Electrolytic capacitor 47μF 16V
R609	09 000 322 513 4	Carbon film resistor 330 ohm 1/4W	C603	09 000 332 105 2	Electrolytic capacitor 4.7μF 35V
R602	09 000 322 533 4	Carbon film resistor 1K ohm 1/4W	C602	09 000 332 056 4	Electrolytic capacitor 0.47μF 50V (NP)
		Carbon film resistor 1.5K ohm 1/4W			

OTHER ELECTRICAL PARTS LIST

Ref No.	Part No.	Description	Ref No.	Part No.	Description
D701	09 000 305 002 0	Diode 1N4003	R702,703	09 000 322 553 4	Carbon film resistor 1.8K ohm 1/4W
L701	09 206 356 003 0	Choke transformer TC1902A	R704	09 000 322 443 4	Carbon film resistor 270 ohm 1/4W
L702	09 208 352 003 0	RF choke coil CHL03A	C702,703	09 000 333 472 3	Ceramic capacitor 0.01µF 50V ZF
M701	09 206 436 002 0	Solenoid ass'y	704,705		
M702	09 206 436 003 0	Magnet ass'y	C701	09 000 332 203 2	Electrolytic capacitor 1000µF 16V
R701	09 000 322 404 4	Carbon film resistor 120 phm 1/2W			

MAIN UNIT MECHANICAL PARTS LIST

Ref. No.	Part No.	Description	Q'ty	Ref. No.	Part No.	Description	Q'ty
	09 206 682 074 0	Cabinet cover (12-2)	1		09 206 723 009 0	Door spring	1
	09 206 682 076 0	Cabinet side (02-0)	1		09 208 672 001 5	Cassette door	1
	09 206 328 014 0	Potentiometer (R) EWK-WYAS82A14	1		09 202 652 008 0	Trimplate	1
	09 206 682 067 0	Tuner coupler C-7 cross pin	1		09 206 732 011 1	Trimplate inlay (R)	1
	09 206 691 001 0	Tuner coupler axle	1		09 206 732 010 2	Trimplate inlay (L)	1
	09 206 607 001 0	Roll pin 1.5φ x 12	1		09 202 732 007 2	Trimplate brand inlay	1
	09 206 358 002 0	AM/FM u-tuner	1		09 206 682 072 0	Dial back plate	2
	09 206 662 016 0	Dial pulley	3		09 206 656 004 0	Dial scale	1
	09 206 682 062 0	Tuner holder	1		09 206 656 005 3	Dial escutcheon	1
	09 206 451 025 0	Assembled PCB (PB-GT22A)	1		09 202 652 011 0	Backup knob	2
	09 206 692 020 0	PCB stud	2		09 206 652 020 0	Knob coupler	1
	09 206 692 022 0	Rear plate spacer	2		09 202 652 010 0	Middle knob	2
	09 206 682 069 0	Cabinet rear	1		09 202 652 009 0	Front knob	2
	09 208 682 031 0	Line cable clamp (E)	1		09 206 653 006 0	Eject button	1
	09 202 406 001 0	Antenna receptacle	1		09 206 653 008 0	FF button (R)	1
	09 202 407 001 0	Auto antenna connector	1		09 206 653 007 0	FF button (L)	1
	09 206 405 003 0	6P socket ass'y	1		09 206 653 005 0	Program button	1
					09 000 587 400 4	E-ring 2φ	2
					09 208 583 002 0	VR nut	8
					09 208 592 002 0	VR washer	4
	09 208 407 011 0	Power supply cable	1				
	09 206 682 068 0	P.C.B Support	1				
	09 206 682 070 0	Line cable clamp (N)	1		09 202 726 001 0	Front installation spring	4
	09 206 682 071 0	Filter holder	1		09 000 594 603 4	Toothed lock washer 3φ	2
	09 206 356 003 0	Choke transformer	1		09 000 593 600 4	Spring lock washer 3φ	2
	09 207 328 018 0	Potentiometer (L) EWJ-0XBS02999	1		09 000 552 303 3	Pan head screw M2x3	2
	09 206 683 010 0	Insulation fibre (Q)	2		09 000 553 704 3	Bind head screw M3x4	2
	09 208 683 005 0	Insulation fibre (#09)	1		09 000 553 603 3	Bind head screw M2.6x3	1
	09 206 682 073 0	Cabinet cover (12-1)	1		09 000 553 704 1	Bind head screw M3x4 (unchromate)	3
	09 206 682 064 0	Deck holder	1		09 000 553 705 1	Bind head screw M3x5 (unchromate)	2
	09 206 662 017 0	Dial string corner pad	2		09 000 553 706 1	Bind head screw M3x6 (unchromate)	4
		Tape mechanism	1		09 000 573 432 1	Bind head tapping screw M3x6 (unchromate)	15
	09 206 712 001 0	Front frame	1				
	09 206 452 030 0	Printed circuit board (KPB-BF16)	1		09 206 602 003 0	Eyelet 2φx4	2
	09 206 452 026 0	Printed circuit board (KPB-PR10B)	1		09 206 602 004 0	Eyelet 2φx6	2
	09 206 452 024 0	Printed circuit board (KPB-GX24A)	1	OTHER PARTS LIST			
	09 206 682 075 0	Cabinet side (02-1)	1		09 202 682 020 0	Rear suspension bracket (A)	1
	09 206 692 023 0	VR shaft flange	1		09 202 682 021 0	Rear suspension bracket (B)	1
	09 202 422 001 0	Lamp (T-3, 6V/30mA)	3		09 202 714 002 0	Rear suspension plug	1
	09 206 422 002 0	Lamp (T-3, 6V/60mA)	1		09 202 782 002 0	Screw kit	1
	09 206 692 021 0	Dial pulley axle	1		09 202 682 022 0	Perforated strap	1
	09 206 682 065 0	Pointer guard rail	1		09 206 736 405 0	Auto-ant tag	1
	09 206 452 028 0	Printed circuit board (KPB-LS56)	1		09 202 782 002 0	Screw it	1
	09 206 682 066 0	VR adjust washer (F)	1		09 206 407 003 0	Grounding cable	1
	09 208 683 007 0	Insulation fibre (R)	1		09 206 736 409 0	Ant trimmer label	1
	09 206 652 021 0	Dial pointer	1		09 206 736 003 0	Specification label	1
	09 206 722 022 0	Dial spring	1		09 206 736 205 0	Warranty # label	1
	09 206 452 027 0	Printed circuit board (KPB-LS55)	1		09 206 736 408 0	Cassette caution label	1
	09 202 653 002 0	Front installation bracket	2		09 206 902 009 0	Operating inst. manual	1
	09 206 792 002 0	Dial string	1		09 202 924 001 0	Silica gel	1
	09 206 682 063 0	Dial background	1		09 202 923 003 0	Polyethylene bag (300x400)	1
	09 206 714 003 0	Lamp bushing (0 8A)	1		09 206 922 010 0	Gift box	1
	09 206 714 009 0	Lamp bushing (0 8B)	2		09 206 925 003 0	Plastic foam cushion	2
	09 206 652 019 0	Nose piece	1				
	09 208 692 006 0	Door axle	2				

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.

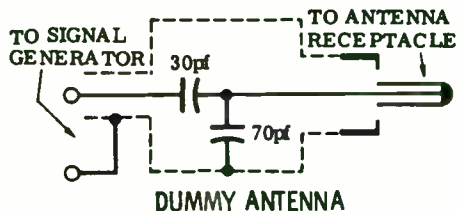
Suggested Alignment Tools: GC ELECTRONICS:
 T52, T51 9440
 T101, T1 5000, 8276, 9089
 TC53, TC52, TC401, TC1, TC2, TC3 ... 5000, 8276, 9089

AM ALIGNMENT—SELECTOR IN AM POSITION

Connect output meter across speaker voice coil.

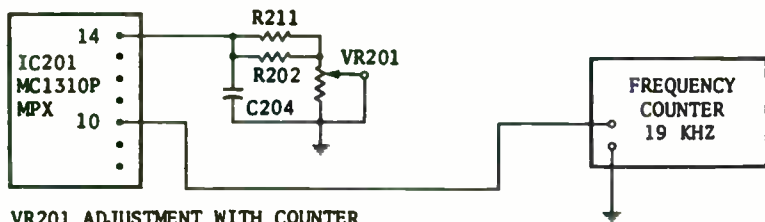
GENERATOR COUPLING	GENERATOR FREQUENCY	RADIO DIAL SETTING	ADJUST	REMARKS
High side thru .1uF antenna	262kHz 400-Hz mod.	High freq end stop	T52,T51	Adjust for maximum
Thru dummy antenna to antenna input.	1600kHz 400Hz mod.	1600kHz	TC53	Adjust for maximum
Thru dummy antenna to antenna input.	1400kHz 400Hz mod.	1400kHz	TC52, TC401.	Adjust for maximum.

With radio installed in car and antenna extended 30", tune in a weak station near 1400kHz and adjust TC401 for maximum output. Antenna adjustment is located on front panel below tuning shaft.



FM STEREO ADJUSTMENT

Ideally, one of the most accurate ways to adjust VR201 would be with the aid of a Frequency Counter. Connect the counter to pin 10 (TP) of IC201 as shown in Fig. below. Adjust VR201 for 19 KHZ as seen on the Counter.



VR201 ADJUSTMENT WITH COUNTER

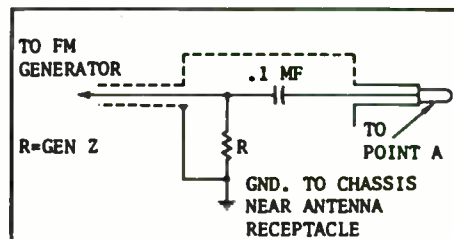


FIG. A - IF GENERATOR TERMINATION

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.

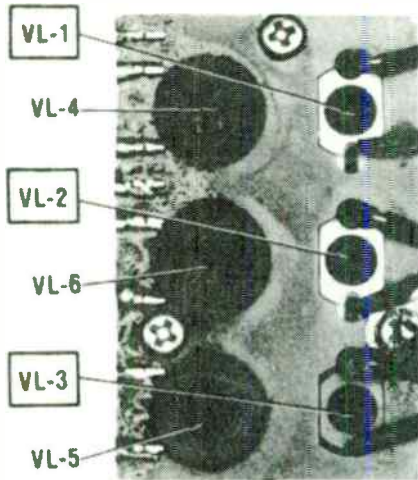
ALIGNMENT CONDITIONS - Input level to the receiver +14.0V DC. During FM alignment, the generator output signal amplitude must be set above or below the receiver limiting level depending on the adjustment made. The limiting level is the point where further increase in input does not increase the output 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

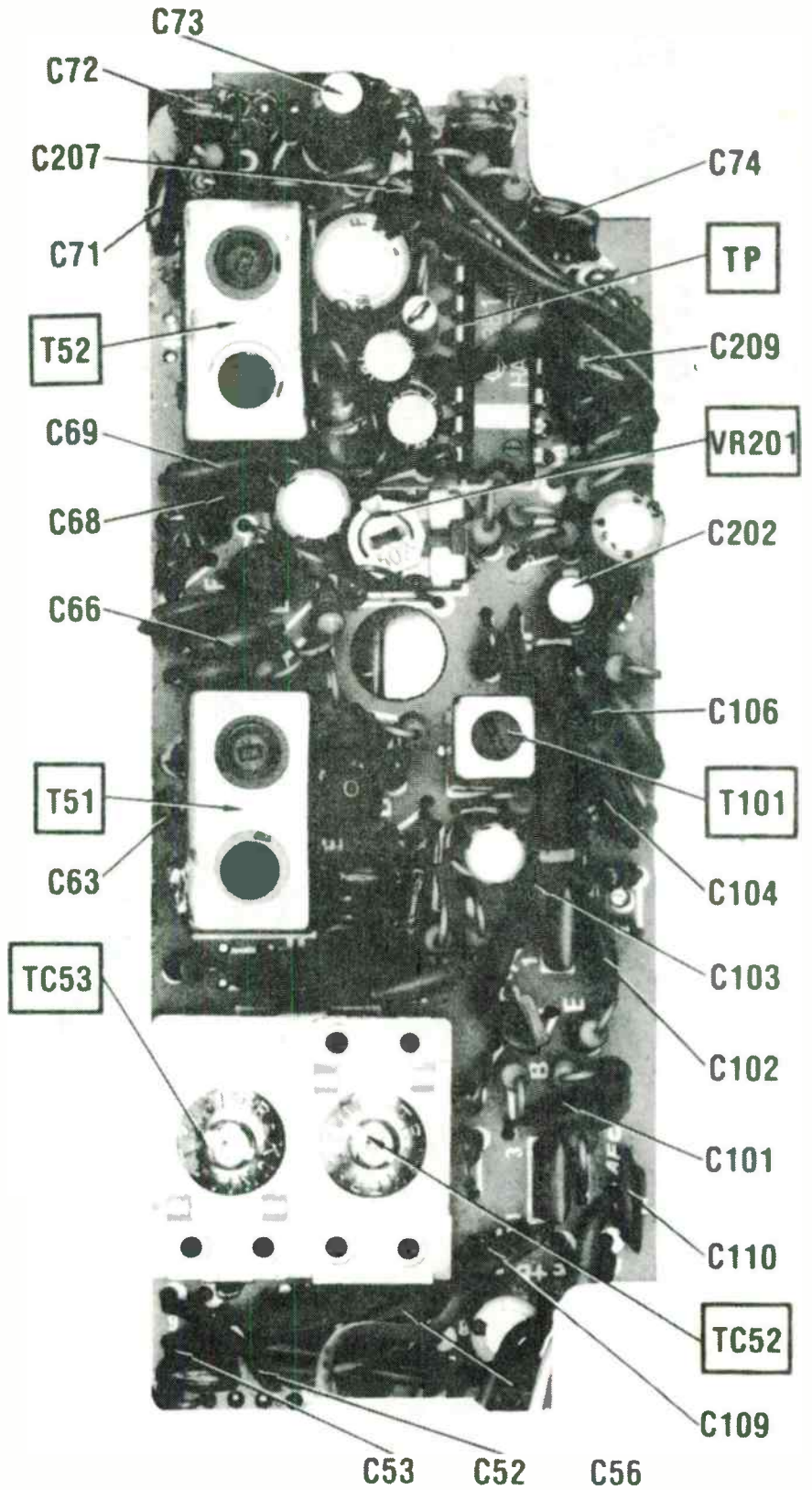
1. The "AM-FM" switch, in "FM" position.
2. Tone control, in full treble position (C.W.).
3. Balance control, equal power output.
4. Connect resistive loads to left & right speaker output.

FM ALIGNMENT USING FM SIGNAL GENERATOR

STEP	GENERATOR COUPLING	GENERATOR FREQUENCY	RADIO FREQUENCY	OUTPUT INDICATOR	ADJUST	REMARKS
FM IF ALIGNMENT						
1	To ant recept thru .1MF capacitor (Fig. A)	10.7MHz (75KHz deviation @ 400Hz Mod-into limiting.)	108.5MHz	VTVM-AC probe or scope across 4.0 ohm output load	T101	Adjust for max output.
2	"	100Kv or better 10.7MHz (75KHz deviation @ 400Hz Mod-below limiting)	"	"	T1	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 100Kv or better)	"	"	T101	Adjust for max output.
5	"	98MHz (75KHz deviation @ 400Hz Mod-below limiting)	"	"	T1	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	TC3	Adjust for max signal output.
7	"	108.5MHz (22.5 KHz deviation @ 400Hz Mod-below limiting)	"	"	TC2, TC1	"
8	"	98MHz (22.5KHz deviation @ 400Hz Mod-use max sig)	98MHz	"	VL3	Adjust for max signal output. See "FM Alignment Point Location" detail for core carriage note.
9	"	98MHz (22.5KHz deviation @ 400Hz Mod - below limiting.)	"	"	VL2, VL1	Adjust for max signal output. Repeat Steps 8 & 9.

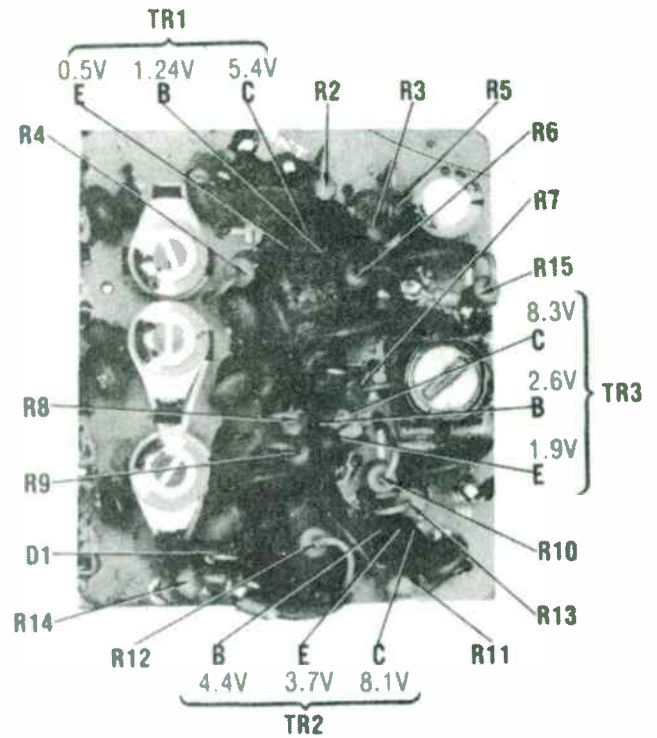
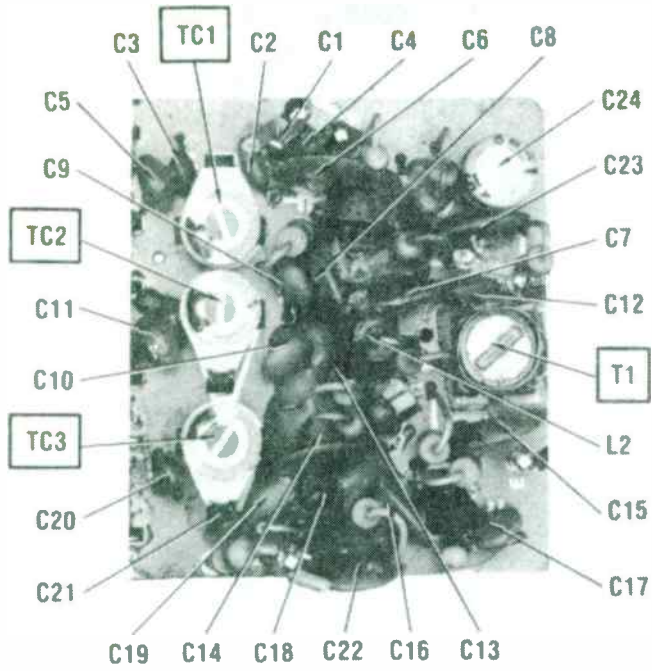


TUNING COIL BOARD

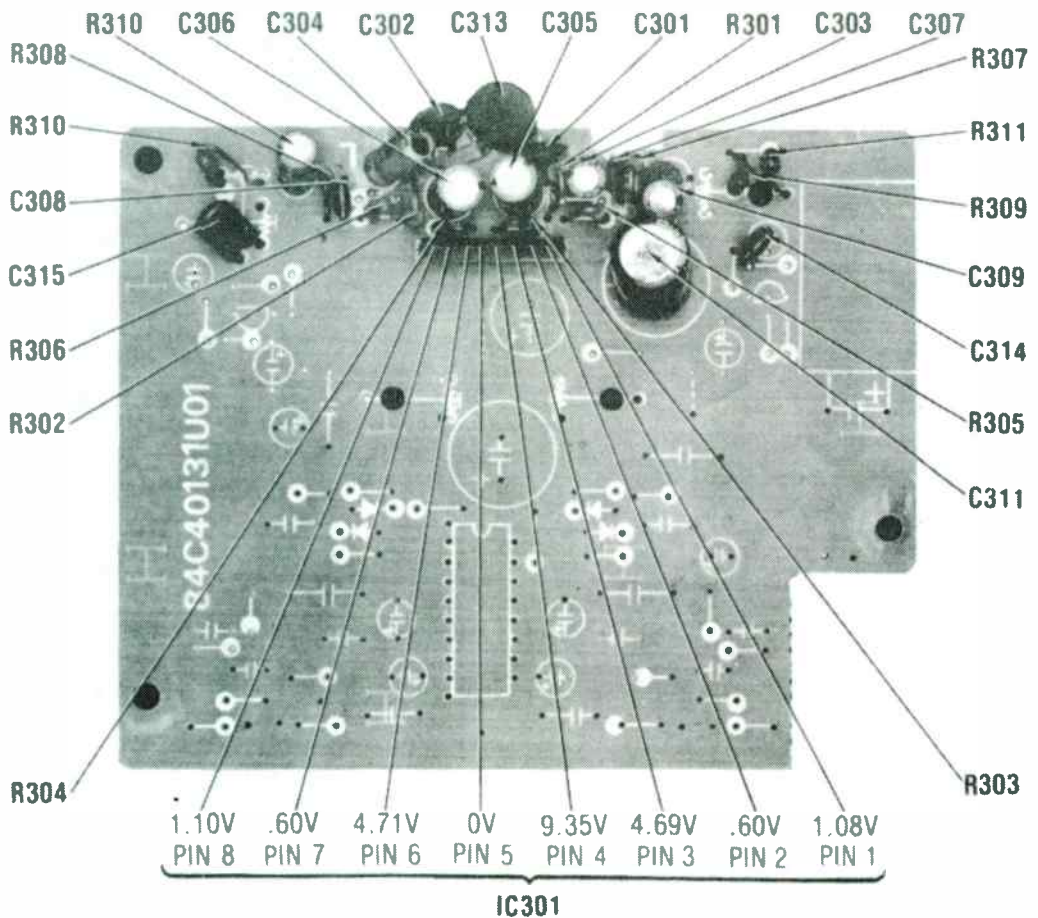


AM-FM BOARD

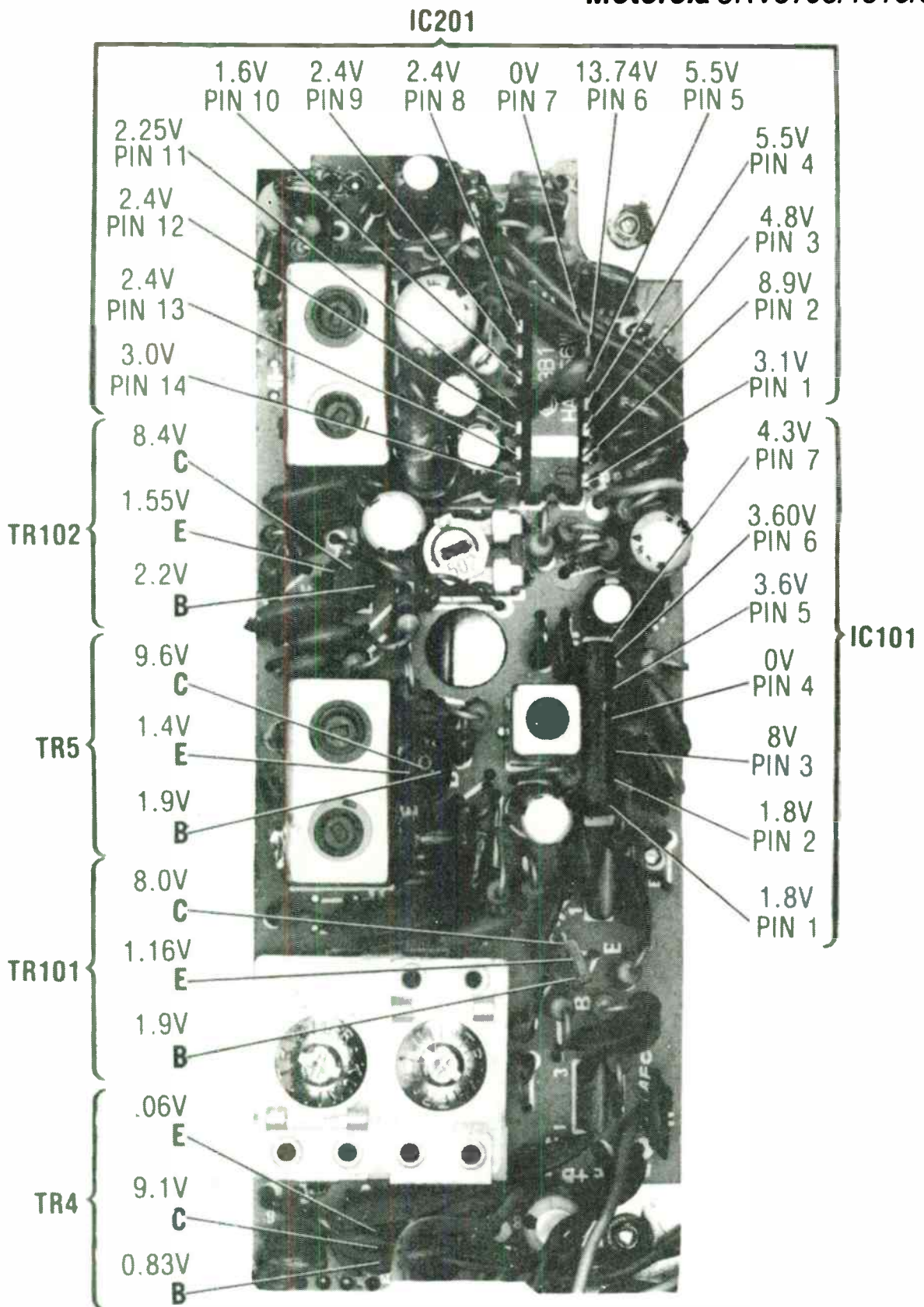
ALIGNMENT POINTS LOCATION



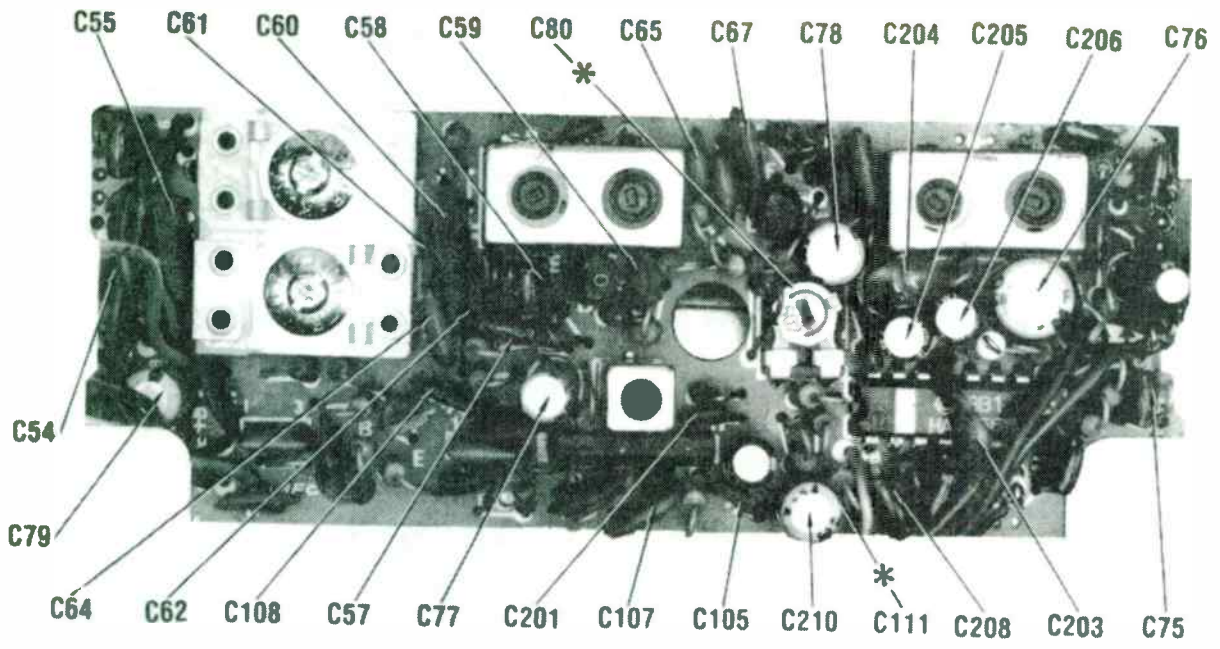
FM TUNER BOARD



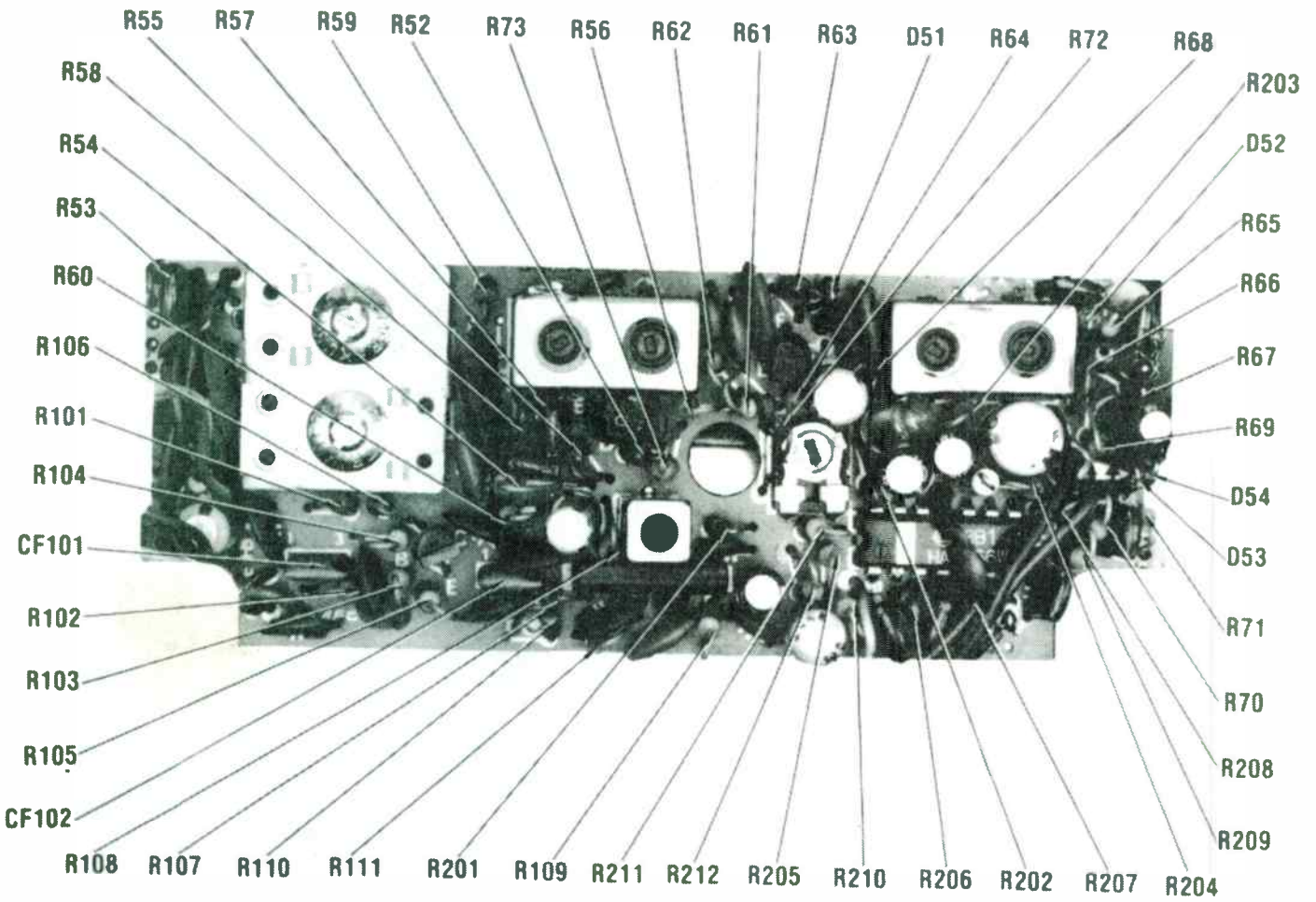
CASSETTE PRE-AMP BOARD



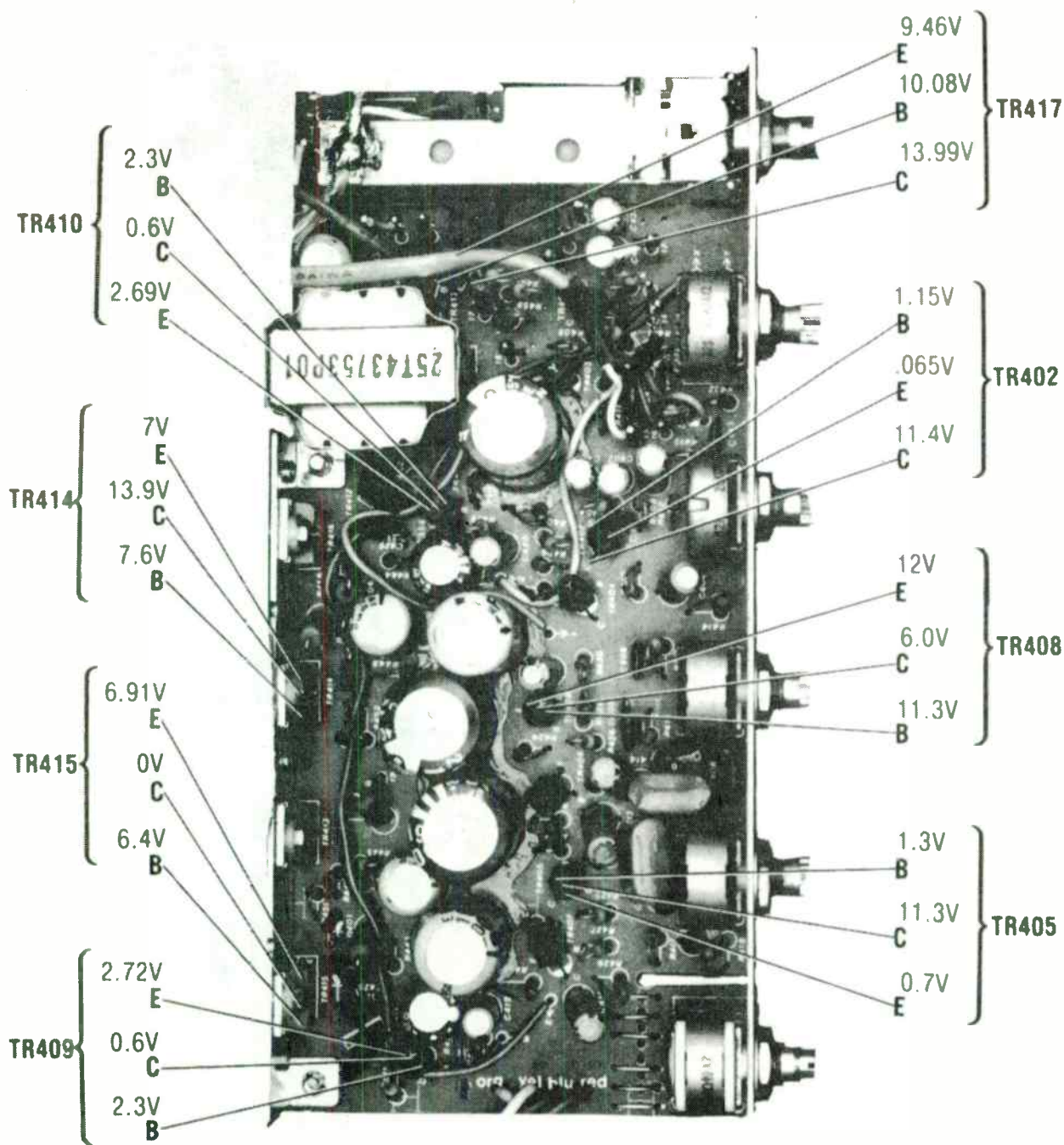
AM-FM BOARD



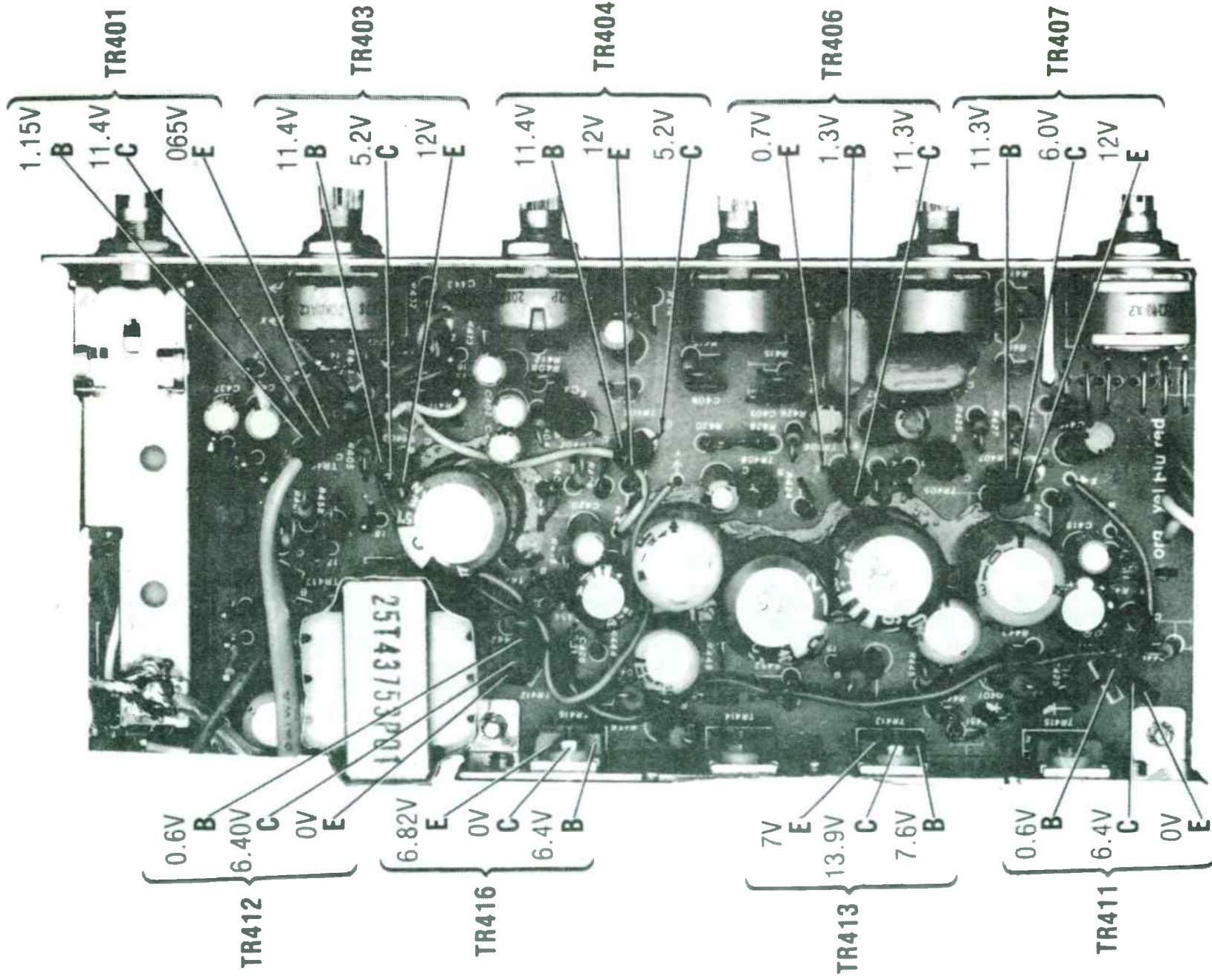
* LOCATED ON BOTTOM OF BOARD



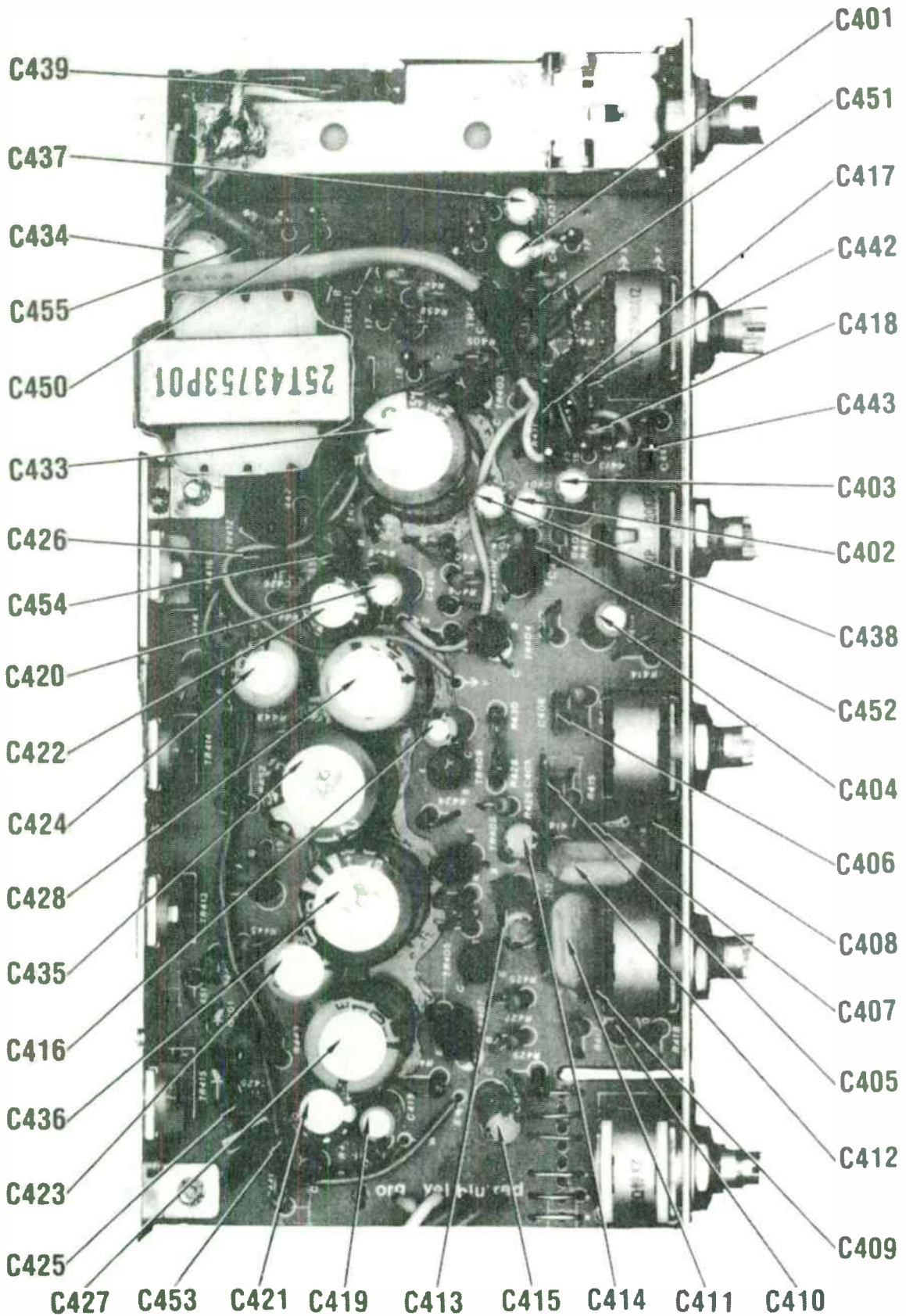
AM/FM BOARD



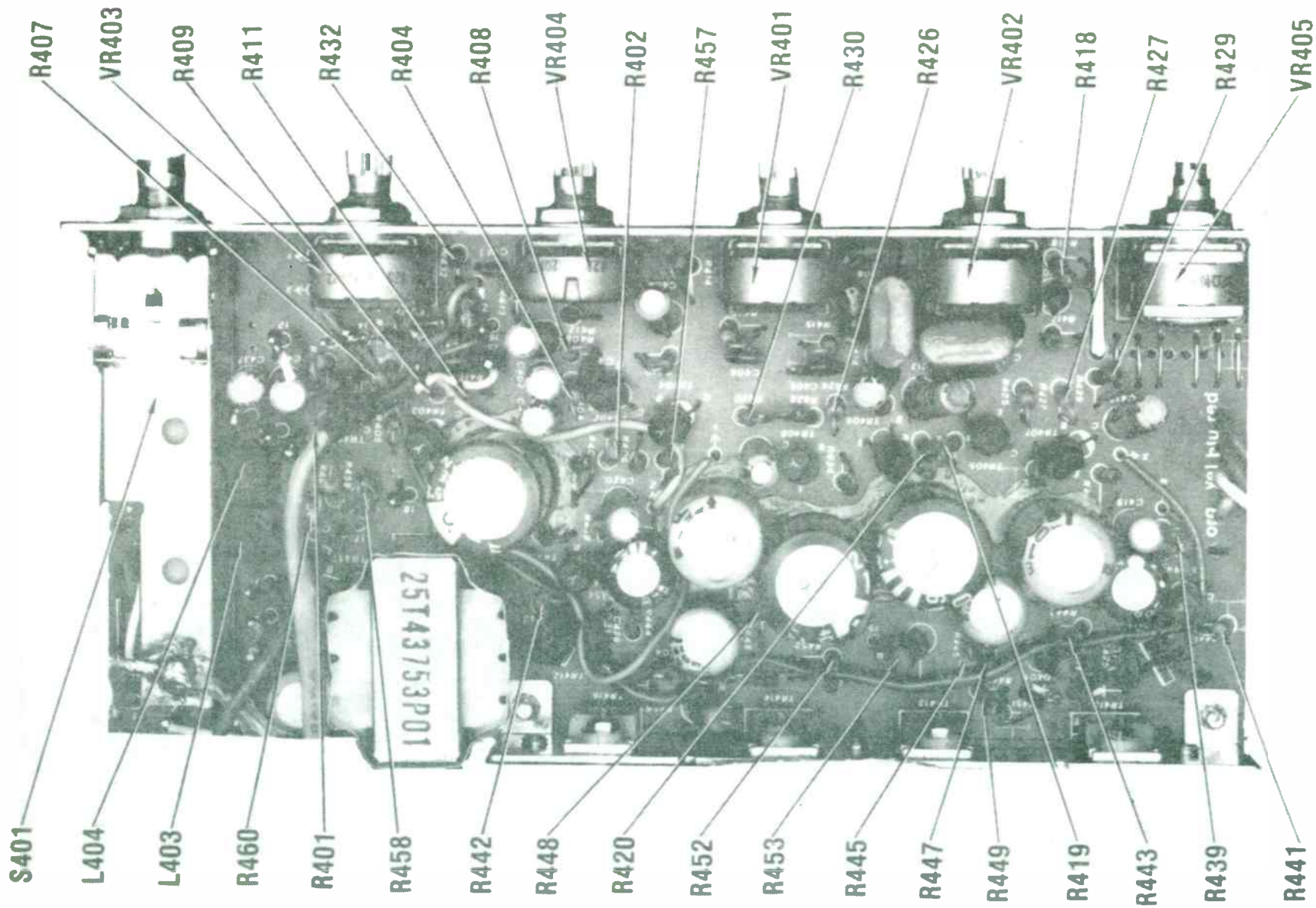
AUDIO BOARD



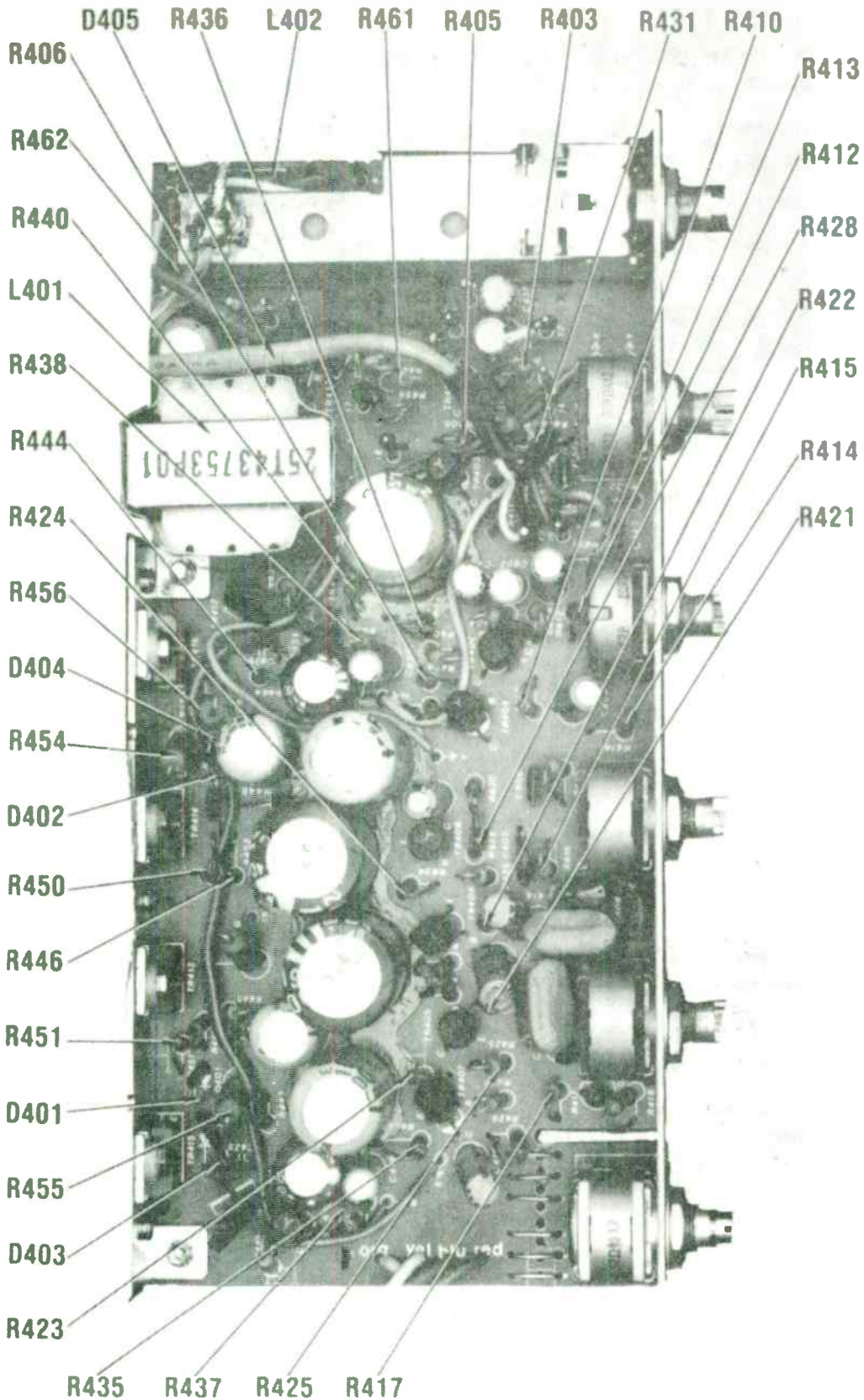
AUDIO BOARD



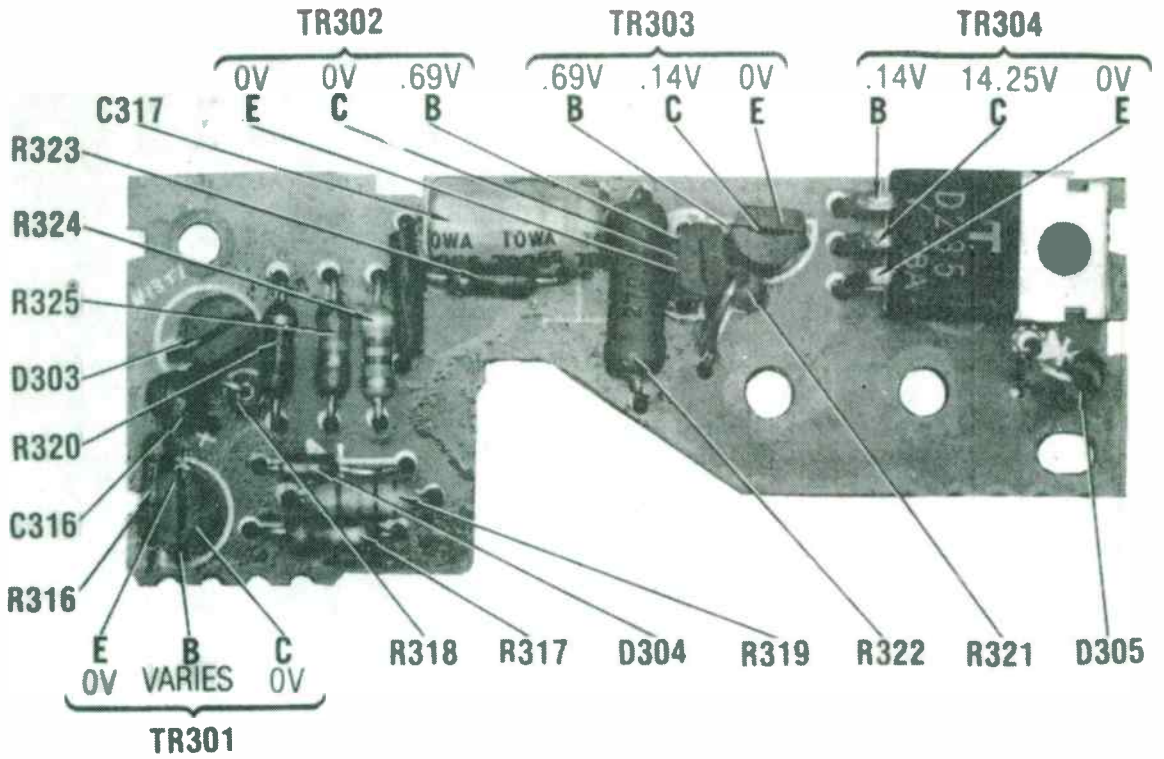
AUDIO BOARD



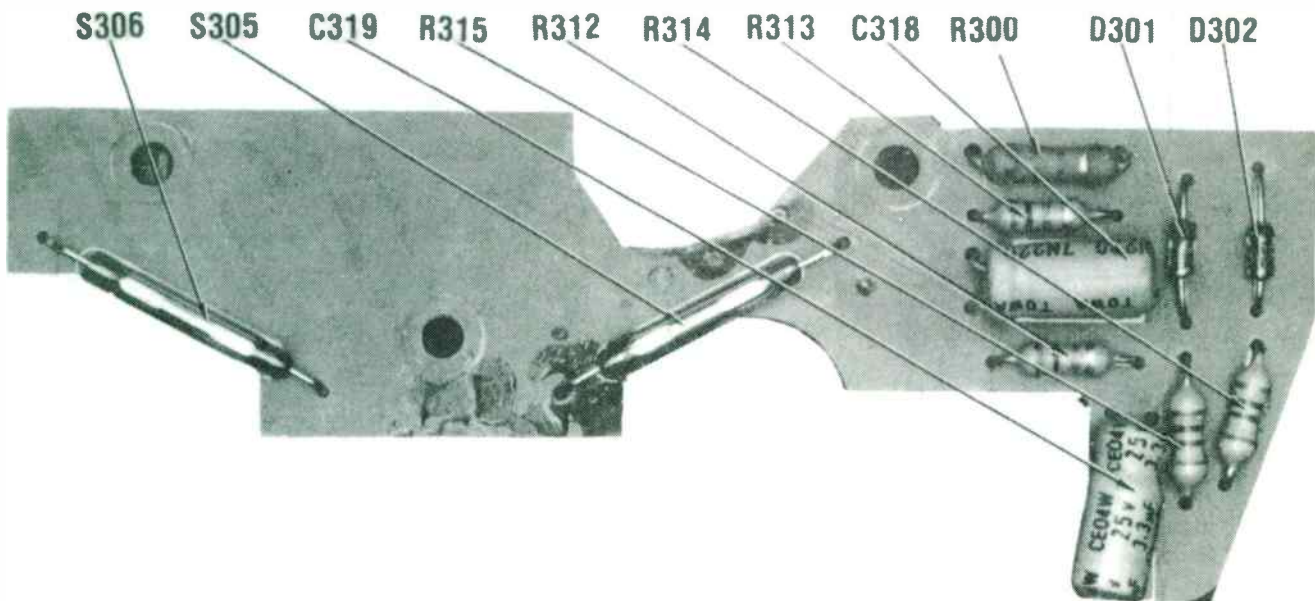
AUDIO BOARD



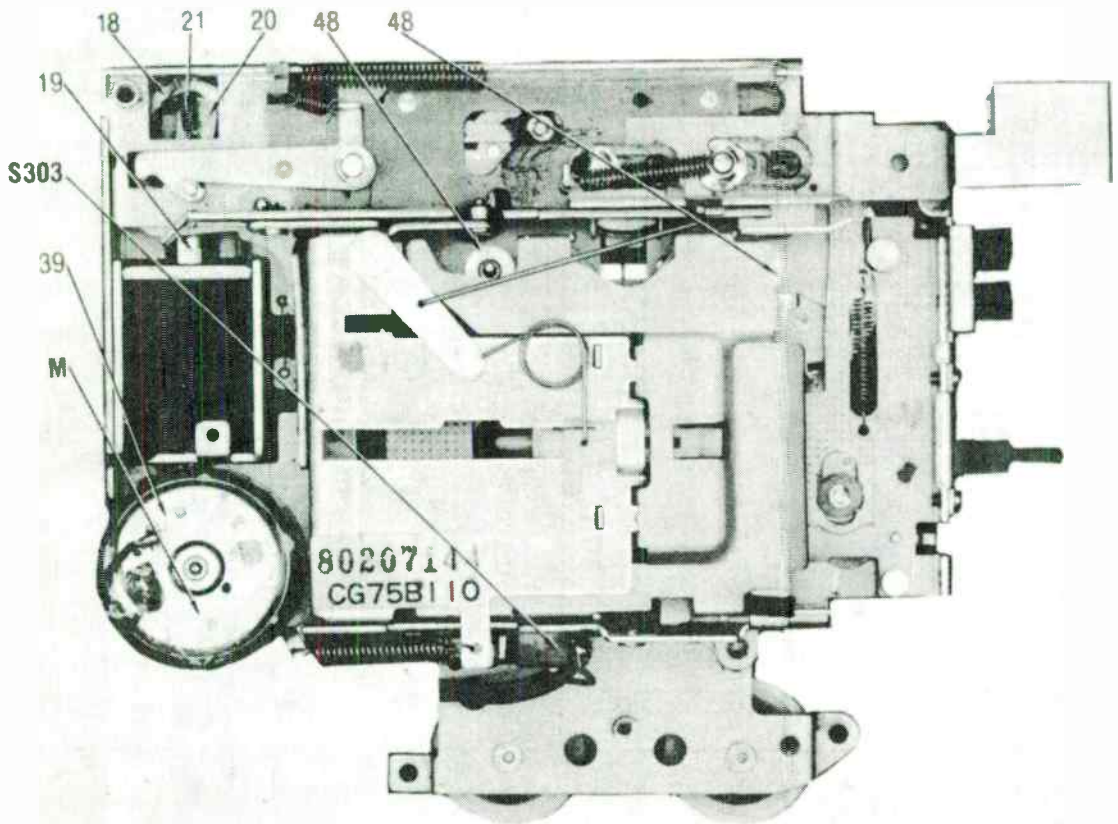
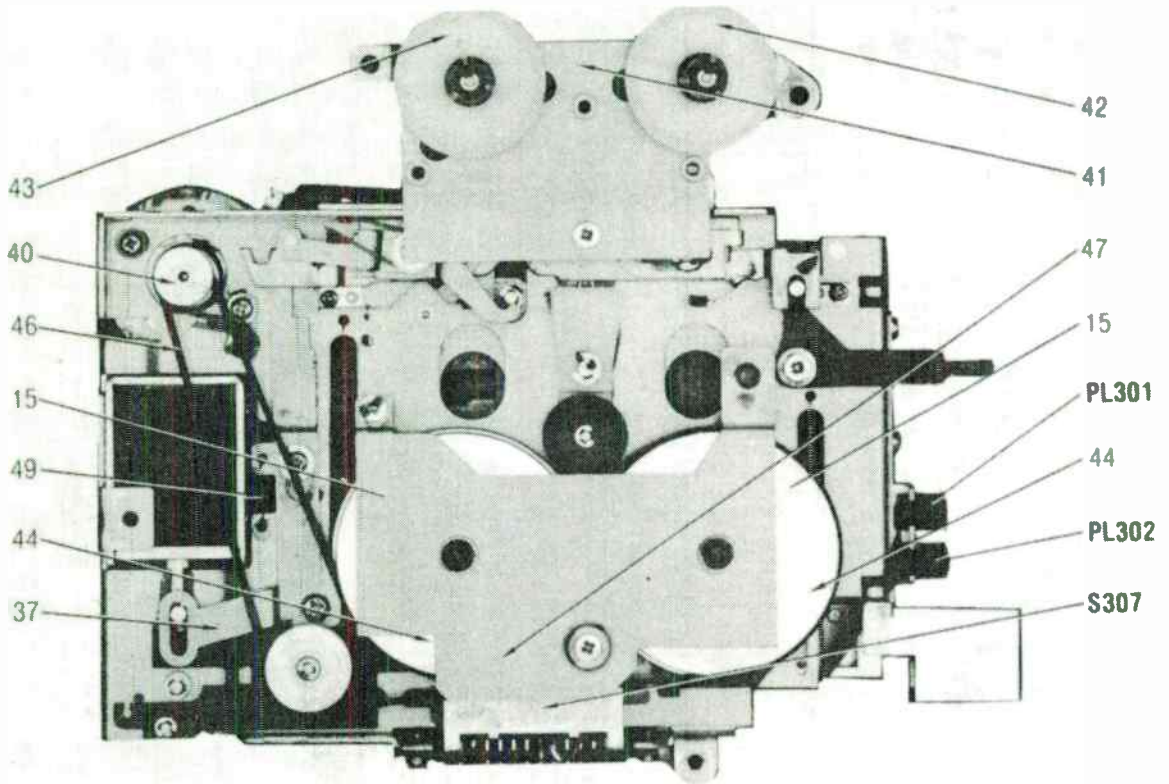
AUDIO BOARD



SWITCH BOARD



TAPE SENSOR BOARD



TAPE DECK PARTS LOCATION

NOTE: ALL PARTS LISTED ARE RECOMMENDED REPLACEMENT PARTS

REF. NO.	PART NUMBER	DESCRIPTION	REF. NO.	PART NUMBER	DESCRIPTION
ELECTRICAL PARTS					
CAPACITORS					
C1	21-45322G13	18PF 5% 50V disc	C305,		
C2	21-45322G10	10PF 0.5PF 50V disc	C306,	23-44333G24	47MF 10V lytic
C3	21-45322G16	33PF 5% 50V disc	C307,		
C4	21-45322G02	2PF ±0.25PF 50V disc	C308,	8-44833J11	.0068MF 10% mylar
C5	21-41701J02	4PF ±0.5PF 50V disc	C309,		
C6,			C310	23-44333G08	10MF 16V lytic
C7	21-45322G32	0.022MF +80-20% 50V disc	C311	23-44780P05	470MF 16V lytic
C8	21-45322G17	39PF 5% 50V disc	C312,		
C10	21-45322G04	4PF ±0.25PF 50V disc	C313	23-45322G32	.022MF +80-20% 50V ceramic
C11	21-41701J02	4PF ±0.5PF 50V disc	C314,		
C12	21-45322G24	150PF 10% 50V disc	C315	8-44833J13	.01MF 10% 50V mylar
C13	21-45322G12	15PF 5% 50V disc	C316	23-41059P22	6.8MF 16V lytic
C14,			C317	23-44333G24	47MF 10V lytic
C15	21-45322G32	0.022MF +80-20% 50V disc	C318	23-44333G08	10MF 16V lytic
C16	21-41701J38	33PF 5% 50V disc	C319	23-44333G02	3.3MF 2.5V lytic
C17	21-41701J03	7PF ±0.5PF 50V disc	C401,		
C18	21-41701J22	5PF ±0.5PF 50V disc	C404,	23-44333G05	4.7MF 50V lytic
C19	21-45322G34	.5PF ±0.25PF 50V disc	C405,		
C20	21-41701J04	10PF ±1PF 50V disc	C406	* 8-44833J12	0.0082MF 10% 50V
C21	21-41701J20	2PF ±0.25PF 50V disc	C407,		
C22,			C408	* 8-44833J24	0.082MF 10% 50V
C23	21-45322G32	0.022MF +80-20% 50V disc	C409,		
C24	21-44333G18	33MF 10V mylar	C410	*23-41059P05	0.47MF 35V lytic
C52	21-45322G27	470PF 20% 50V disc	C411,		
C53	8-44833J13	.01MF 10% 50V mylar	C412	* 8-44833J29	0.22MF 10% 50V
C54	21-45322G16	33PF 5% 50V disc	C413,		
C55	21-41701J35	270PF 5% 50V disc	C416	23-44333G05	4.7MF 50V lytic
C56	21-41701J31	150PF 5% 50V disc	C417,		
C57,			C418	8-44833J20	0.0039MF 10% 50V
C58	8-44833J13	.01MF 10% 50V mylar	C419,		
C59	21-45322G10	10PF ±0.5PF 50V disc	C420	23-44333G05	4.7MF 50V lytic
C60	21-41701J35	270PF 5% 50V disc	C421,		
C61	21-41701J34	120PF 5% 50V disc	C422,	23-44333G36	220MF 16V lytic
C62	8-44833J11	0.0068MF 10% 50V mylar	C423,		
C63	21-45322G03	3PF 0.25PF 50V disc	C424	23-44333G31	100MF 16V lytic
C64	21-41870J03	0.2MF +80-20% 12V disc	C425,		
C65	21-41870J01	0.05MF +80-20% 12V disc	C426	21-45322G25	220PF 10% 50V disc
C66	21-41870J02	0.1MF +80-20% 12V disc	C427,		
C67	21-41870J03	0.2MF +80-20% 12V disc	C428	23-44333G54	1000MF 10V lytic
C68	21-45322G25	220PF 10% 50V disc	C429,		
C69	21-41870J03	0.2MF +80-20% 12V disc	C432	21-42906J01	.001MF +200-0% 500V feed thru (use 21-42954J01)
C71,					2200MF 16V lytic
C72	8-44833J13	0.01MF 10% 50V mylar	C433	23-44333G60	100MF 16V lytic
C73	23-44333G01	1MF 50V lytic	C434	23-44333G31	
C74,			C435,		
C75	8-44833J13	0.01MF 10% 50V mylar	C436	23-44333G60	2200MF 16V lytic
C76	23-44333G30	100MF 10V lytic	C437,		
C77	23-44333G12	22MF 10V lytic	C438	23-44333G05	4.7MF 50V lytic
C78,			C439	21-41701J18	47PF 10% 50V disc
C79	23-44333G09	10MF 25V lytic	C440	21-45322G31	0.01MF +80-20% 50V disc
C101,			C442,		
C104	21-45322G32	0.022MF +80-20% 50V disc	C443	* 8-44833J08	0.0039MF 10% 50V disc
C105	21-45322G25	220PF 10% 50V disc	C451,		
C106	21-45322G07	7PF ±0.5PF 50V disc	C454	21-45322G31	0.01MF +80-20% 50V disc
C107	21-41870J03	0.2MF +80-20% 12V disc	C455	21-45322G28	0.001MF +100-0% 50V disc
C108,			C501,		
C111	21-45322G32	0.022MF +80-20% 50V disc	C502	*21-41880J04	0.001MF feed thru
C201	21-45322G29	0.0022MF +100-0% 50V disc	TC1-		
C202	23-44333G01	1MF 50V lytic	TC3	20-43248J02	TRIMMER,ceramic;RF,MIX,OSC;2-6PF
C203	21-41870J01	0.05MF +80-20% 50V disc	TC52,		
C204	8-42195G07	470PF 5% 125V	TC53	20-44915J01	TRIMMER,AM
C205	23-42909J01	0.22MF 20% 50V	TC401	20-42896J01	TRIMMER,ant
C206	23-42909J02	0.47MF 20% 50V			
C207	23-41059P11	2.2MF 16V lytic			COILS & CHOKES
C208,					
C209	8-44833J19	0.033MF 10% 50V disc	L2	24-42872J01	COIL, 1.5MH
C210	23-44333G18	33MF 10V lytic	L401	*25-43753P01	CHOKE, filter
C301,			L402,		
C302	21-45322G25	220PF 10% 50V ceramic	L403	24-42936J01	COIL, choke, 3.9MH
C303,			L404	24-44179J01	COIL, choke, 4.7MH
C304	23-44333G01	1MF 50V lytic	VL1-6		COILS,AM-FM;Part of AM-FM tuner Ref. No. 14

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.
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Motorola 3RV3705/4816/6701

NOTE: ALL PARTS LISTED ARE RECOMMENDED REPLACEMENT PARTS

REF. NO.	PART NUMBER	DESCRIPTION	REF. NO.	PART NUMBER	DESCRIPTION
MISCELLANEOUS ELECTRICAL PARTS					
CF101, CF102	91-41273J01	FILTER, ceramic; replace as matched pairs only (use 91-43353A72)	TR409, TR410, TR411, TR412, TR413, TR414, TR415, TR416, TR417	48-43238G01 *48-44211G01 48-43240G01 48-43241G01 48-43239G02	2SA495-Y PRE-DRIVER 2SC496 DRIVER 2SC1173Y POWER AMP 2SA473Y POWER AMP 2SC509Y REGULATOR
CP1, CP2	29-41370P01	PIN, check	RESISTORS		
D1	48-45323G01	DIODE 1T410	ALL RESISTORS ARE 5% 1/4W UNLESS OTHERWISE NOTED		
D51	48-134816	DIODE 1S1555	R311	6-43205J07	150 1/2W metal film
D52	48-41768G01	DIODE 1N60	R322	6-44652G06	270 1W metal film
D53	48-134816	DIODE 1S1555	R453- R456	6-44241G01	0.22 5% 1W
D54	48-134816	DIODE 1S1555	R458	* 6-10053C11	120 5% 1/2W
D301, D302, D303, D304, D305, D401, D404	48-134816 48-43738P01 48-134816 48-40235G02	DIODE 1S1555 DIODE N13T1 DIODE 1S1555 DIODE, rectifier 10E2	VR201	18-42061J13	CONTROL, stereo adj.
D405	*48-44170P01	DIODE, zener RD 10E	VR401	*18-43249P01	CONTROL, treble 20K
E501	65-40348G01	FUSE 5A	VR402	*18-43250P01	CONTROL, bass 20K
E502	* 1-40889P19	RECEPTACLE, "A" lead, incl fuse	VR403	*18-43250P01	CONTROL, volume 20K
J1	9-42905J01	RECEPTACLE, ant	VR404	*18-43248P01	CONTROL, balance 20K
J3	30-42688J08	CABLE, spkr; 3-way left (blk, org, blu)	VR405	18-43263P01	CONTROL, fader
J4	30-42688J07	CABLE, spkr; 3-way right (blk, yel, red)	SWITCHES		
J5	30-43183P02	CABLE, spkr; 3-way left (blk, org, blu) (use 30C41270B12)	S1	40-43664P01	NOISE FILTER
J6	30-43183P01	CABLE, spkr; 3-way right (blk, yel, red) (use 30C41270B13)	S2	40-43664P01	POWER, ON/OFF
J9	30-40799P18	CABLE, "A" lead: to 8-track	S301, S302	40-40349J02	SWITCH, micro: audio
J10	30-40799P25	CABLE, "A" lead: to cassette	S303	40-42625P01	SWITCH, micro: B+ 8-track-cassette
J12	* 9-40854P02	JACK, female	S304	*40-40130U01	SWITCH, push: program
PL1	65-42954P01	BULB, stereo ind.	S305, S306	40-41223P01	SWITCH, leaf
PL2	65-43447J01	BULB, DIAL	S307-1, S307-3	*40-40347T01	SWITCH, slide: head & pilot light
PL3	65-43447J01	BULB, DIAL	S401	*40-43668P01	SELECTOR
PL301, PL302	65-42954P02	BULB, indicator: 6V 65mA	TRANSFORMERS		
INTEGRATED CIRCUITS					
IC101	51-44789J01 or 51-44789J02	TA7130P-B LIMITER-DET TA7130P-C (also requires R212, 22K, 6-129667)	T1, T51, T52, T101	24-43712J01 24-43814P01 24-43814P02 24-44795J01	FM IF AM (pnk) IF AM (yel) IF FM (blk)
IC201	51-40464P01 or 51-42908J01	HA1156W MC1310P	MECHANICAL PARTS		
IC301	51-42211P01	M51521L PRE-AMP	*84-43625P01	BOARD, Audio, plated (Less components)	
TRANSISTORS					
TR1	48-45315G01	2SC784 FM RF AMP	* 7-43796P01	BRACKET, AM-FM IF Panel	
TR2	48-43992J01	JSP7005 FM OSC	* 7-43775P01	BRACKET, tuner AM/FM	
TR3	48-43991J01	JSP7006 FM MIXER	* 7-43794P01	BRACKET, FM tuner board	
TR4	48-42191G01	2SC380-0 AM RF AMP	* 7-43993P01	BRACKET, transistor, audio amp board	
TR5	48-42191G01	2SC380-0 AM CONV	*15-43862P01	BUSHING, stereo bulb	
TR101	48-43991J01	JSP7006 FM IF	*30-44001P02	CABLE, input gray	
TR102	48-40170G01	2SC373 AM IF	*30-40799P19	CABLE, power green	
TR301- TR303	48-44578J01	2SC945L AMP	*27-44003P01	CHASSIS, front assy	
TR304	48-40662G05	2SD235 RELAY	*30-43803G04	CORD, dial	
TR401, TR402, TR403, TR404	48-40170G01	2SC373	*15-43787P01	COVER, radio	
TR405, TR406, TR407, TR408	48-43238G01	2SA495-Y	*15-43797P01	COVER, rear	
	48-40170G01	2SC373	* 1-43942P01	ESCUTCHEON, faceplate	
	48-43238G01	2SA495-Y	43-41691G01	INSULATOR, transistor	
	48-43238G01	2SA495-Y	14-40472G02	INSULATOR, transistor	

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NOTE: ALL PARTS LISTED ARE RECOMMENDED REPLACEMENT PARTS

REF. NO.	PART NUMBER	DESCRIPTION	REF. NO.	PART NUMBER	DESCRIPTION
MECHANICAL PARTS (CONTINUED)					
	*36-43785P01	KNOB, fader, bass, treble, bal., vol., select		* 1-43362A29	HARDWARE, installation
	*36-43784P01	KNOB, tuning		36-40063U02	KNOB, eject
	*35-44006P01	LENS, stereo		36-40063U01	KNOB, program
	2-40000G11	NUT, hex M2		36-40478T03	KNOB, slide
	2-40000G10	NUT, hex M7		*68-40501D36	OWNERS GUIDE
	* 2-40000G03	NUT, hex M8		* 9-40854J01	PLATE, phone jack; incl. jacks
	*52-43798P01	POINTER		3-40014G09	SCREW, mch; program sw. mtg. M3X0.5
	*49-43791P01	PULLEY		* 3-40011G78	SCREW, mch; SW mtg. M2.3X15
	* 1-43954P02	PUSHBUTTON, noise filter		3-40018G01	SCREW, tpg; PC board mtg.
	* 1-43954P01	PUSHBUTTON, power		42-544845	STRAP, mtg.
	*26-43792P01	REFLECTOR, lamp		1-43940P01	TRIM, plate: cassette
	*34-43793P01	SCALE, dial		1-43939P01	TRIM, plate: radio
	* 3-43997P03	SCREW, mch. M2.6X10 flat head		68-40511D13	WARRANTY FORM
	3-40011G84	SCREW, mch. M2.6X6 flat head	TAPE MECHANICAL PARTS (DECK ONLY)		
	* 3-40011G99	SCREW, mch. M3X5 BIND		49-40359T01	IDLER, drive wheel
	3-40014G07	SCREW, mch. M2X4 w/cap	15	1-40566T01	CAM, select assem.
	3-43852J02	SCREW, F.T. M2.5X5	18	1-40341T01	SOLENOID, plunger assem.
	* 3-40011G74	SCREW, mch. M2X5 flat	19	* 1-40567T01	LEVER, cam: slide assem.
	* 3-40014G15	SCREW, mch. M2X0.4X8	20	*41-40350T01	SPRING, cam lever
	3-40011G30	SCREW, mch. M2X6	21	*45-40410T01	LEVER, R/F
	3-40011G58	SCREW, mch. M2.6X4	37	59-41596P02	MOTOR, DC
	3-40011G21	SCREW, mch. M3X4	39	49-40436T01	PULLEY, motor: incl. set screws
	3-40011G18	SCREW, mch. M3X0.5X6	40	1-40574T01	BRACKET, reel drive: incl. shafts
	* 3-43992P04	SCREW, mch. M3X8	41	1-40429T01	REEL DRIVE, assem.
	3-40018G02	SCREW, tpg. M3X8	42	1-44200P02	BOARD, plated: lead switch complete
	3-44205G01	SCREW, set, tuner shaft (wrench 1.5MM)	43	49-40343G01	FLYWHEEL, incl. shaft
	* 3-40015G02	SHAFT, tuner	44	42-40367T01	BELT, drive
	*47-43790P01	SPACER, tuner shaft	46	* 7-40418T01	BRACKET, flywheel
	*43-43853P01	SPRING, dial cord	47	43-40406T01	BEARING, flywheel
	*41-43445J03	TUNER, AM-FM TB2AM710	48	*41-40347T03	SPRING, pul
	*70-43551P01	WASHER	49	1-40200T26	BOARD, plated: reverse complete
	4-40070G14	WASHER		84-43569P01	BOARD, plated: slide sw.
	4-40070G03	WASHER "C"		43-40582T01	BUSHING, R/F lever mtg.
	4-42091G05	WASHER "C" spacer ret.		88-43742P01	HEAD, playback
	4-42091G08			3-40011G33	SCREW, mch: M2.4(head mtg 1)
TAPE MECHANICAL PARTS (CABINET & CHASSIS)					
	*84-40131U02	BOARD, plated; micro sw. S301, 2		3-40011G57	SCREW, mch: M2.5(head mtg 1)
	43-43478J01	BUSHING, rubber; fast forward PL		3-40011G87	SCREW, mch: M2.8(B+ sw. mtg)
	*30-40799P25	CABLE, "A" lead (to radio)		* 3-40014G12	SCREW, mch: M2.6x5 (reverse board mtg)
	30-40799P18	CABLE, "A" lead (to 8-track)		3-40011G84	SCREW, mch: M2.6x6 (level R/F mtg)
	*30-44001P03	CABLE, input		3-40011G68	SCREW, mch: M2.6x5 (reel drive brkt. mtg)
	30-43183P02	CABLE, spkr.: left, 5-1/2"		26-40362T01	SHIELD, plate: motor mtg.
	30-43183P01	CABLE, spkr.: right, 5-1/2"		*43-44308J01	SPACER, washer: motor mtg.
	* 1-40074U01	ESCUTCHEON, front: inc. tape door		40-42625P01	SWITCH, micro: B+ 8-track/cassette
				40-40347T01	SWITCH, slide
				4-42091G12	WASHER, "C": idler drive wheel
				4-42091G06	WASHER, "C": pulley wheel
				4-42091G11	WASHER, "C": lever cam slide
				* 4-40075G06	WASHER, "C": reel drive

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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.

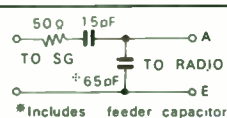


Fig. 1 Antenna Pad

	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 maximum 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. 10.7MHz
	⑨	"	"	"	"	L152	

● 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.

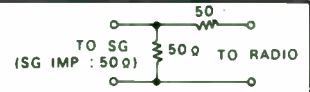


Fig. 3 Antenna Pad

	STEP	GENERATOR FREQUENCY	RADIO-DIAL SETTING	SIGNAL FEED POINT	INDICATOR CONNECTION	ADJUST	REMARKS
FM RF	⑩	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 ⑩, adjust lower frequency at 87.0 MHz. The upper frequency will be within 108 ~ 110 MHz, because of design characteristics. It is nonadjustable. 						

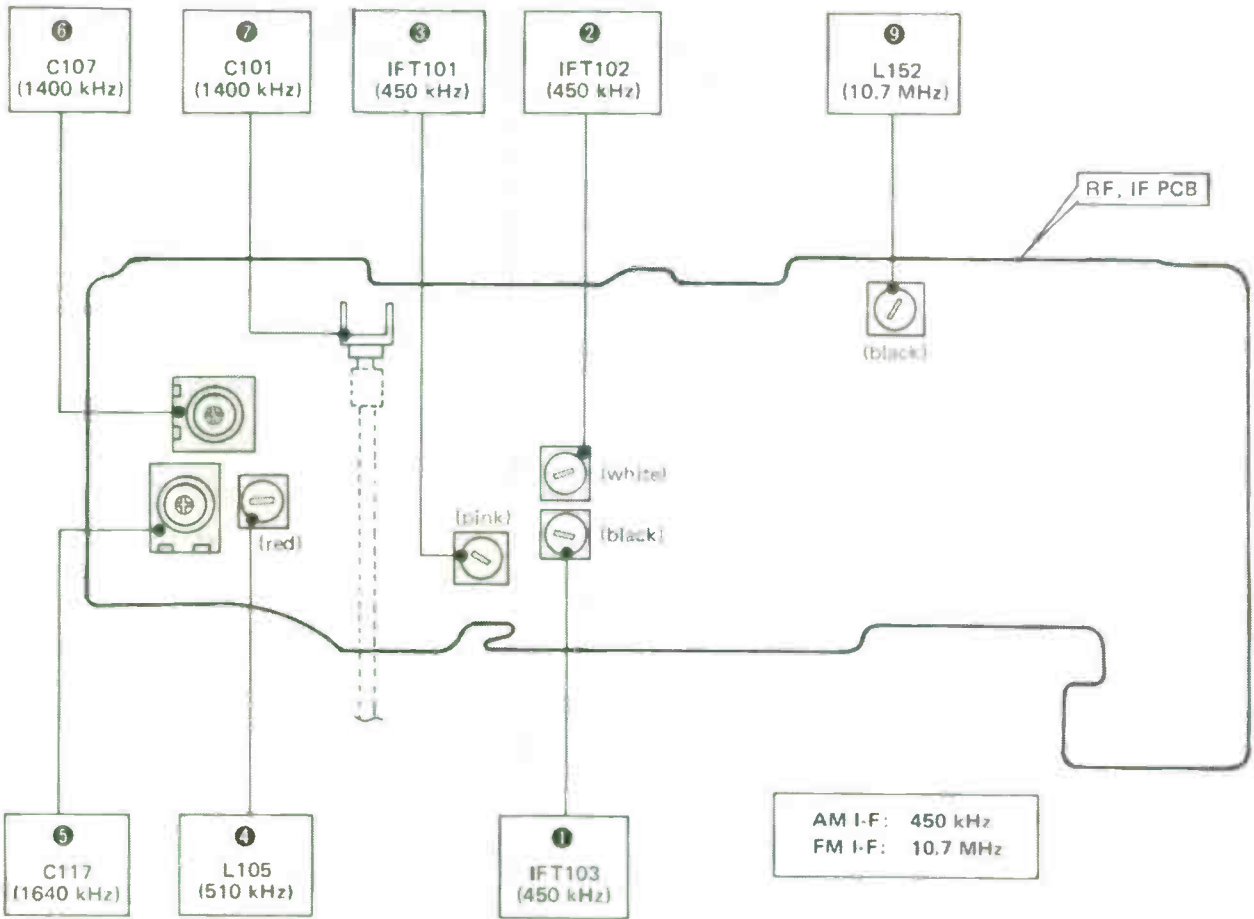
MULTIPLEX ALIGNMENT USING FM SIGNAL GENERATOR AND STEREO SIGNAL GENERATOR

- 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	⑪	No signal input	Frequency counter to Test Point ①, low side to ground.	VR552	Adjust to 19 kHz ± 30 Hz.
	⑫	19 kHz, 400 Hz (Right Channel)	VTVM to left speaker terminals.	VR551	Adjust for minimum.
		19 kHz, 400 Hz (Left Channel)	VTVM to right speaker terminals.		Adjust for minimum.
<ul style="list-style-type: none"> ● Repeat steps two or three times. 					

- The test point ① is terminal No. 12 of IC551.

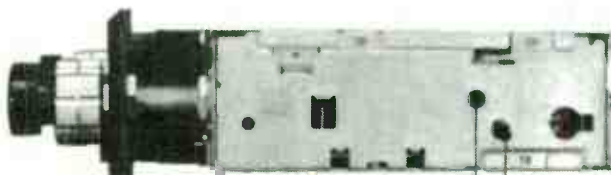
ALIGNMENT POINTS



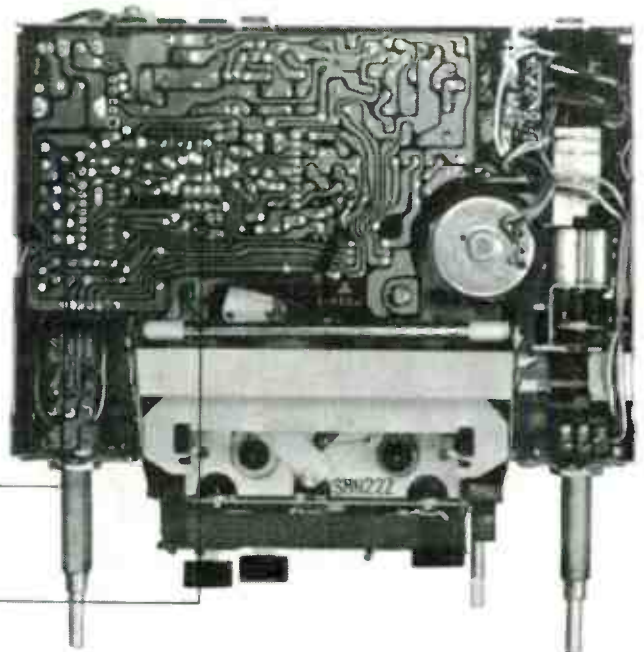
Numbers in ● are indicated ALIGNMENT STEPS.

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

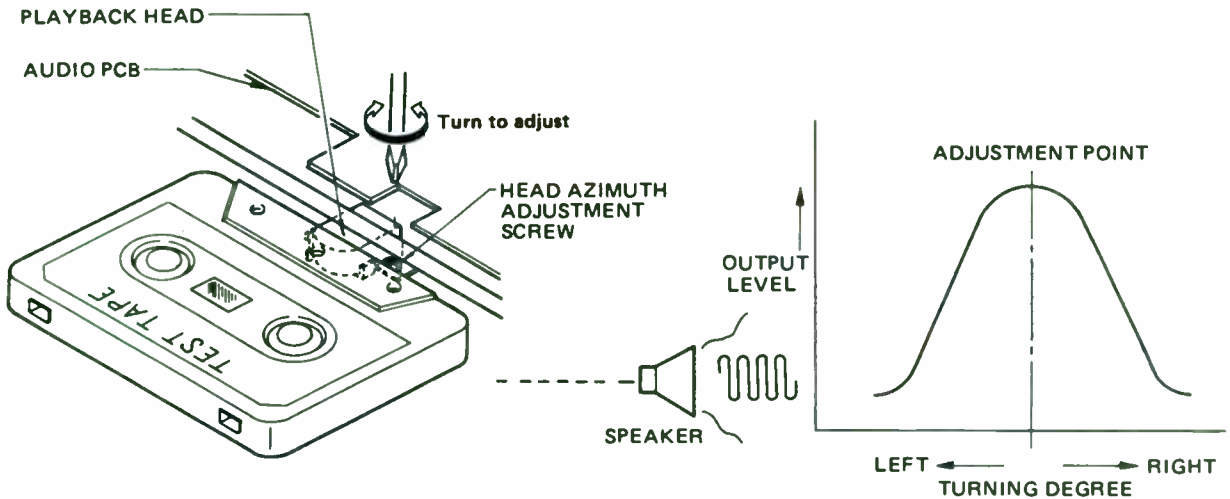
In case of crosstalk, poor high frequency response, or head replacement, adjust the head azimuth.

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.

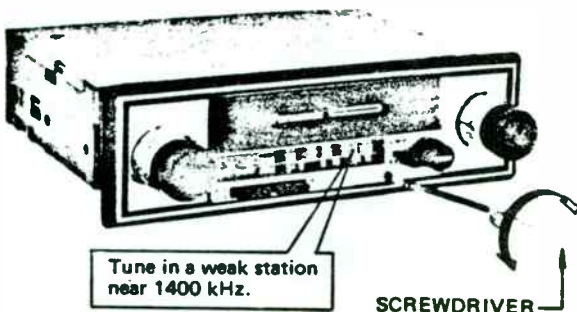


ANTENNA TRIMMER ALIGNMENT

The antenna trimmer alignment can be made without removing any parts.

To adjust the antenna trimmer C101, tune in a weak station near 1400 kHz.

Insert a small screwdriver through the escutcheon as shown below, and turn clockwise or counterclockwise for maximum output.



NORMAL CARE AND MAINTENANCE

Tape Player Maintenance

After many hours of operation, it is advisable to clean the oxide residue from the tape head and pinch roller ass'y to obtain superior performance from the player.

Oxide accumulated on the tape head and pinch roller ass'y may cause tape hiss and malfunction.

The more often the player is operated, the more often it should be cleaned.

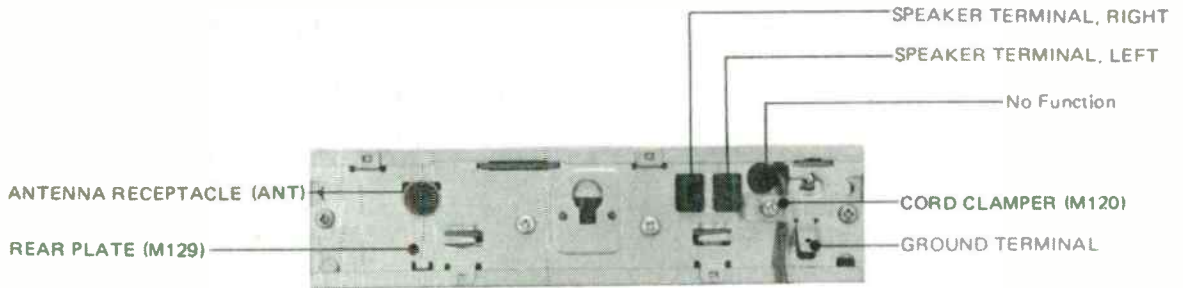
Cleaning Tape Head

To clean the tape head, open the cassette door and clean the residue from the head, with a cotton swab dampened with isopropyl (rubbing) alcohol.

Cleaning Pinch Roller

To clean the pinch roller ass'y, turn the motor on by depressing the charge plate ass'y. Clean the pinch roller ass'y with a cotton swab dampened with alcohol.

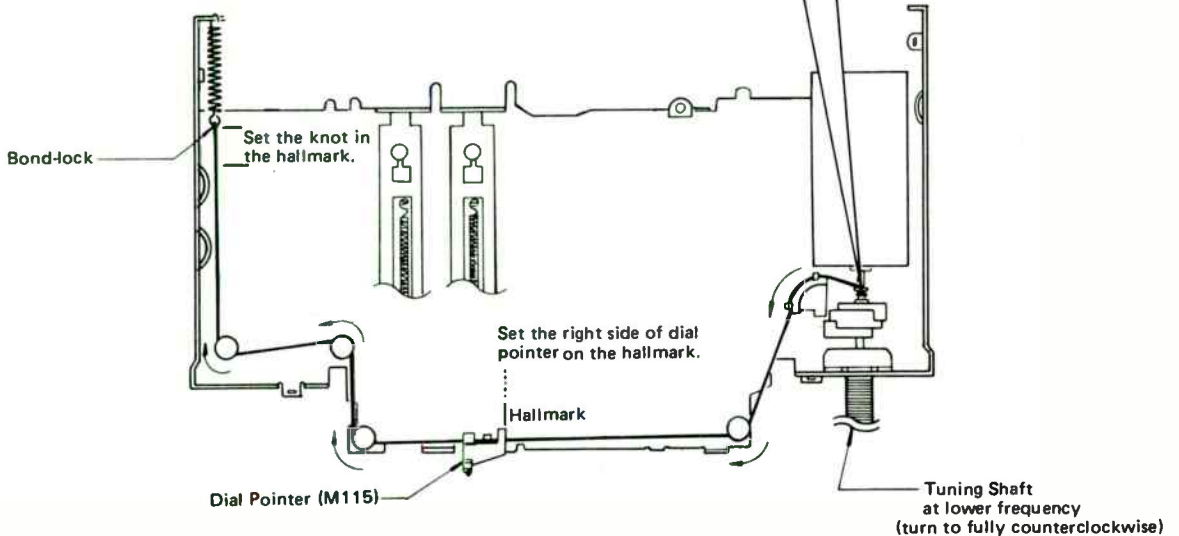
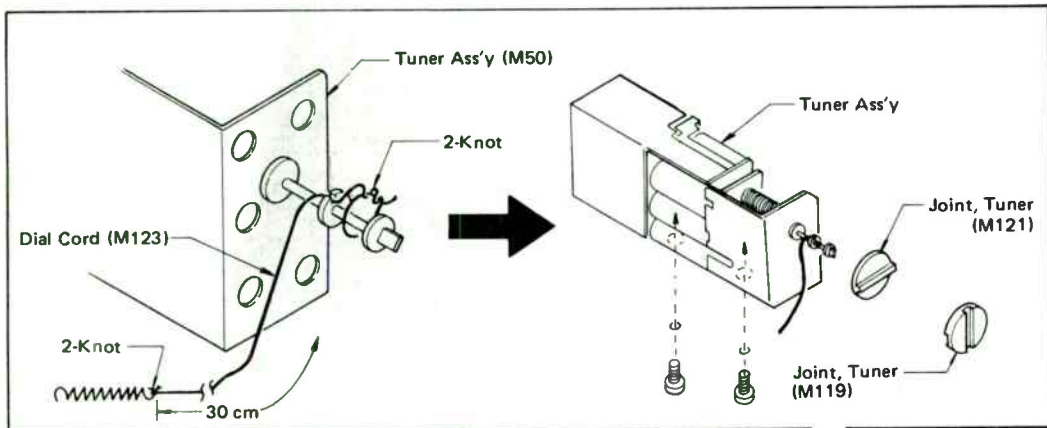
REAR VIEW



DIAL CORD STRINGING GUIDE

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

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



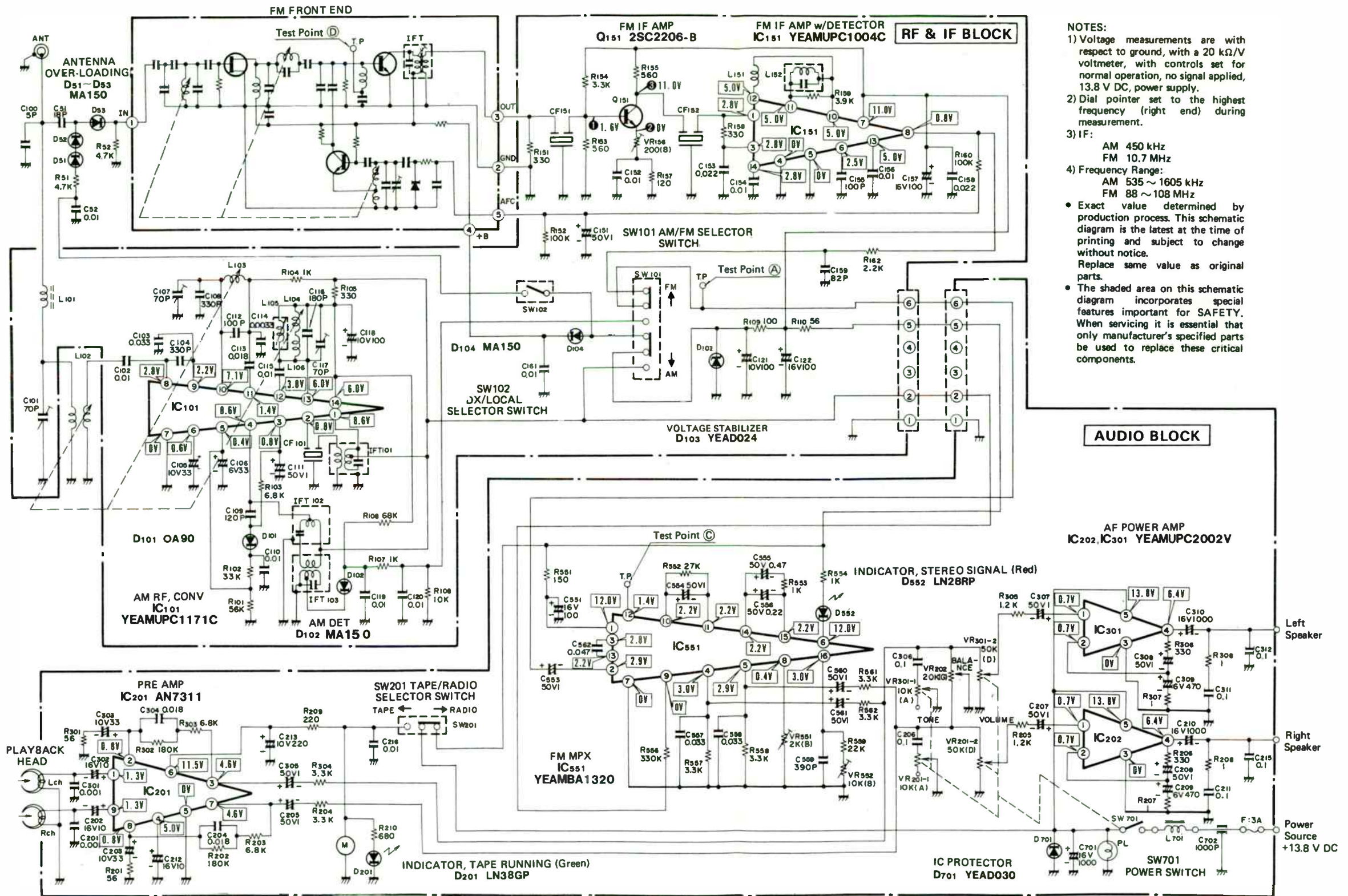
Replacement Parts List Model NOs. CQ-6800EU EC

NOTES

- Be sure to make your order of replacement parts according to this list.
- Components identified by shaded area have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
- 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)	X8B1C30NR1	Fuse 3 A	1
	(2 A)	YEAL24001L	Pilot Lamp	1
	(4 C)	YEA A10019A	Antenna Receptacle	1
	(1 B)	YEF A01347A	Chassis Ass'y	1
	(4 C)	YEF A03361	Upper Cover	1
	(1 C)	YEF A05191	Bottom Cover	1
	(1 B)	YEF X021784A	Mounting Bracket, Pinch Fixing	2
	(1-B 3 A)	YEF L01060	Spacer, Volume	2
	(1 B)	YEJ N01041	Nut, Hexagon	2
	(2 B)	YEF X046261A	Lever, AM-FM Selector, DX LOCAL Selector	2
	(2 B)	YEF X005419	Spring	2
	(2 B)	YEF E 10257	Button, AM-FM Selector, DX LOCAL Selector	2
	(2 C)	YEF X009075	Joint, Switch	2
	(1-B)	YEF E 10258	Button, Eject	1
	(3-A)	YEF X021785	Mounting Bracket, Deck	1
	(1 A)	YEF C02634	Escutcheon Ass'y	1
	(2 A)	YEF J10241	Back Plate	1
	(2-A)	YEF H01190	Dial Pointer	1
	(2 A)	YEF R04082	Illumination Cap	1
	(2 A)	YEF V04006A	Shade Case	1
	(2 B)	YEF H07041	Guide, Dial Cord	1
	(2 C)	YEF X009076	Joint, Tuner	1
	(4-C)	YEF X007150	Cord Clamper	1
	(2 C)	YEF X014009	Joint, Tuner	1
	(2 A)	YEF X021786	Mounting Bracket, LED	1

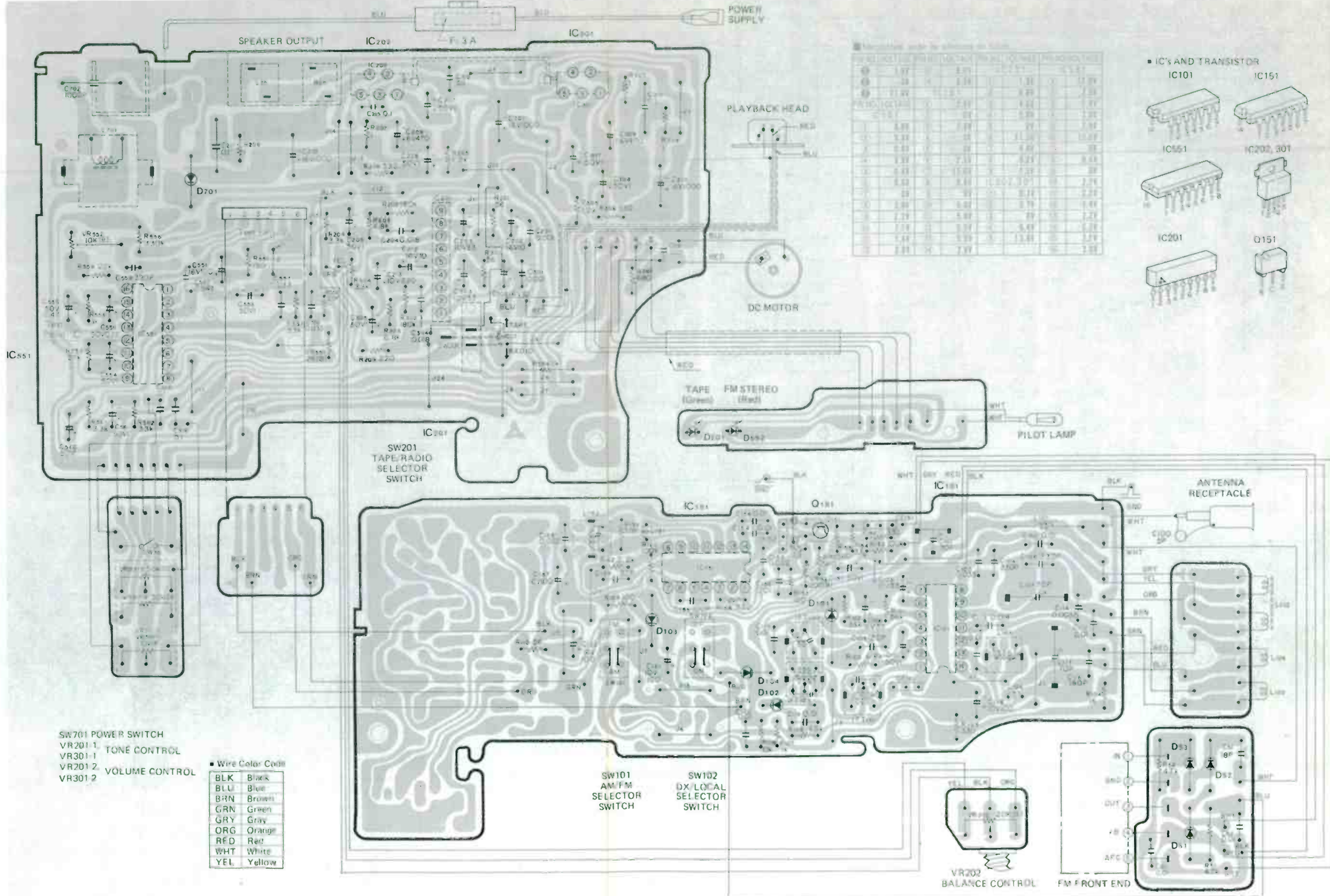
Ref. No.	Part No.	Part Name & Description	Pcs Set	Remarks
(2 A)	YEF H04008	Dial Cord	1	
(2 B)	YEF X005420	Spring, Dial	1	
(2 B)	YEF X999199	Shaft, Antenna Trimmer Alignment	1	
(2 C)	YEF X021793	Mounting Bracket, IC	1	
(4-B)	YEAT03206	Terminal	1	
(4 A)	YEA J01330A	Power Supply Cord (w/Fuse)	1	
(4 C)	YEF A08055A	Rear Plate	1	
(2 A) (3-C)	YEA J07292	5P Cord	1	
	XTB3 + 6FFXS	⊕ Screw, Taplite 3mmø x 6mm	6	
	XSB3 + 4FXS	⊕ Screw, Blind 3mmø x 4mm	2	
	XYN3 + 6FFXS	⊕ Screw w/Washer, 3mmø x 6mm	2	
	XYN26 + C5FXS	⊕ Screw w/Washer, 2.6mmø x 5mm	2	
	XSB3 + 8FXS	⊕ Screw, Blind 3mmø x 8mm	1	
	XYN3 + F10FXS	⊕ Screw w/Washer, 3mmø x 10mm	1	
	XSB3 + 5FXS	⊕ Screw, Blind 3mmø x 5mm	2	
(2 C)	YEF X07192	Cord Clamper	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.

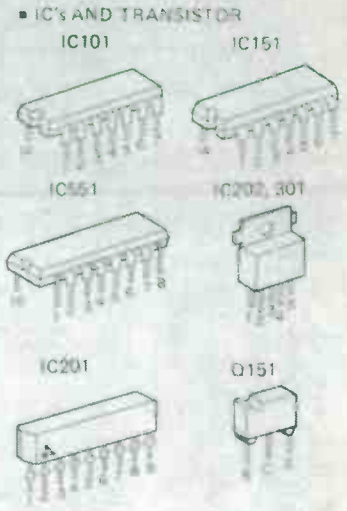
R	51	52		102	103	104	105	106	108	151	153	155	157	158	109	110	159	160	306	307												
	301	201	302	303	202	203	209	304	210	551	554	555	556	552	557	558	553	554	561	305	206	308	207	208								
C	100	51	52	102	103	104	108	112	113	114	115	116	118	119	120	161	151	152	153	154	122	159	155	156	157	158	308	309	208	311	312	
	301	302	304	105	106	109	110	111	213	305					216	551	554	555	556	555	560	306					307	208	311	312		
	201	202	203	212	204	205		205								553	562	557	558	556	559	561	206				207	701	209	211	702	215

Panasonic CQ-6800EC/EU



Part Number, Description, and other specifications table.

Part No.	Description	Quantity	Remarks
IC101	IC	1	
IC151	IC	1	
IC551	IC	1	
IC201, 301	IC	2	
Q151	Transistor	1	



- SW701 POWER SWITCH
 - VR201-1 TONE CONTROL
 - VR301-1
 - VR201-2 VOLUME CONTROL
 - VR301-2
- Wire Color Code
- | | |
|-----|--------|
| BLK | Black |
| BLU | Blue |
| BRN | Brown |
| GRN | Green |
| GRY | Gray |
| ORG | Orange |
| RED | Red |
| WHT | White |
| YEL | Yellow |

Ref. No.	Part No.	Part Name & Description	Pcs Set	Remarks	Ref. No.	Part No.	Part Name & Description	Pcs Set	Remarks
TAPE DECK PARTS (YEF004161Z) -1EU									
HEAD									
H	(4-B)	YEAH1542YA	Playback Head	1					
MECHANICAL PARTS									
M201	(3-C)	YASAK01035	DC Motor Ass'y (w/Pulley)	1					
M202	(4-B)	YEFX018025A	Head Base Ass'y	1					
M203	(4-C)	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)	YEPDFX079	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)	YEPDFX080	SW Selector Plate Ass'y	1					
M212	(2-B)	YEPDFX083	Idler Arm Ass'y	1					
M213	(2-B)	YEPDFX085	FR Lever Ass'y	1					
M214	(3-A)	YEFX046231	Retainer Plate (A) Sub Ass'y	1					
M215	(4-A)	YEFX030020B	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)	YEPDFX084	Retainer Plate (B) Ass'y	1					
M222	(3-C)	YEFK06036A	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					
M226	(4-C)	YEPDFX082	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)	YEFX005346	REW Spring	1					
M236	(2-A)	YEFX01400B	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)	YEFX006365	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					

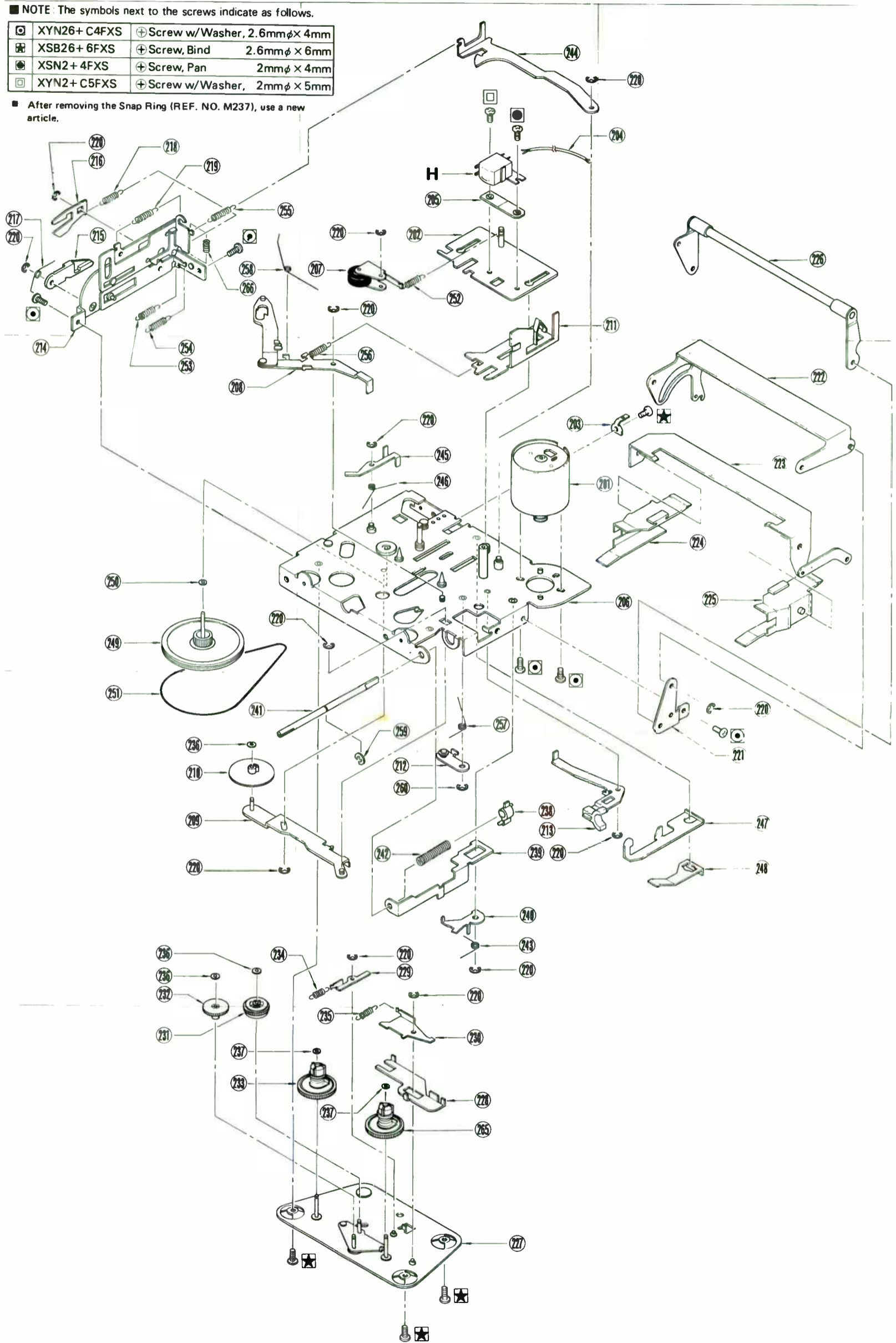
EXPLODED VIEW(TAPE DECK)

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.



Ref. No.	Part No.	Part Name & Description	Pcs Set	Remarks
CAPACITORS				
RF & IF BLOCK				
C51	YECCD1H180KM	18 PF 50WV ±10% Ceramic	1	
C52	ECKD1H103PF	0.01 MFD 50WV +100,-0% Ceramic	1	
C102	YEQN1H103M	0.01 MFD 50WV ±20% Polyester	1	
C103	YEQN1H333M	0.033 MFD 50WV ±20% Polyester	1	
C104	YECCD1H331JM	330 PF 50WV ±5% Ceramic	1	
C105	ECEA1AS330	33 MFD 10WV Electrolytic	1	
C106	ECEA0JS330	33 MFD 6WV Electrolytic	1	
C108	YECCD1H331JM	330 PF 50WV ±5% Ceramic	1	
C109	YECCD1H121KM	120 PF 50WV ±10% Ceramic	1	
C110	YEQN1H103M	0.01 MFD 50WV ±20% Polyester	1	
C111	ECEA1HS010	1 MFD 50WV Electrolytic	1	
C112	YECCD1H101KM	100 PF 50WV ±10% Ceramic	1	
C113	YEQN1H183M	0.018 MFD 50WV ±20% Polyester	1	
C114	YEQN1H332K	0.0033 MFD 50WV ±10% Polyester	1	
C115	YEQN1H103M	0.01 MFD 50WV ±20% Polyester	1	
C116	YECCD1H181JS	180 PF 50WV ±5% Ceramic	1	
C118	ECEA1AS101	100 MFD 10WV Electrolytic	1	
C119	YEQN1H103M	0.01 MFD 50WV ±20% Polyester	1	
C120	YEQN1H103M	0.01 MFD 50WV ±20% Polyester	1	
C121	ECEA1AS101	100 MFD 10WV Electrolytic	1	
C122	ECEA1CS101	100 MFD 16WV Electrolytic	1	
C151	ECEA1HS010	1 MFD 50WV Electrolytic	1	
C152	ECKD1H103PF	0.01 MFD 50WV +100,-0% Ceramic	1	
C153	YEQN1H223M	0.022 MFD 50WV ±20% Polyester	1	
C154	ECKD1H103PF	0.01 MFD 50WV +100,-0% Ceramic	1	
C155	YECCD1H101KM	100 PF 50WV ±10% Ceramic	1	
C156	ECKD1H103PF	0.01 MFD 50WV +100,-0% Ceramic	1	
C157	ECEA1CS101	100 MFD 16WV Electrolytic	1	
C158	YEQN1H223M	0.022 MFD 50WV ±20% Polyester	1	
C159	YECCD1H820KM	82 PF 50WV ±10% Ceramic	1	

Ref. No.	Part No.	Part Name & Description	Pcs Set	Remarks
C161	ECKD1H103PF	0.01 MFD 50WV +100,-0% Ceramic	1	
MAIN UNIT				
C100	YECCD1H050DM	5 PF 50WV ±0.5 PF Ceramic	1	
AUDIO BLOCK				
C201	YEQN1H102K	0.001 MFD 50WV ±10% Polyester	1	
C202	ECEA1CS100	10 MFD 16WV Electrolytic	1	
C203	ECEA1AS330	33 MFD 10WV Electrolytic	1	
C204	YEQN1H183M	0.018 MFD 50WV ±20% Polyester	1	
C205	ECEA1HS010	1 MFD 50WV Electrolytic	1	
C206	YECCD12104M	0.1 MFD 12WV ±20% Ceramic	1	
C207	ECEA1HS010	1 MFD 50WV Electrolytic	1	
C208	ECEA1HS010	1 MFD 50WV Electrolytic	1	
C209	ECEA0JS471	470 MFD 6WV Electrolytic	1	
C210	ECEA16V1000Z	1000 MFD 16WV Electrolytic	1	
C211	EQM1H104MZ	0.1 MFD 50WV ±20% Polyester	1	
C212	ECEA1CS100	10 MFD 16WV Electrolytic	1	
C213	ECEA1AS221	220 MFD 10WV Electrolytic	1	
C215	YECCD12104M	0.1 MFD 12WV ±20% Ceramic	1	
C216	YECKD05103M	0.01 MFD 50WV ±20% Ceramic	1	
C301	YEQN1H102K	0.001 MFD 50WV ±10% Polyester	1	
C302	ECEA1CS100	10 MFD 16WV Electrolytic	1	
C303	ECEA1AS330	33 MFD 10WV Electrolytic	1	
C304	YEQN1H183M	0.018 MFD 50WV ±20% Polyester	1	
C305	ECEA1HS010	1 MFD 50WV Electrolytic	1	
C306	YECCD12104M	0.1 MFD 12WV ±20% Ceramic	1	
C307	ECEA1HS010	1 MFD 50WV Electrolytic	1	
C308	ECEA1HS010	1 MFD 50WV Electrolytic	1	
C309	ECEA0JS471	470 MFD 6WV Electrolytic	1	
C310	ECEA16V1000Z	1000 MFD 16WV Electrolytic	1	
C311	EQM1H104MZ	0.1 MFD 50WV ±20% Polyester	1	

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Ref. No.	Part No.	Part Name & Description	Pcs Set	Remarks
C312	YECCD12104M	0.1 MFD 12WV ±20% Ceramic	1	
C551	ECEA1CS101	100 MFD 16WV Electrolytic	1	
C553	ECEA1HS010	1 MFD 50WV Electrolytic	1	
C554	ECEA1HS010	1 MFD 50WV Electrolytic	1	
C555	ECEA50MR47	0.47 MFD 50WV Electrolytic	1	
C556	ECEA50MR22	0.22 MFD 50WV Electrolytic	1	
C557	YEQN1H333M	0.033 MFD 50WV ±20% Polyester	1	
C558	YEQN1H333M	0.033 MFD 50WV ±20% Polyester	1	
C559	ECSQ1391JZ	390 PF 125WV ±5% Polystyrene	1	
C560	ECEA1HS010	1 MFD 50WV Electrolytic	1	
C561	ECEA1HS010	1 MFD 50WV Electrolytic	1	
C562	YEQN1H473M	0.047 MFD 50WV ±20% Polyester	1	
C701	ECEA16V1000Z	1000 MFD 50WV Electrolytic	1	
C702	YECCL510387	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	

Ref. No.	Part No.	Part Name & Description	Pcs Set	Remarks
R153	ERD18VJ561	560 OHM 1/8W ±5% Carbon	1	
R154	ERD18VJ332	3.3k OHM 1/8W ±5% Carbon	1	
R155	ERD18VJ561	560 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	ECV12W70X41	70 PF	Trimmer	1	
C107, 117	YECTTC10S700	70 PF	Trimmer	2	

VARIABLE RESISTORS

VR201, 301	EWKJSBS90440	50k OHM (D)	Volume Control	1	
SW701		10k OHM (A)	Tone Control with Power Switch		
VR202	EWKYYAS14G24	20k OHM (G)	Balance Control	1	
VR551	EVNK4AA00B23	2k OHM (B)	Semi-fixed	1	
VR552	EVNK4AA00B14	10k OHM (B)	Semi-fixed	1	
VR156	EVNJ0AA00B22	200 OHM (B)	Semi-fixed	1	

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	Choke 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	YEAU01074A	AM/FM Tuner	1	

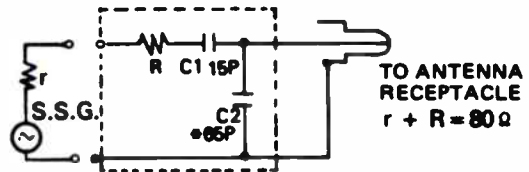
Ref. No.	Part No.	Part Name & Description	Pcs Set	Remarks
ACCESSORIES				
A101	YEFE07108	Knob, Tuning and Volume Control	2	
A102	YEFE08057	Knob, Tone Control and Balance Control	2	
A103	YEFC05143	Trim Plate	1	
A104	YFEG04004	Supporting Strap	1	
A105	YEFX02182B	Mounting Bracket	2	
A106	YEFX999195	Gasket	1	
A107	YEFX999083	Back-Up Plate	2	
A108	YEFE12002	Knob, Ornament	2	
A109	YEAJ03319	Speaker Extension Cord	1	
A110	YEP0FZ972	Mounting Screw Kit, Main Unit	1	
	(YEJN01060)	(Nut, Hexagon)	(2)	
	(YEJN01041)	(Nut, Hexagon)	(2)	
	(YEW02008AW)	(Washer, Flat)	(2)	
	(YEW02019FX)	(Washer, Flat)	(2)	
	(YET01009)	(Hex. Screw, Tapping)	(1)	
	(YEV08011B)	(Mounting Screw)	(1)	
	(YEN01059)	(Nut, Hexagon)	(1)	
	(XWA5BFX)	(Washer, Spring 5mm)	(1)	
	(YEN03006)	(Nut, Spring)	(1)	
	(YEAT03152)	(Terminal)	(1)	
	(YEA0104B)	(Connector)	(4)	

Alignment Procedure

AM ALIGNMENT

● EQUIPMENT REQUIRED

- 1) AM signal generator: 450 – 1700 kHz
- 2) Dummy antenna : Refer to Fig. 7
- 3) Output meter : AC Volt meter
- 4) Power voltage : DC 13.8V



* Including the feeder capacity.

Figure 7. AM Dummy Antenna

● PROCEDURE

- 1) Connect output meter across speaker terminals.
- 2) Set volume control to maximum, and tone control to treble.
- 3) Connect signal generator to antenna receptacle through dummy antenna (Fig. 7).
- 4) Keep signal generator output low enough to prevent A.G.C. overload.
- 5) Set radio for AM reception.
- 6) Refer to Figs. 12 and 13. Follow steps listed in Tables I and II.

TABLE I. AM IF & RF ALIGNMENT USING AM SIGNAL GENERATOR

STEP	GENERATOR FREQUENCY	DIAL SETTING	INDICATOR CONNECTION	ADJUST	REMARKS
1.	455 kHz (400 Hz, 30% Mod)	Point of non-interference	Output meter across voice coil	T-402, T403	Adjust for maximum output
2.	520 kHz (400 Hz, 30% Mod)	Tune for min.	Output meter across voice coil	T-401	Adjust for maximum output
3.	1650 kHz (400 Hz, 30% Mod)	Tune for max.	Output meter across voice coil	CT-402	Adjust for maximum output
4.	1400 kHz (400 Hz, 30% Mod)	Tune to signal	Output meter across voice coil	CT-001 CT-401	Adjust for maximum output
5.	Repeat step 2, 3 and 4 until no further increase. Step 4 should be last step.				
6.	1000 kHz (400 Hz, 30% Mod)	Tune to signal	Connect output meter to point B on Vol. Contr. low side to ground	VR-401	Adjust VR401 for 25mV with input 74 dB (5mV)

When radio is installed in car or when is replaced, always adjust trimmer capacitor CT-001 for maximum output while receiving a weak station near 1400 kHz.

TABLE II. AM IF ALIGNMENT USING AM SWEEP GENERATOR

High side of 455 kHz sweep generator through 0.01 mfd to point A (Antenna receptacle A.J.), low side to ground.

STEP	DIAL SETTING	INDICATOR CONNECTION	ADJUST	REMARKS
1.	Point of non-interference	Vert amp. of scope to point B	T-402 T-403	Adjust T-402, T-403 for maximum gain as shown in Fig. 8

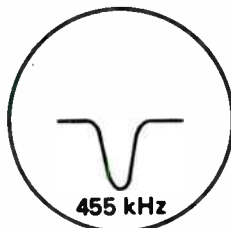


Figure 8.

FM ALIGNMENT

● EQUIPMENT

- 1) FM signal generator : 80 – 130 MHz
- 2) Dummy antenna : Refer to Fig. 9
- 3) Output meter : AC voltmeter
- 4) Power voltage : DC 13.8V.
- 5) FM sweep generator
- 6) Oscilloscope

● PROCEDURE

- 1) Connect output meter across speaker terminals.
- 2) Set volume control to maximum and tone control to treble.
- 3) Connect signal generator to antenna receptacle through dummy antenna (Fig. 9).
- 4) Set radio for FM reception.
- 5) Refer to Figs. 12 and 13. Follow steps listed in Tables III and IV.



Figure 9. FM Dummy Antenna. (Use Matching Pad if signal generator Z_s is other than 75 ohms.)

TABLE III. FM IF ALIGNMENT USING FM SWEEP GENERATOR

High side of sweep generator through 0.01 mfd to TP1, low side to ground.

STEP	GENERATOR FREQUENCY	DIAL SETTING	INDICATOR CONNECTION	ADJUST	REMARKS
7.	10.7 MHz	Point of non-interference	Vert amp. of scope to point B on Vol. Contr.; low side to ground	T-201	Detune T-201 until the waveform similar to Fig. 10 is obtained
8.	10.7 MHz	Point of non-interference	Vert amp. of scope to point B on Vol. Contr.; low side to ground	T-101	Adjust T-101 for maximum
9.	10.7 MHz	Point of non-interference	Vert amp. of scope to point B on Vol. Contr.; low side to ground	T-201	Adjust T-201 to place marker at center of crossover lines as shown in Fig. 11

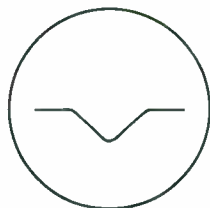


Figure 10.

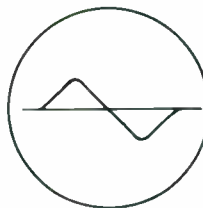


Figure 11.

TABLE IV. FM TUNER ALIGNMENT USING FM SIGNAL GENERATOR

STEP	GENERATOR FREQUENCY	DIAL SETTING	INDICATOR CONNECTION	ADJUST	REMARKS
10.	87 MHz 400 Hz Mod. 22.5 kHz dev.	Set at low end	Output meter across voice coil	C122	Adjust for maximum output.
11.	98 MHz 400 Hz Mod. 22.5 kHz dev.	Tune to signal	Output meter across voice coil	C105 C109	Adjust for maximum output
12.	98 MHz 400 Hz Mod. 22.5 kHz dev.	Tune to signal	Output meter across voice coil	VR-201	Adjust VR-201* for -3dB limiting sensitivity of 15dB or 5.6μV.
13.	98 MHz 400 Hz Mod. 22.5 kHz dev.	Tune to signal	Connect output meter to point B and low side to ground	VR-202	Adjust VR-202 for 25mV with input 54 dB or 500μV.

*Requires signal generator with calibrated output attenuator. VR201, as adjusted by factory, should not normally require further adjustment. VR201 may require adjustment if IF filters, transistors or IC are replaced. In which case VR201 is adjusted to give a limiting sensitivity, i.e. output, which at 5.6 μV, is 3dB below the output for a full limiting input.

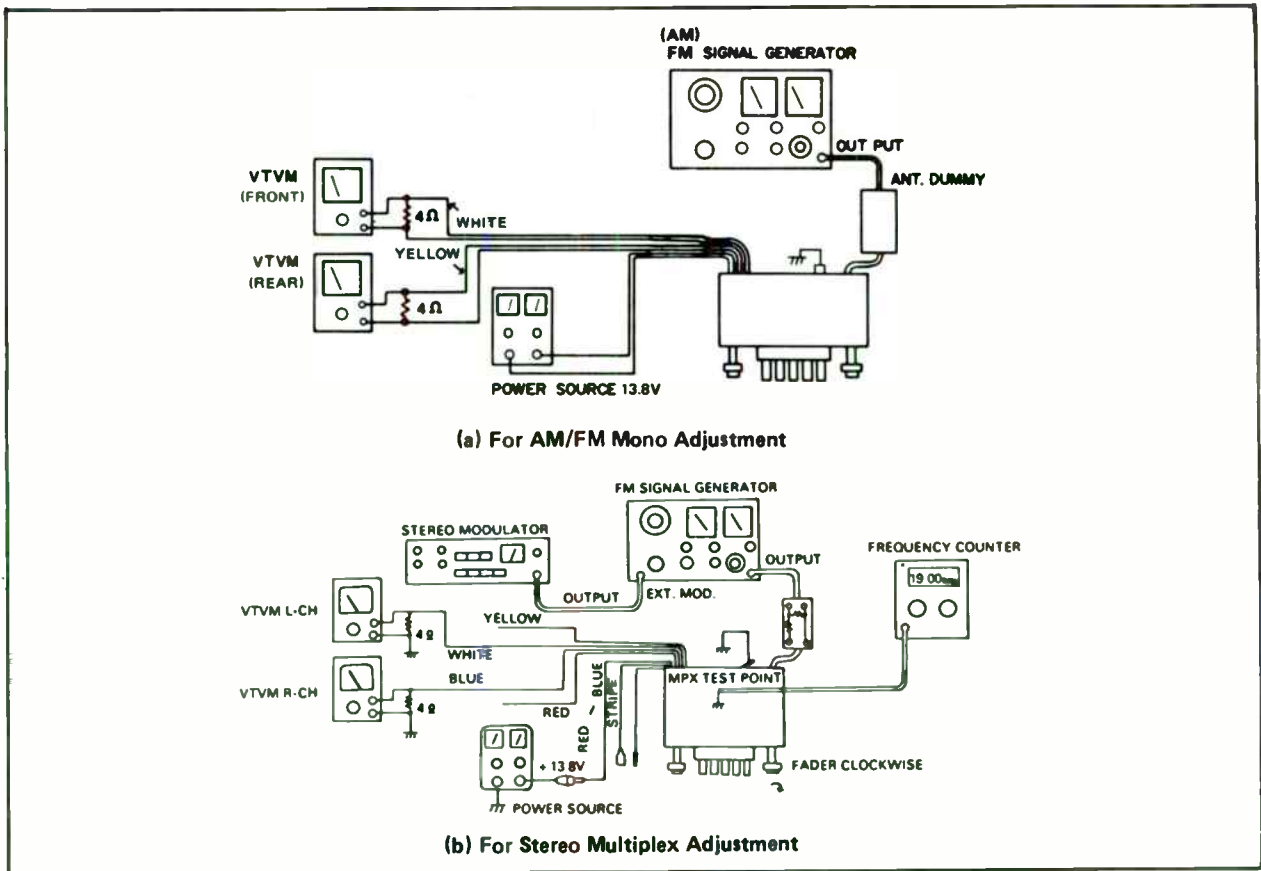


Figure 12. Test Equipment Connections

20C305 STEREO MULTIPLEX ALIGNMENT WITH STEREO SIGNAL GENERATOR AND FM SIGNAL GENERATOR

EQUIPMENT REQUIRED

- 1) FM Signal Generator : Signal frequency 98 MHz, signal output 54 dB
- 2) Stereo Signal Generator : Pilot signal 19 kHz, mod. 7.5 kHz dev. [Stereo Signal 400 Hz mod. 67.5 kHz dev.]
- 3) Oscilloscope or VTVM
- 4) Frequency Counter

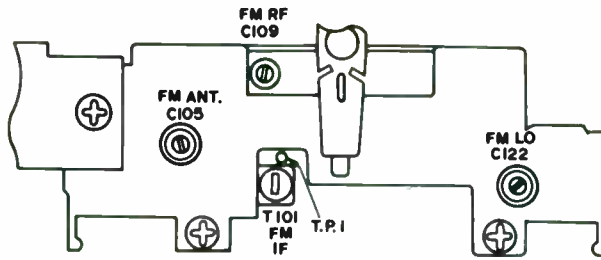
PROCEDURE

(FM RF and IF circuits should be in complete alignment)

- 1) Make connections as shown in Fig. 12, feeding modulated signal into radio antenna jack, and connecting frequency counter to MPX test point, TP2 (See Fig. 13c).
- 2) Set radio for FM reception and set dial to 98 MHz.
- 3) Set local/distance control to distance position.
- 4) Follow steps in Table V.
- 5) Use only enough input signal to give adequate output level.

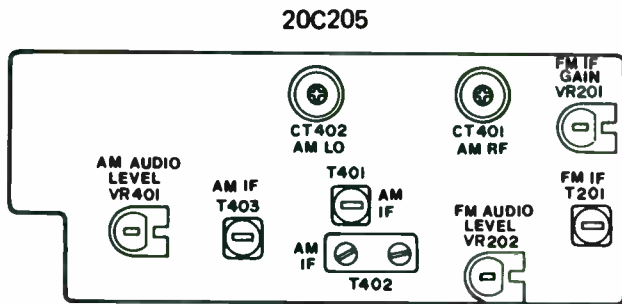
TABLE V. STEREO MPX ADJUSTMENT (20C305 ONLY)

STEP	STEREO SIGNAL	INDICATOR	ADJUSTMENT	REMARKS
14.	No-Signal	Connect frequency counter to TP2 on Main PCB	VR-302	Adjust VR302 for 19.00 kHz at frequency counter
15.	R (or L) only	Output meter across LEFT (RIGHT) channel voice coil	VR301	Adjust VR301 for minimum LEFT (RIGHT) output



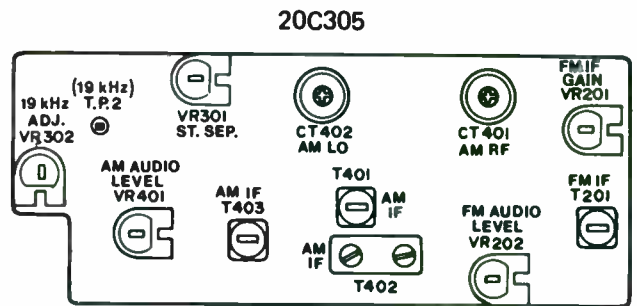
TUNER (FM FRONT-END)

(A)



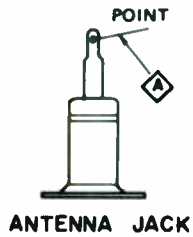
MAIN P.C.B. (COMPONENT VIEW)

(B)



MAIN P.C.B. (COMPONENT VIEW)

(C)



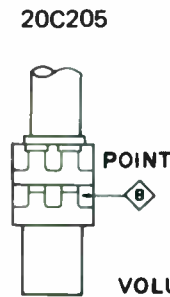
ANTENNA JACK

(D)



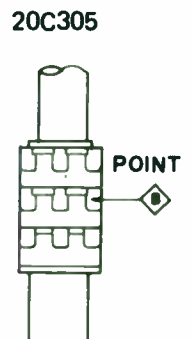
ANTENNA TRIMMER

(E)



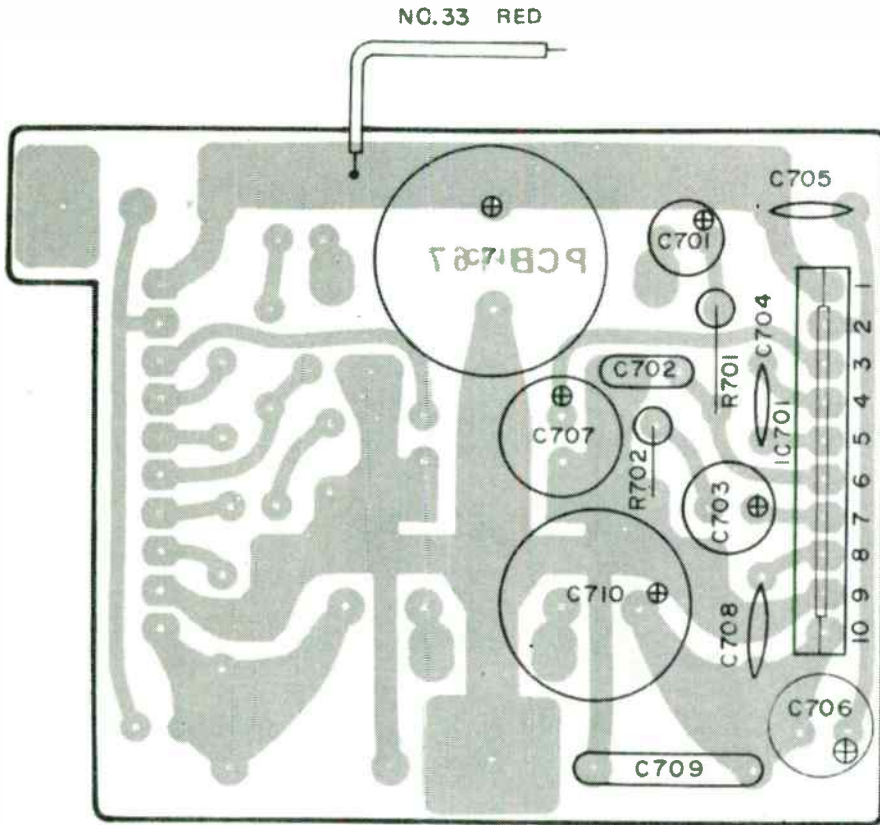
VOLUME CONTROL

(F)

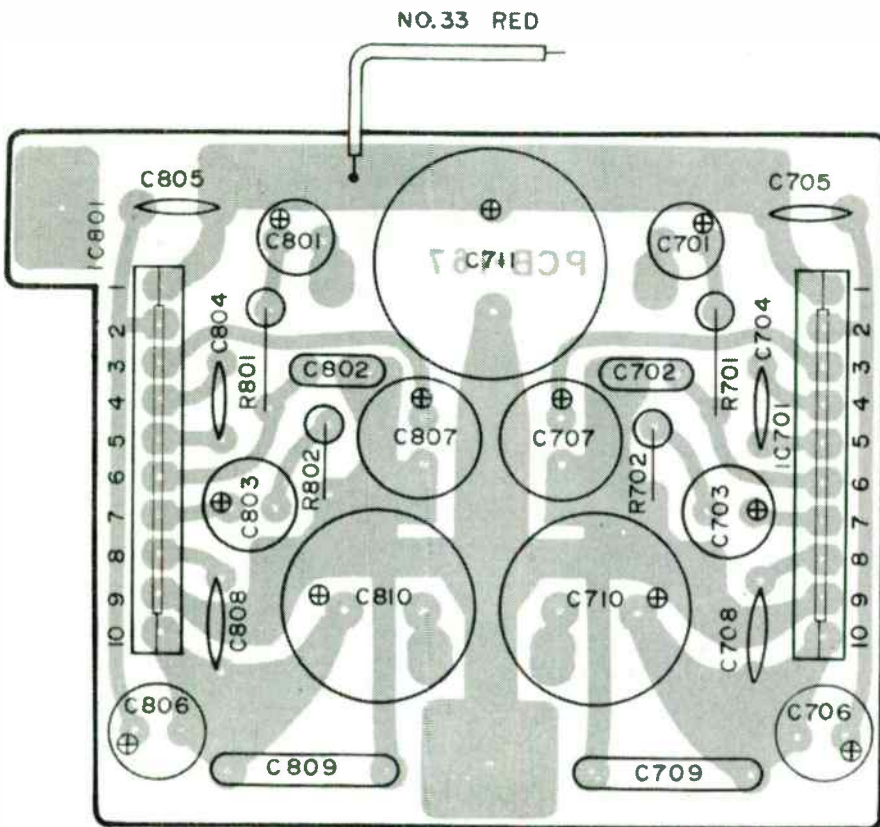
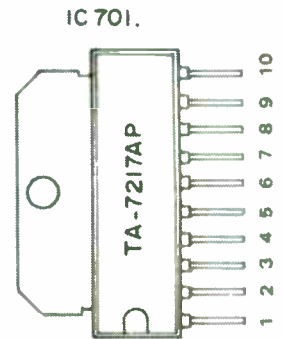


(G)

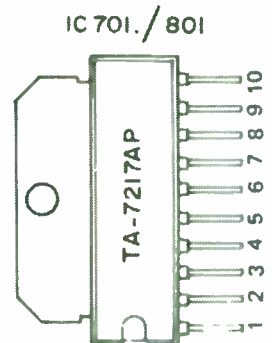
Figure 13. RF/IF Test Points and Adjustments



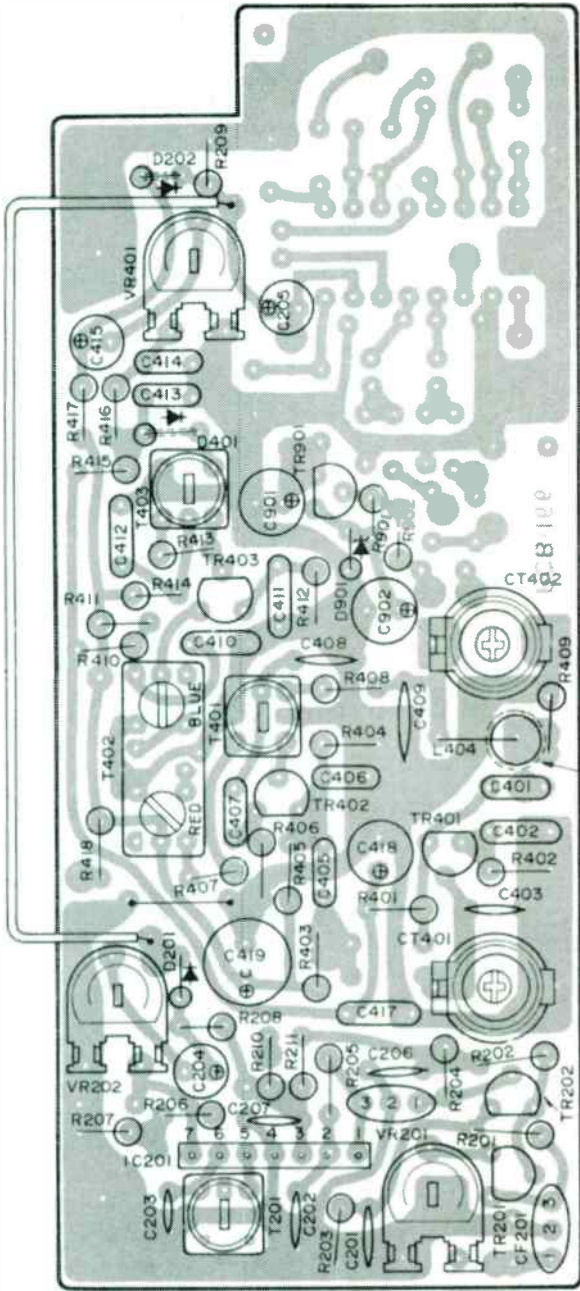
20C205 Audio Printed Circuit Board



20C305 Audio Printed Circuit Board

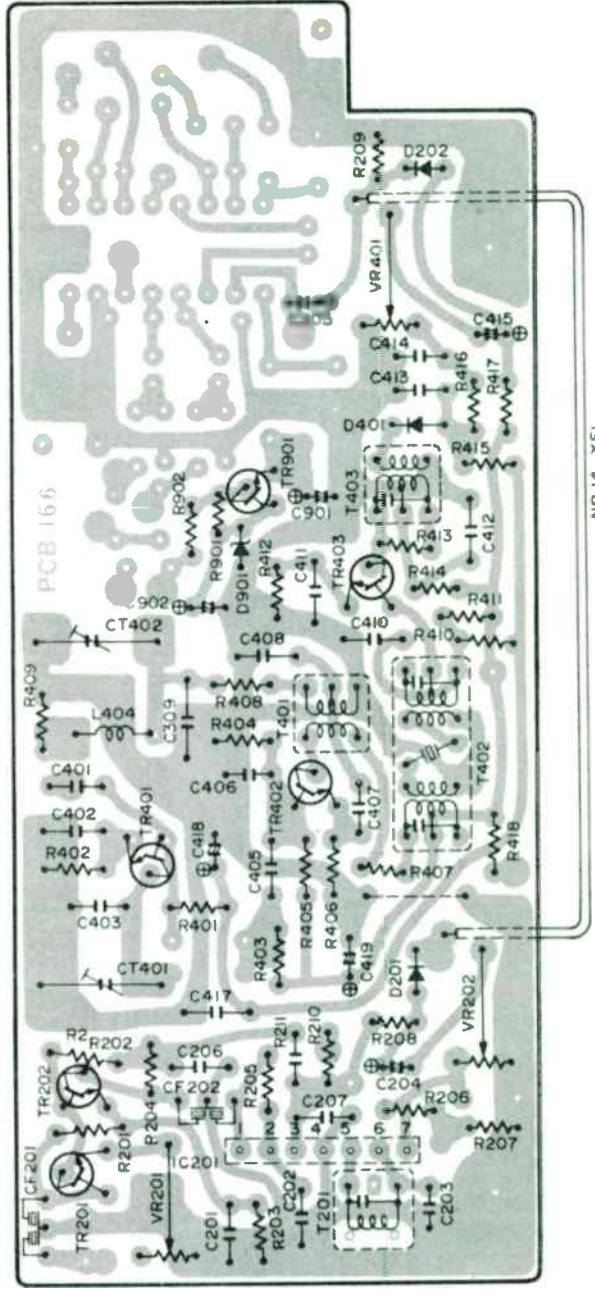


NO.14 YEL



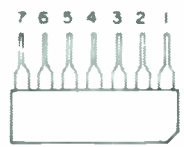
COMPONENT SIDE

VINYL TUBE $\phi 5 \times 10 \text{ m/m}$



CIRCUIT SIDE

NO.14 YEL



IC 201
TA-7130P (C)
(OR μ PC-1028H (F))



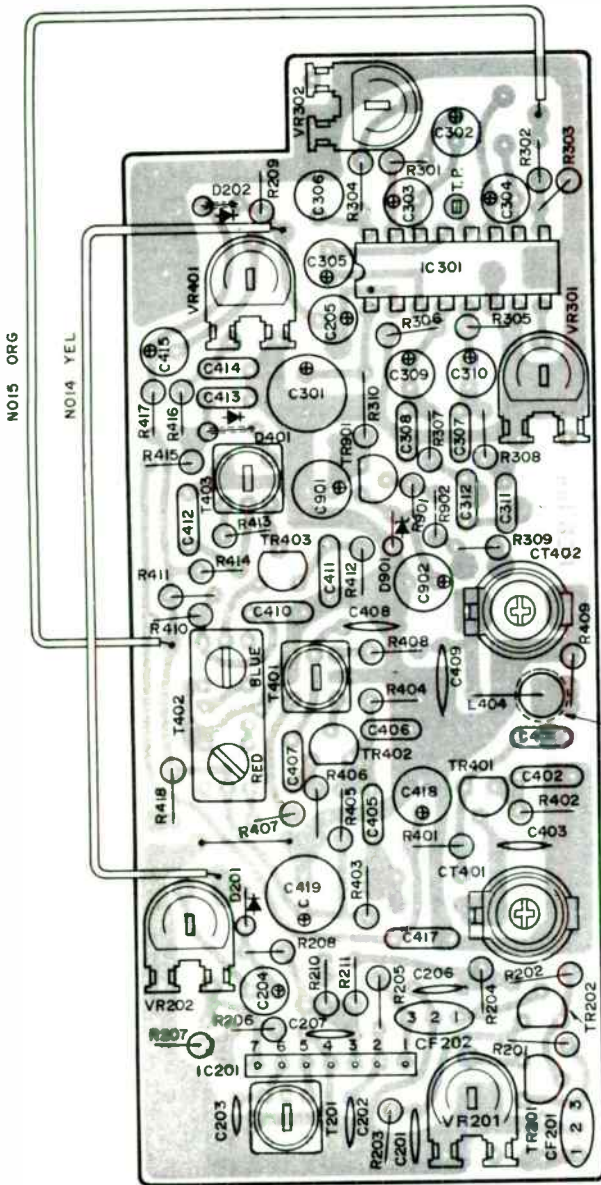
CF 201, 202

- ① INPUT
- ② G
- ③ OUTPUT

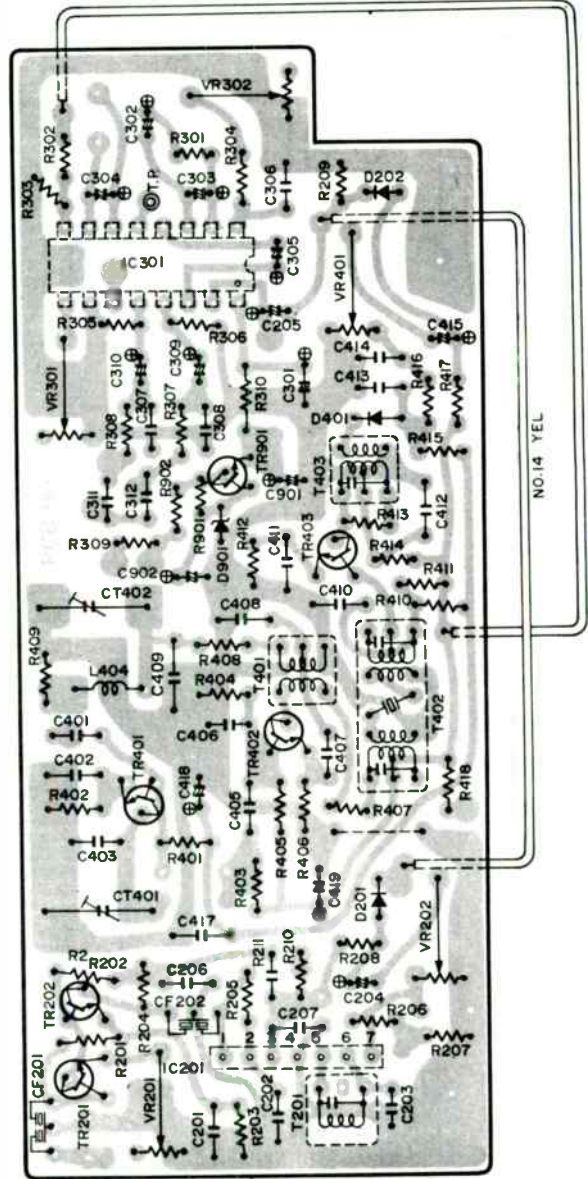


- TR 201 (2SC1675)
- TR 202 (2SC1675)
- TR 401 (2SC2000)
- TR 402 (2SC1675)
- TR 403 (2SC1675)
- TR 901 (2SC945)

20C205 Main Printed Circuit Board

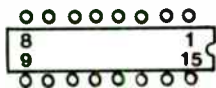


VINYL TUBE Ø5x10m/m



COMPONENT SIDE

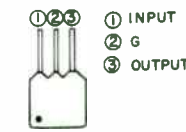
CIRCUIT SIDE



IC 301
(BA-1320)



IC 201
TA-7130P (C)
(OR µPC-1028H (F))

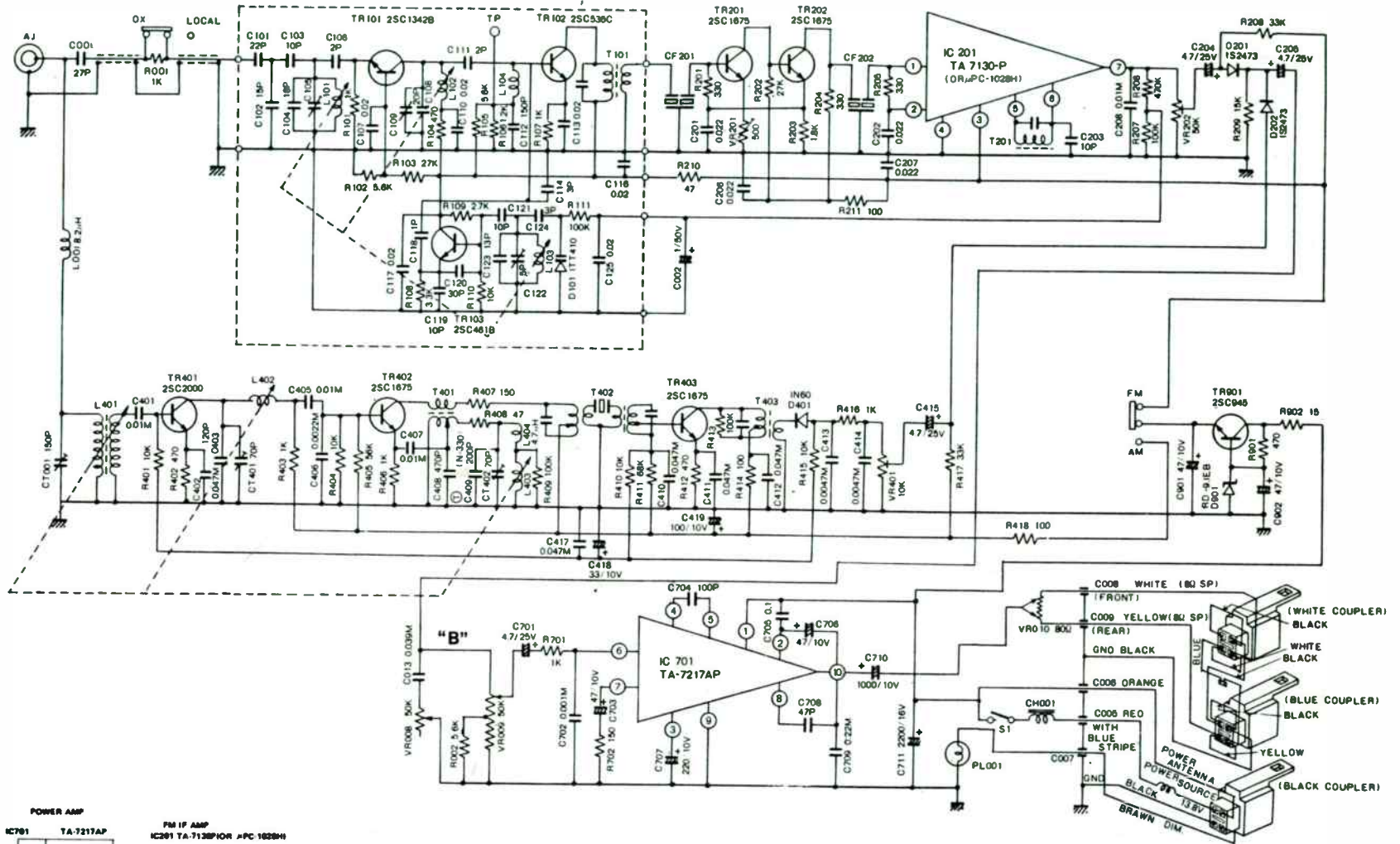


CF 201, 202



TR 201 (2SC1675)
TR 202 (2SC1675)
TR 401 (2SC2000)
TR 402 (2SC1675)
TR 403 (2SC1675)
TR 901 (2SC945)

20C305 Main Printed Circuit Board



POWER AMP

IC701 TA-7217AP

1	13.8V
2	13.60V
3	3.59V
4	8.08V
5	1.49V
6	3.37V
7	3.38V
8	1.27V
9	0
10	8.81V

FM IF AMP

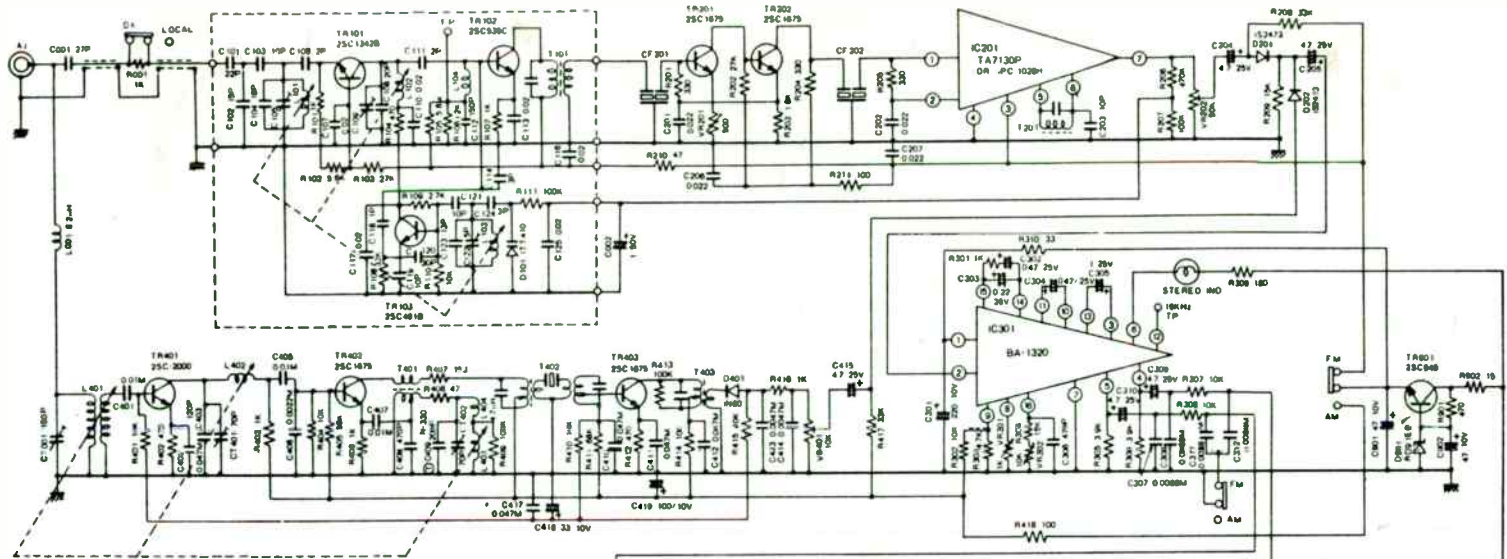
IC201 TA-7130P/ICOR #PC 1028H

1	1.671V
2	1.87
3	8.16
4	0
5	3.85
6	3.88
7	4.44

	FM IF AMP	FM IF AMP	AM RF AMP	AM CONV.	AM IF AMP	AVR
	TR201 2SC1875	TR202 2SC1875	TR401 2SC2000	TR402 2SC1875	TR303 2SC1875	TR901 2SC946
B	0.87V	1.36V	0.78V	1.12V	1.88V	13.8V
C	1.36V	7.89V	8.96V	7.7V	7.82V	8.1V
E	0.01V	0.81V	0.18V	0.77V	0.87V	8.7V

The voltage measurements are taken with a tester whose internal resistance is 10MΩ when there is no signal with a supply voltage of 13.8 volt.

20C205 Schematic Diagram



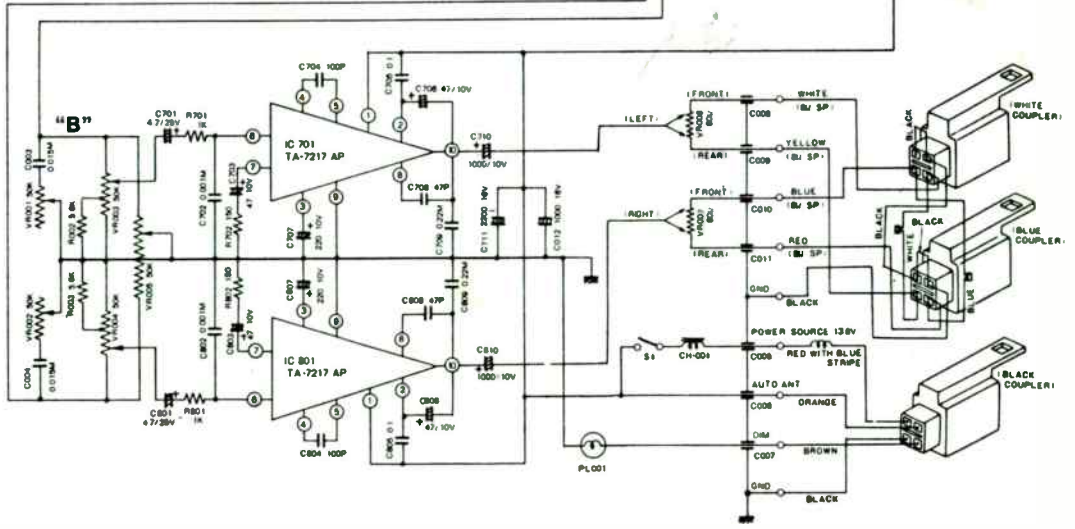
	FM IF AMP	FM IF AMP	AM RF AMP	AM CONV.	AM IF AMP	AVR
	TR201 25C1678	TR202 25C1678	TR601 25C2680	TR403 25C1678	TR402 25C1678	TR801 25C946
B	0.87V	1.26V	0.78V	1.12V	1.95V	13.6V
C	1.36V	7.89V	8.96V	7.7V	7.82V	9.1V
E	0.61V	0.87V	0.18V	0.77V	0.87V	8.7V

POWER AMP

IC701	TA-7217AP
1	13.2V
2	12.60V
3	3.89V
4	6.89V
5	1.49V
6	3.37V
7	3.26V
8	1.37V
9	0
10	6.81V

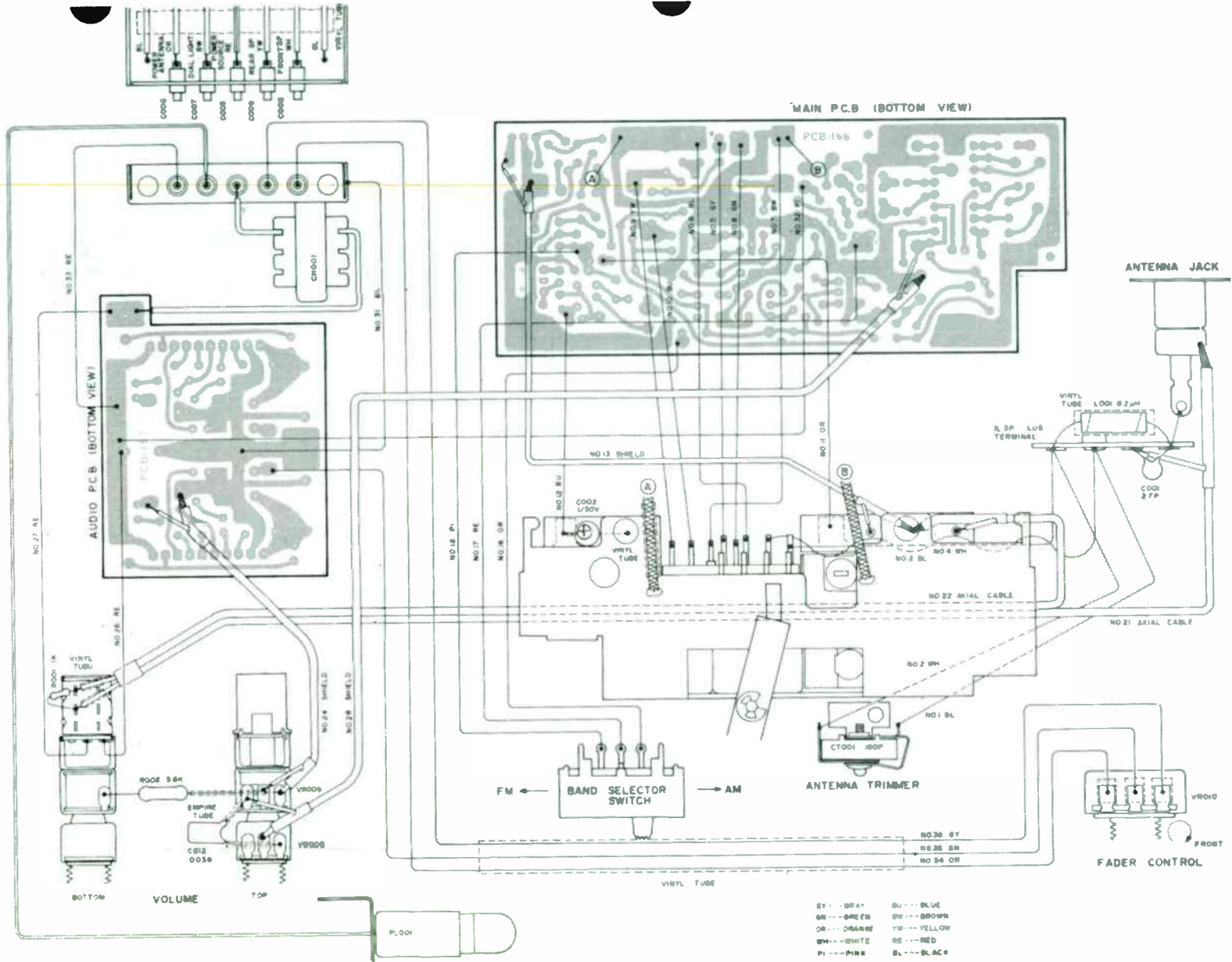
MPX Mod	IC301	BA-1330	AM	AM
1		16	1	7.74V 7.76V
2		15	2	2.99V 2.88V
3		14	3	3.08V 2.87V
4		13	4	3.48V 3.44V
5		12	5	3.40V 3.38V
6		11	6	13.79V 12.80
7		10	7	0 0
8		9	8	0.34V 0.34V

The voltage measurements are taken with a meter whose internal resistance is 10MΩ when there is no signal with a supply voltage of 13.2 volt.

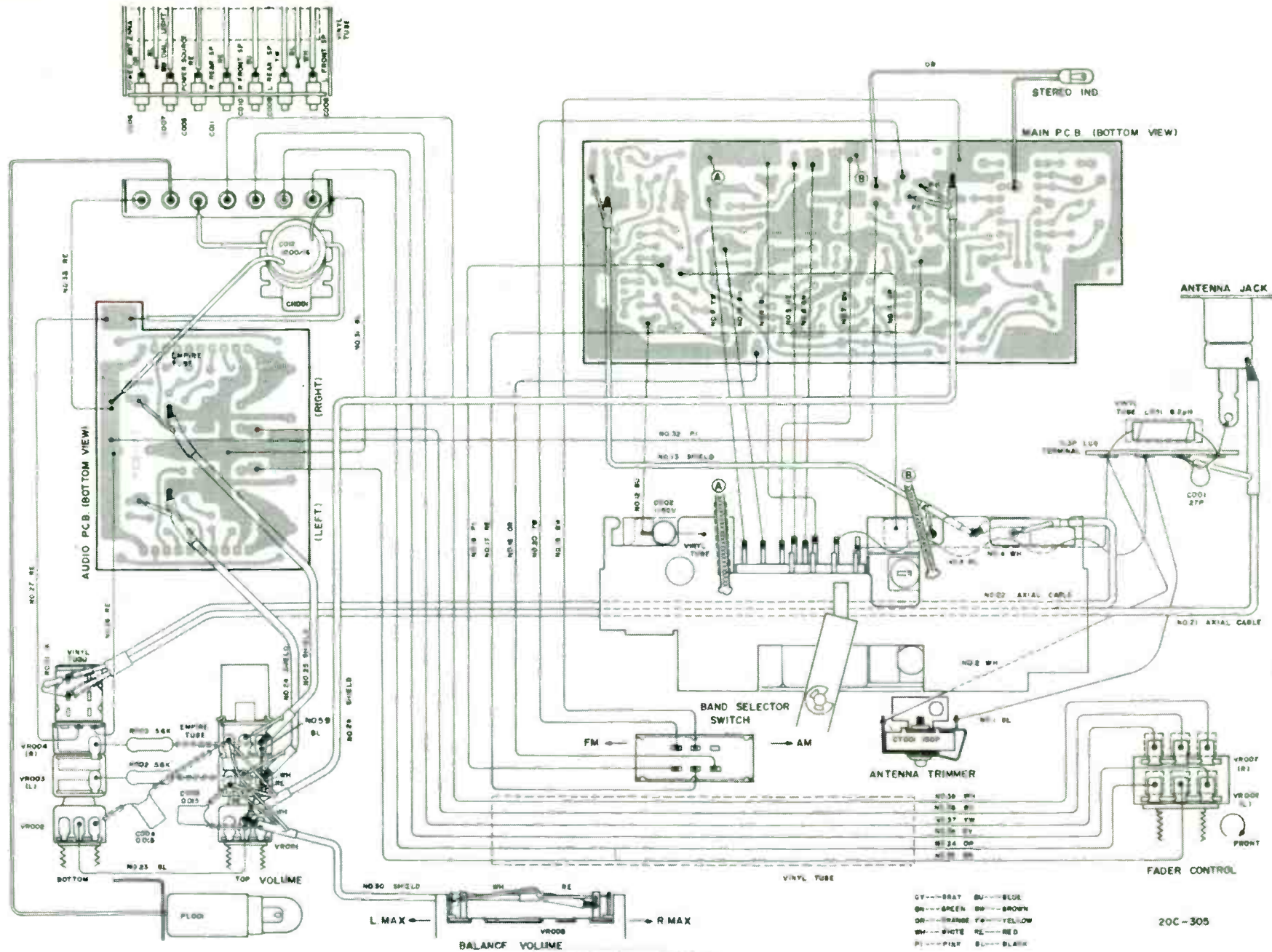


20C305 Schematic Diagram

RCA 20C205/305



20C205 Chassis Wiring



20C305 Chassis Wiring

RCA 20C205/305

Replacement Parts

Symbol	Stock No.	Description	Symbol	Stock No.	Description
		S			
		20C205F/8 AM/FM RADIO			
AJ001	743374	JACK - ANTENNA INPUT	R211	108861	100 OHM 5% 1/4W COMP
C001	428497	27PF CERAMIC	R401	218499	10000 OHM 5% 1/4W COMP
C002	743223	CAPACITOR	R402	108864	470 OHM 5%, 1/4W., COMP.
C005			R403	108865	1000 OHM 5% 1/4W COMP
TD			R404	218499	10000 OHM 5% 1/4W COMP
C009		FEED THRU (PART OF ITEM 31 CAPAC. ASSEMBLY)	R405	426199	50000 OHM 5% 1/4W COMP
C013	437364	0.39UF MYLAR	R406	108865	1000 OHM 5% 1/4W COMP
C201	429688	0.022UF CERAMIC	R407	227744	150 OHM 5%, 1/4W., COMP.
C202	429688	0.022UF CERAMIC	R408	108860	47 OHM 5% 1/4W COMP
C203	743185	CAPACITOR	R409	223769	100000 OHM 5% 1/4W COMP
C204	743229	4.7UF 25V ELECTROLYTIC	R410	218499	10000 OHM 5% 1/4W COMP
C205	743229	4.7UF 25V ELECTROLYTIC	R411	427566	68,000 OHM 1/4W 5%, COMP.
C206	429688	0.022UF CERAMIC	R412	108864	470 OHM 5%, 1/4W., COMP.
C207	429688	0.022UF CERAMIC	R413	223769	100000 OHM 5% 1/4W COMP
C208	743212	CAPACITOR	R414	108861	100 OHM 5% 1/4W COMP
C401	743212	CAPACITOR	R415	218499	10000 OHM 5% 1/4W COMP
C402	743217	CAPACITOR	R416	108865	1000 OHM 5% 1/4W COMP
C403	743187	CAPACITOR	R417	426219	33000 OHM 5% 1/4W COMP
C405	743212	CAPACITOR	R418	108861	100 OHM 5% 1/4W COMP
C406	249942	0.0022UF MYLAR	R701	108865	1000 OHM 5% 1/4W COMP
C407	743212	CAPACITOR	R702	227744	150 OHM 5%, 1/4W., COMP.
C408	743192	CAPACITOR	R901	108864	470 OHM 5% 1/4W COMP
C409	743360	20PF CERAMIC N-330	R902	235097	15 OHM 5%, 1/4W., COMP.
C410	743217	CAPACITOR	T201	743350	TRANSFORMER - FM
C411	743217	CAPACITOR	T401	743402	TRANSFORMER - AM
C412	743217	CAPACITOR	T402	743351	TRANSFORMER - 455KHZ FILTER
C413	437373	0.0047UF MYLAR	T403	743397	TRANSFORMER - AM IF
C414	437373	0.0047UF MYLAR	TR201	741530	TRANSISTOR - TYPE 2SC-1675L
C415	743229	4.7UF 25V ELECTROLYTIC	TR202	741530	TRANSISTOR - TYPE 2SC-1675L
C417	743217	CAPACITOR	TR401	743352	TRANSISTOR - TYPE 2SC-2000L
C418	743228	CAPACITOR	TR402	741530	TRANSISTOR - TYPE 2SC-1675L
C419	743225	CAPACITOR	TR403	741530	TRANSISTOR - TYPE 2SC-1675L
C701	743229	4.7UF 25V ELECTROLYTIC	TR901	741539	TRANSISTOR - TYPE 2SC945-R
C702	242181	0.001UF MYLAR	VR008	743391	CONTROL - VOLUME 2 ELEMENT
C703	743230	CAPACITOR	VR009	743391	CONTROL - VOLUME 2 ELEMENT
C704	743186	CAPACITOR	VR010	743392	CONTROL - FADER
C705	743197	CAPACITOR	VR201	743350	500 OHM VARIABLE
C706	743230	CAPACITOR	VR202	743350	50000 OHM VARIABLE
C707	743227	CAPACITOR	VR401	743350	10000 OHM VARIABLE
C708	743191	CAPACITOR	10	743375	LAMP - DIAL
C709	743365	0.22UF MYLAR	16	743373	SWITCH - AM/FM SELECTOR
C710	743226	CAPACITOR	19	743391	CONTROL - VOLUME 2 ELEMENT
C711	437349	2200UF 16V ELECTROLYTIC	23	743392	CONTROL - FADER
C901	743230	CAPACITOR	24	743369	CAPACITOR - ANTENNA TRIMMER
C902	743230	CAPACITOR	27	743374	JACK - ANTENNA
CF201	743401	FILTER - CERAMIC FM	30	743366	REACTOR - POWER CHOKER
CF202	743401	FILTER - CERAMIC FM	31	743398	CAPACITOR - FEEDTHRU ASSEMBLY [INCLUDES C005 TO C009]
CH001	743366	REACTOR - POWER CHOKER	34A	743395	CONNECTOR - WHITE SHELL ONLY (SEE 34C BELOW)
CT001	743369	150PF VARIABLE	34B	743394	CONNECTOR - BLUE SHELL ONLY (SEE 34C BELOW)
CT401	743363	70PF VARIABLE	35	743393	CONNECTOR - BLACK SHELL ONLY (SEE 34C BELOW)
CT402	743363	70PF VARIABLE	34C	743396	TERMINAL - CONTACT (FOR ITEMS 34A, 34B, 35 ABOVE (4 PER STOCK NO.))
D201	743244	DIODE - TYPE 1S2473	41	743382	SPACER - MOUNTING SHAFT
D202	743244	DIODE - TYPE 1S2473		743110	LEAD - GROUND
D401	226344	DIODE - TYPE 1N60			20C205F
D901	743355	DIODE - TYPE RD-9.1EB	22	743390	TUNER - FRONT END, LESS PUSHBUTTONS
IC201	743353	I.C. - TYPE TA-7130P(C)	22-1	743395	BUTTON - PUSH NO.1
IC701	743364	I.C. - TYPE TA7217AD	22-2	743386	BUTTON - PUSH NO.2
L001	743400	COIL - 8.2UH LOADING	22-3	743387	BUTTON - PUSH NO.3
L404	743166	COIL 4.7UH	22-4	743388	BUTTON - PUSH NO.4
			22-5	743389	BUTTON - PUSH NO.5
PL001	743375	LAMP - DIAL	40	743384	CONNECTOR - SPECIAL ADAPTER POWER SHELL - CONNECTOR LESS CONTACTS (FOR ITEM 40)
R001	429821	680 OHM 5% 1/8W		743415	TERMINAL - CONTACT FOR ABOVE SHELL
R002	422020	500 OHM 5% 1/8W			20C205G
R201	219450	330 OHM 5% 1/4W	22	743381	TUNER - FRONT END LESS PUSHBUTTONS
R202	219467	27000 OHM 5% 1/4W	22-1	743376	BUTTON - PUSH NO.1
R203	219460	1800 OHM 5% 1/4W	22-2	743377	BUTTON - PUSH NO.2
R204	219450	330 OHM 5% 1/4W	22-3	743378	BUTTON - PUSH NO.3
R205	219450	330 OHM 5% 1/4W	22-4	743379	BUTTON - PUSH NO.4
R206	232389	470000 OHM 5% 1/4W	22-5	743380	BUTTON - PUSH NO.5
R207	426199	50000 OHM 5% 1/4W COMP			
R208	426219	33000 OHM 5% 1/4W COMP			
R209	108869	15000 OHM 5% 1/4W COMP			
R210	108860	47 OHM 5% 1/4W COMP			

Replacement Parts

Symbol	Stock No.	Description	Symbol	Stock No.	Description
		S 20C305FM AM/FM MPX RADIO			
AJ001	743374	JACK - ANTENNA INPUT	D201	743244	DIODE - TYPE 1S2473
C001	743367	27PF CERAMIC	D202	743244	DIODE - TYPE 1S2473
C002	743223	CAPACITOR	D401	226344	DIODE - TYPE 1N60
C003	743368	0.015UF MYLAR	D9D1	743355	DIODE - TYPE RD-9, 1EB
C004	743368	0.015UF MYLAR	IC201	743353	I.C. - TYPE TA-7130(C)
C005			IC301	743354	I.C. - TYPE BA-1320
TO			IC701	743364	I.C. - TYPE TA-7217AP
C011			IC801	743364	I.C. - TYPE TA-7217AP
C012	743233	CAPACITOR	L001	743401	COIL - 8.2UH LOADING
C201	429688	0.022UF CERAMIC	L404	743166	COIL - 4.7UH
C202	429688	0.022UF CERAMIC	PL001	743375	LAMP - DIAL
C203	743185	CAPACITOR	R001	429821	680 OHM 5% 1/8W
C204	743229	CAPACITOR	R002	422020	5600 OHM 5% 1/8W
C205	743229	CAPACITOR	R003	422020	5600 OHM 5% 1/8W
C206	429688	0.022UF CERAMIC	R201	219458	330 OHM 5% 1/4W
C207	429688	0.022UF CERAMIC	R202	219467	27000 OHM 5% 1/4W
C301	743227	CAPACITOR	R203	219460	1800 OHM 5% 1/4W
C302	165877	0.47UF 25V ELECTROLYTIC	R204	219458	330 OHM 5% 1/4W
C303	432857	0.22UF 25V ELECTROLYTIC	R205	219458	330 OHM 5% 1/4W
C304	165877	0.47UF 25V ELECTROLYTIC	R206	232389	470000 OHM 5% 1/4W
C305	743362	1UF 10V ELECTROLYTIC	R207	426199	56000 OHM 5% 1/4W COMP
C306	743361	470PF STYROL	R208	426219	33000 OHM 5% 1/4W COMP
C307	123801	0.0068UF MYLAR	R209	108869	15000 OHM 5% 1/4W COMP
C308	123801	0.0068UF MYLAR	R210	108860	47 OHM 5% 1/4W COMP
C309	743229	CAPACITOR	R211	108861	100 OHM 5% 1/4W COMP
C310	743229	CAPACITOR	R301	108865	1000 OHM 5% 1/4W COMP
C311	123801	0.0068UF MYLAR	R302	218499	10000 OHM 5% 1/4W COMP
C312	123801	0.0068UF MYLAR	R303	426213	4700 OHM 5% 1/4W COMP
C401	743212	0.01UF MYLAR	R304	108869	15000 OHM 5% 1/4W COMP
C402	743217	CAPACITOR	R305	427563	3900 OHM 5% 1/4W COMP
C403	743187	CAPACITOR	R306	427563	3900 OHM 5% 1/4W COMP
C405	743212	0.01UF MYLAR	R307	218499	10000 OHM 5% 1/4W COMP
C406	437373	0.0022UF MYLAR	R308	218499	10000 OHM 5% 1/4W COMP
C407	743212	0.01UF MYLAR	R309	426543	180000 OHM 5% 1/4W COMP
C408	743192	CAPACITOR	R310	233931	33 OHM 5% 1/4W
C409	743360	200PF CERAMIC N330	R401	218499	10000 OHM 5% 1/4W COMP
C410	743217	0.047UF MYLAR	R402	108864	470 OHM 5% 1/4W COMP.
C411	743217	0.047UF MYLAR	R403	108865	1000 OHM 5% 1/4W COMP
C412	743217	CAPACITOR	R404	218499	10000 OHM 5% 1/4W COMP
C413	123800	0.0047UF MYLAR	R405	426199	56000 OHM 5% 1/4W COMP
C414	123800	0.0047UF MYLAR	R406	108865	1000 OHM 5% 1/4W COMP
C415	743229	CAPACITOR	R407	227744	150 OHM 5% 1/4W COMP.
C417	743217	CAPACITOR	R408	108860	47 OHM 5% 1/4W COMP
C418	743228	CAPACITOR	R409	223769	10000 OHM 5% 1/4W COMP
C419	743228	CAPACITOR	R410	218499	10000 OHM 5% 1/4W COMP
C701	435877	4.7UF 25V ELECTROLYTIC	R411	427566	68,000 OHM 1/4W 5% COMP.
C702	242181	0.001UF MYLAR	R412	108864	470 OHM 5% 1/4W COMP.
C703	743230	CAPACITOR	R413	223769	10000 OHM 5% 1/4W COMP
C704	743186	CAPACITOR	R414	108861	100 OHM 5% 1/4W COMP
C705	743197	CAPACITOR	R415	218499	10000 OHM 5% 1/4W COMP
C706	743230	CAPACITOR	R416	108865	1000 OHM 5% 1/4W COMP
C707	743227	CAPACITOR	R417	426219	33000 OHM 5% 1/4W COMP
C708	743191	CAPACITOR	R418	108861	100 OHM 5% 1/4W COMP
C709	743365	0.22UF MYLAR	R701	108865	1000 OHM 5% 1/4W COMP
C710	743226	CAPACITOR	R702	227744	150 OHM 5% 1/4W COMP.
C711	743233	CAPACITOR	R801	108865	1000 OHM 5% 1/4W COMP.
C801	435877	4.7UF 25V ELECTROLYTIC	R802	227744	150 OHM 5% 1/4W COMP.
C802	242181	0.001UF MYLAR	R901	108864	470 OHM 5% 1/4W COMP.
C803	743230	CAPACITOR	R902	235097	15 OHM 5% 1/4W COMP.
C804	743186	CAPACITOR	T201	743350	TRANSFORMER - FM
C805	743197	CAPACITOR	T401	743403	TRANSFORMER - AM
C806	743230	CAPACITOR	T402	743351	TRANSFORMER - 455KHZ FILTER
C807	743227	CAPACITOR	TP	743109	TEST POINT
C808	743191	47PF CERAMIC	TR201	741538	TRANSISTOR - TYPE 2SC-1675L
C809	743365	0.22UF MYLAR	TR202	741538	TRANSISTOR - TYPE 2SC-1675L
C810	743226	CAPACITOR	TR401	743352	TRANSISTOR - TYPE 2SC-2000L
C901	743230	CAPACITOR	TR402	741538	TRANSISTOR - TYPE 2SC-1675L
C902	743230	CAPACITOR	TR403	741538	TRANSISTOR - TYPE 2SC-1675L
CF201	743401	FILTER - CERAMIC FM	TR901	741539	TRANSISTOR - TYPE 2SC945-R
CF202	743401	FILTER - CERAMIC FM	VR001	TO	
CM001	433366	REACTOR - POWER CHOKER	VR004	743370	50000 OHM 4 SECTION VARIABLE
CT001	743369	150PF VARIABLE	VR005	743372	50000 OHM VARIABLE BALANCE
CT401	743363	70PF VARIABLE	VR006	743371	CONTROL - FADER
CT402	743363	70PF VARIABLE	VR007	743371	CONTROL - FADER
			VR201	743356	500 OHM VARIABLE

Replacement Parts (Continued)

Symbol	Stock No.	Description	Symbol	Stock No.	Description
VR202	743359	50000 OHM VARIABLE	42	743349	SPACER - MOUNTING SHAFT
VR301	743357	1000 OHM VARIABLE		743110	CABLE - GROUND
VR302	743358	10000 OHM VARIABLE		743109	PIN
VR401	743358	10000 OHM VARIABLE			
2	743346	KNOB - BALANCE			20C305F
4	743372	CONTROL - BALANCE SLIDE	22	743390	TUNER - FRONT END LESS PUSHBUTTONS
6	743344	LENS - STEREO INDICATOR	22-1	743385	BUTTON - PUSH NO.1
8	743345	HOLDER - STEREO LAMP	22-2	743386	BUTTON - PUSH NO.2
9	743309	LAMP - STEREO	22-3	743387	BUTTON - PUSH NO.3
10	743375	LAMP - DIAL	22-4	743388	BUTTON - PUSH NO.4
11	743347	HOLDER - DIAL LAMP	22-5	743389	BUTTON - PUSH NO.5
16	743373	SWITCH - AM/FM SELECTOR			
19	743370	CONTROL - VOLUME 4 ELEMENT	40	743384	CONNECTOR - SPECIAL ADAPTER POWER
23	743371	CONTROL - PAWER 2 ELEMENT		743415	SHELL - CONNECTOR LESS CONTACTS
24	743369	CAPACITOR - ANTENNA TRIMMER			(FOR ITEM 40)
27	743374	JACK - ANTENNA INPUT		743416	TERMINAL - CONTACT FOR ABOVE SHELL
31	743399	CAPACITOR - FEEDTHRU ASSEMBLY (INCLUDES COO5 TO CO11)			
34A	743395	CONNECTOR - WHITE SHELL ONLY (SEE 34C BELOW)			20C305G
34B	743396	CONNECTOR - BLUE SHELL ONLY (SEE 34C BELOW)	22	743381	TUNER - FRONT END LESS PUSHBUTTONS
35	743393	CONNECTOR - BLACK SHELL ONLY (SEE 34C BELOW)	22-1	743376	BUTTON - PUSH NO.1
34C	743396	TERMINAL - CONTACT (FOR ITEMS 34A, 34B, 35 ABOVE)	22-2	743377	BUTTON - PUSH NO.2
41	743348	SPACER - MOUNTING SHAFT	22-3	743378	BUTTON - PUSH NO.3
			22-4	743379	BUTTON - PUSH NO.4
			22-5	743380	BUTTON - PUSH NO.5

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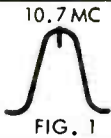
GENERATOR COUPLING	GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
High side thru .1 uf to point A, low side to ground.	455kHz 400-Hz mod.	High freq. end stop.	Output meter across voice coil.	T206 T205-T204 T203-T202	Adjust for maximum.
High side thru .1 uf to point B, low side to ground.	455kHz 400-Hz mod.	High freq. end stop.	Output meter across voice coil.	T201	Adjust at null point.
Thru dummy antenno to antenna input	1615kHz			VC203 VC202 VC201	Adjust for maximum.

With radio installed in cor and antenna extended 33", tune in a weak station near 1400KHZ and adjust VC201 for maximum output Antenna adjustment is locoted behind insert on FM/AM switch.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR

High side of generator thru .001mfd to point TP1 low side to ground.

GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
10.7MC Unmoduloted	Point of non-interference	DC probe of VTVM to point C common to ground.	T104 T101 T103 T102	Adjust for maximum
10.7MC Unmoduloted	Point of non-interference	DC probe of VTVM to point TP2 common to ground.	T105	Adjust for zero reading. A positive or negative reading will be obtained on either side of correct setting



FM IF ALIGNMENT USING FM SIGNAL GENERATOR SELECTOR IN FM POSITION


High side of generator thru .001mfd to point TP1 low side to ground.
 Use only enough marker signal for indicotion. Use 60 cycle frequency moduloted signal with 400KC sweep. Use 60 cycle sawtooth voltage in scope for horizontal deflection.

GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
10.7MC 450KC Sweep	Point of non-interference	Vert. omp of scope to point C low side to ground.	T104 T103 T102 T101	Disconnect stabilizing capacitor C133 adjust for maximum gain and symmetry of response similar to Fig. 1 with marker shown. Reconnect C133
10.7MC 450KC Sweep	Point of non-interference	Vert. amp of scope to point TP2 low side to ground.	T105	Adjust T605 (secondary) to place marker at center of "S" curve similar to Fig.2. Readjust T 604 (primary) for maximum amplitude and straightness of line.

FM RF ALIGNMENT SELECTOR IN FM POSITION

Connect generator across antenno terminals with a 120 ohm carbon resistor with each lead.

GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
108.5 MC	High freq. end	DC probe of VTVM to point C common to ground.	VC103 VC102 VC101	Adjust for maximum.



FM MULTIPLEX ALIGNMENT USING FM STEREO GENERATOR (+.0001% ACCURACY)

Connect generator across antenna terminols with a 120 ohm resistor with each lead.

GENERATOR FREQUENCY	INDICATOR	ADJUST	REMARKS
100 MC with moduloted left channel	Output meter across voice coil of right speaker.	VR101 VR102	Adjust for MINIMUM.
100 MC with moduloted left channel	Output meter across voice coil of left speaker.		Check for MAXIMUM. If necessary make compromise adjustment of VR101 ond VR102.

Adjustments

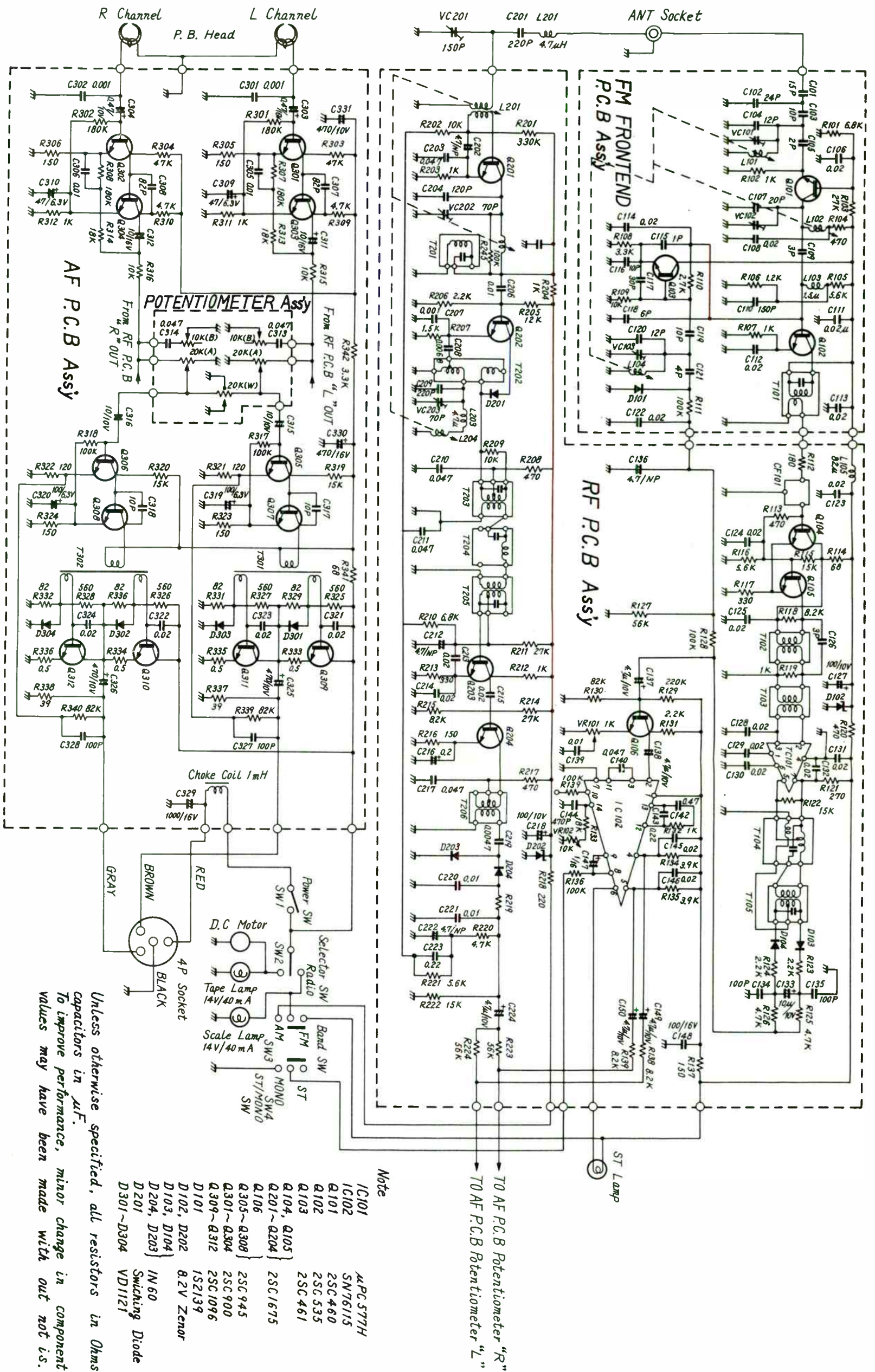
1. All voltage measurements referred to in this chart are made at a tape speed of 1-7/8 ips with an audio VTVM having a flat response to 100KC.
2. All torque measurements are made at a tape speed of 1-7/8 ips with a spring scale applied to a point 1 inch from spindle center.
3. All pressure measurements are made by using a spring scale to determine that point at which pressure is just removed.

ADJUST	REMARKS
Play Take-up Torque	Nominal value 1/2 oz. Controlled by condition of tire on take-up spindle and condition of clutch 40.
Fast Forward Take-up Torque	Nominal value 3/4 oz. Controlled by condition of rubber parts in drive train.
Rewind Torque	Nominal value 3/4 oz. Controlled by condition of rubber parts in drive train.
Pressure Roller Pressure	Nominal value 11 oz. Controlled by moving spring 48 from hole to hole.
Record/Play Head Azimuth	Connect on ACVTVM across left output, play azimuth-test tape, and adjust screw for maximum output.
Flywheel Play	Adjust 66 for a slight vertical play of flywheel (38).

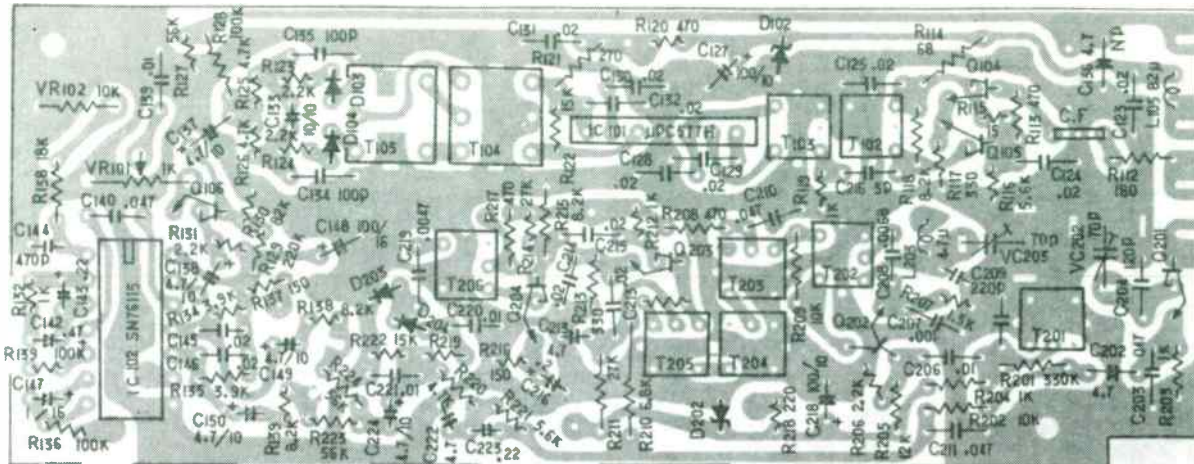
Troubleshooting

If your auto stereo cassette player should malfunction, there are a few simple checks that can be made to reveal the trouble.

SYMPTOM	CHECK
Dead (no power)	<ul style="list-style-type: none"> A. Fuse in "A" lead B. Connection to fuse block or ignition switch C. Cassette chassis for proper ground to a metallic surface.
Hum when volume Control turned up but tape does not play	<ul style="list-style-type: none"> A. Cartridge improperly inserted B. Drive belt off pulley or broken
Unit blows fuse upon insertion of cartridge	<ul style="list-style-type: none"> A. Check proper polarity of player vs car (if unit has polarity switch, position correctly)
No reproduction out of one channel	<ul style="list-style-type: none"> A. Check speaker wiring for loose or bad connection. B. Clean tape head
Tape plays slow or erratic	<ul style="list-style-type: none"> A. Try another cartridge B. Clean capstan and tape head



Radio PC Board Parts List



ITEM	PART NO.	DESCRIPTION	ITEM	PART NO.	DESCRIPTION
CF101	171114-303	Filter 10.7MHz	Q203	171162-303	Trans 2SC1675
D102	171162-307	Diode-Zener	Q204	171162-303	Trans 2SC1675
D103	171162-229	Diode IN60P	T102	171114-282	Transf FM-IF
D104	171162-229	Diode IN60P	T103	171114-283	Transf FM-IF
D202	171162-307	Diode-Zener	T104	171114-284	Transf FM-IF
D203	171162-229	Diode IN60P	T105	171114-285	Transf FM-IF
D204	171162-229	Diode IN60P	T201	171114-288	Transf AM-IF
IC101	171179-111	IC UNPC577H	T202	171114-286	Transf AM-OSC
IC102	171179-110	IC SN76115	T203	171114-287	Transf AM-IF
L105	171114-304	Coil 82 uh	T204	171114-288	Transf AM-IF
L203	171114-305	Coil 4.7uh	T205	171114-289	Transf AM-IF
Q104	171162-303	Trans 2SC1675	T206	171114-290	Transf AM-IF
Q105	171162-303	Trans 2SC1675	VC202	171110-042	Trimmer 70P
Q106	171162-202	Trans 2SC945	VC203	171110-042	Trimmer 70P
Q201	171162-303	Trans 2SC1675	VR101	171149-028	Varistor 1K
Q202	171162-303	Trans 2SC1675	VR102	171149-029	Varistor 10K

ELECTROLYTIC CAPACITORS

C127	100uf@10V	C150	4.7uf@10V
C133	10uf@10V	C202	4.7uf@10V
C136	4.7uf@10V	C209	220P
C137	4.7uf@10V	C212	4.7uf@10V
C138	4.7uf@10V	C218	100uf@10V
C144	470P	C222	4.7uf@10V
C148	100uf@16V	C224	4.7uf@10V
C149	4.7uf@10V		

DISC CAPACITORS

C123	.02	C131	.02	C204	120P	C213	.02
C124	.02	C132	.02	C206	.01	C214	.02
C125	.02	C134	100P	C207	.001	C217	.047
C126	3P	C135	100P	C208	.0068	C219	.0047
C128	.02	C139	.01	C210	.047	C220	.01
C129	.02	C203	.047	C211	.047	C221	.01
C130	.02						

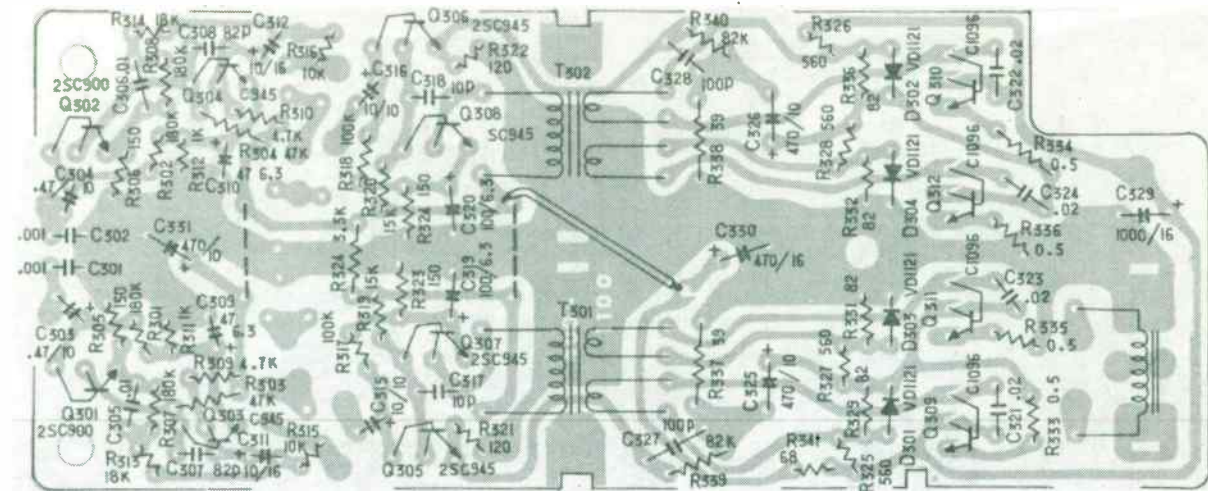
TANTALUM CAPACITORS

C142	.47	C216	.22
C143	.22	C223	.22
C147	1.0		

MYLAR CAPACITORS

C140	.047	C146	.02
C145	.02		

Audio PC Board Parts List



ITEM	PART NO.	DESCRIPTION	ITEM	PART NO.	DESCRIPTION
D301	171149-025	Varistor VD1121	Q306	171162-202	Trans 2SC945
D302	171149-025	Varistor VD1121	Q307	171162-202	Trans 2SC945
D303	171149-025	Varistor VD1121	Q308	171162-202	Trans 2SC945
D304	171149-025	Varistor VD1121	Q309	171162-184	Trans 2SC1096
L301	171161-145	Choke 1mH	Q310	171162-184	Trans 2SC1096
Q301	171162-203	Trans 2SC900	Q311	171162-184	Trans 2SC1096
Q302	171162-203	Trans 2SC900	Q312	171162-184	Trans 2SC1096
Q303	171162-202	Trans 2SC945	T301	171161-139	Transf-Output
Q304	171162-202	Trans 2SC945	T302	171161-139	Transf-Output
Q305	171162-202	Trans 2SC945			

1/4 WATT RESISTORS

R301	180K OHMS	R310	4.7K OHMS	R319	15K OHMS	R328	560 OHMS
R302	180K OHMS	R311	1K OHMS	R320	15K OHMS	R329	82 OHMS
R303	47K OHMS	R312	1K OHMS	R321	120 OHMS	R330	82 OHMS
R304	47K OHMS	R313	18K OHMS	R322	120 OHMS	R331	82 OHMS
R305	150 OHMS	R314	18K OHMS	R323	150 OHMS	R332	82 OHMS
R306	150 OHMS	R315	10K OHMS	R324	150 OHMS	R339	82K OHMS
R307	180K OHMS	R316	10K OHMS	R325	560 OHMS	R340	82K OHMS
R308	180K OHMS	R317	100K OHMS	R326	560 OHMS	R341	68 OHMS
R309	4.7K OHMS	R318	100K OHMS	R327	560 OHMS		

1 WATT RESISTORS

R333	.5 OHMS
R334	.5 OHMS

1/2 WATT RESISTORS

R335	.5 OHMS	R337	39 OHMS	R338	39 OHMS
R336	.5 OHMS				

ELECTROLYTIC CAPACITORS

C303	.47uf@10V	C319	100uf@6.3V
C304	.47uf@10V	C320	100uf@6.3V
C309	47uf@6.3V	C325	470uf@10V
C310	47uf@6.3V	C326	470uf@10V
C311	10uf@16V	C329	1000uf@16V
C312	10uf@16V	C330	470uf@10V
C315	10uf@16V	C331	470uf@10V
C316	10uf@16V		

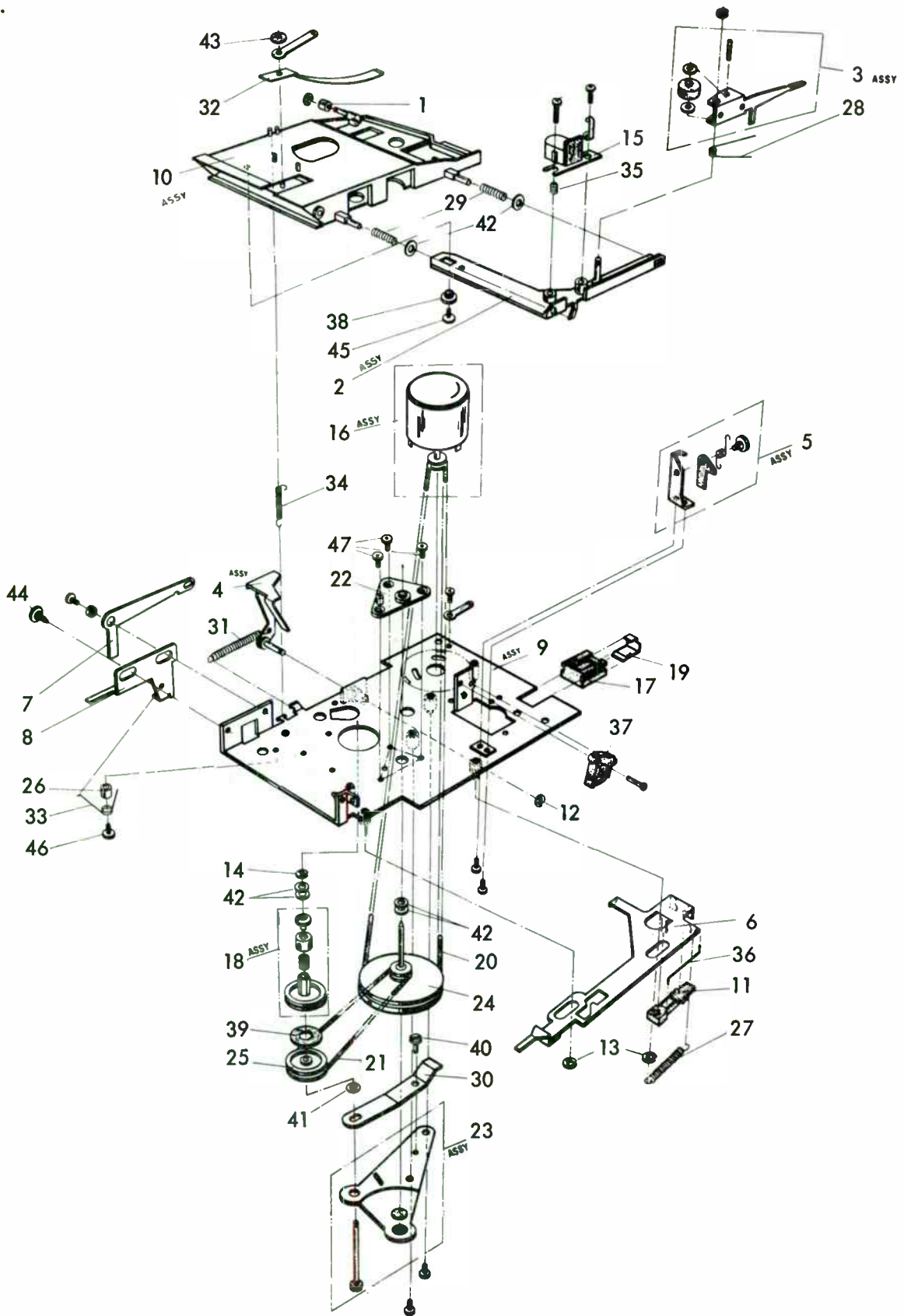
DISC CAPACITORS

C301	.001	C308	82P
C302	.001	C317	10P
C305	.01	C318	10P
C306	.01	C327	100P
C307	82P	C328	100P

MYLAR CAPACITORS

C321	.02	C323	.02
C322	.02	C324	.02

Exploded View-Deck



Mechanical Parts

ITEM	PART NO.	DESCRIPTION	ITEM	PART NO.	DESCRIPTION
1	171103-119	Roller-Guide	25	171147-156	Pulley-Friction
2	171103-120	Lever Asm-Pickup	26	171154-025	Spacer
3	171103-121	Roller Asm-Pinch	27	171156-200	Spring-FF Ret
4	171103-122	Lever Asm-Stop	28	171156-201	Spring-Pinch Roller
5	171103-123	Lever Asm	29	171156-202	Spring-Pickup Lever
6	171103-124	Lever F.F.	30	171156-203	Spring-Leaf
7	171103-125	Arm-Eject	31	171156-204	Spring-Stop Lever
8	171103-126	Lever-Eject	32	171156-205	Spring-Lever Return
9	171104-110	Chassis	33	171156-206	Spring-Eject
10	171105-293	Holder Asm	34	171156-207	Spring-Holder
11	171105-294	Base-FF Stop	35	171156-208	Spring-Head
12	171113-010	E Ring 2.5mm	36	171156-209	Spring-FF Stop
13	171113-021	E Ring 4mm	37	171158-191	Switch
14	171113-054	E Ring 5mm	38	171163-378	Washer-Pickup Lev
15	171115-066	Head-Tape	39	171163-379	Pad-Felt
16	171115-067	Motor/Pulley	40	171163-380	Screw-Adj
17	171117-076	Cam-FF	41	171163-381	Washer-Vinyl A
18	171119-254	Cover-Clutch	42	171163-382	Washer-Vinyl B
19	171119-255	Cover-Cam	43	171163-383	Nut-Speed
20	171131-051	Belt-Drive	44	171163-384	Screw
21	171131-052	Belt	45	171163-385	Screw M2 X 6
22	171142-141	Plate Asm-Brg	46	171163-386	Screw M3 X 4 BH
23	171142-142	Plate Asm-Clutch	47	171163-387	Screw M3 X 4 FH
24	171147-144	Flywheel			

Mechanical Parts List

ITEM	PART NO.	DESCRIPTION	ITEM	PART NO.	DESCRIPTION
	171050-086	Lamp-Dial		171133-049	Insert-Mono/St
	171050-087	Lamp-Stereo		171133-050	Insert-F.F.
	171103-118	Roller-Cord		171133-051	Insert-Eject
	171105-271	Lug-Drive		171133-052	Insert-Am/Fm
	171105-287	Brkt-Radio PCB		171142-138	Plate-Front
	171105-288	Brkt-Coupling		171142-139	Plate-Switch Mtg
	171105-289	Brkt-Audio PCB		171142-140	Plate-Backup
	171105-290	Heat Sink		171144-042	Pointer
	171105-291	Guide-Cord		171145-162	Control-Vol
	171105-292	Holder-Lamp		171145-163	Control-Bal
	171107-107	Button		171150-063	Shaft-Tuner
	171107-108	Button-Am/Fm		171150-071	Shaft-Ant
	171108-056	Housing-Lamp		171150-072	Shaft-Door
	171109-056	Cable Asm-Ant		171156-198	Spring-Cord
	171109-057	Cable Asm-Power		171156-199	Spring-Door
	171110-041	Trimmer-Ant		171158-167	Switch-Am/Fm
	171119-234	Cover-Top		171163-344	Coupler-B
	171119-235	Cover-Bottom		171163-345	Coupler
	171119-253	Door		171163-347	Washer-Tabbed
	171122-070	Scale-Dial		171163-376	Coupling-Base
	171124-015	Cord-Dial		171163-377	Coupling-A
	171125-117	Bezel Asm		171164-040	Tuner
	171131-058	Grommet			

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		SJC1603/613	234	8992525	166			CA73PB (Pg 21)	136
		SJC1709	274	8992770 (1RA1226)	155			CA74FM (Pg 21)	133
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51BPBT3	207	(Pg 103)		80BCB1	264	7305841 (21TPB1)	110	72 Pont.	120	7930134 (34BPBT1)	138
51SVPB1	186	62BPB1/BK1	193	80BFC1	261	7305841 (21TPB2)	124	7313562 (22FFPK1/K2/		7930144 (14BFMT1)	98
51SVPB2	217	(Pg 107)		80BFC2	261	7305841 (41SVPB1)	167	K3)	120	7930144 (14BFMT2)	120
51TFP1	189	62BPBT2	256	80BFM1	265	7305841 (51SVPB1)	186	7313604 (14APB1)	106	7930144 (24BFMT1)	120
51TPB1	186	62FFM1 (Pg 85)	191	80BFMD1	259	7305841 (61/		7313604 (24APB1)	115	7930161	105
51TPB2	217	62FFP1/PK1	189	80BFMT1/T2	261	71SVPB1)	253	7313604 (24APB2)	125	7930202 (12BPBK2)	115
51XFM1	191	(Pg 85)		80BFPC1	262	7306914	70	7313971 (11BT411)	97	7930202 (22BPBK1)	118
51XFM1/T2	192	62FFP1/PK1	186	80BFP1	260	7306934	70	7313971 (21AT411)	112	7930202 (22BPBK2)	115
51XFP1	189	(Pg 87)		80BFPK1	260	7306964	70	7314201 (11BPB2)	97	7930202 (22BPBK3)	122
51XPB1	186	62FPB1 (7313522)	252	80BFTC1	264	7307205	70	7314201 (21BPB1)	112	7930212 (12BFPK1)	102
51XPB2/BK6	217	62FPBK1	252	80BFTC2	264	7307302 (12APB1)	98	7314201 (21BPB2)	120	7930212 (22BFPK1)	109
51XPBK1	186	63AFM1 (Pg 103)	188	80BFTD1	265	7307302 (22APB1)	114	7314201 (31BPB1)	137	7930212 (22BFPK2)	
51XPBT1/T2	193	63AFP1/PK1	189	80BPP1 (Pg 93)	239	7307302 (22APB2)	126	7314201 (31BPB2)	145	(Pg 99)	109
51YFM1	191	(Pg 103)		80BPPBK1	273	7307303	71	7314201 (41BPB1)	165	7930224	117
51YFP1	189	63APB1/BK1	190	80BPT1/T2	259	7307312	72	7314201 (51BPB1)	187	7930234 (14BFPM1)	96
52AFM1	190	(Pg 93)		81TFM2	270	7307313	74	7314201 (71BPB1)	239	7930234 (24BFPM1)	110
52AFMT1, 52AFMT2	185	63APBT2	256	81TFP1 (Pg 93)	239	7307332 (12GPB1)	98	7314211 (11BFM1/		7930242 (12BPBT1)	101
52AFMT3	215	65HDPB1 (Pg 87)	186	81TPB1 (Pg 43)	217	7307332 (22GPB1)	114	M2)	101	7930242 (12BPBT2)	117
52AFP1, 52AFP2	189	65TCPP1 (Pg 85)	189	81TPBK1	273	7307332 (22GPB2)	126	7314211 (21BFM1)	114	7930242 (22BPBT1)	117
52APB1, 52APBK1	193	65TCPB1 (Pg 87)	186	81YFMC1	262	7307332 (92GPB1)	72	7314211 (31BFM1)		7930242 (22BPBT2)	127
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52APBT3	213	66CMW1 (Pg 29)	213	81YFP1	260	7307402 (12AFP1)		7314211 (41BFM1)	174	7930244 (24BFM1)	113
52BFM1	190	70AFM1	242	82XFM1	242	72 Pont.	120	7314211 (41BFM2)	169	7930244 (24BFPM2)	125
52BFMT1, 52BFMT2	187	70AFMT1	255	83BPB1	273	7307402 (22AFP1/		7314211 (51BFM1/		7930252	115
52BFMT3	215	70AFMT2	255	83BPPK1	273	P2)	120	M2)	191	7930254 (14LPB2)	96
52BFP1, 52BFPK1	189	70APB1	239	86CFM1	260	7307412	73	7314221	93	7930254 (24LPB2)	114
52BPB1, 52BPBK1	193	70APBK1	239	86CFMT1/T2	263	7307432 (12GFP1)		7314291	104	7930254 (30LPB1)	126
52BPT1, 52BPT2	192	70BCB1	250	86CFM1	263	7307432 (12GFP1)		7895080	243	7930254 (40LPB1)	171
52BPT3	213	70BCB2	254	86CFCT1	264	71 Pont.	97	7895366	253	7930254 (50LPB1)	192
52FPB1	186	70BFM1	242	86CFCT2	264	7307432 (12GFP1)		7895376	247	7930492 (12FT451)	97
52FPB2/BK2	217	70BFMC1/MC2	250	86DFM1	260	72 Pont.	120	7895510	255	7930492 (22FT451)	112
52FPBK1	186	70BFMC3	254	86KFM1	260	7307432 (22GFP1/		7895851-1	229	7930495	112
52GPB1, 52GPBK1	193	70BFMD1/D2	257	86KFM1/T2	263	P2)	120	7896001 (Pg 47)	221	7930542 (12AFM1)	106
53APB1	190	70BFMT1/T2	245	86KFTC1	264	7307456	97	7896111	251	7930542 (22AFM1)	113
53APB2 (Pg 93)	190	70BFPP1	240	86KFTC2	264	7307554	112	7896200	246	7930631	102
53APBK1	190	70BFPK1	240	86TT431	73	7307615	74	7896210	245	7931466 (26TFP1)	117
53APBK2 (Pg 93)	190	70BPB1	239	86TT432	73	7307702 (12AT411)	97	7896296	244	7931466 (26TCFP2)	127
53BFM1	188	70DPBK1	239	90BCB1	288	7307702 (22AT411)	112	7896306	253	7931466 (55TFP1)	189
53BFMT1, 53BFMT2	193	70BPBT1/T2	246	90BFC1	283	7307813	74	7896316	247	7931766 (16TRMP1)	96
53BFMT3	219	70EFM1/H2	243	90BFM1	283	7307863	70	7897241	251	7931766 (26TRMP1)	110
53BFP1, 53BFPK1	191	70EFMT1/H2	255	90BFMD1	283	7308166	93	7897366	253	7931766 (26TRMP2)	124
53BPB1	190	70HFM1	242	90BFMT1	283	7308166 (16UT411)	97	7897401	253	7931766 (55TPB2)	217
53BPB2 (Pg 93)	190	70HFM1/T2	245	90BFPC1	286	7308203	71	7897411 (Pg 85)	189	7931766 (45TPB1)	167
53BPBK1	190	70HFP1	240	90BFP2	284	7311205 (96TT412)	71	7897770	242	7931766 (55TPB1)	186
53BPBK2 (Pg 93)	190	70HPK1	240	90BFPK1	284	7312234 (14PPB1)	97	7897800	242	7932743	101
53BPBT1/T2	195	70HPB1	239	90BFTC1	288	7312234 (24PPB1)	112	7898150	246	7932753	105
53BPBT3	210	70HPBK1	239	90BFTC2	289	7312234 (24PPB2)	127	7898220	250	7932763	97
54BFM1/H2	189	70HPBT1/T2	246	90BPB1/BK1	289	7312234 (94PPB1)	70	7898340	262	7933241 (11APB1)	96
54BFP1, 54BFPK1	188	71AFM1	255	90BPBT1	283	7312332 (12GFM1)	106	7898426	250	7933241 (21APB1)	
54LPB1	192	71AFM2	255	90ECB1	288	7312332 (22GFM1)	113	7898433	239	Chev.	110
55TFP1	189	71BPB1	239	91FMC1	286	7312892 (12APBK1)	98	7898436	250	7933241 (21APB2)	114
55TPB1	186	71BPBK1	239	91TFM1	285	7312892 (12APBK1)	98	7898440 (91YFM1)	283	Chev.	124
55TPB2	217	71GVFK1 (Pg 85)	189	91TFP1	287	7312892 (22APBK1)	114	7898443	239	7933241 (21APB2)	
55TTCB1	186	71GVPB1	253	91TPFPK1	287	7312892 (22APBK2)	126	7898450 (90BFM1)	283	Pont.	126
55TTCB2	217	71GVPBK1	253	91TPB1/BK1	292	7312912 (22GPBK1)	114	7898460 (90BFMD1)	283	7933241 (41XPB1)	167
56CFMT1/T2/T3	194	71AFMT1/T2	245	91VFM2	70	7312912 (22GPBK2)	126	7898470 (90BFPC1)	286	7933241 (51XPB2/	
56CFMT4	213	71HPBT1/T2	246	91VFP1	73	7312922 (12AFP1)		7898473	243	BK2)	217
56CFP1	190	71SVPB1	253	91VMP1	70	71 Pont.	97	7898490 (90BFM1)	283	7933251 (11AFP1)	104
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60BFM1 (Pg 13)	189	71TFPB1 (Pg 43)	217	91YFMT1	283	7312942 (12GFPK1)	120	7898500 (90BPBT1)	283	Pont.	120
60BFP1/PK1 (Pg 21)	188	71TPBK1 (Pg 43)	217	91YFP2	284	7313091	70	7898510 (90BFMT1)	261	7933251 (21AFP2/	
60BPB1/PK1 (Pg 29)	192	72AFM1	242	92BFP6 (Pg 105)	73	7313514 (14AFP1)	101	7898510 (90BFMT1)	261	P3)	127
60BPBT2	256	72AFMT1	255	92BPB1	72	7313514 (24AFP1)	118	7898570	250	7933251 (51XFP1/	
60HFM1 (Pg 57)	191	72AFMT2	255	92BPB6 (Pg 89)	72	7313514 (24AFP2)	129	7898940	255	PK1)	189
60HFMT1/T2	221	72AFP1	240	92GFM3	79	7313522 (12FPB1)	98	7899443	250	7933261 (11AFM1)	100
60HFMT1/PK1 (Pg 27)	186	72AFP2	240	92GPB1	72	7313522 (22FPB1)	114	7930012 (22BPB2)	122	7933261 (21AFM1)	
60HFMT1 (Pg 103)	191	72APB1	239	92GPB6 (Pg 89)	72	7313522 (42FPB1)	174	7930013	101	Chev.	109
60HFPK1 (Pg 103)	191	72APBK1	239	93AFP1	70	7313522 (22FPB2)	126	7930015 (15CFP1)	100	7933261 (21AFM1)	
60HPB1/BK1 (Pg 65)	187	72FPB1	252	93BFW1	74	7313522 (52FPB1)	186	7930022 (12BFPM1)	102	Pont.	113
60HPBT1/T2	220	72FPDK1	252	93BFW2	74	7313522 (52FPB2)	171	7930022 (22BFPM1)	109	7933261 (51XFM1)	191
60XFM1 (Pg 85)	191	72FT41 (Pg 47)	112	93BPB1/2	71	7313522 (62FPB1)	252	7930022 (22BFPM2)	109	7933271 (21APBT1)	74
60XFP1/PK1 (Pg 85)	189	73AFM1	242	93BPB1/BK1	289	7313522 (62FPBK1)	252	(Pg 99)	102	7933271 (51XPBT1/	
60XPB1/BK1 (Pg 87)	186	73AFMC1/MC2	250	93EFW1	74	7313522 (72FPB1)	252	7930025	109	T2)	193
61BFMT1 (Pg 29)	206	73AFMC3	254	93EFW2	74	7313522 (72FPBK1)	252	7930025	109	7933281 (21AFMT1)	
61BFMT2 (Pg 47)	221	73AFMT1	255	94AFP1	70	7313522 (12FPBK1)	120	7930032 (12BFM1)	100	(Pg 19)	75
61BPB1/BK1 (Pg 65)	187	73AFMT3	255	94BFP1	70	7313532 (12FPBK1)	120	7930032 (22BFM1/		7933281 (51XFM1/	
61BPBT1 (Pg 5)	207	73AFP1	240	94EFP1	70	72 Pont.	120	M2)	112	T2)/	192
61BPBT2	256	73AFP2	240	94FPB1	70	7313532 (22FFP1/		7930033	98	7933291 (11BPBK2)	97
61GVFP1 (Pg 85)	189	73AFP3	239	94FPB1	70	P2)	120	7930035	96	7933291 (21BPBK1)	112
61GVPB1	253	73AFP4	239	95CFP1	74	7313542 (12FFM1)	106	7930053 (13BPBT1)	96	7933291 (31BPBK1)	130
61HFM2 (Pg 47)	221	73GFMT1/H2	243	95CFP2	74	7313542 (22FFM1)	113	7930061	115	7933291 (31BPBK2)	145
61HFM3	229	73GFMT1/T2	245	95CT411/12	71	7313552 (12FPBK1)	98	7930063 (13BFMT1)	97	7933291 (41BPBK1)	165
61SVPB1	253	73FMCI/MC2	250	96TT412	73	7313552 (22FPBK1)	114	7930063 (13BFMT2)	117	7933291 (51BPBK1)	187
61TFP1/PK1	218	76CFM3	254	7298832A	73	7313552 (22FPBK2)	126	7930093	117	7933291 (71BPBK1)	239
61TPB1/BK1	191	76CFMD1/D2	257	7301466	104	7313552 (22FPBK2)	126	7930121 (11BFMT1)	105	7933301 (11BFPP3/PK3)	
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7933401	217	7937025	110	9343061 (61/71GVPB1)	253	16000570 (80BCB1)	264			IKJ1048	118
7933501 (21APBK1)		7937400	115	9343283	173	16000666	263	IMPERIAL		IKJ1326/32	168
Pont.	114	7937413 (23AT411)	112	9343293	173	16000676	263	(See Chrysler)		IKJ2512 (Pg 5)	169
7933501 (21APBK2)		7937571 (21VFP1)	117	9343303	173	16000686	263	INLAND DYNATRONICS		5JC1603	234
Chev.	124	7937571 (21VFP2)	127	9343313	173	16000810	264			5JC1613	234
7933501 (21APBK2)		7937581	78	9343323	176	16000866	264	AF604	124	981026	118
Pont.	126	7937943 (33BPB1)	142	9343333	176	16000876	264	AFX802	182	981030	118
7933501 (41XPBK1)	167	7937943 (33BPB2)	147	9343343	171	16001062	242	AT830	135	984336	118
7933501 (51XPBK1)	186	7937953 (PCB)		9343353	172	16001111	254	ATK830 (Pg 71)	135	5457087	234
7933511 (21AFP1)		AR151	139	9343363	168	16001381	285	AXT838	151	5460125	234
Chev.	117	7937963	140	9343382	189	16001516	263	AXT885	214	8997004	168
7933511 (21AFP1)		7937973 (33BFMT1)	145	9343482	189	16001526	263	CTX50	172	8997025 (Pg 5)	169
Pont.	120	7937973 (33BFMT2)	144	9343492	189	16001536	260	FM404	125		
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K3)	127	AR151	139	9343502 (52BFM1)	190	16001650	260	MPT70	131	515	207
7933511 (51XFPK1)	189	7938003 (33APBK1)	142	9344124	171	16001650 (90BFP2)	284	MPT80	145	517	213
7933641 (11HPF2)	97	7938003 (33APBK2)	147	9344134	170	16001691	262	MPT801	145	528	209
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7933641 (21HPB2)	120	7938303 (23AFP2/		9344144 (44BFM3)	172	16001700	260	QK48	175	603MIS	197
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7933641 (31APB2)	145	7938313	114	9344164	173	16001801	260	RA05	139	608	261
7933641 (41APB1)	165	7938323	146	9344336 (46CFMT1/		16001801 (91YFP2)	284	RF06	142	612	259
7933641 (51APB1)	187	7938333	146	T2)	170	16002110	289	RX14	184	613	273
7933641 (70HPB1)	239	7939071 (31BPBT1)	139	9344336 (56CFMT1/T2/		16002120	289	S70A	147	631	275
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7934782 (22BT411)	112	7939071 (51BPBT1/		9344336 (56CFMT4)	213	16003513	289	S85	119	633	282
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B2)	140	7939071 (51BPBT3)	207	9344651	189	16005490 (90BFPCT1)	283	S400	176	701MPXU	215
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7935002 (72APB1)	239	7939081 (41BFMT1)	171	9345270 (70HPF1)	240	16005591	287	S705A	143	707	270
7935003 (23APB1)	120	7939081 (51BFMT1/		9345280 (Pg 103)	191	16005601	287	S900	119	815M	202
7935003 (23APB2)	128	T2)	189	9345280 (70HPF1)	240	16006270	286	S1000	149	817FM	204
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7935014 (44AFP1)	170	7939112 (32BPBK1)	140	9345500 (50BPB2)	190	CR616	80	206	180	841	190
7935021 (21HPBK1)	112	7939112 (32BPBK2)	138	9345500 (50BPB3)	215	CR627	70	INTERNATIONAL		842	199
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