



AUTO RADIO SERVICE DATA



+ AR-282 +



Audiovox ID300A
(77-300HA)

Craig S606

**Ford D9AF19A171AB, D9DF19A171AA,
D9EF19A171AA, D9VF19A171AB,
D9TF19A171AA**

J.I.L. 633

JCPenney 981-0245-00
(981-0326)

Panasonic CR-5703EC/EU
CR-5704EU

Sharp RG-3400

Ten GP-7881-1

Truetone MCC7810A77
(23-7810-7)



**AUTO
RADIO
SERVICE DATA**

AR-282

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.

WARNING: In using meters, signal generators, and any tools in servicing ICs extreme care is needed. DO NOT SHORT THE IC TERMINALS TO THE PC BOARD OR TO EACH OTHER. THE IC WILL BE INSTANTANEOUSLY DESTROYED.

ALIGNMENT PROCEDURE

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

NOTES:

1. Check for specified source voltage — DC, 14.4 volts.
2. Connect an AC voltmeter (VTVM) across speaker or dummy load (8 ohms, 10W, wirewound resistor)
3. Signal input must be kept as low as possible to avoid overload and clipping (use highest possible sensitivity of output indicator)
4. Repeat adjustment to insure good results.
5. Non-metallic alignment tools must be used (especially at FM alignment)
6. Alignment location details:

AM IF & RF ALIGNMENT USING AM SIGNAL GENERATOR

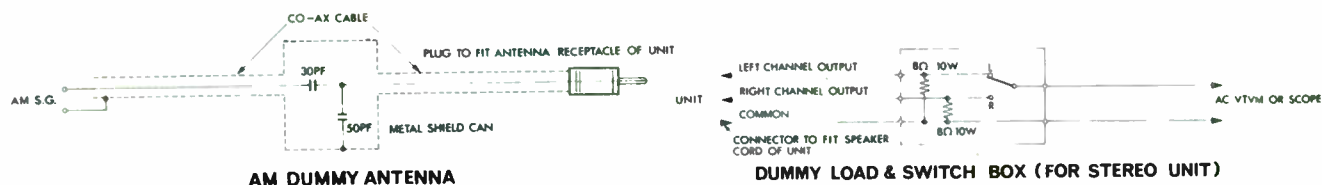
Set the radio for AM reception.

AM signal generator should be coupled with antenna receptacle (J1) through dummy antenna.

Set volume control maximum and tone to treble.

STEP	GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
1	262.5KHz 400Hz, 30% mod.	Around 1000KHz of non-interference	AC VTVM across voice coil or dummy load	T103 (T1) T104 (T2)	Adjust for maximum
2	1620KHz	High frequency end stop	"	C-148 (C12)	"
3	1400KHz	Tune to signal	"	C-140 (C7) C1	"

With radio installed in car and antenna extended to desired height, tune in a weak station near 1400KHz and adjust antenna trimmer (C1) for maximum output.



FM IF ALIGNMENT USING FM SWEEP GENERATOR

Set the radio for FM reception. High side of sweep generator through 0.01 mfd. to test point \diamond , low side to ground. Use only enough marker signal for indication. Set volume control to minimum and tone to treble.

STEP	RADIO DIAL SETTING	GENERATOR FREQUENCY	OUTPUT INDICATOR	ADJUST	REMARKS
1	10.7MHz (sweep)	Point of non-interference.	Vert amp of scope to point \diamond , low side to ground.	T102	Adjust T102 to obtain symmetry of response similar to Fig. 6 according to the colour of Ceramic Filters used.
2	"	"	"	T101	Adjust T101 for maximum amplitude and straightness of line.
3	Repeat above steps 1 and 2 twice or three times.				

NOTE:

1. FM SWEEP GENERATOR should be definitely required for FM IF alignment, because Ceramic Filters are used in IF circuit. Five kinds of Ceramic Filters are used and they are different in their center frequencies as shown below. RED 10.7MHz, BLUE; 10.67MHz, ORANGE; 10.73MHz, BLACK; 10.64MHz, WHITE; 10.76MHz
2. If the Ceramic Filters except RED are used, 10.7 MHz marker will not appear at the center of "S" curve. (See Fig. 6)
3. The colour of Ceramic Filters used is different per production, but the same colour-dotted Ceramic Filters should be replaced as one pair on the individual unit.
4. Be careful for static coupling between output lead of sweep generator and input lead of scope. The leads must be as short as possible and carefully shielded.

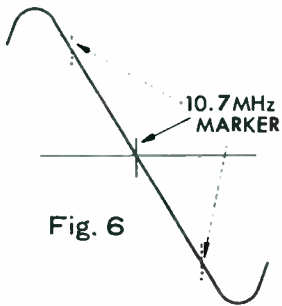
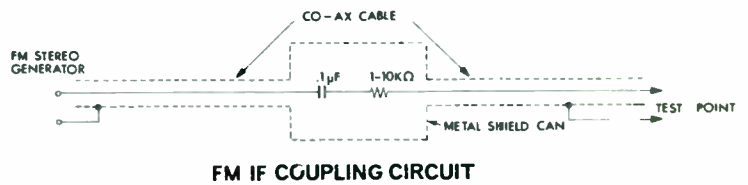


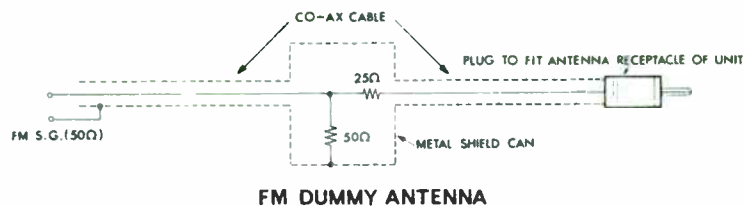
Fig. 6



FM RF ALIGNMENT USING FM SIGNAL GENERATOR

Set the radio for FM reception. Connect FM signal generator with antenna receptacle (J1) through FM dummy antenna. FM S.G. output level; 5–10 microvolts. Set volume control to 0.5 watts output (2.0 volts at 8 ohms load) and tone to treble.

STEP	GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
1	109MHz (400Hz, 22.5KHz dev)	Low frequency end stop	Output meter across 8 ohms load.	C120 (OSC)	Adjust for maximum
2	98MHz (400Hz, 22.5KHz dev)	Tune for Signal	"	C103 (ANT) C109 (RF)	"



Audiovox ID300A (77-300HA)

FM MULTIPLEX ALIGNMENT USING FREQUENCY COUNTER

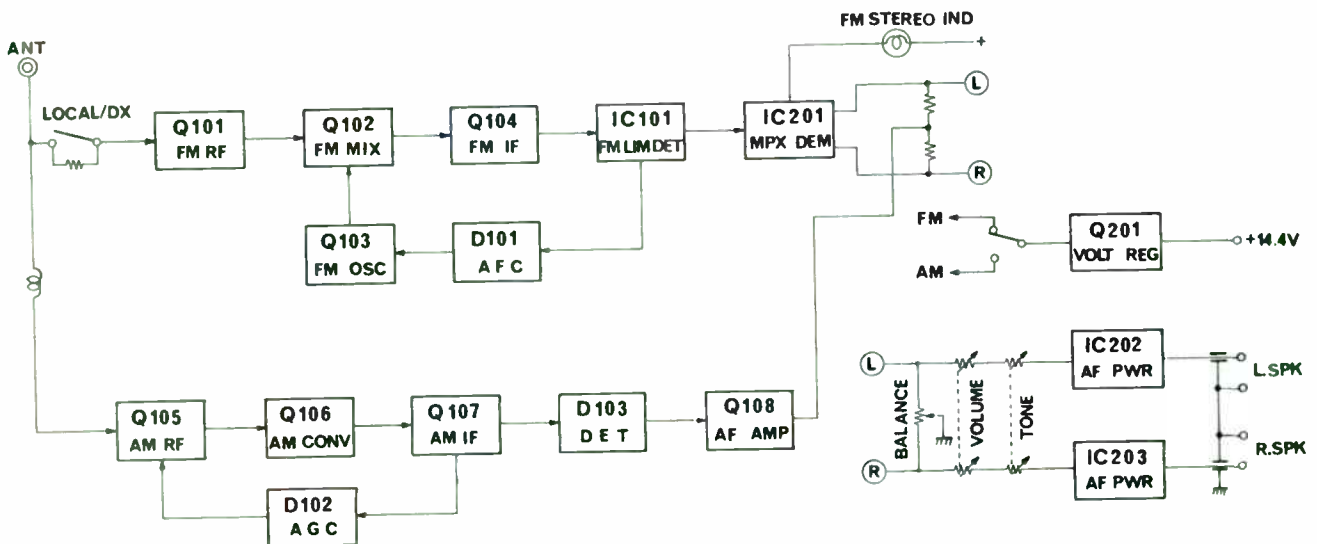
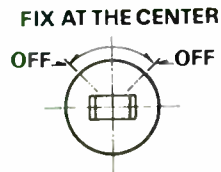
Set the radio for FM reception.

STEP	OUTPUT INDICATOR	ADJUST	REMARKS
1	Connect frequency counter to test point \diamond	R-204	Adjust to 19.000KHz (18.950-19.050KHz is permissible)

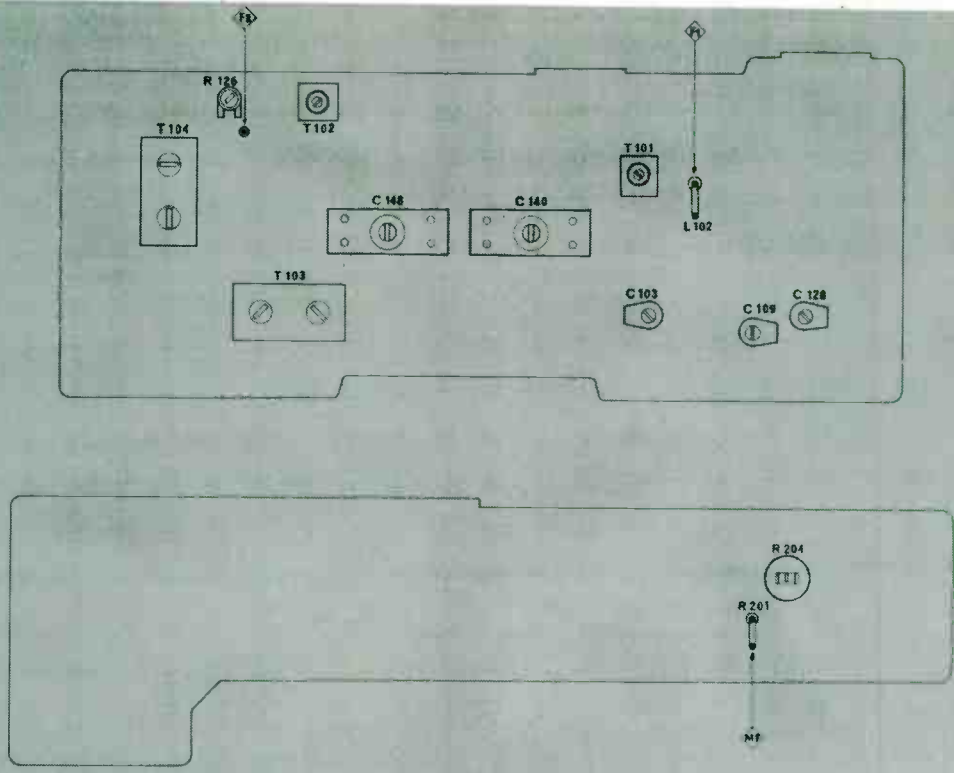
Note: Test point \diamond should be grounded while adjusting R-204.

FM MULTIPLEX ALIGNMENT WITHOUT USING FREQUENCY COUNTER

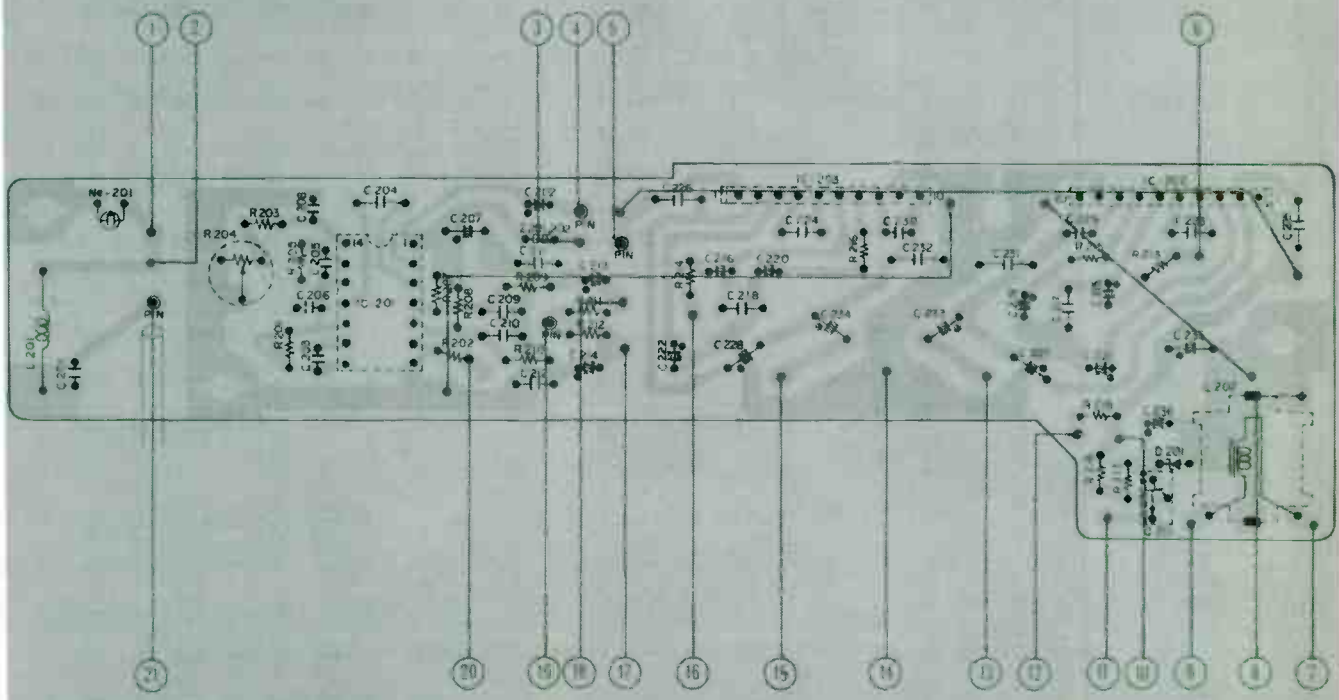
STEP	RADIO DIAL SETTING	ADJUST	REMARKS
1	Tune radio to strong FM STEREO station.	R-204	Rotate R-204 CW or CCW and mark the points where the STEREO INDICATOR LAMP is turned off. Then, fix R-204 at the center of the above marked points.



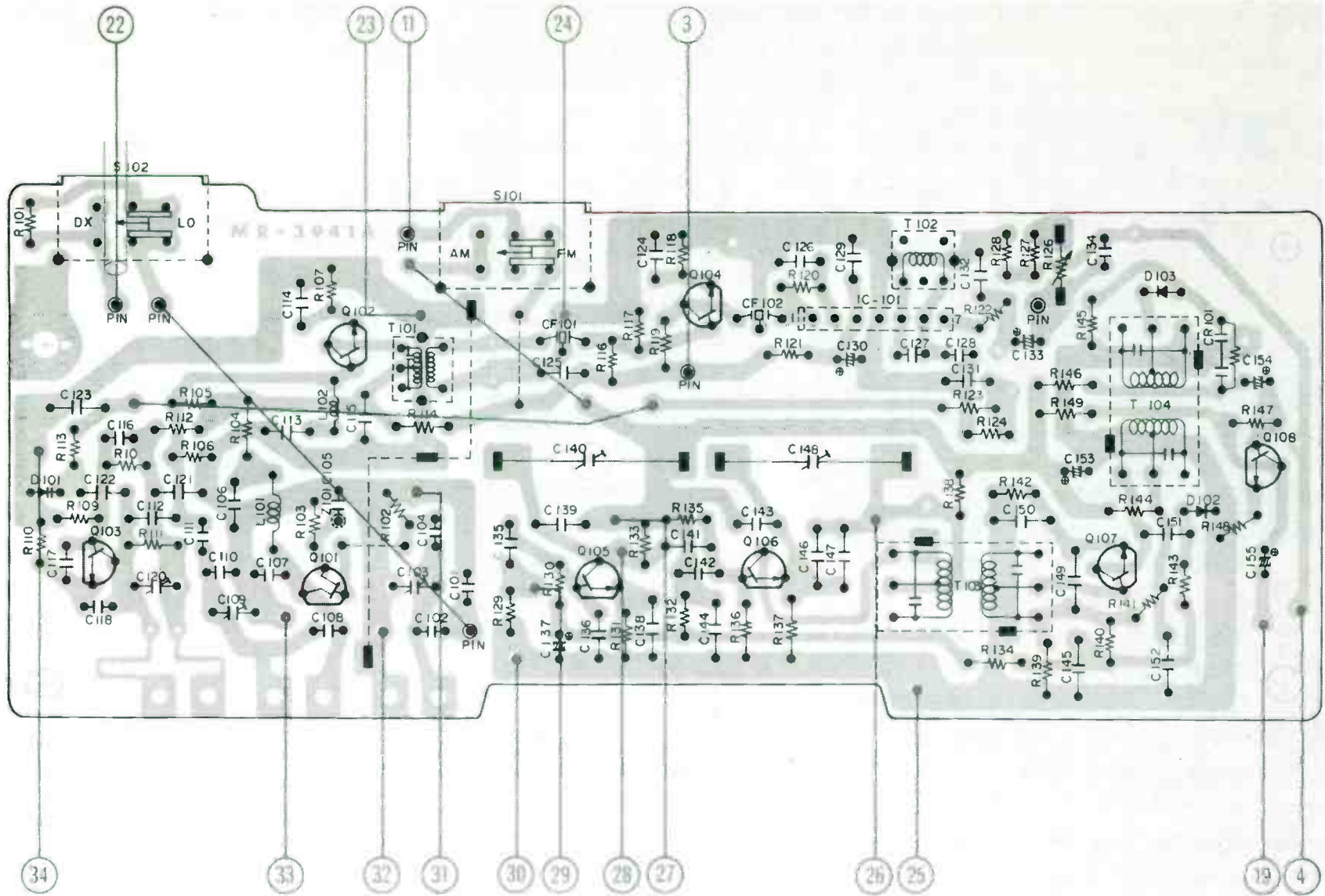
AM / FM, FM STEREO MODEL



ALIGNMENT LOCATION DETAIL

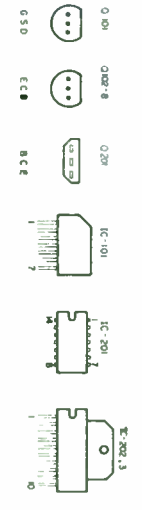
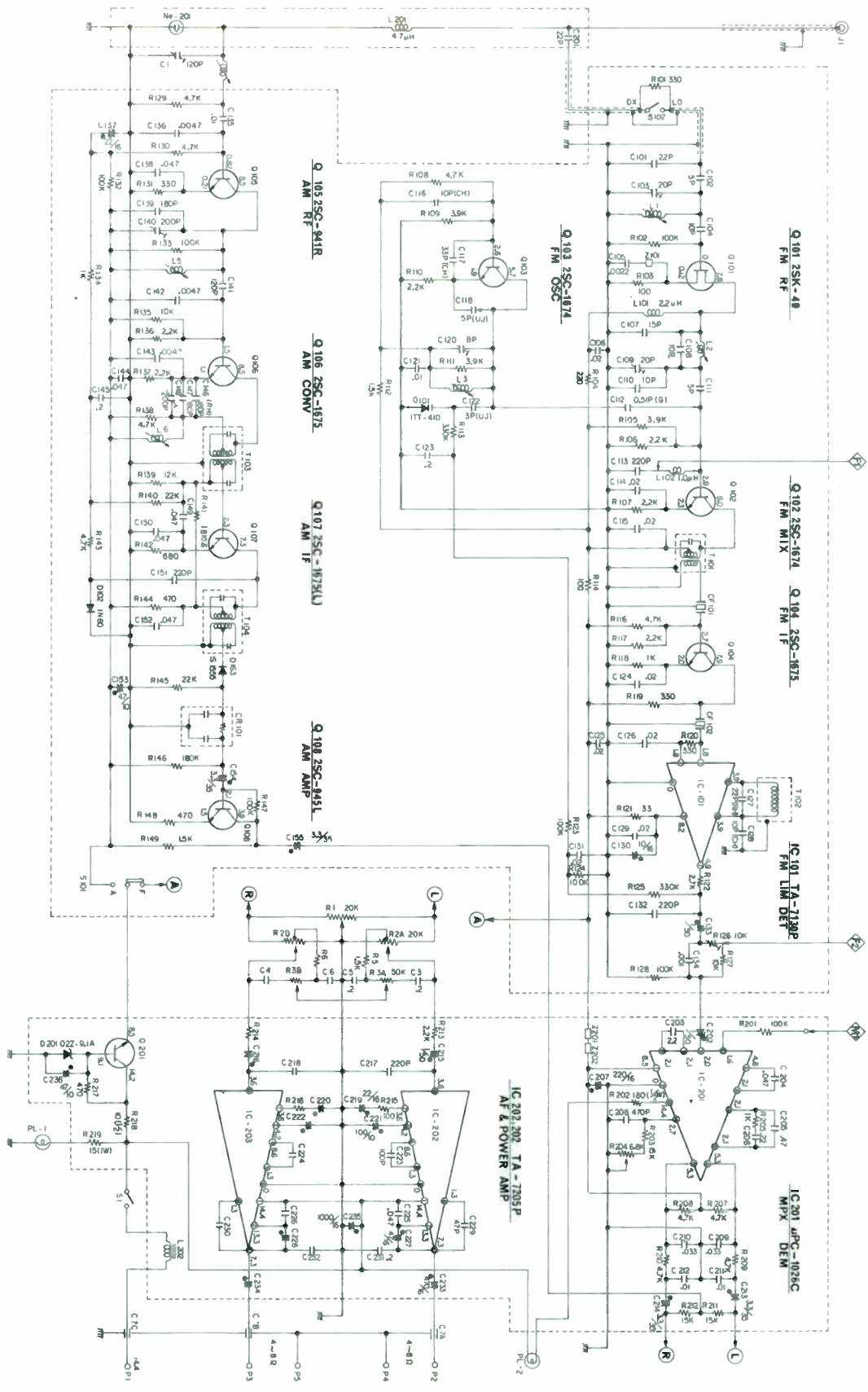


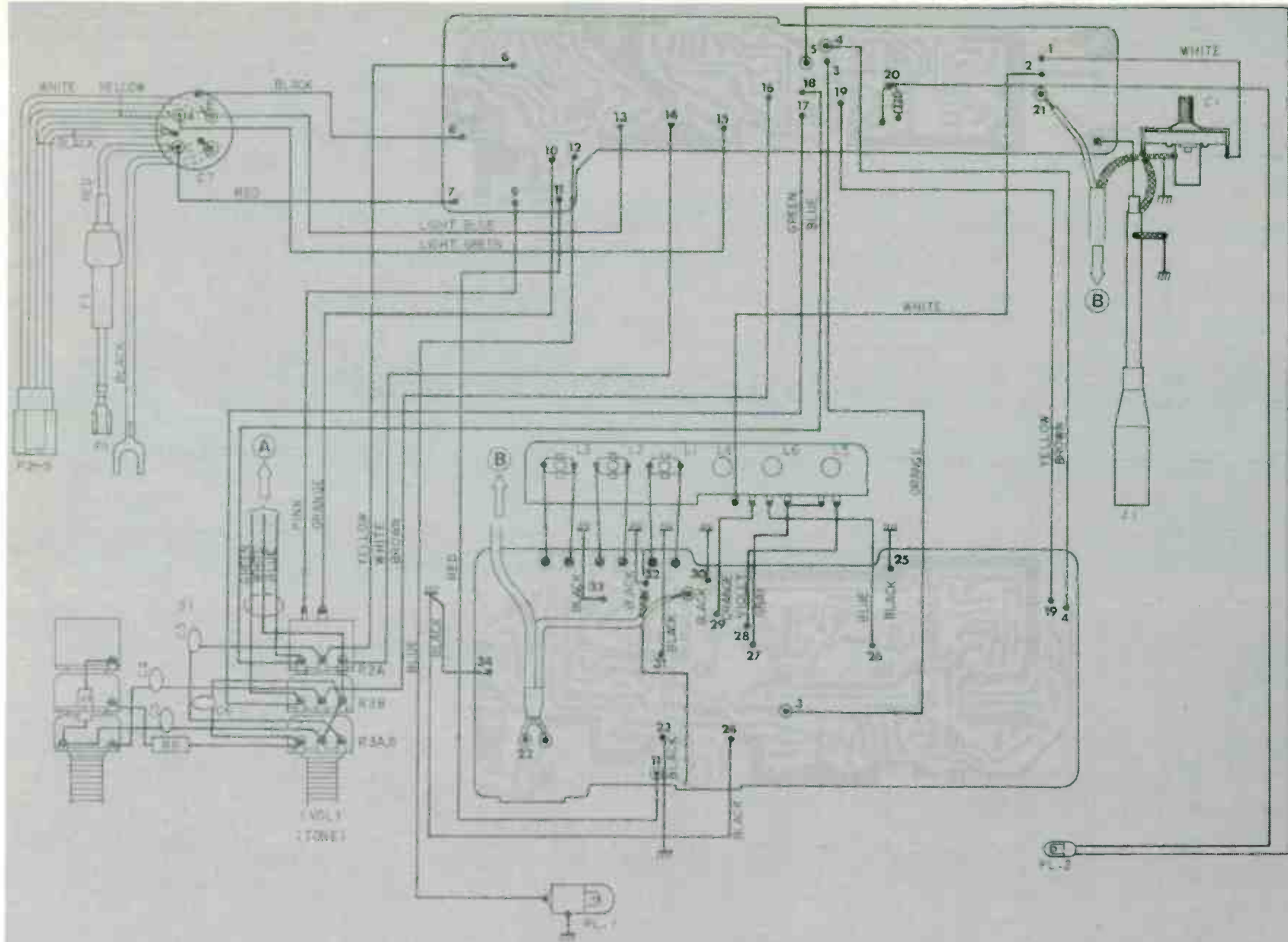
PARTS ASSEMBLY DIAGRAM



PARTS ASSEMBLY DIAGRAM

Audiovox ID300A
 (77-300HA)





WIRING DIAGRAM



Audiovox ID300A
 (77-300HA)

Reference No.	Part No.	Description	Q'ty	Reference No.	Part No.	Description	Q'ty
ELECTRICAL PARTS				D-102	58R-104-82	Diode, AGC 1N-60	1
CAPACITOR (Unlisted capacitors are ceramic Disc type, 50V See schematic diagram for specific value.)				D-103	58R-104-83	Diode, DET. IS-1555	1
C-1	58R-104-1	120PF, max. trimmer TC-68B	1	D-201	58R-104-84	Diode, zener .022-9.1A	1
C-3, 4, 5, 6, 123, 145 231, 232	58R-104-2	.2uF, 12V, semi-conductor	8	IC-101	58R-104-85	IC, FM IF & DET. TA-7130P	1
C-7A, B, C	58R-104-3	1,000PF X 3, feed-thru KC-3A	1	IC-201	58R-104-86	IC, MPX DEM. uPC-1026C	1
C-103, 109	58R-104-4	20PF, max. trimmer TC-37	2	IC-202, 203	58R-104-87	IC, power TA-7205P	2
C-112	58R-104-5	51PF, 50V, fixed-composition	1	Q-101	58R-104-88	Transistor, FM RF ZSR-49	1
C-116, 128	58R-104-6	10PF, 50V, NPO, ceramic	2	Q-102, 103	58R-104-89	Transistor, FM MIX & OSC ZSC-1674	2
C-117	58R-104-7	33PF, 50V, NPO, ceramic	1	Q-104, 106, 107	58R-104-90	Transistor, FM IF, AM CONV & IF ZSC-1675	3
C-118	58R-104-8	5PF, 50V, N750, ceramic	1	Q-105	58R-104-91	Transistor, AM RF ZSC-941	1
C-120	58R-104-9	8PF, max. trimmer TC-36	1	Q-108	58R-104-92	Transistor, AM amp ZSC-945	1
C-121, 135	58R-104-10	.01uF, 50V, mylar	2	Q-201	58R-104-93	Transistor, Volt. reg. ZSD-471	1
C-122	58R-104-11	3PF, 50V, N750, ceramic	1	SWITCHES			
C-127	58R-104-12	22PF, 50V, N220, ceramic	1	S-101, 102	58R-104-101	AM/FM & Local/DX SW SW-140	2
C-130	58R-104-13	10uF, 16V, electrolytic	1	TRANSFORMERS			
C-133, 202, 215, 216	58R-104-14	1uF, 50V, electrolytic	4	T-101	58R-104-111	FM IFT IT-830B	1
C-136, 142, 143	58R-104-15	.0047uF, 50V, mylar	3	T-102	58R-104-112	FM IFT IT-7130	1
C-137, 219, 220	58R-104-16	22uF, 16V, electrolytic	3	T-103	58R-104-113	AM IFT IT-808A	1
C-138, 149, 150, 152	58R-104-17	.047uF, 25V, semi-conductor	4	T-104	58R-104-114	AM IFT IT-218B-1	1
C-140, 148	58R-104-18	200PF, max. trimmer TC-19	2	MECHANICAL PARTS			
C-144, 204, 225, 226	58R-104-19	.047uF, 50V, mylar	4		58R-104-121	Background, dial KR-14778	1
C-146, 147	58R-104-20	180PF, 50V, N220, ceramic	2		58R-104-122	Bracket, p.c. board (left) KR-14741	1
C-153, 236	58R-104-21	47uF, 16V, electrolytic	2		58R-104-123	Bracket, p.c. board (right) KR-14742	1
C-154, 155, 213, 214	58R-104-22	3.3uF, 35V, electrolytic	4		58R-104-124	Cable Ass'y, battery & speaker cord QS-879	1
C-203	58R-104-23	2.2uF, 16V, tantalum	1		58R-104-125	Chassis, base PR-14736	1
C-205	58R-104-24	47uF, 35V, tantalum	1		58R-104-126	Chassis, front MR-14738	1
C-206	58R-104-25	22uF, 35V, tantalum	1		58R-104-127	Cover, top PR-14737	1
C-207	58R-104-26	220uF, 16V, electrolytic	1		58R-104-128	Dog-Washer, volume & tuning shaft KR-12549	2
C-208	58R-104-27	470PF, 50V, polyethylene	1		58R-104-129	Escutcheon Ass'y, with dial plate band selector knob 58R-104C(02) ID-300A	1
C-209, 210	58R-104-28	.033uF, 25V, semi-conductor	2		58R-104-130	Escutcheon Ass'y, with dial plate band selector knob 58R-104C(03) 77-300HA	1
C-211, 212	58R-104-29	.01uF, 16V, semi-conductor	2		58R-104-131	Heatsink, power IC KR-14745	1
C-221, 222	58R-104-30	100uF, 10V, electrolytic	2		58R-104-132	Holder, pilot lamp PLH-8	1
C-227, 228	58R-104-31	47uF, 16V, electrolytic	2		58R-104-133	Holder, stereo indicator lamp KR-30960	1
C-233, 234	58R-104-32	470uF, 16V, electrolytic	2		58R-104-134	Insulator, fiber KR-2964	1
C-235	58R-104-33	1,000uF, 16V, electrolytic	1		58R-104-135	Knob, local/dx switch KN-69T	1
COILS & CHOKES					58R-104-136	Lever, AM/FM switch KR-14744	1
L-1, 2, 3, 4, 5, 6	58R-104-41	Tuner Ass'y PT-3158	1		58R-104-137	Lever, local/dx switch KR-14743	1
L-101	58R-104-42	Choke, RF LH-2.2	1		58R-104-138	Nut, hex N3	2
L-102	58R-104-43	IF Trap, FL-1.0	1		58R-104-139	Nut, volume & tuning shaft KR-11508	2
L-201	58R-104-44	Choke, ANT SL-4.7	1		58R-104-140	P.C. Board, AF, MR-3942	1
L-202	58R-104-45	Choke, DC NL-6	1		58R-104-141	P.C. Board, RF, MR-3941	1
CONTROLS					58R-104-142	Plate, shield KR-14816	1
R-1	58R-104-51	Balance, L/R VR-211	1		58R-104-143	Pointer, dial KR-14739	1
R-2A, B, 3A, B, S-1	58R-104-52	Volume, Tone & On-Off SW VR-223	1		58R-104-144	Receptacle, antenna AJ-12	1
MISCELLANEOUS ELECTRICAL PARTS					58R-104-145	Reflector, pilot lamp KR-14310	1
CF-101, 102	58R-104-61	Ceramic Filter, SFE-10.7MA-5	2		58R-104-146	Retainer, antenna receptacle KR-12285	1
CR-101	58R-104-62	CR Component SM-02	1		58R-104-147	Retainer, battery & speaker cable KR-12615	1
F-1	58R-104-63	Fuse 2A	1		58R-104-148	Screw, machine P.B. 3 X 5	1
Ne-201	58R-104-64	Neon Bulb NE-2	1		58R-104-149	Screw, machine P.B. 3 X 4	1
PL-1	58R-104-65	Lamp, pilot PL-14B	1		58R-104-150	Screw, machine P.B. 3 X 6	2
PL-2	58R-104-66	Lamp, stereo indicator PL-4S	1		58R-104-151	Screw, machine P.B. 3 X 6 (BS)	2
Z-101	58R-104-67	Ferrite Bead, filter FB-202	1		58R-104-152	Screw, machine P.S. 3 X 6	2
Z-201, 202	58R-104-68	Ferrite Bead, filter FB-108	2		58R-104-153	Screw, tapping hex. 3 X 6	14
RESISTORS (Unlisted resistors are carbon insulated type, 1/4W See schematic diagram for specific value.)					58R-104-154	Screw, tapping P.B. 3 X 6	5
R-5, 6	58R-104-71	1,5000, 10%, 1/2W, fixed-composition	2		58R-104-155	Screw, tapping P.B. 3 X 5	6
R-126	58R-104-72	10,000, semi-fixed VR-141	1		58R-104-156	Shaft Ass'y, tuning & balance TSA-22	1
R-202	58R-104-73	180, 10%, 1/2W, fixed-composition	1		58R-104-157	Spacer band selector & local/dx switch lever KR-14903	2
R-204	58R-104-74	6,800, semi-fixed VR-134	1		58R-104-158	Spacer, tuner KR-14740	2
R-218	58R-104-75	10, 10%, 1/2W, carbon	1		58R-104-159	Sticker, model no. 58R-104C ID-300A	1
R-219	58R-104-76	15, 10%, 1W, metal film	1		58R-104-160	Sticker, model no. 58R-104C2 77-300HA	1
SEMI-CONDUCTORS					58R-104-161	Washer, lock LW9	2
D-101	58R-104-81	Diode, vari-cap 1TT-410	1		58R-104-162	Washer, plain W3	2

ALIGNMENT PROCEDURE

AM

STEP	ADJUSTING CIRCUIT	CONNECTIONS		GEN. FREQ'CY	DIAL SETTING	ADJUST	ADJUST FOR
		INPUT	OUTPUT				
1	AM IF	Connect Signal Generator, thru dummy Ant. to antenna receptacle	Connect Scope, VTVM to audio output, with a 4 Ohm dummy load in place.	455 kHz (30% Mod.)	OFF station	T601,T602 T603,T604	Maximum Output
2	AM OSC			500 kHz ± 10 kHz	Low End	L602	
3				1690 kHz ± 10 kHz	High End	C607	
4	AM RF			1400 kHz	1400 kHz	C701,C603	
5	REPEAT ADJUSTMENTS FOR BEST RESULTS						

FM/FM MPX

1	FM IF	Connect Sweep Generator to "TP"	Connect Oscilloscope to TP-1	10.7 MHz	Off Station	T401	Max. Output
2	DETECTOR					T402	Symmetrical "S" Curve
3	BAND	Connect FM Signal Gen. thru dummy Ant. to antenna receptacle	Connect VTVM to Audio output with a 4 Ohm dummy load in place	87 MHz (Mod.)	Low End	C416	Max. Output
4	19 kHz PILOT	Frequency Counter to TP-2			Off Station	R502	Obtain a reading of 19.0 kHz
5	STEREO SEPARATION	Connect FM Signal Gen. w/Stereo Gen. thru dummy Ant. to Antenna receptacle	Connect VTVM to Audio output with a 4 Ohm dummy load in place	98 MHz (Mod.)	98 MHz	R443	Minimum R(L) output when L (R) signal is Modulated

ADJUSTMENTS

HEAD AZIMUTH: Insert a standard azimuth test cartridge. Adjust the azimuth adjust screw (Ref. No 40 on MECH. Exploded view) for maximum output.

CROSSTALK: Insert a standard test cartridge. Set unit to program #3 and adjust the head height adjust nut (Ref. No 39 on MECH. Exploded view) for maximum output.

AM ANTENNA TRIMMER: With the unit installed in car and antenna fully extended. Tune-in a weak station near 1400 kHz and adjust C701 (AM Ant. Trimmer) for maximum output.

REF. NO	CRAIG KEY NO.	DESCRIPTION	MFR'S SUGG RET. PRICE	REF. NO.	CRAIG KEY NO.	DESCRIPTION	MFR'S SUGG RET. PRICE
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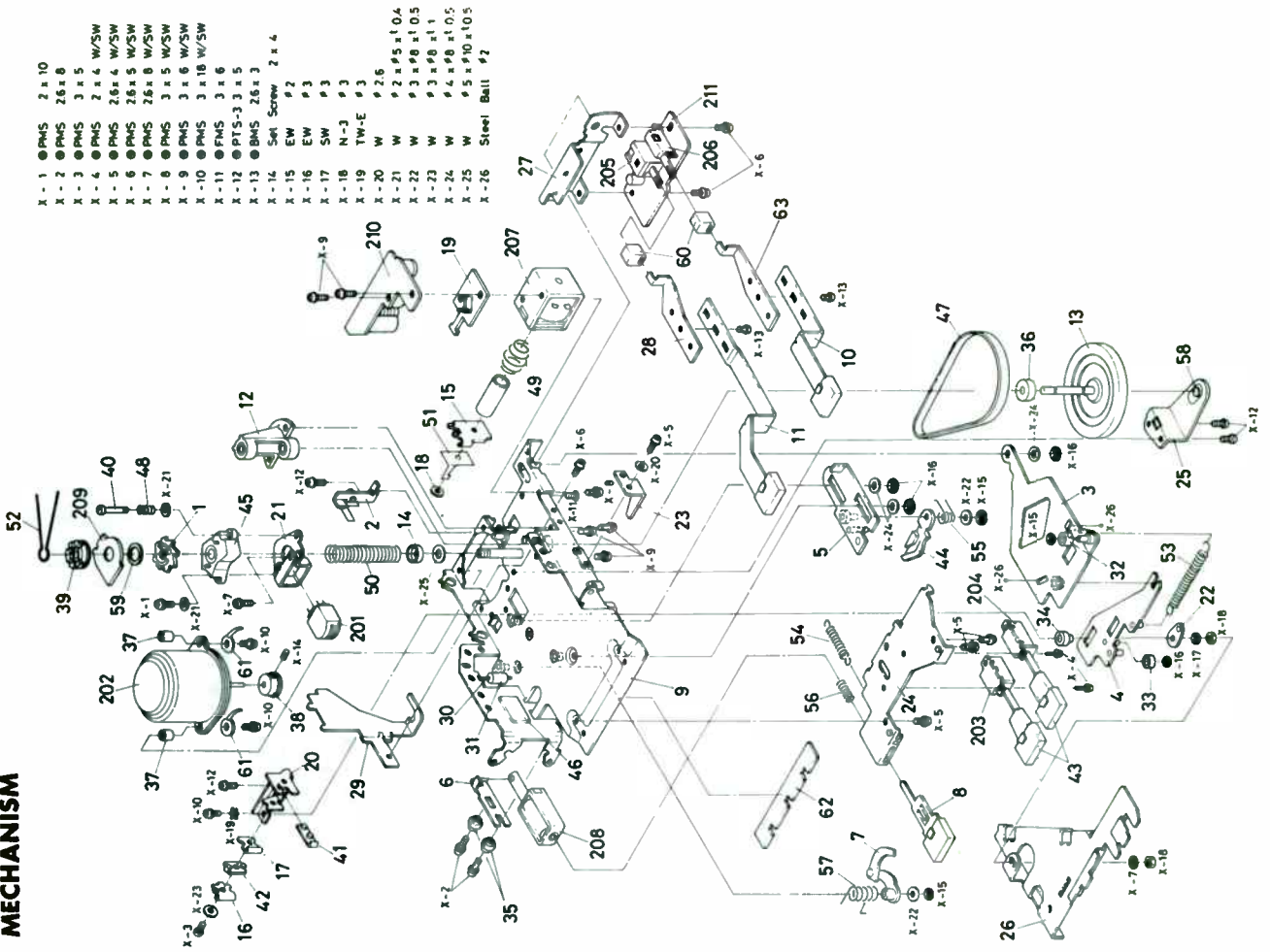
PACKAGING

	S606001	Individual Carton	1.75		S601003	Ass'y, Mtg Hardware Kit	1.50
	S606002	Styrofoam, Left	.70		3128053	"L" Bracket Strap	.25
	S606003	Styrofoam, Right	.70		S606083	Ass'y, Trim Plate (Comp)	2.60
	S606004	Styrofoam, Front	.30		S680007	Trim Plate (Stripped)	2.10
	3516004	Adjust Driver	.70		S606084	Index Label (L), VOL/PROG/CLOCK	.45
	3148020	Knob, TONE/FADER	.75		S606085	Index Label (R), FADER/TUNING	.45
	3148021	Knob, VOL/TUNING	.80		S606620	Ass'y, 9P Pwr/SP Conn (car side)	3.95
	3128054	Bkt, Perforated Mtg Strap	.40		XFU002	Spare Fuse, 2A	.30
	9744100	Gasket	1.10		S606808	Power Harness, Clock B+ (30)	1.20

MISCELLANEOUS ELECTRICAL

SK801	S606621	3P Conn Plug (KSA-3X)	.65	S305		Manual Prog Sw (See VOL Cont)	
SK802	S606622	4P Conn Plug (KSA-4X)	.70	S306	S606532	Leaf Sw, HOUR Set	1.15
SK803	S606623	6P Conn Plug (KSA-6X)	1.05	S307	S606532	Leaf Sw, MINUTE Set	1.15
	S606809	17P Flexible EPC Conn	2.25	S308	3144066	PCB, Prog LED Sw	.65
	S606608	28P So, Clock IC Mtg	2.25	S501	S601071	Push Sw, STEREO/MONO	1.65
	S606620	Ass'y, 9P Pwr & SP Conn (Car side)	3.95	S701	S606531	Push Sw, LOC/DX	1.85
	S606612	Ass'y, 4P Conn So w/Harness	2.65	S702	S606530	Push Sw, AM/FM Select	2.70
	S606613	Ass'y, 3P Conn So w/Harness	1.95	VR101,201		VR 20k Ohms, TONE Cont VR 20k Ohms, VOL Cont VR 50k Ohms, BALANCE Cont Power Switch PROG/TIME Set Switch	9.40
	S606614	Ass'y, 6P Conn So w/Harness	2.50	VR102,202			
	S606807	Power Harness, Clock B+ (PW9)	.40	VR301	S606570		
	3148142	Neon Lamp	.70	S301			
SK305		Power Sw (See VOL Cont)		S305			
DS701	3136074	Slide Sw, RADIO/TAPE	2.30	VR103,203	S606571	VR 50 Ohms, FADER Cont	8.90
S301	S601070	Push Sw, MATRIX	1.70	R443,502	S601085	Semi-Var Res, 10k Ohms	.75
S302		Sensor Sw (Ref. 16 & 17/MECH.)		SK804	S606609	17P So for EPC Conn	2.95

MECHANISM



- X-1 ①PMS 2 x 10
- X-2 ①PMS 26 x 8
- X-3 ①PMS 3 x 5
- X-4 ①PMS 2 x 4 W/SW
- X-5 ①PMS 26 x 4 W/SW
- X-6 ①PMS 26 x 5 W/SW
- X-7 ①PMS 26 x 8 W/SW
- X-8 ①PMS 3 x 5 W/SW
- X-9 ①PMS 3 x 6 W/SW
- X-10 ①PMS 3 x 18 W/SW
- X-11 ①FMS 3 x 6
- X-12 ①PTS-3 3 x 5
- X-13 ①BMS 26 x 3
- X-14 Set Screw 2 x 4
- X-15 EW #2
- X-16 EW #3
- X-17 SW #3
- X-18 N-3 #3
- X-19 TW-E #3
- X-20 W #2.6
- X-21 W #2 x .95 ± 1.04
- X-22 W #3 x .98 ± 1.05
- X-23 W #3 x .98 ± 1.1
- X-24 W #4 x .98 ± 1.05
- X-25 W #5 x 1.0 ± 1.05
- X-26 Steel Ball #2

Pin No.	IC601	IC501	IC101 IC701	IC102 IC702	IC401	Q405	O501
1	2.55	9	1.9	14.25	0	E	1.3
2	1.45	2.95	0.6	7.65	2	B	2
3	0.7	4.75	0.01	1.45	0	C	7.95
4	0	6	0	5.25	0		
5	9.65	6	0.6	5.3	0.7		
6	0.7	0.75	6.25	7.8	2.05		
7	2.08	0	10.25	14.12	3.65		
8	2.2	2.3	0	5.2	0		
9	12.4	2.25	13	4.85	0		
10	2.15	1.5	7	3.65	0		
11	0	2.25	0	2.05	0		
12	11.45	2.25	0	9	0		
13	3.36	2.25	0	2	0		
14	1.36	2.8	0	2	0		
15	11.6	0	0	0	0		
16	11.45	0	0	0	0		

VOLTAGE CHART

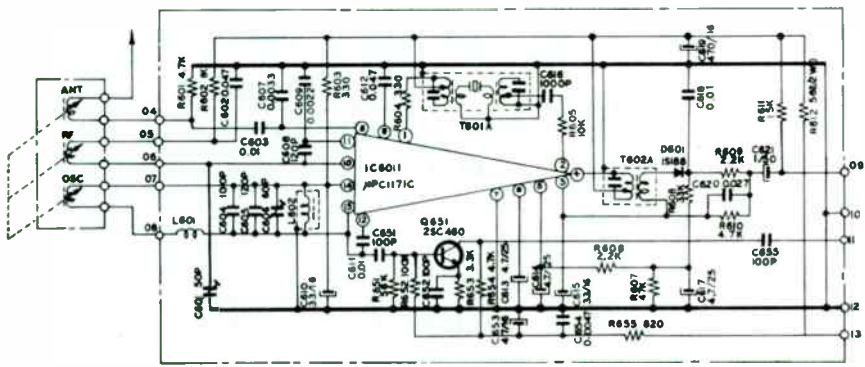
NOTES:

(1) Both EARLY and LATE production PCB's are inter-changeable.

REF. NO.	Craig KEY NO.	DESCRIPTION
C601	L600675	Trimmer, 50pF
T601A	S606642	AM IFT
T602A	S606643	AM IFT
C606	S606677	Trimmer, 60pF
IC6011	uPC1171C	I.C., AM RF/IF

(2) IC501 uses three different types of IC's in production which are interchangeable with the following modifications:

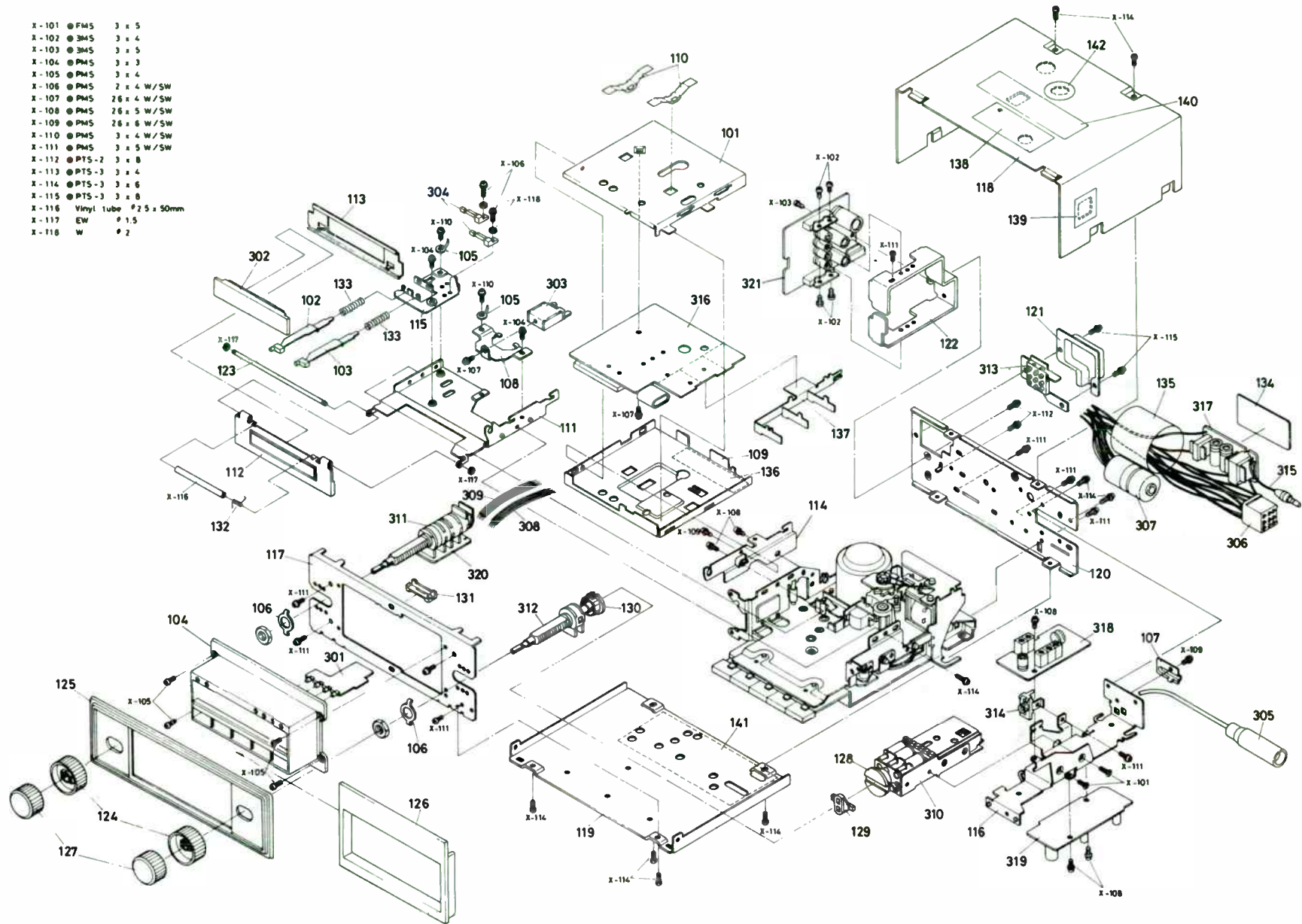
- SN76115N or MC1310P: R504/R505 should be 3.9k Ohms
R506/R507 Should be 3.3k Ohms
- uPC1026: R504/R505 should be 3.3k Ohms
R506/R507 Should be 4.7k Ohms



AM RF/IF SCHEMATIC DIAGRAM (Late Production)

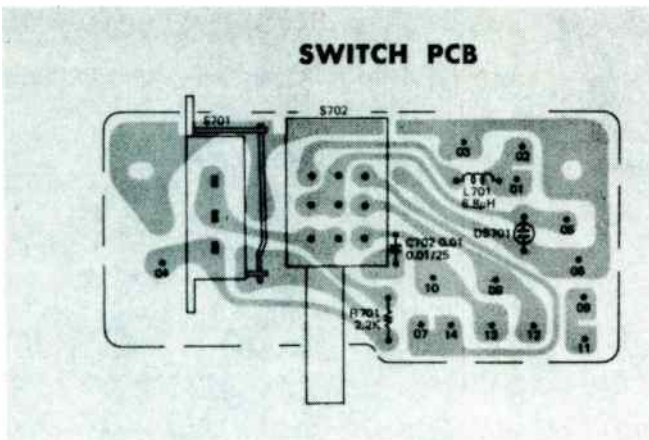
CABINET & CHASSIS

- X-101 @ FMS 3 x 5
- X-102 @ 3MS 3 x 4
- X-103 @ 3MS 3 x 5
- X-104 @ PMS 3 x 3
- X-105 @ PMS 3 x 4
- X-106 @ PMS 2 x 4 W/SW
- X-107 @ PMS 2 6 x 4 W/SW
- X-108 @ PMS 2 6 x 5 W/SW
- X-109 @ PMS 2 6 x 6 W/SW
- X-110 @ PMS 3 x 4 W/SW
- X-111 @ PMS 3 x 5 W/SW
- X-112 @ PTS-2 3 x 8
- X-113 @ PTS-3 3 x 4
- X-114 @ PTS-3 3 x 6
- X-115 @ PTS-3 3 x 8
- X-116 Vinyl Tube $\phi 2.5 \times 50\text{mm}$
- X-117 EW $\phi 1.5$
- X-118 W $\phi 2$

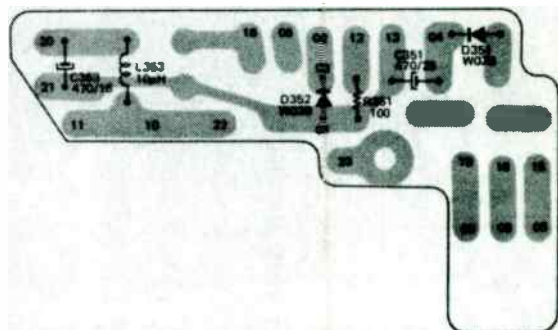


Craig S606

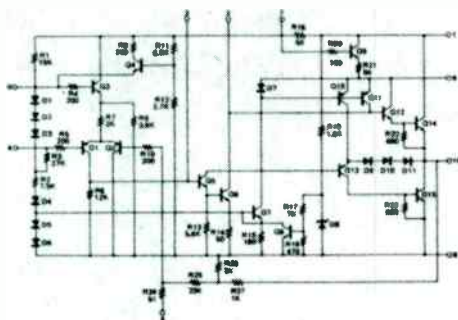
SWITCH PCB



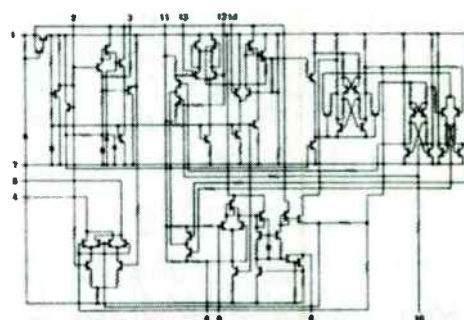
POWER SUPPLY PCB

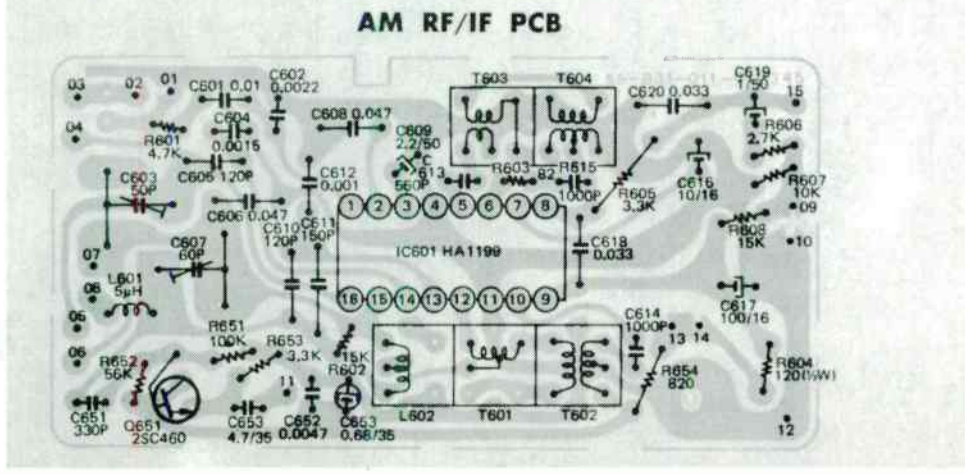
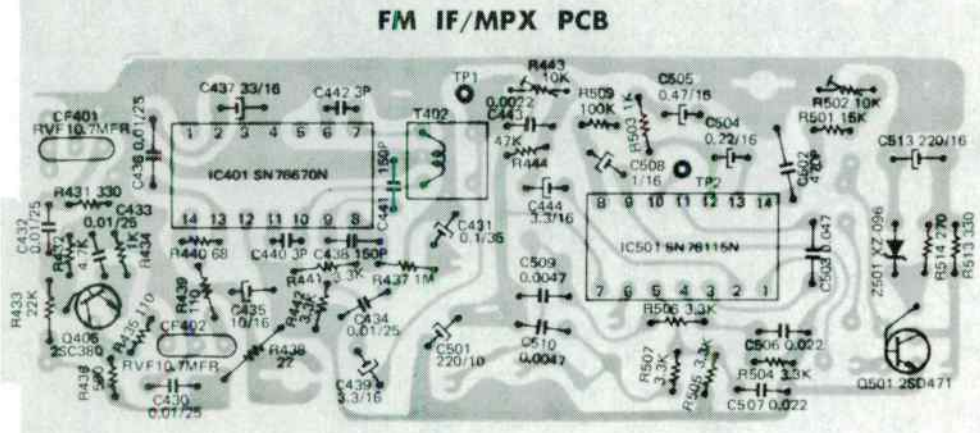
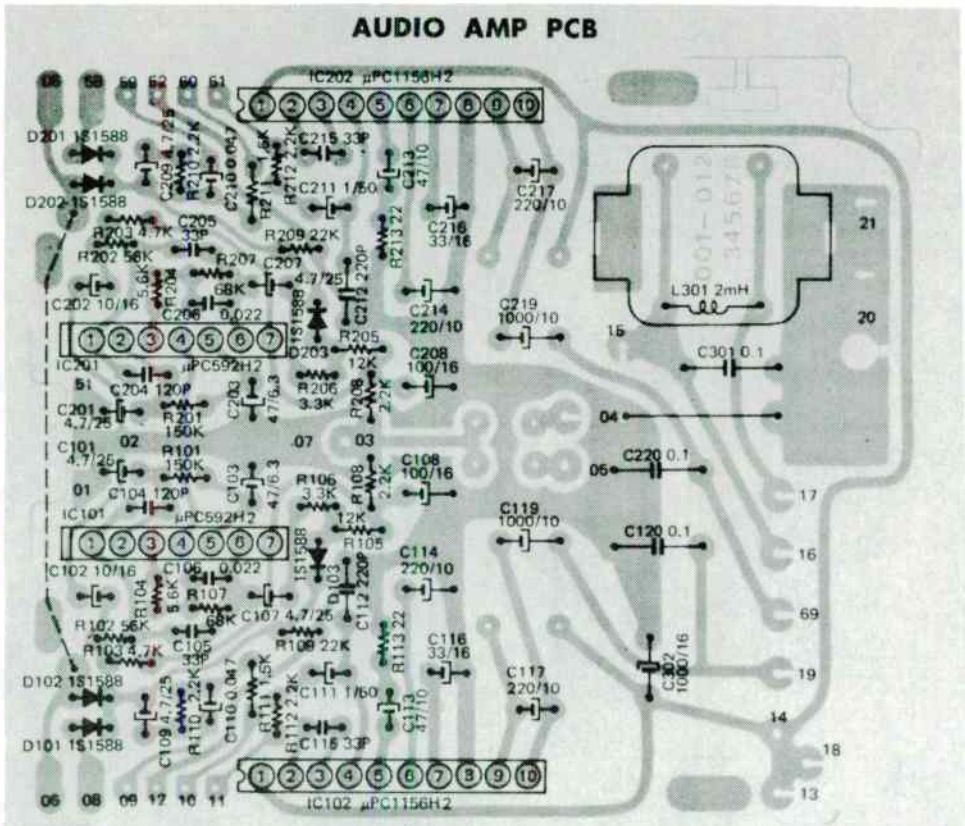


PC82H

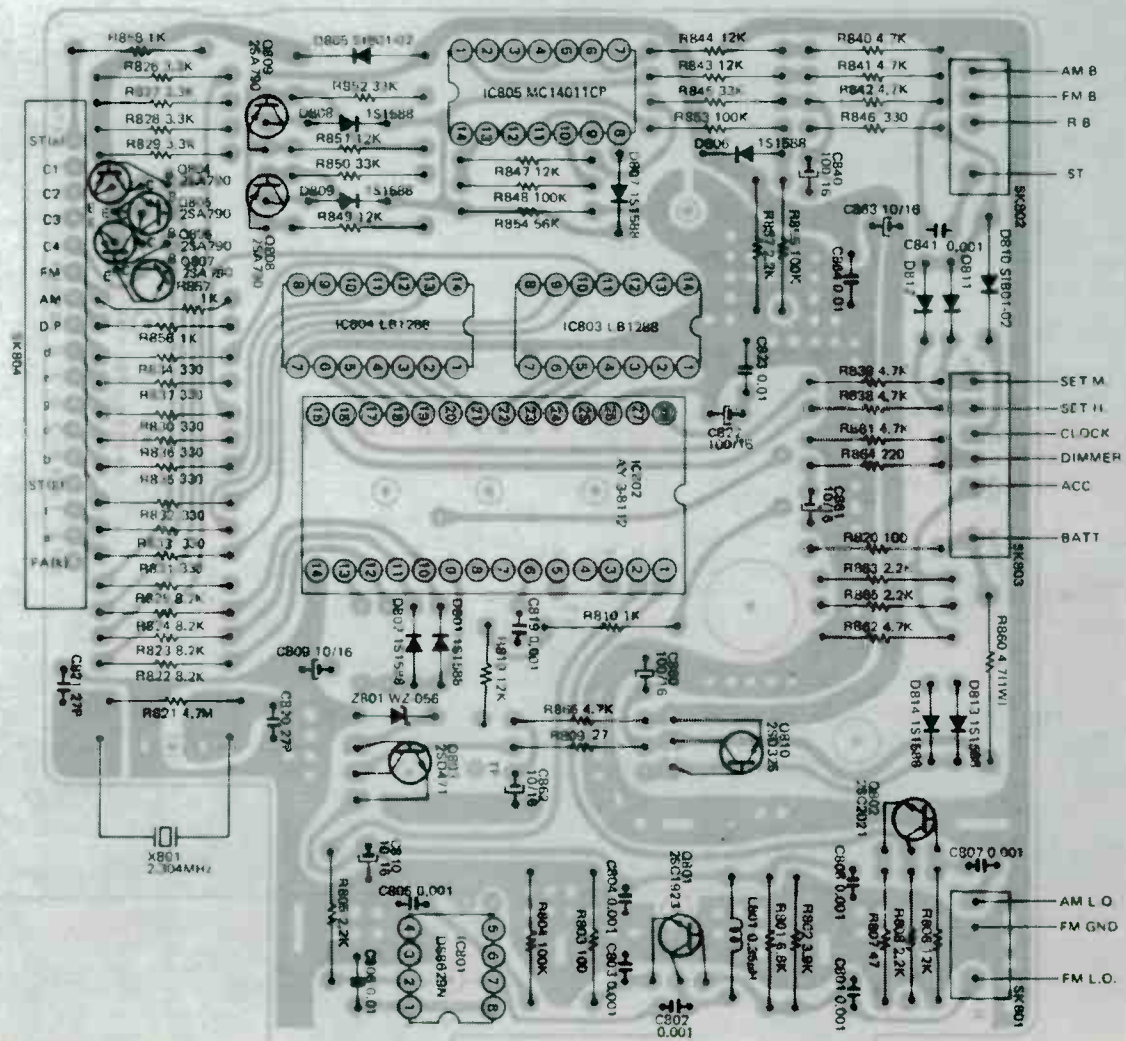


8N78115M



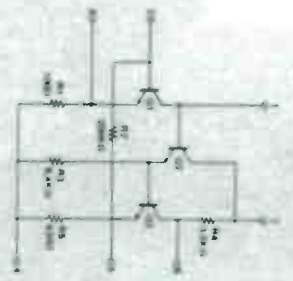


LOGIC (CLOCK) PCB



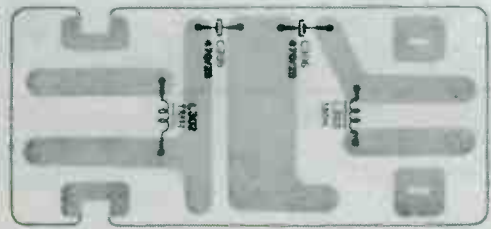
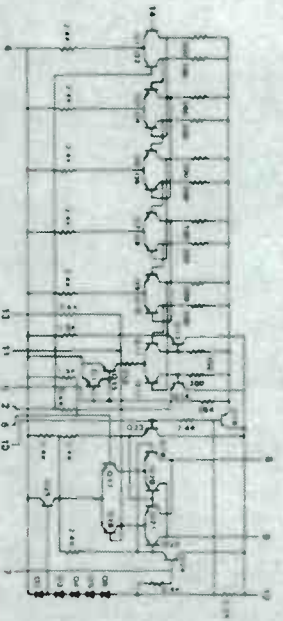
NOTE:

JPC1156HZ

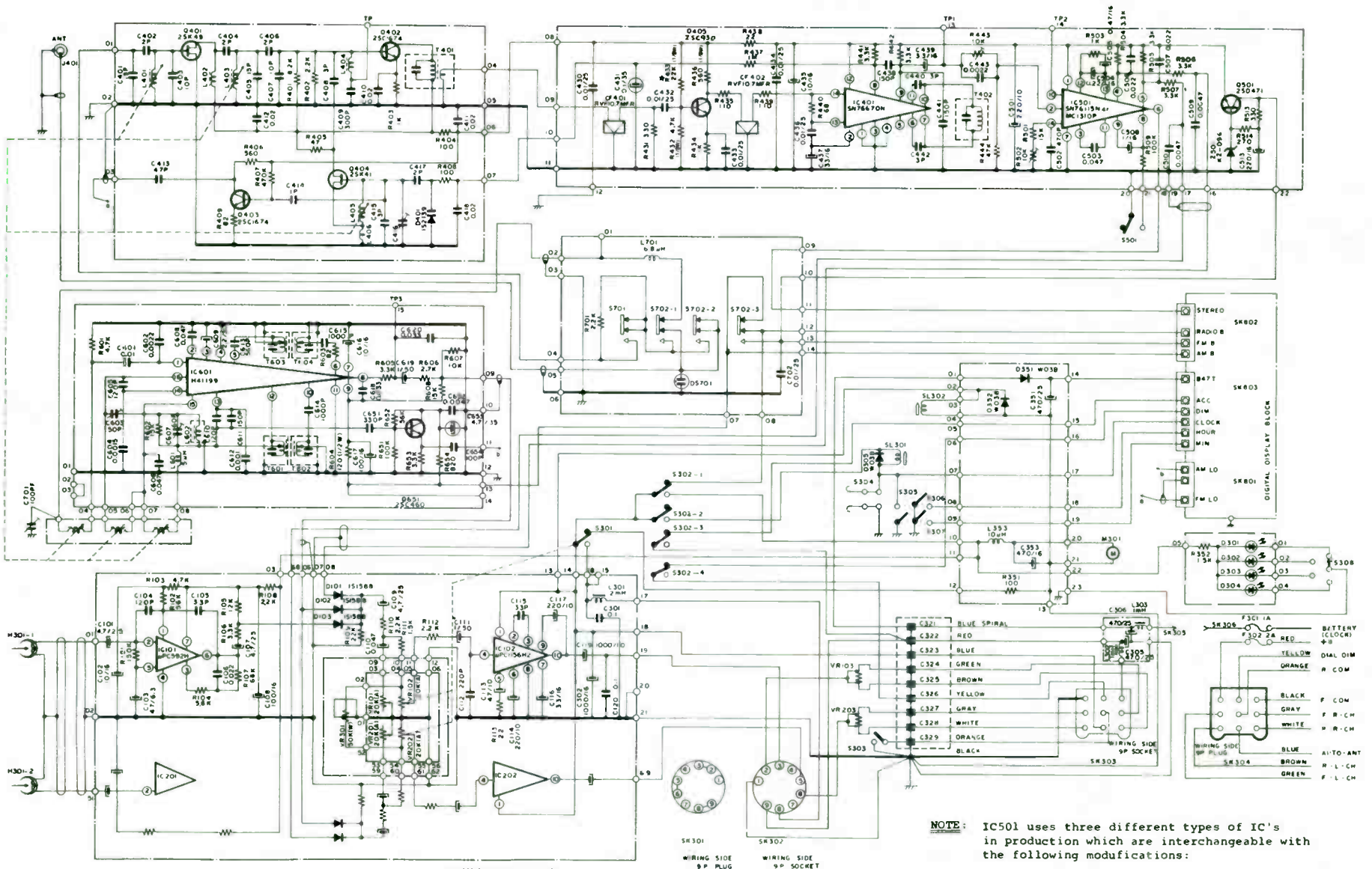


SN76670N

FILTER PCB



TUNER/AUDIO SCHEMATIC DIAGRAM

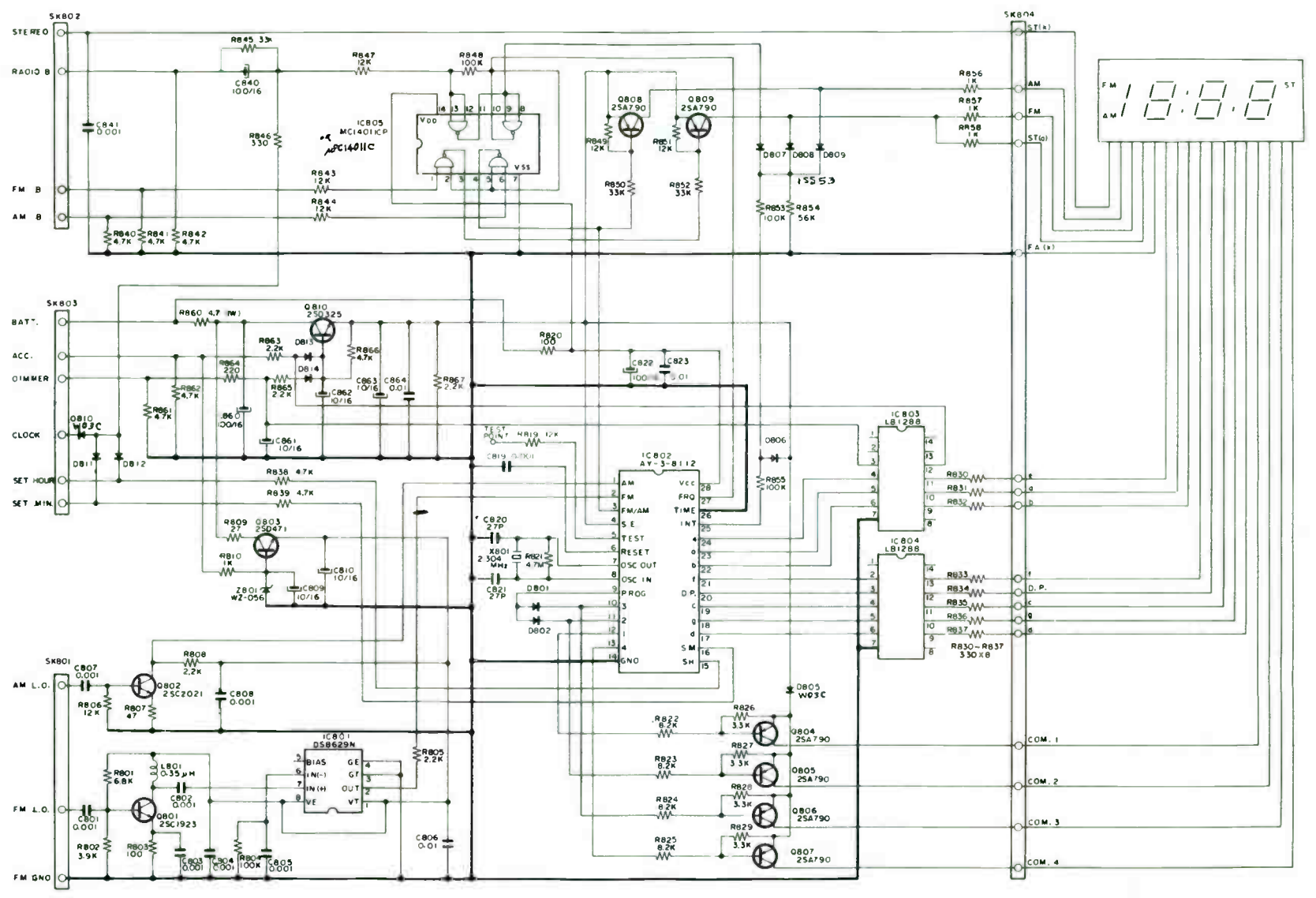


- NOTES
- S301 POWER SW (OFF)
 - S302 TAPE/RADIO SW (RADIO)
 - S303 MATRIX SW (ON)
 - S304 SENSING SW (OFF)
 - S305 SELECTOR SW (OFF)
 - S306, 307 TIME SET SW (OFF)
 - S308 CHANNEL SELECTOR SW (1 CH)
 - S601 MONO/STEREO SW (STEREO)
 - S701 LOCAL/DX SW (LOCAL)
 - S702 BAND SW (AM)
 - D501-304 CHANNEL INDICATOR
- UNLESS OTHERWISE INDICATED
- 1 ALL RESISTANCE VALUES ARE IN Ω
 - 2 ALL RESISTORS ARE RATED AT 1/4 WATT 5%
 - 3 ALL CAPACITANCE VALUES ARE IN pF
 - 4 ALL CAPACITORS ARE RATED AT 50 WV
 - * NOMINAL VALUE MAY VARY

NOTE: IC501 uses three different types of IC's in production which are interchangeable with the following modifications:

- SN76115N or MC1310: R504/R505 should be 3.9k Ohms
- R506/R507 should be 3.3k Ohms
- uPC1026: R504/R505 should be 3.3k Ohms
- R506/R507 should be 4.7k Ohms

LOGIC (CLOCK) SCHEMATIC DIAGRAM

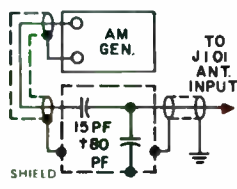


- NOTES
- 1 ALL RESISTANCE VALUES ARE IN OHMS R-10 M-10
 - 2 ALL RESISTORS ARE RATED AT 1/4 WATT 5%
 - 3 ALL CAPACITANCE VALUES ARE IN pF P-10 uF
 - 4 ALL CAPACITORS ARE RATED AT 50WV
 - * NOMINAL VALUE MAY VARY

PRELIMINARY INFORMATION

1. Disassemble radio as required.
2. Connect +14 VDC output from power supply to A+ cable lead, and negative lead of power supply to chassis ground.
3. Connect VTVM or scope to AM audio output on AM panel.
4. Connect AM signal generator as directed in AM ALIGNMENT PROCEDURE.
5. Set AM-FM mode switch for AM operation.

AM ALIGNMENT PROCEDURE

STEP	SPECIAL INSTRUCTIONS	SIGNAL GENERATOR		RECEIVER	
		CONNECTION TO RECEIVER	DIAL SETTING	DIAL SETTING	ADJUST
1	Follow preliminary instructions.	To Q102 base (converter) thru .1 MF capacitor.	262.5 KHz	1000 KHz	T102 (black core) for max.
2	Same as step 1.	Same as step 1.	262.5 KHz	1000 KHz	T102 (blue core) for max.
3	Same as step 1.	Same as step 1.	262.5 KHz	1000 KHz	T101 (black core) for max.
4	Same as step 1.	Same as step 1.	262.5 KHz	1000 KHz	T101 (red core) for max.
5	Re-assemble radio with exception of cover. Connect +14 VDC to A+ cable lead of radio. Connect a 3.2 ohm load resistor across the output socket P2. Connect VTVM or scope across load resistor. Set vol. control to max. and adjust generator output for 1.8V RMS across load resistor.	Thru dummy antenna (Diagram D) to antenna input.	1610 KHz	1610 KHz	1. C113 (OSC.) max. 2. C108 (RF) max. 3. C101 (ANT.) max. (Repeat)
		 <p style="text-align: center;">108.5 D9AF 80 D9DF 54 D9EF 73.5 D9TF 187 D9VF</p> <p style="text-align: center;">DIAGRAM D. AM DUMMY ANTENNA</p>			
6	Install completely assembled radio in car with antenna fully extended. Tune in a weak station above 1400 KHz and readjust antenna trimmer C101 for maximum volume.				

PERFORM THE FOLLOWING ALIGNMENT PROCEDURE ONLY IF TUNING COIL OR CORES HAVE BEEN REPLACED.
 FACTORY INSTALLED TUNER ASSEMBLIES ARE FACTORY ALIGNED.

1,2,3,4	Same as above.				
5	Remove bezel and sub dial. Rotate screw part of all three AM cores counterclockwise as much as possible. Then follow step 5 above except do not re-assemble bezel and sub dial. **	Thru dummy antenna to antenna input. (Refer to Diagram D for dummy antenna.)	1610 KHz	1610 KHz	1. C113 (OSC.) max. 2. C108 (RF) max. 3. C101 (ANT.) max. (Repeat)

**CAUTION: Avoid scratching sub dial on removal.

AM ALIGNMENT PROCEDURE (Cont'd)

STEP	SPECIAL INSTRUCTIONS	SIGNAL GENERATOR		RECEIVER	
		CONNECTION TO RECEIVER	DIAL SETTING	DIAL SETTING	ADJUST
6	Tune coils by adjusting screw part of each core.	Same as step 5.	1000 KHz	1000 KHz	1. L105 (OSC.) max. 2. L103 (RF) max. 3. L102 (ANT.) max. (Repeat)
7	Repeat adjustments in steps 5 and 6, if necessary, to improve dial tracking.				
8	After dial tracking is completed, cement brass screw part of each core to its grommet on carriage housing. Re-assemble sub dial, bezel, and cover.				
9	Install completely assembled radio in car with antenna fully extended. Tune in a weak station above 1400 KHz and readjust antenna trimmer C101 for maximum volume.				

VARACTOR POWER SUPPLY ALIGNMENT
AM-FM MONAURAL MODELS D9AF, D9DF, D9EF,
D9TF AND D9VF

SERVICE NOTES

Follow preliminary information steps 1 through 3 below to determine whether the varactor power supply requires complete alignment.

PRELIMINARY INFORMATION

1. Connect +14 VDC output from power supply to A+ cable lead, and negative lead of power supply to radio chassis.
2. Set AM-FM mode switch for FM operation.
3. To determine whether varactor power supply alignment is necessary, use VTVM to measure VRAC tuning voltage at J201-3 under conditions listed below. (If any voltage measured is not within limits specified, proceed with COMPLETE VARACTOR ALIGNMENT PROCEDURE.)
 - a. Dial pointer set to extreme high end (at stop) — output on VTVM should be 6.7 to 6.9 VDC.
 - b. Dial pointer set to 94 MHz — output on VTVM should be 1.4 to 1.6 VDC.
 - c. Dial pointer set to extreme low end (at stop) — output on VTVM should be 0.68 to 0.72 VDC.

COMPLETE VARACTOR ALIGNMENT PROCEDURE

STEP	PROCEDURES
1	Dissassemble radio as required (see disassembly instructions).
2	Set pointer to 94 MHz (lightly press a push button to release clutch). Adjust core of L104 for 1.50VDC on VTVM at P201-3.
3	Check voltages at extreme ends of tuner travel. These voltages should be 0.72 VDC, or less at low end, and 6.6 VDC, or greater at the high end.
4	Adjustment of the core can be made at 98 MHz to meet this minimum tuning voltage range or to center the tuning voltage range.

**Ford D9AF19A171AB, D9DF19A171AA,
D9EF19A171AA, D9VF19A171AB,
D9TF19A171AA**

**FM ALIGNMENT
AM-FM MONAURAL MODELS D9AF, D9DF, D9EF,
D9TF AND D9VF**

EQUIPMENT

1. Power Supply — Hewlett Packard 6285A or equivalent.
2. A-C VTVM — Hewlett Packard 400H or equivalent.
3. FM Generator — Boonton 202H or equivalent.
4. Oscilloscope — Tektronix 504 or equivalent.
5. RF Voltmeter or Detector Probe (see Diagram A for information on building an RF detector probe).
6. Varactor supply voltage from Varactor Supply Panel.

SERVICE NOTES

Before proceeding with the FM alignment, read the Service Notes and follow preliminary information steps 1 through 3 under VARACTOR POWER SUPPLY ALIGNMENT to determine whether the varactor voltages are within acceptable limits.

Use a VTVM with an input impedance of 1 megohm or greater for voltage measurements.

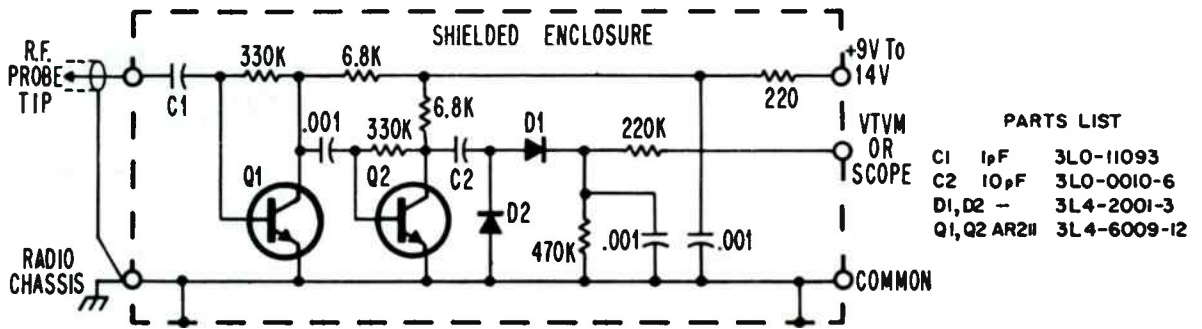
PRELIMINARY INFORMATION

1. Connect RF signal generator through dummy antenna to antenna input jack J101. (Refer to Diagram C for dummy antenna configuration.) Use 22.5 KHz modulated signal at frequency indicated in complete FM alignment procedure (except where otherwise indicated), and keep generator output at 1 millivolt for entire procedure.
2. Use test point J201-1 for indication of FM audio output.

PARTIAL FM ALIGNMENT PROCEDURE FOLLOWING PARTS REPLACEMENT

When replacing a component on the FM tuner panel, alignment should be performed only on the component replaced. The procedure in each case is shown in simplified chart form below.

PART REPLACED	GENERATOR SETTING	ADJUSTMENT FOR MAX. OUTPUT
L207	88MHz	L207
C226	108MHz	C226
C203, C208	104MHz	Only the capacitor or capacitors replaced
L201, L204	92MHz	Only the coil or coils replaced
TD203	108MHz 88MHz	C226 L207
TD201 TD202	104MHz 92MHz	The associated capacitor (C203 or C208) The associated coil (L201 or L204)
T202 FM detector transformer	Follow procedure as explained in step 10 of COMPLETE FM ALIGNMENT PROCEDURE.	



PARTS LIST

C1	1 μ F	3L0-11093
C2	10 μ F	3L0-0010-6
D1, D2	-	3L4-2001-3
Q1, Q2	AR2H	3L4-6009-12

DIAGRAM A. RF DETECTOR PROBE SCHEMATIC

COMPLETE FM ALIGNMENT PROCEDURE

STEP	PROCEDURE
1	Connect VTVM or scope to test point J201-1 for indication of FM audio output.
2	Connect RF voltmeter or RF detector to input (pin 1) of IC201 (junction of R234 and R221. (If RF voltmeter is not available, use detector probe suggested in Diagram A.)
3	Pull out high end pushbutton to unlock. Manually tune radio to 108 MHz for varactor tuning voltage into FM panel J201-3 of +6.5 VDC on VTVM. Push the button in to lock in voltage setting.
4	Set generator to 108 MHz and adjust C226 for max. output.
5	Set generator to 104MHz and adjust antenna trimmer C203, and RF trimmer C208 for max. output on scope or meter. Adjust generator output as needed to prevent limiting in IC201.
6	Pull out low end pushbutton to unlock. Manually tune radio to 88 MHz for varactor tuning voltage of 0.75 VDC on VTVM. Push the button in to lock in voltage setting.
7	Set generator to 88 MHz and adjust L207 for max. output.
8	Set generator to 92 MHz and adjust antenna coil L201, and RF coil L204 for max. output on scope or meter.
9	Repeat steps 4,5,7 & 8. If output reading on scope or meter is within 1 dB of max. output, no further tuning is required. If output reading is not within limit specified, repeat steps 4 through 8 until output is within the limit.
10	Align FM detector at 98 MHz as follows: a. Ground AFC line at junction of R231, R232, C229, and R224. b. Adjust generator frequency for max. output at pin 1 of IC201. c. Set generator to 75 KHz deviation, 400 Hz modulated signal at 1 millivolt output. d. Adjust FM detector transformer T202 for max. output on scope or meter. e. Adjust generator frequency for min. distortion in output indication. f. At null point, readjust T202 for max. output on scope or meter. g. Adjust T201 for max. output on scope or meter.

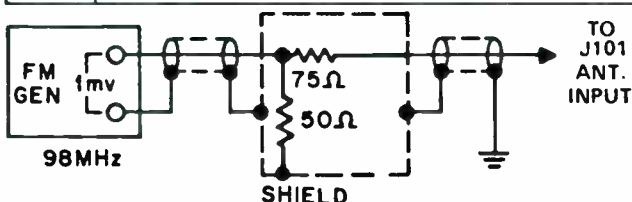
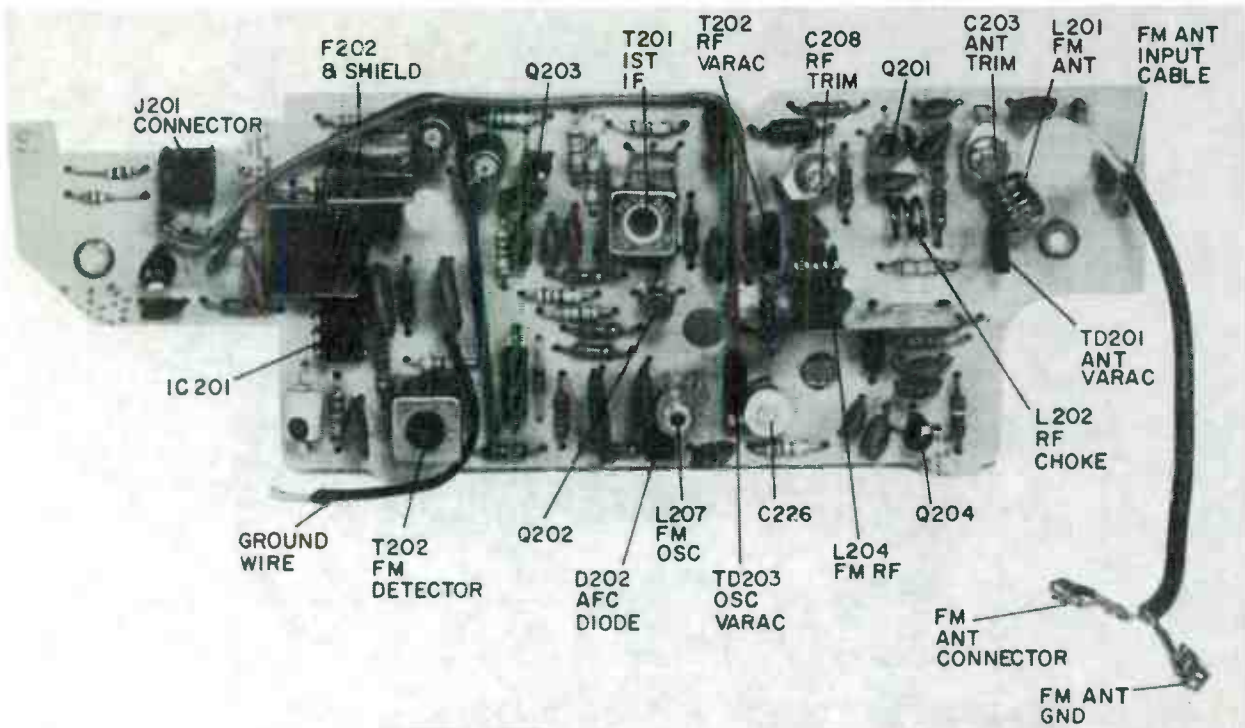
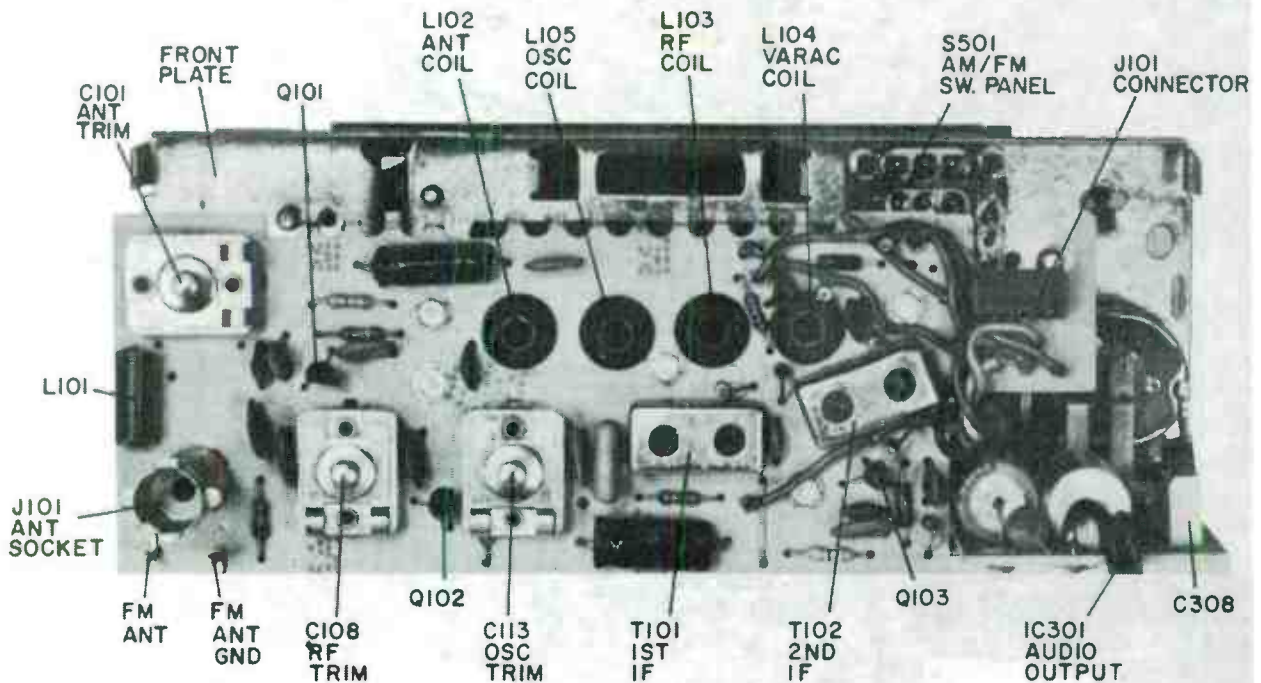


DIAGRAM C. FM DUMMY ANTENNA

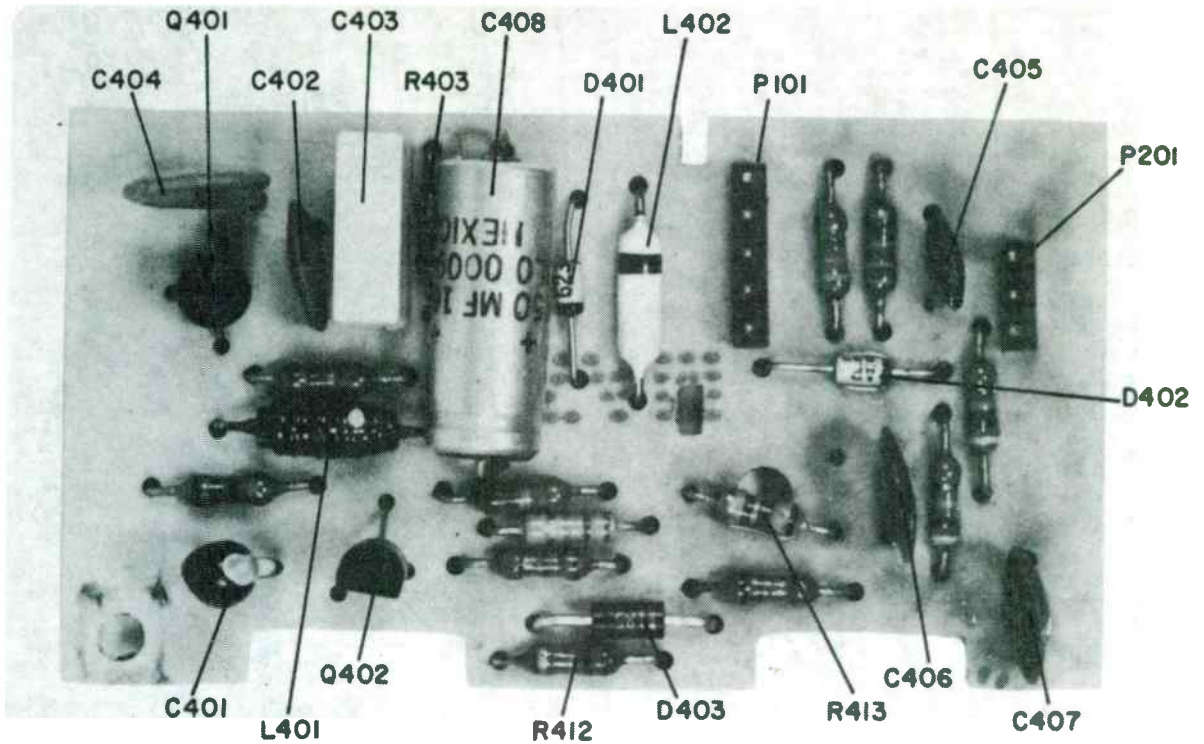
**Ford D9AF19A171AB, D9DF19A171AA,
D9EF19A171AA, D9VF19A171AB,
D9TF19A171AA**



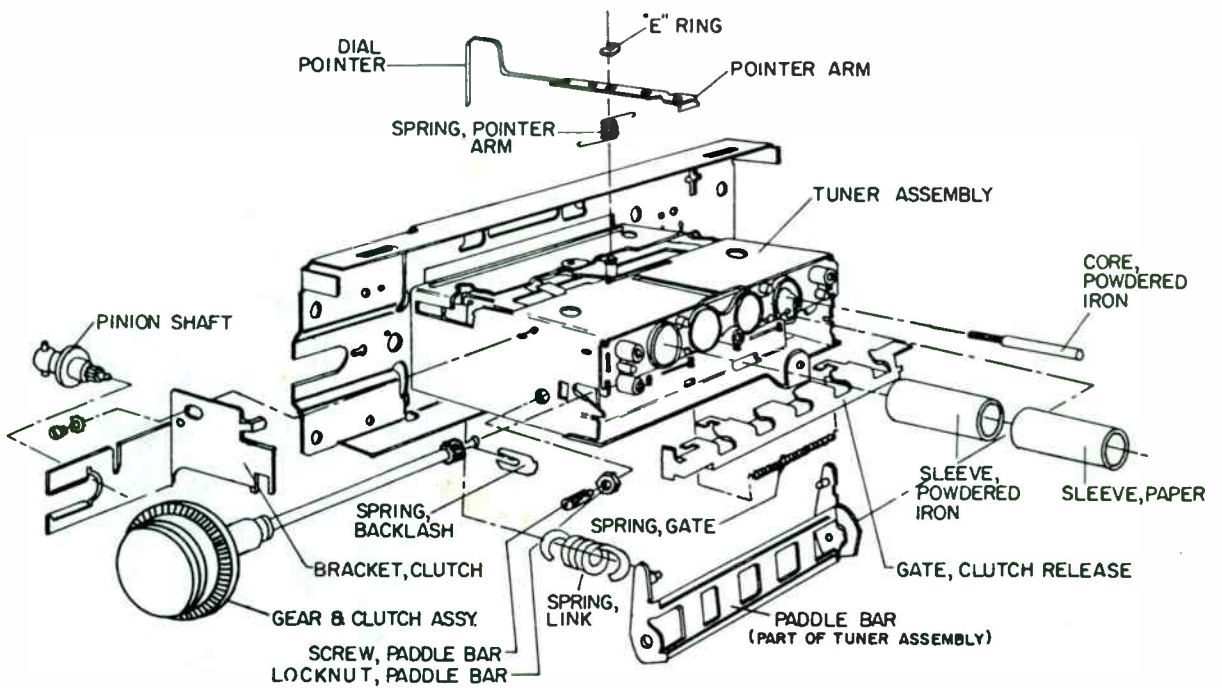
FM TUNER PANEL
AM-FM MONAURAL MODELS D9AF(AB), D9DF, D9EF, D9TF AND D9VF(AB)



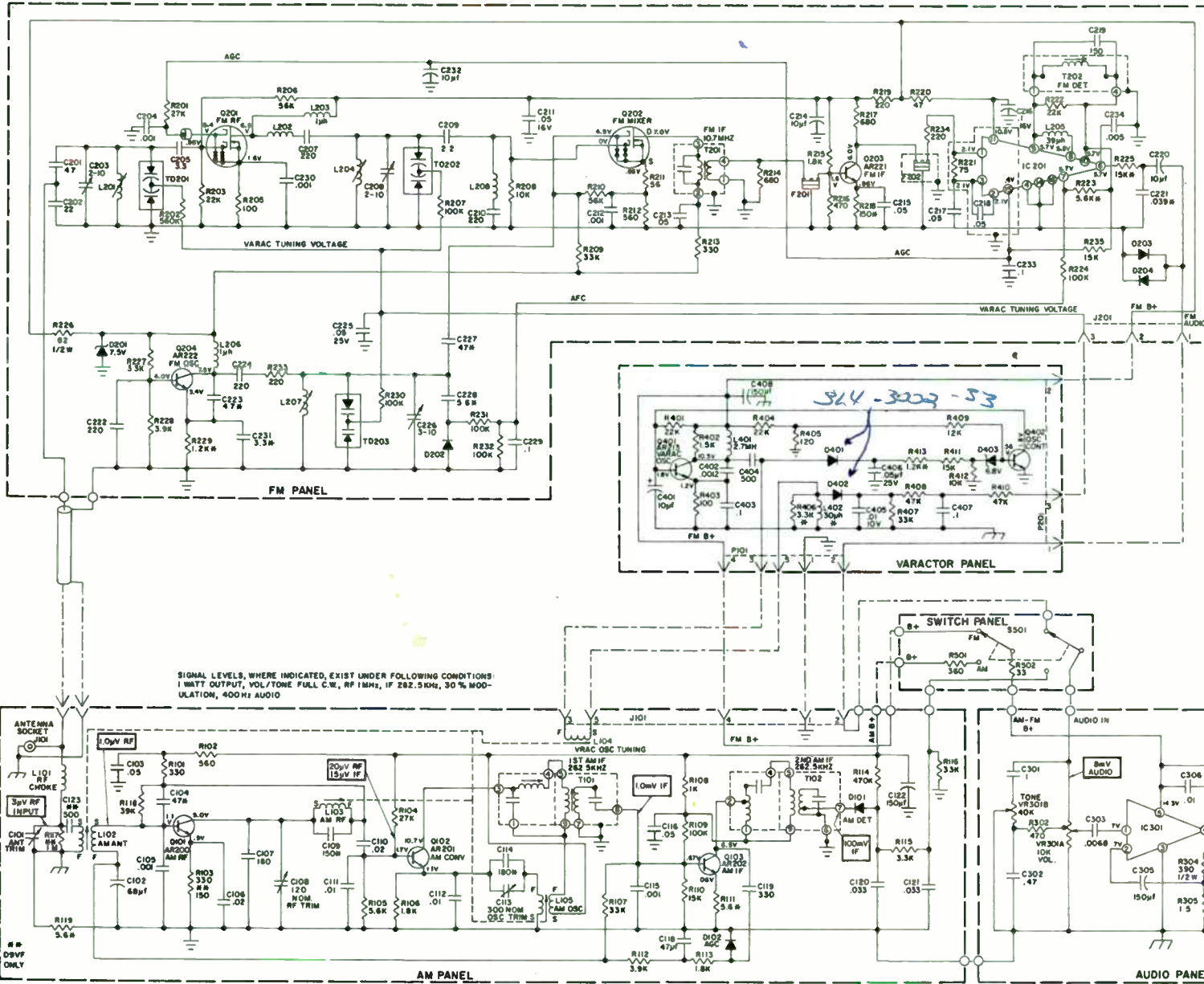
AM TUNER AND AUDIO PANEL
AM-FM MONAURAL MODELS D9AF(AB), D9DF, D9EF, D9TF AND D9VF(AB)



VARACTOR PANEL
AM-FM MONAURAL MODELS D9AF(AB), D9DF, D9EF, D9TF AND D9VF(AB)

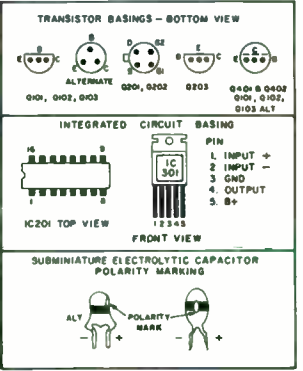


EXPLODED VIEW - MECHANICAL TUNER
AM-FM MONAURAL MODELS D9AF(AB), D9DF, D9EF, D9TF AND D9VF(AB)



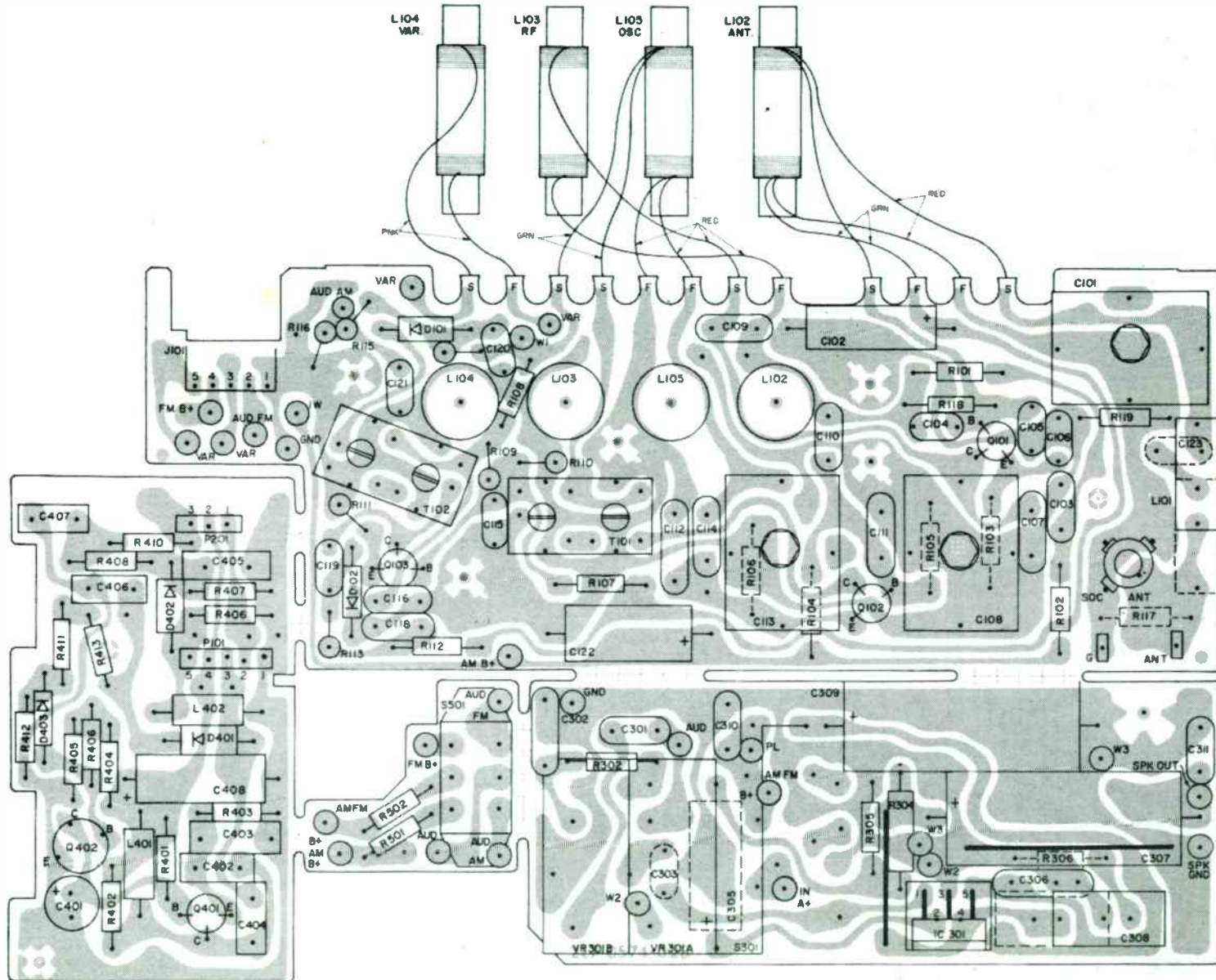
SIGNAL LEVELS, WHERE INDICATED, EXIST UNDER FOLLOWING CONDITIONS:
 1 WATT OUTPUT, VOL/TONE FULL C.W., FM 1MHz, IF 262.5kHz, 30% MODULATION, 400Hz AUDIO

- NOTES
- 1 ALL VOLTAGES MEASURED WITH HI-IMPEDANCE VTVM UNDER NO SIGNAL CONDITIONS AND 4.4V A+ SUPPLY WITH RADIO SET FOR FM AND VOLUME AT MINIMUM EXCEPT WHERE OTHERWISE NOTED.
 - 2 ALL RESISTORS ARE 1/4W EXCEPT WHERE OTHERWISE NOTED. RESISTANCES ARE IN OHMS K = 1000 OHMS.
 - 3 CAPACITANCE VALUES (UNLESS OTHERWISE NOTED) VALUES LESS THAN ONE = MICROFARADS (UF) VALUES ABOVE ONE = PICOFARADS (PF)
 - 4 TUNING RANGE AM = 540KHz TO 1600KHz (F=262.5 KHz); FM = 88MHz TO 108MHz (IF 10.7 MHz).
 - 5 # VALUES SUBJECT TO CHANGE
 - 6 \perp GROUND, RADIO CHASSIS OR HOUSING
 - 7 \perp GROUND, PW PANEL

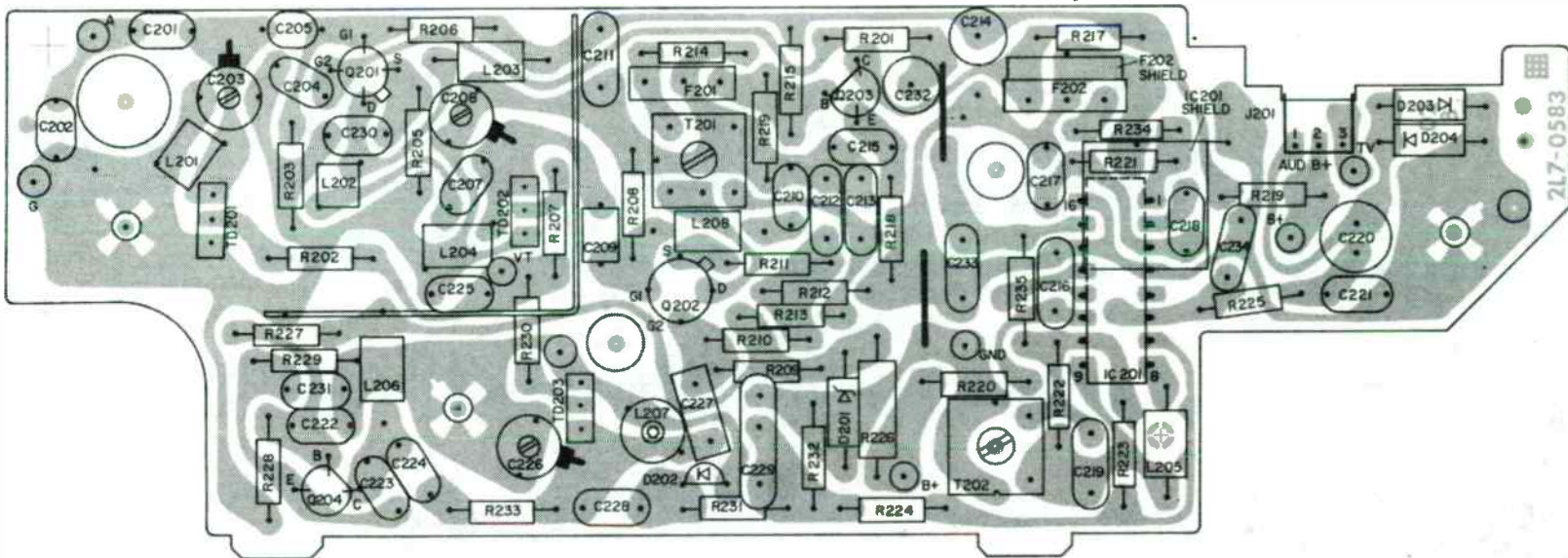


800 731 553
Hughes Tube

**Ford D9AF19A171A,B, D9DF19A171A,A,
 D9EF19A171A,A, D9VF19A171A,B, D9TF19A171A,A**



AM TUNER, VARAC, SWITCH AND AUDIO PANELS



BOTTOM VIEW - FM PANEL

Ford D9AF19A171AB, D9DF19A171AA,
 D9EF19A171AA, D9VF19A171AB,
 D9TF19A171AA

ELECTRICAL PARTS LIST

AM-FM MONAURAL MODELS D9AF(AB), D9DF, D9EF, D9TF AND D9VF(AB)

New parts not previously carried are indicated by the symbol "*" following the number.

SYM-BOL	*W A R R.	DESCRIPTION	SERVICE PART NO.	SYM-BOL	*W A R R.	DESCRIPTION	SERVICE PART NO.
		CAPACITORS					
C101	C	80 pf nom., ant. trim. D9DF, D9EF, D9TF	3L1-0005-5	C305	C	150 mf/6V, DC feedback	3L0-0009-50
C101	C	40 pf nom., ant. trim. D9AF, D9VF	3L1-0005-6	C306	C	.01 mf/25V, A+ bypass	3L0-0008-16
C102	C	68 mf/16V, AGC filter	3L0-0009-26	C307	C	1300 mf/10V, spkr. output	3L0-0009-51
C103	C	.05 mf/25V, B+ bypass	3L0-0008-39	C308	C	.22 mf/50V, audio stab.	3L0-1001-31
C104	C	47 pf/50V, RF feedback	3L0-0006-15	C309	C	1000 mf/16V, A+ filter	3L0-0009-44
C105	C	.001 mf/50V, Q101 base	3L0-0007-37	C310	C	820 pf/500V, spark filter	3L0-0007-25
C106	C	.02 mf/16V, Q101 emit.	3L0-0008-17	C311	C	820 pf/500V, audio stab.	3L0-0007-25
C107	C	180 pf/50V, temp. comp.	3L0-0006-25	C401	C	10 mf/20V, Q401 base	3L0-0011-4
C108	C	120 pf nom., RF trim.	3L0-0005-1	C402	C	.0012 mf/50V, Varac osc. feedback	3L0-0007-20
C109	C	150 pf/50V, N750, temp. comp.	3L0-0006-28	C403	C	.1 mf/50V, Varac osc. fdbk.	3L0-1001-15
C110	C	.02 mf/50V, RF coupling	3L0-0008-73	C404	C	500 pf/150V, Varac osc. coup.	3L0-0006-23
C111	C	.01 mf/50V, Q102 base	3L0-0008-72	C405	C	.01 mf/16V, Varac sup. filter	3L0-0008-21
C112	C	.01 mf/50V, Q102 emit.	3L0-1001-8	C406	C	.05 mf/25V, rect. filter	3L0-0008-39
C113	C	300 pf nom., osc. trim.	3L0-0005-3	C407	C	.1 mf/10V, Varac sup. filter	3L0-0008-11
C114	C	180 pf/50V, temp. comp.	3L0-0006-25	C408	C	150 mf/16V, B+ filter	3L0-0009-26
C115	C	.001 mf/50V, Q103 base	3L0-0007-37			DIODES	
C116	C	.05 mf/25V, B+ bypass	3L0-0008-39	D101	P	AM det.	3L4-2003-1
C118	C	.47 mf/3V, AGC filter	3L0-0008-14	D102	P	AM AGC det.	3L4-2003-1
C119	C	330 pf/500V, AGC coupling	3L0-0007-1	D201	P	Zener, 7.5V	3L4-3506-3
C120	C	.033 mf/10V, bass boost	3L0-0008-32	D202	P	AFC	3L4-3503-5
C121	C	.033 mf/10V, audio filter	3L0-0008-32	D203	P	Switch pop-filter	3L4-3002-1
C122	C	150 mf/16V, B+ filter	3L0-0009-45	D204	P	Switch pop-filter	3L4-3002-1
C123	C	500 pf/150V, ant. (D9VF only)	3L0-0006-23	D401	P	Varac osc. rect.	3L4-3002-33
C201	C	4.7 pf/500V, ant. div.	3L0-0006-17	D402	P	Varac supply rect.	3L4-3002-33
C202	C	22 pf/500V, ant. div.	3L0-0007-13	D403	P	Zener, 6.8V	3L4-3506-43
C203	C	2-10 pf., ant. trim.	3L1-0004-1			DIODE VARACTORS	
C204	C	.001 mf/50V, AGC bypass	3L0-0007-37	TD201	P	Ant. tun. (Red)	3L4-3504-4
C205	C	3.3 pf/500V, RF gate #1	3L0-0006-13	TD202	P	RF tun. (Green)	3L4-3504-1
C207	C	220 pf/500V, RF DC block.	3L0-0007-15	TD203	P	Osc. tun. (White)	3L4-3504-3
C208	C	2-10 pf, RF trim.	3L1-0004-1	TD201	P	Ant. tun. (Blue) opt.	3L4-3504-2
C209	C	2.2 pf/500V, mixer gate #1	3L0-0006-34	TD202	P	RF tun. (Blue) opt.	3L4-3504-2
C210	C	220 pf/500V, IF trap	3L0-0007-15	TD203	P	Osc. tun. (White) opt.	3L4-3504-3
C211	C	.05 mf/16V, RF B+	3L0-0008-24	TD201	P	Ant. tun. (Blue) opt.	3L4-3508-2
C212	C	.001 mf/50V, mixer bypass	3L0-0007-37	TD202	P	RF tun. (Blue) opt.	3L4-3508-2
C213	C	.05 mf/10V, IF bypass	3L0-0008-10	TD203	P	Osc. tun. (White) opt.	3L4-3508-1
C214	C	10 mf/16V, IF B+	3L0-0024-1			CAUTION: Varactors are used together in combina- tions listed above. Replace with same color dot and part number.	
C215	C	.05 mf/10V, Q203 emit.	3L0-0008-10			FILTERS	
C216	C	.1 mf/16V, IC201 B+	3L0-0008-38	F201	B	IF filter, 10.7 MHz	3L5-5003-1
C217	C	.05 mf/10V, IC201 B+	3L0-0008-10	F201	B	IF filter, 10.7 MHz opt.	3L5-5004-1
C218	C	.05 mf/10V, IC201 bypass	3L0-0008-10	F202	B	IF filter, 10.7 MHz	3L5-5003-1
C219	C	150 pf/100V, N470, T202 load	3L0-0006-58	F202	B	IF filter, 10.7 MHz opt.	3L5-5004-1
C220	C	10 mf/20V, audio coupling	3L0-0011-4			INTEGRATED CIRCUITS	
C221	C	.039 mf/12V, de-emph.	3L0-0008-40	IC201	S	FM IF & detector	3L4-9014-3#
C222	C	220 pf/500V, Q204 base	3L0-0007-15	IC301	S	Audio output	3L4-9020-1
C223	C	4.7 pf/150V, N330, osc. feedback	3L0-0006-44			COILS	
C224	C	220 pf/500V, de-coup.	3L0-0007-15	L101	D	Ant. RF choke	3L2-0034-4
C225	C	.05 mf/25V, VRAC sup.	3L0-0008-39	L102	D	AM, ant. tun.	3L2-0007-17
C226	C	3-10 pf, osc. trim.	3L1-0004-10#				
C227	C	47 pf/500V, NPO, osc. coup.	3L0-0006-15				
C228	C	5.6 pf/150V, N750, AFC div.	3L0-0006-59				
C229	C	.1 mf/25V, AFC bypass	3L0-0008-70				
C230	C	.001 mf/50V, RF bypass	3L0-0007-37				
C231	C	3.3 pf/500V, N330, osc. feedback	3L0-0006-43				
C232	C	10 mf/16V, AGC bypass	3L0-0024-1				
C234	C	.005 mf/100V, de-emph.	3L0-0007-22				
C301	C	.1 mf/3V, Hi-cut.	3L0-0008-12				
C302	C	.47 mf/3V, bass boost	3L0-0008-3				
C303	C	.0068 mf/100V, audio coup.	3L0-0007-55				

*Warranty Component Category

Ford D9AF19A171AB, D9DF19A171AA, D9EF19A171AA, D9VF19A171AB, D9TF19A171AA

ELECTRICAL PARTS LIST (Cont'd)

AM-FM MONAURAL MODELS D9AF(AB), D9DF, D9EF, D9TF AND D9VF(AB)

SYM-BOL	*W A R R.	DESCRIPTION	SERVICE PART NO.
L103	D	AM, RF tun.	3L2-0007-19
L104	D	Varac. tun.	3L2-0027-2
L105	D	AM, osc. tun.	3L2-0002-9
L201	D	FM, ant. tun.	3L2-0037-5
L202	D	Spurious response RF choke	3L2-0037-2
L203	D	1 μH RF decoup. choke	3L2-0023-11
L204	D	FM, RF tun.	3L2-0037-3
L205	D	38 μH IC201 decoup.	3L2-0023-10
L206	D	1 μH osc. decoup.	3L2-0023-11
L207	D	FM, osc. tun.	3L2-0044-1
L208	D	1 μH IF filter	3L2-0023-11
L301	D	A+ choke, part of A+ cable assy.	
L401	D	2.7 μH, RF choke	3L2-0023-5
L402	D	30 μH, osc. tank	3L2-0023-12
TRANSFORMERS			
T101	E	AM 1st IF	3L2-0019-1
T102	E	AM 2nd IF	3L2-0019-2
T201	E	FM 1st IF	3L2-0022-1
T202	E	FM detector	3L2-0030-2
TRANSISTORS			
Q101	A	AR200 AM RF	3L4-6007-1
Q102	A	AR201 AM conv.	3L4-6007-2
Q103	A	AR202 AM IF	3L4-6007-3
Q201	A	AR501 FM RF amp.	3L4-6503-1
Q202	A	AR502 FM IF & mix.	3L4-6503-2
Q203	A	AR221 FM IF (red-yel.)	3L4-6007-22
Q204	A	AR222 FM osc. (blue-yel.)	3L4-6007-23
Q401	A	AR213 Varac. osc. (violet)	3L4-6007-14
Q402	A	AR218 osc. control (red)	3L4-6007-41
RESISTORS (ohms)			
All resistors are 5% 1/4W unless specified otherwise.			
R101	G	330, Q101 B+	
R102	G	560, RF B+	
R103	G	330, Q101 emit.	
R103	G	150, Q101 emit. (D9VF only)	
R104	G	27K, Q102 base	
R105	G	5.6K, Q102 base	
R106	G	1.8K, Q102 emit.	
R107	G	33K, Q103 AGC	
R108	G	1K, IF B+	
R109	G	100K, Q103 base	
R110	G	15K, Q103 base	
R111	G	5.6, Q103 emit.	3L3R9561240
R112	G	3.9K, AGC filter	
R113	G	1.8K, AGC	
R114	G	470K, detector bias	
R115	G	3.3K, detector	
R116	G	3.3K, tone comp.	
R117	G	1 meg., ant. (D9VF only)	
R118	G	39K, Q101 base	
R119	G	5.6, ant. grnd.	3L3R9561205
R201	G	27K, RF AGC	
R202	G	560K, Ant. Varac. bias	
R203	G	22K, Q201 gate #2	
R204			
R205	G	100, Q201 source	

SYM-BOL	*W A R R.	DESCRIPTION	SERVICE PART NO.
R206	G	56K, Q201 bias	
R207	G	100K, RF Varac bias	
R208	G	10K, Q202 gate #1	
R209	G	33K, Q202 gate #2 bias	
R210	G	56K, Q202 gate #2 div.	
R211	G	56, Q202 source	
R212	G	560, Q202 source	
R213	G	330, Q202 B+	
R214	G	680, T201 load	
R215	G	1.8K, Q203 bias	
R216	G	470, Q203 bias	
R217	G	680, Q203 coll.	
R218	G	150, Q203 emit.	
R219	G	220, IF B+	
R220	G	47, IF B+	
R221	G	75, DC feedback	
R222	G	22K, T202 load	
R223	G	5.6K, AFC	
R224	G	100K, AFC	
R225	G	15K, de-emphasis	
R226	G	82, 5% 1/2W., osc. & IF B+	
R227	G	3.3K, Q204 bias	
R228	G	3.9K, Q204 bias	
R229	G	1.2K, Q204 emit.	
R230	G	100K, VRAC bias	
R231	G	100K, AFC divide	
R232	G	100K, AFC divide	
R233	G	220, isolation	
R234	G	220, IC201 input	
R235	G	15K, AGC	
R302	G	470, vol. tap.	
R304	G	390 5% 1/2W, feedback div.	
R305	G	1.5, feedback div.	3L3R9151205
R306	G	1.0, audio stab.	3L3R9101205
R401	G	22K, Q401 base	
R402	G	15K, Q401 coll.	
R403	G	100, Q401 emit.	
R404	G	22K, VRAC B+ div.	
R405	G	120, VRAC B+ div.	
R406	G	3.3K, L402 load	
R407	G	33K, Varac supply load	
R408	G	47K, supply filter	
R409	G	12K, Q402 base	
R410	G	47K, supply filter	
R411	G	15K, ref. bias div.	
R412	G	10K, ref. bias div.	
R413	G	1.2K, Varac. sup. adj.	
R501	G	360, AM B+	
R502	G	33, switched A+	
CONTROLS			
VR301	H, I	10K Vol./40K Tone, on-off switch D9AF(AB), D9DF, D9VF D9AF(AB), D9DF, D9VF (opt.) D9EF D9EF (opt.) D9TF D9TF (opt.)	3L3-0021-47# 3L3-0021-48# 3L3-0021-24 3L3-0021-36# 3L3-0021-15 3L3-0021-31#
SWITCHES			
S501	I	FM-AM Slide switch	4L2-0020-1

TUNER REPLACEMENT PARTS

AM-FM MONAURAL MODELS D9AF(AB), D9DF, D9EF, D9TF AND D9VF(AB)

New parts not previously carried are indicated by the symbol "*" following the number.
All parts are Warranty Component Category F.

DESCRIPTION	SERVICE PART NO.
Tuner Assy. (mechanical)	7L6-0394-8
Ball Bearing, Paddle bar (2)	—
Bracket, Clutch	2L8-0707-1
Clutch, Drive assy.	7L6-0402-3
"E" Ring, Pointer arm	1W60971FA3
Gate, Clutch release (cam)	2L8-0213-2
Nut, Paddle bar	—

DESCRIPTION	SERVICE PART NO.
Pointer Arm	2L8-0740-1
Screw, Paddle bar	—
Screw and Nut Assy., Paddle bar	—
Spring, Backlash	2L8-0344-1
Spring, Gate	2L8-0719-1
Spring, Pointer arm	2L8-0216-1

MECHANICAL AND ELECTRICAL MISCELLANEOUS PARTS LIST

AM-FM MONAURAL MODELS D9AF(AB), D9DF, D9EF, D9TF AND D9VF(AB)

New parts not previously carried are indicated by the symbol "*" following the number.

*W A R R. R.	DESCRIPTION	SERVICE PART NO.
Z	Barrier, Light	2L7-0019-2
D	Bead, Ferrite	2L7-0134-3
L	Bezel	2L7-0394-5#
	D9EF only	2L7-0394-6#
Z	Bolt, Mounting	2L8-0060-6
Z	Bracket, Chassis mtg. (rear) (D9EF only)	2L8-0639-1
Z	Bracket Assy., Pilot light	7L6-0215-2
Z	Bushing, Tuning shaft	2L8-0222-5
	D9AF, D9DF, D9VF	2L8-0222-7
	D9EF	2L8-0222-2
	D9TF	2L7-0145-2
O	Button Push (5)	2L7-0145-2
N	Cable, A+ lead, choke and pilot light assy.	4L1-0115-3
	D9AF, D9DF, D9EF, D9VF	4L1-0115-6
	D9TF	4L1-0115-6
N	Cable Assy., Speaker	4L1-0116-1
	D9AF, D9DF, D9VF	4L1-0116-2
	D9EF	4L1-0116-4
	D9TF	2L8-0226-1
Z	Clamp, Strain relief	LL-0014-1
Z	Clamp, Pilot light lead	2L8-0545-2
Z	Clip, Ant. socket	2L8-0785-1#
Z	Clip, Heat sink IC301	424-9698
Z	Connectors, Panel, 2L8-0641-1 (male)	2L7-0549-5#
Z	Connector, J101 (5 pin)	2L7-0549-3#
Z	Connector, J201 (3 pin)	2L8-0069-4
D	Core, Ant. and RF	2L8-0069-5
D	Core, Ant. and RF (optional)	2L8-0069-6
D	Core, Ant. and RF (optional)	2L8-0045-6
D	Core, Osc.	2L8-0069-17
D	Core, VRAC	2L8-0617-1
Z	Cover, Housing	2L7-0147-3
L	Filter, Color	2L7-0147-4
	D9AF, D9DF, D9TF, D9VF	2L7-0022-1
Z	Grommet, Coil mtg.	2L7-0573-5#
Z	Header, P101 (5 pin)	2L7-0573-3#
Z	Header, P201 (3 pin)	2L8-0616-2#
Z	Housing	2L7-0418-1
Z	Insulator, FM board	2L7-0064-1
Z	Insulator, Pilot light	

*W A R R. R.	DESCRIPTION	SERVICE PART NO.
Z	Liner, Slide bar	2L7-0416-1
Z	Nut, Tuning shaft and Vol.	28-14686-1
Z	Nut, Mounting	2L8-0061-1
Z	Pointer, Dial	2L8-0077-24#
M	P.W. Assy., FM w/comp.	7L6-0583-1#
M	P.W. Assy., AM, AUDIO w/comp.	7L6-0847-5#
	D9AF	7L6-0847-1#
	D9DF	7L6-0847-3#
	D9EF	7L6-0847-4#
	D9TF	7L6-0847-2#
	D9VF	2L8-0393-1
Z	Retainer, Slide bar	E1W61043FE5
Z	Ring, Retaining (tun. shaft)	LW-0046-1
Z	Screw, Special (shuttle mtg.) (2)	
Z	Shaft, Tuning	2L7-0056-14
	D9AF, D9DF, D9VF	2L7-0056-15
	D9EF	2L7-0056-11
	D9TF	2L7-0030-20
Q	Shaft, Pinion	2L8-0660-1
Z	Shield, IF Filter (F202)	2L8-0643-1
Z	Shield (IC201)	2L8-0733-1
Z	Shield, FM	2L8-0225-1
Z	Shield, Pilot light	2L8-0615-1
Z	Shuttle, Slide bar	5L4-0002-1
D	Sleeve, Paper	2L8-0138-1
D	Sleeve, Pwdr. iron (ant., RF, osc.)	2L8-0138-10
D	Sleeve, Varactor osc.	424-9707
Z	Slide Bar, AM-FM (Kit)	2L8-0544-1
Z	Socket, Ant.	2L7-0532-1#
Z	Spacer, IC301	
Z	Spacer, Tuning shaft	2L8-0177-6
	D9EF	2L8-0177-4
	D9TF	
Z	Spacer, Vol. control	2L8-0177-3
	D9AF, D9DF, D9VF	2L8-0177-6
	D9EF	2L8-0177-4
	D9TF	2L8-0638-1
Z	Spring, Toggle	2L8-0067-1
Z	Spring, Pilot light	2L7-0395-1
L	Sub dial	7L6-0394-8
Z	Tuner Assy. (mech.)	2L8-0223-1
Z	Washer, Spring (tun. shaft)	

*Warranty Component Category

ALIGNMENT PROCEDURE OF AM-FM RADIO

Alignment was performed at factory with laboratory test equipments. Therefore, before alignment the set should be thoroughly checked for defects before proceeding alignment, and note following prior to alignment.

- Check the specified Voltages and source polarity.
- Use fresh batteries or well regulated DC power supply.
- Connect speaker or dummy load resistor 4 to 8 ohms to output cables.
- Non-metallic tools must be used for IF and RF Sect. alignments.
- Signal input must be kept as low as possible to avoid over load and clipping using highest possible sensitivity output indicator.
- Be sure there is no static coupling between input and output signal.

i) FM RADIO SECTION ALIGNMENT using sweep signal generator.

- Notes: 1. When sweep signal generator is used for alignment of FM IF stage, the marker color is set at center part of "S" curve trace. Because of fixed ceramic filters, five kinds of center frequency, are used, which is identified as follows: Yellow-10.78, Red-10.70, White-10.74, Black-10.66 and Green-10.62 MHz.
2. In order to make correct alignment of front end and IF-stage, input signal must be kept lower than 10 uV at antenna input.

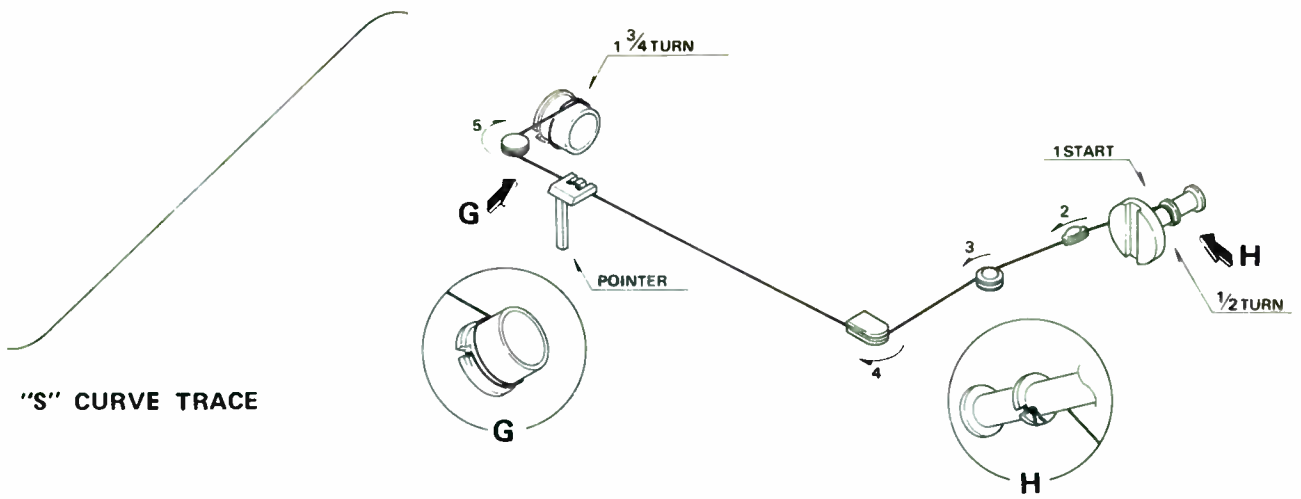
STEP	CONNECT SIGNAL SOURCE TO	CONNECT OUTPUT INDICATOR TO	SET SIGNAL SOURCE	SET RADIO DIAL	ADJUST ON	ADJUST FOR
1	Slide FM/AM switch to the left side for FM position.					
2	Sweep signal generator to test point located in front end unit through 1K ohm resistor	Oscilloscope to the test point through 0.01µF capacitor	10.7MHz (unmodulated)	Quiet point on band	IFT-101	Maximum amplitude ("S" curve trace)
3					IFT*	Maximum amplitude * Located in front end unit
4	Repeat above steps to make sure the alignment has been made correctly.					
5	Signal generator to antenna input terminal through matching network (no sweep)	VTVM to the speaker cable terminated with 4 to 8 ohms dummy load	108.7MHz	108.7MHz	OT*	Maximum amplitude
6			87MHz	87MHz	OSC	Maximum amplitude
7			106MHz	106MHz	AT* & RT*	Maximum amplitude
8	Repeat above three steps to make sure the alignment has been made correctly.					* Located in front end unit.

ii) AM RADIO SECTION ALIGNMENT

- Notes: 1. RF signal generator is connected to the antenna input terminal through matching network.
2. Modulation level is 40% maximum.
3. RF signal level is kept as lower as possible.
4. Output indicator is connected to the Left or Right speaker cable terminated with 4 to 8 ohms resistor.

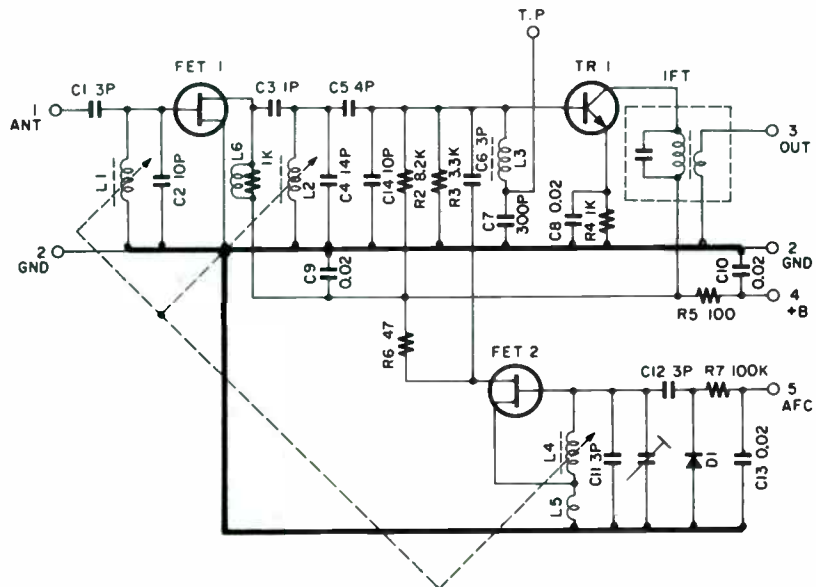
STEP	SOURCE SIGNAL	SET RADIO DIAL TO	ADJUST ON	ADJUST FOR
1	Slide FM-AM switch to the right side for AM position.			
2	455 KHz	Quiet point on band	IFT-202, 203, 204, 205	Maximum amplitude.
3	1,650 KHz	1,650 KHz	CT-203	Maximum amplitude.
4	515 KHz	515 KHz	OSC, IFT201	Maximum amplitude.
5	1,400 KHz	1,400 KHz	CT-201, 202	Maximum amplitude.
6	Repeat above steps to make sure the correct alignment has been made.			

- ii) FM MULTIPLEX DEMODULATOR ALIGNMENT using FM signal generator and MULTIPLEX STEREO signal generator.**
1. Connect the frequency counter to the test point (TP) of IC103 (Pin No. 10) through 0.02 µF capacitor and then adjust VR102 within the limits of 19 KHz ±100 Hz.
 2. Adjust VR103 to obtain the maximum separation.



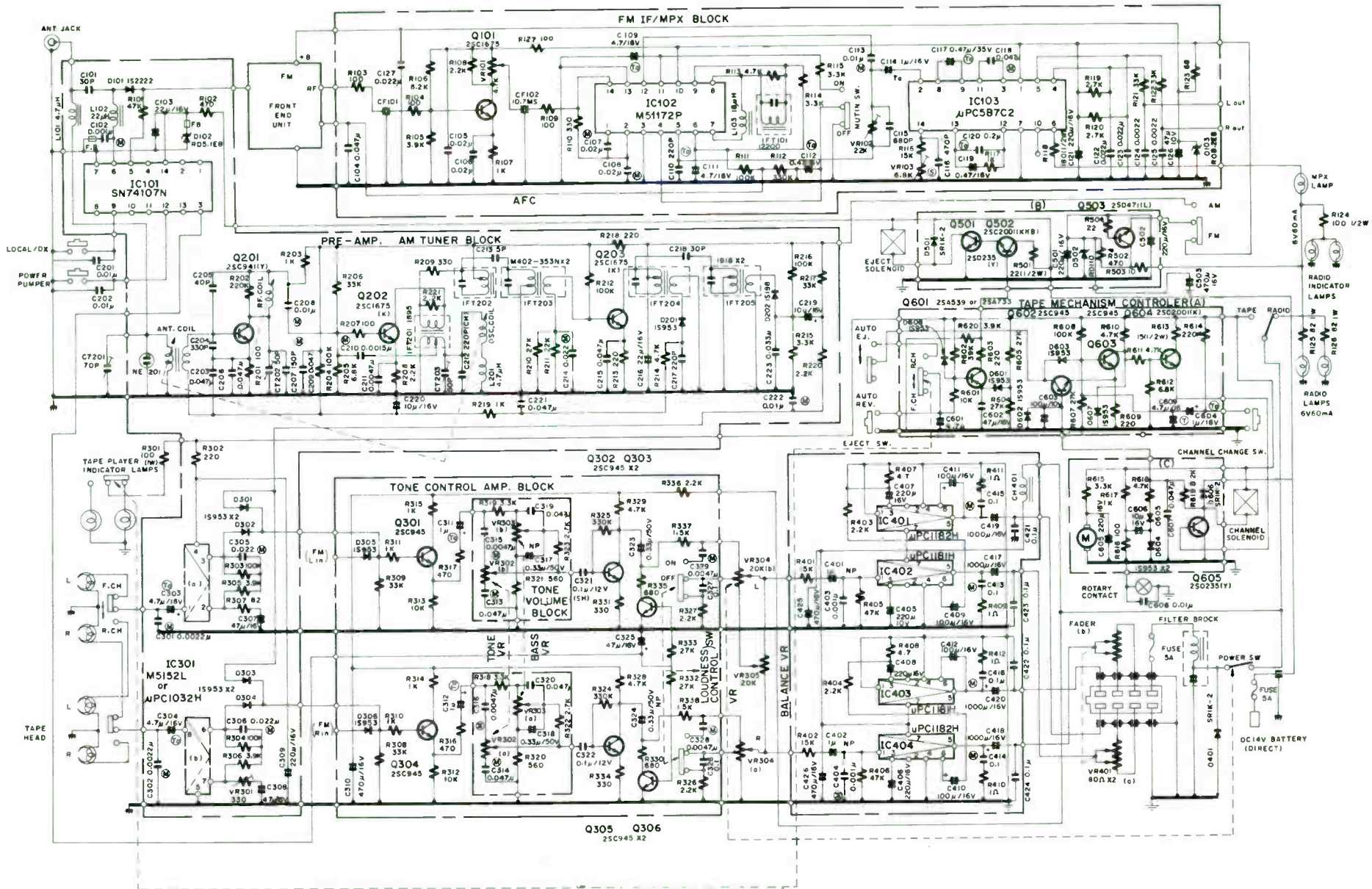
"S" CURVE TRACE

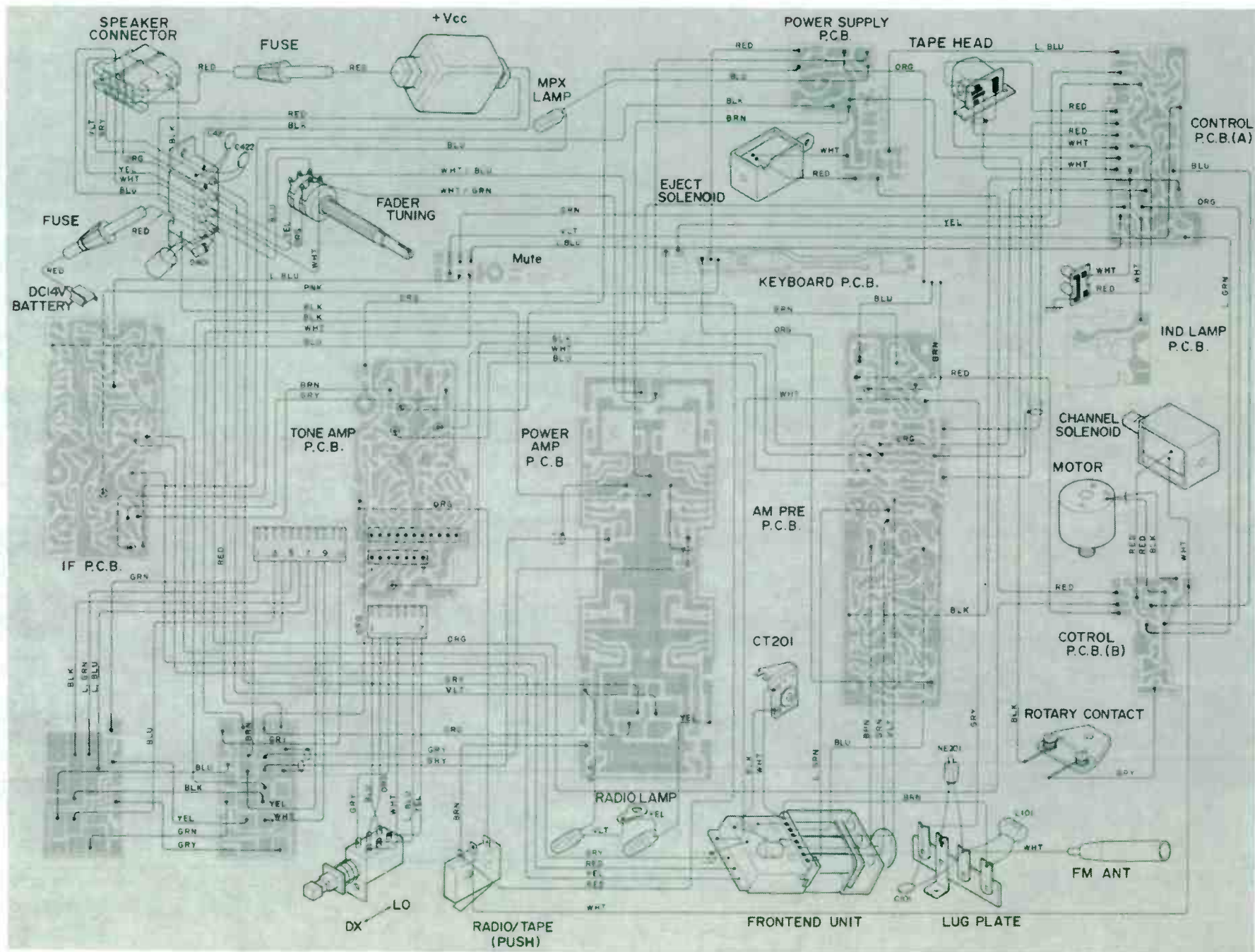
DIAL STRING ARRANGEMENT

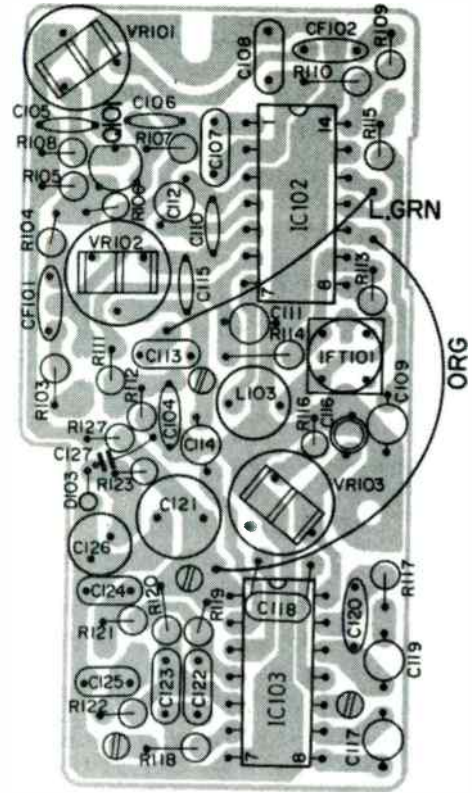
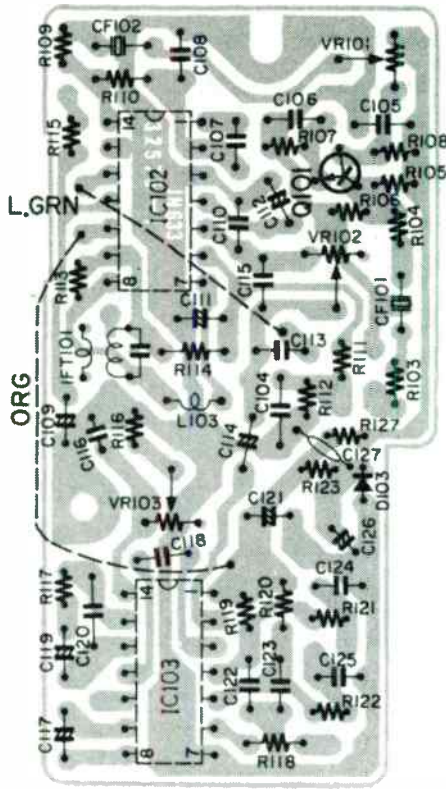


- NOTE
- 1 INPUT IMPEDANCE 75 OHMS.
 - 2 OUTPUT IMPEDANCE 300 OHMS.
 - 3 SUPPLY VOLTAGE 8.2V.
 - 4 REFERENCE OF AFC 5V.

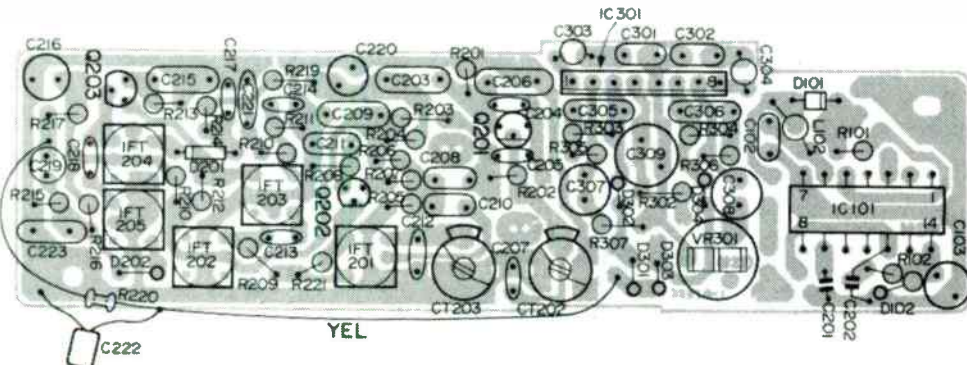
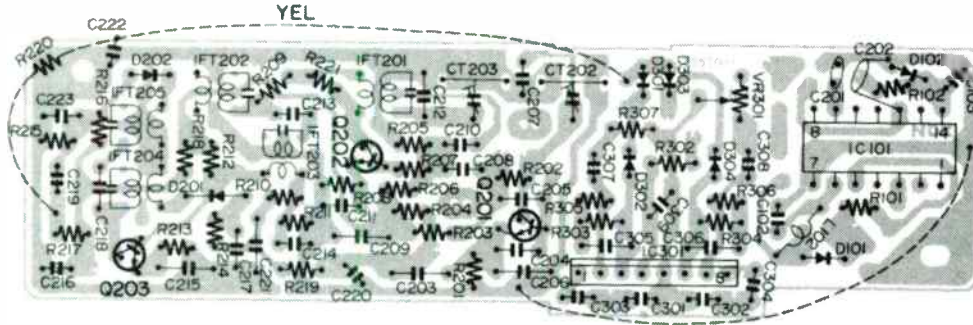
CIRCUIT DIAGRAM OF FRONT END UNIT





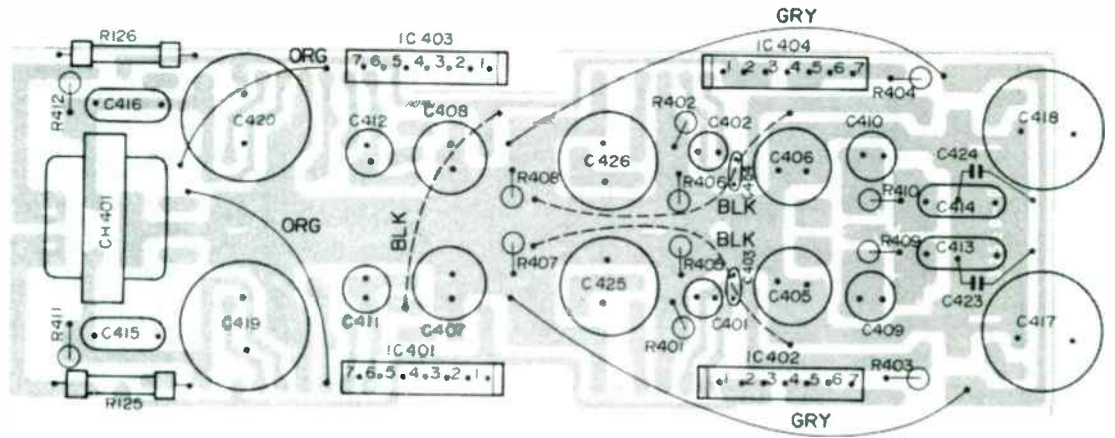
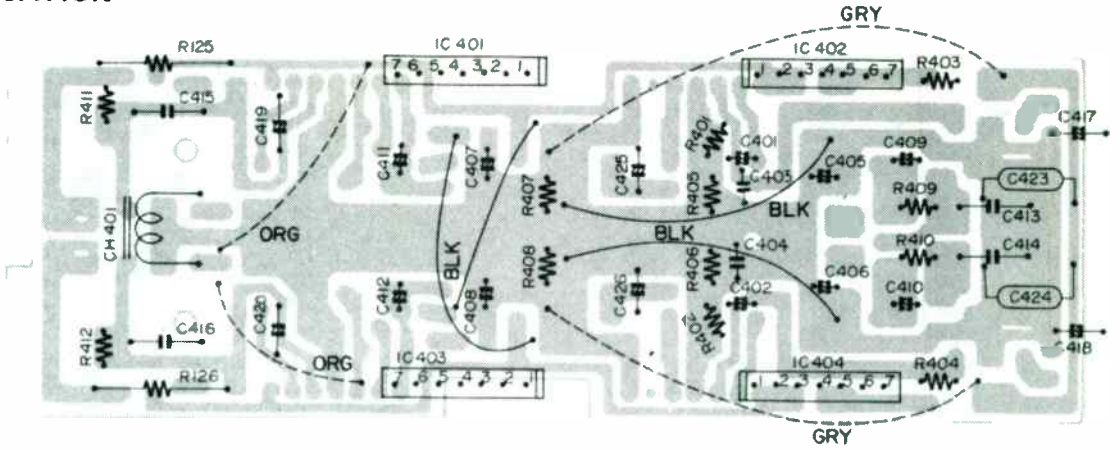


IF AMP. P.C. BOARD
WIRING/COMPONENT SIDES

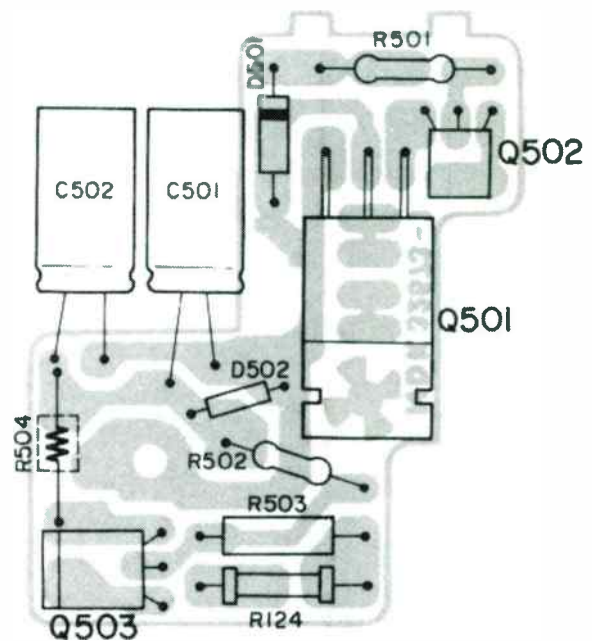
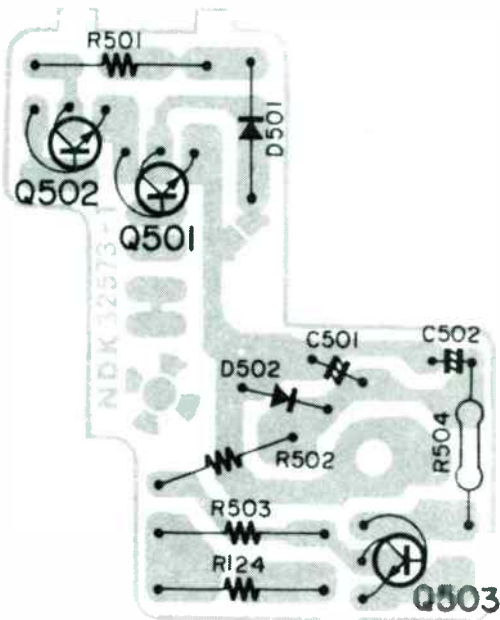


AM PRE-AMP. P.C. BOARD
WIRING/COMPONENT SIDES

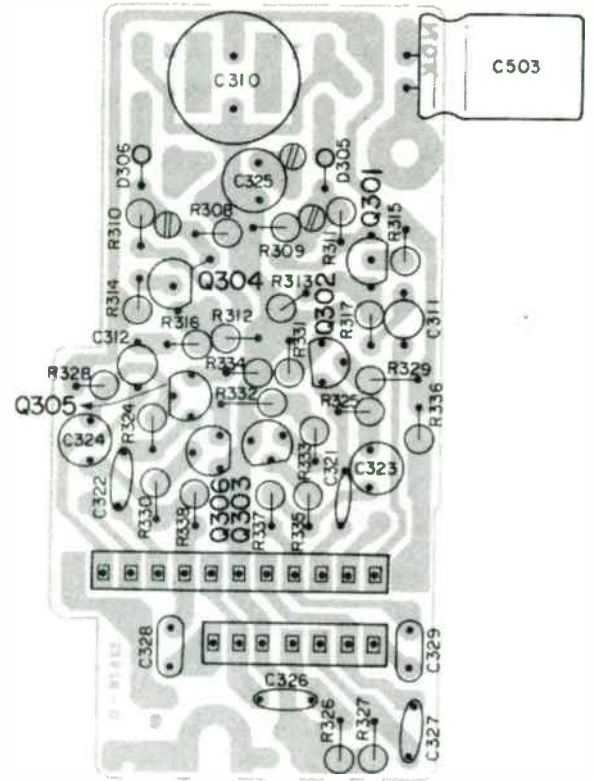
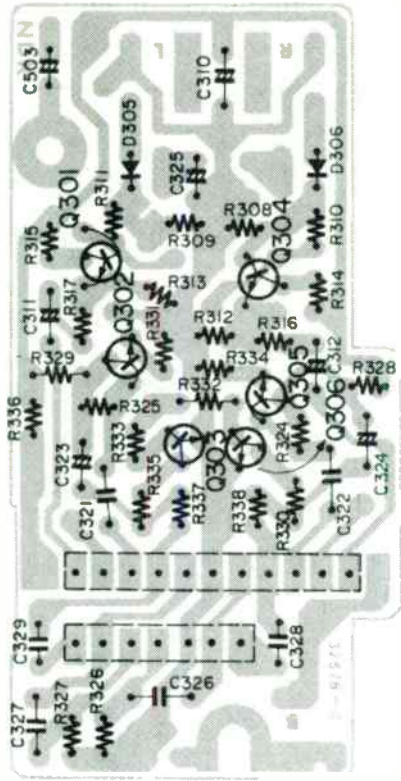
PART LOCATION



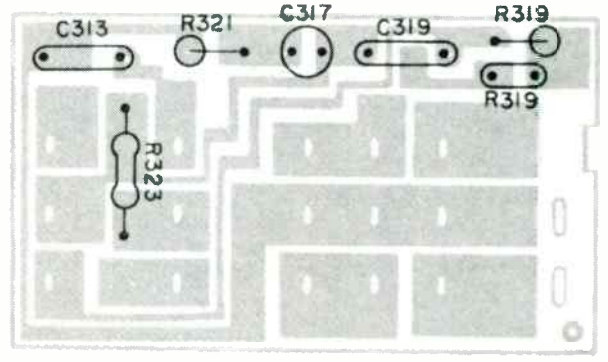
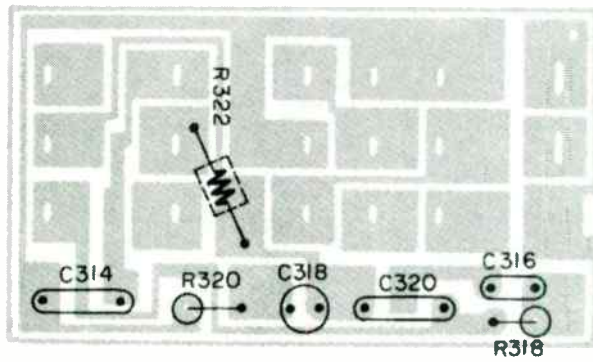
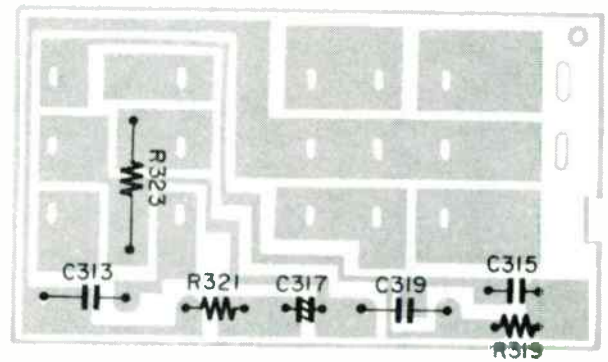
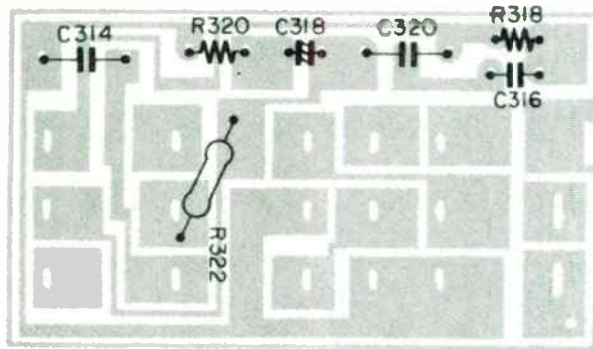
**POWER AMP. P.C. BOARD
WIRING/COMPONENT SIDES**



**POWER SUPPLY P.C. BOARD
WIRING/COMPONENT SIDES**



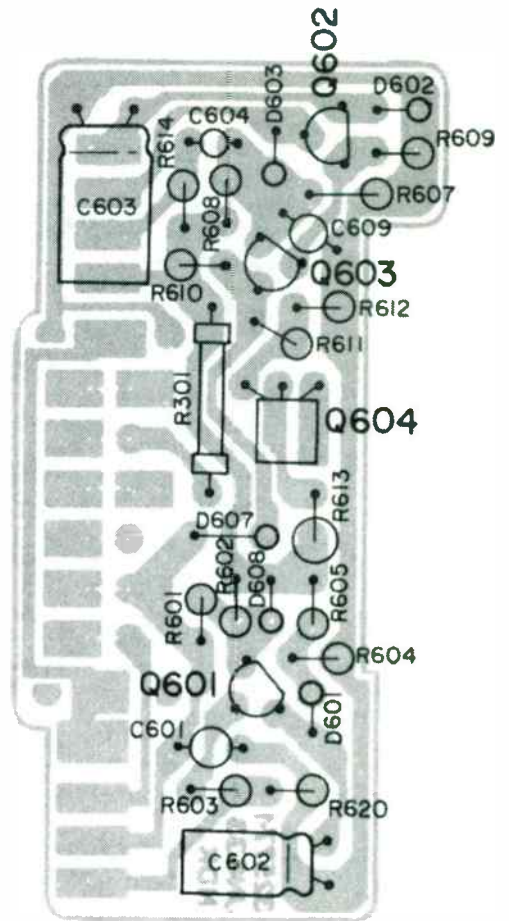
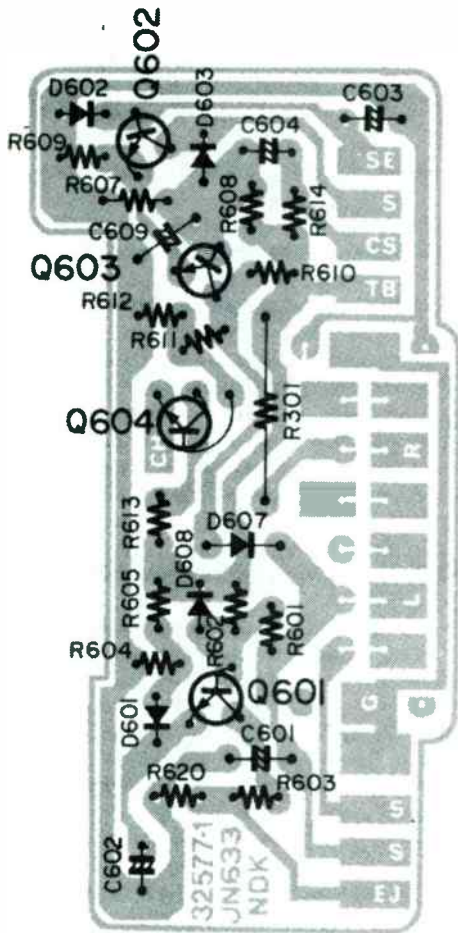
tone AMP. P.C. BOARD
WIRING/COMPONENT SIDES



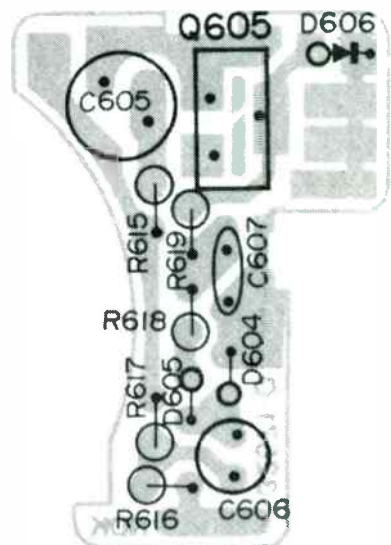
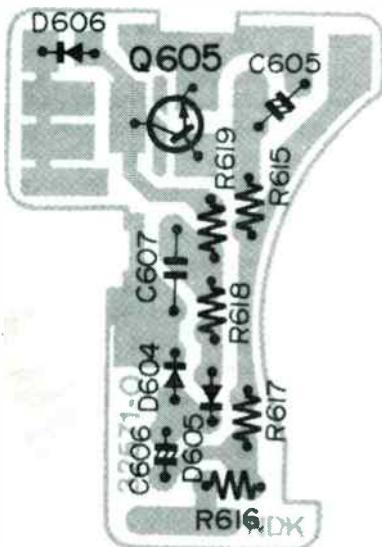
VOLUME P.C. BOARD (A)
WIRING/COMPONENT SIDES

VOLUME P.C. BOARD (B)
WIRING/COMPONENT SIDES

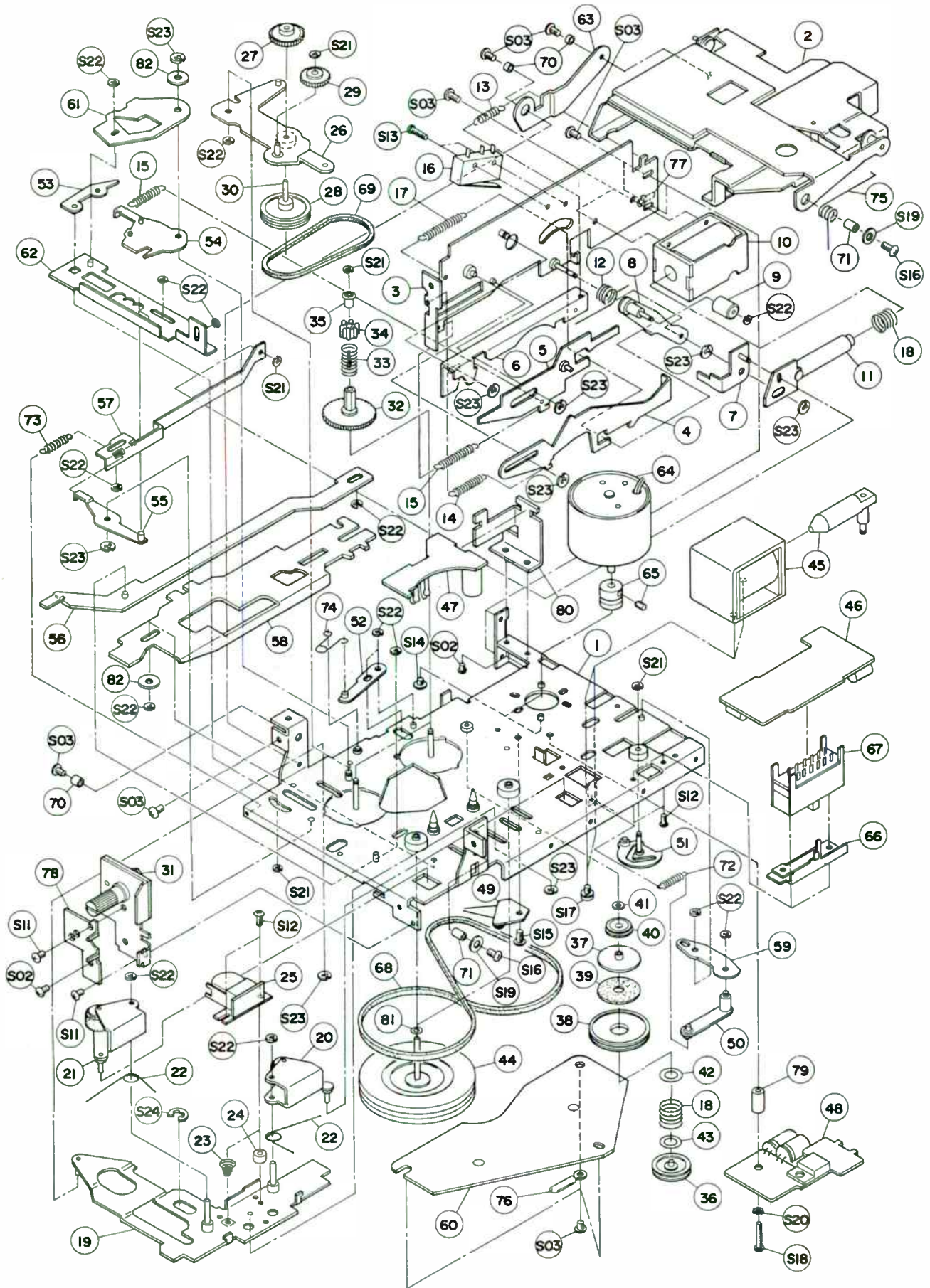
PART LOCATION



**CONTROL P.C. BOARD (A)
WIRING/COMPONENT SIDES**



**CONTROL P.C. BOARD (B)
WIRING/COMPONENT SIDES**



COMPONENTS LIST

Drawing Ref. No.	Part No.	Description	Q'ty	Drawing Ref. No.	Part No.	Description	Q'ty
1	21629	Main Chassis	1	45	21656	CH Plunger Ass'y	1
2	21630	Cassette Housing Ass'y	1	46	30986	Control P.C. Board (A)	1
3	24293	Eject Base	1	47	30987	Control P.C. Board (B)	1
	24347	Pin A	1	48	30988	Power Regulator P.C. Board	1
	24360	Pin B	1	49	21667	Brush Holder Ass'y	1
	24359	Pin C	1	50	21657	Cam Lever Ass'y	1
	24361	Pin D	1	51	21658	Change Cam Ass'y	1
4	24330	Lever, Pack Case	1	52	21659	Kick Arm Ass'y	1
5	24255	Lever, Head Base	1	53	21660	Hinge Lever Ass'y	1
	24365	Pin, Head Base	1	54	21661	Head Bracket Idle Lever Ass'y	1
	24366	Pin, Head Base Spring	1	55	21662	Lock Arm Ass'y	1
6	24280	Lock Bridge	1	56	21663	Lock off Lever (CH) Ass'y	1
	24356	Pin, Lock Bridge	1	57	24240	Lock off Lever, Eject	1
7	24252	Lever, EJ Spring up	1	58	24295	Change Lever	1
	24342	Pin, EJ Spring up	1	59	24284	Idle Lever, CH Plunger	1
8	24251	Arm, Pack push	1	60	24257	Bottom Plate	1
	24370	Pin A	1	61	24249	Idle Plate, REW/FF	1
	24371	Pin B	1	62	21664	REW/FF Lock Lever Ass'y	1
	24372	Pin C	1	63	24281	Sub-Arm, Pack Case	1
	24373	Pin D	1	64	911030	Motor	1
9	24313	Collar, Pack push	1	65	24289	Motor Pulley	1
10	24329	Plunger, Eject	1	66	45933	Bracket, Switch	1
11	24256	Lever, Plunger	1	67	912087	Channel Change Switch	1
	24314	Pin, Plunger	1	68	24242	Belt, Main	1
12	24246	Spring, Pack push	1	69	24241	Belt, Take up Reel	1
13	24238	Spring, Lock Bridge	1	70	23875	Washer, Eject Lever	3
14	23857	Spring, REW/FF Lever	1	71	24355	Collar 5.3L, Pack Arm	2
15	24235	Spring, Idle Lever	2	72	23964	Spring, Change Cam	1
16	912084	Power Switch	1	73	24234	Spring, REW/FF Lock Lever	1
17	24385	Tension Spring, Pack Push Arm	1	74	24265	Spring, Kick	1
18	24230	Spring, Torque	2	75	24328	Spring, Pack Case	1
19	24296	Head Bracket	1	76	923362	Pad, Lead Wire	1
20/21	21638	Pinch Roller Ass'y, L/R	1	77	922255	Lug	1
22	24267	Spring, Pinch Roller	2	78	45941	Mfg. Hardware, Keyboard	1
23	24331	Spring, Azimuth	1	79	46082	Collar, Print Board	1
24	24353	Washer, Head	1	80	45955	Mfg. Foot, Control P.C.B.	1
25	917021	Head	1	81		Washer, Nylon	2
26	24278	Idle Gear Plate w/Pin/Metal	1	82		Washer, Adjustment	2
27	24248	Idle Gear (Large)	1				
28	24368	Pulley, Idle Gear	1				
29	24276	Idle Gear (Small)	1	S02	022607	Screw M2.6 x 4, RH	3
30	24311	Idle Stay	1	S03	022655	Screw M2.6 x 4, Truss	11
31	21634	FF/REW Bracket Ass'y	1	S11	022032	Screw M2 x 3, Truss	2
32	24275	Rim Gear	2	S12	022012	Screw M2 x 5, Truss	4
33	24316	Spring, Rim Wheel	2	S13	022304	Screw M2.3 x 8, RH	2
34	23856	Rim Wheel	2	S14	022678	Screw M2.6 x 3, Truss	2
35	24030	Cap, Post	2	S15	022680	Screw M2.6 x 6, Truss	1
36	24271	Idle Pulley	1	S16	022669	Screw M2.6 x 8, Truss	2
37	24272	Post, Pulse Detector	1	S17	022176	Screw M3 x 4, BH	2
38	24270	Post Pulley, Pulse Detector	1	S18		Screw M2.6 x 12, RH	1
39	24334	Felt Washer	1	S19	038003	Washer M3, Plain	2
40	24045	Ring, Pulse Detector	1	S20		Washer M2.6, Teethed	1
41	24386	Torque Washer	1	S21	031501	E Ring M1.5	5
42	24393	Torque Washer (A)	1	S22	032003	E Ring M2	15
43	24394	Torque Washer (B)	1	S23	032501	E Ring M2.5	9
44	21636	Flywheel Ass'y	2	S24	033026	E Ring M3	1

Ref. No.	Part No.	Description	Q'ty
SEMI-CONDUCTORS			
IC101	916134	IC SN74107N	1
IC102	916157	IC M51172P	1
IC103	916155	IC uPC587C2	1
IC301	916106	IC M5152L	1
IC401	916205	IC uPC1182H	1
IC402, 403	916204	IC uPC1181H	2
IC404	916205	IC uPC1182H	1
Q101	916144	Silicon Transistor 2SC1675	1
Q201	916127	Silicon Transistor 2SC941(Y)	1
Q202, 203	916144	Silicon Transistor 2SC1675	2
Q301 thru. 306	916033	Silicon Transistor 2SC945	6
Q501	916161	Silicon Transistor 2SD235(Y)	1
Q502	916162	Silicon Transistor 2SC2001(K)	1
Q503	916126	Silicon Transistor 2SD471(L)	1
Q601	916107	Silicon Transistor 2SA539	1
Q602, 603	916033	Silicon Transistor 2SC945	2
Q604	916162	Silicon Transistor 2SC2001(K)	1
Q605	916161	Silicon Transistor 2SD235(Y)	1
D101	923395	Diode IS2222	1
D102	923147	Diode RD5.1EB	1
D103	923428	Diode RD8.2EB	1
D201	923147	Diode IS953	1
D202	922604	Diode IS188	1
D301 thru. 306	923147	Diode IS953	6
D401	922969	Diode SR1K-2	1
D501	922969	Diode SR1K-2	1
D502	923450	Diode RD110EB	1
D601 thru. 605	923147	Diode IS953	5
D606	922969	Diode SR1K-2	1
D607, 608	923147	Diode IS953	2
COILS AND OTHERS			
L101	913572	Micro Inductor 4.7uH	1
L102	913573	Micro Inductor 22uH	1
L103	913557	Micro Inductor 18uH	1
L201	913572	Micro Inductor 4.7uH	1
CH401	914028	Choke Coil 4016	1
I FT101	923133	I FT 12200, FM IF	1
I FT201	922592	I FT, AM 1895	1
I FT202, 203	922838	I FT, AM M402-353N	2
I FT204, 205	923593	I FT, AM 1918	2
CF101, 102	922974	Ceramic Filter SFE10.7MS2	2
RESISTORS, all are 1/8W tolerance unless otherwise specified.			
R101	915343	47K ohm	1
R102	915057	470 "	1
R103, 104	915009	100 "	2
R105	915325	3.9K "	1
R106	915055	8.2K "	1
R107	915003	1K "	1
R108	915007	2.2K "	1
R109	915009	100 "	1
R110	915351	330 "	1
R111	915039	100K "	1
R112	915443	330K "	1

Ref. No.	Part No.	Description	Q'ty
R113	915327	4.7 ohm	1
R114, 115	915004	3.3K "	2
R116	915341	15K "	1
R117	915003	1K "	1
R118	915175	180 " 1/2W	1
R119, 120	915053	2.7K "	2
R121, 122	915052	33K "	2
R123	915356	68 "	1
R124	915087	100 " 1/2W	1
R125, 126	915461	82 " 1W	2
R127	915009	100 "	1
R201	915009	100 "	1
R202	915344	220K "	1
R203	915003	1K "	1
R204	915039	100K "	1
R205	915340	6.8K "	1
R206	915052	33K "	1
R207	915009	100 "	1
R208	915007	2.2K "	1
R209	915443	330 "	1
R210	915395	27K "	1
R211	915342	22K "	1
R212	915039	100K "	1
R213	915336	220 "	1
R214	915327	4.7K "	1
R215	915004	3.3K "	1
R216	915039	100K "	1
R217	915052	33K "	1
R218	915336	220 "	1
R219	915003	1K "	1
R220, 221	915007	2.2K "	2
R301	915352	100 " 1W	1
R302	915336	220 "	1
R303, 304	915039	100K "	2
R305, 306	915325	3.9K "	2
R307	915461	82 "	1
R308, 309	915052	33K "	2
R310, 311	915003	1K "	2
R312, 313	915015	10K "	2
R314, 315	915003	1K "	2
R316, 317	915057	470 "	2
R318, 319	915004	3.3K "	2
R320, 321	915410	560 "	2
R322, 323	915053	2.7K "	2
R324, 325	915443	330K "	2
R326, 327	915007	2.2K "	2
R328, 329	915327	4.7K "	2
R330	915337	680 "	1
R331	915351	330 "	1
R332, 333	915395	27K "	2
R334	915351	330 "	1
R335	915337	680 "	1
R336	915007	2.2K "	1
R337, 338	915001	1.5K "	2
R401, 402	915341	15K "	2
R403, 404	915007	2.2K "	2
R405, 406	915343	47K "	2
R407, 408	915327	4.7 "	2
R409 thru. 412	915523	1 "	4
R501	915083	22 " 1/2W	1
R502	915057	470 "	1
R503	915091	10 " 1/2W	1
R504	915002	22 "	1

ELECTRICAL COMPONENTS LIST (Cont'd)

Ref. No.	Part No.	Description	Q'ty	Ref. No.	Part No.	Description	Q'ty
R601	915015	10K ohm	1	C205	913172	Ceramic 40pF	1
R602	915054	39K "	1	C206	913063	Ceramic 0.047uF	1
R603	915336	220 "	1	C207	913249	Ceramic 150pF	1
R604, 605	915395	27K "	2	C208	913020	Mylar 0.01uF	1
R606		No component		C209	913044	Mylar 0.047uF	1
R607	915395	27K "	1	C210	913210	Mylar 0.0015uF	1
R608	915039	100K "	1	C211	913040	Mylar 0.0047uF	1
R609	915336	220 "	1	C212	913241	Ceramic 220pF (SH)	1
R610, 611	915327	4.7K "	2	C213	913053	Ceramic 5pF	1
R612	915340	6.8K "	1	C214	913045	Mylar 0.022uF	1
R613	915030	15 " 1/2W	1	C215	913063	Ceramic 0.047uF	1
R614	915344	220K "	1	C216	913217	Electrolytic 22uF 16V	1
R615	915085	3.3K " 1/2W	1	C217	913077	Ceramic 220pF	1
R616	915009	100 "	1	C218	913171	Ceramic 30pF	1
R617	915003	1K "	1	C219, 220	913175	Electrolytic 10uF 16V	2
R618	915327	4.7K "	1	C221	913063	Ceramic 0.047uF	1
R619	915427	82K "	1	C222	913020	Mylar 0.01uF	1
R620	915325	3.9K "	1	C223	913550	Mylar 0.033uF	1
VR101	915370	Solid Volume 4.7K ohm	1	C301, 302	913043	Mylar 0.0022uF	2
VR102	915262	Solid Volume 22K "	1	C303, 304	913471	Tantalum 4.7uF 16V	2
VR103	915434	Solid Volume 6.8K "	1	C305, 306	913045	Mylar 0.022uF	2
VR301	915431	Solid Volume 470 "	1	C307, 308	913180	Electrolytic 47uF 16V	2
VR302 thru. 305	915510	Potentiometer, Volume/ On-Off Switch/Tone/Balance/ Channel Selector	1	C309	913069	Electrolytic 220uF 16V	1
VR401	915524	Potentiometer, Fader/Tuning	1	C310	913030	Electrolytic 470uF 16V	1
CAPACITORS, all are in 50 working voltages unless otherwise specified.				C311, 312	913462	Tantalum 1uF 16V	2
C101	913171	Ceramic 30pF	1	C313, 314	913044	Mylar 0.047uF	2
C102	913071	Mylar 0.001uF	1	C315, 316	913040	Mylar 0.0047uF	2
C103	913217	Electrolytic 22uF 16V	1	C317, 318	913141	Electrolytic 0.33uF (NP)	2
C104	913063	Ceramic 0.047uF	1	C319, 320	913044	Mylar 0.047uF	2
C105, 106	913366	Ceramic 0.02uF	2	C321, 322	913331	Semi-Con. 0.1uF 12V (SC)	2
C107, 108	913064	Mylar 0.022uF	2	C323, 324	913141	Electrolytic 0.33uF (NP)	2
C109	913425	Tantalum 4.7uF 16V	1	C325	913180	Electrolytic 47uF 16V	1
C110	913077	Ceramic 220pF	1	C326, 327	913331	Semi-Con. 0.1uF 12V (SC)	2
C111	913425	Tantalum 4.7uF 16V	1	C328, 329	913040	Mylar 0.0047uF	2
C112	913581	Tantalum 0.47uF 16V	1	C401, 402	913349	Electrolytic 1uF (NP)	2
C113	913020	Mylar 0.01uF	1	C403, 404	913071	Mylar 0.001uF	2
C114	913462	Tantalum 1uF 16V	1	C405 thru. 408	913069	Electrolytic 220uF 16V	4
C115	913162	Ceramic 680pF	1	C409 thru. 412	913097	Electrolytic 100uF 16V	4
C116	913096	Polystyren 470pF	1	C413 thru. 416	913021	Mylar 0.1uF	4
C117	913436	Tantalum 0.47uF 35V	1	C417 thru. 420	913061	Electrolytic 1000uF 16V	4
C118	913044	Mylar 0.047uF	1	C421 thru. 424	913331	Semi-Con. 0.1uF 12V (SC)	4
C119	913581	Tantalum 0.47uF 16V	1	C425, 426	913030	Electrolytic 470uF 16V	2
C120	913284	Semi-Con. 0.2uF 12V (SC)	1	C501, 502	913069	Electrolytic 220uF 16V	2
C121	913069	Electrolytic 220uF 16V	1	C503	913030	Electrolytic 470uF 16V	1
C122, 123	913064	Mylar 0.022uF	2	C601	913148	Electrolytic 4.7uF 16V	1
C124, 125	913043	Mylar 0.0022uF	2	C602	913180	Electrolytic 47uF 16V	1
C126	913196	Electrolytic 47uF 10V	1	C603	913013	Electrolytic 100uF 10V	1
C127	913125	Ceramic 0.022uF	1	C604	913462	Tantalum 1uF 16V	1
C201, 202	913060	Ceramic 0.01uF	2	C605	913069	Electrolytic 220uF 16V	1
C203	913044	Mylar 0.047uF	1	C606	913175	Electrolytic 10uF 16V	1
C204	913073	Ceramic 330pF	1	C607	913063	Ceramic 0.047uF	1
				C608	913060	Ceramic 0.01uF	1
				C609	913148	Electrolytic 4.7uF 16V	1
				CT201	913271	Trimmer, Antenna 70pF	1
				CT202, 203	913519	Trimmer 50pF	2

Electrical Adjustment

Equipment Required:

1. Regulated dc power supply: 0–20V, 8A or higher, adjusted to 13.8V ± 1%.
2. VTVM: 1 mV measurable.
3. Digital Voltmeter: 10 mV measurable; input impedance — 1 M ohm/V or higher.
4. Oscilloscope: 0 – 20 MHz; High sensitivity and high input impedance.
5. Frequency Counter: 0 – 20 MHz; high sensitivity and high input impedance.
6. Standard Signal Generator: 100 kHz – 150 MHz; –10 dB – 100 dB; 50 ohms unbalanced. Frequency accuracy, ±50 Hz [AM], ±500 Hz [FM].
7. Speaker Dummy Resistor: 8 ohms, 5 watts.
8. Circuit Tester: dc 20 k ohm/V.

* All test equipment should be properly calibrated.

General

Test Conditions:

Signal Generator Output: Modulation Frequency — 400 Hz

Modulation Percentage — 30% [AM].

Signal Generator Output: Modulation Frequency — 400 Hz

Modulation Percentage 30%/100%.

Sweep Frequency — 22.5 kHz [FM].

Signal Application: Antenna Receptacle thru a dummy antenna.

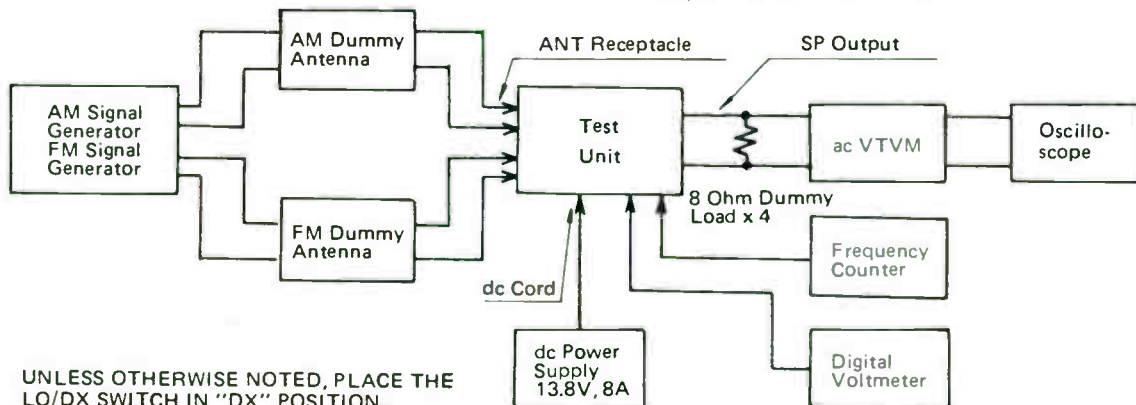
Output Meter Connection: Across the speaker or dummy load.

Setting of Radio Controls: Volume Control at maximum; Balance Control at its center.

Power Supply: 13.8V dc

* Location of components for alignment are shown on Printed Circuit Board View (component side).

Connect Digital Tuning Car Radio Alignment test equipment as shown below.



UNLESS OTHERWISE NOTED, PLACE THE LO/DX SWITCH IN "DX" POSITION.

AM/FM FRONT END ALIGNMENT TEST SET-UP

Preliminary

1. Before performing any adjustments, check visually all jacks, plugs and solder joints for good connection. Shown in the schematic diagrams are nominal test voltage values for the transistors. In addition, certain other pertinent voltages are shown in the schematic diagrams.
2. Before adjustment or alignment of this unit, temporarily set VR1 through VR3 on Multiplex Unit PC Board to their center position.
3. Turn each trimmer TC1, TC2, TC3, TC4 on Digital Tuner PC Board and CT1 on Digital Control Unit PC Board to their center position.

Power Amplifier Alignment

1. There are no adjustments provided in the power amplifier circuits. First check for correct voltage distribution, referring to the voltage values shown in the schematic diagram.

Digital Synthesizer (PLL) Alignment

1. Connect frequency counter to PLL LSI (IC2) on Control Unit, pin No. 19 (TP) through its probe and adjust the trimming capacitor CT1 to obtain a frequency reading of:
5.12000 MHz ± 10 Hz

Note: This alignment must be carefully done with frequency counter's gate placed in 1 sec. position because the oscillator frequency is used as a reference signal for digital clock.

AM Local Oscillator Alignment

1. First, verify that both trimmer TC3 & TC4 on Digital tuner PC Board are placed as illustrated.



2. Release AM/FM switch in AM.
3. Tune radio to 1610 kHz.
4. Connect digital voltmeter between LPF OUT pin 14 (See Figure 22) on Digital Tuner PC Board and ground.
5. Adjust core of T9 on Digital Tuner PC Board to obtain $8.5V \pm 0.05V$, starting from top to bottom when tuning core.
6. Tune radio to 530 kHz and verify that the reading should be within $0.8V - 2.0V$.

Note: Use the high input impedance digital voltmeter ($1 M\Omega/Vm$ or higher) in step 4 above.

AM Tuner Alignment

1. Connect AM signal generator to antenna receptacle thru the dummy antenna. (Figure 14).
2. Adjust AM signal generator to 600 kHz, 30% modulation at 400 Hz, with radio tuner set to the same frequency.
3. Increase AM signal generator output until a sine wave begins to appear on the scope display.
4. Then, adjust T7 and T8 for maximum audio output across the 8 ohm dummy load resistor.
5. Set AM signal generator frequency to 1400 kHz, 30% modulation at 400 Hz, with radio tuner set to the same frequency.
6. Adjust TC3 and TC4 for maximum output.
7. Repeat step 4 and 6 (at 600 kHz and 1400 kHz).
8. Next, adjust AM signal generator frequency to 1000 kHz, 30% modulation at 400 Hz, with radio tuner set to the same frequency.
9. Adjust T10 and T11 for maximum output.

Note: During alignment, the audio output level may rapidly increase and VTVM pointer may go off scale. In this case always decrease the signal generator output.

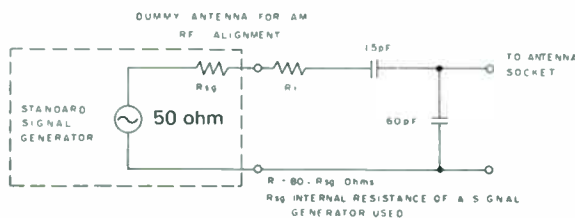


Figure 14.

AM Auto Scan Stop Circuit Alignment

1. Connect a digital voltmeter between TP1 and TP2 on Digital Tuner Unit PC Board.
2. Set AM signal generator frequency to 1000 kHz with radio tuner set to the same frequency.
3. Turn on AM signal generator and increase signal output level. Verify that audio level begins to appear at the audio stage.
4. Connect a jumper lead between terminal pin 48 and pin 31 on Multiplex Unit PC Board.
5. Adjust T6 so that the meter reading becomes 0V on VTVM.
6. Then, set the radio into AM auto Scan Stop mode. Verify that the auto scan stop action operates correctly.

Note: The operation of auto scan stop is adjusted by T6 transformer. Since the position of VR3 depends upon gain of IC2, IC3, the VR3 should be left in its center position unless otherwise noted.

To adjust this circuit, connect 8V dc output line from terminal pin 48 to L/D terminal pin 31 using jumper lead, because the circuit can not be adjusted without supplying 8V.

If dc supply voltage is more than 8V (using an external power supply), the integrated circuit may be damaged, therefore always use terminal pin 48 in this alignment.

Do not forget to remove the jumper lead after alignment.

FM Local Oscillator Alignment

1. Depress AM/FM switch in FM.
2. Tune radio to 107.9 MHz.
3. Connect digital voltmeter between LPF OUT pin 14 on Digital tuner Unit PC Board (See Figure 22) and ground.
4. Adjust T3 (Local OSC coil) to obtain $8V \pm 0.05V$, starting from top to bottom when tuning core.
5. Tune radio to 88.1 MHz and verify that the reading should be more than 1.5V at minimum and less than 3.0V at maximum.

Note: Use the high input impedance digital voltmeter ($1 M\Omega/Vm$ or higher) in step 3 above.

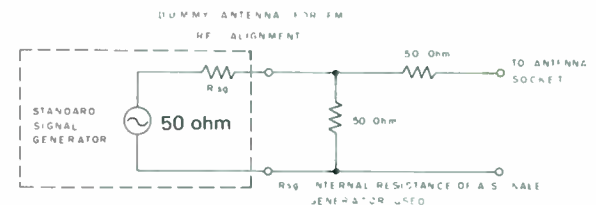


Figure 15.

IF Detector Alignment

1. Connect FM signal generator to antenna receptacle thru the dummy antenna. (Figure 15).
2. Connect digital voltmeter between TP1 and TP2 on Digital tuner Unit PC Board. (Figure 23).
3. Adjust FM signal generator frequency to 98.1 MHz with radio tuning set to the same frequency.
4. Increase signal generator output level to provide 1 mV or higher.
5. Adjust T5 for 0V on the meter.

Note: This alignment should be repeated twice, because the initial alignment influences the radio's distortion and scan stop action.

FM Front End Alignment

1. Set the St/Mo switch to Stereo.
2. Adjust FM signal generator frequency to 90.1 MHz with 30% modulation at 400 Hz (22.5 kHz deviation) and tune radio to the same frequency. Refer to the AM/FM Front End Alignment Test set-up.
3. Increase signal generator output until a sine wave appears on scope display.
4. Alternately adjust T1 and T2 for maximum amplitude on scope display.
5. Readjust signal generator frequency to 106.1 MHz with 30% modulation at 400 Hz (22.5 kHz deviation) and tune radio to the same frequency.
6. Adjust TC1 and TC2 for maximum audio output across the 8 ohm dummy load resistor.
7. Repeat step 3 and 5 above (at 90.1 MHz and 106.1 MHz) until no further improvement is obtained.
8. Adjust signal generator frequency to 98.1 MHz with 30% modulation at 400 Hz (22.5 kHz deviation) and tune radio to the same frequency.
9. Adjust T4 for maximum audio output.

Note: During alignment, the audio output level may rapidly increase and VTVM pointer may go off scale. In this case always decrease signal generator output.

19 kHz Pilot Signal Adjustment

1. Set FM signal generator frequency to 98.1 MHz without modulation and tune radio to the same frequency.
2. Reduce signal generator output level to just display audio output on scope.
3. Connect frequency counter between TP and ground on Multiplex Unit PC Board and read frequency. (Figure 19).
It should read 19.00 kHz \pm 100 Hz. If not, adjust VR2 to obtain that reading.

Separation Alignment

1. Modulate FM signal generator (stereo signal modulator [SSM]) with stereo composite signal (F = 98.1 MHz, 400 Hz, 100% modulation).
2. Tune radio exactly to signal generator frequency.
3. Increase signal generator output up to about 1 mV.
4. Modulate signal generator with the normal left channel composite signal and observe the output signal of right channel. Adjust VR1 for minimum output.
5. Modulate signal generator with the normal right channel composite signal and observe the output of the left channel, which should be minimal.
The voltage should have the same level as that of the right channel. If not, readjust VR1 for equal and minimum leakage at both outputs. The normal leakage (separation) is approximately 25 – 30 dB.

FM Auto Scan Stop Alignment

There are no adjustments provided in the FM Auto Scan Stop circuit.

Detailed Description on AM Tuner Alignment, T10 & T11.

T10 and T11 are AM IF transformers and should be adjusted correctly to 450 kHz to obtain clearer reception. The oscillating frequency of AM local oscillator is kept within the accuracy of \pm 50 Hz due to the PLL circuitry employed.

Under "AM Tuner Alignment, step 8 & 9", set the AM signal generator frequency to 1000 kHz \pm 100 Hz, then adjust T10 and T11 to obtain maximum AF output. Above procedure assures the accuracy of 450 kHz \pm 150 Hz in T10 and T11 alignment.

Detailed Description on AM Auto Scan Alignment, VR3.

VR3 should be set in its mechanical center position. Though this has been provided to compensate IC's gain variations, the actual units have shown that there is no need to adjust it.

Mechanical Adjustment

Tape Head Cleaning

Head faces should be cleaned with head cleaner to remove dust and accumulated oxide.

Use a long Q-tip moistened with denatured alcohol to perform this function. 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.

Equipment Required

1. ac VTVM – Preferably with a one-volt full scale or VOM with 20,000 ohms/volt sensitivity.
2. Oscilloscope: 0 – 20 MHz, high sensitivity and high input impedance.
3. Tape head demagnetizer.
4. Head cleaner, alcohol, lubricants, etc.
5. Cotton swabs, tweezers, hand tools, etc.
6. Regulated dc Power Supply, 0 – 20V, 8A or higher, adjusted to $13.8V \pm 1\%$.
7. 8-Track Test Tape Cartridge, or equivalent.
Head Azimuth Alignment – RCA 1-326, 8 kHz Full Track, -6 dB.
Head Cross Talk Alignment – RCA 1-327.

Head Azimuth Adjustment (Figure 16)

1. Connect two VTVM's to the output of the left and right channels.
2. Insert the Head Azimuth Alignment Tape, (RCA #326) into the tape slot and play back the tape.
3. Adjust Volume Control so that audio output level obtained is 0.5 – 1.0V on VTVM while Balance and Tone (Treble & Bass) Controls are each at center position.
4. Adjust the head azimuth adjustment screw [numbered "156" on the exploded view of Tape Mechanism Unit] to obtain maximum and equal audio output for both channels.
5. Repeat all steps if necessary for best results.

Head Height and Cross-Talk Adjustment (Figure 17)

1. Connect two VTVM's to the output of the left and right channels. (If two VTVM's are not available, use one VTVM alternately.)
2. Insert the Cross-Talk Alignment Tape, (RCA #327) into the tape slot and play back the tape. Push the program selector switch, if necessary. Make sure that the left and right signals recorded on various tracks on the test tape are obtained on the two VTVM's.
3. Adjust Head Height Adjustment knob [numbered "111" on the exploded view of Tape Mechanism Unit] for minimum and equal residual noises (cross-talk) on VTVM's.
4. Repeat step (2) and (3) if necessary.

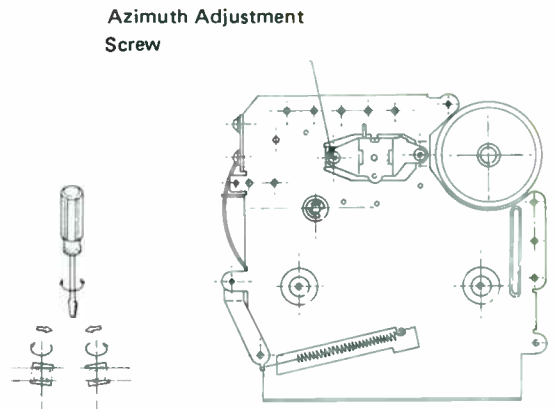


Figure 16.

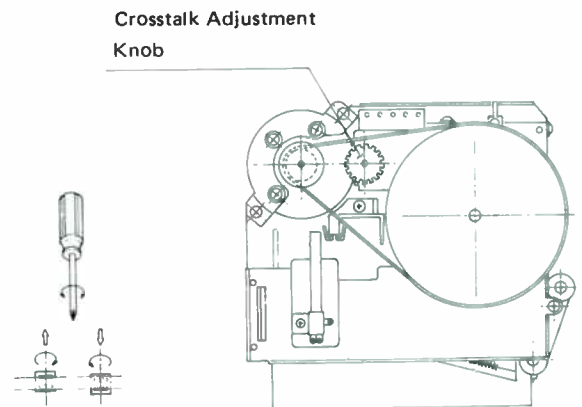
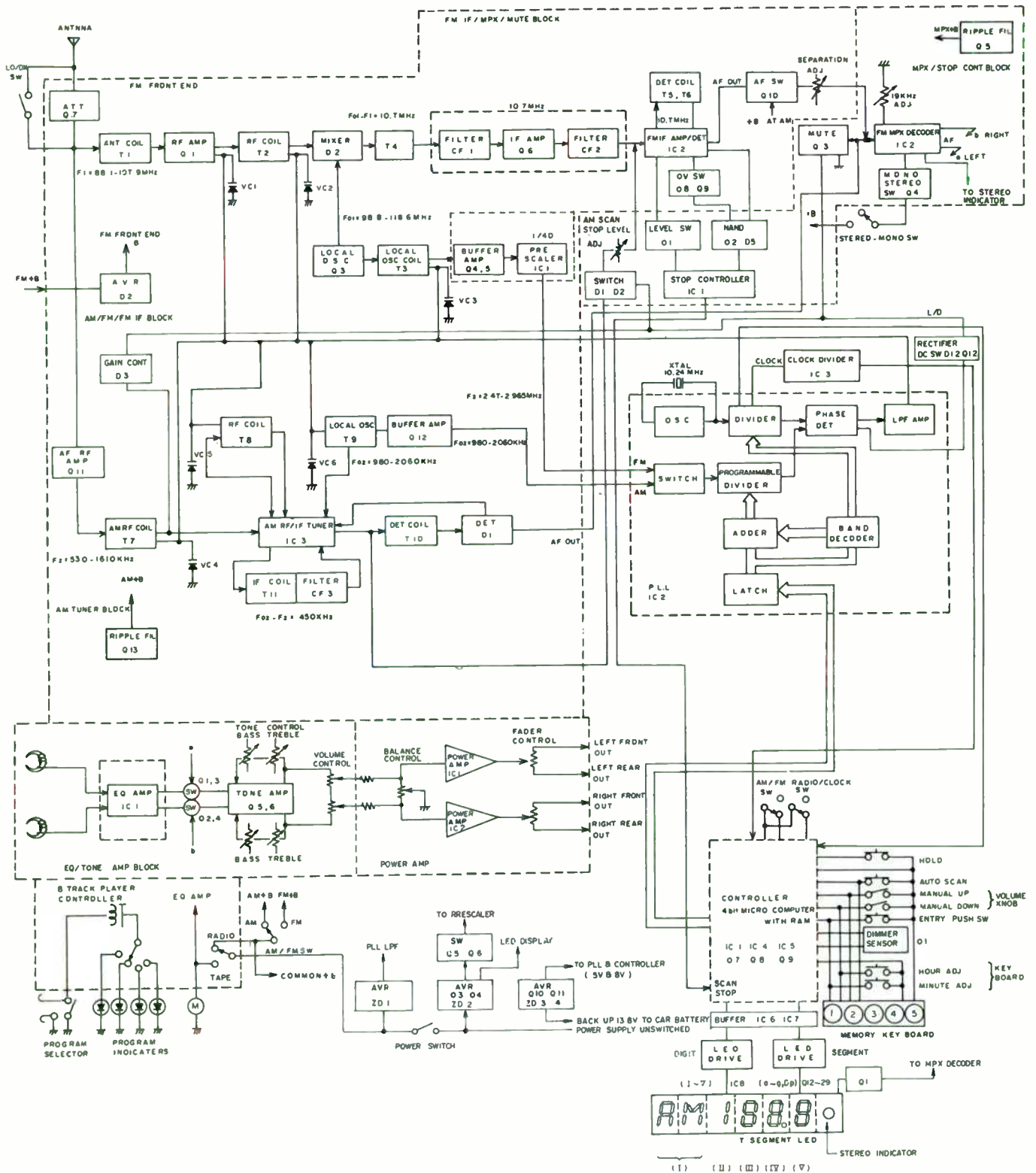
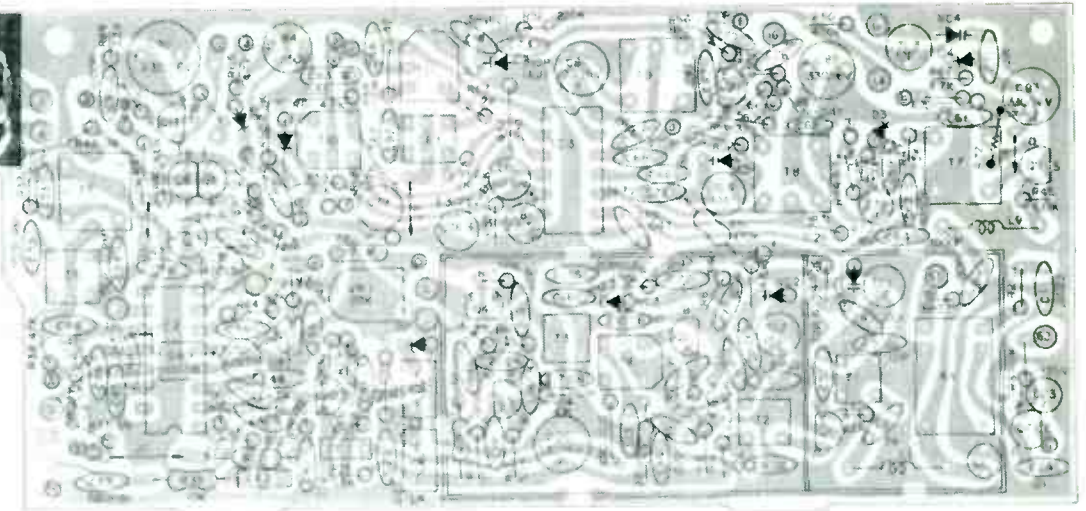


Figure 17.

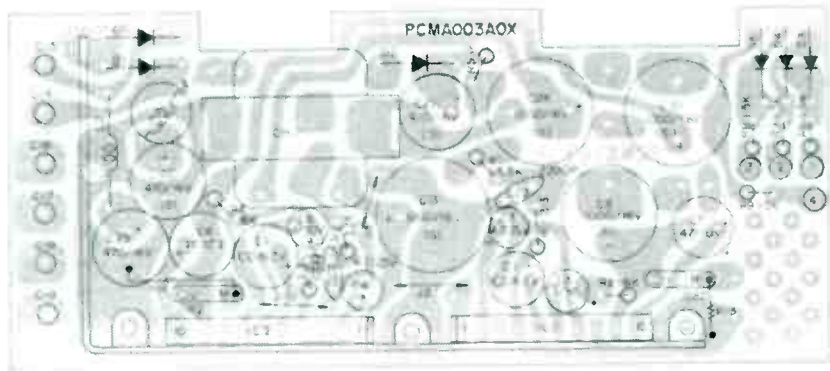
Circuit Block Diagram



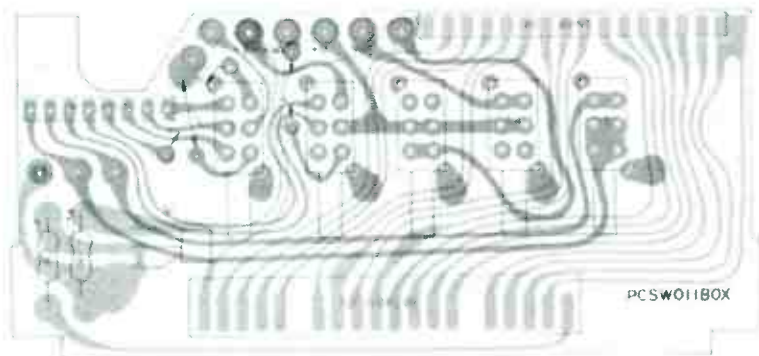
PC Board-Component Side



PCTU005A0X, DIGITAL TUNER UNIT



PCMA003A0X, MAIN AMP. UNIT

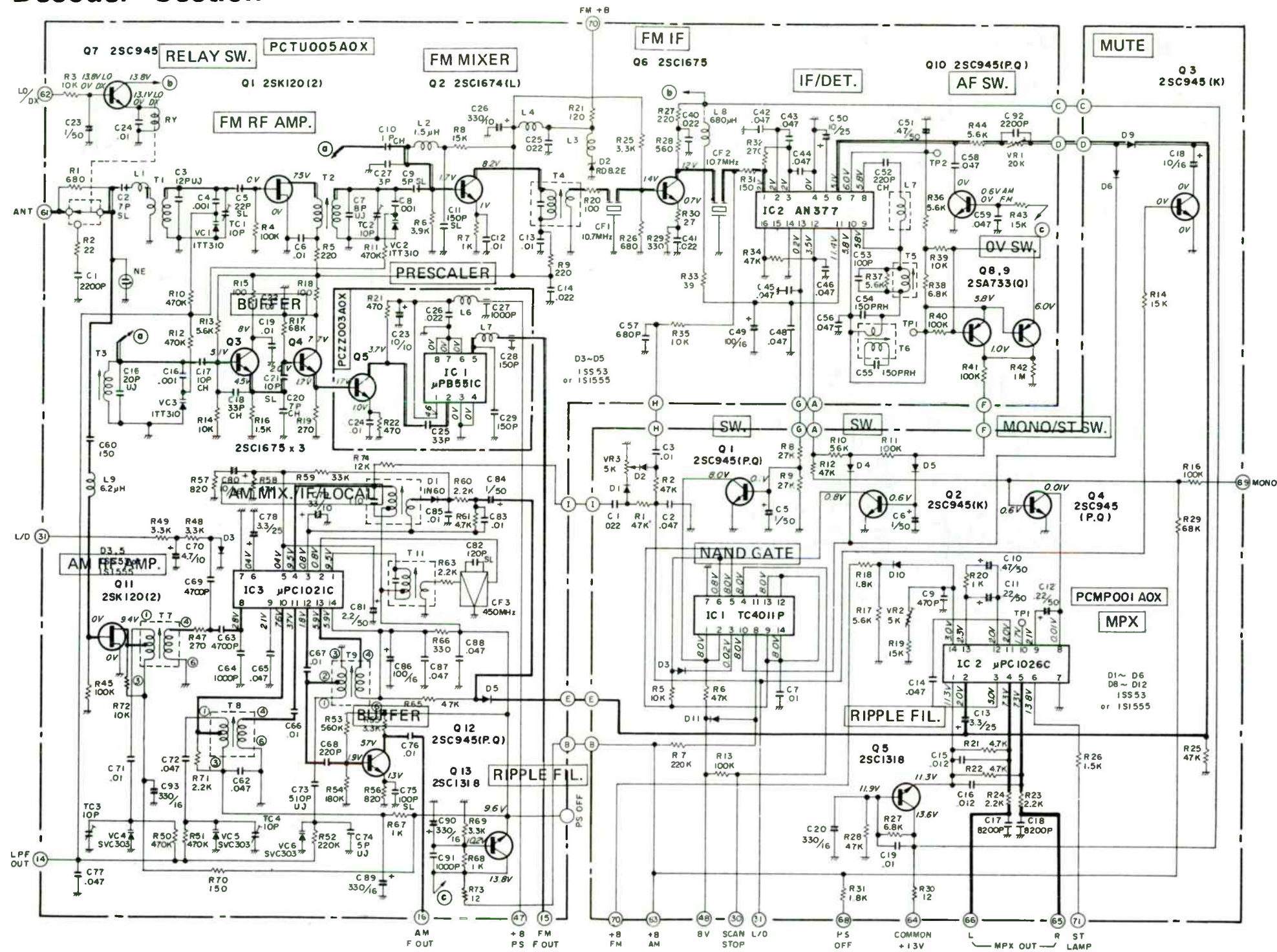


PCSW011BOX, PUSH SWITCH UNIT

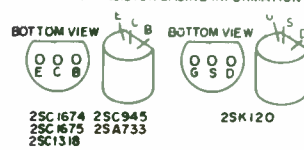


PCSW012H1B, KEY BOARD UNIT

Digital Tuner & MPX Decoder Section



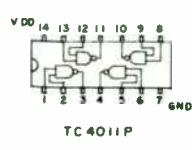
IC & TRANSISTOR BASING INFORMATION



E: EMITTER
C: COLLECTOR
B: BASE

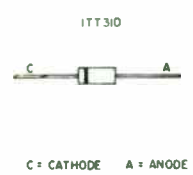
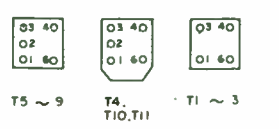
G: GATE
S: SOURCE
D: DRAIN

GATE IC



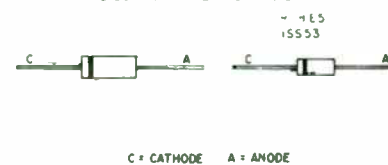
TC4011P

TRANSFORMER TERMINATION INFORMATION (BOTTOM VIEW)



C: CATHODE A: ANODE

DIODE TERMINAL INFORMATION

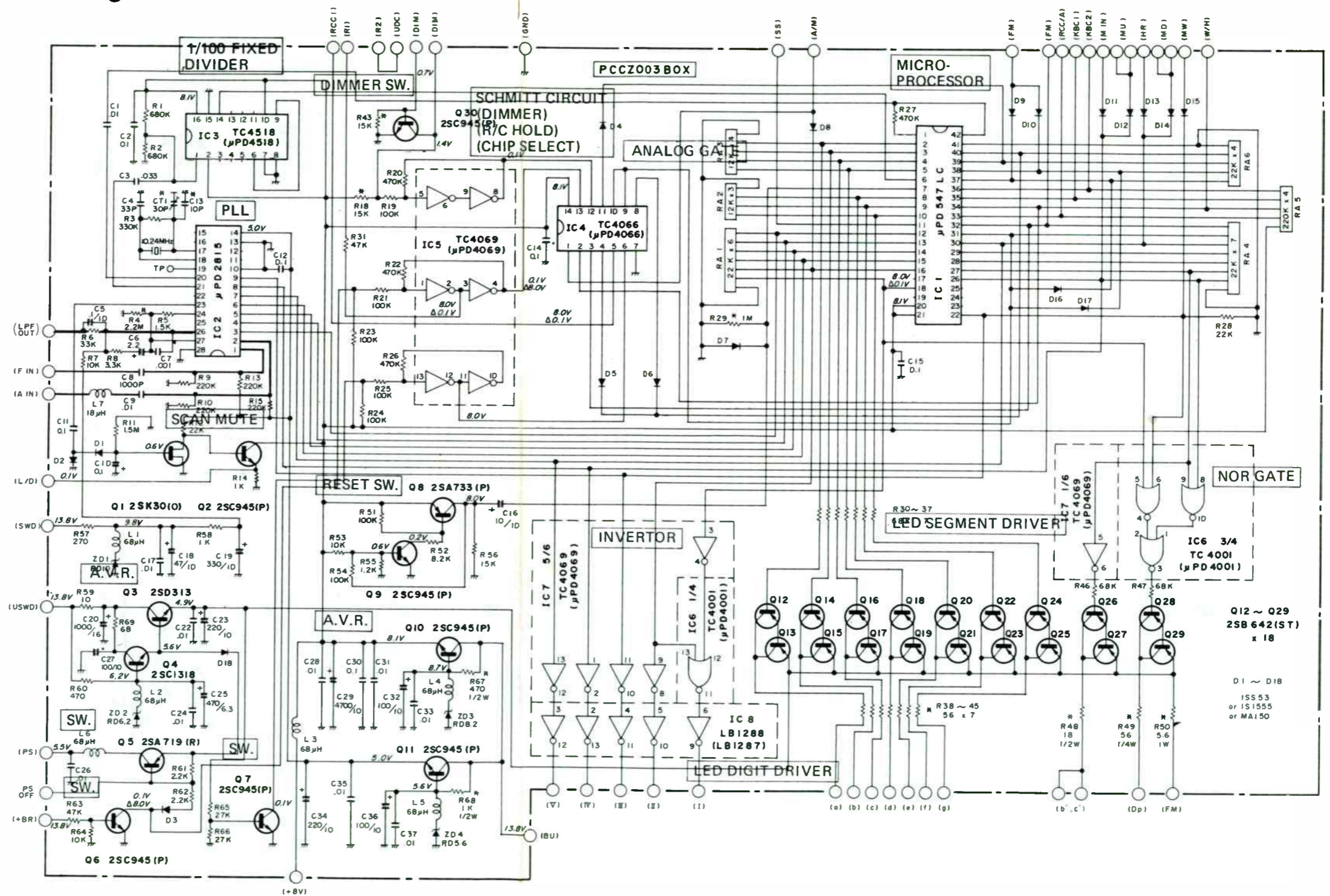


C: CATHODE A: ANODE

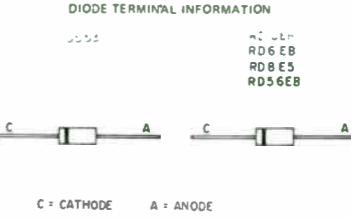
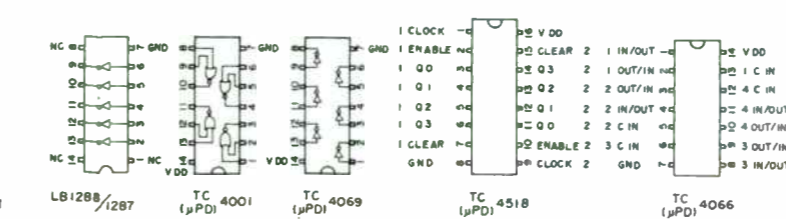
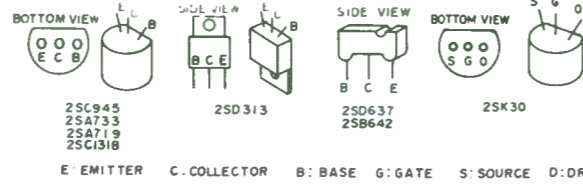
NOTE:

ALL VOLTAGES MEASURED FROM PC BOARD GND WITH VTVM AT NO SIGNAL (AT 13.8V POWER SUPPLY) IF MEASUREMENT VALUES OBTAINED ARE IN EXCESS OF ±20% OF VALUES SHOWN THEN REASON FOR DIFFERENCE SHOULD BE CORRECTED

Schematic Diagram – Digital Control Section

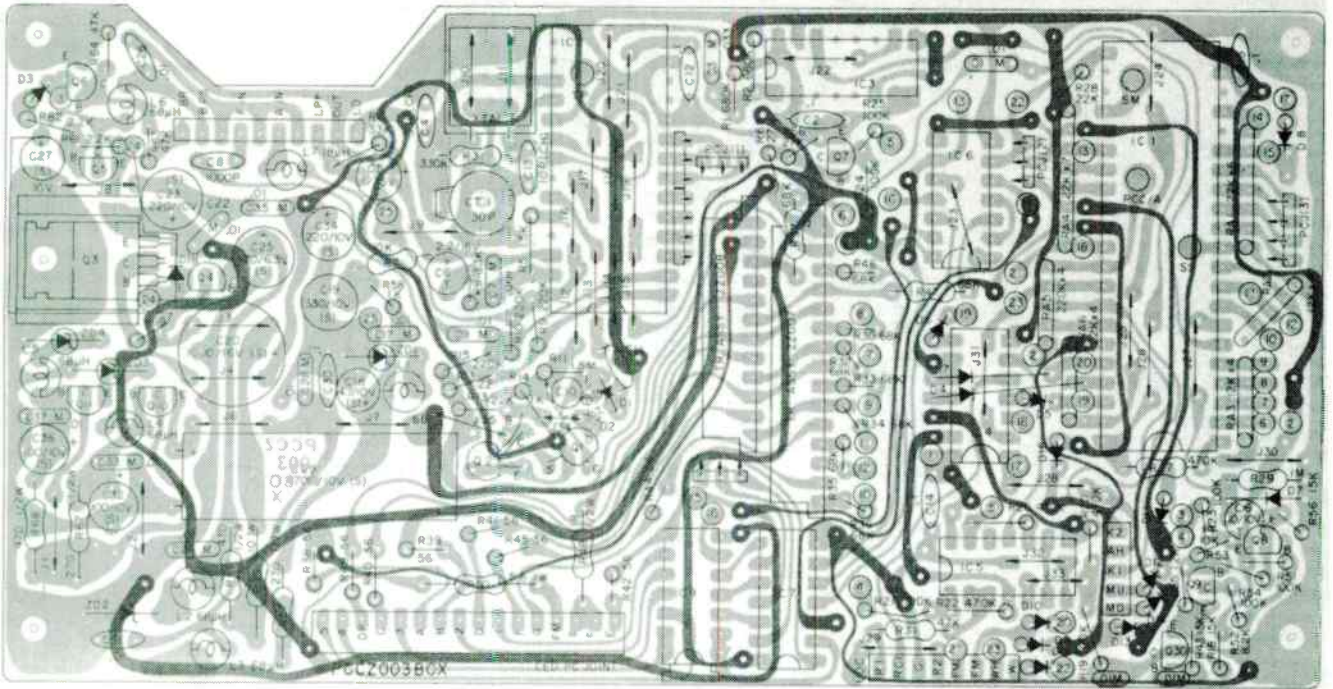


IC & TRANSISTOR BASING INFORMATION

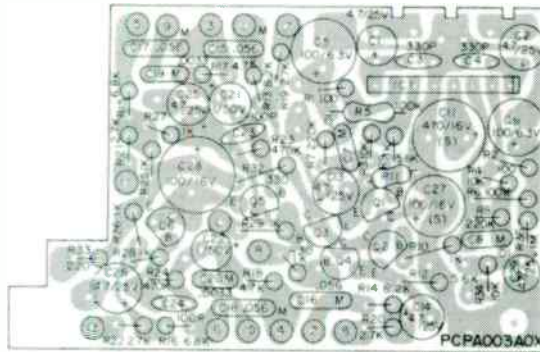


NOTE:
Δ VOLTS AT CLOCK DISPLAY CONDITION
ALL VOLTAGES MEASURED FROM PC BOARD
GND WITH VTVM AT NO SIGNAL
(AT 13.8V POWER SUPPLY) IF MEASUREMENT VALUES OBTAINED ARE IN EXCESS OF ±20% OF VALUES SHOWN THEN REASON FOR DIFFERENCE SHOULD BE CORRECTED
* VARIABLE

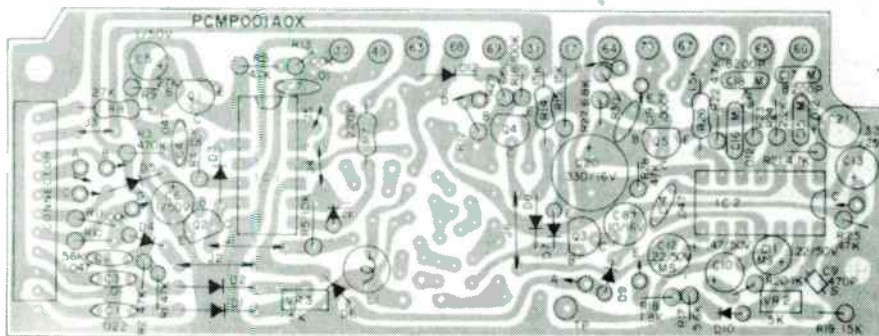
PC Board-Component Side



PCCZ003BOX, CONTROL UNIT

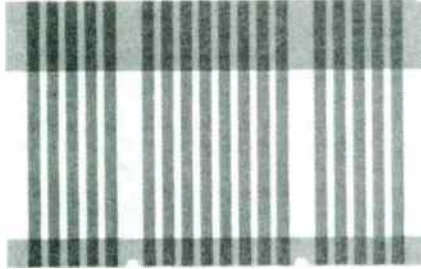


PCPA003A0X, EQUALIZER/TONE AMP UNIT

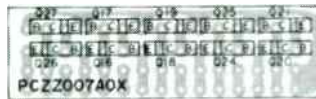


PCMP001A0X, MULTIPLEX UNIT

PC Board-Component Side



PCZZ004POF, LED JUMPER UNIT

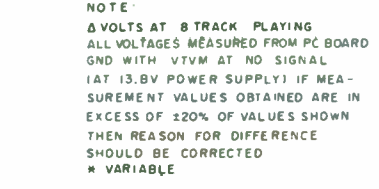
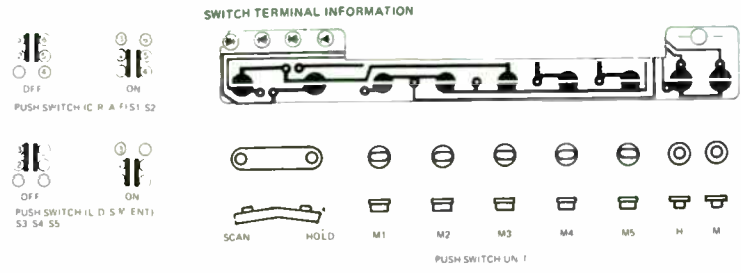
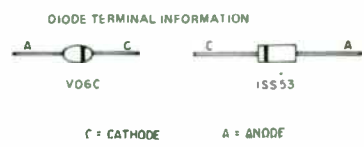
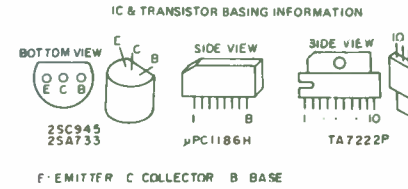
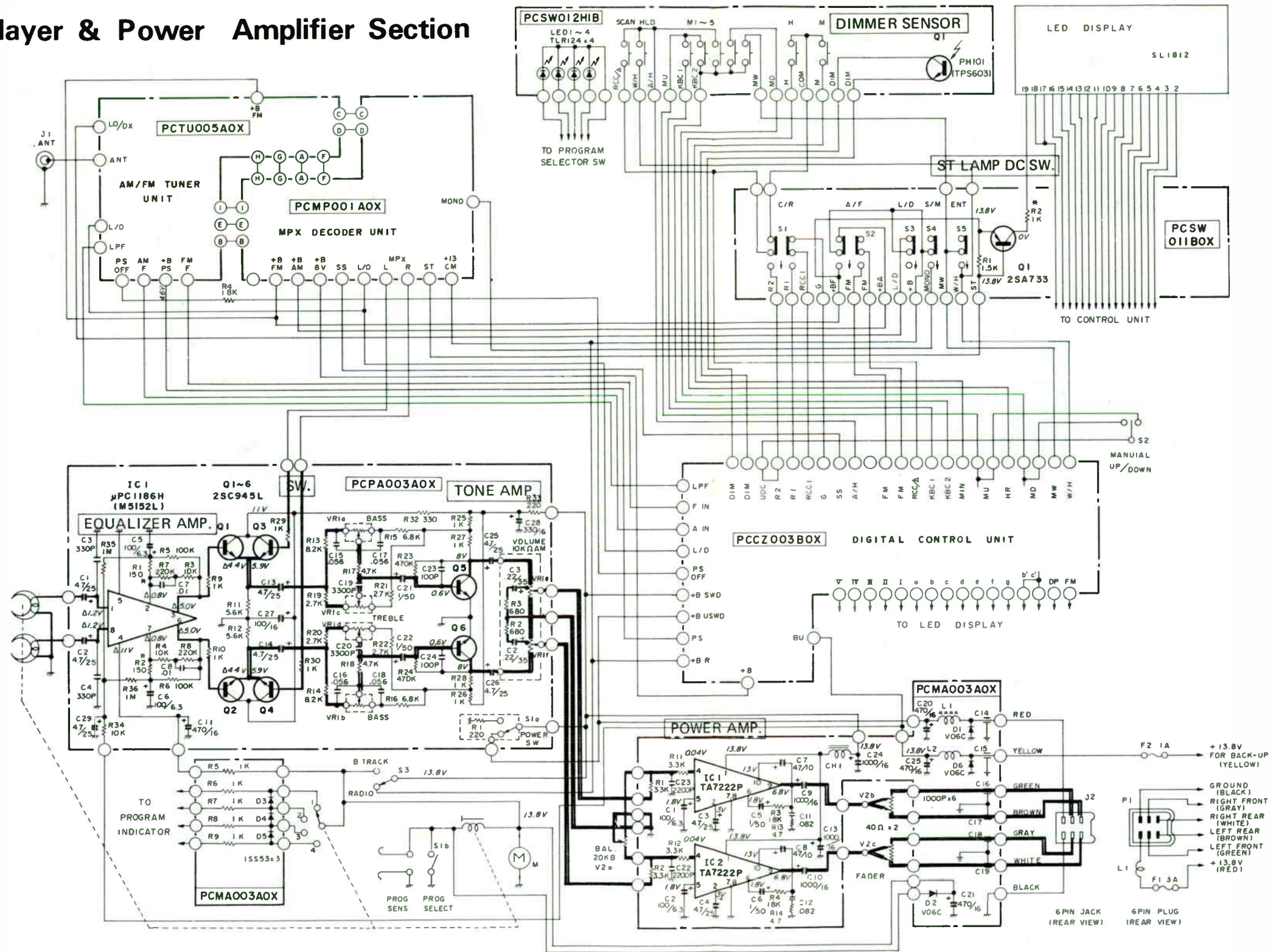


PCZZ007A0X, TRANSISTOR UNIT

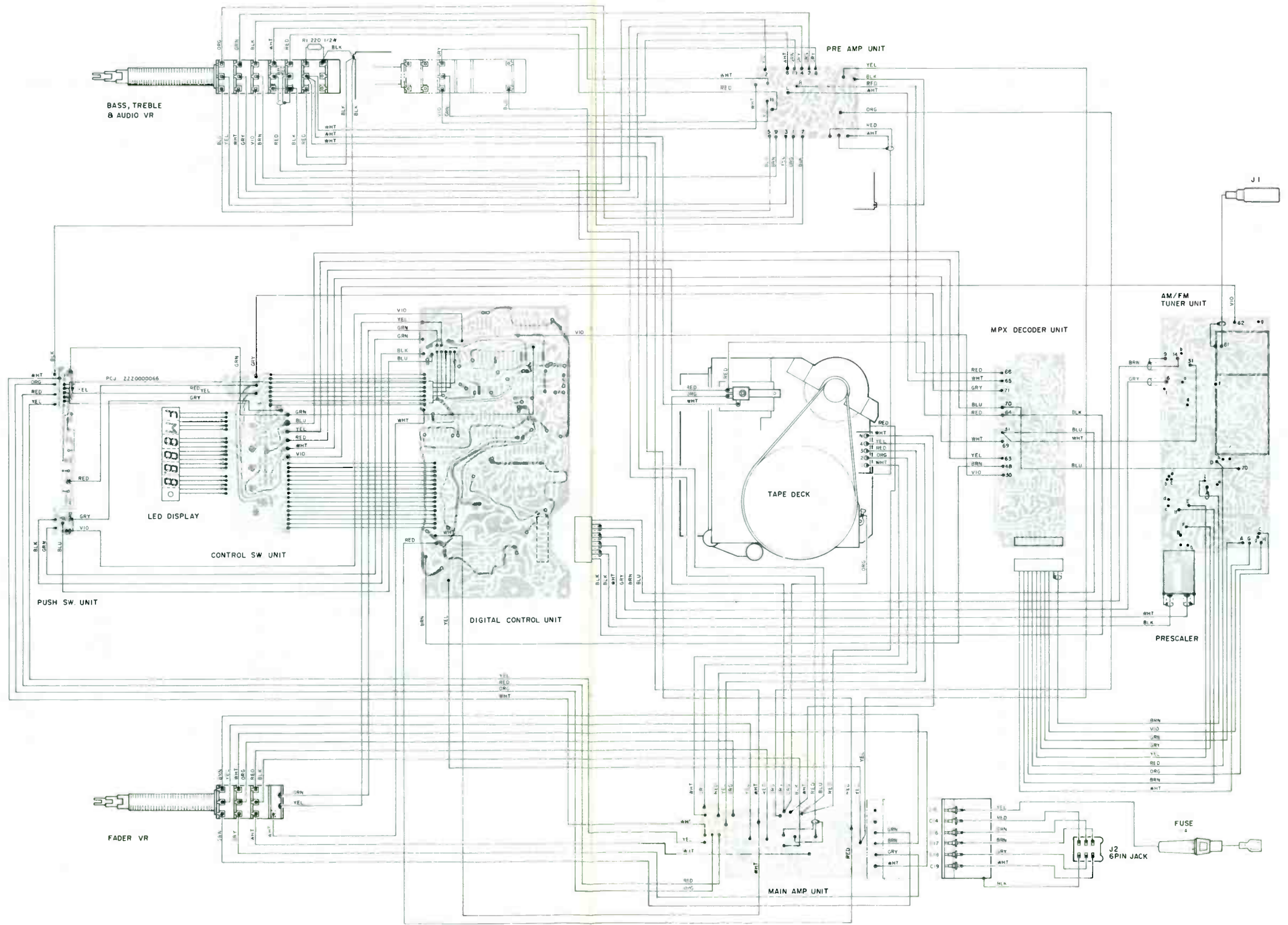


PCZZ008A0X, TRANSISTOR UNIT

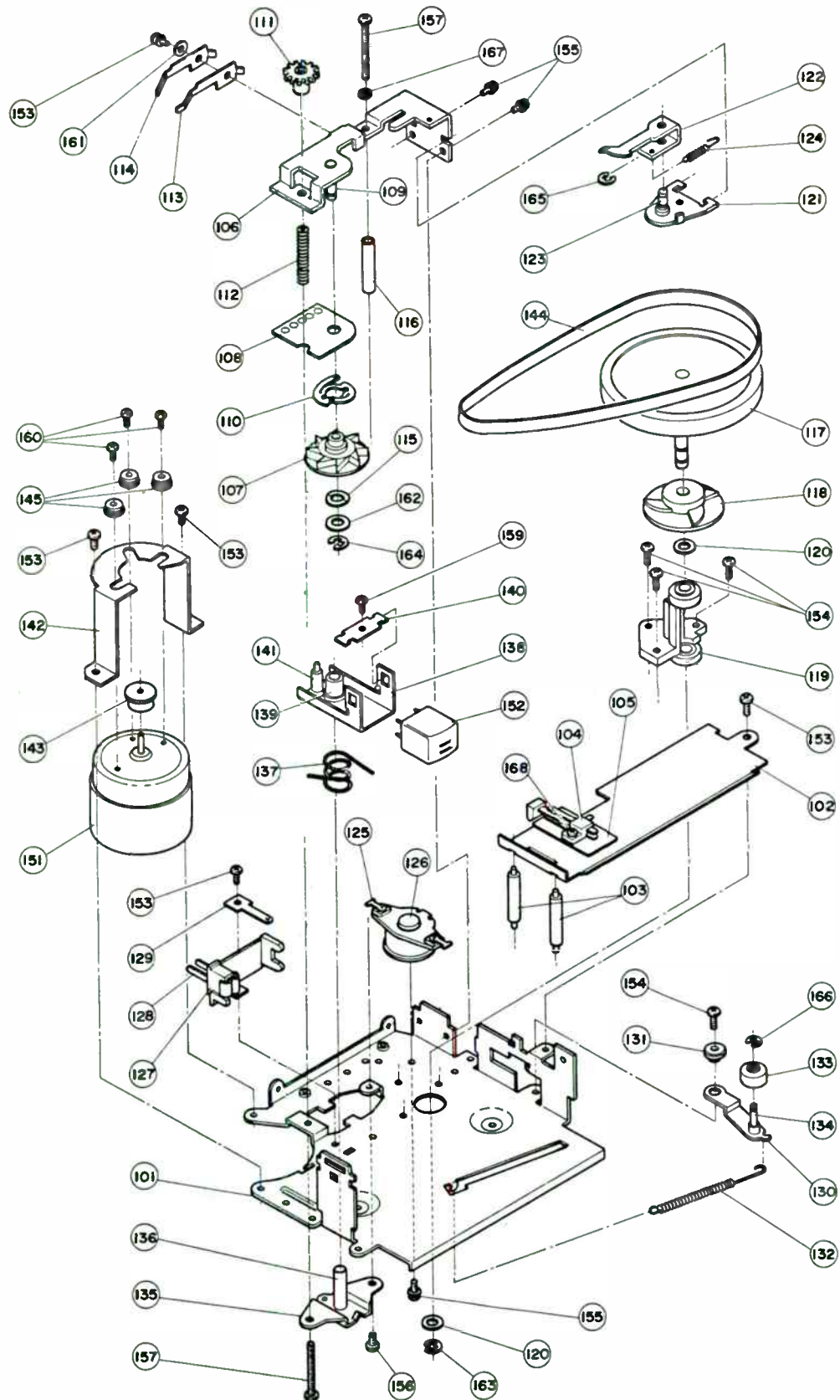
Player & Power Amplifier Section



Wiring Diagram-Solder Side



Exploded View – Mechanism



Replacement Parts List

Ref. No.	JCPenney Part No.	Supplier Part No.	Description
		CABINET PARTS	
		MB-775SM001	Plate (Base)
VR2		RV-ZZ400X01	Tune, Balance, Fader
		MS-426SB001	Positioner (Volume)
VR1		RV-ZZ503X02	Volume, Tone, Program
		ML-631SL001	Bracket (Pre Amp. P.C.B. Mtg.)
		AP-CPA003AA	P.C.B. Ass'y (EQ & Tone) ①
		MC-375SL001	Bracket (Tuner P.C.B. Mtg.)
		AP-CMP001AA	P.C.B. Ass'y (MPX, Scan Unit) ①
		VV-L621GE16	Mask Film-1
		VV-L441GE01	Mask Film-2
		AD-L0TZZ05T	Tape Deck Ass'y (8 Track)
		MB-774SL001	Shield Plate
		AP-CCZ003AA	P.C.B. Ass'y (Control Unit) ①
		AP-CTU005AA	P.C.B. Ass'y (Tuner Unit) ①
		AC-GN124GEA	Connector, Lead Ass'y 10P
		AC-ZZ009GEA	Ant. Cable Ass'y
		MP-131SL001	Clamper (Cord)
		AC-CN121GEA	Connector, Cord Ass'y
		AC-DC064GEA	dc Cord Ass'y
		VX-752SM001	Inner Nose (Push SW. Cover)
		AP-CSW011AA	P.C.B. Ass'y (Push Switch) ②
		VN-510SM001	Knob (Push Switch)
		PC-ZZ004POE	P.C.B. (LED Jumper Lead)
		AP-CSW012AA	P.C.B. Ass'y (Key Board) ②
		VK-164RH001	Sheet (Rubber Switch)
		VL-611SB001	Key Holder
		MB-731AA001	Door (Tape Door)
LED		QL-#SL8112C	LED Unit ②
		MT-722LL001	Shaft (Tape Door)
		MW-131LL001	Spring (Tape Door)
		VX-754SC001	Outer Nose
		VN-130SM001	Scan/Hold Switch
		VN-160SM001	Knob (Key Board)
		VM-164AC001	Dimmer Cap
		VM-453SM001	Knob (Timer Set Switch)
		MB-641SL001	Shield (Tuner P.C.B.)
		AP-CMA003AA	P.C.B. Ass'y (Player, Power Amp.) ①
		VK-275RJ001	Rubber Gasket
		VE-76XSM001	Trim Panel
		VN-146SC001	Knob (Rear)
		VN-236SC001	Knob (Middle)
		MM-150SY001	Spring (Knob)
		MN-285AA003	Front Knob

① Field repair.
Do not exchange.

② Throw away.
Do not repair.

Note: Elyt: Electrolytic Capacitor.
Numbers in parenthesis are Exploded View
Reference No.

Ref. No.	JCPenney Part No.	Supplier Part No.	Description
C1 R1		MB-766SM002	Cover
		VS-774FF002	Barrier (Cover)
		B0-245**A01	Wire kit Ass'y
		AC-CN124GEA	Connection Lead Ass'y
		CE-AD470ALX	Elyt Capacitor 47 μ F 16V
		RC-12GK221X	Solid Resistor 220 ohm 1/4W
		MB-774SL001	Shield Plate
		VV-S0245**1	Serial Number Plate
		BS-PB3005NN	Bind Head Screw M3 x 5 (Shield)
		BS-PB3005NB	Bind Head Screw M3 x 5 (Clamper)
		BS-PL3005NB	Bind Nail Screw M3 x 5 (Cover)
		VS-PU3004NB	Thin Bind Screw M3 x 4 (Deck)
		BT-PB3008BB	Bind Tap Screw M3 x 8 (Deck)
		BW-G30655SW	Lock Washer (Pre Amp.)
		VW-M30805FB	Fiber Washer (Pre Amp.)
		VM-332RJ001	Gasket
		MS-827SZ001	Mounting Strap
		AC-CN122GEA	Connection Cord Ass'y
		AY-0245-01	Accessory Ass'y
		BN-HVH05VSZ	Nut
	BN-HVL95VSZ	Nut	
	BN-ZXX60NSZ	Nut	
	VS-PR6030NZ	Nut	
		[Digital Control Unit PC Board]	
	PC-CZ003B0X	P.C. Board ① (AP-CCZ003AA)	
		Integrated Circuits	
IC1		QQ-P547LCAA	I.C. μ PD547LC-513
IC2		QQ-002815AA	I.C. μ PD2815C
IC3		QQ-004518AA	I.C. μ PD4518C
IC4		QQ-004066AA	I.C. μ PD4066C
IC5,7		QQ-004069AA	I.C. μ PD4069C
IC6		QQ-004001AA	I.C. μ PD4001C
IC8		QQ-M01288AC	I.C. LB1288
			Transistors
Q1,2,6,7,9, 10,11,30		QT-C0945AAA	Transistor 2SC945 (P)
Q3		QT-D0313XAC	Transistor 2SD313
Q4		QT-C1318XGN	Transistor 2SC1318 (S)

① Field repair.
Do not exchange.

② Throw away.
Do not repair.

Note: Elyt: Electrolytic Capacitor.
Numbers in parenthesis are Exploded View
Reference No.

Ref. No.	JCPenney Part No.	Supplier Part No.	Description
Q5		QT-A0719XBN	Transistor 2SA719 (R)
Q8		QT-A0733XBA	Transistor 2SA733 (P)
			Diodes, X'tal & Trimmer
D1-17		QD-SS53XXA	Diode 1SS53
ZD1		QD-ZRD10EXA	Diode, Zener RD10EB
ZD2		QD-ZRD6EXXA	Diode, Zener RD6, 2EB
ZD3		QD-ZRD8ECAA	Diode, Zener RD8, 2EC
ZD4		QD-Z5R6EBAA	Diode, Zener RD5, 6EB
X1		XA-S1B3001X	X'tal 10.24000MHz
CT1		CT-Z7300W01	Trimmer Cap. 30PF
			Resistor Array
RA1		RA-B223K06N	Resistor Array 22K
RA2,3		RA-B123K04N	Resistor Array 12K
RA4		RA-B223K07N	Resistor Array 22K
RA5		RA-B224K04N	Resistor Array 220K
RA6		RA-B223K04N	Resistor Array 22K
			Transformers
L1-6		LF-680JC01K	RF Coil 68μH
L7		LF-180JC01K	RF Coil 18μH
			Miscellaneous
		YP-F10S002Z	Plug 10P
		MW-201BS010	Tie Point
		MW-401CX001	Short Jumper 10mm
		MW-401CX003	Short Jumper 7.5mm
		MU-222AD001	Heat Sink 2SD313 Transistor
		BS-PP3008NT	Pan HD Screw M3x8 Transistor
		BN-HAH30NBN	HEA Nut M3 Transistor
		VS-223RH002	Silicon Sheet Transistor
		VS-225FH001	Barrier X'tal
		ZZ-Z0000063	PC Joint 5mm
		ZZ-Z0000063	PC Joint 5mm
		ZZ-Z0000064	PC Joint 5mm
			Resistors All resistor wattages not shown on this Parts List are carbon 1/4W. See schematic for special value.
R48		RH-HANJ180N	Metal Oxide Film Resistor 18 ohm 1/2W
R50		RX-1ANJ5R6N	Metal Oxide Film Resistor 5.6 ohm 1W
R57		RX-HANJ271N	Metal Oxide Film Resistor 270 ohm 1/2W
R59		RX-1ANJ100N	Metal Oxide Film Resistor 10 ohm 1W
R60		RG-HANJ471N	Metal Oxide Film Resistor 470 ohm 1/2W
R67		RG-HANJ471N	Metal Oxide Film Resistor 470 ohm 1/2W

Ref. No.	JCPenney Part No.	Supplier Part No.	Description
			Capacitors All capacitor ratings not shown on this Parts List are ceramic Disc 50V. See schematic for special value.
C2		CB-D1B104MM	Ceramic Capacitor .1 μ F 12V
C5		CS-SF0R1MDC	Tantalum Capacitor .1 μ F 35V
C6		CS-SD2R2MDC	Tantalum Capacitor 2.2 μ F 16V
C11		CS-SF010MDC	Tantalum Capacitor 1 μ F 35V
C12		CB-D1B104MM	Ceramic Capacitor .1 μ F 12V
C14,15		CB-D1B104MM	Ceramic Capacitor .1 μ F 12V
C16		CS-SC100MDC	Tantalum Capacitor 10 μ F 10V
C18		CE-AC470ACX	Elyt Capacitor 47 μ F 10V
C19		CE-AC331ACX	Elyt Capacitor 330 μ F 10V
C20		CE-AD102ABX	Elyt Capacitor 1000 μ F 16V
C23,34		CE-AC221ACX	Elyt Capacitor 220 μ F 10V
C27,36,32		CE-AC101ACX	Elyt Capacitor 100 μ F 10V
C29		CE-AC472ACX	Elyt Capacitor 4700 μ F 10V
C30		CB-D1B104MM	Ceramic Capacitor .1 μ F 12V
			[Transistor Block PC Board]
		PC-ZZ008A0X	P.C. Board ② (AP-CZZ008AA)
			Transistors
		QT-B0642XAN	Transistor 2SB642 (S.T)
			[Transistor Block PC Board]
		PC-ZZ007A0X	P.C. Board ② (AP-CZZ007AA)
			Transistors
		QT-B0642XAN	Transistor 2SB642 (S.T)
			[Key Board Unit PC Board]
		PC-SW012H1B	P.C. Board ② (AP-CSW012AA)
			Transistors
Q1		QT-PH101XAA	Transistor (Dimmer Sensor) PH101
			LED
LED		QL-ATLR124T	L.E.D ② TLR124
			Miscellaneous
		VK-130SB001	Spacer L.E.D
		ZZ-Z0000067	P.C. Joint 5mm
			[Push Switch Unit PC Board]
		PC-SW011B0X	P.C. Board ② (AP-CSW011AA)

Ref. No.	JCPenney Part No.	Supplier Part No.	Description
Q1		QT-A0733XBA	Transistor Transistor 2SA733 (A)
S1-4		SP-01AAX28A	Switches Push SW CL/RA. AM/FM. LO/DX. ST/MONO
S5		SP-01ABX27A	Push SW ENT
		MW-401CX001	Miscellaneous Short Jumper 10mm
		MW-201BS002	Tie Point 10, 5mm
		ZZ-00000065	P.C. Joint 5mm
		ZZ-Z0000066	P.C. Joint 5mm
		PC-PA003A0X	[Equalizer & Tone Unit PC Board] P.C. Board ① (AP-CPA003AA)
IC1		QQ-M01186AA	Integrated Circuit I.C. μ PC1186H
Q1-6		QT-C0945LAA	Transistors Transistor 2SC945 (P)
C1,2,13,14		CE-AE4R7ALX	Capacitors All capacitor ratings not shown on this Parts List are ceramic Disc 50V. See schematic for special value. Elyt Capacitor 4.7 μ F 25V
C5,6		CE-AB101ALX	Elyt Capacitor 100 μ F 16V
C11		CE-AD471AAN	Elyt Capacitor 470 μ F 16V
		PC-MP001A0X	[Multiplex Unit PC Board] P.C. Board ① (AP-CMP001AA)
IC1		QQ-0T4011AT	Integrated Circuits I.C. TC4011C
IC2		QQ-M01026AA	I.C. μ PC1026C
Q1,4		QT-C0945AEA	Transistors Transistor 2SC945 (P)
Q2,3		QT-C0945XHA	Transistor 2SC945 (K)
Q5		QT-C1318XGN	Transistor 2SC1318 (S)
D1-12		QD-SSS53XXA	Diodes Diode 1SS53

① Field repair.
Do not exchange.

② Throw away.
Do not repair.

Note: Elyt: Electrolytic Capacitor.
Numbers in parenthesis are Exploded View Reference No.

Ref. No.	JCPenney Part No.	Supplier Part No.	Description
			Capacitors All capacitor ratings not shown on this Parts List are ceramic Disc 50V. See schematic for special value.
C8		CE-AE100ALX	Elyt Capacitor 10 μ F 25V
C10		CE-AGR47ALX	Elyt Capacitor .47 μ F 50V
C11,12		CE-AGR22ZMN	Elyt Capacitor .22 μ F 50V
C13		CE-AE3R3ALX	Elyt Capacitor 3.3 μ F 25V
C20		CE-AD331ABN	Elyt Capacitor 330 μ F 16V
C21		CS-SD4R7MDN	Tantalum Capacitor 4.7 μ F 16V
			Sub Mini Resistors
VR1,2		RP-FNB50201	Sub Mini VR 5K
		AC-CN123GEA	Conn, Lead Ass'y 10P
			[Digital Tuner Unit PC Board]
		PC-TU005A0X	P.C. Board ① (AP-CTU005AA) Tuner
			Transistors
Q1		QT-K0120XAS	Transistor 2SK120 (2)
Q2		QT-C1674XAA	Transistor 2SC1674 (L)
Q3,4,6		QT-C1675XCA	Transistor 2SC1675 (L)
Q7		QT-C0945XHA	Transistor 2SC945 (K)
Q8,9		QT-A0733XAA	Transistor 2SA733 (Q)
Q10,12		QT-C0945AEA	Transistor 2SC945A
Q11		QT-K0120XAS	Transistor 2SK120 (2)
Q13		QT-C1318XAG	Transistor 2SC1318 (S)
			Integrated Circuits
IC2		QQ-MAN377AN	I.C. AN377
IC3		QQ-M01021AA	I.C. μ PC1021C
			Varactor Diodes
VC1-3		QD-CTT310AQ	Vari, Cap ITT310
VC4-6		QD-CVC303XC	Vari, Cep SVC303
			Diodes
D1		QD-G1N60XXT	Diode 1N60
D2		QD-ZRDSEBAA	Diode, Zener RD8. 2EB
D3-5		QD-SSS53XXA	Diode 1SS53
			Transformers
T1,2		TR-07AP001S	Transformer RF
T3		TR-07AR004S	Transformer RF
T4		TR-07MB010M	Transformer IF 10.7MHz
T5		TR-10MR005M	Transformer IF

① Field repair.
Do not exchange.

② Throw away.
Do not repair.

Note: Elyt: Electrolytic Capacitor.
Numbers in parenthesis are Exploded View
Reference No.

Ref. No.	JCPenney Part No.	Supplier Part No.	Description		
T6		TR-07LA031M	Transformer	IF	
T7,8		TR-10BN021S	Transformer	RF	
T9		TR-10BN022S	Transformer	RF	
T10		TR-07LA030M	Transformer	IF	
T11		TR-07LA029M	Transformer	IF	
			Coils		
L1		LD-ADB3013J	Coil	RF	
L2		LF-1R5KE01T	Coil	RF	1.5 μ H
L3,4		LF-680KD01N	Coil	RF	68 μ H
L7		LF-220JC01K	Coil	RF	22 μ H
L8		LF-681KA02T	Coil	RF	680 μ H
L9		LC-AEY3656B	Coil	RF	6.2 μ H
			Ceramic Filters		
CF1,2		FB-10R7F13M	Ceramic Filter		10.7MHz
CF3		FB-R450A01M	Ceramic Filter		450kHz
			Sub Mini Resistors		
VR1		RP-GNB20301	Sub Mini VR		20K
			Trimmers		
TC1-4		CT-Z7100H01	Trimmer Capacitor		10pF
			Miscellaneous		
		YP-F10S003Z	Plug		10Pin
NE		ZP-F1AR401Z	Neon Lamp		
RY		ZR-A134101Z	Relay		BR211AA012-M
		MB-642SL001	Shield		
		MS-425SL001	Shield		
			Capacitors		
			All capacitor ratings not shown on this Parts List are ceramic Disc 50V. See schematic for special value.		
C23		CS-SF010MDC	Tantalum Capacitor	1 μ F	35V
C49		CE-AD330ALX	Elyt Capacitor	33 μ F	16V
C50		CE-AE100ALX	Elyt Capacitor	10 μ F	25V
C51		CE-AGR47ALX	Elyt Capacitor	.47 μ F	50V
C70		CS-SD4R7MDC	Tantalum Capacitor	4.7 μ F	16V
C78		CE-AE3R3ALX	Elyt Capacitor	3.3 μ F	25V
C79		CEAC330ALX	Elyt Capacitor	33 μ F	10V
C80		CE-AE100ALX	Elyt Capacitor	10 μ F	25V
C81		CE-AG2R2ZMN	Elyt Capacitor	2.2 μ F	50V
C84		CE-AG010ALX	Elyt Capacitor	1 μ F	50V
C86		CE-AD101ALX	Elyt Capacitor	100 μ F	16V
C89		CE-AD331ABN	Elyt Capacitor	330 μ F	16V

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Ref. No.	JCPenney Part No.	Supplier Part No.	Description
C90		CE-AD331ABN	Elyt Capacitor 330 μ F 16V
C93		CE-AD331ABN	Elyt Capacitor 330 μ F 16V
			[Prescaler Unit PC Board]
		PC-ZZ003A0X	P.C. Board ② (AP-CZZ003AA)
			Transistor
Q5		QT-C1675XCA	Transistor 2SC1675 (L)
			Integrated Circuit
IC1		QQ-M0051AA	I.C. μ PB551C
			Coils
L6,7		LF-180KD02N	Coil RF 18 μ H
			Resistors All resistor wattages not shown on this Parts List are carbon 1/4W. See schematic for special value.
R21,22		RC-18GK471X	Carbon Resistor 470 ohm 1/8W
			Capacitors All capacitor ratings not shown on this Parts List are ceramic Disc 50V. See schematic for special value.
C23		CS-SB100MDC	Tantalum Capacitor 10 μ F 6.3V
C26		CB-D1E223MM	Ceramic Capacitor .022 μ F 500V
		AV-TRMNL005	Shield TRM, Ass'y
		ML-332SS002	Shield
			[Player Power Amp. Unit PC Board]
		PC-MA003A0X	P.C. Board ① (AP-CMA003AA)
			Integrated Circuits
IC1,2		QQ-M07222BT	I.C. TA7222P
			Diodes
D1,2,6		QD-SV06CXXB	Diode V06C
D3-5		QD-SSS53XXA	Diode 1SS53
			Coils
CH1		LJ-124H001W	Coil Choke
L1		LB-BJE1008A	Coil RF
L2		LD-ADB4024B	Coil RF
			Capacitors All capacitor ratings not shown on this Parts List are ceramic Disc 50V. See schematic for special value.
C1,2		CE-AB101ALX	Elyt Capacitor 100 μ F 6.3V
C3,4		CE-AE4R7ALX	Elyt Capacitor 4.7 μ F 25V

Ref. No.	JCPenney Part No.	Supplier Part No.	Description		
C5,6		CE-AG010ALX	Elyt Capacitor	1 μ F	50V
C7,8		CE-AC470ALX	Elyt Capacitor	47 μ F	10V
C9,10,24		CE-AD102AAN	Elyt Capacitor	1000 μ F	16V
C11,12		CQ-MB823KEH	Mylar Capacitor	.082 μ F	50V
C13		CE-AD102AAN	Elyt Capacitor	1000 μ F	16V
C20, 21		CE-AD471AAN	Elyt Capacitor	470 μ F	16V.
C25		CE-AD471AAN	Elyt Capacitor	470 μ F	16V
			Miscellaneous		
		AV-TRMNL006	Terminal Ass'y		
		BW-M2060AFR	Barrier		
		ML-565SL001	Bracket	Heat Sink Mtg.	
		MS-616SL001	Plate	I.C Mtg.	
		BS-PB3905NN	Bind HD Screw	M3x5	I.C.
		BW-G30655SW	Lock Washer	M3	Heat
J1,2		MW-401CX001	Short Jumper		
J3		MW-401CX003	Short Jumper		

Replacement Parts List (8 Track Player Section)

Ref. No.	JCPenney Part No.	Supplier Part No.	Description
(101)		NS-A024501T	Chassis
(102)		NS-A024502T	Gate Plate
(103)		NS-A024503T	Roller
(104)		NS-A024504T	Leaf Switch
(105)		NS-A024505T	Insulator
(106)		NS-A024506T	High Plate
(107)		NS-A024507T	8 Cam
(108)		NS-A024508T	Indicator P.C. Board ②

① Field repair.
Do not exchange.

② Throw away.
Do not repair.

Note: Elyt: Electrolytic Capacitor.
Numbers in parenthesis are Exploded View
Reference No.

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Ref No.	JCPenney Part No.	Supplier Part No.	Description
(110)		NS-A024510T	Indicator Contact
(111)		NS-A024511T	Adjust Cam B
(112)		NS-A024512T	Adjust Spring
(113)		NS-A024513T	Leaf Spring
(115)		NS-A024514T	Wave Washer
(116)		NS-A024515T	Prop B
(117)		NS-A024516T	Flywheel & Capstan
(118)		NS-A024517T	Channel Chang Cam
(119)		NS-A024518T	Flywheel Metal
(120)		NS-A024519T	Flat Washer
(121)		NS-A024520T	Switching Irom
(122)		NS-A024521T	Select Plate
(123)		NS-A024522T	Select Shaft
(124)		NS-A024523T	Change Lever Spring
(125)		NS-A024526T	Coil E
(126)		NS-A024527T	Tug Pole
(127)		NS-A024528T	Tape Guide
(128)		NS-A024529T	Sensing Plate
(129)		NS-A024530T	Ground Lug
(130)		NS-A024531T	ARM
(131)		NS-A024532T	ARM Collar
(132)		NS-A024533T	Pressure Spring
(133)		NS-A024534T	Roller
(134)		NS-A024535T	Pressure Roller Shaft
(135)		NS-A024536T	Base Plate
(136)		NS-A024537T	Main Shaft
(137)		NS-A024538T	Head Support Spring
(138)		NS-A024539T	Head Holder
(139)		NS-A024540T	Main Shaft Guide
(140)		NS-A024541T	Head Clamp
(141)		NS-A024542T	Cam Follow Pin
(142)		NS-A024543T	Motor Holder
(143)		NS-A024544T	Motor Pulley
(144)		NS-A024545T	Drive Belt
(145)		NS-A024546T	Insulator
(151)		NS-A024549T	Motor
(152)		NS-A024550T	Head
(158)		NS-A024551T	Tapping Screw M3x5
(154)		NS-A024552T	Tapping Screw M3x6
(153)		NS-A024553T	Cems Screw M2.6x5
(156)		NS-A024554T	Screw M3x5
(157)		NS-A024555T	Prop Screw

Ref No.	JCPenney Part No.	Supplier Part No.	Description	
(159)		NS-A024557T	Screw	M2.6x4
(160)		NS-A024558T	Cup Screw	M2.6x5
(161)		NS-A024559T	Washer	M2.6
(163)		NS-A024562T	E Ring	ETWJ-4
(164)		NS-A024563T	E Ring	ETWJ-3.2
(165)		NS-A024564T	E Ring	ETWJ-2.3
(166)		NS-A024565T	E Ring	ETWJ-1.5
(168)		NS-A024567T	Rivet	2x1

ALIGNMENT INSTRUCTIONS

ANTENNA TRIMMER ALIGNMENT

Antenna trimmer alignment can be made without removing any parts.

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

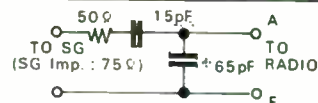
Insert a small screwdriver through the escutcheon, as shown, and turn clockwise or counterclockwise to obtain maximum output.



SCREWDRIVER

AM (I-F & RF) ALIGNMENT

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



*Includes feeder capacitor.


Fig. 1 Antenna Pad

STEP	GENERATOR FREQUENCY	BAND SELECTOR SETTING	RADIO-DIAL SETTING	SIGNAL FEED POINT	INDICATOR CONNECTION	ADJUST	REMARKS
I F ① ~ ④	450 kHz [Un-modulated or 400 Hz Mod.]	AM	Point of non interference (on/about 600 kHz)	Through pad (Fig. 1) to antenna receptacle	Between Point ⑤ and ground or speaker terminals.	IFT104 IFT101	Adjust for maximum.
R F ⑤	510 kHz [400 Hz Mod.]	"	Low freq. end stop	"	Output meter across speaker terminals.	L106 (OSC)	"
R F ⑥	1640 kHz [400 Hz Mod.]	"	High freq. end stop	"	"	C113 (OSC)	"
R F ⑦ ~ ⑧	1400 kHz [400 Hz Mod.]	"	tune to signal	"	"	C104 (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
- Repeat steps two or three times.

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

- Volume, Tone and Balance Controls may be left in any position.
- Set Band Selector Switch in the FM 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
F M ⑨	10.7 MHz	Point of non interference.	Through pad (Fig. 3) to antenna receptacle.	Vert. amp of scope to point ⑤, low side to ground.	IFT51	Adjust for maximum amplitude and proper linearity between ±100 kHz markers.
I F ⑩ ~ ⑪	"	"	"	"	IFT151 IFT152	 10.7 MHz

- Repeat steps ⑨, ⑩ & ⑪ two or three times.

Fig. 2

FM RF ALIGNMENT

- Set Volume Control at maximum, and Tone Control 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 low enough to prevent overloading the circuit.

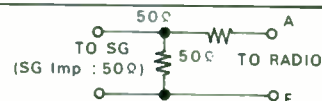


Fig. 3 Antenna Pad

STEP	GENERATOR FREQUENCY	RADIO-DIAL SETTING	SIGNAL FEED POINT	INDICATOR CONNECTION	ADJUST	REMARKS
F M ⑫	87.0 MHz [400 Hz. Mod.]	Low freq. end stop Tune to signal	Through pad (Fig. 3) to antenna receptacle.	Output meter across speaker terminals.	C75 (OSC)	Adjust for maximum. Repeat steps two or three times.
R F ⑬ ~ ⑭	98.0 MHz [400 Hz Mod.]	"	"	"	C65 (RF) C58 (ANT)	

- In step ⑫, adjust lower frequency at 86.0 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

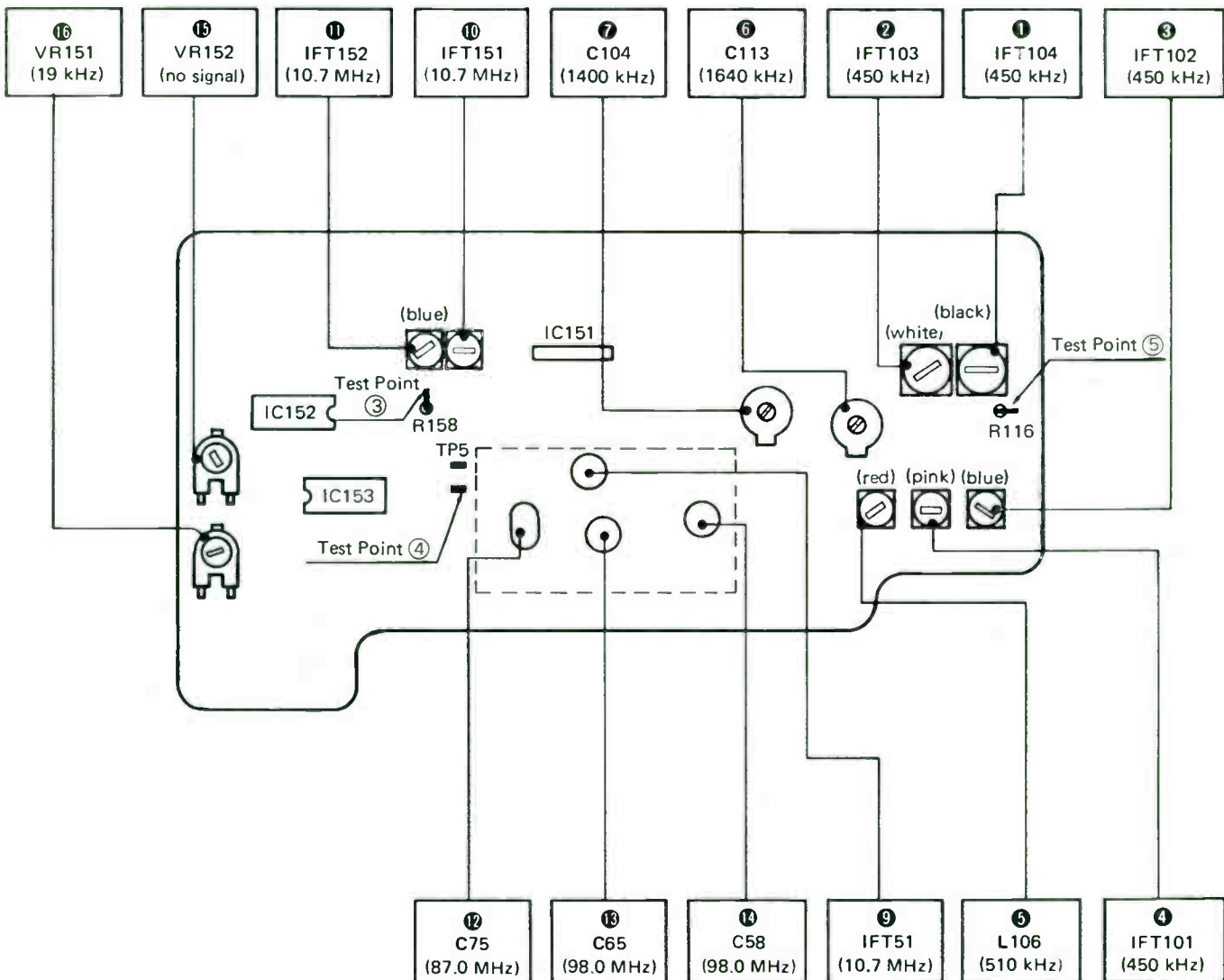
- Set Volume Control at maximum, and Tone Control in the treble position.
- Set Balance Control in center.
- Set DX/LOCAL Selector Switch in the DX position.
- Connect the signal generator to the antenna receptacle through the antenna pad. (Fig. 3)
- Keep the signal generator output low enough to prevent 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	INICATOR	ADJUST	REMARKS
F M	15	No signal input	Frequency counter to Test Point ④, low side to ground.	VR152	Adjust to 19 kHz +30 Hz.
	M P X	16	19 kHz, 400 Hz (Right Channel)	VTVM to left speaker terminals.	VR151
19 kHz, 400 Hz (Left Channel)			VTVM to right speaker terminals.	Adjust for minimum.	

● Repeat steps two or three times.

- NOTES: 1) Test Point ⑤ is negative side of C119 in the line of R116.
 2) Test Point ③ is the junction of R158 and R165.
 3) Test Point ④ is terminal No. 12 of IC153.

■ Numbers in ● are indicated ALIGNMENT STEPS.



Ref. No.	Part No.	Part Name & Description
ICs		
IC151	YEAMUPC577H	FM IF AMP
IC153	AN362	FM MPX AMP
IC250, 350	YEAMHA1366W	AF Power AMP
TRANSISTORS		
Q51, 52	2SC1047	FM RF AMP, FM MIX
Q53, 102, 103 151	2SC829	FM OSC, AM Conv., FM IF AMP, AM IF AMP
Q101	2SC2076	AM RF AMP
Q104	2SC828	AF AMP
DIODES		
D51, 52, 53	MA150	Over-Loading
103, 104, 105		AM Det, Switching
156		Reverse Voltage Prevention
D54	YEAD029	FM AFC
D101, 102	OA90	AM AGC
D151, 152	YEAD032	FM DISC
D155	LN25DLCF	Stereo Indicator
D701, 703	YEAD024	Voltage Stabilizer
D704	YEAD030	Spark Suppression

Ref. No.	Part No.	Part Name & Description	Pcs Set	Remarks
CAPACITORS				
C51	YECCD1H150KM	15 PF 50WV ±10% Ceramic	1	
C52	YECCD1H180KM	18 PF 50WV ±10% Ceramic	1	
C53	YECCD1H180KM	18 PF 50WV ±10% Ceramic	1	
C54	YECKD05103Z	0.01 MFD 50WV +80, -20% Ceramic	1	
C55	YECCD1H100JS	10 PF 50WV ±5% Ceramic	1	
C56	YECCD1H180KM	18 PF 50WV ±10% Ceramic	1	
C57	YECCD1H080DS	8 PF 50WV ±0.5 PF Ceramic	1	
C59	YECCD1H020CM	2 PF 50WV ±0.25 PF Ceramic	1	
C60	YECKD05471K	470 PF 50WV ±10% Ceramic	1	
C61	YECKD05471K	470 PF 50WV ±10% Ceramic	1	
C62	YECCD1H050DM	5 PF 50WV ±05 PF Ceramic	1	
C63	YECCD1H060DM	6 PF 50WV ±0.5 PF Ceramic	1	
C64	YECCD1H120JU	12 PF 50WV ±5% Ceramic	1	
C66	YECCD1H020CM	2 PF 50WV ±0.25 PF Ceramic	1	
C67	YECCD1H270KM	27 PF 50WV ±10% Ceramic	1	
C68	YECCD1H271JM	270 PF 50WV ±5% Ceramic	1	
C69	YECKD05103Z	0.01 MFD 50WV +80, -20% Ceramic	1	
C71	YECCD1H390KM	39 PF 50WV ±10% Ceramic	1	
C72	YECKD05471K	470 PF 50WV ±10% Ceramic	1	
C73	YECCD1H030CU	3 PF 50WV ±0.25 PF Ceramic	1	
C74	YECCD1H040CU	4 PF 50WV ±0.25 PF Ceramic	1	
C76	YECCD1H010CM	1 PF 50WV ±0.25 PF Ceramic	1	
C77	YECCD1H040CU	4 PF 50WV ±0.25 PF Ceramic	1	
C78	YECQN1H472K	0.0047 MFD 50WV ±10% Polyester	1	
C79	YECKD05103Z	0.01 MFD 50WV +80, -20% Ceramic	1	
C80	ECEA50V1L	1 MFD 50WV Electrolytic	1	
C102	YECKD05103Z	0.01 MFD 50WV +80, -20% Ceramic	1	
C103	YECCD1H100FM	10 PF 50WV ±1% Ceramic	1	
C105	YECCD1H391KM	390 PF 50WV ±10% Ceramic	1	
C106	YECCD1H820KM	82 PF 50WV ±10% Ceramic	1	
C107	YECQN1H103M	0.01 MFD 50WV ±20% Polyester	1	
C108	YECQN1H332K	0.0033 MFD 50WV ±10% Polyester	1	

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CR-5704EU

Ref. No.	Part No.	Part Name & Description				Pcs Set	Remarks
C109	YEQQN1H473M	0.047 MFD	50WV	±20%	Polyester	1	
C110	YEQQN1H222K	0.0022 MFD	50WV	±10%	Polyester	1	
C111	YEQQN1H103M	0.01 MFD	50WV	±20%	Polyester	1	
C112	YECCD1H181KT	180 PF	50WV	±10%	Ceramic	1	
C114	YEQQN1H103M	0.01 MFD	50WV	±20%	Polyester	1	
C115	ECEA50V1L	1 MFD	50WV		Electrolytic	1	
C116	ECEA10V33L	33 MFD	10WV		Electrolytic	1	
C117	YEQQN1H473M	0.047 MFD	50WV	±20%	Polyester	1	
C118	YECCD1H331KM	330 PF	50WV	±10%	Ceramic	1	
C119	ECEA50V1L	1 MFD	50WV		Electrolytic	1	
C120	YEQQN1H473M	0.047 MFD	50WV	±20%	Polyester	1	
C121	YEQQN1H103M	0.01 MFD	50WV	±20%	Polyester	1	
C122	YEQQN1H393M	0.039 MFD	50WV	±20%	Polyester	1	
C123	YEQQN1H473M	0.047 MFD	50WV	±20%	Polyester	1	
C124	ECQM1H104MZ	0.1 MFD	50WV	±20%	Polyester	1	
C125	YECCD1H220KM	22 PF	50WV	±10%	Ceramic	1	
C151	YECKD05103Z	0.01 MFD	50WV	+80, -20%	Ceramic	1	
C152	YEQQN1H223M	0.022 MFD	50WV	±20%	Polyester	1	
C153	YECKD05103Z	0.01 MFD	50WV	+80, -20%	Ceramic	1	
C154	YEQQN1H333M	0.033 MFD	50WV	±20%	Polyester	1	
C155	YECKD05103Z	0.01 MFD	50WV	±20%	Ceramic	1	
C158	YECCD1H181KM	180 PF	50WV	±10%	Ceramic	1	
C159	YECCD1H181KM	180 PF	50WV	±10%	Ceramic	1	
C160	YECCD1H181KM	180 PF	50WV	±10%	Ceramic	1	
C161	ECEA25V4R7L	4.7 MFD	25WV		Electrolytic	1	
C163	ECEA50V1L	1 MFD	50WV		Electrolytic	1	
C177	YEQQN1H473M	0.047 MFD	50WV	±20%	Polyester	1	
C178	YEQQH1H333M	0.033 MFD	50WV	±20%	Polyester	1	
C179	YEQQN1H333M	0.033 MFD	50WV	±20%	Polyester	1	
C180	ECEA50V1L	1 MFD	50WV		Electrolytic	1	
C181	ECQS1391JZ	390 PF	125WV	±5%	Polystyrene	1	
C182	ECEA50MR47	0.47 MFD	50WV		Electrolytic	1	
C183	ECEA50MR22	0.22 MFD	50WV		Electrolytic	1	
C240	ECEA50V1L	1 MFD	50WV		Electrolytic	1	
C250	YECCD12104M	0.1 MFD	12WV	±20%	Ceramic	1	
C251	YECCD12204M	0.2 MFD	12WV	±20%	Ceramic	1	
C252	YEQQN1H102K	0.001 MFD	50WV	±10%	Polyester	1	
C253	ECEA10V100L	100 MFD	10WV		Electrolytic	1	
C254	ECEA10V47L	47 MFD	10WV		Electrolytic	1	
C255	ECEA10V47L	47 MFD	10WV		Electrolytic	1	
C256	ECEA16V1000Z	1000 MFD	16WV		Electrolytic	1	
C257	ECQM1H104MZ	0.1 MFD	50WV	±20%	Polyester	1	
C340	ECEA50V1L	1 MFD	50WV		Electrolytic	1	
C350	YECCD12104M	0.1 MFD	12WV	±20%	Ceramic	1	
C351	YECCD12204M	0.2 MFD	12WV	±20%	Ceramic	1	
C352	YEQQN1H102K	0.001 MFD	50WV	±10%	Polyester	1	
C353	ECEA10V100L	100 MFD	10WV		Electrolytic	1	
C354	ECEA10V47L	47 MFD	10WV		Electrolytic	1	
C355	ECEA10V47L	47 MFD	10WV		Electrolytic	1	
C356	ECEA16V1000Z	1000 MFD	16WV		Electrolytic	1	
C357	ECQM1H104MZ	0.1 MFD	50WV	±20%	Polyester	1	
C702	ECEA16V1000Z	1000 MFD	16WV		Electrolytic	1	
C703	ECEA16V100L	100 MFD	16WV		Electrolytic	1	
C704	ECEA16V330L	330 MFD	16WV		Electrolytic	1	
C705	ECEA16V100L	100 MFD	16WV		Electrolytic	1	
C707	ECEA10V100L	100 MFD	10WV		Electrolytic	1	
C708	ECEA10V100L	100 MFD	10WV		Electrolytic	1	
C710	ECEA10V47L	47 MFD	10WV		Electrolytic	1	
C715	ECEA10V100L	100 MFD	10WV		Electrolytic	1	
C719	YEQQN1H103M	0.01 MFD	50WV	±20%	Polyester	1	
CS701, 702	YECCL510283	1000 PF x 2			Feedthrough	1	

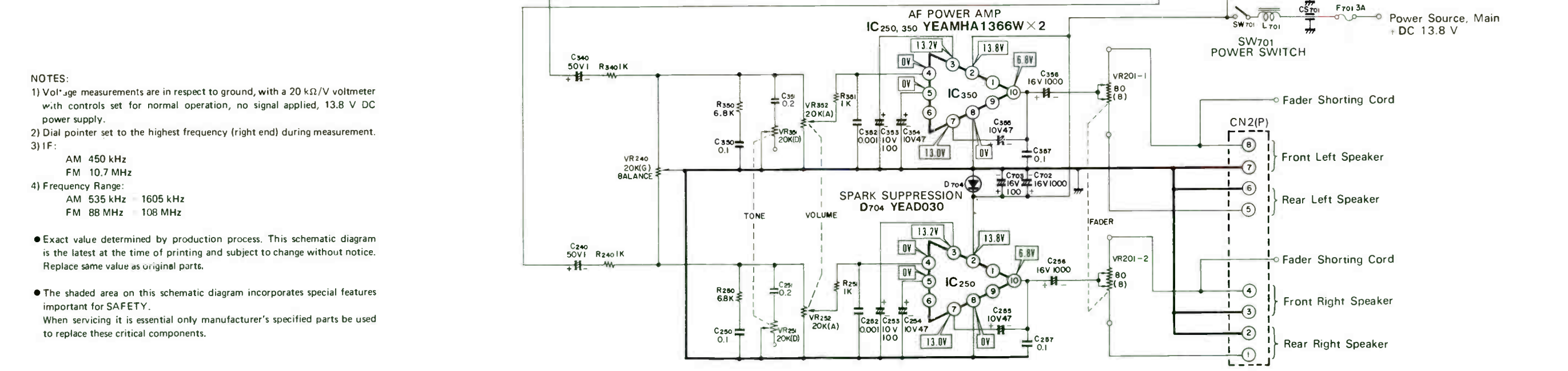
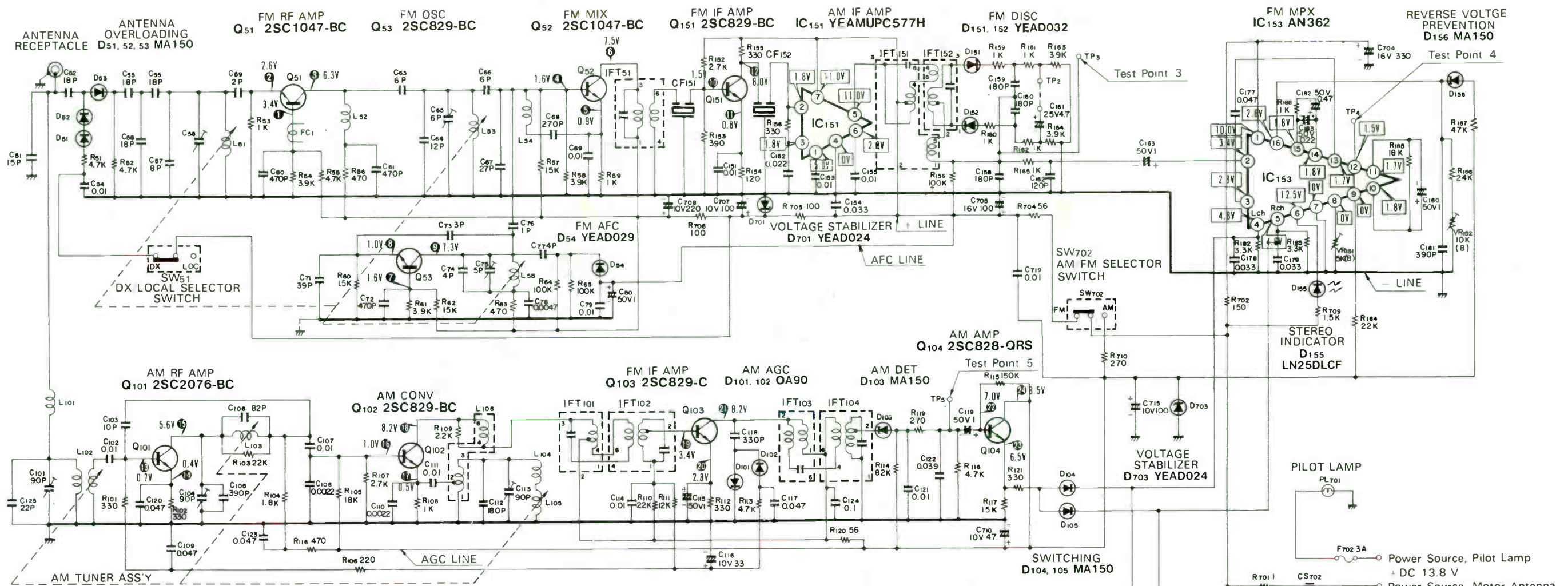
Ref. No.	Part No.	Part Name & Description	Pcs Set	Remarks
RESISTORS				
R51	ERD18TJ472	4.7k OHM 1/8W ±5% Carbon	1	
R52	ERD18VJ472	4.7k OHM 1/8W ±5% Carbon	1	
R53	ERD18VJ102	1k OHM 1/8W ±5% Carbon	1	
R54	ERD18VJ392	3.9k OHM 1/8W ±5% Carbon	1	
R55	ERD18VJ472	4.7k OHM 1/8W ±5% Carbon	1	
R56	ERD18VJ471	470 OHM 1/8W ±5% Carbon	1	
R57	ERD18VJ153	15k OHM 1/8W ±5% Carbon	1	
R58	ERD18TJ392	3.9k OHM 1/8W ±5% Carbon	1	
R59	ERD18VJ102	1k OHM 1/8W ±5% Carbon	1	
R60	ERD18VJ152	1.5k OHM 1/8W ±5% Carbon	1	
R61	ERD18VJ392	3.9k OHM 1/8W ±5% Carbon	1	
R62	ERD18VJ153	15k OHM 1/8W ±5% Carbon	1	
R63	ERD18VJ471	470 OHM 1/8W ±5% Carbon	1	
R64	ERD18TJ104	100k OHM 1/8W ±5% Carbon	1	
R65	ERD18VJ104	100k OHM 1/8W ±5% Carbon	1	
R101	ERD18TJ331	330 OHM 1/8W ±5% Carbon	1	
R102	ERD18TJ331	330 OHM 1/8W ±5% Carbon	1	
R103	ERD18TJ223	22k OHM 1/8W ±5% Carbon	1	
R104	ERD18TJ182	1.8k OHM 1/8W ±5% Carbon	1	
R105	ERD18TJ183	18k OHM 1/8W ±5% Carbon	1	
R106	ERD18TJ221	220 OHM 1/8W ±5% Carbon	1	
R107	ERD18TJ272	2.7k OHM 1/8W ±5% Carbon	1	
R108	ERD18TJ102	1k OHM 1/8W ±5% Carbon	1	
R109	ERD18TJ222	2.2k OHM 1/8W ±5% Carbon	1	
R110	ERD18TJ223	22k OHM 1/8W ±5% Carbon	1	
R111	ERD18VJ123	12k OHM 1/8W ±5% Carbon	1	
R112	ERD18VJ331	330 OHM 1/8W ±5% Carbon	1	
R113	ERD18VJ472	4.7k OHM 1/8W ±5% Carbon	1	
R114	ERD18TJ823	82k OHM 1/8W ±5% Carbon	1	
R115	ERD18VJ154	150k OHM 1/8W ±5% Carbon	1	
R116	ERD18TJ472	4.7k OHM 1/8W ±5% Carbon	1	
R117	ERD18VJ153	15k OHM 1/8W ±5% Carbon	1	

Ref. No.	Part No.	Part Name & Description	Pcs Set
R118	ERD18VJ471	470 OHM 1/8W ±5% Carbon	1
R119	ERD18TJ271	270 OHM 1/8W ±5% Carbon	1
R120	ERD18TJ560	56 OHM 1/8W ±5% Carbon	1
R121	ERD18TJ331	330 OHM 1/8W ±5% Carbon	1
R152	ERD18TJ272	2.7k OHM 1/8W ±5% Carbon	1
R153	ERD18VJ391	390 OHM 1/8W ±5% Carbon	1
R154	ERD18TJ121	120 OHM 1/8W ±5% Carbon	1
R155	ERD18TJ331	330 OHM 1/8W ±5% Carbon	1
R156	ERD18VJ331	330 OHM 1/8W ±5% Carbon	1
R158	ERD18TJ104	100k OHM 1/8W ±5% Carbon	1
R159	ERD18VJ102	1k OHM 1/8W ±5% Carbon	1
R160	ERD18VJ102	1k OHM 1/8W ±5% Carbon	1
R161	ERD18VJ102	1k OHM 1/8W ±5% Carbon	1
R162	ERD18VJ102	1k OHM 1/8W ±5% Carbon	1
R163	ERD18VJ392	3.9k OHM 1/8W ±5% Carbon	1
R164	ERD18VJ392	3.9k OHM 1/8W ±5% Carbon	1
R182	ERD18TJ332	3.3k OHM 1/8W ±5% Carbon	1
R183	ERD18TJ332	3.3k OHM 1/8W ±5% Carbon	1
R184	ERD18TJ223	22k OHM 1/8W ±5% Carbon	1
R185	ERD18TJ183	18k OHM 1/8W ±5% Carbon	1
R186	ERD18TJ243	24k OHM 1/8W ±5% Carbon	1
R187	ERD18TJ473	47k OHM 1/8W ±5% Carbon	1
R188	ERD18TJ102	1k OHM 1/8W ±5% Carbon	1
R240	ERD18TJ102	1k OHM 1/8W ±5% Carbon	1
R250	ERD18VJ682	6.8k OHM 1/8W ±5% Carbon	1
R251	ERD18TJ102	1k OHM 1/8W ±5% Carbon	1
R340	ERD18TJ102	1k OHM 1/8W ±5% Carbon	1
R350	ERD18VJ682	6.8k OHM 1/8W ±5% Carbon	1
R351	ERD18TJ102	1k OHM 1/8W ±5% Carbon	1
R701	ERD18FJ1R0	1 OHM 1/8W ±5% Carbon	1
R702	ERD18VJ151	150 OHM 1/8W ±5% Carbon	1
R704	ERG1ANJ560	56 OHM 1W ±5% Metal Film	1
R705	ERD14VJ101	100 OHM 1/4W ±5% Carbon	1
R706	ERD18TJ101	100 OHM 1/8W ±5% Carbon	1

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Ref. No.	Part No.	Part Name & Description	Pcs Set	Remarks
R709	ERD18TJ152	1.5k OHM 1/8W \pm 5% Carbon	1	
R710	ERD18TJ271	270 OHM 1/8W \pm 5% Carbon	1	
VARIABLE CAPACITORS				
C58, 65	ECV1ZW06X32	6 PF Trimmer	2	
C75	YECTAT1397	50 PF Trimmer	1	
C101	ECV1ZW50X32	50 PF Trimmer	1	
C104, 113	YECTT1090	90 PF Trimmer	2	
VARIABLE RESISTORS				
VR151	EVNK4AA00B23	2k OHM (B) Semi-fixed	1	
VR152	EVNK4AA00B14	10k OHM (B) Semi-fixed	1	
VR240	EVAHH1S10G24	20k OHM (G) Balance Control	1	
VR251, 351	EWK37BS42672	20k OHM (A) Volume Control	1	
252, 352		20k OHM (D) Tone Control		
w/SW701		with Power Switch		
VR201	EVMWAAS01B81	40 OHM (B) Fader Control	1	
COILS, TRANSFORMERS AND CERAMIC FILTERS				
L52	YELT04C5R6K	FM RF AM	1	
L54	YELT03C011	FM RF Coil	1	
L101	YELT04C8R2K	Loading Coil	1	
L104	YELT06N5R6	AM RF Coil	1	
L106	ELL7E001B	AM OSC Coil	1	

Ref. No.	Part No.	Part Name & Description	Pcs Set	Remarks
L701	YETQ020F039	Choke Coil	1	
IFT51	EIF7E001A	FM IFT	1	
IFT101	EIA7Q001A	AM IFT	1	
IFT102	EIA7Q001B	AM IFT	1	
IFT103	EIA10Q001C	AM IFT	1	
IFT104	EIA10Q001D	AM IFT	1	
IFT151	EIF7E001D	FM IFT	1	
IFT152	EIF7E001E	FM IFT	1	
CF151, 152	YEIN09N5007	Ceramic Filter	2	
FC	YEAZQ5BRH002	Ferrite Core	1	
SWITCHES				
SW51	YEAS07059	DX/LOCAL Selector Switch	1	
SW702	YEAS07060	AM/FM Selector Switch	1	
TUNER				
M50	YEAU05244	Tuner Ass'y	1	
M50-1	YEFE10229	Push Button	5	
MISCELLANEOUS				
PL701 (4-B)	YEAL25001W	Pilot Lamp	1	
F701 702 (3-A)	XBB1F30NR5	Fuse, 3 A	2	
(4-C)	YEFA03318	Upper Cover	1	
(1-C)	YEFA05174	Bottom Cover	1	
(1-A)	YEFE17096A	Knob, AM/FM Selector Switch	1	
(1-A)	YEFE17097A	Knob, DX/LOCAL Selector Switch	1	
(1-A)	YEFE17098A	Knob, Balance Control	1	
(1-A)	YEF02519	Escutcheon Ass'y [CR-5703EU/EC]	1	
(2-A)	YEF02521	Escutcheon Ass'y [CR-5704EU]	1	



NOTES:

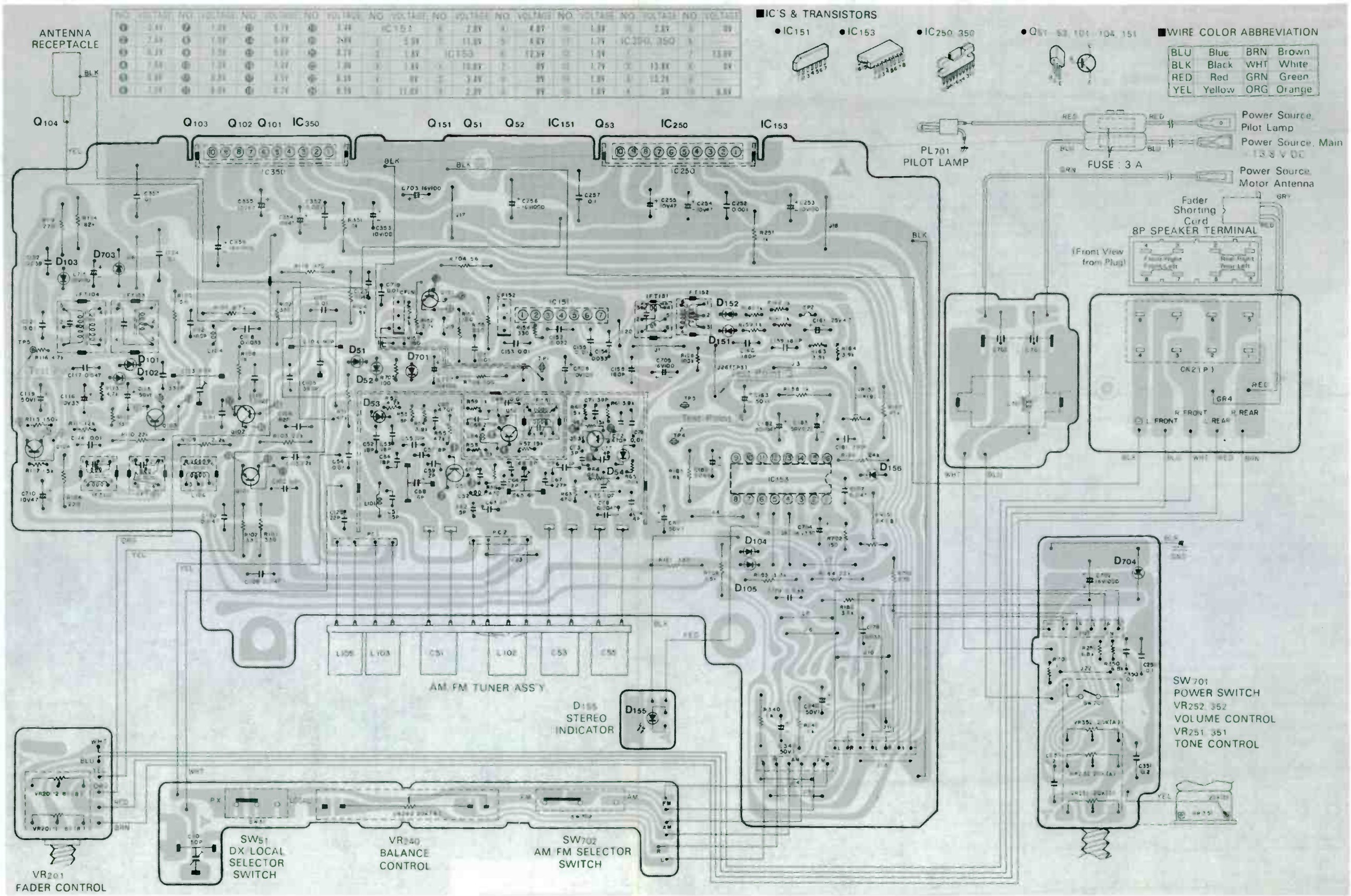
- 1) Voltage measurements are in respect to ground, with a 20 k Ω /V voltmeter with controls set for normal operation, no signal applied, 13.8 V DC power supply.
- 2) Dial pointer set to the highest frequency (right end) during measurement.
- 3) IF:
 - AM 450 kHz
 - FM 10.7 MHz
- 4) Frequency Range:
 - AM 535 kHz - 1605 kHz
 - FM 88 MHz - 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 only manufacturer's specified parts be used to replace these critical components.

R	51	52	54	54	55	56	60	61	62	65	57	64	58	65	59	706	152	158	158	708	158	160	161	163	710	162	701	166	709	164	165	167							
		101	102	103	104	118	106	107	109						540	110	111	185	154	113	361	620	114	119	116	115	117	121	162	164		168	702	163	188				
							108								240			112	350	280	281						165	704											
C	51	52	54	54	55	57	59	60	71	72	61	63	64	73	66	67	76	68	69	79	80	708	151	707	162	163	154	156	168	159	161	163	177	179	182	704	180		
		102	103	120	109		105	106	128	107	110	111	74	112	78			340	114	115	116	117	124	352	363	364	121	122	119	706	160	355	162	357	356	715	178	185	181
									108						240			360	250	361	251						282	283	254	710	705	255	719	257	256				

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NO.	SYMBOL	TYPE	NO.	VOLTAGE	NO.	SYMBOL	TYPE	NO.	VOLTAGE	NO.	SYMBOL	TYPE	NO.	VOLTAGE	NO.	SYMBOL	TYPE	NO.	VOLTAGE
1	IC151	IC	151	5V	2	IC153	IC	153	5V	3	IC250	IC	250	5V	4	IC350	IC	350	5V
5	Q101	Q	101	12.8V	6	Q102	Q	102	12.8V	7	Q103	Q	103	12.8V	8	Q104	Q	104	12.8V
9	Q51	Q	51	12.8V	10	Q52	Q	52	12.8V	11	Q53	Q	53	12.8V	12	Q54	Q	54	12.8V
13	D101	D	101	12.8V	14	D102	D	102	12.8V	15	D103	D	103	12.8V	16	D104	D	104	12.8V
17	D105	D	105	12.8V	18	D106	D	106	12.8V	19	D107	D	107	12.8V	20	D108	D	108	12.8V
21	D109	D	109	12.8V	22	D110	D	110	12.8V	23	D111	D	111	12.8V	24	D112	D	112	12.8V
25	D113	D	113	12.8V	26	D114	D	114	12.8V	27	D115	D	115	12.8V	28	D116	D	116	12.8V
29	D117	D	117	12.8V	30	D118	D	118	12.8V	31	D119	D	119	12.8V	32	D120	D	120	12.8V
33	D121	D	121	12.8V	34	D122	D	122	12.8V	35	D123	D	123	12.8V	36	D124	D	124	12.8V
37	D125	D	125	12.8V	38	D126	D	126	12.8V	39	D127	D	127	12.8V	40	D128	D	128	12.8V
41	D129	D	129	12.8V	42	D130	D	130	12.8V	43	D131	D	131	12.8V	44	D132	D	132	12.8V
45	D133	D	133	12.8V	46	D134	D	134	12.8V	47	D135	D	135	12.8V	48	D136	D	136	12.8V
49	D137	D	137	12.8V	50	D138	D	138	12.8V	51	D139	D	139	12.8V	52	D140	D	140	12.8V
53	D141	D	141	12.8V	54	D142	D	142	12.8V	55	D143	D	143	12.8V	56	D144	D	144	12.8V
57	D145	D	145	12.8V	58	D146	D	146	12.8V	59	D147	D	147	12.8V	60	D148	D	148	12.8V
61	D149	D	149	12.8V	62	D150	D	150	12.8V	63	D151	D	151	12.8V	64	D152	D	152	12.8V
65	D153	D	153	12.8V	66	D154	D	154	12.8V	67	D155	D	155	12.8V	68	D156	D	156	12.8V
69	D157	D	157	12.8V	70	D158	D	158	12.8V	71	D159	D	159	12.8V	72	D160	D	160	12.8V

IC'S & TRANSISTORS

- IC151
- IC153
- IC250, 350
- Q51, 52, 101, 104, 151

WIRE COLOR ABBREVIATION

BLU	Blue	BRN	Brown
BLK	Black	WHT	White
RED	Red	GRN	Green
YEL	Yellow	ORG	Orange

GENERAL ALIGNMENT INSTRUCTIONS

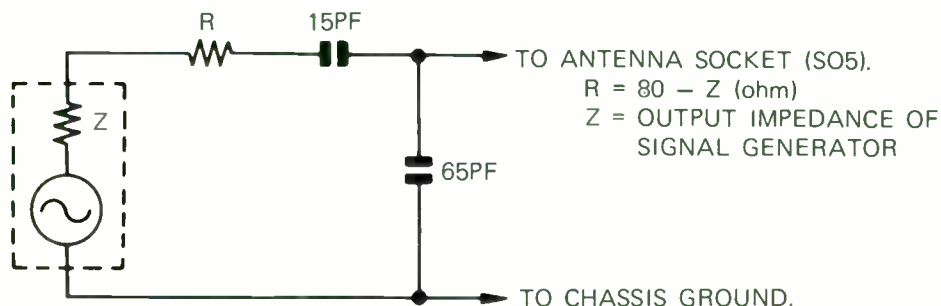
Should it become necessary at any time to check the alignment of this receiver, proceed as follows;

- 1) Connect an output meter across the speaker voice coil lugs.
- 2) Set the volume control at maximum.
- 3) Attenuate the signals from the generator enough to swing the most sensitive range of the output meter.
- 4) Use a non-metallic alignment tool.
- 5) Repeat adjustments to insure good results.

AM ALIGNMENT CHART

Set the AM/FM selector switch (SW2) at "AM" position and DX/Local selector switch (SW1) at "DX" position.

STEP	BAND	TEST STAGE	SIGNAL GENERATOR		RECEIVER		ADJUSTMENT
			CONNECTION TO RECEIVER	INPUT SIGNAL FREQUENCY	DIAL SETTING	REMARKS	
1	AM	IF	Connect signal generator through a dummy to the antenna socket (SO5). Ground lead to the receiver chassis.	Exactly 455kHz (400Hz, 30%, AM modulated)	High end of dial (minimum inductance)	Adjust for maximum output on speaker voice coil lugs.	T101 T3
2	AM	IF	Repeat until no further improvement can be made.				
3	AM	Band Coverage	Same as step 1.	Exactly 515kHz (400Hz, 30%, AM modulated)	Low end of dial (maximum inductance)	Same as step 1.	Adjust the AM oscillator coil L105
			Same as step 1.	Exactly 1650kHz (400Hz, 30%, AM modulated)	High end of dial (minimum inductance)	Same as step 1.	Adjust the AM oscillator trimmer TC102
4	AM	Tracking	Same as step 1.	Exactly 1400kHz (400Hz, 30%, AM modulated)	1400kHz.	Same as step 1.	Adjust the AM antenna trimmer TC1, and then adjust the AM RF trimmer TC101.
5	AM		Repeat steps 3 and 4 until no further improvement can be made.				



AM DUMMY

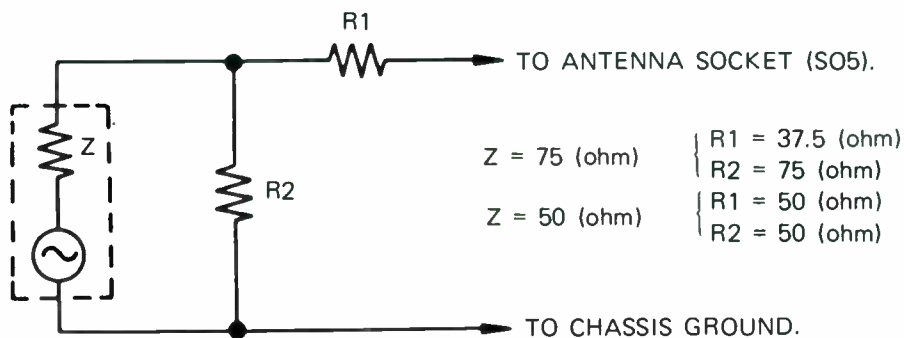
FM ALIGNMENT CHART

Set the AM/FM selector switch (SW2) at "FM" position and DX/Local selector switch(SW1) at "DX" position.

STEP	TEST STAGE	SIGNAL GENERATOR		RECEIVER		ADJUSTMENT
		CONNECTION TO RECEIVER	INPUT SIGNAL FREQUENCY	DIAL SETTING	REMARKS	
1	IF NOTE B	Connect signal generator through a dummy to antenna socket (SO5). Ground lead to the receiver chassis.	Exactly 10.7MHz (400Hz, 30%, AM modulated)	Low end of dial. (maximum inductance)	Connect VTVM between test point TP1 and chassis ground.	Detune T2 Tune T901 and T1
2	Ratio Detector	Same as step 1.	Exactly 10.7MHz (unmodulated)	Same as step 1.	See NOTE A.	See NOTE A.
3	Repeat steps 1 until no further improvement can be made.					
4	Band Coverage	Connect signal generator through a dummy to the antenna socket (SO5). Ground lead of generator connected to the receiver chassis.	Exactly 87.0MHz (400Hz, 30%, FM modulated)	Same as step 1.	Adjust for maximum output at speaker voice coil.	Oscillator trimmer TC902
5	Tracking	Same as step 3.	Exactly 108MHz (400Hz, 30%, FM modulated)	108MHz	Same as step 3.	RF trimmer TC 901
6	Repeat steps 4 and 5 until no further improvement can be made.					

NOTE A

- 1) Connect VTVM(0.1 volts range D.C. Scale)between test point TP 1 and chassis ground.
- 2) Adjust T 2 for 0 volts on VTVM.
- 3) Change signal generator frequency 10.7MHz + 100kHz and -100kHz approximately.
- 4) Adjust T 1 for balanced peaks. Peak separation should be approximately 200kHz.



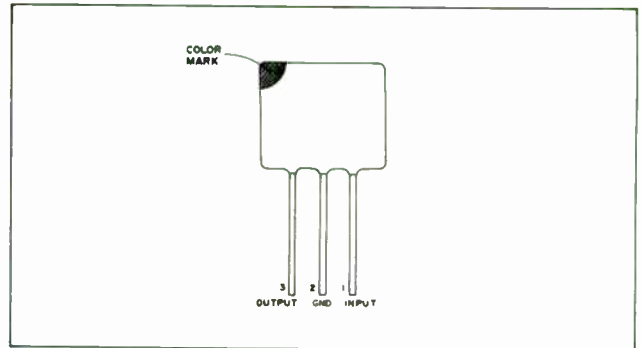
Z=OUTPUT IMPEDANCE OF SIGNAL GENERATOR

FM DUMMY

NOTE B

Five kinds of ceramic filter (CF1, CF2) are available for this set. The difference of central frequency from each other can be known by the color indication. The table below shows such a difference of IF and S curve, depending upon the color indications of the ceramic filter (CF1, CF2).

Central Frequency	D	Black	10.64MHz ± 30kHz
	B	Blue	10.67MHz ± 30kHz
	A	Red	10.70MHz ± 30kHz
	C	Orange	10.73MHz ± 30kHz
	E	White	10.76MHz ± 30kHz



For their employment, it is required to use two ceramic filters of same type.

FM STEREO ALIGNMENT

Set the AM/FM selector switch (SW2) at "FM" position.

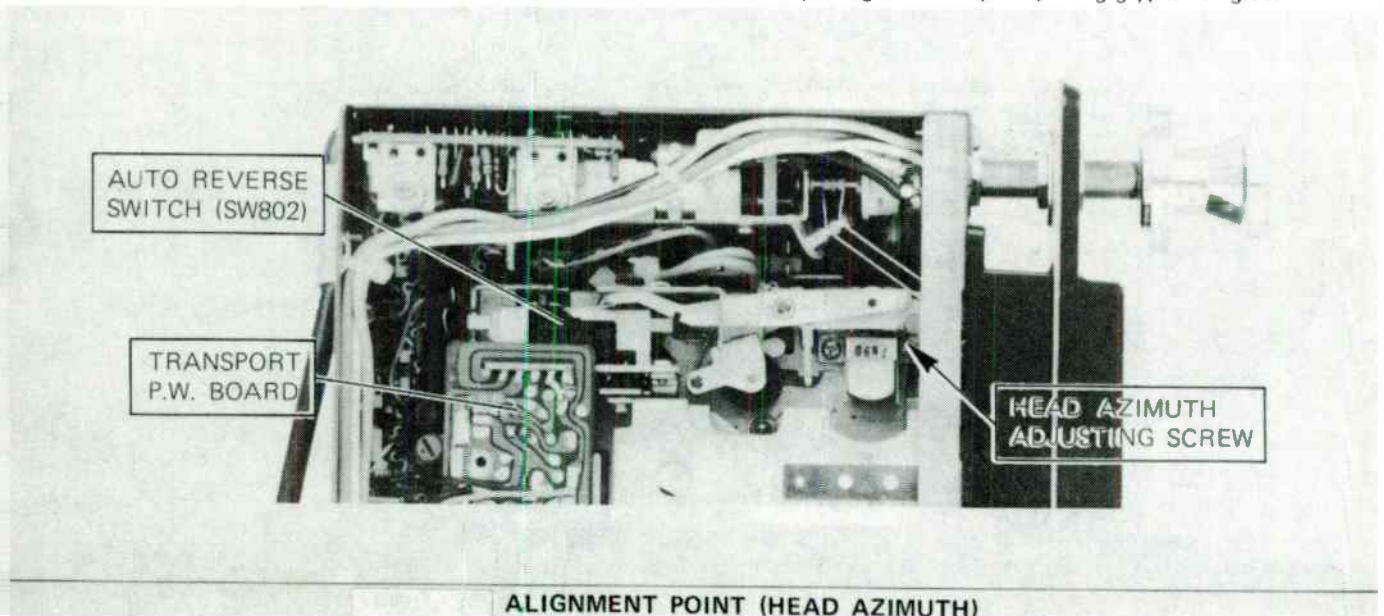
STEP	SIGNAL GENERATOR		RECEIVER		METER CONNECTION	ADJUSTMENT
	CONNECTION TO RECEIVER	INPUT SIGNAL FREQUENCY	DIAL SETTING	REMARKS		
1	Connect signal generator through a dummy to the antenna socket (SO5). Ground lead to the receiver chassis	Exactly 98MHz (54 dB input unmodulated)	98MHz	Adjust so that the frequency becomes 19.0kHz. (In case an oscilloscope is connected to the test point TP201, adjust the signals to be 19kHz by using Lissajou's wave-form).	Connect the frequency counter (or oscilloscope) through a 100K ohm resistor to TP201(12 pin of IC201).	VR201

HEAD AZIMUTH ADJUSTMENT

Standard Test Tape to be applied: Philips HU-71512 or the equivalent (TEAC MTT-113, VICTOR VTT-601).

- (1) Set the Player Unit ON, Pull and rotate the balance knob/rotate the Volume knob rightward with a fullest stroke.
- (2) Turn the azimuth adjusting screw until the output of the test tape (6.3kHz) is boosted up to the maximum.

Caution: After completion of the adjustment, be sure to lock the adjusting screw in place, using glyptal or glue.



ALIGNMENT POINTS

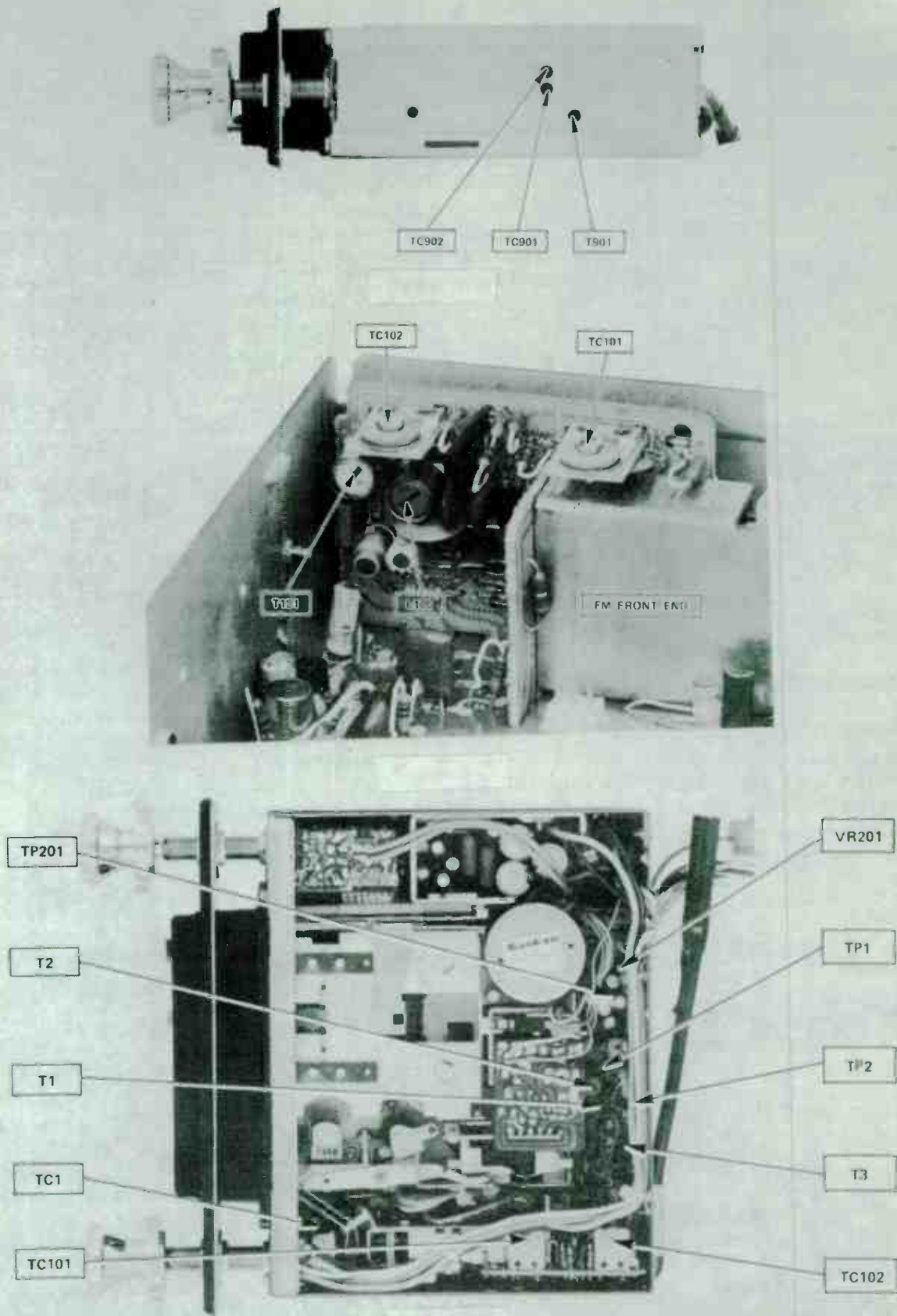


Figure 9

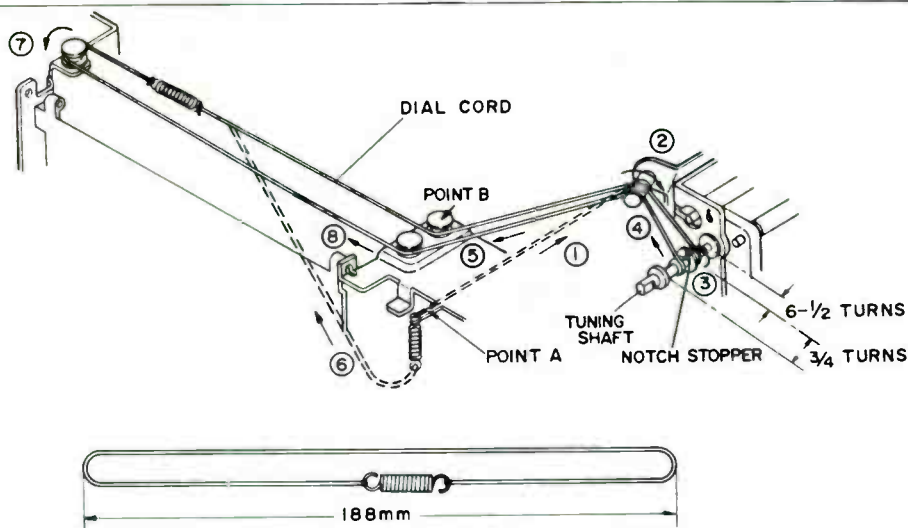


Figure 4-1

SETTING OF THE DIAL CORD (Shown in Figure 4-1)

- (1) Hang the dial cord spring on the hook at the point A .
- (2) Rotate the tuning shaft fully counterclockwise.
- (3) Bring the dial cord under the tuning shaft and wind it, here, by 6-1/2 turns (counterclockwise), then further by 3/4 turns after passing it through the notch stopper.
- (4) In this way, proceed with the stringing until the point 5.
- (5) Bring the dial cord through the pulley at the point B and other two pulleys 7 and 8, and thus the stringing is completed.

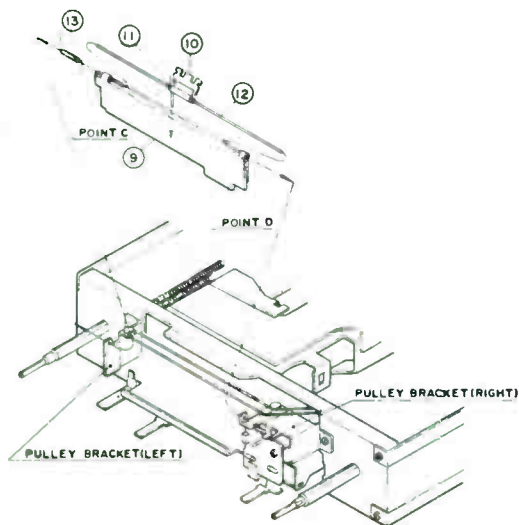


Figure 4-2

SETTING OF THE POINTER

- (1) Insert the dial scale rod 12 into the assembly of the dial pointer 11 and dial pointer slider 10 (Shown in Figure 4-2).
- (2) Put the dial pointer 11 into the opening of the dial scale 9 .
- (3) Insert the dial scale rod 12 (at its left end) into the point C of the dial scale 9, and inclose it with the dial scale spring 13 . And put another end of the dial scale rod 12 into the point D of the dial scale 9.
- (4) After checking that the jobs in the above three steps have been completely done, insert one end of the dial scale rod

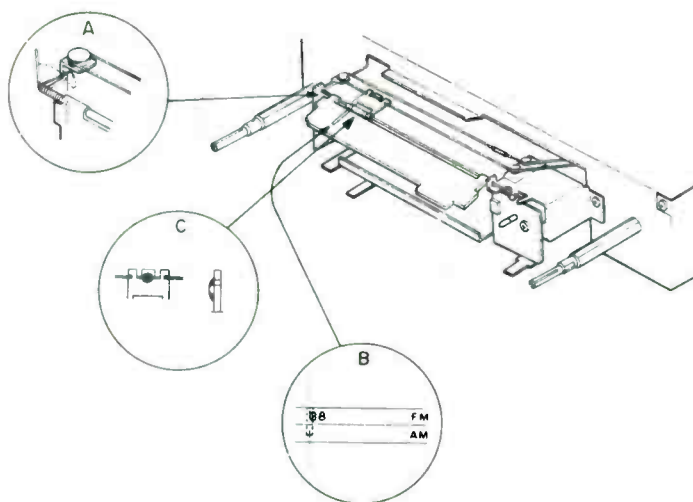
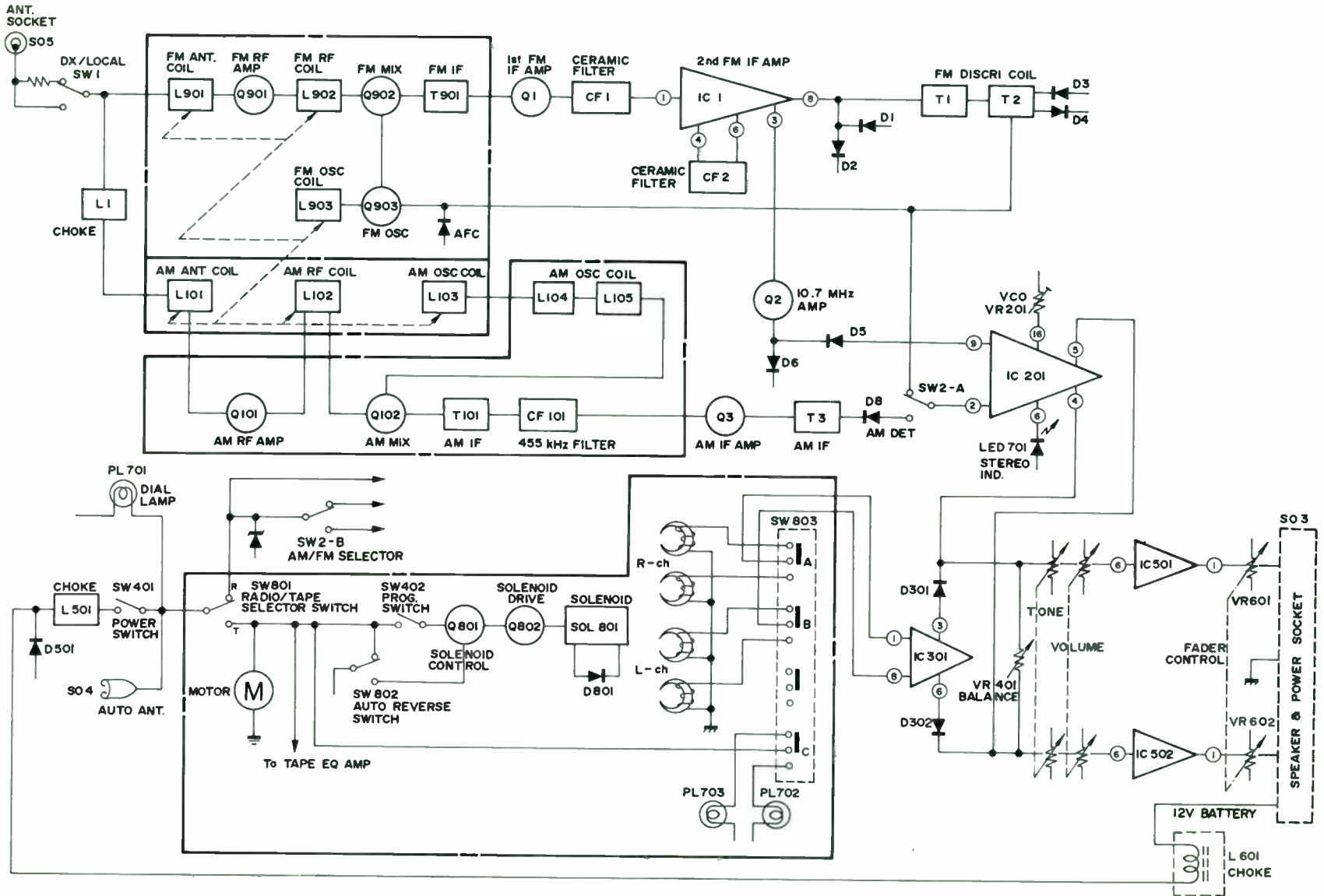
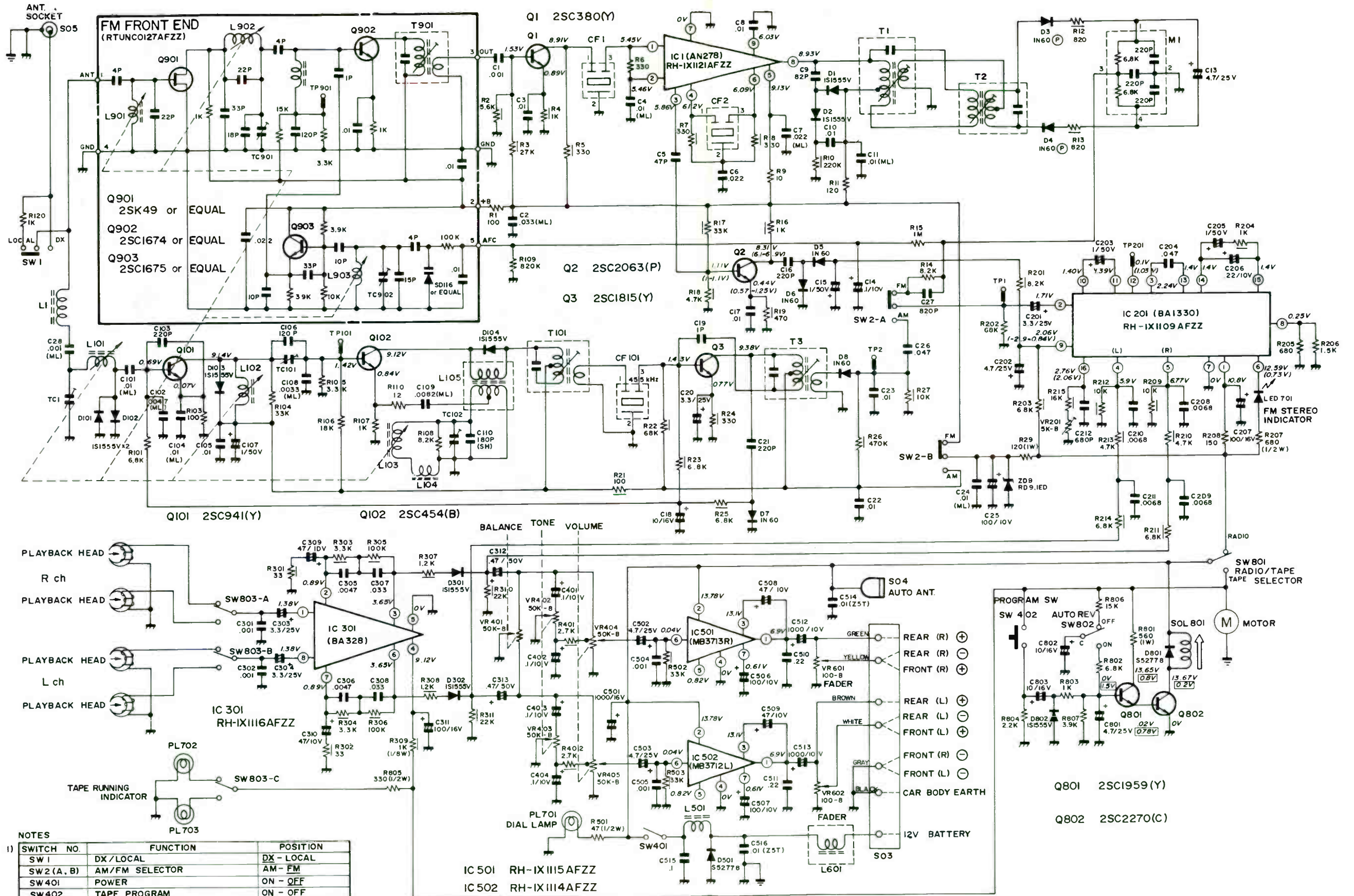


Figure 4-3

- (5) 12 into the hole of the pulley bracket (left) and another, into that of the pulley bracket (right). Then slide the dial scale rod 12 in both directions fully along the two holes.
- (6) As shown in Figure 4-3A, bring the part A of the dial scale spring 13 under the pulley bracket (left).
- (6) As shown in Figure 4-3B, slide the dial pointer until it will be positioned just near the left extreme of the indication "88 MHz" FM.
- (7) Rotate the tuning shaft fully counterclockwise.
- (8) As shown in Figure 4-3C, put the dial cord into the dial pointer slider neatly.



BLOCK DIAGRAM



NOTES

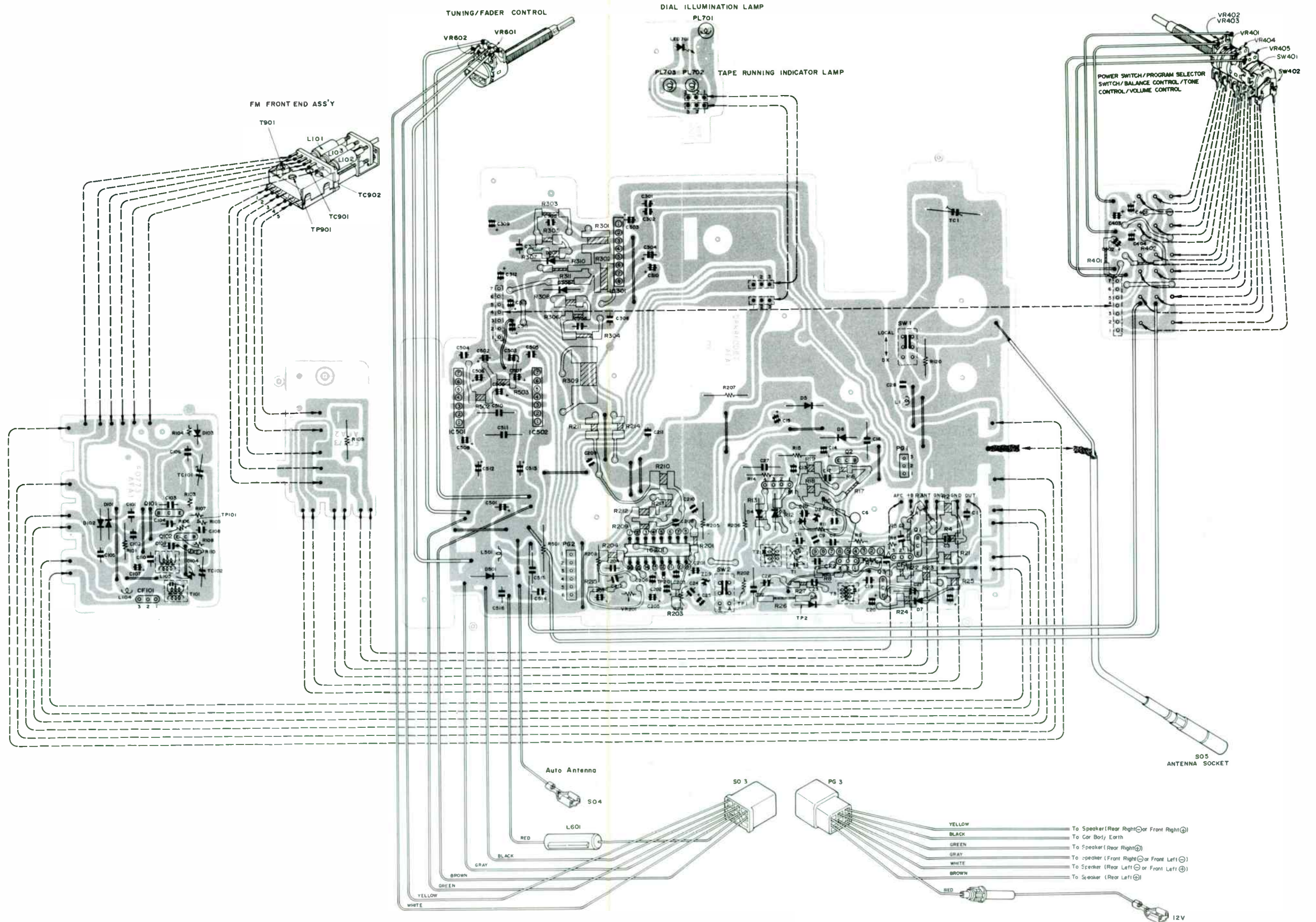
SWITCH NO.	FUNCTION	POSITION
SW 1	DX / LOCAL	DX - LOCAL
SW 2 (A, B)	AM / FM SELECTOR	AM - FM
SW 401	POWER	ON - OFF
SW 402	TAPE PROGRAM	ON - OFF
SW 801	RADIO / TAPE SELECTOR	RADIO - TAPE
SW 802	AUTO REVERSE	ON - OFF
SW 803(A-C)	FORWARD / REVERSE SELECTOR	FOR - REV

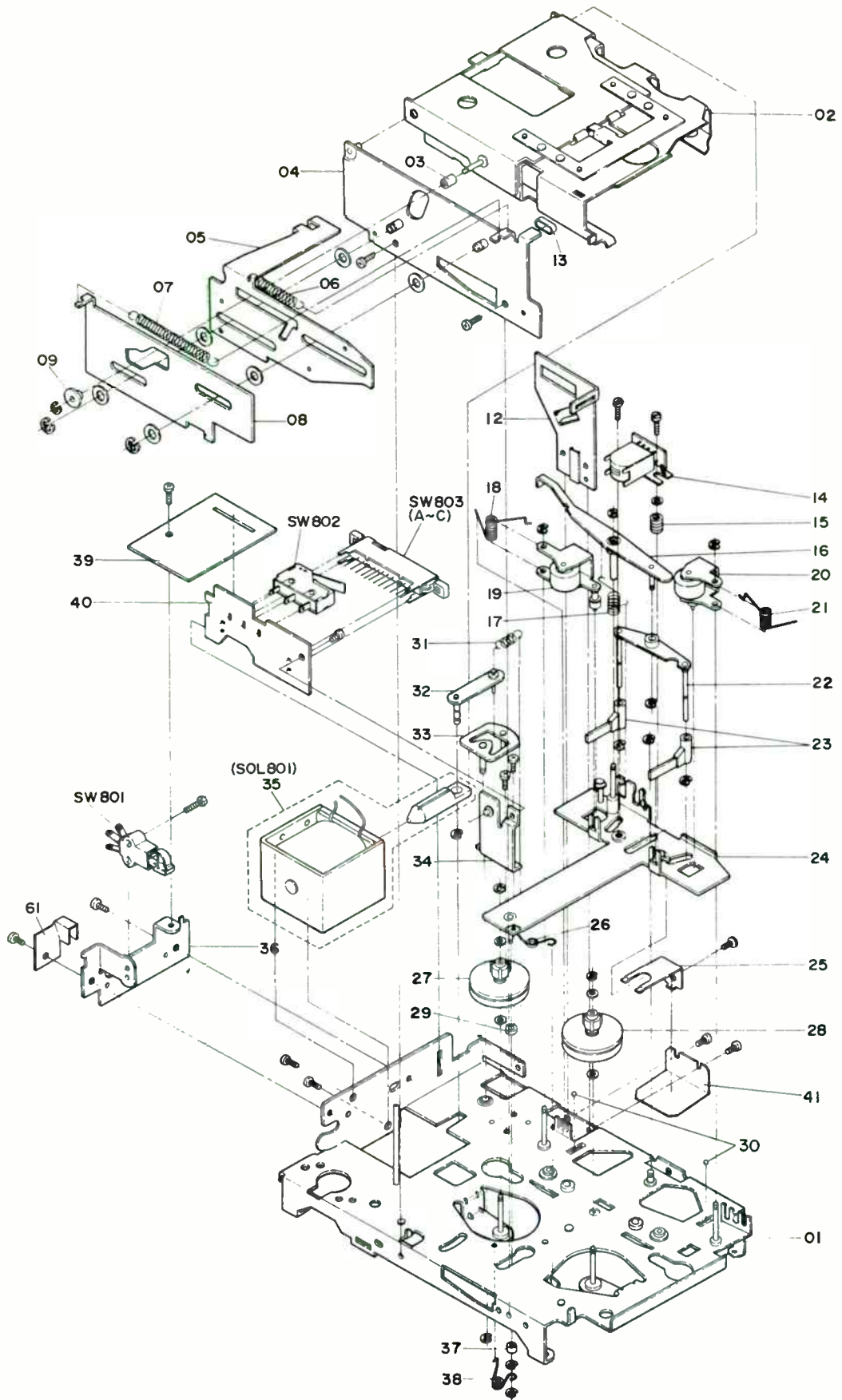
2) FREQUENCY RANGE AM 525 ~ 1605 kHz , FM 87.6 ~ 108 MHz

3) IF AM 455 kHz , FM 10.7 MHz
4) VOLTAGE READING ARE MEASURED WITH V.T.V.M. WITH NO SIGNAL AND VOLTAGE CONTROL AT MINIMUM

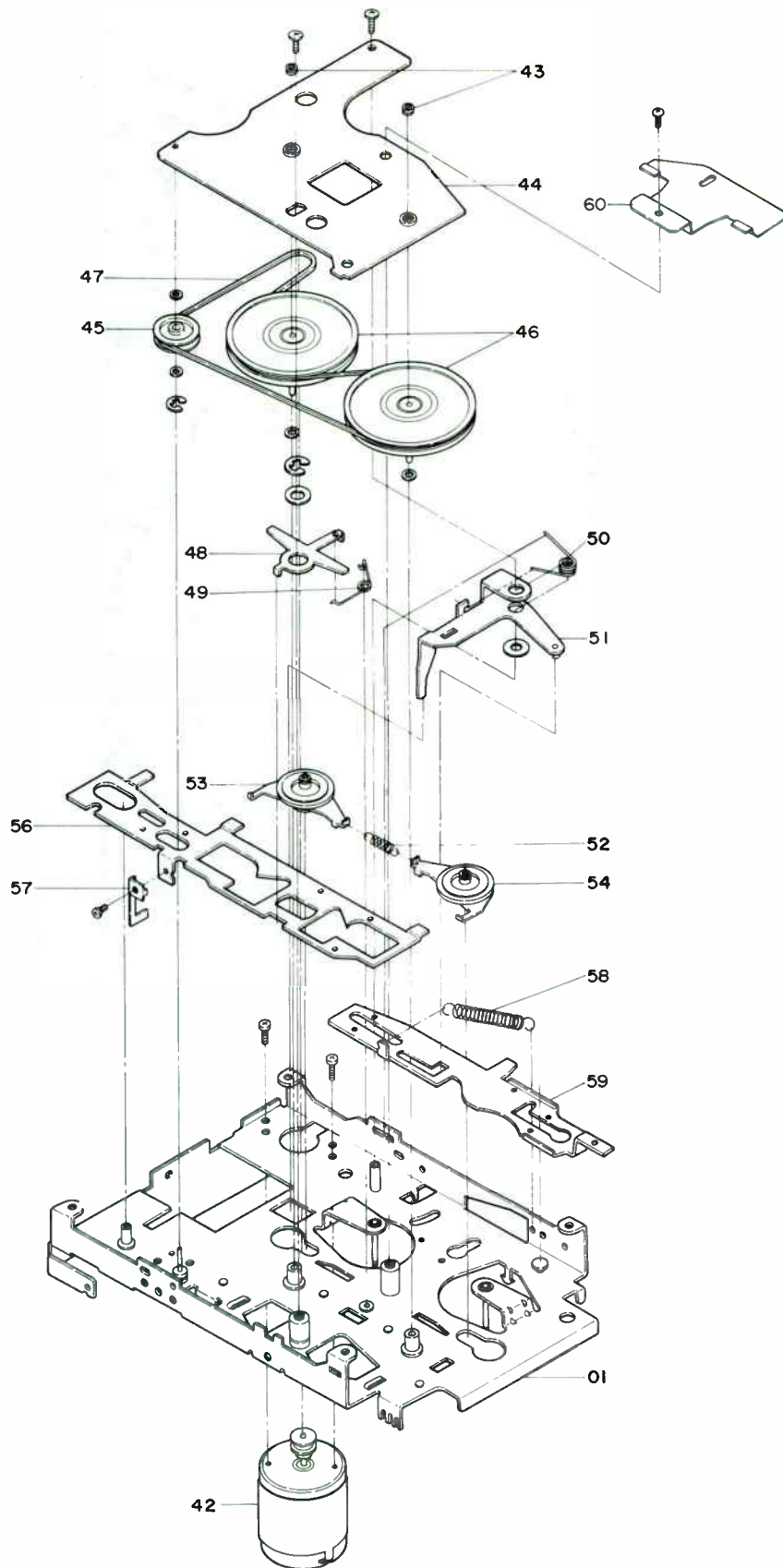
5) VOLTAGE WITH PARENTHESES TAKEN WITH UNIT STEREO MODE
6) VOLTAGE IN SQUARE FRAME TAKEN WITH UNIT SOLENOID ON MODE

Sharp RG-3400





MECHANISM EXPLODED TOP VIEW



MECHANISM EXPLODED BOTTOM VIEW

REPLACEMENT PARTS LIST

"HOW TO ORDER REPLACEMENT PARTS"

To have your order filled promptly and correctly, please furnish the following informations.

1. MODEL NUMBER
2. REF. NO.
3. PART NO.
4. DESCRIPTION

Order to : Parts Center

P.O. Box 664 Paramus, New Jersey 07652 (201) 262-9000
P.O. Box 20394 Long Beach, Calif. 90801 (213) 830-4470

REF. NO.	PART NO.	DESCRIPTION
INTEGRATED CIRCUITS		
IC1	AN278	2nd FM IF Amp. (RH-IX1121AFZZ)
IC201	BA1330	P.L.L. FM Stereo Demodulator (RH-IX1109AFZZ)
IC301	BA328	Tape Equalizer Amp. (RH-IX1116AFZZ)
IC501	MB3713R	Audio Amp. (RH-IX1114AFZZ)
IC502	MB3712L	Audio Amp. (RH-IX1115AFZZ)
TRANSISTORS		
Q1	2SC380Y	1st FM IF Amp. (VS2SC380-Y/-1)
Q2	2SC2063P	FM Audio Amp. (VS2SC2063P/-1)
Q3	2SC1815Y	AM IF Amp. (VS2SC1815Y/-1)
Q101	2SC941Y	AM RF Amp. (VS2SC941-Y/-1)
Q102	2SC454B	AM Mix. (VS2SC454-B/-1)
Q801	2SC1959Y	Solenoid Control (VS2SC1959Y/-1)
Q802	2SC2270C	Solenoid Drive (VS2SC2270C/-1)
DIODES		
D1	1S1555V	Noise Limiter (VHD1S1555V/1G)
D2	1S1555V	Noise Limiter (VHD1S1555V/1G)
D3	1N60P	FM Detector(VHD1N60////-3)
D4	1N60P	FM Detector(VHD1N60////-3)
D5	1N60	Rectifier(VHD1N60////-1)
D6	1N60	Rectifier(VHD1N60////-1)
D7	1N60	AM AGC(VHD1N60////-1)
D8	1N60	AM Detector(VHD1N60////-1)
D101	1S1555V	Protector(VHD1S1555V/1G)
D102	1S1555V	Protector(VHD1S1555V/1G)
D103	1S1555V	AM IF Amp. (VHD1S1555V/1G)
D104	1S1555V	Oscillator Prevention (VHD1S1555V/1G)
D301	1S1555V	Switching(VHD1S1555V/1G)
D302	1S1555V	Switching(VHD1S1555V/1G)
D501	S5277B	Protector(VHDS5277B//--1)
D801	S5277B	Protector(VHDS5277B//--1)
D802	1S1555V	Time Constant (VHD1S1555V/1G)

REF. NO.	PART NO.	DESCRIPTION	
ZENER DIODE			
ZD9	VHERD9.1ED/-1	Voltage Regulator(9.1V)	
LIGHT EMITTING DIODE			
LED701	VHPGL3AR1//--1	Stereo Indicator Lamp	
COILS			
L1	RCILC0065AFZZ	Choke FM Front End Assembly	
L101, L102, L103, L901, L902, L903	RTUNC0127AFZZ	L101:AM Antenna L102:AM RF L103:AM Oscillation L901:FM Antenna L902:FM RF L903:FM Oscillator	
T901			T901:FM IF
L104		RCILC0061AFZZ	AM Oscillation
L105		RCILB0322AFZZ	AM Oscillator
L501		RCILF0067AFZZ	Choke(High Frequency)
L601		OCNW-0362AFZZ	Choke(Low Frequency)
TRANSFORMERS			
T1	RCIL10185AFZZ	FM Discriminator	
T2	RCIL10182AFZZ	FM Discriminator	
T3	RCIL10241AFZZ	2nd AM IF	
T101	RCIL10240AFZZ	1st AM IF	
FILTERS			
CF1	RFILF0009AFZZ	Ceramic, 10.7MHz, FM IF	
CF2	RFILF0009AFZZ	Ceramic, 10.7MHz, FM IF	
CF101	RFILA0060AFZZ	455kHz, AM IF	
PACKAGED CIRCUIT			
M1	RMPTA0105AFZZ	6.8KohmX2+220PFX2	
CONTROLS			
VR201	RVR-M0168AFZZ	5Kohm(B),V.C.O.Frequency Adjustment 50Kohm(B), VR401:Balance Control VR402,VR403:Tone Control VR404,VR405:Volume Control	
VR401, VR402, VR403, VR404, VR405, SW401, SW402	RVR-B0166AFZZ	SW401:Power Switch SW402:Program Selector Switch	

PARTS LIST

REF. NO.	PART NO.	DESCRIPTION
VR601, VR602	RVR-B0167AFZZ	100ohm(B), Tuning/Fader
TC1	RTO-A1054AFZZ	Trimmer Capacitor, AM Antenna
TC101	RTO-A1052AFZZ	Trimmer Capacitor, AM RF
TC102	RTO-A1052AFZZ	Trimmer Capacitor, AM Oscillator
TC901, TC902	RTUNC0127AFZZ	FM Front End Assembly TC901:FM RF Trimmer TC902:FM Oscillator Trimmer

RESISTORS

(Unless otherwise specified resistors are 1/4W, $\pm 5\%$, Carbon Type.)

R1	VRD-SU2EE101J	100ohm
R6	VRD-SU2EE331J	330ohm
R9	VRD-SU2EE100J	10ohm
R11	VRD-ST2EE121J	120 ohm
R14	VRD-ST2EE822J	8.2Kohm
R15	VRD-ST2EE105J	1Meg ohm
R29	VRS-PT3AB121K	120ohm, 1W, $\pm 10\%$, Oxide Film
R101	VRD-ST2EE682J	6.8Kohm
R103	VRD-SU2EE101J	100ohm
R104	VRD-SU2EE333J	33Kohm
R105	VRD-ST2EE332J	3.3Kohm
R106	VRD-SU2EE183J	18Kohm
R107	VRD-SU2EE102J	1Kohm
R108	VRD-SU2EE822J	8.2Kohm
R109	VRD-ST2EE824J	820Kohm
R110	VRD-SU2EE120J	12ohm
R120	VRD-ST2EE102J	1Kohm
R202	VRD-ST2EE683J	68Kohm
R205	VRD-ST2EE681J	680ohm
R206	VRD-ST2EE152J	1.5Kohm
R207	VRC-MT2HG681K	680ohm, 1/2W, $\pm 10\%$, Carbon
R208	VRD-ST2EE151J	150ohm
R501	VRC-MT2HG470K	47ohm, 1/2W, $\pm 10\%$, Carbon
R801	VRS-PT3AB561K	560ohm, 1W, $\pm 10\%$, Oxide Film
R802	VRD-SU2EE682J	6.8K ohm
R803	VRD-SU2EE102J	1Kohm
R804	VRD-ST2EE222J	2.2Kohm
R805	VRC-MT2HG331K	330ohm, 1/2W, $\pm 10\%$, Carbon
R806	VRD-SU2EE153J	15Kohm
R807	VRD-SU2EE392J	3.9Kohm

CAPACITORS

C1	VCTYPU1EX102K	.001MFD, 25V, $\pm 10\%$, Ceramic
C2	VCQYKU1HM333M	.033MFD, 50V, $\pm 20\%$, Mylar
C3	VCTYAT1EX103N	.01MFD, 25V, $\pm 30\%$, Ceramic
C4	VCQYKU1HM103M	.01MFD, 50V, $\pm 20\%$, Mylar
C5	VCCSPU1HL470J	47PF, 50V, $\pm 5\%$, Ceramic
C6	VCTYPU1EX223M	.022MFD, 25V, $\pm 20\%$, Ceramic
C7	VCQYKU1HM223M	.022MFD, 50V, $\pm 20\%$, Mylar
C8	VCQYKU1HM103M	.01MFD, 50V, $\pm 20\%$, Mylar
C9	VCCSPU1HL820J	82PF, 50V, $\pm 5\%$, Ceramic
C10	VCTYPU1EX103M	.01MFD, 25V, $\pm 20\%$, Ceramic
C11	VCQYKU1HM103M	.01MFD, 50V, $\pm 20\%$, Mylar
C16	VCKYAT1HB221K	220PF, 50V, $\pm 10\%$, Ceramic
C17	VCTYAT1EX103N	.01MFD, 25V, $\pm 30\%$, Ceramic
C19	VCCSPU1HL1R0C	1PF, 50V, $\pm .25$ PF, Ceramic
C21	VCKYAT1HB221K	220PF, 50V, $\pm 10\%$, Ceramic

REF. NO.	PART NO.	DESCRIPTION
C22	VCTYAT1EX103N	.01MFD, 25V, $\pm 30\%$, Ceramic
C23	VCTYAT1EX103N	.01MFD, 25V, $\pm 30\%$, Ceramic
C24	VCQYKU1HM103M	.01MFD, 50V, $\pm 20\%$, Mylar
C26	VCTYPU1EX473M	.047MFD, 25V, $\pm 20\%$, Ceramic
C27	VCKYAT1HB821K	820PF, 50V, $\pm 10\%$, Ceramic
C28	VCQYKU1HM102M	.001MFD, 50V, $\pm 20\%$, Mylar
C101	VCQYKU1HM103M	.01MFD, 50V, $\pm 20\%$, Mylar
C102	VCQYKU1HM472M	.0047MFD, 50V, $\pm 20\%$, Mylar
C103	VCCSPU1HL221J	220PF, 50V, $\pm 5\%$, Ceramic
C104	VCQYKU1HM103M	.01MFD, 50V, $\pm 20\%$, Mylar
C105	VCKZPU1HF103Z	.01MFD, 50V, +80-20%, Ceramic
C106	VCCSPU1HL121J	120PF, 50V, $\pm 5\%$, Ceramic
C108	VCQYKU1HM332M	.0033MFD, 50V, $\pm 20\%$, Mylar
C109	VCQYKU1HM822M	.0082MFD, 50V, $\pm 20\%$, Mylar
C110	VCCSPU1HH181J	180PF, 50V, $\pm 5\%$, Ceramic
C204	VCTYPU1EX473M	.047MFD, 25V, $\pm 20\%$, Ceramic
C208	VCTYPU1EX682K	.0068MFD, 25V, $\pm 10\%$, Ceramic
C209	VCTYPU1EX682K	.0068MFD, 25V, $\pm 10\%$, Ceramic
C210	VCTYPU1EX682K	.0068MFD, 25V, $\pm 10\%$, Ceramic
C211	VCTYPU1EX682K	.0068MFD, 25V, $\pm 10\%$, Ceramic
C212	VCQSMU1HS681J	680PF, 50V, $\pm 5\%$, Styrol
C301	VCTYPU1EX102K	.001MFD, 25V, $\pm 10\%$, Ceramic
C302	VCTYPU1EX102K	.001MFD, 25V, $\pm 10\%$, Ceramic
C305	VCTYPU1EX472K	.0047MFD, 25V, $\pm 10\%$, Ceramic
C306	VCTYPU1EX472K	.0047MFD, 25V, $\pm 10\%$, Ceramic
C307	VCTYPU1EX333K	.033MFD, 25V, $\pm 10\%$, Ceramic
C308	VCTYPU1EX333K	.033MFD, 25V, $\pm 10\%$, Ceramic
C504	VCTYPU1EX102K	.001MFD, 25V, $\pm 10\%$, Ceramic
C505	VCTYPU1EX102K	.001MFD, 25V, $\pm 10\%$, Ceramic
C510	VCQYSH1HM224K	.22MFD, 50V, $\pm 10\%$, Mylar
C511	VCQYSH1HM224K	.22MFD, 50V, $\pm 10\%$, Mylar
C514	VCKYPU1SD103Z	.01MFD, 30V, +80-20%, Ceramic
C515	VCKZPU1HF104Z	.1MFD, 50V, +80-20%, Ceramic
C516	VCKYPU1SD103Z	.01MFD, 30V, +80-20%, Ceramic

ELECTROLYTIC CAPACITORS

C13	VCEAAU1EW475A	4.7MFD, 25V, +75-10%
C14	VCAAAU1AB104M	.1MFD, 10V, $\pm 20\%$, Aluminum
C15	VCEAAU1HW105A	1MFD, 50V, +75-10%
C18	VCEAAU1CW106Y	10MFD, 16V, +50-10%
C20	VCEAAU1EW335A	3.3MFD, 25V, +75-10%
C25	RC-EZS107AF1A	100MFD, 10V, +30-10%
C107	VCEAAU1HW105A	1MFD, 50V, +75-10%
C201	VCEAAU1EW335A	3.3MFD, 25V, +75-10%
C202	VCEAAU1EW475A	4.7MFD, 25V, +75-10%
C203	VCEAAU1HW105A	1MFD, 50V, +75-10%
C205	VCEAAU1HW105A	1MFD, 50V, +75-10%
C206	VCAAAU1AB224M	.22MFD, 10V, $\pm 20\%$, Aluminum
C207	RC-EZS107AF1C	100MFD, 16V, +30-10%
C303	VCEAAU1EW335A	3.3MFD, 25V, +75-10%
C304	VCEAAU1EW335A	3.3MFD, 25V, +75-10%
C309	RC-EZS476AF1A	47MFD, 10V, +30-10%
C310	RC-EZS476AF1A	47MFD, 10V, +30-10%
C311	RC-EZS107AF1C	100MFD, 16V, +30-10%
C312	VCEALU1HW474M	.47MFD, 50V, $\pm 20\%$
C313	VCEALU1HW474M	.47MFD, 50V, $\pm 20\%$
C401	VCAAAU1AB104M	.1MFD, 10V, $\pm 20\%$, Aluminum
C402	VCAAAU1AB104M	.1MFD, 10V, $\pm 20\%$, Aluminum
C403	VCAAAU1AB104M	.1MFD, 10V, $\pm 20\%$, Aluminum

PARTS LIST

Sharp RG-3400

REF. NO.	PART NO.	DESCRIPTION
C404	VCAAAU1AB104M	.1MFD, 10V, ±20%, Aluminum
C501	RC-EZS108AF1C	1000MFD, 16V, +30-10%
C502	VCEAAU1EW475A	4.7MFD, 25V, +75-10%
C503	VCEAAU1EW475A	4.7MFD, 25V, +75-10%
C506	RC-EZS107AF1A	100MFD, 10V, +30-10%
C507	RC-EZS107AF1A	100MFD, 10V, +30-10%
C508	RC-EZS476AF1A	47MFD, 10V, +30-10%
C509	RC-EZS476AF1A	47MFD, 10V, +30-10%
C512	RC-EZS108AF1A	1000MFD, 10V, +30-10%
C513	RC-EZS108AF1A	1000MFD, 10V, +30-10%
C801	VCEALU1EW475M	4.7MFD, 25V, ±20%
C802	VCEAAU1CW106Y	10MFD, 16V, +50-10%
C803	VCEALU1CW106M	10MFD, 16V, ±20%

MECHANICAL PARTS

01	LCHSM0294AFZZ	Mechanism Chassis
02	LHLDX3061AFZZ	Cassette Holder
03	LSLVM0060AFFW	Sleeve, Eject Lever
04	LANGG0053AFZZ	Bracket, Cassette Holer
05	MLEVF0653AFFD	Eject Lever
06	MSPRT0414AFFJ	Spring, Eject Lever
07	MSPRT0413AFFJ	Spring, Upper Lever
08	MLEVF0648AFFD	Upper Lever
09	NROLM0055AFFW	Roller, Upper Lever
12	LANGG0054AFFW	Bracket, Program Lever
13	PGUMM0111AF00	Cushion Rubber
14	RHEDF0056AFZZ	Playback Head
15	MSPRC0133AFFJ	Spring, Playback Head
16	MLEVF0851AFZZ	Tape End Action Lever
17	MSPRD0145AFFJ	Spring, Tape End Action Lever
18	MSPRD0141AFFJ	Spring, Pinch Lever(Right)
19	NROLY0009AFZZ	Pinch Roller(Right)
20	NROLY0008AFZZ	Pinch Roller(Left)
21	MSPRD0140AFFJ	Spring, Pinch Lever(Left)
22	MLEVF0650AFZZ	Tape End Action Lever
23	MLEVP0081AFZZ	Tape End Detect Lever
24	LCHSS0116AFZZ	Sub Chassis
25	MSPRP0141AFFW	Spring, Plate Type, Sub Chassis
26	MSPRD0144AFFJ	Spring, Sub Chassis
27	NDAIR0120AFSA	Turntable(Right)
28	NDAIR0116AFSA	Turntable(Left)
29	NROLM0054AFFW	Roller, Sub Chassis Guide
30	NBALS0006AGFJ	Ball, Mechanism Chassis
31	MSPRT0415AFFJ	Spring, Solenoid Lever
32	MLEVF0654AFZZ	Lever, Solenoid Pin
33	MCAMF0050AFZZ	Cam, Solenoid Lever
34	LANGF0371AFZZ	Bracket, Cassette Holder
35	RPLU-0062AFZZ	Solenoid
(SOL801)		
36	LANGT0702AFFW	Bracket, Radio/Tape Selector Switch
37	NROLM0056AFFW	Roller, Sub Chassis Return
38	MSPRD0157AFFJ	Spring, Sub Chassis
39	QPWBF0774AFZZ	P.W.Board, Solenoid (Board only, Not Available)
40	QPWBF0590AFZZ	P.W.Board, Switch (Board only, Not Available)
41	PSLDC3075AFZZ	Shield Plate
42	RMOTM0064AFZZ	Motor
43	LX-BZ0215AFZZ	Screw, Flywheel Thrust Adjustment
44	LANGF0372AFFW	Bracket, Flywheel
45	NPLYR0056AFZZ	Pulley, Flywheel

REF. NO.	PART NO.	DESCRIPTION
46	NFLYC0060AFZZ	Flywheel
47	NBLTK0112AFZZ	Belt, Flywheel
48	MLEVF0657AFFD	Select Lever
49	MSPRD0143AFFJ	Spring, Select Lever
50	MSPRT0414AFFJ	Spring, Cassette Detect Lever
51	MLEVF0652AFFD	Cassette Detect Lever
52	MSPRT0411AFFJ	Spring, Idler Lever
53	NIDR-0053AFZZ	Idler(Right)
54	NIDR-0054AFZZ	Idler(Left)
56	MLEVF0651AFFW	Select Lever
57	MSPRP0142AFFW	Spring, Plate Type, Select Lever
58	MSPRT0412AFFJ	Spring, Eject Lever
59	MLEVF0801AFFD	Eject Lever
60	PSLDC3062AFZZ	Shield Plate
61	PZETF0137AFZZ	Insulation Plate

MISCELLANEOUS

GCABA3487AFFW	Chassis, Front
GCABB3487AFFW	Chassis, Rear
GCABC3487AFFW	Cabinet, Top
GCABD3487AFFW	Cabinet, Bottom
GWAKP1074AFSA	Nose Piece
GWAKP1075AF00	Gasket
HDALP0401AFSA	Dial Scale(Cassette Door)
HDAP-0175AFSA	Bracket, Dial Scale
HINDI0057AFSA	Indication Plate, Forward/Reverse
HINDM1254AFSA	Decoration Plate "STEREO AUTO REVERSE"
HINDM1255AFSA	Decoration Plate, Stereo Indicator Lamp
HPNLC1245AFSA	Front Panel
HSSND0246AFSA	Dial Pointer
JKNBB0058AFSB	Knob, Eject/Fast Forward Lever
JKNBK0174AFSA	Knob, Outer
JKNBK0175AFSA	Knob, Outer (Recessed)
JKNBM0284AFSA	Knob, Inner
JKNBP0086AFSA	Knob, FM/AM Selector Switch-DX/Local Selector Switch
LANGF0447AFFW	Bracket, Back Up
LANGG0060AFFW	Bracket, pulley(Left)
LANGG0061AFFW	Bracket, pulley(Right)
LANGR0444AFFW	Bracket, FM Front End Assembly
LANGT0071AFFW	Suspension Plate
LX-NZ0052AFFD	Nut, Power IC
MLEVF0857AFFW	Lever, DX/Local Selector
MLEVF0858AFFW	Lever, FM/AM Selector
MRODM0062AFFN	Rod, Dial Scale
MSLIF0051AFFW	Slider, Dial Pointer
MSPRD0200AFFJ	Spring, Dial Scale (Cassette Door)
CSPRT0321AF05	Dial Cord Assembly
NIDR-0063AFZZ	Idler, FM Front End Assembly(Outside)
NIDR-0064AFZZ	Idler, FM Front End Assembly(Inside)
PCOVU3113AFFW	Cover, Dial Illumination Lamp
PCOVZ8055AFZZ	Green Color Cover, Dial Illumination Lamp

PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	REF. NO.	PART NO.	DESCRIPTION
	PGIDH0054AFFW	Settle Plate, Tuning/ Fader Control		RTUNC0127AFZZ	FM Front End Assembly
	PRDAR0173AFZZ	Heat Sink		LX-BZ0260AFFE	Bolt (5 x 8mm)
	PSPAZ0060AF00	Spacer, Stereo Indicator		LX-TZ0001AFFE	Bolt (5 x 16mm)
	LHLDW3015AFFW	Holer, Antenna Socket		LX-BZ0236AFFE	Bolt (5 x 14mm)
	LHLDW3016AFFW	Holer, Speaker/ Power and Ground Leads	PG1	QCNCM099CAFZZ	Plug, 3Pin
	QCNW-0365AFZZ	Flat Cable(Small)	PG2	QCNCM102FAFZZ	Plug, 6Pin
	QCNW-0366AFZZ	Flat Cable(Large)	PG3	QCNW-0363AFZZ	Plug, 9Pin
	QPRBF0087AFA1	Printed Resistor Wiring Board, Tuner(Board only, Not Available)	SO1	QCNW-0406AFZZ	Socket, 3Pin
	QPRBF0087AFA2	Printed Resistor Wiring Board, Volume Control/Balance Control/Program Selector (Board only, Not Available)	SO2	QCNW-0361AFZZ	Socket, 6Pin
	QPRBF0087AFA3	P.W.Board, Lamp (Board only, Not Available)	SO3	QCNW-0362AFZZ	Socket, 9Pin
	QPWBF0590AFZZ	P.W.Board, Switch (Board only, Not Available)	SO4	QCNW-0364AFZZ	Socket, Auto Antenna
	QPWBF0773AFA1	P.W.Board, FM Front End Ass'y (Large)(Board only, Not Available)	SO5	QSOCZ2182AFZZ	Socket, Antenna
	QPWBF0773AFA2	P.W.Board, FM Front End Ass'y (Small)(Board only, Not Available)	SW1	QSW-P0174AFZZ	Switch, DX/Local Selector
	QPWBF0774AFZZ	P.W.Board, Transport (Board only, Not Available)	SW2(A,B)	QSW-P0174AFZZ	Switch, AM/FM Selector
	PZETF0135AFZZ	Insulation Plate	SW801	QSW-F0049AGZZ	Switch, Radio/Tape Selector
	PCOVU8115AF00	Cover, Tape Running Indicator Lamp	SW802	QSW-M0054AFZZ	Switch, Auto Reverse
	PSHEP0060AFZZ	Sheet, Light Cut Off	SW803 (A~C)	QSW-S0199AFZZ	Switch, Forward/Reverse
			PL701	RLMPM0069AFZZ	Lamp, Dial Illumination
			PL702, PL703	RLMPP0054AFZZ	Lamp, Tape Running Indicator (Forward-Reverse)
				RC-HZ0001AFZZ	Capacitor, Noise Suppression
				SSAKA0025AFZZ	Polyethylene Bag
				SPAK F0052AFZZ	Packing Material
				SPAKA0536AFZZ	Packing Add.
				SPAKC1181AFZZ	Packing Case
				SPAKT0735AFZZ	Packing Material
ACCESSORY PARTS					
				HDECK0055AFSA	Decoration Plate, Inner Knob
				HDECP0059AFSA	Decoration Plate, Front Panel

AM ALIGNMENT

[1] IF Alignment

(1) Preparations for alignment

a. Connections

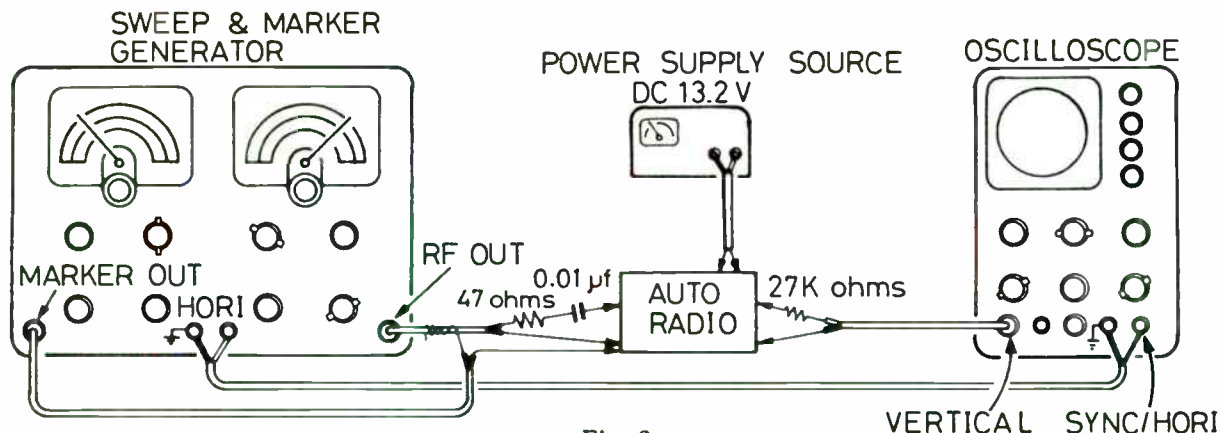


Fig. 2

SWEEP GENERATOR OUTPUT	OSCILLOSCOPE VERTICAL INPUT	OSCILLOSCOPE HORIZONTAL INPUT
Connect [TP9] in Fig. 9 through 0.01 μ F capacitor & 47-ohm	Connect [TP11] in Fig. 9 through 27k-ohm resistor	Connect with HORIZONTAL terminal of sweep generator

b. Power supply : 13.2 VDC

d. Controls : Volume for minimum

c. Switch : Band selector for AM

Tone for high

(2) Alignment (Refer to Fig. 9 for ADJUSTMENT POINTS.)

STEP	PURPOSE	SWEEP GENERATOR FREQUENCY	SET TUNER TO	ADJUSTMENT POINTS	PROCEDURE
1	IF	455 kHz	Near 1,000 kHz no signal exists	T ₄ to T ₇	Get maximum IF curve and best symmetry on both sides.
2	Repeat STEP 1 until no further gain in output can be obtained.				

[2] Tracking Alignment

(1) Preparations for alignment

a. Connections

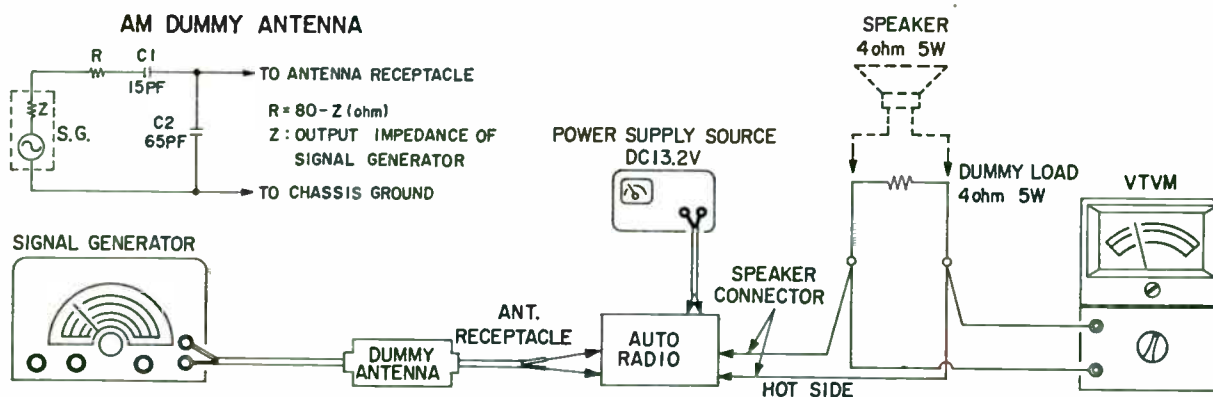


Fig. 3

b. Power supply : 13.2 VDC

d. Controls : Volume for maximum

c. Switch : Band selector for AM

Tone for high

(2) Alignment (Refer to Fig. 9 for ADJUSTMENT POINTS.)

STEP	PURPOSE	GENERATOR FREQUENCY	SET TUNER TO	ADJUSTMENT POINTS	PROCEDURE
1	Tuning range	505 kHz (400 Hz, 30%, AM modulated)	High-end stop	CV ₃	Adjust for maximum meter indication.
2		1,635 kHz (400 Hz, 30%, AM modulated)	Low-end stop	T ₃	
3	Repeat STEP 1 and 2 until no further gain in output can be obtained.				
4	Tracking	1,400 kHz (400 Hz, 30%, AM modulated)	Just tune in SG frequency	CV ₄	Adjust for maximum meter indication.
5				CV ₅	

NOTE: Always readjust antenna trimmer CV₄ when radio or antenna is reinstalled, tuning in a weak station around 1,400 kHz and get maximum volume.

FM ALIGNMENT

- * The adjustment of the FM front-end is precisely performed at the factory and should not be required normally. Inadequate adjustment results in inferior sensitivity and reception. If something is wrong with FM front-end, follow the procedure described below.
- * FM front-end (FM FRONT-END stock No. RN-ETR-Z-128) supplied as a replacement part is completely adjusted for tuning range and tracking, so adjustments are unnecessary except IF transformers.

[1] IF Alignment

⊙ Points to watch in replacing ceramic filter

In the FM circuit there are two ceramic filters. It is important that both filters have the same color (i.e. the same center frequency).

- Readjustment is not necessary if a defective ceramic filter is replaced with one of the same color. (Same center frequency)
- Both filters should be changed to the same color if one of them must be replaced with a different colored filter. Readjustment will be necessary because of the changed center frequency.

(1) Preparations for alignment

- Connections (Refer to Fig. 9)

SWEEP GENERATOR OUTPUT	OSCILLOSCOPE VERTICAL INPUT	OSCILLOSCOPE HORIZONTAL INPUT
Connect [TP9] in Fig. 9 through 0.01 μF capacitor & 47-ohm	Connect [TP10] in Fig. 9 through 27k-ohm resistor	Connect with HORIZONTAL terminal of sweep generator

- Power supply : 13.2 VDC
- Switch : Band selector for FM
- Controls : Volume for minimum Tone for high

(2) Alignment (Refer to Fig. 9 for ADJUSTMENT POINTS.)

STEP	PURPOSE	SWEEP GENERATOR FREQUENCY	SET TUNER TO	ADJUSTMENT POINTS	PROCEDURE
1	IF circuit	Center frequency varies according to the color of the ceramic filter (Refer to chart given below)	Near 98 MHz no signal exists	T ₁ and T ₂	Adjust for full gain and length of S-curve at linears. (See Fig. 7)
2					Keep S-curve straight at the center, and adjust waveform for best symmetry of S-curve against the axis as much as possible. (See Fig. 7)
3	Detector circuit				

4 Repeat STEP 1 to 3 until no further gain output can be obtained.

COLOR	CENTER FREQUENCY
Black	10.64 MHz \pm 30 kHz
Blue	10.67 MHz \pm 30 kHz
Red	10.70 MHz \pm 30 kHz
Orange	10.73 MHz \pm 30 kHz
White	10.76 MHz \pm 30 kHz



Fig. 6

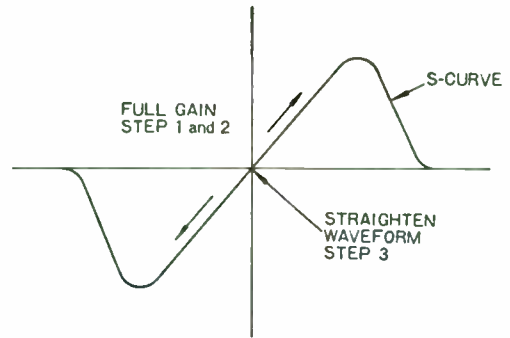


Fig. 7

[2] Tracking alignment (Refer to Fig. 9 for ADJUSTMENT POINTS.)

(1) Preparations for Alignment

a. Connections

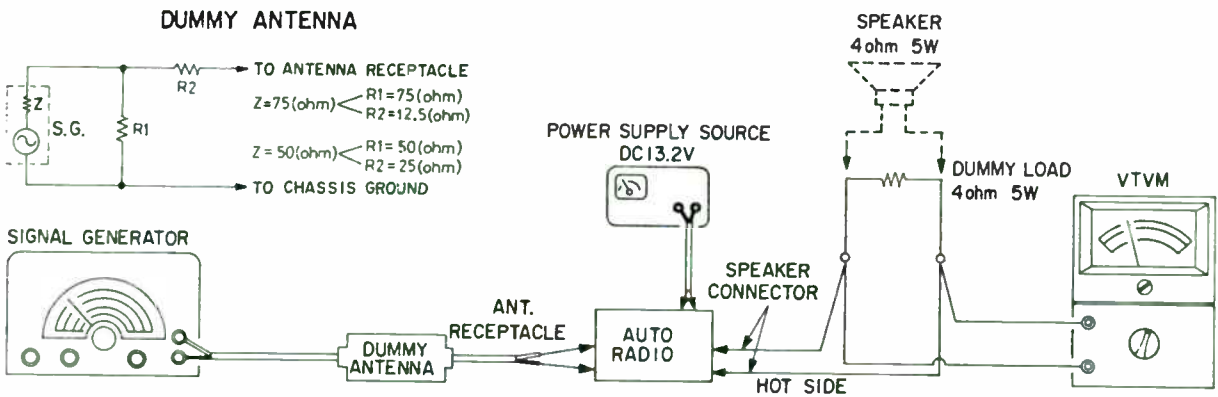


Fig. 8

b. Power supply : 13.2 VDC

d. Controls

: Volume for maximum
Tone for high

c. Switch : Band selector for FM

(2) Alignment (Refer to Fig. 9 for ADJUSTMENT POINTS.)

STEP	PURPOSE	GENERATOR FREQUENCY	SET TUNER TO	ADJUSTMENT POINT	PROCEDURE
1	Tuning range	87.5 MHz (400 Hz, 30%, FM modulated)	Low-end stop	CV 3	Adjust for maximum meter indication.
2		109 MHz (400 Hz, 30%, FM modulated)	High-end stop		109 MHz must be received.
3	Tracking	98 MHz (400 Hz, 30%, FM modulated)	Just tune in SG frequency	CV 1	Adjust for maximum meter indication.
4				CV 2	

[3] FM STEREO (MPX.) SEPARATION ADJUSTMENT

(1) Alignment (Refer to Fig. 9 for ADJUSTMENT POINTS.)

a. Adjustment with frequency counter :

Connect frequency counter to TP₂ as per Fig. 9 and adjust RV₁ so that the counter frequency

becomes $19 \text{ kHz} \pm 100 \text{ Hz}$.

b. Adjustment without frequency counter :

Tune in a stereo broadcast and rotate the arm of potentiometer RV₁ slowly, and you can find a position where the stereo indicator L.E.D. lights.

Further rotating it in the same direction may cause the L.E.D. to go out. Set the potentiometer arm at the center of lighting range of the L.E.D.

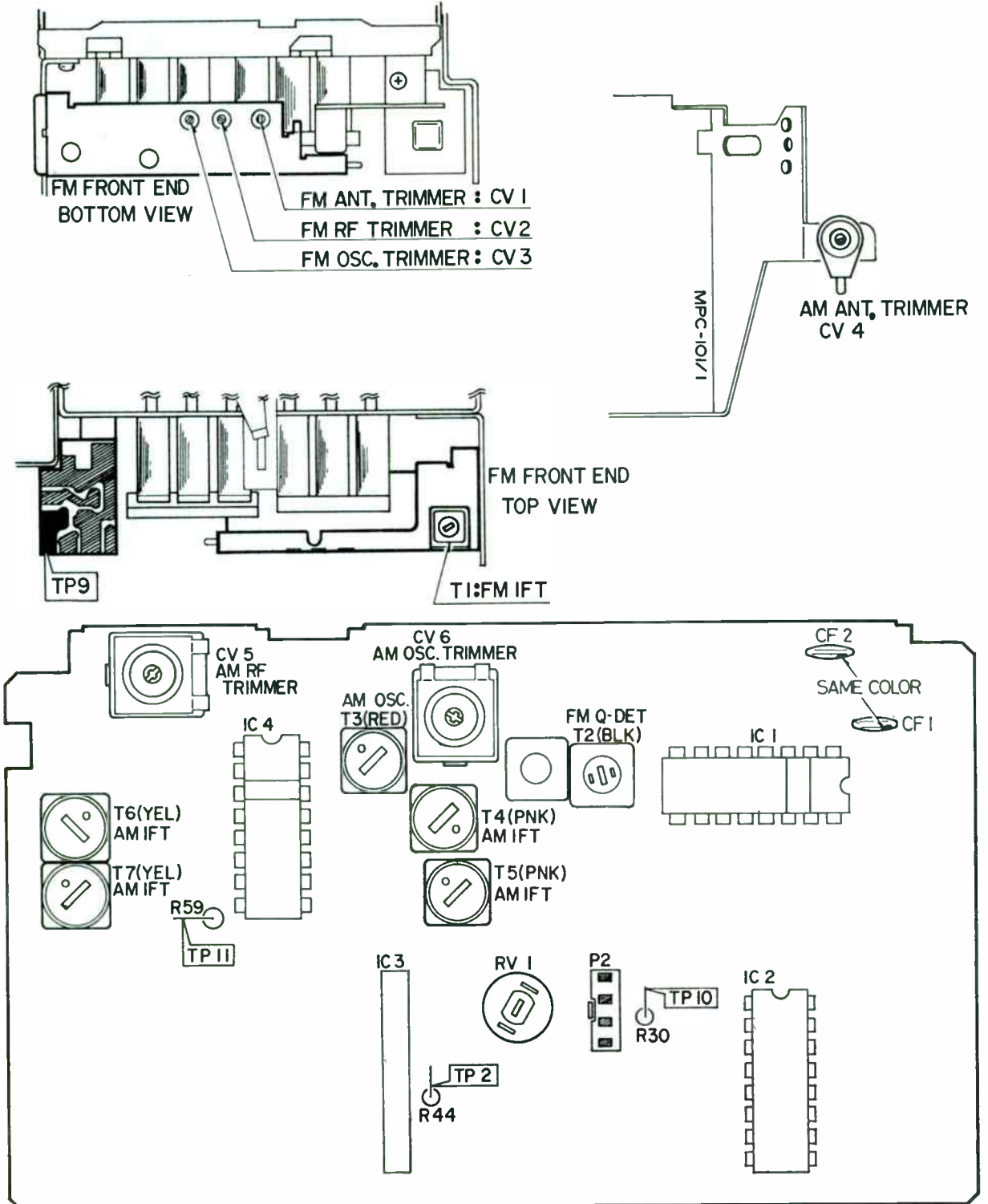
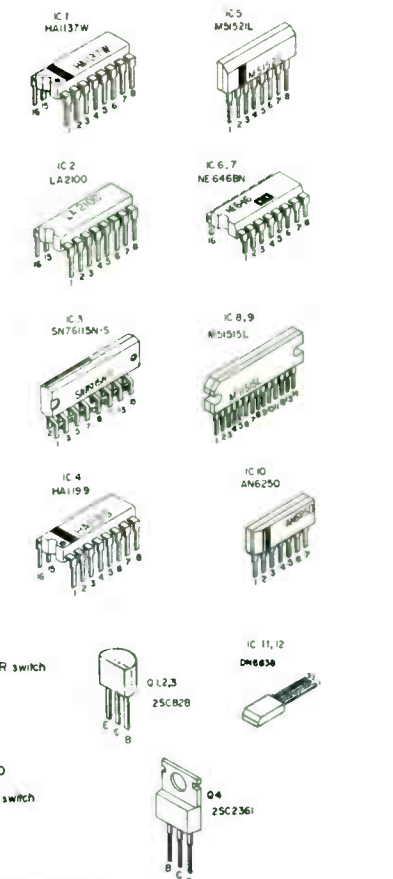
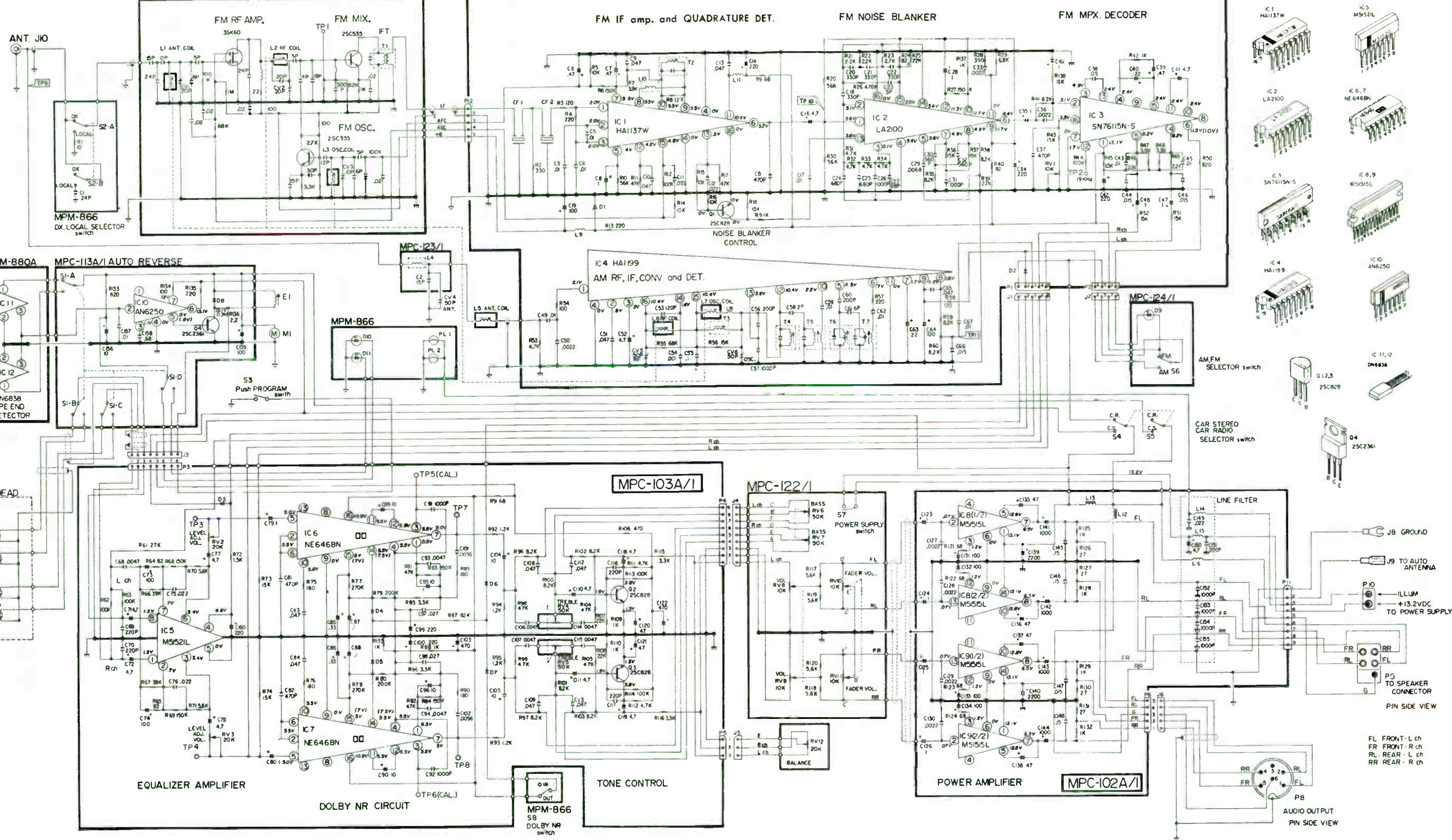


Fig. 9 (ADJUSTMENT POINTS)

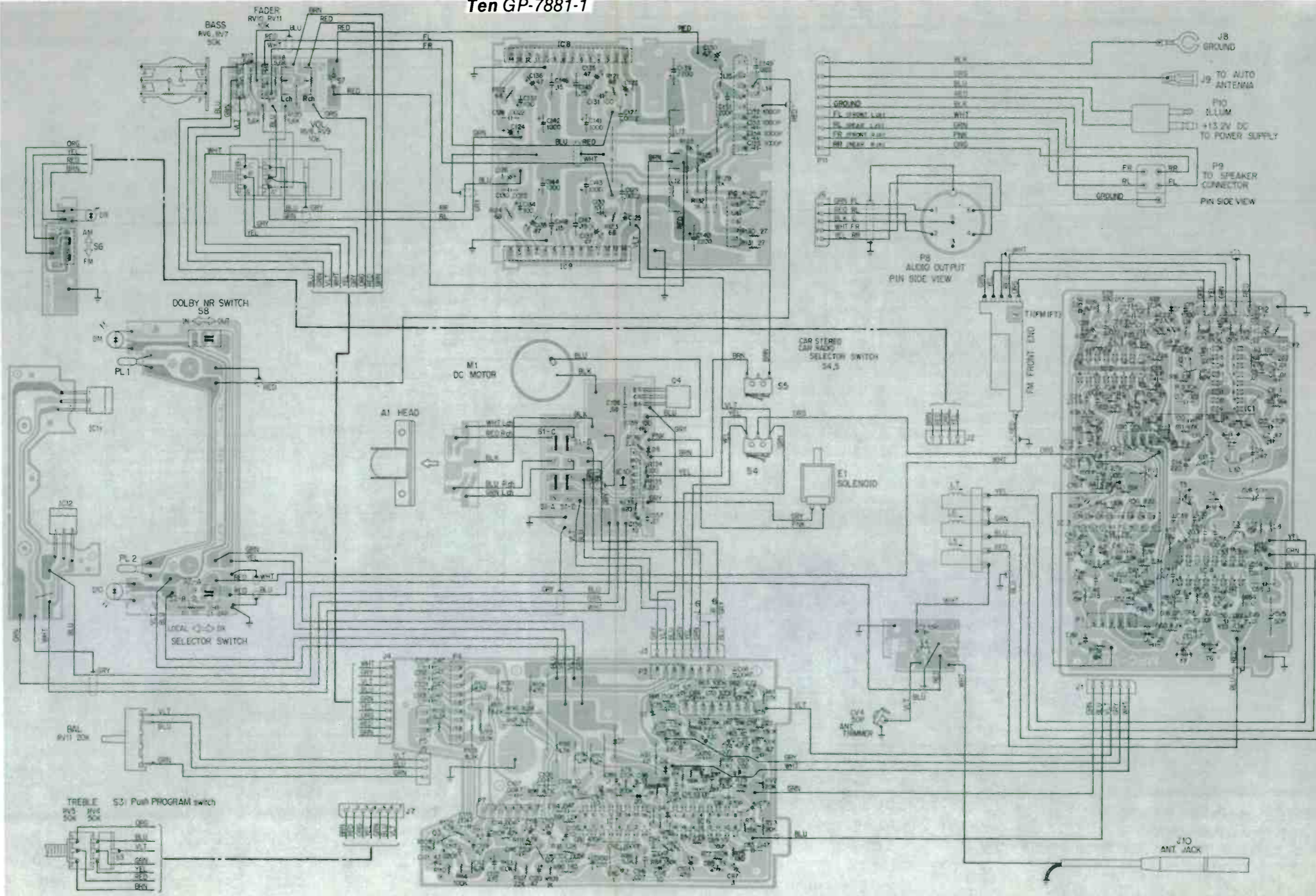
FM FRONT END

MPC-101A/1



- NOTES:**
1. All resistance in ohms, K=1,000
 2. All capacitance in μF , P= $\mu\mu F$
 3. DC voltage against chassis measured with 100k ohms/volt meter, power supply set at +13.2VDC, no signal input.

Ten GP-7881-1



EXPLODED VIEW (CASSETTE DECK)

Ten GP-7881-1

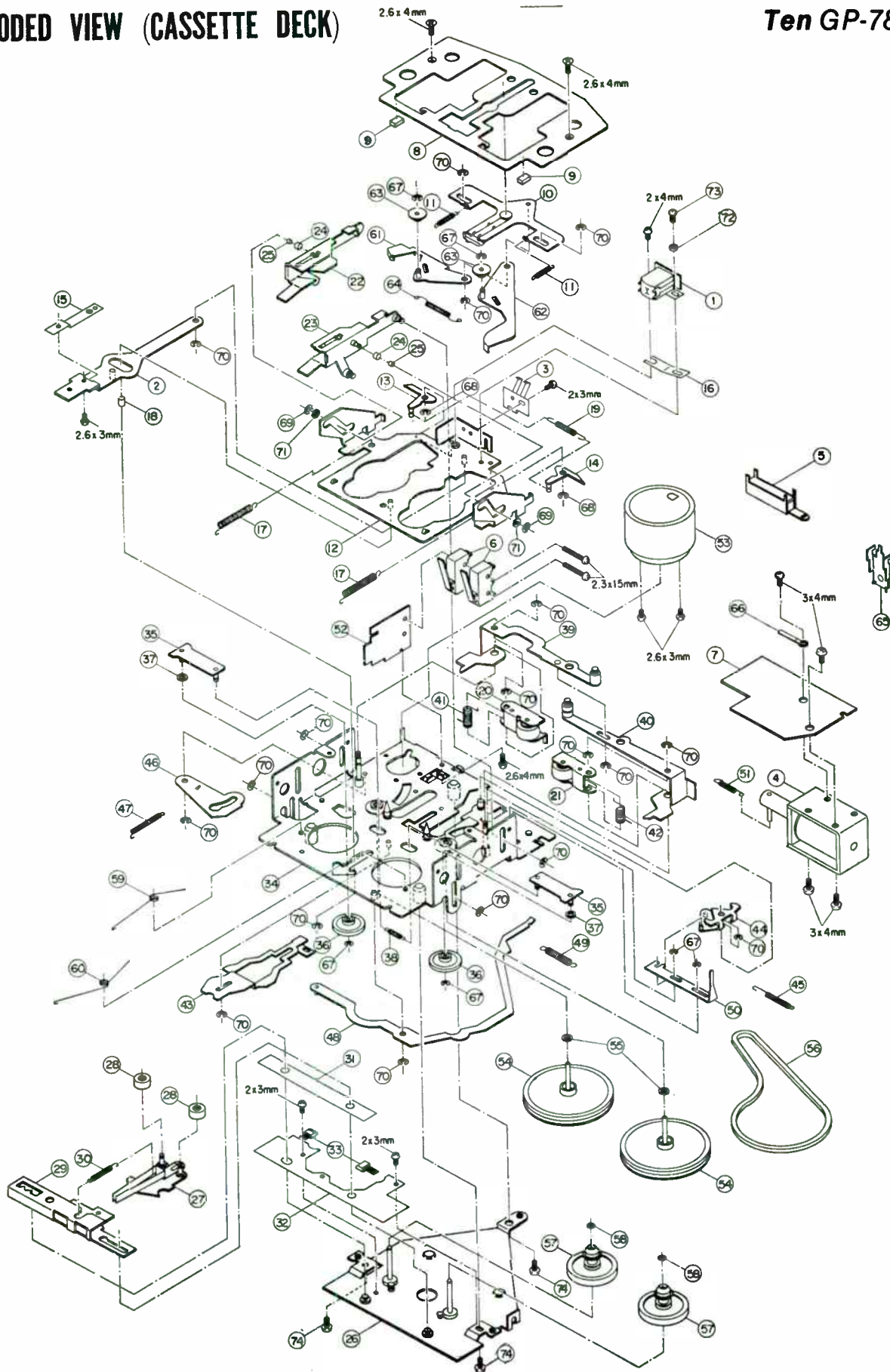


Fig. 12

Illus. No. (Fig. 12)	Stock No.	Description	Q'ty
1	RN-EHM-C44-33	Playback head (A ₁)	1
2	RN-MUL-213A	Lever	1
3	RN-MSP-135	Spring	1
4	RN-MKT-3	Solenoid assembly (E ₁)	1
5	RN-ESS-22-135	Slide switch, program changing (S ₁)	1
6	RN-ESM-109	Micro switch, C.S./C.R. selector (S _{4, 5})	2
7	RN-MPC-113A	PC board, AUTO REVERSE CONTROL unit	1
8	RN-MYT-84B	Top plate	1
9	RN-MSE-161	Cushion	2
10	RN-MKI-9	Slide plate assembly	1
11	RN-MSC-254	Spring	2
12	RN-MYT-85A	Sub-chassis	1
13	RN-MUL-214	Lever, left	1
14	RN-MUL-215	Lever, right	1
15	RN-MSP-136	Spring	1
16	RN-MSP-141	Spring	1
17	RN-MSC-285	Spring	2
18	RN-MST-130	Spacer	1
19	RN-MSC-259	Spring	1
20	RN-MKR-8	Pinchroller assembly, left	1
21	RN-MKR-9	Pinchroller assembly, right	1
22	RN-MKI-7	Cassette loading mechanism, left	1
23	RN-MKI-8	Cassette loading mechanism, right	1
24	RN-MST-128	Spacer	2
25	RN-MST-129	Spacer	2
26	RN-MYT-86A	Bottom plate	1
27	RN-MKA-6A	Lever assembly	1
28	RN-MRP-198A	Roller	2
29	RN-MUL-218A	Holder	1
30	RN-MSC-261	Spring	1
31	RN-MIP-117	Insulator	1
32	RN-MPM-880A	PC board, TAPE END DETECTOR circuit	1
33	RN-EID-DN6838	Digital IC, TAPE END DETECTOR (IC _{11, 12})	2
34	RN-MAS-87A	Main chassis	1
35	RN-MUL-216	Lever	2
36	RN-MRP-197	Roller	2
37	RN-MWP-85	Washer	2
38	RN-MSC-260	Spring	1
39	RN-MUL-210	Lever, left	1
40	RN-MUL-211	Lever, right	1
41	RN-MSC-257	Spring, left	1
42	RN-MSC-258	Spring, right	1
43	RN-MUL-220	Lever	1
44	RN-MUL-219	Lever	1
45	RN-MSC-262	Spring	1

	Stock No.	Description	Q'ty
46	RN-MUL-225	Lever	1
47	RN-MSC-266	Spring	1
48	RN-MUL-221	Lever	1
49	RN-MSC-265A	Spring	1
50	RN-MUL-222	Lever	1
51	RN-MSC-264	Spring	1
52	RN-MHL-183	Plate	1
53	RN-EDM-35	DC motor (M ₁)	1
54	RN-MUF-26A	Flywheel with capstan	2
55	RN-MWP-85	Washer	2
56	RN-MUB-31	Belt	1
57	RN-MKS-14A	Slip mechanism	2
58	RN-MWP-80A	Washer	2
59	RN-MSC-267	Spring, left	1
60	RN-MSC-268	Spring, right	1
61	RN-MUL-235	Lever, left	1
62	RN-MUL-236	Lever, right	1
63	RN-MRP-204	Roller	2
64	RN-MSC-276	Spring	1
65	RN-MRU-86	Radiator, Q ₄	1
66	RN-MCF-17	Clamp	1
67	F6-ER-1.5	E-type ring, 1.5mm	6
68	F6-ER-2	E-type ring, 2mm	2
69	RN-MHJ-2	E-type ring, 1.5mm	2
70	RN-MHJ-3	E-type ring, 2mm	18
71	RN-MWS-110	Washer	2
72	RN-MST-133	Cushion	1
73	RN-MET-232	Special screw	1
74	RN-MET-238	Special screw	3
	F6-SBD-2×3S	Screw, 2×3mm	3
	F6-SBD-2×4S	Screw, 2×4mm	1
	F6-SBD-2.3×15S	Screw, 2.3×15mm	2
	F6-SBD-2.6×3S	Screw, 2.6×3mm	6
	F6-SBD-2.6×4S	Screw, 2.6×4mm	1
	F6-SBD-3×4S	Screw, 3×4mm	4
	F6-SSA-2.6×4S	Screw, 2.6×4mm	2
	F6-SSA-2.6×6S	Screw, 2.6×6mm	1

REPLACEMENT PARTS LIST

Symbol No.	Stock No.	Description		
CAPACITORS				
C 1	RN-ECC-DSL240 J Y	24 pF	50V	ceramic
C 2	RN-ECC-DSL150 J Y	15 pF	"	"
C 3, 4, 5, 17 43, 45, 49, 59 62, 157	RN-ECB-DOX103E	.01 μ F	"	"
C 6, 7	RN-ECE-MR47V50	.47 μ F	"	electrolytic
C 8, 28, 35, 47 48, 123, 124 126, 126, 161	RN-ECE-M1R0V50	1 μ F	"	"
C 9, 10, 13, 61 65, 108, 109 112, 113	RN-ECB-DOX473E	.047 μ F	50V	ceramic
C 11, 12, 149	RN-ECB-DOX223E	.022 μ F	"	"
C 14, 34, 42	RN-ECE-M221V16-5	220 μ F	16V	electrolytic
C 15	RN-ECG-DAS471 J	470 pF	50V	ceramic
C 16, 41, 52, 71 72, 77, 78 110, 111, 118 119, 150	RN-ECE-M4R7V25	4.7 μ F	25V	electrolytic
C 18, 20, 21, 22	RN-ECK-DB331K Y	330 pF	50V	ceramic
C 19, 73, 74, 131 132, 133, 134	RN-ECE-M101V10-4	100 μ F	10V	electrolytic
C 23	RN-ECC-DSL050 C Y	5 pF	50V	ceramic
C 24, 25	RN-ECK-DB681K Y	680 pF	"	"
C 26, 31, 57, 91 92, 152, 153 154, 155	RN-ECK-DB102K Y	1000 pF	"	"
C 27	RN-ECC-DSL680 J Y	68 pF	50V	ceramic
C 29	RN-ECB-DOX682E	.0068 μ F	"	"
C 30, 32	RN-ECK-DB561K Y	560 pF	"	"
C 33, 35, 50, 127 128, 129, 130	RN-ECK-DB222K Y	.0022 μ F	"	"
C 37	CQ09S-1H-470R0-K05A	470 pF	"	styrol
C 38	RN-ECB-DBC503B	.05 μ F	12V	ceramic
C 39	CA15E-1A-R4700-X07A	.47 μ F	50V	alox
C 40	CA15E-1C-R2200-X07A	.22 μ F	"	"
C 44, 46, 66	RN-ECF-R153V50	.015 μ F	"	mylar
C 63	RN-ECC-DSL121 J Y-1	120 pF	"	ceramic
C 54	RN-ECG-DAS102 J	.001 μ F	50V	ceramic
C 55	RN-ECF-R104V50	.1 μ F	"	mylar
C 56	RN-ECC-DTH201 J Y	200 pF	"	ceramic
C 58	RN-ECC-DSL020 C Y	2 pF	"	"
C 60, 161	RN-ECC-DSL201 J Y	200 pF	"	"
C 61	RN-ECC-DSL060 D Y	6 pF	50V	ceramic
C 63	RN-ECE-M220V16-1	22 μ F	16V	electrolytic
C 64, 159	RN-ECE-M101V16-4	100 μ F	"	"
C 67	RN-ECF-R103V50	.01 μ F	50V	mylar
C 68, 106, 107 114, 115	RN-ECB-DOX472E	.0047 μ F	"	ceramic
C 69, 70, 116 117	RN-ECK-DB221K Y	220 pF	50V	ceramic
C 75, 76	RN-ECF-R223V50- J	.022 μ F	"	5% mylar
C 79, 80	RN-ECY-M1R0V16-M1	1 μ F	16V	electrolytic
C 81, 82	RN-ECK-DB471K Y	470 pF	50V	ceramic
C 83, 84	RN-ECF-R473V50- J	.047 μ F	"	5% mylar

Symbol No.	Stock No.	Description			
C _{85, 86}	RN-ECY-MR33V16-M1	.33 μ F	16V		tantalum
C _{87, 88}	RN-ECY-MR10V16-M1	.1 μ F	"		"
C _{89, 90, 95, 96} 104, 105	RN-ECY-M100V16-M1	10 μ F	"		"
C _{93, 94}	RN-ECF-R472V50-G	.0047 μ F	50V	2%	mylar
C _{97, 98}	RN-ECF-R273V50-G	.027 μ F	"	"	"
C _{99, 100, 160}	RN-ECE-M221V10-3	220 μ F	10V		electrolytic
C _{101, 102}	RN-ECF-R562V50-G	.0056 μ F	50V	2%	mylar
C _{103, 122}	RN-ECE-M471V16-9	470 μ F	16V		electrolytic
C _{120, 121, 135} 136, 137, 138	RN-ECE-M470V10-4	47 μ F	10V		"
C _{139, 140}	RN-ECE-M222V16-2	2200 μ F	16V		"
C _{141, 142} 143, 144	RN-ECE-M102V10-5	1000 μ F	10V		electrolytic
C _{145, 146} 147, 148	RN-ECF-R154V50	.15 μ F	50V		mylar
C ₁₅₆	RN-ECE-M100V16	10 μ F	16V		electrolytic
C ₁₅₈	RN-ECH-RR68V100	.68 μ F	100V		metalized paper
CV ₄	RN-ECV-B50-21	AM ANT. Trimmer 50 pF			
CV _{5, 6}	RN-ECT-N500-45	RF, OSC. Trimmer 50 pF			
RESISTORS					
R ₁	RN-ERD-AE100 J B	10 ohms	5%	1/4W	carbon
R ₂	RN-ERD-AE331 J B	330 ohms	"	"	"
R ₃	RN-ERD-AE121 J B	120 ohms	"	"	"
R _{4, 57}	RN-ERD-AE221 J B	220 ohms	"	"	"
R _{5, 14, 15, 16}	RN-ERD-AE103 J B	10k ohms	"	"	"
R _{6, 27, 68} 69, 83, 84	RN-ERD-AE154 J B	150k ohms	5%	1/4W	carbon
R _{7, 47, 48}	RN-ERD-AE392 J B	3.9k ohms	"	"	"
R ₈	RN-ERD-AE123 J B	12k ohms	"	"	"
R _{9, 91, 121} 122, 123, 124	RN-ERD-AE680 J B	68 ohms	"	"	"
R _{10, 20, 30}	RN-ERD-AE563 J B	56k ohms	"	"	"
R _{11, 17, 81, 82}	RN-ERD-AE473 J B	47k ohms	5%	1/4W	carbon
R _{12, 44, 62, 63} 113, 114	RN-ERD-AE104 J B	100k ohms	"	"	"
R _{13, 135}	RN-ERC-CF221K	220 ohms	10%	1/2W	solid
R _{18, 36, 37, 43} 56, 73, 74, 51 52	RN-ERD-AE153 J B	15k ohms	5%	1/4W	carbon
R _{19, 42, 88, 109} 110, 125, 128 129, 132, 137	RN-ERD-AE102 J B	1k ohms	"	"	"
R _{21, 22, 46, 49}	RN-ERD-AE222 J B	2.2k ohms	5%	1/4W	carbon
R _{23, 39}	RN-ERD-AE272 J B	2.7k ohms	"	"	"
R _{24, 87}	RN-ERD-AE823 J B	82k ohms	"	"	"
R _{25, 107, 108}	RN-ERD-AE223 J B	22k ohms	"	"	"
R ₂₆	RN-ERD-AE474 J B	470k ohms	"	"	"
R ₂₈	RN-ERD-AE391 J B	390 ohms	5%	1/4W	carbon
R ₂₉	RN-ERD-AE682 J B	6.8k ohms	"	"	"
R _{31, 32, 33, 34} 53, 98, 99, 104 105, 111, 112	RN-ERD-AE472 J B	4.7k ohms	"	"	"
R _{35, 38, 59, 96} 97, 41, 100 101, 102, 103	RN-ERD-AE822 J B	8.2k ohms	"	"	"
R _{40, 64, 65}	RN-ERD-AE820 J B	82 ohms	"	"	"

Symbol No.	Stock No.	Description			
R _{45, 72}	RN-ERD-AE152 J B	1.5k ohms	5%	¼W	carbon
R _{50, 133}	RN-ERD-AE821 J B	820 ohms	"	"	"
R ₅₄	RN-ERD-AE101 J B	100 ohms	"	"	"
R ₅₅	RN-ERD-AE683 J B	68k ohms	"	"	"
R ₅₈	RN-ERC-CF121K	120 ohms	10%	½W	solid
R ₆₁	BN-ERD-AE273 J B	27k ohms	5%	¼W	carbon
R _{65, 67}	RN-ERD-AE393 J B	39k ohms	"	"	"
R _{70, 71, 117} 118, 119, 120	RN-ERD-AE562 J B	5.6k ohms	"	"	"
R _{75, 76, 89, 90}	RN-ERD-AE181 J B	180 ohms	"	"	"
R _{77, 78}	RN-ERD-AE274 J B	270k ohms	"	"	"
R _{79, 80}	RN-ERD-AE204 J B	200k ohms	5%	¼W	carbon
R _{85, 86} 115, 116	RN-ERG-AE332F	3.3k ohms	1%	"	metal film
R _{92, 93, 94, 95}	RN-ERD-AE122 J B	1.2k ohms	5%	"	carbon
R ₁₀₆	RN-ERD-AE471 J B	470 ohms	"	"	"
R _{126, 127} 130, 131	RN-ERD-AE270 J B	27 ohms	"	"	"
R ₁₃₄	RN-ERD-AE101 J B	100 ohms	5%	¼W	carbon
R ₁₃₆	RN-ERC-CF2R2K	2.2 ohms	10%	½W	solid
RV ₁	RN-ERV-0N1-153	10k ohms			variable resistor
RV _{2, 3}	RN-ERV-0N1-112	DOLBY LEVEL ADJ. VOL. : 10k ohms			"
RV _{4, 5, S3}	RN-ERV-2P2-157	TREBLE : 50k ohms Push PROGRAM switch			"
RV _{6, 7, 8} 9, 10, 11	RN-ERV-2R4-1	VOLUME : 10k ohms FADER : 10k ohms BASS : 50k ohms			variable resistor
S ₇		POWER SUPPLY switch			"
RV ₁₂	RN-ERV-9N1-120	BALANCE : 20k ohms			"
SEMICONDUCTORS					
IC ₁	RN-EIC-HA1137W	FM IF amp. and QUADRATURE DET., linear-monolithic			
IC ₂	RN-EIC-LA2100	FM NOISE BLANKER, linear-monolithic			
IC ₃	RN-EIC-SN76115N-S	FM MPX. DECODER, linear-monolithic			
IC ₄	RN-EIC-HA1199	AM RF, IF, CONV and DET., linear-monolithic			
IC ₅	RN-EIC-M51521L	EQUALIZER-AMPLIFIER, linear-monolithic			
IC _{6, 7}	RN-EIC-NE646BN	DOLBY PROCESSOR, linear-monolithic			
IC _{8, 9}	RN-EIC-M51515L	POWER AMPLIFIER, linear-monolithic			
IC ₁₀	RN-EID-AN6250	AUTO REVERSE control, degital			
IC _{11, 12}	RN-EID-DN6838	TAPE END DETECTOR, degital			
Q _{1, 2, 3}	RN-EVS-2SC828-QR	Silicon transistor, pre. amplifier			
Q ₄	RN-EVS-2SC2361-QP	Silicon transistor, switching			
D _{1, 8}	RN-EDS-1S1885	Silicon diode			
D ₂	RN-EDT-RD8R2E-B	Zener diode, 8.2V regulator			
D _{3, 4, 5} 6, 7	RN-EDS-1S1555	Silicon diode			
D ₉	RN-EDP-LN-210RP	Light Emitting Diode, FM STEREO indicator			
D _{10, 11}	RN-EDP-LN312GP	Light Emitting Diode, TAPE RAN indicator			
CERAMIC FILTERS, TRANSFORMERS & COILS					
T ₂	RN-ETF-138	Transformer, QUADRATURE DET. 10.7 MHz			
T ₃	RN-ETH-210	Transformer, AM OSC.			
T _{4, 5}	RN-ETA-148	Transformer, AM IFT 455 kHz			
T _{6, 7}	RN-ETA-129	Transformer, AM IFT 455 kHz			
CF _{1, 2}	RN-ECF-F2-112	Ceramic filter, FM IF 10.7 MHz			

Symbol No.	Stock No.	Description
L 4	RN-ELH-B6R2-2	Choke, 6.2 μ H
L 8	RN-ELH-C4R7-1	Choke, 4.7 μ H
L 9, 11	RN-ELH-C6R2	Choke, filter 6.2 μ H
L 10	RN-ELH-C220-1/F0	Choke, 22 μ H
L 12, 13	RN-ELL-320	Choke, filter 1.8 mH
L 14, 16	RN-ELH-BR74	Choke, filter .74 μ H
L 15	RN-ELL-321	Choke, filter .85 μ H
TUNER COMPONENT		
μ	RN-ETB-2R-129	Pushbutton μ tuner assembly, (assembly of following four parts) FM FRONT END assembly, AM coil assembly, Gear, 42 in Fig. 11 Button, 41 in Fig. 11
	RN-ETR-Z-128	
L 5, 6, 7	RN-ETR-L-175	
	RN-ETR-G-505	
	RN-ETR-J-187	
MISCELLANEOUS ELECTRICAL		
S 2, 3	RN-ESB-2L2-144	Push switch, LOCAL/DX selector switch DOLBY NR switch IN/OUT
S 6	RN-ESS-22-135	Slide switch, AM/FM SELECTOR switch
P 1, 6	RN-EJU-S05V-346	5P connector
P 2	RN-EJU-S04V-345	4P connector
P 3	RN-EJU-S08V-349	8P connector
P 4	RN-EJU-S09V-350	9P connector
P 5	RN-EJU-S03V-344	3P connector
P 7	RN-EJU-S07V-348	7P connector
P 8 (J 6)	RN-EWJ-956	6P-DIN connector, AUDIO OUTPUT
P 11 (P 9, 10 J 8, 9)	RN-EWJ-955	Terminal and lead assy., 9P POWER SUPPLY, ILLUM, AUTO ANTENNA(+B) SPEAKER CONNECTOR
J 1	RN-EWJ-1004	Terminal and lead assy., 5P
J 2	RN-EWJ-1003	Terminal and lead assy., 4P from AM/FM selector switch
J 3	RN-EWJ-1010	Terminal and lead assy., 8P from AUTO REVERSE circuit
J 4	RN-EWJ-1006	Terminal and lead assy., 9P from VOLUME CONTROL circuit
J 5	RN-EWJ-1008	Terminal and lead assy., 3P from BALANCE CONTROL circuit
J 7	RN-EWJ-1009	Terminal and lead assy., 7P from TREBLE CONTROL volume
J 10	RN-EJL-145	Receptacle, antenna
PL 1, 2	RN-EPL-74-8	Lamp
	RN-EWJ-1007	Wiring
	RN-EWJ-1005	Wiring
	RN-EWJ-1014	Wiring

Illus. No. (Fig. 11)	Stock No.	Description	Q'ty
MECHANICAL			
	RN-MFP-138	Nose piece (includes dialplate)	1
	RN-MAD-239	Chassis, front	1
	RN-MAD-240	Chassis, left	1
	RN-MAD-241	Chassis, bottom	1
	RN-MAD-242	Chassis, top	1
	RN-MAD-243	Chassis, right	1
	RN-MSS-15	Switch mechanism, for ill. S ₆	1
	RN-MHE-604	Holder, PC board (MPM-866) mounting	1
	RN-MHE-606	Holder, D ₉ (FM MPX indicator)	1
	RN-MHE-607	Holder, PC board (MPC-101A) mounting	1
	RN-MHL-185	Holder, tuner mounting	1
	RN-MRU-85	Radiator, IC _{8,9}	1
	RN-MSB-163	Shield plate, line filter	1
	RN-MHF-101	Holder, IC _{8,9} mounting	2
	RN-MSI-199	Shaft, for ill. 17	1
	RN-MSC-237A	Spring, for ill. 17	1
	RN-MCV-245A	Cover	1
	RN-MSE-166A	Spacer, for ill. 17	2
	RN-MBP-27A	Backplate	1
	RN-MLF-75	Filter, (GRN) for ill. PL _{1,2}	2
	RN-MIB-69	Pointer, dialplate	1
	RN-MSI-207	Shaft	1
	RN-MCE-134A	Clamp, P ₁₁	1
	RN-MCC-54	Clamp, J ₁₀ antenna receptacle	1
	RN-MYB-225	Button, LOCAL/DX SELECTOR switch DOLBY NR switch	2
	RN-MYB-226	Button, fastforward, rewind and eject	1
	RN-MYB-227	Button, AM/FM selector switch	1
	RN-MYB-228	Button, BALANCE	1
	RN-MLC-141	Spacer, for ill. BALANCE VOLUME	1
	RN-MWS-114	Washer, shaft spacing lock (both side)	2
	RN-MWS-132	Washer	2
	RN-MPC-101A	PC board, FM IF, DET. and MPX DECODER AM RF, IF, CONV and DET.	1
	RN-MPC-102A	PC board, POWER AMPLIFIER unit	1
	RN-MPC-103A	PC board, PRE. AMPLIFIER unit (incls. equalizer amplifier DOLBY PROCESSOR TONE CONTROL circuit)	1
	RN-MPC-122	PC board, VOLUME CONTROL UNIT (incls. VOLUME, FADER, BASS and POWER SUPPLY switch)	1
	RN-MPC-123	PC board, ANT. trimmer	1
	RN-MPC-124	PC board, AM/FM SELECTOR switch	1
	RN-MPM-866	PC board, DOLBY NR switch LOCAL/DX SELECTOR switch TAPE RAN, POWER indicator	1
	RN-MSN-17	Nut, 9mm tuning and volume shaft mounting	2
	RN-MWS-88	Washer, 9mm tuning and volume shaft mounting	2
	F6-SBD-2×3S	Screw, 2×3mm	2
	F6-SBD-2.6×4S	Screw, 2.6×4mm	4
	F6-SBD-3×4S	Screw, 3×4mm	4
	F6-SBD-3×6S	Screw, 3×6mm	31
	F6-SBD-3×10S	Screw, 3×10mm	2
	F6-SSA-3×10S	Screw, 3×10mm	4

ELECTRICAL ADJUSTMENT

1. AM. Alignment

Adjustment	Equipment Connection	Step No.	Generator Frequency	Tuning	Location to be Adjustment
IF	<ul style="list-style-type: none"> ● AM Signal generator ● Sweep/maker generator ● Oscilloscope ● V.T.V.M. ● Dummy Antenna ● Load resistance ● Connect measuring instruments as shown in Fig. 1 and Fig. 2. 	1	455 kHz (Mod.)		AM, IFT-3, 4, 5 Adjust for maximum (See Fig 1)
		2	Repeat Steps to obtain Maximum Output		
MW Band		3	520 kHz (Mod.)	520 kHz	Set generator frequency to 520 kHz with L-4(MW oscillator coil) (See Fig 2)
		4	1620 kHz (Mod.)	1620 kHz	Set generator frequency to 1620 kHz with TC-3 (Trimmer condenser)
		5	Repeat Steps 3 and 4 two or three times to adjust f. cover.		
MW Tracking		6	1400 kHz (Mod.)	1400 kHz	Adjust TC-2 (Trimmer condenser) maximum sensitivity
		7	1400 kHz (Mod.)	1400 kHz	Adjust TC-1 (Trimmer condenser) so as to obtain maximum sensitivity
		8	Repeat Steps 6 and 7 two or three times to obtain maximum sensitivity.		

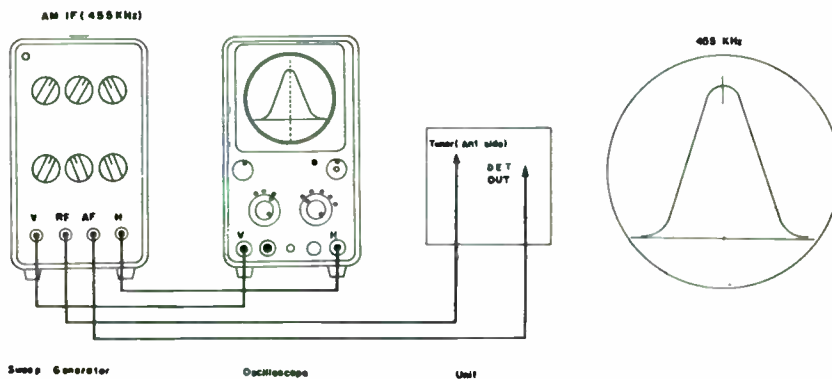


Fig. 1

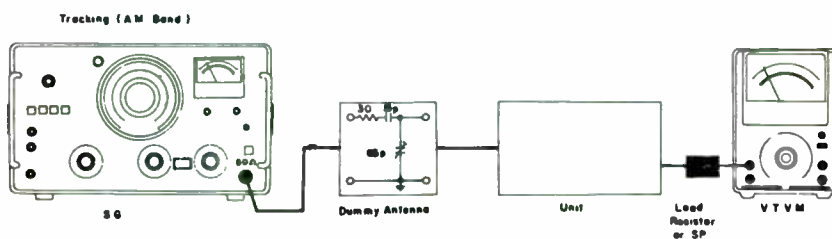
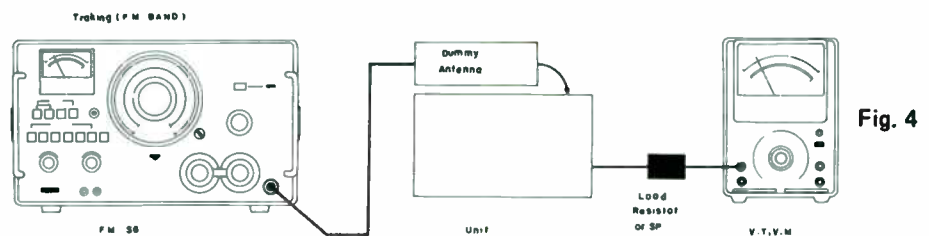
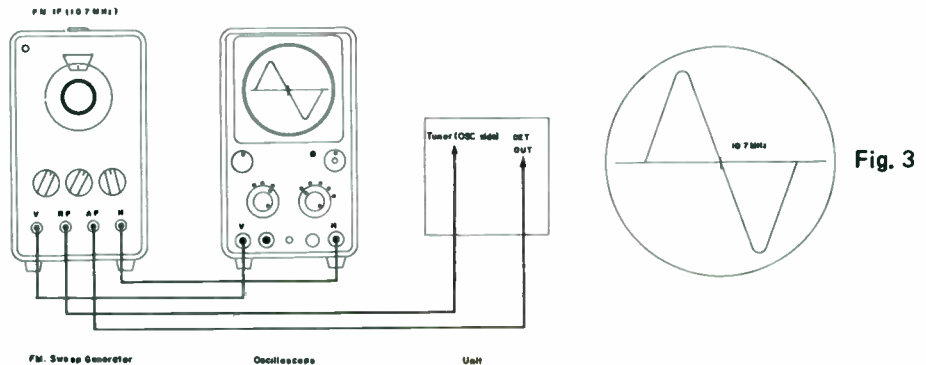


Fig. 2

2. FM. Alignment

Adjustment	Equipment Connection	Step No.	Generator Frequency	Tuning	Location to be Adjustment
IF	<ul style="list-style-type: none"> ● FM Signal generator ● FM Sweep/maker generator 	1	10.7 MHz (Mod.)		FM. IFT-1,2. adjust for symmetric "S" curve (Make should appear in the middle of "S" curve) (See Fig. 3)
		2	Repeat Steps to obtain Maximum Output.		
FM Band	<ul style="list-style-type: none"> ● Oscilloscope ● V.T.V.M. ● Dummy antenna 	3	87 MHz (Mod.)	87 MHz	Set generator frequency to 87 MHz with FM OSC Trimmer (See Fig. 4.)
		4	109 MHz (Mod.)	109 MHz	Set generator frequency to 109 MHz Confirm 109 MHz
		5	Repeat Steps 3 and 4 two or three times to adjust f. cover.		
FM Tracking	<ul style="list-style-type: none"> ● Load resistance ● Connect measuring instruments as shown in Fig. 3 and Fig. 4. 	6	90 MHz (Mod.)	90 MHz	Adjust spacing of RF Trimmer condenser to obtain maximum sensitivity.
		7	106 MHz (Mod.)	106 MHz	Adjust Ant. Trimmer condenser to obtain maximum sensitivity.
		8	Repeat Steps 6 and 7 two or three times to obtain maximum sensitivity.		

- Set the internal modulation signal generator to 30%, 400 Hz of each.
- Connect a V.T.V.M. or a circuit testor to the voice coil.
- Use only nonmetallic alignment tools to insure proper alignment.



3. FM MPX Adjustment

FM MPX circuit uses PLL IC, thus adjustments are very easy.

- Connect test instruments as shown in Fig. 5.
- Set signal generator frequency to 98 MHz.
- Set stereo signal generator to 90% main signal and 10% pilot signal.

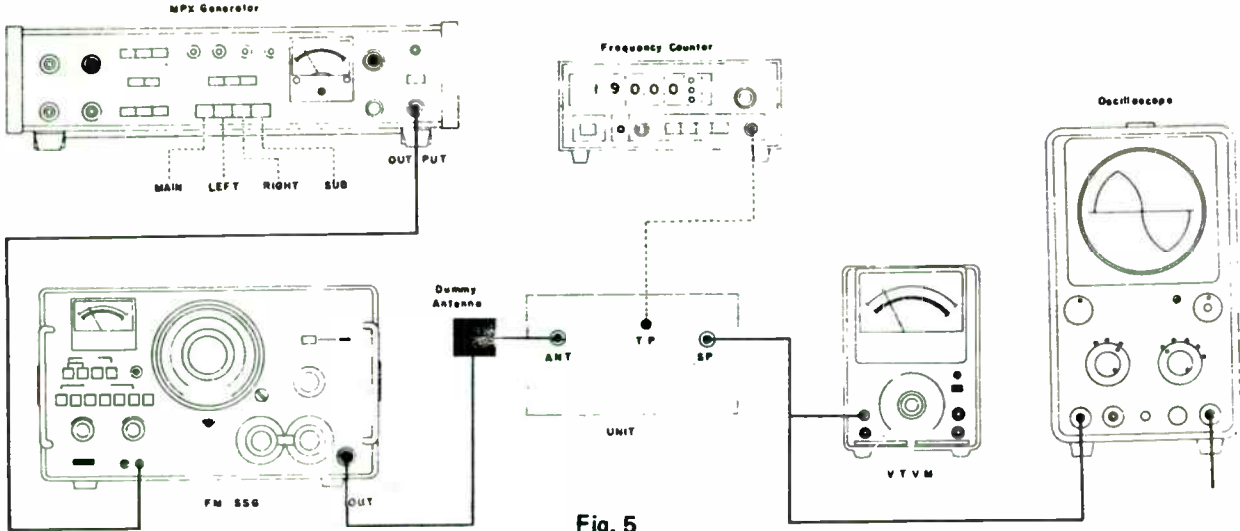


Fig. 5

Procedures

1. Connect frequency counter between TP (#10) and earth. Adjust R12 for a reading of 19 kHz on the counter (be sure to set signal generator to "0" and short the input by grounding C10). See Fig. 6.

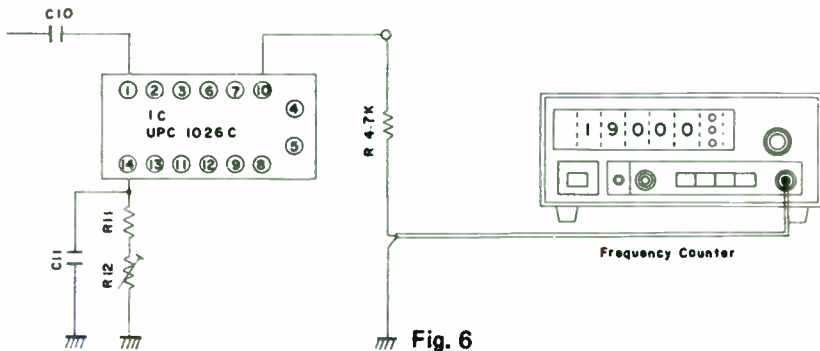
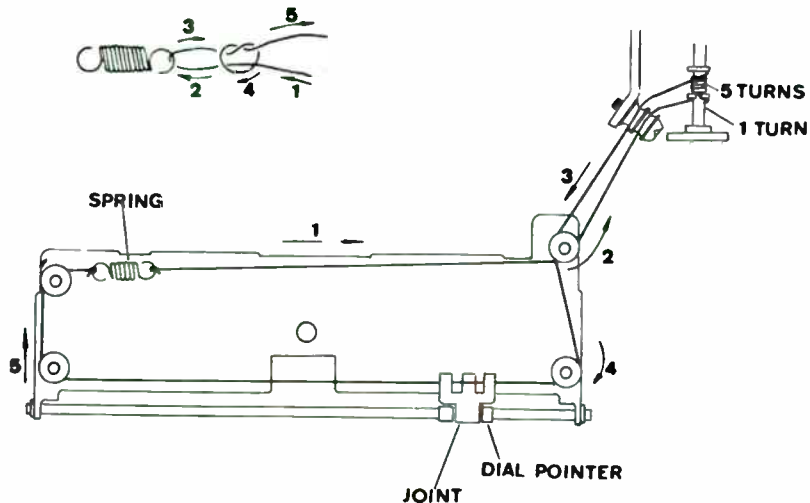
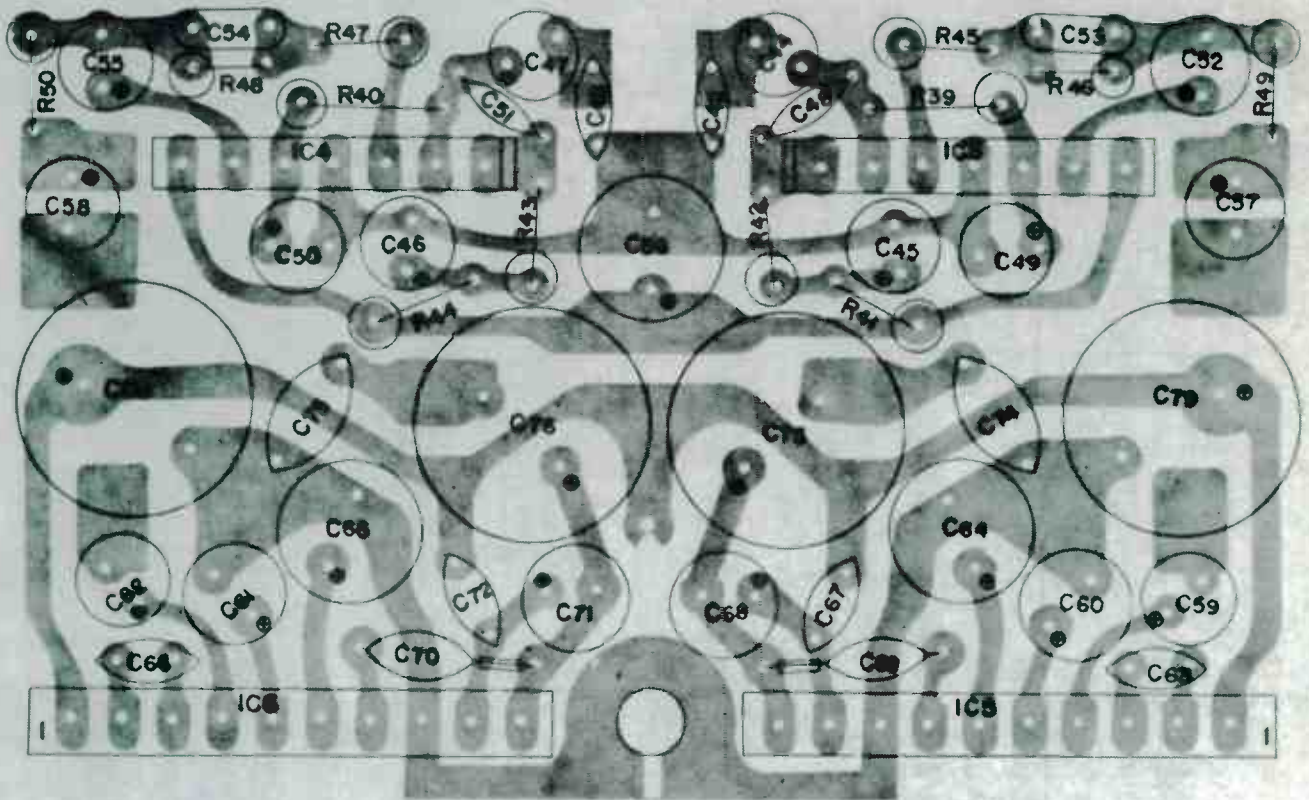


Fig. 6

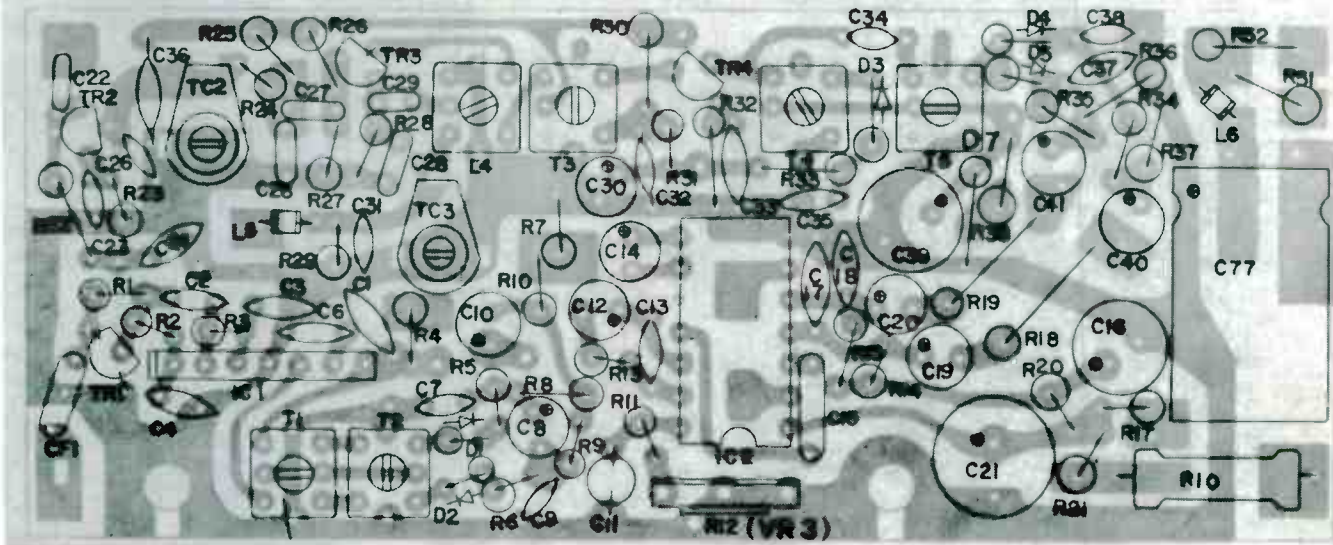
DIAL CORD STRINGING VIEW

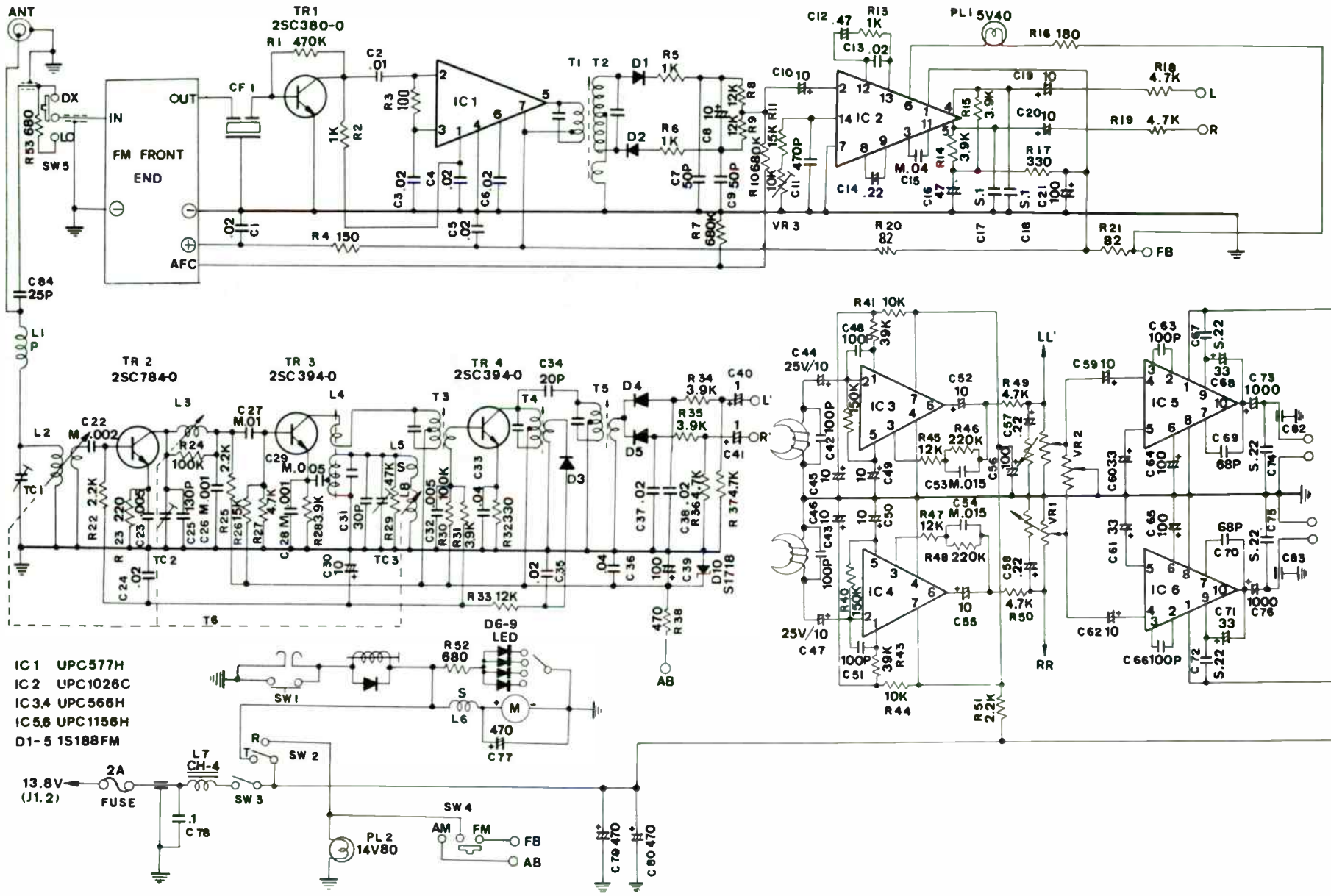


WIRING BOARD LAYOUT



WIRING BOARD LAYOUT





IC1 UPC577H
 IC2 UPC1026C
 IC3,4 UPC566H
 IC5,6 UPC1156H
 D1-5 1S188FM

Truetone MCC7810A77
 (23-7810-7)

PARTS LIST

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
RESISTORS			CONTROLS		
All resistors are carbon type, ¼ watt. Refer to schematic for specific values.			65-162037		Control, Balance
			65-160076		Control, Volume/Tone
CAPACITORS			SWITCHES		
Capacitors not shown on this parts list are ceramic disc type, 50 volt. Refer to schematic for specific values.			SW4,5,11	65-183084	Switch, Slide
			SW2	65-183085	Switch, Leaf
POLYSTYROL			PC BOARDS, (With Components)		
C11	03-009065	470PF, 50V	65-075002		Board, PC, AM/FM
			65-075003		Board, PC, Amplifier
FEED THROUGH			INTEGRATED CIRCUITS		
C81,82, 83	65-130025	1000PF, 500V MYLAR	IC1	02-300577	UPC - 577H
			IC2	02-301026	UPC - 1026C
			IC3,4	02-300566	UPC - 566H
			IC5,6	02-301156	UPC - 1156H
C22	03-000235	.002UF, 50V	DIODES		
C15	03-000290	.04UF, 50V	IS188FM		
C26,28	03-000210	.001UF, 50V	D1,2,3,		GL31AR
C27	03-000205	.01UF, 50V	4,5	05-180188	S1718
C29	03-000325	.005UF, 50V	D6,8,9	05-130031	
C53,54	03-000335	.015UF, 50V	D7	05-571718	
C78	03-000200	.1UF, 50V	TRANSISTORS		
ELECTROLYTIC			TR1	01-030380	2SC380
C8,10,19, 20,30,45, 46,49,50, 52,55,59, 62	00-132115	10UF, 16V	TR2	01-030784	2SC784
C12	00-132565	.47UF, 16V	TR3,4	01-030394	2SC394
C14,57, 58	00-132250	.22UF, 16V	MECHANICAL & CASE PARTS		
C16	00-132630	.47UF, 16V	65-159099		Socket, Lamp
C39,64, 65	00-132165	100UF, 10V	65-157136		Grommet, Rubber (Lamp Holder)
C40,41	00-132035	1UF, 16V	65-158411		Bracket, Lamp
C44,47	00-132120	10UF, 25V	65-158412		Bracket, Switch
C56	00-132175	1000UF, 16V	65-156296		Shaft, Door
C60,61, 68,71	00-132510	33UF, 16V	65-075001		Deck, Tape, Assy.
C73,76	00-132195	1000UF, 10V	65-150182		Plate, Dial Back
C77,79,80	00-132675	470UF, 16V	65-158413		Clip, Dial Pointer
TRIMMER CAPACITORS			65-150182		Pointer, Dial
TC1,2,3	65-123056	Capacitor, Trimmer	65-152347		Spring
CERAMIC FILTER			65-150183		Plate, Dial Scale Background
CF1	65-179029	Filter, Ceramic	65-020307		Door, Cassette
COILS & TRANSFORMERS			65-151441		Bar, Switch
(L7) 33	65-178080	Transformer, Choke	65-152348		Spring, Switch Knob
L1	65-176084	Coil, RF, P Type	65-010086		Escutcheon, Case Front
L4	65-170042	Coil, AM Oscillator	65-020308		Plate, Name
L5,6	65-176085	Coil, RF, SG Type	65-115041		Button, Switch
T1	65-090143	IFT, FM	MISCELLANEOUS		
T2	65-090144	IFT, FM	65-201082		Lamp, Pilot
T3	65-090145	IFT, AM	65-078042		Tuner, Assy. (T6)
T4,5	65-090146	IFT, AM	65-201083		Lamp, Assy., Channel Indicator
			65-190037		Motor
			65-198045		Belt
			65-199205		Flywheel
			65-193034		Head, Playback
			65-105032		Solenoid
			65-156300		Gear, Headshift Sprocket

AUTOMATIC-CONT

Table listing car models and their corresponding radio frequencies for the AUTOMATIC-CONT section.

AUTOMATIC (CONT.)

Table listing car models and their corresponding radio frequencies for the AUTOMATIC (CONT.) section.

AUTOMATIC (CONT.)

Table listing car models and their corresponding radio frequencies for the AUTOMATIC (CONT.) section.

AUTOMATIC (CONT.)

Table listing car models and their corresponding radio frequencies for the AUTOMATIC (CONT.) section.

CARTAGE-CONT

Table listing car models and their corresponding radio frequencies for the CARTAGE-CONT section.

CHRYSLER-CONT

Table listing car models and their corresponding radio frequencies for the CHRYSLER-CONT section.

CHRYSLER-CONT

1501508 (1PF 1121)... AR-156
1501508 (1PF 1206H1972 Fury)... AR-131
1501521... AR-159
1501522 (2PD1 106)... AR-157

CLARICON

JC701 (RE 1661)... AR-240
JC701 (PE 6201)... AR-239
PA41A... AR-170
PE606B... AR-201
PE618A... AR-244

CORRA

45XLR... AR-248

COMET

(See Ford)

CONTINENTAL

(For Auto Radio See Ford)

CORTINA

(See Ford)

CORVAIR

(See General Motors)

CORVETTE

(See General Motors)

COUGAR

(See Ford)

CRAC

5600... AR-268
5601... AR-274
5603 A... AR-270

CRAWWOOD

TC771... AR-212
TC95MPX (See Pg. 47)... AR-184
TC707MPX... AR-211

CROWN

SC1500/1800... AR-107

DART

(See Chrysler)

DELCO

(See General Motors)

DESOTO

(See Chrysler)

DOODGE

(See Chrysler)

DOLPHIN

#DF MB8R (Sim. to Pg. 81)... AR-104

DYNATRONICS

S401... AR-95
SR08... AR-79
SR48... AR-91

EDELSE

(See Ford)

FALCON

(See Ford)

FO-MO-CD

(See Ford)

FORD

BBAF19A171AA (Sim. to Pg. 17)... AR-171
C7VF 19A180AB... AR-251
CRVY18R05B5... AR-87

FORD-CONT

D4RJ19A241AA... AR-182
D4T18R06AA... AR-170
D4T18R06AA... AR-170
D4U18R06AA... AR-170

FORD-CONT

DD0A19A241... AR-79
DDA18R06... AR-83
DDA18R06... AR-83
DDA18R06... AR-83

FORD-CONT

5PN250H (Sim. to Pg. 79)... AR-179
5PN251... AR-200
5A D6D0A19A171... AR-226

GENERAL MOTORS-CONT

#HT411... AR-78
#HT411... AR-78
#HT412... AR-87

GENERAL MOTORS-CONT

Table listing car models and years for General Motors, including Buick, Oldsmobile, and Pontiac divisions.

GENERAL MOTORS-CONT

Table listing car models and years for General Motors, including Buick, Oldsmobile, and Pontiac divisions.

GENERAL MOTORS-CONT

Table listing car models and years for General Motors, including Buick, Oldsmobile, and Pontiac divisions.

INTERNATIONAL-CONT

Table listing car models and years for International Harvester.

LEARJET-CONT

Table listing car models and years for Learjet.

MOTOROLA-CONT

Table listing car models and years for Motorola.

PANASONIC-CONT		PORSCHÉ-CONT		REALISTIC (CONT.)		SONY (CONT.)		TRIUMPH		VOLKSWAGEN-CONT	
CR501E UA	AR-150	1VW4412	AR-201	14 85R	AR-146	TC 10A	AR-164	#B. HTR, BTRA/IBTR	AR-110	#Sapphire XI	AR-80
CR514E U	AR-140	1VW419	AR-191	14 871	AR-130	TC 14	AR-268	2BF MI (See Page 5)	AR-129	Sapphire XII	AR-84
CR515E U	AR-139	2VW1127 (Sapphire XVIII)	AR-155	14 876	AR-134	STEREOSONIC	AR-163	#H MI (See Page 5)	AR-129	Sapphire XVII	AR-118
CR565E U	AR-167	5VW1127 (Sapphire XVIII)	AR-155	14 878	AR-129	4995	AR-211	9F BTONE	AR-113	Sapphire XVIII	AR-192
CR675E U/58E U	AR-217	5VW1419	AR-155	14 879	AR-129	501S	AR-164	TRUETONE	AR-76	Sapphire XXV	AR-181
CR700E U	AR-139	5VW1601	AR-192	14 896	AR-129	502S	AR-199	1VW20Sapphire (XII)	AR-80	Sapphire XXV	AR-181
CR701E U	AR-166	5VW2195	AR-181	14 898	AR-144	504S	AR-164	1VW1419	AR-192	#1VW110	AR-80
CR714E U	AR-174	5VW401	AR-193	14 899	AR-140	505	AR-203	1VW2109 (Sapphire XIV)(1971)	AR-130	1VW2111 (Sapphire XIV)(1971)	AR-130
CR1515E U	AR-235	5VW408	AR-201	RENAULT	AR-131	719S (See Pg. 5)	AR-165	4C4060 (MIC4060A 07)	AR-93	Fastback, Squareback	AR-130
CR1657E U/58E U/59E U	AR-242	5VW4109 (Sapphire XXI)	AR-179	F85MXD (5568 00)	AR-118	790S	AR-164	4C4060 (IME D4060A 47)	AR-160	1VW2121 (Sapphire XIX)	AR-154
CR1714E U	AR-234	5VW4412	AR-201	F85MXD (5568 00)	AR-118	791S	AR-160	DC4060H	AR-100	1VW2121 (Sapphire XIX)	AR-154
CR2702E U/1E U/4E U	AR-270	5VW4419	AR-191	F85MXD (5568 00)	AR-118	STUOEBAKER	AR-106	DC5056	AR-71	1VW2145	AR-181
CR2701E U/1E U/4E U/515E C E U	AR-281	RANGER	AR-86	F85MXD (5568 00)	AR-118	#19BF MI (Sim to Pg. 81)	AR-106	DC5554	AR-183	1VW2427	AR-199
CX111E U	AR-143	R12293	AR-86	F85MXD (5568 00)	AR-118	SUPERSCOPE	AR-253	DC5560	AR-184	1VW401	AR-193
CX125E U/26E U	AR-151	R62MPX0/21/4) A00000	AR-74	F85MXD (5568 00)	AR-118	CA70	AR-253	DC5640	AR-185	1VW4112	AR-124
CX151E U	AR-111	R711	AR-111	F85MXD (5568 00)	AR-118	TECHNICS	AR-136	DC5640	AR-185	1VW4109 (Sapphire XXI)	AR-179
CX185E U	AR-177	R100CO	AR-75	F85MXD (5568 00)	AR-118	RS271US	AR-136	DC5640	AR-185	1VW4112	AR-179
CX187E U	AR-183	R102CO	AR-147	F85MXD (5568 00)	AR-118	TEM	AR-271	DC5640	AR-185	1VW4112	AR-179
CX268E U (Sim to Pg. 95)	AR-172	R104	AR-75	F85MXD (5568 00)	AR-118	AT1700 I	AR-271	DC5640	AR-185	1VW4112	AR-179
CX601E U (PC HAR 176)	AR-144	R201M	AR-142	F85MXD (5568 00)	AR-118	AT7801 I	AR-273	DC5640	AR-185	2BG	AR-102
CR675E U	AR-181	RR21M (IC Version)	AR-217	F85MXD (5568 00)	AR-118	AT7811 I	AR-273	DC5640	AR-185	2B1 (RZBT)	AR-102
CX7775U	AR-99	RR22R	AR-79	F85MXD (5568 00)	AR-118	AT7821 I	AR-274	DC5640	AR-185	2B1 (RZBV)	AR-102
CX810E U	AR-111	RR24PB	AR-105	F85MXD (5568 00)	AR-118	AT7831 I	AR-274	DC5640	AR-185	2VW1116	AR-118
CX880E U	AR-148	RR26M	AR-106	F85MXD (5568 00)	AR-118	DF600 I	AR-274	DC5640	AR-185	2VW1127	AR-150
CX885U	AR-95	01BSA99	AR-72	F85MXD (5568 00)	AR-118	GI 7851 I	AR-281	DC5640	AR-185	2VW2109 (Sapphire XV)	AR-135
270H U/41 U	AR-270	RR12/14) 15MPX	AR-72	F85MXD (5568 00)	AR-118	TENNA	AR-75	DC5640	AR-185	#1VW1116	AR-118
PEUGEOT	AR-129	RR16PH	AR-148	F85MXD (5568 00)	AR-118	R100C/2/4	AR-75	DC5640	AR-185	1VW1116	AR-118
2FG102 (9180Z)	AR-129	RR22T (See Pg. 77)	AR-92	F85MXD (5568 00)	AR-118	RR201M	AR-270	DC5640	AR-185	1VW1116	AR-118
9810Z	AR-129	RR47I	AR-79	F85MXD (5568 00)	AR-118	RR201M	AR-270	DC5640	AR-185	1VW1116	AR-118
PHILCO-FORD	AR-129	RR47I0/2/4	AR-79	F85MXD (5568 00)	AR-118	RR201M	AR-270	DC5640	AR-185	1VW1116	AR-118
(See Ford)	AR-129	RR51T	AR-213	F85MXD (5568 00)	AR-118	RR201M	AR-270	DC5640	AR-185	1VW1116	AR-118
PHILCO-LINCOLN	AR-129	RR54T	AR-220	F85MXD (5568 00)	AR-118	RR201M	AR-270	DC5640	AR-185	1VW1116	AR-118
(See Ford)	AR-129	RR56T	AR-141	F85MXD (5568 00)	AR-118	RR201M	AR-270	DC5640	AR-185	1VW1116	AR-118
PHILCO-MERCURY	AR-129	RR56T0	AR-150	F85MXD (5568 00)	AR-118	RR201M	AR-270	DC5640	AR-185	1VW1116	AR-118
(See Ford)	AR-129	RR69TC	AR-175	F85MXD (5568 00)	AR-118	RR201M	AR-270	DC5640	AR-185	1VW1116	AR-118
PIONEER	AR-220	RR77W	AR-161	F85MXD (5568 00)	AR-118	RR201M	AR-270	DC5640	AR-185	1VW1116	AR-118
GK1500G	AR-220	RR86T	AR-216	F85MXD (5568 00)	AR-118	RR201M	AR-270	DC5640	AR-185	1VW1116	AR-118
GK2070G	AR-218	RR91MPX	AR-217	F85MXD (5568 00)	AR-118	RR201M	AR-270	DC5640	AR-185	1VW1116	AR-118
GK400	AR-275	RR94T	AR-220	F85MXD (5568 00)	AR-118	RR201M	AR-270	DC5640	AR-185	1VW1116	AR-118
GK5050G	AR-273	RR96T	AR-141	F85MXD (5568 00)	AR-118	RR201M	AR-270	DC5640	AR-185	1VW1116	AR-118
KL7000	AR-273	RR96T0	AR-150	F85MXD (5568 00)	AR-118	RR201M	AR-270	DC5640	AR-185	1VW1116	AR-118
KP131E	AR-156	RR99TC	AR-175	F85MXD (5568 00)	AR-118	RR201M	AR-270	DC5640	AR-185	1VW1116	AR-118
KP4000G/1	AR-227	RR99TC	AR-175	F85MXD (5568 00)	AR-118	RR201M	AR-270	DC5640	AR-185	1VW1116	AR-118
KP5005	AR-272	RR99TC	AR-175	F85MXD (5568 00)	AR-118	RR201M	AR-270	DC5640	AR-185	1VW1116	AR-118
KP8000G	AR-257	RR99TC	AR-175	F85MXD (5568 00)	AR-118	RR201M	AR-270	DC5640	AR-185	1VW1116	AR-118
KP8005G	AR-256	RR99TC	AR-175	F85MXD (5568 00)	AR-118	RR201M	AR-270	DC5640	AR-185	1VW1116	AR-118
KP8005G	AR-256	RR99TC	AR-175	F85MXD (5568 00)	AR-118	RR201M	AR-270	DC5640	AR-185	1VW1116	AR-118
KP8005G	AR-271	RR99TC	AR-175	F85MXD (5568 00)	AR-118	RR201M	AR-270	DC5640	AR-185	1VW1116	AR-118
OP444E	AR-155	RR99TC	AR-175	F85MXD (5568 00)	AR-118	RR201M	AR-270	DC5640	AR-185	1VW1116	AR-118
TP200	AR-222	RR99TC	AR-175	F85MXD (5568 00)	AR-118	RR201M	AR-270	DC5640	AR-185	1VW1116	AR-118
TP227E	AR-143	RR99TC	AR-175	F85MXD (5568 00)	AR-118	RR201M	AR-270	DC5640	AR-185	1VW1116	AR-118
TP212E/A/11E A	AR-216	RR99TC	AR-175	F85MXD (5568 00)	AR-118	RR201M	AR-270	DC5640	AR-185	1VW1116	AR-118
TP251	AR-142	RR99TC	AR-175	F85MXD (5568 00)	AR-118	RR201M	AR-270	DC5640	AR-185	1VW1116	AR-118
TP7001	AR-152	RR99TC	AR-175	F85MXD (5568 00)	AR-118	RR201M	AR-270	DC5640	AR-185	1VW1116	AR-118
TP727E	AR-248	RR99TC	AR-175	F85MXD (5568 00)	AR-118	RR201M	AR-270	DC5640	AR-185	1VW1116	AR-118
TP8001	AR-145	RR99TC	AR-175	F85MXD (5568 00)	AR-118	RR201M	AR-270	DC5640	AR-185	1VW1116	AR-118
TP8001	AR-125	RR99TC	AR-175	F85MXD (5568 00)	AR-118	RR201M	AR-270	DC5640	AR-185	1VW1116	AR-118
TP878E	AR-221	RR99TC	AR-175	F85MXD (5568 00)	AR-118	RR201M	AR-270	DC5640	AR-185	1VW1116	AR-118
TP900E	AR-250	RR99TC	AR-175	F85MXD (5568 00)	AR-118	RR201M	AR-270	DC5640	AR-185	1VW1116	AR-118
TP600G, G	AR-146	RR99TC	AR-175	F85MXD (5568 00)	AR-118	RR201M	AR-270	DC5640	AR-185	1VW1116	AR-118
TP6001G	AR-246	RR99TC	AR-175	F85MXD (5568 00)	AR-118	RR201M	AR-270	DC5640	AR-185	1VW1116	AR-118
TP7000G, ZI	AR-219	RR99TC	AR-175	F85MXD (5568 00)	AR-118	RR201M	AR-270	DC5640	AR-185	1VW1116	AR-118
TP7005G	AR-244	RR99TC	AR-175	F85MXD (5568 00)	AR-118	RR201M	AR-270	DC5640	AR-185	1VW1116	AR-118
TP7006G	AR-276	RR99TC	AR-175	F85MXD (5568 00)	AR-118	RR201M	AR-270	DC5640	AR-185	1VW1116	AR-118
TP8000E	AR-148	RR99TC	AR-175	F85MXD (5568 00)	AR-118	RR201M	AR-270	DC5640	AR-185	1VW1116	AR-118
TP8001E	AR-228	RR99TC	AR-175	F85MXD (5568 00)	AR-118	RR201M	AR-270	DC5640	AR-185	1VW1116	AR-118
TP9004G	AR-276	RR99TC	AR-175	F85MXD (5568 00)	AR-118	RR201M	AR-270	DC5640	AR-185	1VW1116	AR-118
TP9005G	AR-244	RR99TC	AR-175	F85MXD (5568 00)	AR-118	RR201M	AR-270	DC5640	AR-185	1VW1116	AR-118
TP9006G	AR-276	RR99TC	AR-175	F85MXD (5568 00)	AR-118	RR201M	AR-270	DC5640	AR-185	1VW1116	AR-118
PLYMOUTH	AR-220	RCA	AR-149	F85MXD (5568 00)	AR-118	TOYOTA	AR-114	DC5640	AR-185	1VW1116	AR-118
(See Chrysler)	AR-220	PA424A1	AR-149	F85MXD (5568 00)	AR-118	R100C/2/4	AR-75	DC5640	AR-185	1VW1116	AR-118
PONTIAC	AR-220	12R100 (12R0100)	AR-167	F85MXD (5568 00)	AR-118	CR127/T/271 T	AR-114	DC5640	AR-185	1VW1116	AR-118
(See General Motors)	AR-220	12R150	AR-212	F85MXD (5568 00)	AR-118	CR201E CT, FUT	AR-146	DC5640	AR-185	1VW1116	AR-118
PORSCHE	AR-192	12R200	AR-161	F85MXD (5568 00)	AR-118	CR251H T, FUT	AR-184	DC5640	AR-185	1VW1116	AR-118
Sapphire XV111	AR-192	12R210	AR-260	F85MXD (5568 00)	AR-118	CR251H T, 2H T	AR-184	DC5640	AR-185	1VW1116	AR-118
Sapphire XVII	AR-128	12R210	AR-260	F85MXD (5568 00)	AR-118	CR251H T, 2H T	AR-184	DC5640	AR-185	1VW1116	AR-118
Sapphire XXV	AR-181	12R210	AR-161	F85MXD (5568 00)	AR-118	CR251H T, 2H T	AR-184	DC5640	AR-185	1VW1116	AR-118
#1PI 1121	AR-118	12R210	AR-161	F85MXD (5568 00)	AR-118	CR251H T, 2H T	AR-184	DC5640	AR-185	1VW1116	AR-118
1PI 2124 (1971 9111, 914)	AR-130	12R210	AR-161	F85MXD (5568 00)	AR-118	CR251H T, 2H T	AR-184	DC5640	AR-185	1VW1116	AR-118
1PI 2127	AR-156	12R210	AR-161	F85MXD (5568 00)	AR-118	CR251H T, 2H T	AR-184	DC5640	AR-185	1VW1116	AR-118
1PI 2741/42	AR-157	12R210	AR-161	F85MXD (5568 00)	AR-118	CR251H T, 2H T	AR-184	DC5640	AR-185	1VW1116	AR-118
1VW1127 (Sapphire XVII)											

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