sams

modular hi-fi components

MHF-47

for

Hitachi SR-3200, SR-5200

Lafayette LR-775 (99-02156WX)

Lafayette LT-725A (99-02297WX) — Magnavox Chassis R243

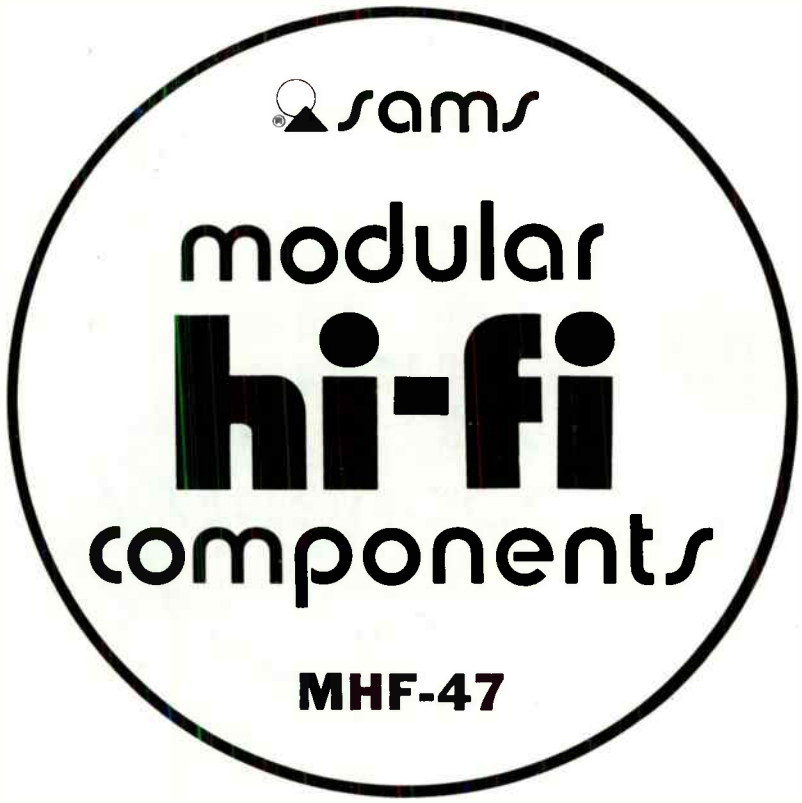
Morse/Electrophonic T-4700 — Penncrest 1201

Pioneer TX-500A/F, FVZ, KC, KU — RCA VS6010, YZD598

Realistic STA-65D (31-2031) — Sears Silvertone 132.91460300 thru 132.91460303

Sony HP-485 — Wards Airline GEN-6214A, GEN-6254A, GEN-6284A

$4.25
$5.10 IN CANADA
Cat. No. MHF-47



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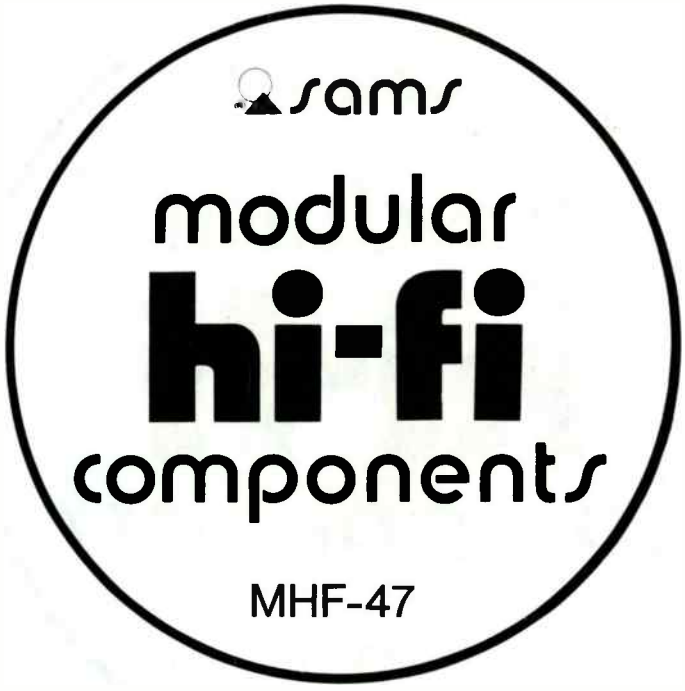
First Printing-March, 1974



Library of Congress Catalog Card Number 72-77606

modular hi-fi components

TABLE OF CONTENTS

GENERAL SERVICING INFORMATION

The following information applies to all players 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 player.

POWER SOURCES

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

CLEANING

Head faces should be cleaned with head cleaner 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 players result from defective cartridges. Always try a cartridge known to be good before attempting repairs.

Pages 5-15 Courtesy of HITACHI SALES CORP. OF AMERICA

GENERAL ALIGNMENT INSTRUCTION

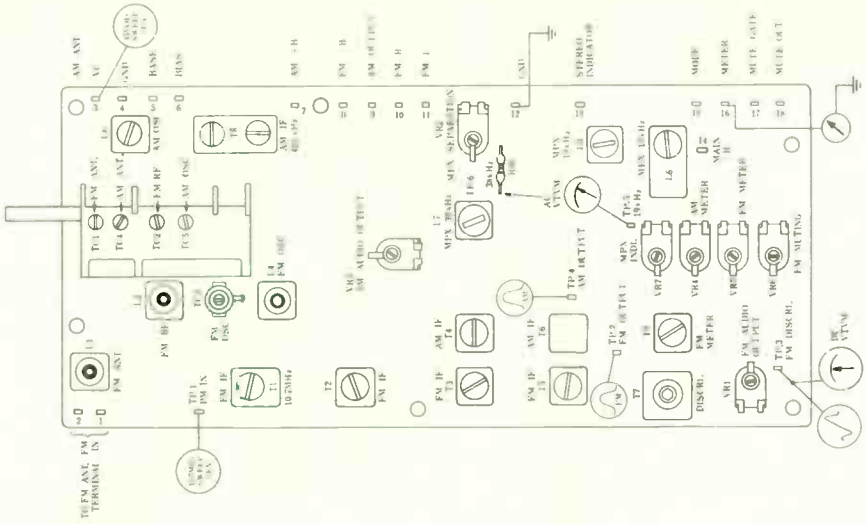


Fig. 4

5.1 FM TUNER ALIGNMENT

Steps		Item	Measuring Instrument	Input Terminal	Output Terminal	Frequency	Adjust	Wave Form
1	(1)	IF Amplifier	10.7MHz±150kHz Sweep Generator	TP 1	TP 2		T107 (upper) T109	Core Max.
	(2)						T101, T102 T103, T105	CAUTION (1)
	(3)	"S" curve		TP 1	TP 3		T107 (lower) T107 (upper)	CAUTION (2)
2		Discriminate	FM signal generator 100MHz 400Hz 100% modulated 60dB at input V.T.V.M.	Antenna terminal	TP 3 (DC balance meter)	100MHz	T107 (upper)	Adjust T107 so that pointer of Balance Meter will become 0V.
3		Distortion	FM signal generator 100MHz 400Hz 100% modulated 60dB at input Distortion meter	Antenna terminal	TAPE OUT(L) or SP OUT(L)	100MHz	T107 (lower)	Adjust T107 so that distortion will become min.
4	(1)	Covering	4.1 FM signal generator 90MHz 400Hz 100% modulated	Antenna terminal	TAPE OUT(L) or SP OUT(L)	90MHz (Turn the Dial pointer at 90MHz)	T104	Output Max.
	(2)		4.2 FM signal generator 106MHz 400Hz 100% modulated			106MHz (Turn the Dial pointer at 106MHz)	TC103	
	(3)							Repeat (1) & (2)
5	(1)	Tracking	5.1 FM signal generator 90MHz 400Hz 100% modulated, 10dB at input V.T.V.M.	Antenna terminal	TAPE OUT(L) or SP OUT(L)	90MHz	T101, T102	Output Max.
	(2)		5.2 FM signal generator 106MHz 400Hz 100% modulated, 10dB at input V.T.V.M.			106MHz	TC101 TC102	
6		Tuning Meter	FM signal generator 98MHz 400Hz 100% modulated, 60dB at input	Antenna terminal	Tuning Meter	98MHz (Set the Tuning meter so that pointer will be max.	VR105	Adjust VR105 so that pointer of Tuning meter will be 4.
7		Output	FM signal generator 98MHz 400Hz 30% modulated, 60dB at input	Antenna terminal	TAPE OUT	98MHz	VR101	Adjust the output to gain 250mV±2dB.
8		FM Muting	FM signal generator 98MHz 400Hz 100% modulated, 24dB at input	Antenna terminal	TAPE OUT(L) or SP OUT(L)	98MHz	VR106	Adjust VR106 so that a signal can occur then the input signal is 24±6dB

CAUTION

(1) At the article 1 - (2). By the core of T101, T102, T103 and T105 let it be adjusted so that the gain will be max. And the wave form should be adjusted so that it will be the one of the Fig.5. In this case, the output voltage at the surveying point of TP.2 is weak, so let it be adjusted by connecting shown at Fig. 6. using V.T.V.M.
Next, adjust it by T109 core, so that the wave form of Fig.5 will dip just as Fig.7 and at this time of adjustment stop the oscillation. (Oscillation variable capacitor is shorted.)

Fig. 5

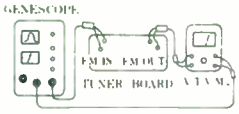


Fig. 6

Fig. 7

(2) At the article 1 - (3). Adjust so that it will be just as S curve of Fig. 8 with the secondary core (upper) of T107. And by the primary core (lower) of the T107, adjust it so that the gain will be max. In this case, A and B will be at the symmetry position of C, and adjust it as the straight line can be gained.
At the time of adjustment of Caution (1) and (2), we use ceramic filter, so the center of the marker will not sometimes come on that of wave form. In this case, neglect the marker.

Fig. 8

5.2 FM MPX ALIGNMENT

Steps		Item	Measuring Instrument	Input Terminal	Output Terminal	Frequency	Adjust	Wave Form
1							VR107	Set the VR107 in the center.
2	(1)	19kHz 38kHz Tuning coil	FM signal generator 60dB at input Stereo signal generator pilot signal (19kHz) 8% modulated V.T.V.M.	Antenna terminal	TP 5	100MHz	L106, L109	Adjust L106 and L109 so that 19kHz output wave form becomes max.
	(2)				TP 6		L107	Adjust L107 so that the (38kHz) output wave form becomes max.
3	(1)	Separation	1. FM signal generator 100MHz, 60dB at input 2. Stereo signal generator Main signal 92% modulated Pilot signal 8% modulated V.T.V.M.	Antenna terminal	FM OUT(L) or SP OUT(L)	100MHz		Set the tuning knob so that pointer of meter will become max.
	(2)						L109	After making the signal of L ch and Pilot, adjust L109 so that the output wave form of L ch becomes max.
	(3)						VR102	After making the signal of R ch and Pilot, adjust VR-102 so that the output wave form of L ch becomes min.
	(4)							Optimize VR102 so that the leak level of the L ch signal is equal to that of the R ch signal.
4		Lighting Level of STEREO Indicator Lamp	FM signal generator 100MHz 60dB at input Stereo signal generator pilot signal (19kHz) 5% modulated.	Antenna terminal	STEREO Indicator Lamp	100MHz	VR107	Adjust VR107 so that stereo indicator lamp will be lighted when the modulation degree of pilot signal is 5%.

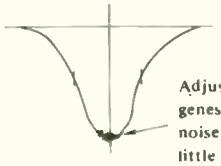
5.3 AM TUNER ALIGNMENT

Steps		Item	Measuring Instrument	Input Terminal	Output Terminal	Frequency	Adjust	Wave Form
1		IF Amplifier	Sweep generator 455kHz	Antenna terminal	TP 4		T104, T108	Gain Max. CAUTION (3)
2	(1)	Covering	AM signal generator 600kHz 400Hz 30% modulated, 50dB at input V.T.V.M.	Ferrite antenna	TAPE OUT or SP OUT	600kHz	L108	Gain Max. CAUTION (4)
	(2)		AM signal generator 1400kHz 400Hz 30% modulated, 50dB at input V.T.V.M.			1400kHz	TC105	
	(3)							Repeat (1) and (2)
3	(1)	Tracking	AM signal generator 600kHz 400Hz 30% modulated, 50dB at input V.T.V.M.	Ferrite antenna	TAPE OUT or SP OUT	600kHz	Ferrite antenna	Gain Max. CAUTION (4)
	(2)		AM signal generator 1400kHz 400Hz 30% modulated, 50dB at input V.T.V.M.			1400kHz	TC104	
	(3)							Repeat (1) and (2)
4		Tuning Meter	AM signal generator 1000kHz 400Hz 30% modulated, 74dB at input	Ferrite antenna	TAPE OUT or SP OUT	1000kHz	VR104	Adjust VR104 so that pointer of meter will be 3.2.
5		Output	AM signal generator 1000kHz 400Hz 30% modulated, 74dB at input V.T.V.M.	Ferrite antenna	TAPE OUT	1000kHz	VR103	Adjust VR103 so that the output becomes 200mV±2dB.

CAUTION

(3) At the article 1, adjust T104 and T108, so that the wave form will be as in Fig. 9. As T108 contains ceramic filter of 455kHz sometimes the center of the marker will not come on that of the wave form. In this case, neglect the marker.

(4) At the article 2 and 3, at the time of the first adjustment, make input power at 74dB and as the adjustment goes on, make it the minimum and necessary input power (50dB).



Adjust the output of genescope so that the noise will be out a little at the tip.

Fig. 9

5.4 AUDIO CIRCUIT ALIGNMENT

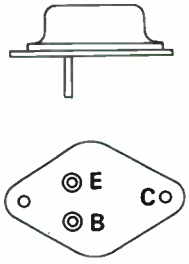
Steps	Item	Measuring Instrument	Point to be Measured	Adjust	Value Adjusted
1	Idle Current	DC volt meter	connect (+) terminal of DC volt meter to TP L connect (−) terminal of DC volt meter to TP L(E)	VR 701L	Steady state: 20 ~ 2.5mV
		VR701R(TP R, TP R(E)): Adjust similarly			

TERMINAL GUIDE OF TRANSISTORS, FET & IC

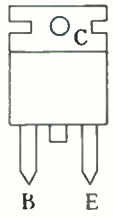
2SC461
2SC458
2SC458LG
2SC460
2SC454

2SA673A
2SA673AS
2SC1213A
2SC535
2SC1345

2SC1030



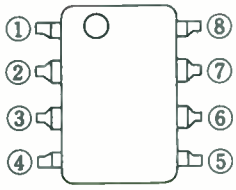
2SC1060



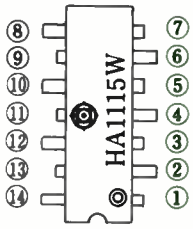
3SK45

1. DRAIN
2. GATE 2
3. GATE 1
4. SOURCE

HA1201
HA1202

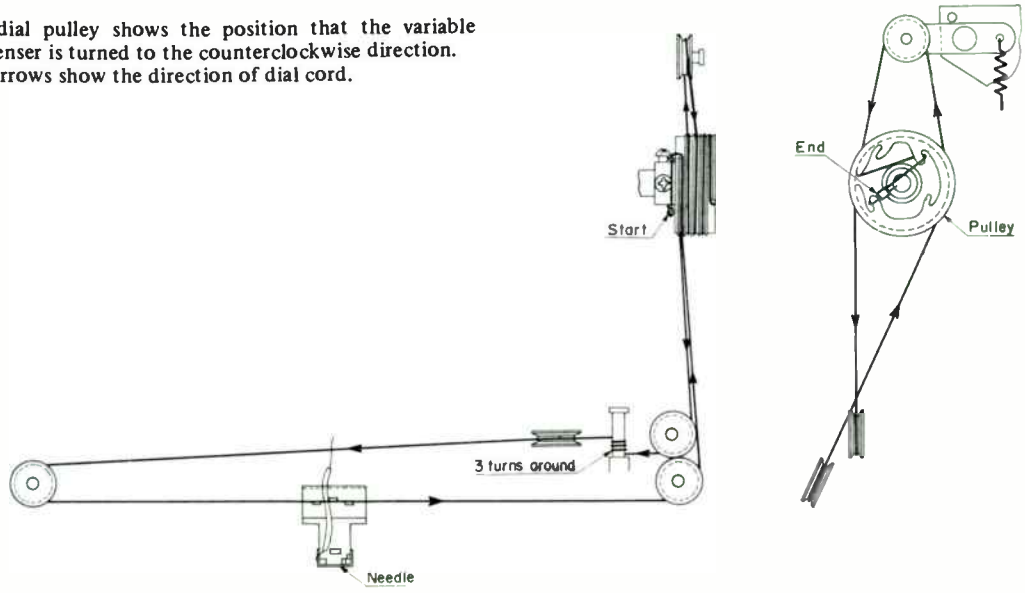


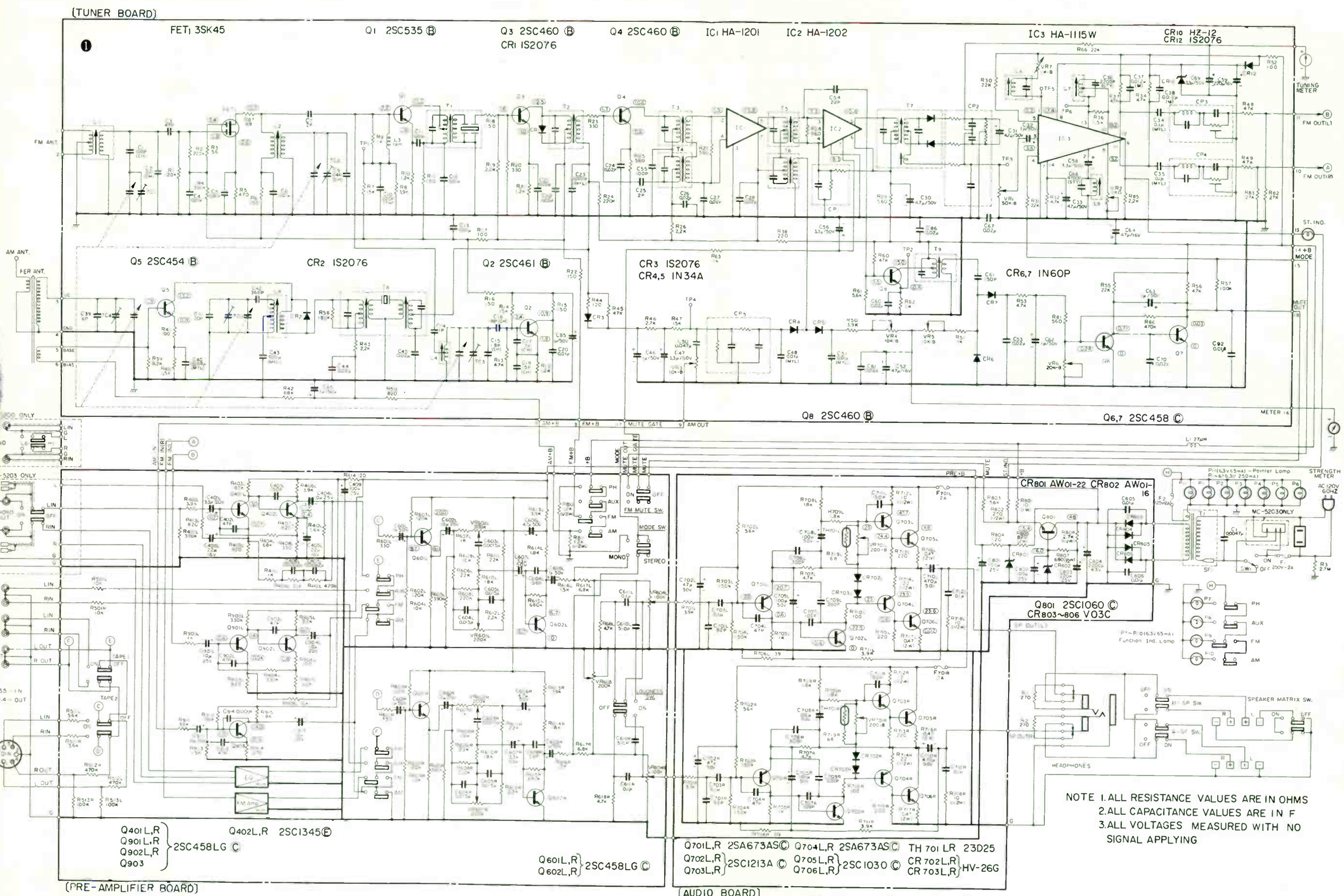
HA1115W



DIAL CORD SETTING

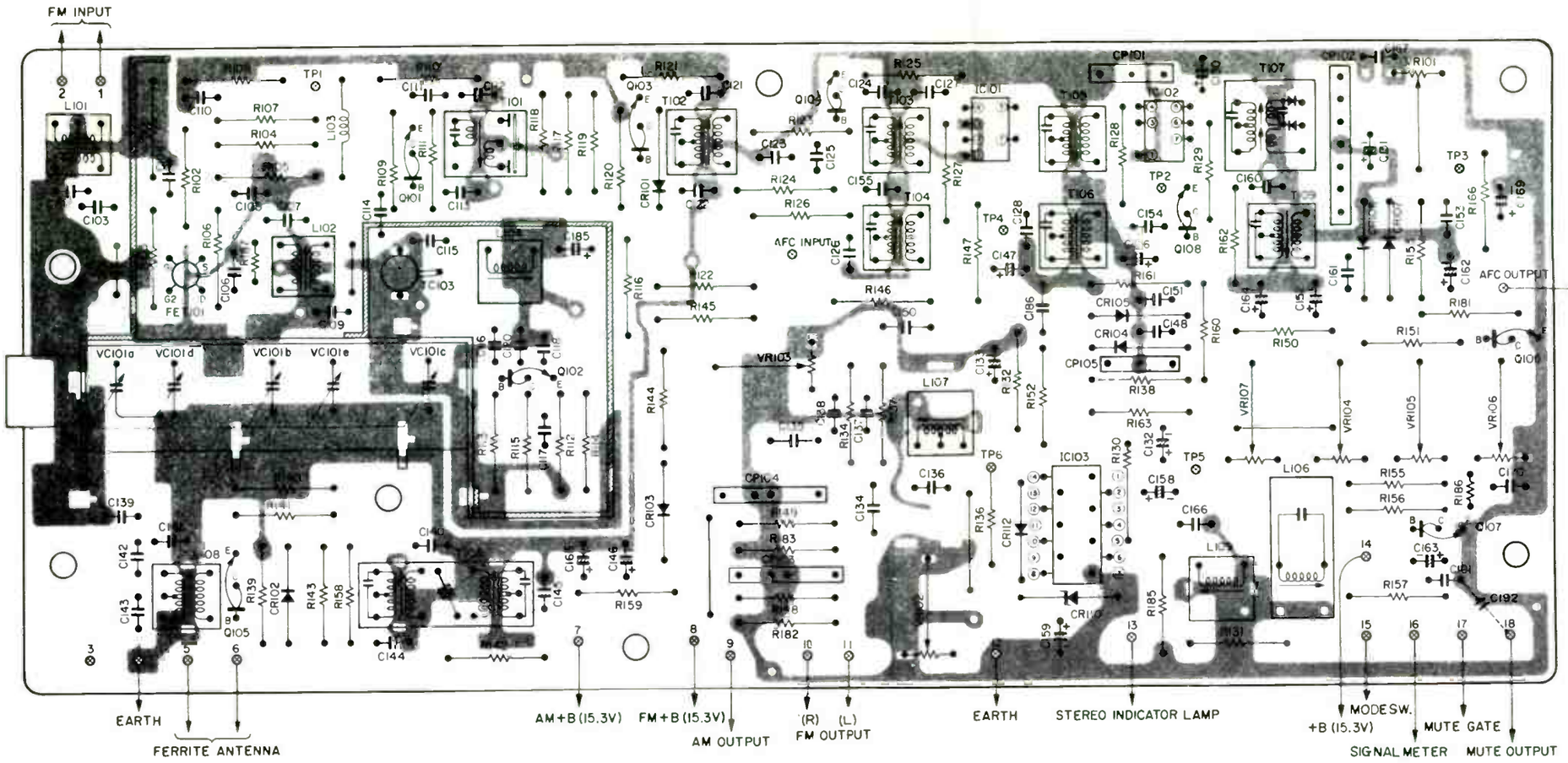
Note: 1. The dial pulley shows the position that the variable condenser is turned to the counterclockwise direction.
2. The arrows show the direction of dial cord.





NOTE 1. ALL RESISTANCE VALUES ARE IN OHMS
2. ALL CAPACITANCE VALUES ARE IN F
3. ALL VOLTAGES MEASURED WITH NO SIGNAL APPLYING

The circuit diagram is subject to change for improvement without notice.

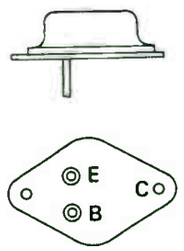


TUNER PRINTED WIRING BOARD

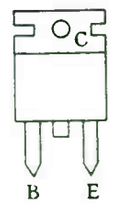
TERMINAL GUIDE OF TRANSISTORS

2SC461	2SA673A
2SC458	2SA673AS
2SC458LG	2SC1213A
2SC460	2SC535
2SC454	2SC1345

2SC1030



2SC1060

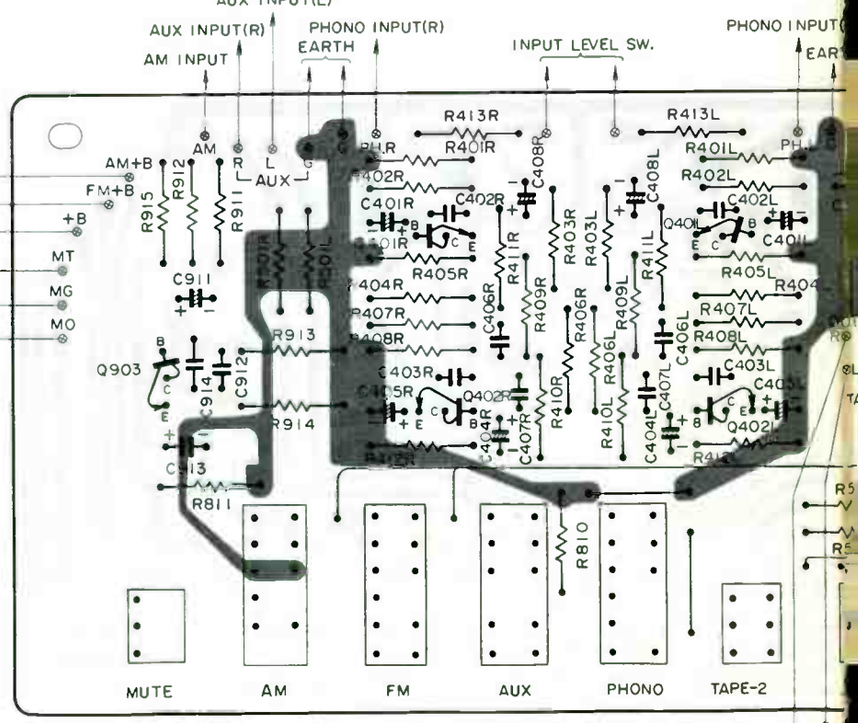


3SK45

1. DRAIN
2. GATE 2
3. GATE 1
4. SOURCE

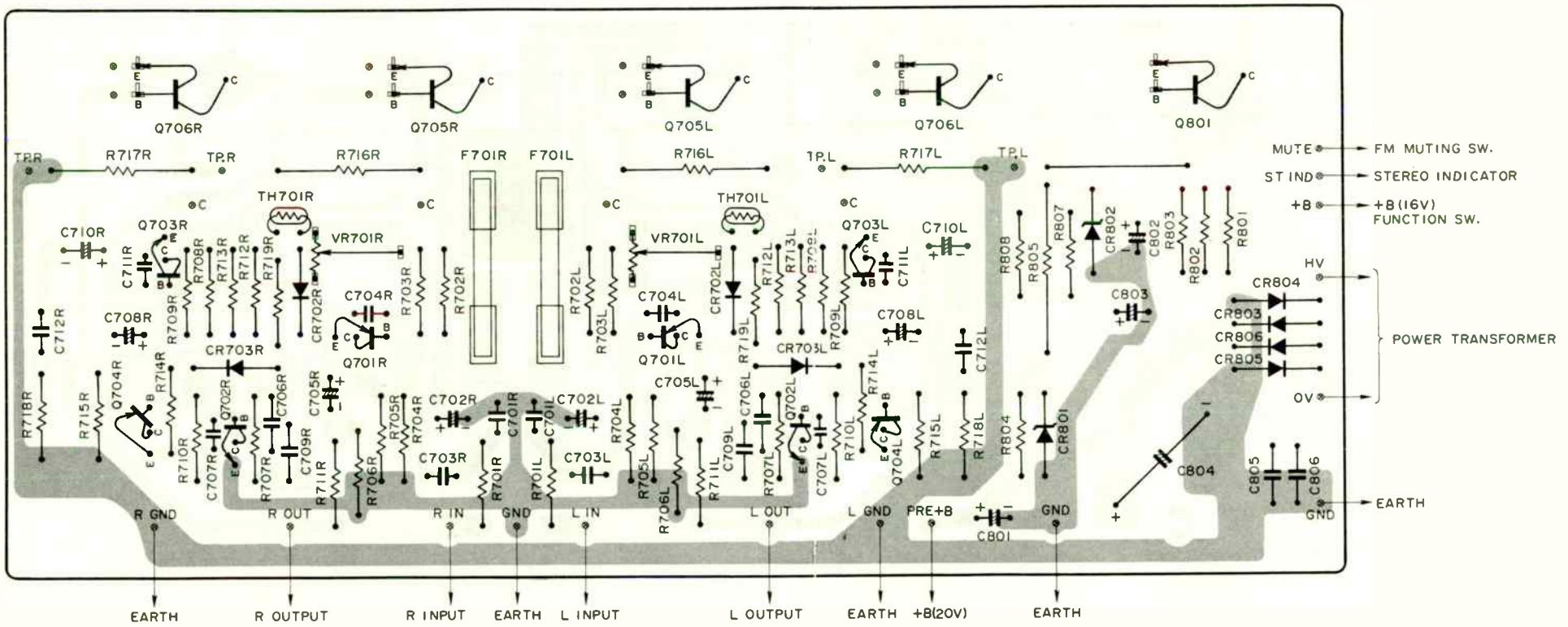
LAMP PRINTED

HA1201
HA1202

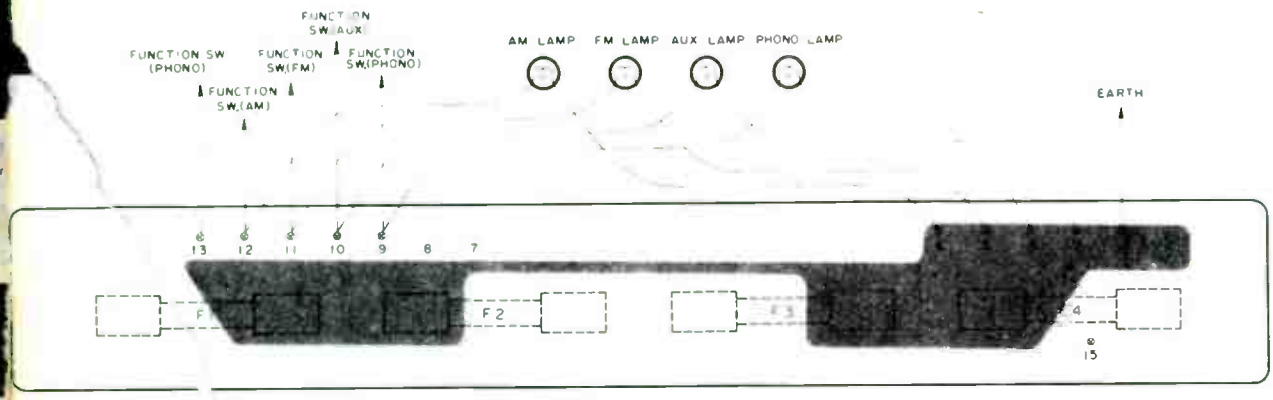


PRE-AMPLIFIER PRINTED WIRING BOARD

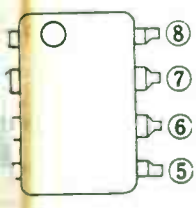
AUDIO PRINTED WIRING BOARD

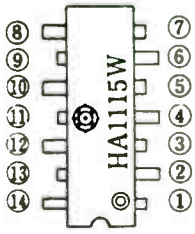


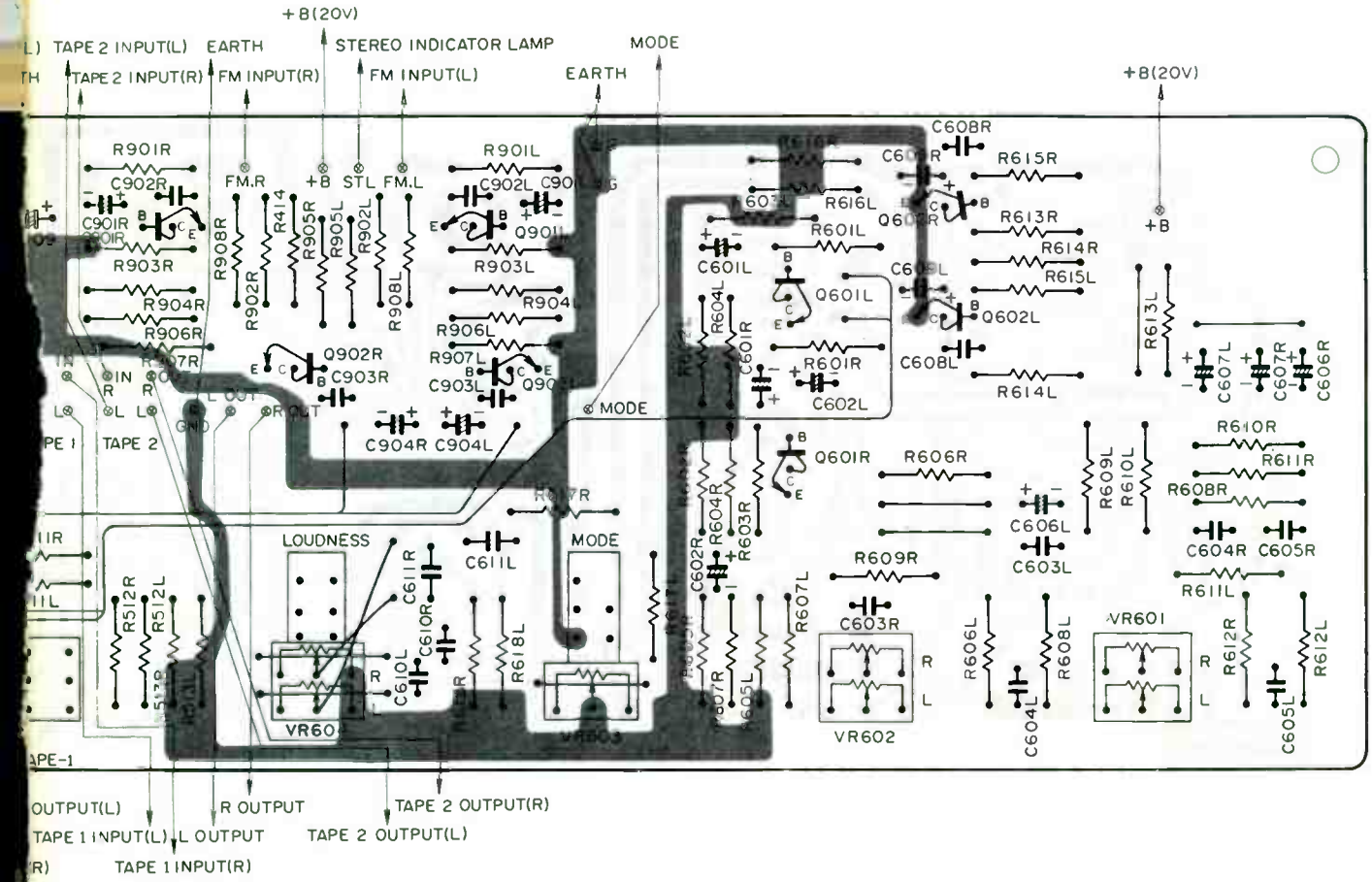
WIRING BOARD



HA1115W







SEMICONDUCTORS

ITEM	PART NO.	TYPE
CR101	2337011	1S2076
CR102	2337011	1S2076
CR103	2337011	1S2076
CR104	0575002	1N34A
CR105	0575002	1N34A
CR106	0575019	1N60(P)
CR107	0575019	1N60(P)
CR110	2337101	HZ-12(A)
CR112	2337011	1S2076
CR702	2337071	HV-26G
CR703	2337071	HV-26G
CR801	2337063	AW01-22
CR802	2337065	AW01-16
CR803	2327031	V03C
CR804	2327031	V03C
CR805	2327031	V03C
CR806	2327031	V03C
FET101	2327431	3SK45
IC101	2327312	HA1201
IC102	2327411	HA1202
IC103	2327422	HA1115(W)
Q101	0573510	2SC535(B)
Q102	0573507	2SC461(B)
Q103	0573486	2SC460(B)
Q104	0573486	2SC460(B)
Q105	0573491	2SC454(B)
Q106	2320063	2SC458(C)
Q107	2320063	2SC458(C)
Q108	0573486	2SC460(B)
Q401	2320073	2SC458LG(C)
Q402	2327363	2SC1345(E)
Q601	2320073	2SC458LG(C)
Q602	2320073	2SC458LG(C)
Q701	2327283 (1)	2SA673A(C) (1)
	2327387 (2)	2SA673AS(C) (2)
Q702	2327293	2SC1213A(C)
Q703	2327293	2SC1213A(C)
Q704	2327283 (1)	2SA673A(C) (1)
	2327387 (2)	2SA673AS(C) (2)
Q705	2327203 (1)	2SC1060(C) (1)
	2327053 (2)	2SC1030(C) (2)
Q706	2327203 (1)	2SC1060(C) (1)
	2327053 (2)	2SC1030(C) (2)
Q801	2327203	2SC1060(C)
Q901	2320073	2SC458LG(C)
Q902	2320073	2SC458LG(C)

ELECTROLYTIC/VARIABLE CAPS

ITEM	PART NO.	VALUE
C130	0252815	4.7 uF 50 V
C131	0242815	4.7 uF 50 V
C132	0252811	1 uF 50 V
C133	0252815	4.7 uF 50 V
C146	0252811	1 uF 50 V
C147	0252813	3.3 uF 50 V
C152	0252525	47 uF 16 V
C156	0252813	3.3 uF 50 V
C158	0252813	3.3 uF 50 V
C159	0252532	220 uF 16 V
C162	0252811	1 uF 50 V
C163	0252811	1 uF 50 V
C164	0252525	47 uF 16 V
C165	0252811	1 uF 50 V
C169	0252813	3.3 uF 50 V
C185	0252811	1 uF 50 V
C401	0252813	3.3 uF 50 V
C404	0252621	10 uF 25 V
C405	0252522	22 uF 16 V
C408	0252522	22 uF 16 V
C409	0252631	100 uF 25 V
C601	0242811	1 uF 50 V
C602	0252621	10 uF 25 V
C606	0252815	4.7 uF 50 V
C607	0252813	3.3 uF 50 V
C702	0252825	47 uF 50 V
C705	0252831	100 uF 50 V
C708	0252831	100 uF 50 V
C710	0252835	470 uF 50 V
C801	0252631	100 uF 25 V
C802	0252631	100 uF 25 V
C803	0252632	220 uF 25 V
C804	0250139	2200 uF 63 V
C901	0252621	10 uF 25 V
C904	0252621	10 uF 25 V
C911	0252621	10 uF 25 V
C913	0252621	10 uF 25 V
TC103	0283115	Trimmer
VC101	0281169	Tuning Gang

CONTROLS/SPECIAL RESISTORS

ITEM	PART NO.	DESCRIPTION
R716	0119127	.47 ohm 10%
R717	0119127	.47 ohm 10%
TH701	0576041	Thermistor 23D25
VR101	0151225	50K Output
VR102	0151282	1000 ohm Separation
VR103	0151224	10K Output
VR104	0151224	10K Tuning Meter
VR105	0151224	10K Tuning Meter
VR106	0151281	20K FM Muting
VR107	0151282	1000 ohm FM Muting
VR601	0151710	200K Dual Treble
VR602	0151710	200K Dual Bass
VR603	0151708	200K Balance
VR604	0151709	100K Dual Volume
VR701	0151256 (1)	300 ohm Idle Current (1)
	0151223 (2)	200 ohm Idle Current (2)

COIL/TRANSFORMERS

ITEM	PART NO.
L1	2227035
L101	2134411
L102	2134419
L103	2227081
L104	2134416
L106	2134392
L107	2134373
L108	2134431
L109	2134371
T101	2154172
T102	0322203
T103	2154199
T104	2154161
T105	0322203
T106	2154122
T107	2140242
T108	2154183
T109	2140155
Power	2217582 (1)
	2217591 (2)

MISCELLANEOUS

ITEM	NAME	PART NO.	PART NO.
CP101	Component Combination	0186022	
CP102	Component Combination	0186041	
CP103	Component Combination	0186011	
CP104	Component Combination	0186011	
CP105	Component Combination	0186031	
F1	Fuse, 2 A Fast	2727221	
F701	Fuse, 2 A Fast	2727221	
	Fuse, 2 A Slo-Blo	2727081	
	Switch, Power	2637323	
	Switch, Speaker	2637441	
	Switch, Function	2637431	
	Switch, Input Level/ Speaker Matrix	2627012	

CABINET PARTS

NAME	PART NO.
Assembly, Cabinet	9403002
Assembly, Escutcheon, Model 3200	3242271
Assembly, Escutcheon, Model 5200	3242272
Knob, Tuning	3281441
Knob, Balance/Volume	3281451
Knob Bass/Treble	3281452

(1) Model SR-3200.
(2) Model SR-5200.

Pages 16-22 Courtesy of LAFAYETTE RADIO ELECTRONICS

ALIGNMENT INSTRUCTIONS

CAUTION: Use isolation transformer or observe polarity when connecting test equipment.
Maintain line voltage at 120VAC. Allow a 15-minute warm-up period.
Use only enough generator output to obtain a suitable indication.

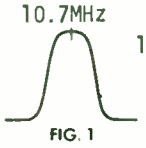


FIG. 1

FIG. 2

AM ALIGNMENT—SELECTOR IN AM POSITION

Connect generator across loop fashioned of several turns of wire. Set volume at maximum.

GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
455kHz 400-hertz Modulation	Tuning gang fully open	Output meter across voice coil	T114,T113, T112	Adjust for maximum. Repeat until no further improvement is noted.
600kHz	Tune to signal	"	T111,T110	Adjust for maximum.
1640kHz	"	"	CT107	Adjust for maximum.
1400kHz	"	"	CT106, CT105	Adjust for maximum. Repeat AM alignment until no further improvement is noted.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR—SELECTOR IN FM POSITION

High side of generator thru .001mfd to point 4, low side to ground.

GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
10.7MHz Unmodulated	Point of non-interference	DC probe of VTVM to Cathode T109 common to ground.	T109 (Pri), T108,T107, T106, T105	Adjust for maximum.
"	"	DC probe of VTVM to point 12, common to ground.	T109 (Sec.)	Adjust for zero reading. A positive or negative reading will be obtained on either side of correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR—SELECTOR IN FM POSITION

High side of generator thru .001mfd to point 4 low side to ground.
Use only enough marker signal for indication. Use 60-hertz frequency modulated signal with 450kHz sweep. Use 60-hertz sawtooth voltage in scope for horizontal deflection.

GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
10.7MHz 450kHz Sweep	Point of non-interference	Vert input of scope to Cathode T109, low side to ground.	T109 (Pri.) T108,T107, T106,T105	Disconnect stabilizing capacitor C Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown. Reconnect C
"	"	Vert input of scope to point 12, low side to ground.	T109 (Sec.)	Adjust T109 (Pri.) to place marker at center of S curve similar to Fig. 2. Readjust T105 (Sec.) for maximum amplitude and straightness of line.

FM RF ALIGNMENT—SELECTOR IN FM POSITION

Connect generator across antenna terminals with 120-ohm carbon resistor in series with each lead. Adjustment of coils by bending should not be attempted unless the coil is deformed or replaced.

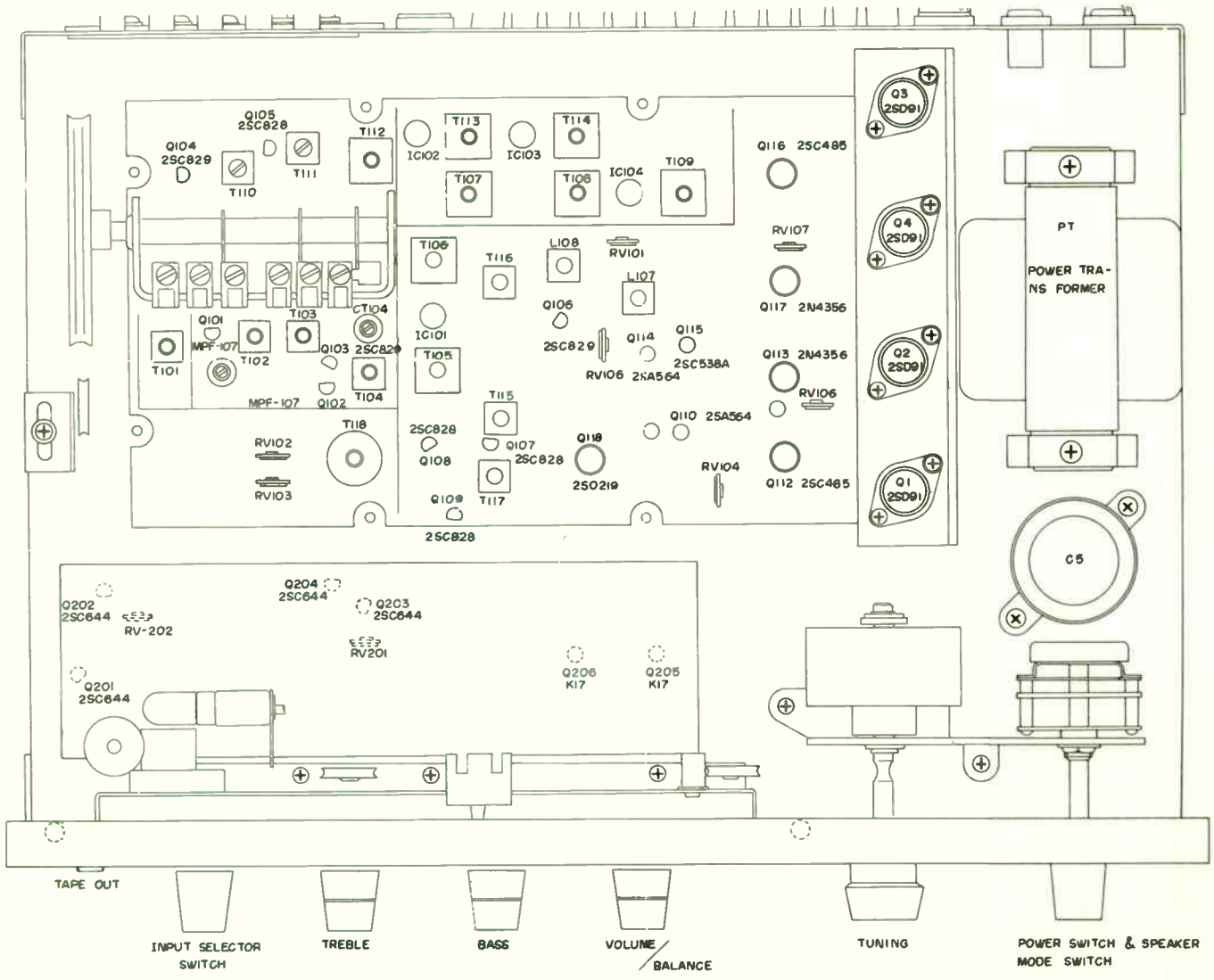
GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
88MHz Unmodulated	Low freq end	DC probe of VTVM to Cathode T109, common to ground.	T104,L101, T103,T102, T101	Adjust for maximum.
Unmodulated	Tune to signal	"	CT104,CT101, CT103,CT102	Adjust for maximum. Repeat FM RF steps until no further improvement is noted.

ALIGNMENT INSTRUCTIONS (Continued)

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

High side of generator thru 47K to point 12			low side to ground.
GENERATOR FREQUENCY	**INDICATOR**	**ADJUST**	**REMARKS**
67kHz	Vert input of scope thru 47K to Collector Q106 low side to ground.	L107	Adjust for MINIMUM.
19kHz	Vert input of scope thru 47K to Anode D108, low side to ground.	T115,T117	Adjust for maximum.
19kHz	Vert input of scope thru 47K to point 31, low side to ground.	T118	Adjust for maximum 38kHz response.
Modulated Left Channel	Vert input of scope to point 27, low side to ground.	T116	Adjust for MINIMUM. This step should require only slight adjustment.
Modulated Right Channel	Vert input of scope to point 26, low side to ground.		Check for MINIMUM. If necessary, make compromise adjustment of T116.

PARTS LOCATION LR-775



SEMICONDUCTORS

ITEM	PART NO.	TYPE
D1	1854-17	10D-4
D2	1854-17	10D-4
D3	1854-17	10D-4
D4	1854-17	10D-4
D101	1012-17	1S446
D102	1012-17	1S446
D103	1012-17	1S446
D104	1012-17	1S446
D105	1012-17	1S446
D106	1012-17	1S446
D107	1012-17	1S446
D108	1012-17	1S446
D109	1012-17	1S446
D110	1937-17	1S1555
D111	1937-17	1S1555
D112	1937-17	1S1555
D113	1937-17	1S1555
D114	1851-17	SV-02
D115	1851-17	SV-02
D116	1855-17	10D-1
D117	1855-17	10D-1
D118	1446-17	RD-13A(N)
D119	1851-17	SV-02
IC101	1000-25	ICF-1/uA703
IC102	1000-25	ICF-1/uA703
IC103	1000-25	ICF-1/uA703
IC104	1000-25	ICF-1/uA703
Q1	1936-17	2SD-91F
Q2	1936-17	2SD-91F
Q3	1936-17	2SD-91F
Q4	1936-17	2SD-91F
Q101	1859-17	MPF-107
Q102	1859-17	MPF-107
Q103	1931-17	2SC-829(B)
Q104	1931-17	2SC-829(B)
Q105	1751-17	2SC-828(P)
Q106	1931-17	2SC-829(C)
Q107	1751-17	2SC-828(P)
Q108	1751-17	2SC-828(O)
Q109	1751-17	2SC-828(S)
Q110	1935-17	2SA-564(Q)
Q111	1866-17	2SC-538A
Q112	1804-17	2SC-485Y
Q113	1553-17	2N-4356
Q114	1935-17	2SA-564(Q)
Q115	1866-17	2SC-538(A)
Q116	1804-17	2SC-485Y
Q117	1553-17	2N-4356
Q118	1933-17	2SD-219
Q201	1932-17	2SC-644(S)
Q202	1932-17	2SC-644(T)
Q203	1932-17	2SC-644(S)
Q204	1932-17	2SC-644(T)
Q205	1934-17	2SK-17(O)
Q206	1934-17	2SK-17(O)

ELECTROLYTIC/VARIABLE CAPS

ITEM	PART NO	VALUE
C5	2240-12	2000 uF 50 V
C6	2890-12	220 uF 50 V
C133	1308-12	1 uF 25 V
C134	2702-12	100 uF 16 V
C141	2658-12	10 uF 16 V
C142		33 uF 16 V
C146		47 uF 16 V
C147	2658-12	10 uF 16 V
C149	1308-12	1 uF 25 V
C151	1308-12	1 uF 25 V
C156	2893-12	.1 uF
C157	2893-12	.1 uF
C158	1308-12	1 uF 25 V
C159	2779-12	220 uF 25 V
C161	2807-12	47 uF 25 V
C162	2807-12	47 uF 25 V
C164	1008-12	1000 uF 25 V
C166	1308-12	1 uF 25 V
C167	2779-12	220 uF 25 V
C169	2807-12	47 uF 25 V
C170	2807-12	47 uF 25 V
C172	1008-12	1000 uF 25 V
C175	2702-12	100 uF 16 V
C176	2890-12	220 uF 50 V
C201	2711-12	4.7 uF 16 V
C202	2828-12	33 uF 25 V
C203	2658-12	10 uF 16 V
C205	1562-12	100 uF 6 V
C206	2843-12	4.7 uF 25 V
C209	2711-12	4.7 uF 16 V
C210	2828-12	33 uF 25 V
C211	2800-12	10 uF 6 V
C213	2675-12	100 uF 6 V
C214	2843-12	4.7 uF 25 V
C219	1308-12	1 uF 25 V
C221	2800-12	10 uF 6 V
C226	1308-12	1 uF 25 V
C228	2800-12	10 uF 6 V
CT104	2896-12	Trimmer
CT105	2896-12	Trimmer
	2529-12	Tuning Gang

CONTROLS/SPECIAL RESISTORS

ITEM	PART NO.	DESCRIPTION
R150	2291-13	0.5 ohms10% 3W
R165	2291-13	0.5 ohms 10% 3W
TV101	2292-13	20K Tuning Meter
RV102	1902-13	5000 ohms
RV103	1902-13	5000 ohms Separation
RV104	2293-13	50K Bias
RV105	2294-13	500 ohms Balance
RV106	2293-13	50K Bias
RV107	2294-13	500 ohms Balance
RV201	2295-13	1000 ohms Bias
RV202	2295-13	1000 ohms Bias
	1531-11	500K Dual Bass
	1332-11	50K Dual Volume/Balance
	1531-11	500K Dual Treble
	1853-17	Thermistor 21D28

COIL/TRANSFORMERS

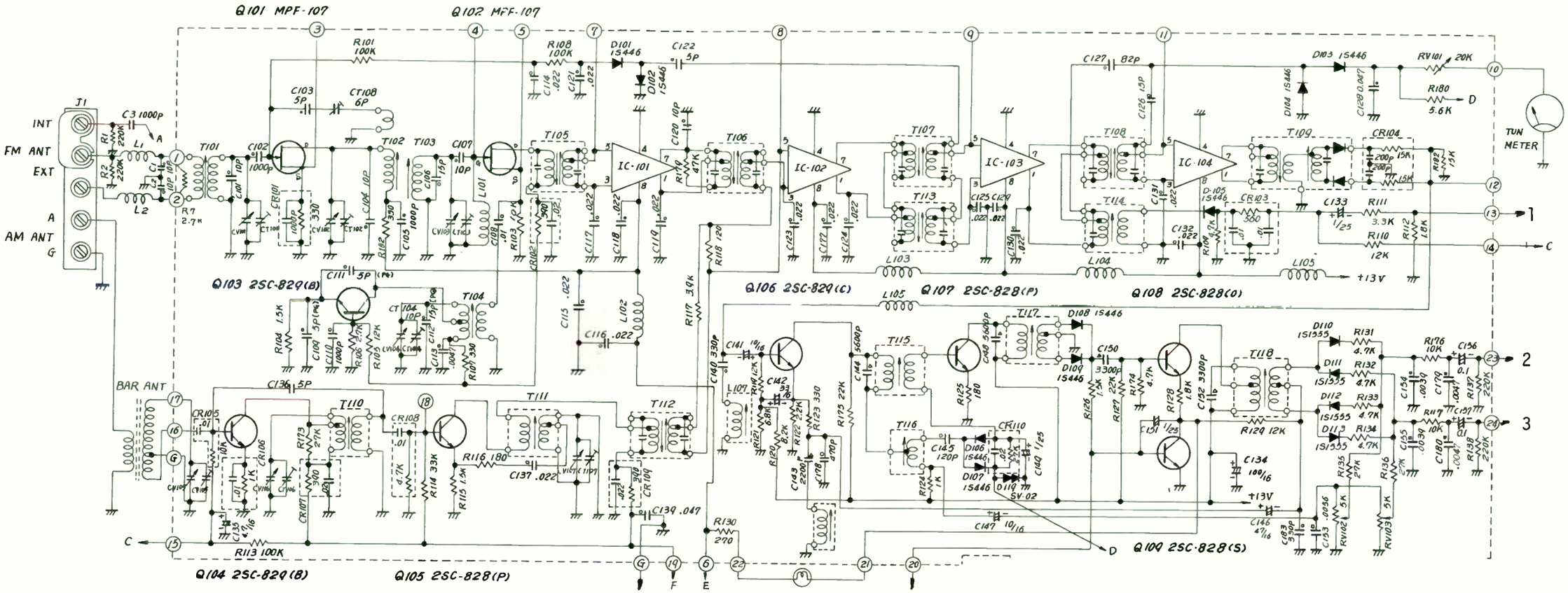
ITEM	PART NO
L1	1674-23
L2	1674-23
L3	1678-23
L4	1678-23
L103	2172-23
L104	2172-23
L105	2172-23
L106	2172-23
L107	1912-24
T101	2173-23
T102	2174-23
T103	2175-23
T104	2176-23
T105	1913-24
T106	1914-24
T107	1913-24
T110	1917-24
T111	1918-24
T112	1916-24
T113	1915-24
T114	1919-24
T115	1909-24
T116	1910-24
T117	1908-24
Power	1583-15

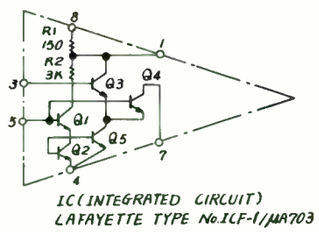
MISCELLANEOUS

ITEM	NAME	PART NO.
CR1	Component Combination	2285-13
CR2	Component Combination	2286-13
CR101	Component Combination	2290-13
CR103	Component Combination	2284-13
CR104	Component Combination	2279-13
CR105	Component Combination	2280-13
CR106	Component Combination	2281-13
CR107	Component Combination	2282-13
CR108	Component Combination	2283-13
CR109	Component Combination	2282-13
CR110	Component Combination	2289-13
CR201	Component Combination	2287-13
CR202	Component Combination	2288-13
S1	Switch, Speaker Mode	1645-14
S2	Switch, Function Select	1646-14
	Meter, Level	1052-27

CABINET PARTS

NAME	PART NO.
Cabinet, Main	5687-10
Escutcheon	5688-10
Plate, Bottom	5689-10
Knob, Volume/Balance,Back	1658-18
Knob, Volume/Balance,Front	1659-18
Knob, Bass	1654-18
Knob, Treble	1654-18
Knob, Speaker Mode	1655-18
Knob, Tuning	1656-18



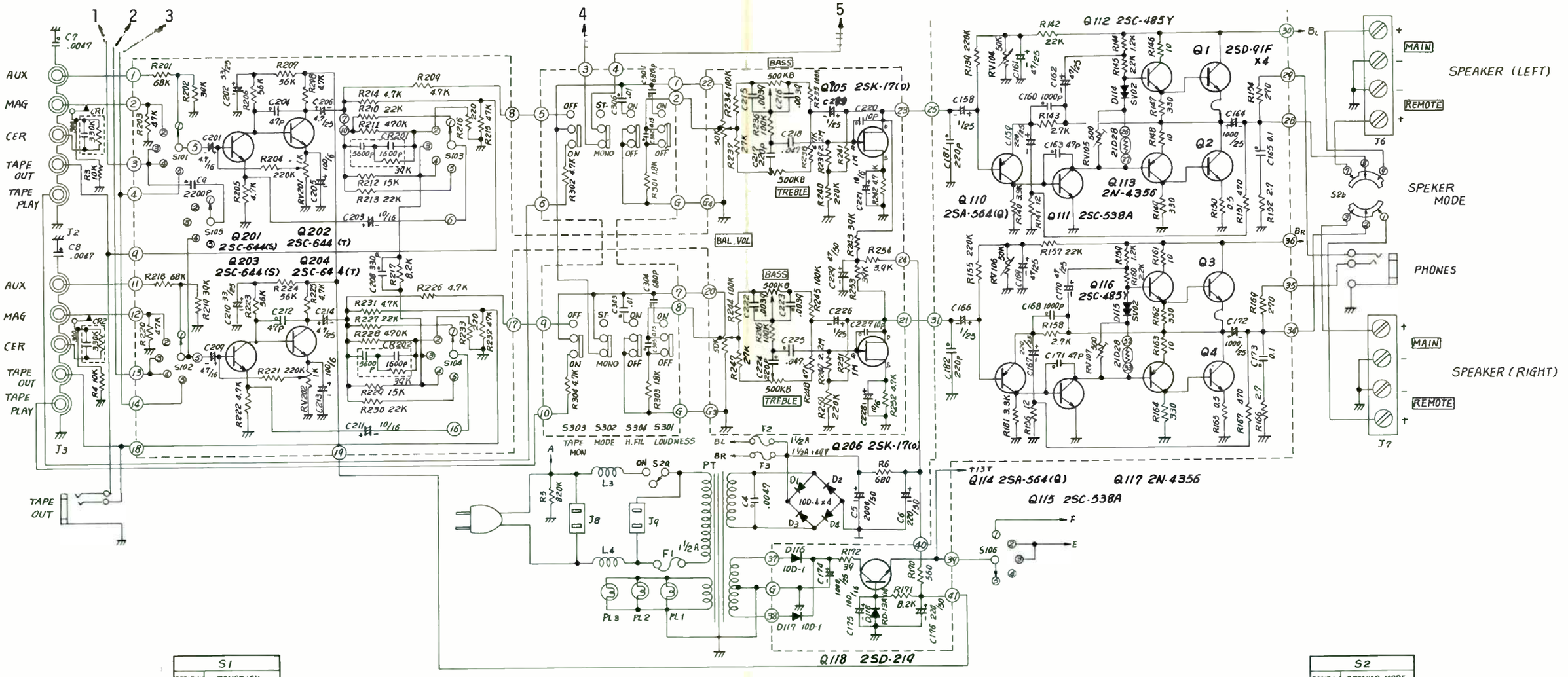


IC (INTEGRATED CIRCUIT)
LAFAYETTE TYPE No. LCF-1/μA703

S1	
POSITION	FANCTION
1	AUX
2	PHONO
3	FM
4	FM (FIL)
5	AM

S2	
POSITION	SPEAKER MODE
1	MAIN
2	MAIN+REMOTE
3	REMOTE
4	PHONES

MODEL LR-775 TUNER



S1	
POSITION	FANCTION
1	AUX
2	PHONO
3	FM
4	FM (FIL)
5	AM

S2	
POSITION	SPEAKER MODE
1	MAIN
2	MAIN+REMOTE
3	REMOTE
4	PHONES

MODEL LR-775 AMP/POWER SUPPLY

Pages 23-28 Courtesy of LAFAYETTE RADIO ELECTRONICS

ALIGNMENT INSTRUCTIONS

CAUTION: Use isolation transformer or observe polarity when connecting test equipment.
Maintain line voltage at 120VAC. Allow a 15-minute warm-up period.
Use only enough generator output to obtain a suitable indication.

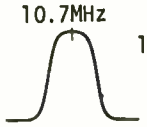


FIG. 1

FIG. 2

AM ALIGNMENT—SELECTOR IN AM POSITION

Connect generator across loop fashioned of several turns of wire. Set volume at maximum.

GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
455kHz 400-hertz Modulation	Tuning gang fully open	Output meter across voice coil	T114,T113, T112,T111	Adjust for maximum. Repeat until no further improvement is noted.
600kHz	Tune to signal	"	T110	Adjust for maximum.
1640kHz	"	"	CT106	Adjust for maximum.
1400kHz	"	"	CT105	Adjust for maximum. Repeat AM alignment until no further improvement is noted.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR—SELECTOR IN FM POSITION

High side of generator thru .001mfd to Jct. C106 and C107, low side to ground.

GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
10.7MHz Unmodulated	Point of non-interference	DC probe of VTVM to point 14, common to ground.	T109 (Pri) T108,T107, T106,T105	Adjust for maximum.
"	"	DC probe of VTVM to point 15, common to ground.	T109 (Sec)	Adjust for zero reading. A positive or negative reading will be obtained on either side of correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR—SELECTOR IN FM POSITION

High side of generator thru .001mfd to Jct. C106 and C107, low side to ground.
Use only enough marker signal for indication. Use 60-hertz frequency modulated signal with 450kHz sweep. Use 60-hertz sawtooth voltage in scope for horizontal deflection.

GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
10.7MHz 450kHz Sweep	Point of non-interference	Vert input of scope to point 14, low side to ground.	T109 (Pri) T108,T107, T106,T105	Disconnect stabilizing capacitor C Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown. Reconnect C
"	"	Vert input of scope to point 15, low side to ground.	T109 (Sec)	Adjust T109(P) to place marker at center of S curve similar to Fig. 2. Readjust T109(S) for maximum amplitude and straightness of line.

FM RF ALIGNMENT—SELECTOR IN FM POSITION

Connect generator across antenna terminals with 120-ohm carbon resistor in series with each lead.
Adjustment of coils by bending should not be attempted unless the coil is deformed or replaced.

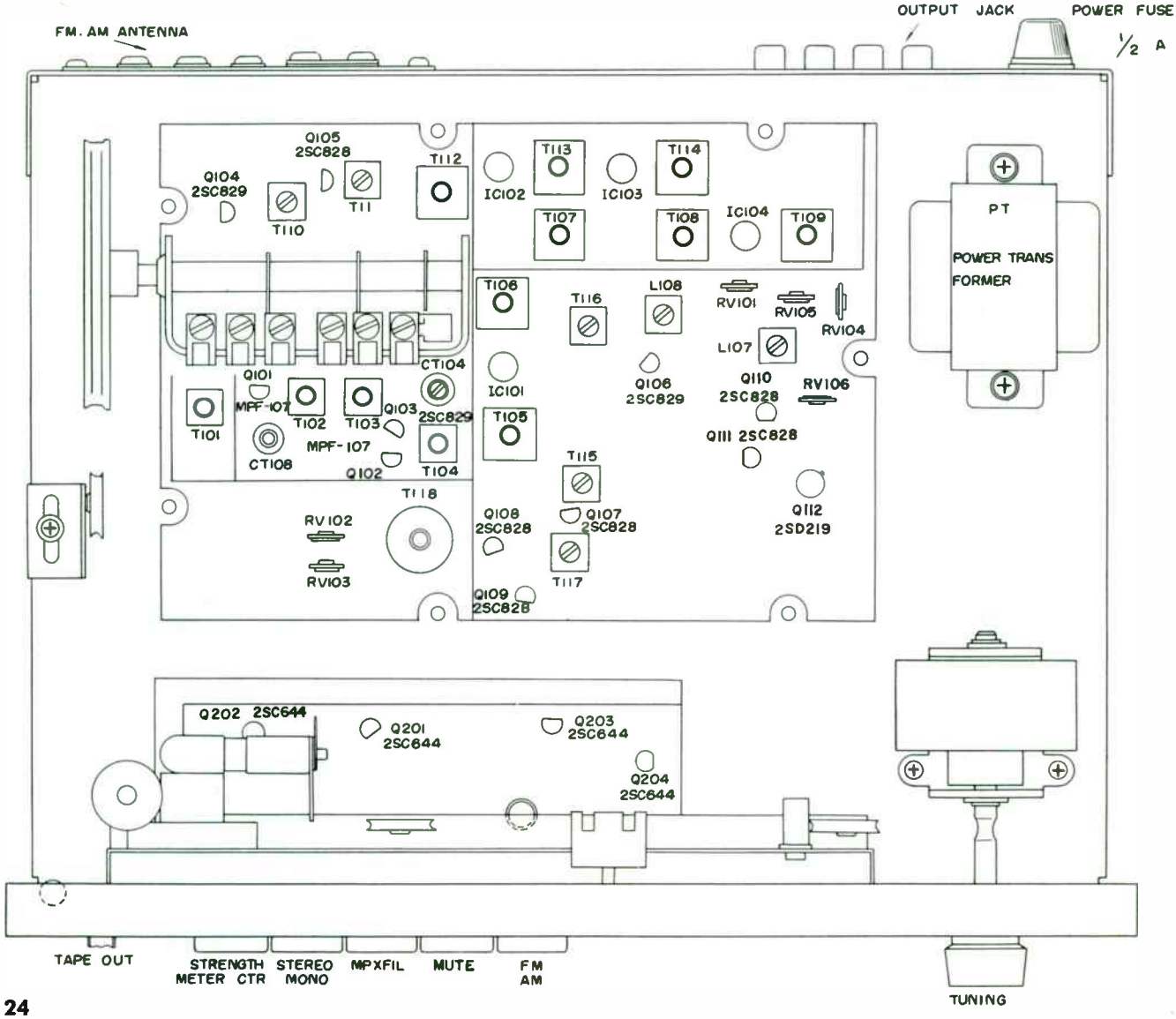
GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
88MHz Unmodulated	Low freq end	DC probe of VTVM to point 14, common to ground.	T105,T103, T104,L101, T101	Adjust for maximum.
Unmodulated	Tune to signal	"	CT108 CT103,CT101, CT104,CT102,	Adjust for maximum. Repeat FM RF steps until no further improvement is noted.

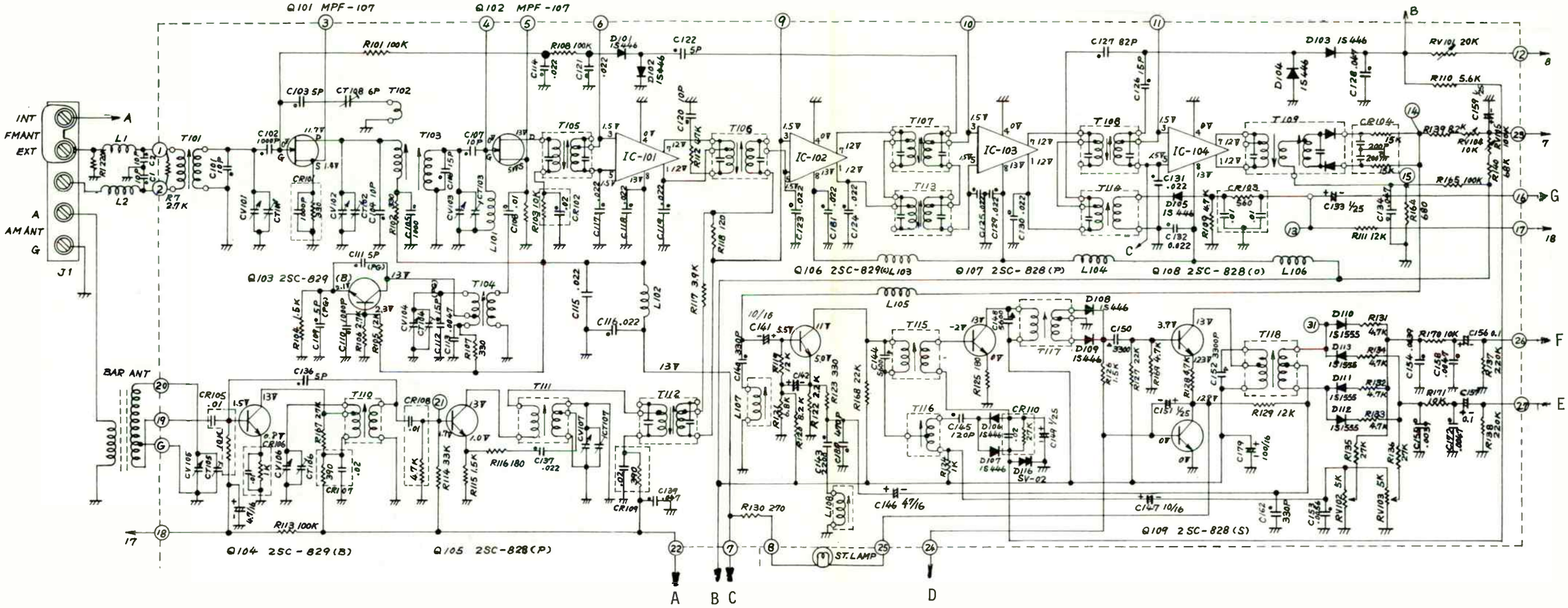
ALIGNMENT INSTRUCTIONS (Continued)

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

High side of generator thru 47K to point 15 ,			low side to ground.
GENERATOR FREQUENCY	INDICATOR	ADJUST	REMARKS
67kHz	Vert input of scope thru 47K to Collector Q106 low side to ground.	L107, L108	Adjust for MINIMUM.
19kHz	Vert input of scope thru 47K to Anode D108, low side to ground.	T115	Adjust for maximum.
19kHz	Vert input of scope thru 47K to point 31, low side to ground.	T118	Adjust for maximum 38kHz response.
Modulated Left Channel	Vert input of scope to point 27, low side to ground.	T116	Adjust for MINIMUM. This step should require only slight adjustment.
Modulated Right Channel	Vert input of scope to point 26, low side to ground.		Check for MINIMUM. If necessary, make compromise adjustment of T116.

PARTS LOCATION LT-725A

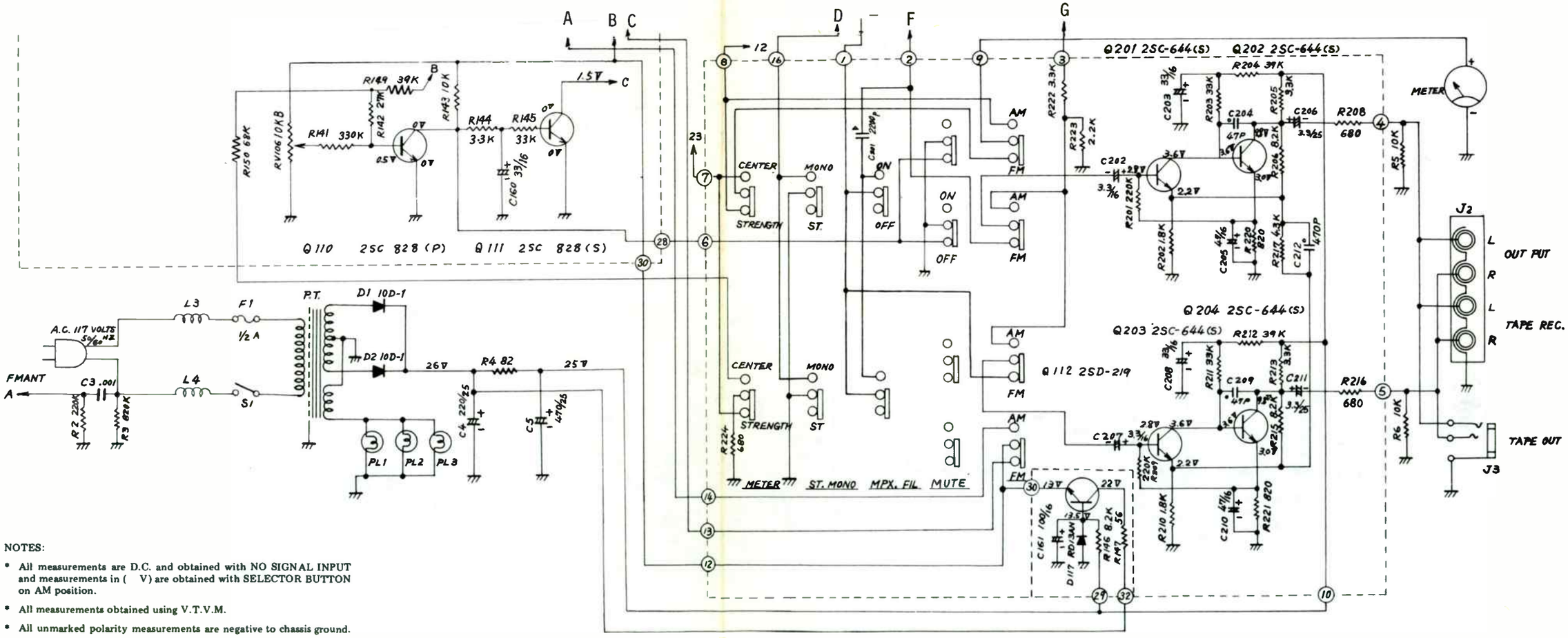




NOTES:

- All measurements are D.C. and obtained with NO SIGNAL INPUT and measurements in (V) are obtained with SELECTOR BUTTON on AM position.
- All measurements obtained using V.T.V.M.
- All unmarked polarity measurements are negative to chassis ground.
- When measuring voltages in AM/FM/MPX POSITIONS, tune receiver to a NO SIGNAL location on dial and short appropriate external antenna inputs.
- If measurements obtained are in excess of plus/minus 20% of values shown, then reason for difference should be corrected.

MODEL LT-725A TUNER



NOTES:

- All measurements are D.C. and obtained with NO SIGNAL INPUT and measurements in (V) are obtained with SELECTOR BUTTON on AM position.
- All measurements obtained using V.T.V.M.
- All unmarked polarity measurements are negative to chassis ground.
- When measuring voltages in AM/FM/MPX POSITIONS, tune receiver to a NO SIGNAL location on dial and short appropriate external antenna inputs.
- If measurements obtained are in excess of plus/minus 20% of values shown, then reason for difference should be corrected.

MODEL LT-725A POWER SUPPLY/AMP

Pages 29-40 Courtesy of THE MAGNAVOX COMPANY

ALIGNMENT PROCEDURE

1. Read entire alignment procedure before attempting alignment.
2. Under no circumstances attempt to align T102, T103 or T203. These LC-Filters are pre-aligned in test fixtures to Magnavox standards and are sealed after alignment is completed.

Equipment for FM IF Alignment

Sweep Generator
VTVM
Oscilloscope

Equipment for FM RF Alignment

300 ohm Balanced Dummy Antenna Pad (See Figure 4).
VTVM
RF Generator (90 MHz - 106 MHz FM)

Equipment for Multiplex Alignment

15 Volt Bias Supply
AC VTVM or Oscilloscope
19 KHz Generator

Equipment for AM RF Alignment

VTVM
RF Generator (550 KHz - 1600 KHz)

MULTIPLEX ALIGNMENT

1. Apply 15 VDC through a 22K resistor to pin 4 of IC103.
2. Apply a 19 KHz crystal controlled signal through a 4.7 mfd. blocking capacitor to TP7 (junction of C170 and C167). Keep the generator output below 300 MV.
3. Depress the stereo pushbutton.
4. Connect an AC VTVM or scope through a 22K resistor to TP8 (Pin 13 of IC103).
5. Adjust L110, L111, and L112 for maximum output.
6. Apply a composite stereo signal to the antenna terminals. Modulate the left channel with a 400 cycle tone, connect an AC VTVM or scope to the right channel speaker terminals, and adjust L112 for minimum output.

FM IF ALIGNMENT

1. Apply sweep signal with a 10.3 MHz to 11.1 MHz range, through Figure 1, or an equivalent circuit to TP1. NOTE: If your sweep generator has a 10.7 MHz marker, completely attenuate or ignore the marker. This procedure will align the chassis to the exact frequency of the pre-aligned LC Filters. The frequency is approximately, but not exactly 10.7 MHz, dependent upon the alignment of the prealigned LC Filters.
2. Connect VTVM to junction of D104 and C131.
3. Adjust sweep output to read a positive 1 volt on VTVM throughout IF alignment.
4. Adjust T101 for minimum positive voltage on VTVM.
5. Connect oscilloscope through Figure 2 to TP4. Adjust Bottom slug of T104 for straightest crossover line. (See Figure 3).

   HINT: Lay a straight edge on the oscilloscope face along the center portion of the crossover line.

   NOTE: The signal level of the S-curve will be approximately 1.5V P/P.
6. Adjust T105 for minimum positive voltage reading on VTVM.

   NOTE: T102 and T103 are factory aligned. DO NOT ADJUST.

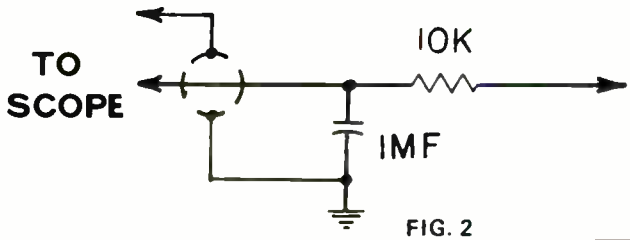


FIG. 2

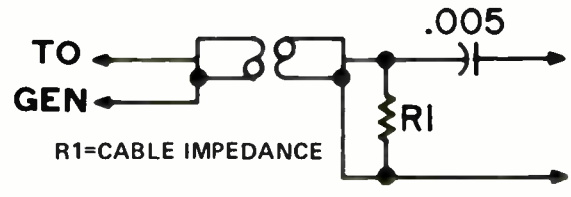


FIG. 1

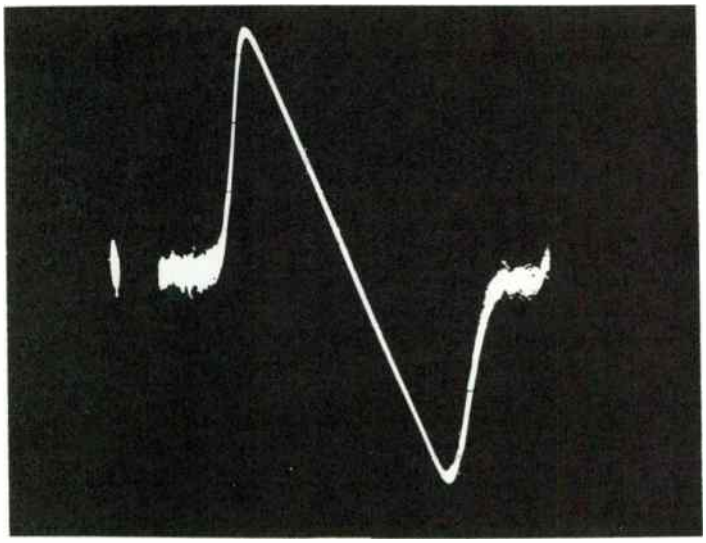


FIG. 3

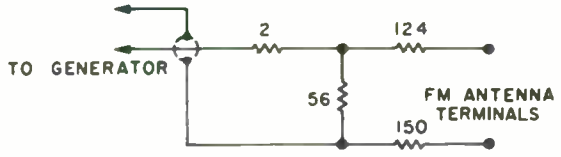


FIG. 4

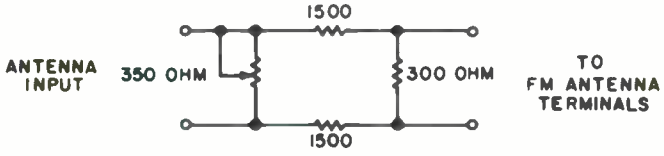
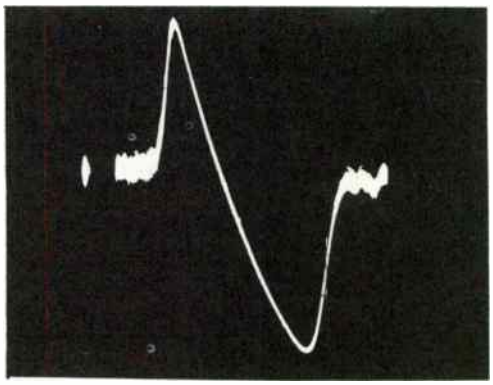
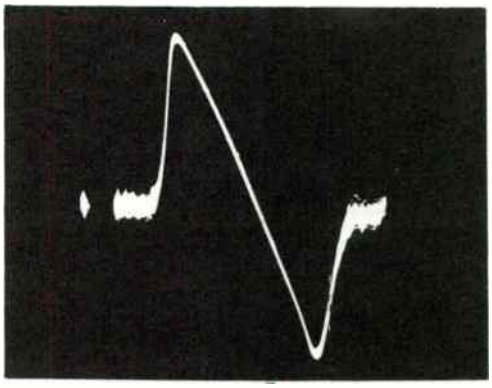


FIG. 6



INCORRECTLY ADJUSTED



INCORRECTLY ADJUSTED

FM RF ALIGNMENT

1. Remove Dial and Bezel Assembly. At 90 KHz and 106 KHz calibration, the black rectangle on the top of the pointer must be contained within the rectangle formed by the raised calibration mark on the Diffuser (see Figure 5).

   NOTE: Close tuning capacitor and check dial pointer calibration on Diffuser.

2. Connect RF Signal Generator through Figure 4 to FM antenna terminals.
3. Connect VTVM to junction of D104 and C131.
4. Set dial pointer to 106 MHz calibration point on Diffuser (see Figure 5).
5. Set generator to 106 MHz, adjust generator output to read +1 volt on VTVM.
6. Adjust C101F FM oscillator trimmer first, then adjust C101A, B and E, for minimum positive voltage reading on VTVM.
7. Set dial pointer to 90 MHz calibration point on Diffuser (see Figure 5).
8. Set generator to 90 MHz, adjust generator output to read +1 volt on VTVM.
9. Adjust L107 FM oscillator coil first, then adjust L102, L105 and L106, for minimum positive voltage readings on VTVM.
10. Reset generator to 106 MHz and rock tuning slightly around 106 MHz. If minimum positive voltage is not at 106 MHz, readjust trimmer capacitors C101A, B, E and F.
11. Reset generator to 90 MHz and rock tuning slightly around 90 MHz. If minimum positive voltage is not at 90 MHz, readjust L102, L105, L106 and L107.
12. Repeat Steps 10 and 11 until minimum positive voltage is achieved at the correct frequencies.

AM IF ALIGNMENT

No AM IF alignment is necessary in this chassis. The LC Filters are pre-aligned in test fixtures at the factory.

NOTE: T203 is factory aligned and sealed, DO NOT ATTEMPT TO ALIGN.

AM RF ALIGNMENT

1. Remove Dial and Bezel assembly and loose couple an RF generator to the AM antenna.
2. Connect VTVM to junction of D201 and R214.
3. Set dial pointer to the 1400 KHz calibration point on Diffuser (see Figure 5).
4. Set generator to 1400 KHz and adjust C101D and E for maximum negative voltage.
5. Set dial pointer to the 600 KHz calibration point on Diffuser (see Figure 5).
6. Set generator to 600 KHz and adjust T202 for maximum negative voltage.
7. Reset generator to 1400 KHz, rock tuning slightly around 1400 KHz. If maximum negative voltage is not at 1400 KHz, readjust C101D and E.
8. Reset generator to 600 KHz, rock tuning slightly around 600 KHz. If maximum negative voltage is not at 600 KHz, readjust T202.
9. Repeat Steps 7 and 8 until maximum negative voltage is achieved at the correct frequencies.

TUNING METER ADJUSTMENT

1. Loosely couple an AM RF signal generator to the AM antenna.
2. Adjust the signal generator and the radio to a frequency near the center of the dial.
3. Reduce the AM RF signal to zero and adjust the top core of T104 until the tuning meter does not change indication as the signal generator level is increased and decreased.
4. Tune the radio to the center of the dial where no AM or FM signals are present.
5. Adjust R176 until tuning meter shows no change of indication when radio is switched from AM to FM.
6. Repeat Step 4 and adjust R134 to center the tuning meter.

POWER AMPLIFIER BIAS ADJUST

1. Move speaker switches to Off.
2. Rotate Volume Control fully counter-clockwise.
3. Connect a VTVM between the emitter of Q415 and the collector of Q417.
4. Adjust Bias Adjust (R419) for .025 VDC on VTVM.
5. Repeat Step 3 procedure for the emitter of Q416 and the collector of Q418.
6. Adjust R420 as in step 4.

FM MUTE SENSITIVITY

1. Connect generator to FM antenna terminals through 300 ohm balanced dummy antenna (see Figure 4). Adjust output of generator for 10 uV of signal at the FM antenna.

2. Turn mute switch On and adjust R139 until signal is present at the speaker terminals. Tune receiver off channel with mute switch On, there will be no noise. With mute switch Off there will be noise.

   The mute control operates in either stereo or mono function. If R139 is not adjusted properly it will affect the muting and stereo. R139 determines the threshold for muting as well as the gating voltage to turn on stereo signal. NOTE: If the equipment you are using cannot be attenuated to a 10 uV signal, then use alternate adjustment.

Alternate Adjustment Procedure

a. Put Antenna Attenuator (Figure 6) between FM antenna terminals and antenna as shown in Figure 6.

b. Place unit in Stereo Mode, Mute Off.

c. Tune to a weak station known to be broadcasting a stereo signal. Adjust Antenna Attenuator (Figure 6) until the background hiss becomes apparent. Put the mute switch in the On position and adjust R139 mute sensitivity control until signal is muted, as in Step 2 above.

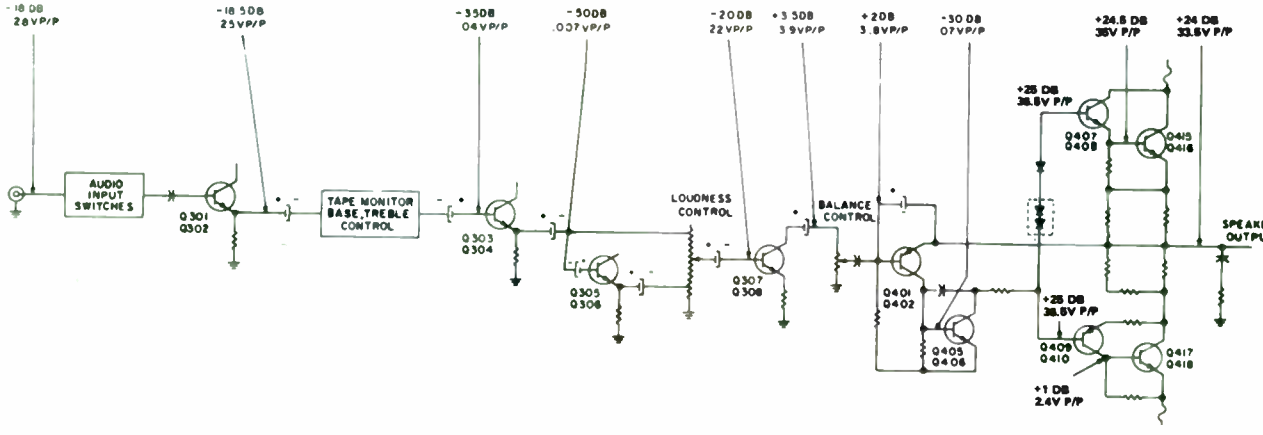
10 KHz TRAP ALIGNMENT

1. Apply a 10 KHz signal to TP6 at about .5V RMS.

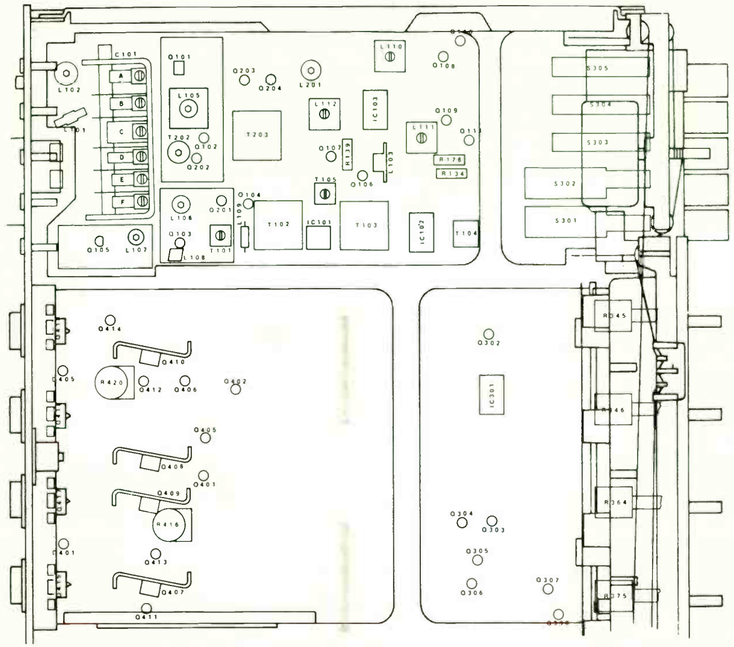
2. Connect an AC VTVM or scope to JU12.

3. Adjust L201 for minimum 10 KHz.

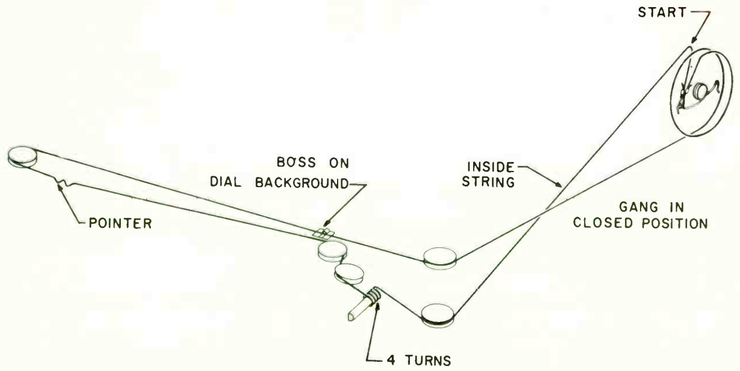
GAIN DIAGRAM

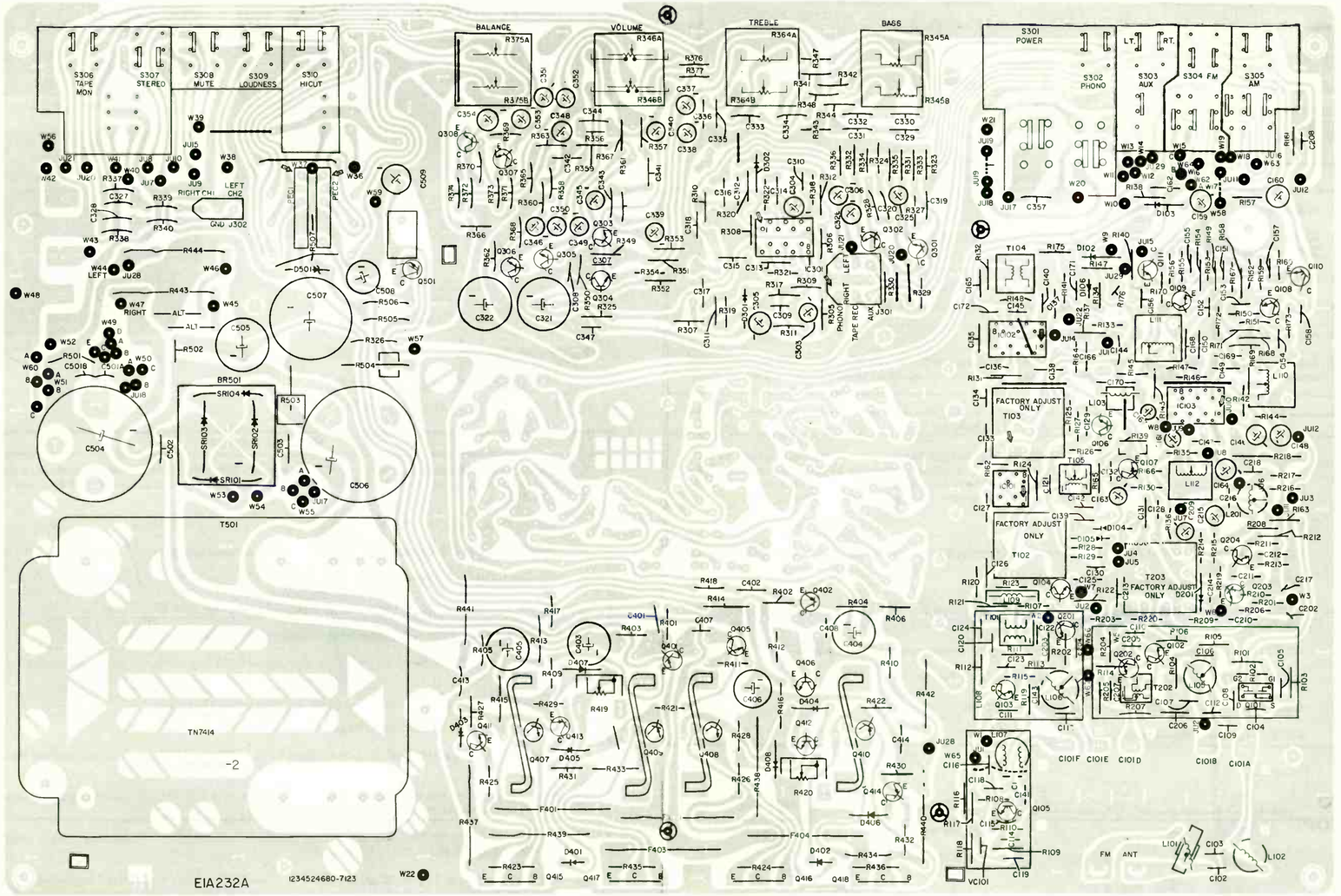


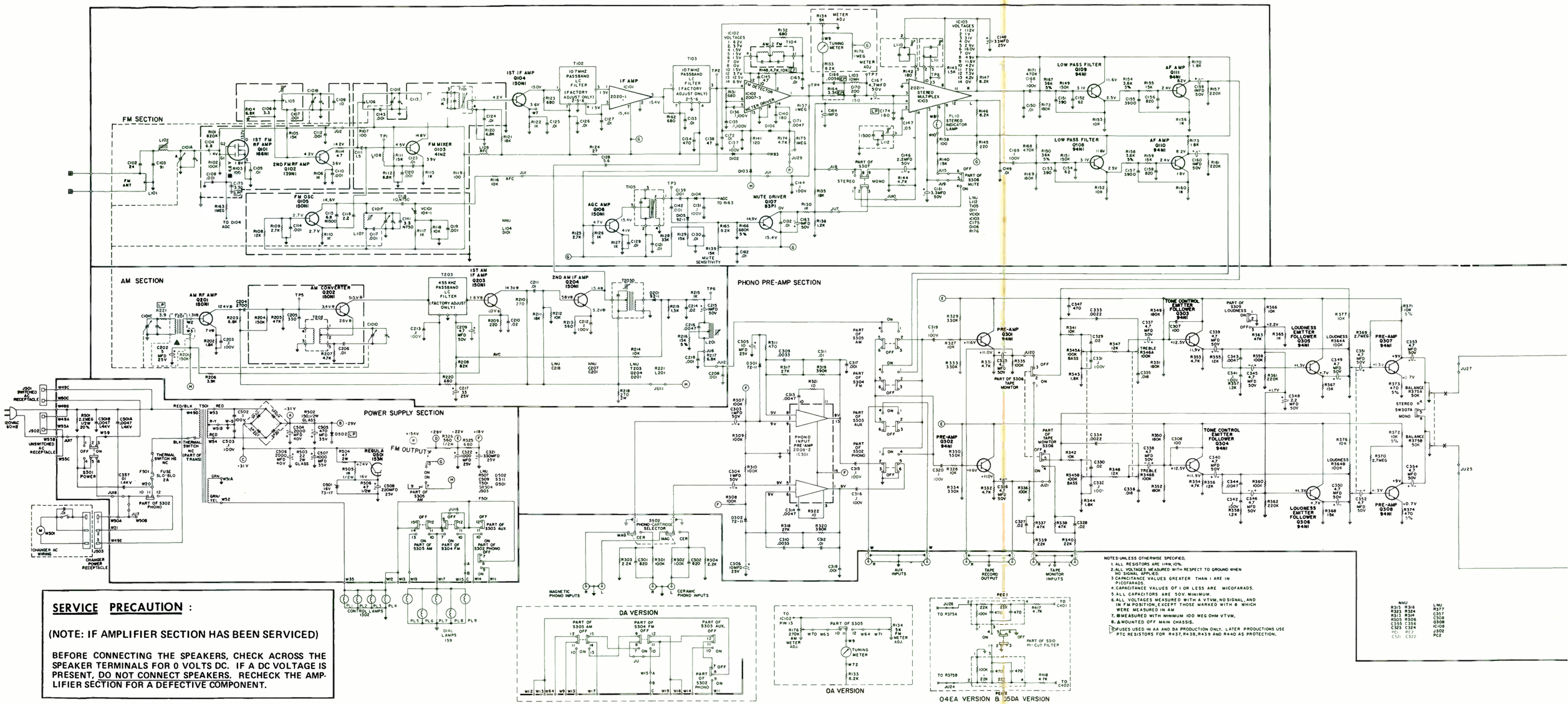
CHASSIS TOP VIEW
(ALIGNMENT LAYOUT)



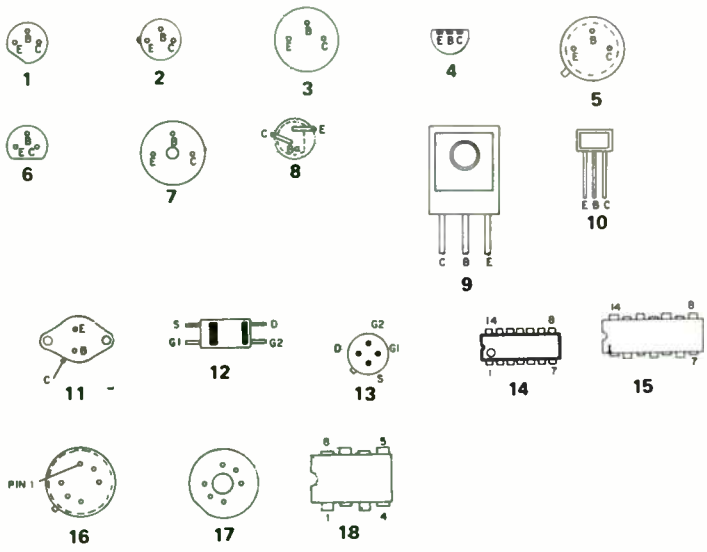
DIAL STRINGING





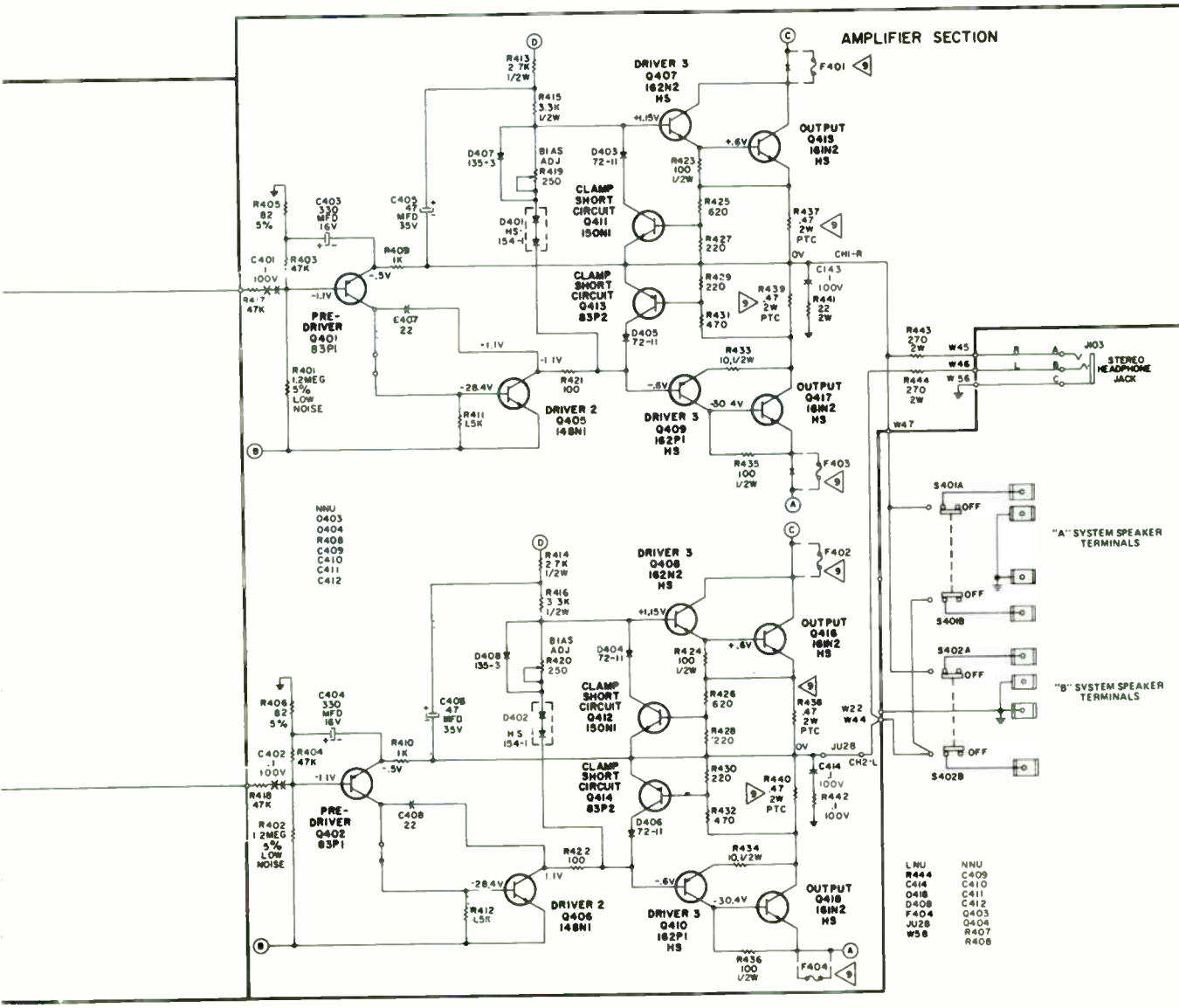


Magnavox Chassis R243-01-AA, -BA, R243-02-AA, R243-03-AA, R243-04-AA, -EA, R243-05-AA, -DA



TRANSISTOR BASING REFERENCE CHART

Q101	12-13		
Q102	1-2-4-5-6-8-10	Q307	1-2-4-6-8
Q103	2	Q308	1-2-4-6-8
Q104	1-3-4-5-6-7-8-10	Q401	2-4-6
Q105	1-3-4-5-6-7-8-10	Q402	2-4-6
Q106	1-3-4-5-6-7-8-10	Q405	2-4-5-6-8-10
Q107	1-2-4-6	Q406	2-4-5-6-8-10
Q108	1-2-4-6-8	Q407	9-10
Q109	1-2-4-6-8	Q408	9-10
Q110	1-2-4-6-8	Q409	9-10
Q111	1-2-4-6-8	Q410	9-10
Q201	1-3-4-5-6-7-8-10	Q411	1-3-4-5-6-7-8-10
Q202	1-3-4-5-6-7-8-10	Q412	1-3-4-5-6-7-8-10
Q203	1-3-4-5-6-7-8-10	Q413	1-2-4-6
Q204	1-3-4-5-6-7-8-10	Q414	1-2-4-6
Q301	1-2-4-6-8	Q415	11
Q302	1-2-4-6-8	Q416	11
Q303	1-2-4-6-8	Q417	11
Q304	1-2-4-6-8	Q418	11
Q304	1-2-4-6-8	IC101	16-17-18
Q304	1-2-4-6-8	IC102	14-15
Q305	1-2-4-6-8	IC103	15
Q306	1-2-4-6-8	IC301	14-15



SEMICONDUCTORS

ITEM	PART NO.
D102	530072-1011
D103	530072-1011
D104	530092-1001
D105	530092-1001
D106	530092-1001
D201	530092-1001
D301	530072-1011
D302	530072-1011
D401	530154-1
D402	530154-1
D402	530154-1
D403	530072-1011
D404	530072-1011
D405	530072-1011
D406	530072-1011
D407	530135-3
D408	530135-3
D501	530073-17
D502	530111-1 (5,6)
IC101	612020-1
IC102	612007-3
CI103	612021-1
IC301	612008-2
Q101	610166-1
Q102	610139-1
Q102	610041-2
Q104	610150-1
Q106	610150-1
Q106	610150-1
Q107	610083-1
Q108	610094-1
Q109	610094-1
Q110	610094-1
Q111	610094-1
Q201	610150-2
Q202	610150-2
Q203	610150-2
Q204	610150-1
Q301	610094-1
Q302	610094-1
Q303	610094-1
Q304	610094-1
Q305	610094-1
Q306	610094-1
Q307	610094-1
Q308	610094-1
Q401	610093-1
Q402	610083-1
Q405	610148-1
Q406	610148-1
Q407 & Q409	171175-1
Q408 & Q410	171175-1
Q411	610150-1
Q412	610150-1
Q413	610083-2
Q414	610083-2
Q415 & Q417	171174-1
Q16 & Q418	171174-1
SR501	530111-1002
SR502	530111-1002
SR503	530111-1002
SR504	530111-1002
VC101	530104-1

ELECTROLYTIC/VARIABLE CAPS

ITEM	PART NO.	VALUE	
C101	260211-2	Tuning Gang	
C146	270109-2050	2.2 uF	50 V
C148	270109-3125	33 uF	25 V
C159	270109-1050	1 uF	50 V
C160	270109-1050	1 uF	50 V
C161	270109-3050	3.3 uF	30 V
C163	270109-1050	1 uF	50 V
C164	27D109-1050	1 uF	50 V
C167	270109-5050	4.7 uF	50 V
C202	270082-603	5 uF	25 V
C209	270109-5050	4.7 uF	50 V
C215	270109-1050	1 uF	50 V
C217	270109-3125	33 uF	25 V
C303	270109-1050	1 uF	50 V
C304	270109-1050	1 uF	50 V
C305	270109-1125	10 uF	25 V
C306	270109-1125	10 uF	25 V
C321	270109-3225	330 uF	25 V
C322	270109-1325	1000 uF	25 V
C325	270109-5050	4.7 uF	50 V
C326	270109-5050	4.7 uF	50 V
C337	270109-5050	4.7 uF	50 V
C338	270109-5050	4.7 uF	50 V
C339	270109-5050	4.7 uF	50 V
C340	270109-5050	4.7 uF	50 V
C345	270109-5050	4.7 uF	50 V
C346	270109-5050	4.7 uF	50 V
C348	270109-2050	2.2 uF	50 V
C349	270109-5050	4.7 uF	50 V
C350	270109-5050	4.7 uF	50 V
C351	270109-5050	4.7 uF	50 V
C352	270109-5050	4.7 uF	50 V
C353	270109-5050	4.7 uF	50 V
C354	270109-5050	4.7 uF	50 V
C403	270109-545	470 uF	16 V
C404	270109-5215	470 uF	16 V
C405	270109-5135	47 uF	35 V
C406	270109-5135	47 uF	35 V
C504	270099-18	2000 uF	50 V
C505	270109-5250	470 uF	50 V
C506	270099-18	3000 uF	50 V
C507	270109-1335	1000 uF	35 V
C508	270109-2225	220 uF	25 V
C509	270109-2225	220 uF	25 V

(1) Chassis R243-01-AA
(2) Chassis R243-01-BA
(3) Chassis R243-02-AA
(4) Chassis R243-03-AA
(5) Chassis R243-04-AA
(6) Chassis R243-05-AA

CONTROLS/SPECIAL RESISTORS

ITEM	PART NO.	DESCRIPTION
R221	230203-3395	3.9 ohms, 5% (5,6)
R437	230164-46	.47 ohm, 10% 2W WW (1,2)
	240104-1	.47 ohm, 10% Fusible (3,4,5,6)
R438	230164-46	.47 ohm, 10% 2W WW (1,2)
	240104-1	.47 ohm, 10% Fusible (3,4,5,6)
R439	230164-46	.47 ohm, 10% 2W WW (1,2)
	240104-1	.47 ohm, 10% Fisible (3,4,5,6)
R440	230164-46	.47 ohm, 10% 2W WW (1,2)
	240104-1	.47 ohm, 10% Fusible (3,4,5,6)
R134	220217-13	5000 ohm Meter Adjust
R139	220217-14	20K Muting
R176	220217-12	1 meg Meter (1,2,3,4)
	220217-22	270K Meter (5,6)
R345	220204-29	100K Dual Bass
R346	220204-29	100K Dual Treble
R364	220206-16	100K Dual Volume
R375	220204-30	50K Dual Balance
R419	220193-18	250 ohm Bias
R420	220193-18	250 ohm Bias

COIL/TRANSFORMERS

ITEM	PART NO.
L101	361108-2
L102	361080-6
L103	361007-2
L105	361235-1
L106	361235-10
L107	351101-2
L108	360996-2
L109	361277-1
L110	361388-1
L111	361388-2
L112	361388-1
L201	361255-1
T101	361433-1
T102	361406-1
T103	361406-1
T104	361431-1
T105	361433-1
T201	361314-1 (1,2,3,4)
	361314-3 (5.6)
T202	361031-3 (1,2,3,4)
	361473-1 (5.6)
T203	361432-1
T501	300277-1

MISCELLANEOUS

ITEM	NAME	PART NO.
F401	Fuse, 2.5 A	181021-1300 (1,2)
F402	Fuse, 2.5 A	181021-1300 (1,2)
F403	Fuse, 2.5 A	181021-1300 (1,2)
F404	Fuse, 2.5 A	181021-1300 (1,2)
F501	Fuse, 2.0 A	181021-5250
PC1	Component Combination	250627-1
PC2	Component Combination	250627-1
S301-305	Switch, Mode	160467-1
S306-309	Switch, Feature	160469-3 (1,2,3,4,5)
		160469-4 (6)
S401 & S402	Switch, Speaker Function	160466-1
S502	Switch, Phono Input	160370-5
	Meter, Tuning	701263-7

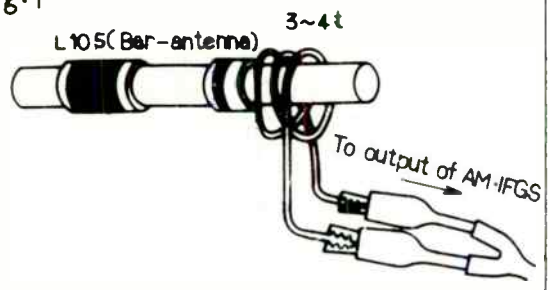
CABINET PARTS

NAME	PART NO.
Button, Red	142115-3
Button, Black	142115-1
Panel, Dial	142117-3

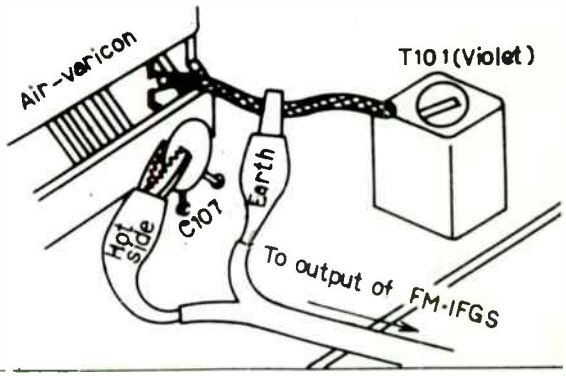
Pages 41-52 Courtesy of MORSE ELECTRO PRODUCTS CORP.

ALIGNMENT DIAGRAMS

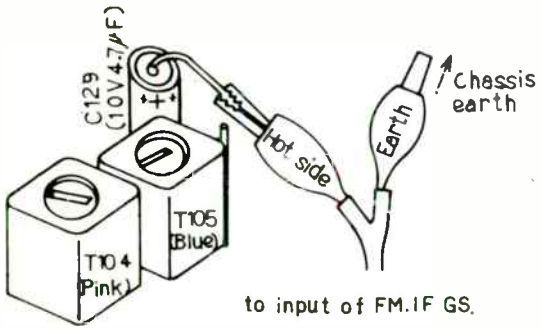
Fig·1



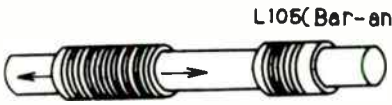
Fig·2



Fig·3



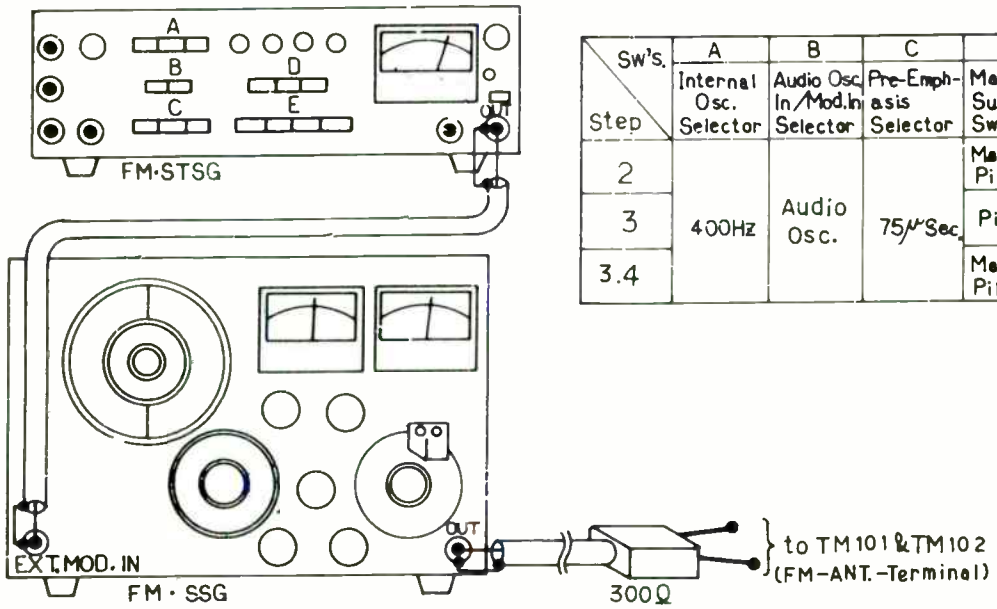
Fig·4



Adjust L101 by sliding coil-bobbin

Fig·5

(a) Connection of Signal Source



(b) Setting of Signal

Sw's. / Step	A Internal Osc. Selector	B Audio Osc. In/Mod.In Selector	C Pre-Emphasis Selector	D Main & Subch. Switch.	E Output Signal Selector
2	400Hz	Audio Osc.	75μSec.	Main & Pilot	Main
3				Pilot	
3.4				Main & Pilot	Lch+Rch

ALIGNMENT

Equipment Required

1. VTVM
2. AM/FM Standard Signal Generator (AM/FM SSG)
3. AM/FM Intermediate Frequency Generating Scope (AM/FM IFGS)
4. Loop Antenna
5. FM Stereo Signal Generator (FM STSG)
6. Audio Frequency Signal Generator (AF SG)
7. Oscilloscope
8. Dummy Load: Two 8 ohm, 5-10W resistors
9. 8-Track Test Cartridges: RCA #323 (NIVICO VTT-807)
   RCA #326 (NIVICO VTT-809)
   RCA #327 (NIVICO VTT-820)
   RCA #328 (NIVICO VTT-804)
10. Non-metallic alignment tool
11. Miscellaneous: Paint for locking screws, connection cords.

NOTE:

1. Before attempting alignment, connect 8 ohm 5-10W dummy loads across Speaker Output jacks J501 and J502.
2. All adjustments in this section are to be made with Bass, Treble, and Balance controls at mid-range; and Volume control at maximum.
3. Use only enough generator output to obtain a usuable indication.
4. Standard modulation is 400Hz, 30% (22.5KHz deviation)
5. Standard audio output is 500mW (2 volts at 8 ohms)
6. Refer to P.C. Board Diagram "TUP-022C" for parts location
7. Low sides of signal sources and output indicators are to be connected to closest ground, unless otherwise noted
8. Lock all adjustments with paint when completed.

Item		Step	Signal Source Connection	Set Signal Source to	Output Indicator Connection	Set Radio Dial at	Adjust	Adjust for
IFT	455 KHz	1	Set Function switch to AM position.					
		2	AM IFGS Output to L105 (See Fig. 1)	Sweep centered @ 455KHz	IFGS Input to R126	minimum frequency	T106	maximum
		3					T107	
		4					T108	
		5	Repeat Steps 2 thru 4 until no further improvement can be made.					

ALIGNMENT (CONTINUED)

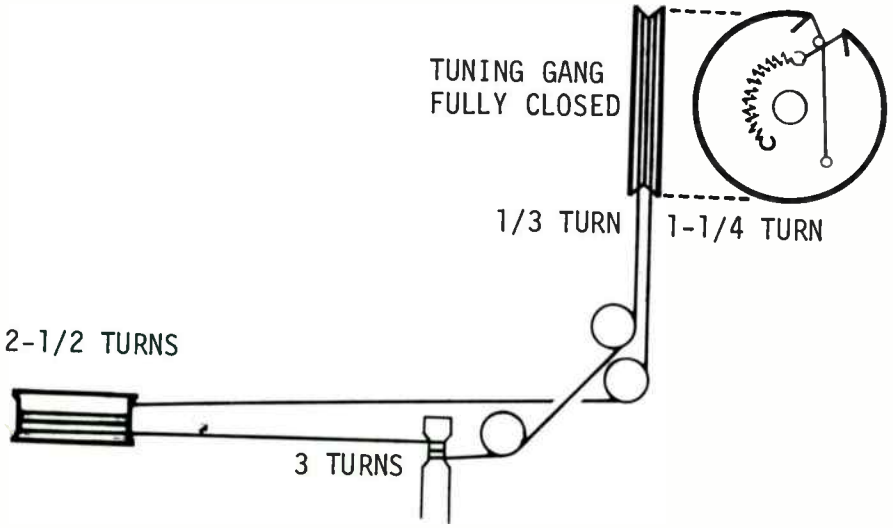
Item		Step	Signal Source Connection	Set Signal Source to	Output Indicator Connection	Set Radio Dial at	Adjust	Adjust for
IFT	10.7 MHz	1	Set Function switch to FM position. Disconnect positive lead of C129.					
		2	FM IFGS output to C107 (See Fig. 2)	Sweep ±1MHz centered @ 10.7MHz	FM IFGS input to positive lead of C129 (See Fig. 3)	maximum frequency	T101	maximum symmetrical "V" curve, centered at 10.7MHz
		3					T102	
		4					T103	
		5					T104	
		6	Repeat Steps 2 thru 5 until no further improvement can be made. Reconnect the positive lead of C129.					
		7	"	"	FM IFGS input to C201		T105	symmetrical "S" curve
AM	Band	1	Set Function switch to AM position.					
		2	AM SSG Standard Modulated Output* to loop antenna	525KHz	VTVM/O-Scope w. Dummy load input to J501 or J502 (Main Speaker Jack)	minimum frequency	L106	maximum
		3		1,650KHz in summer, 1,660KHz in autumn or spring 1,760KHz in winter		maximum frequency	TC104 (on varicon)	
		4	Repeat Step 2 and 3 a few times to obtain the needed AM bandwidth.					
	Tracking	1	"	600KHz	"	600KHz (tune to signal)	L105 (See Fig. 4)	"
		2		1,400KHz		1,400KHz (tune to signal)	TC103 (on varicon)	
		3	Repeat Step 1 and 2 a few times to minimize the tracking error.					

* Standard Modulated Output is 400Hz, 30% (22.5 KHz deviation).

ALIGNMENT (CONTINUED)

Item	Step	Signal Source Connection	Set Signal Source to	Output Indicator Connection	Set Radio Dial at	Adjust	Adjust for
FM Band	1	See Function switch to FM positon.					
	2	FM SSG Standard Modulated Output * to TM101 or TM102	86MHz	VTVM/O-Scope w. Dummy load Input to J501 or J502	minimum frequency	**L104	maximum
	3		109.5MHz		maximum frequency	TC102	
	4	Repeat Step 2 thru 3 a few times to obtain the needed FM bandwidth.					
Tracking	1	"	90MHz	"	90MHz (tune to signal)	**L102	maximum
	2		98MHz		98MHz (tune to signal)	L101	
	3		106MHz		106MHz (tune to signal)	TC101 (on varicon)	
	4	Repeat Step 1 thru 3 a few times to minimize the tracking error.					
MPX (FM-Stereo)	1	See Fig. 5(a)	See Fig.5(b)	VTVM/ O-Scope input to F201 or F202	tune to signal	L201 L202	minimum 400Hz leak from tne other channel.

DIAL CORD STRINGING



ADJUSTMENTS

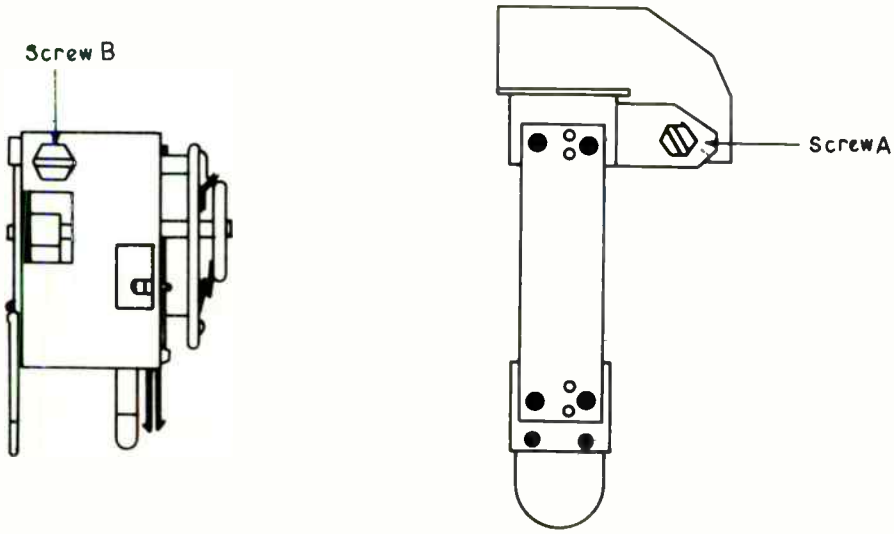
8-Track Tape Deck Adjustments

Note:

1. Before making any adjustments, connect 8 ohm, 5-10W dummy loads across Speaker Output jacks J501 and J502.
2. All adjustments referred to in this chart are made with the Function switch in Tape; and the Bass, Treble and Balance controls at midrange.
3. For location of Screws A and B, see Figure 6. For location of VR301 and VR302, see P.C. Board Diagram "OP-055".
4. Lock all adjustments with paint when completed.

Adjustment	Step	Test Cartridge	Output Indicator Connection	Channel Position	Volume Control Setting	Adjust	Adjust for
Head Azimuth	1.	RCA #326 or NIVICO VTT-809	VTVM/O-Scope Across J501 or J502	2 or 3	non-clipping level	Screw A	maximum
Head Position (crosstalk)	1.	RCA #327 or NIVICO VTT-820		1 & 3, and next 1 & 3	maximum	Screw B	minimum
	2.	RCA #328 or NIVICO VTT-804		2 & 4, and next 2 & 4			minimum
Output Level	1.	RCA #323 or NIVICO VTT-807	VTVM/O-Scope Across J501	2 or 3		VR301	6.3V (5 watts)
	2.		VTVM/O-Scope Across J502			VR302	

Fig.6



SEMICONDUCTORS

ITEM	PART NO.	TYPE			
D001-1	21M317	10DC-1R	Q103	21M153	2SC829B
D001-2	21M317	10DC-1R	Q104	21M152	2SC829A
D002		10D-06	Q105	21M153	2SC829B
D003	21M436	10D-1	Q106	21M007	2SA102BA
D101	21M288	1N60	Q301	21M174	2SC945P
D102	21M288	1N60	Q302	21M174	2SC945P
D103	21M288	1N60	Q303	21M174	2SC945P
D104	21M288	1N60	Q304	21M174	2SC945P
D105	21M288	1N60	Q401	21M174	2SC945P
D106&	21M288	1N60P	Q402	21M174	2SC945P
D107	21M288	1N60P	Q501	21M174	2SC945P
D108	21M316	SC-15	Q502	21M174	2SC945P
D109	21M214	RD-9A	Q503	21M186	2SC1317S
D501	21M248	VD1210	Q504	21M186	2SC1317S
D502	21M248	VD1210	Q505	21M184	2SC1226AP
IC201	21M485	UPC544C	Q506	21M028	2SA699AP
Q101	21M188	2SC1359B	Q507	21M184	2SC1226AP
Q102	21M153	2SC829B	Q508	21M028	2SA699AP

ELECTROLYTIC/VARIABLE CAPS

ITEM	PART NO.	VALUE	
C006		470uf	25V
C129		4.7uf	10V
C130		.47uf	10V
C136		10uf	10V
C137		220uf	10V
C201		1uf	16V
C202		4.7uf	16V
C208		220uf	16V
C209		4.7uf	16V
C210		4.7uf	16V
C303		4.7uf	16V
C304		4.7uf	16V
C308		3.3uf	16V
C309		3.3uf	16V
C312		4.7uf	16V
C313		4.7uf	16V
C314		470uf	16V
C403		200uf	10V
C404		.47uf	16V
C405		.47uf	16V
C406		33uf	6V
C407		33uf	6V
C408	25M018	1uf	50V
C409	25M018	1uf	50V
C416	26M030	.1uf	10V
C417	26M030	.1uf	10V
C418	26M038	.15uf	10V
C420	26M038	.15uf	10V
C501		4.7uf	16V
C502		4.7uf	16V
C507		10uf	16V
C508		10uf	16V
C509		33uf	6V
C510		33uf	6V
C511		100uf	16V
C512		100uf	16V
C519		470uf	16V
C520		470uf	16V
TC101, TC103, TC104, VC101, VC102, VC103, VC104	28M008	Tuning Gang w/Trimmers	
TC120	28M032	Trimmer	

CONTROLS/SPECIAL RESISTORS

ITEM	PART NO.	TYPE
D501	21M248	Thermistor VD1210
D502	21M248	Thermistor VD1210
R525	20M126	.47 ohms WW
R526	20M126	.47 ohms WW
R527	20M126	.47 ohms WW
R528	20M126	.47 ohms WW
VR301	22M177	Tape Level
VR302	22M177	Tape Level
VR401	EVBF0AA01B54	Dual Treble
VR402	EVBF0AA01B54	Dual Bass
VR403	EVAQ5AA01G54	Balance
VR404	EVBF5AA01B54	Dual Volume

COILS/TRANSFORMERS

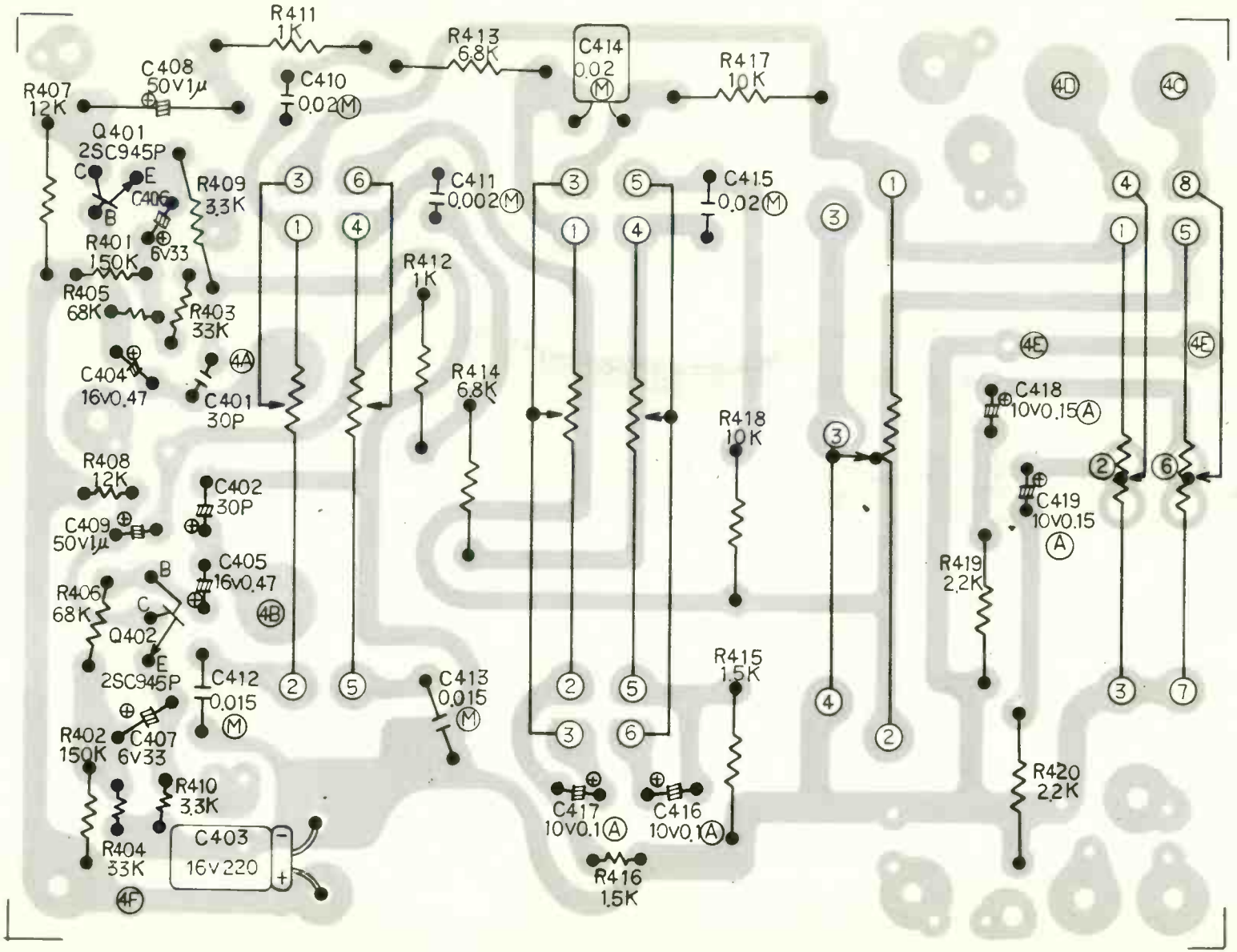
ITEM	PART NO.	DESCRIPTION
CH001	47M485	Choke Coil
CH002	47M485	Choke Coil
L101	47M343	FM Antenna Coil
L102	47M480	FM RF
L103	47M479	FM Trap Coil
L104	47M520	FM Oscillator
L105	50M030	AM Antenna Coil
L106	47M170	AM Oscillator
L201	47M482	19KC
L202	47M483	38KC
T101	47M481	HFS-055A FM IFT
T103	47M358	S1F-523B FM IFT
T104	47M359	HFS-651 FM IFT
T105	47M360	HFS-641 FM IFT
T106	47M169	10-TA AM IFT
T107	47M188	0408 AM IFT
T108	47M189	0409 AM IFT
T501	11M097	Power Transformer

MISCELLANEOUS

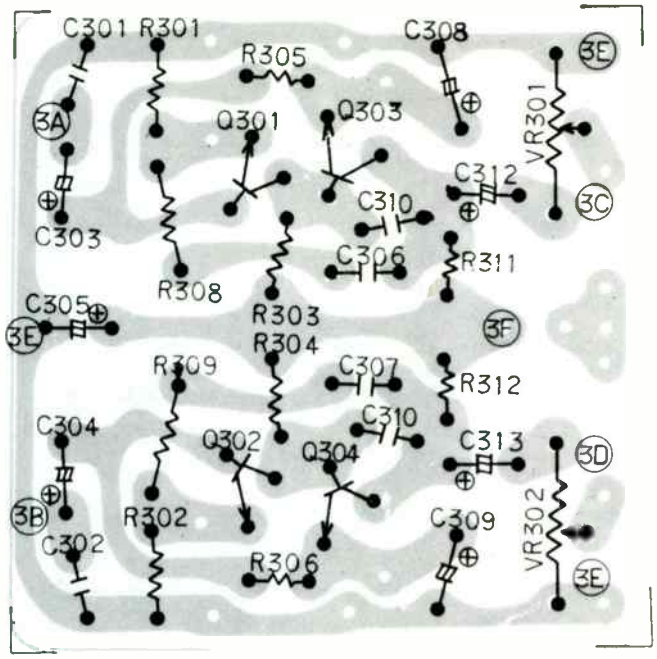
ITEM	NAME	PART NO.
F201	Filter, MPX	47M484
F202	Filter, MPX	47M484
HD301 & HD302	Head, 8-Track Play	38M020
M	Motor, Tape Drive	31M037
PL002	Lamp, Stereo Indicator	17M079
PL003	Lamp, Channel 1 Indicator	17M078
PL004	Lamp, Channel 2 Indicator	17M078
PL005	Lamp, Channel 3 Indicator	17M078
PL006	Lamp, Channel 4 Indicator	17M078
RL001	Solenoid, Track Change	39M063
SW001	Switch, Power	12M114
SW002, SW101, SW102, SW103, SW401, SW402	Switch, Function	12M115
SW003	Switch, Tape Deck Power	12M175
SW006	Switch, Channel Indicator	17M038
	Belt, Tape Drive	46M008
	Flywheel	29M092

CAB INET PARTS

NAME	PART NO.
Button, Manual Channel Select	40M138
Door, Cartridge	29M134
Knob, Function	40M173
Knob, Slide Control	40M174
Panel, Front	29M874



TP-045



OP-055

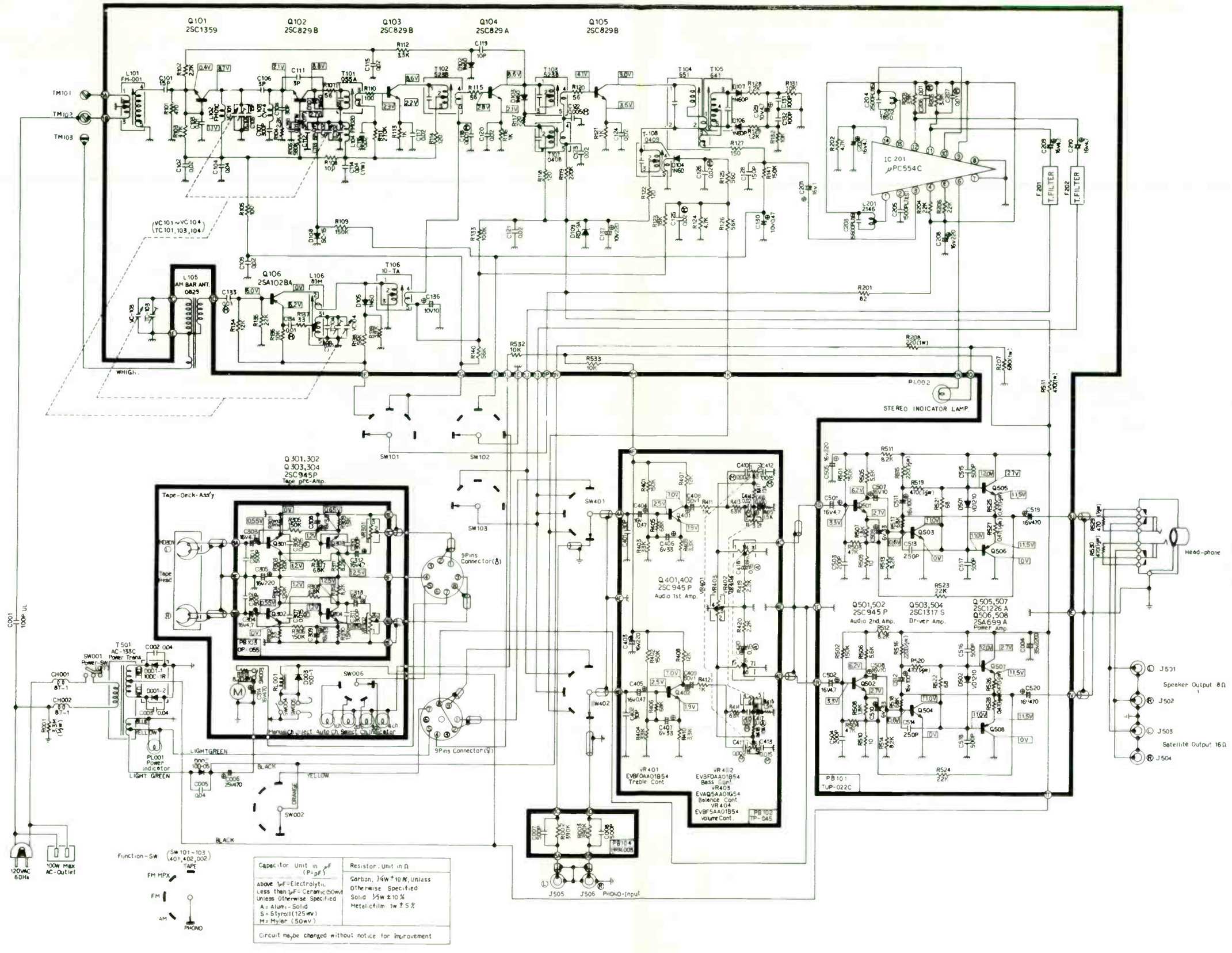
OP-055

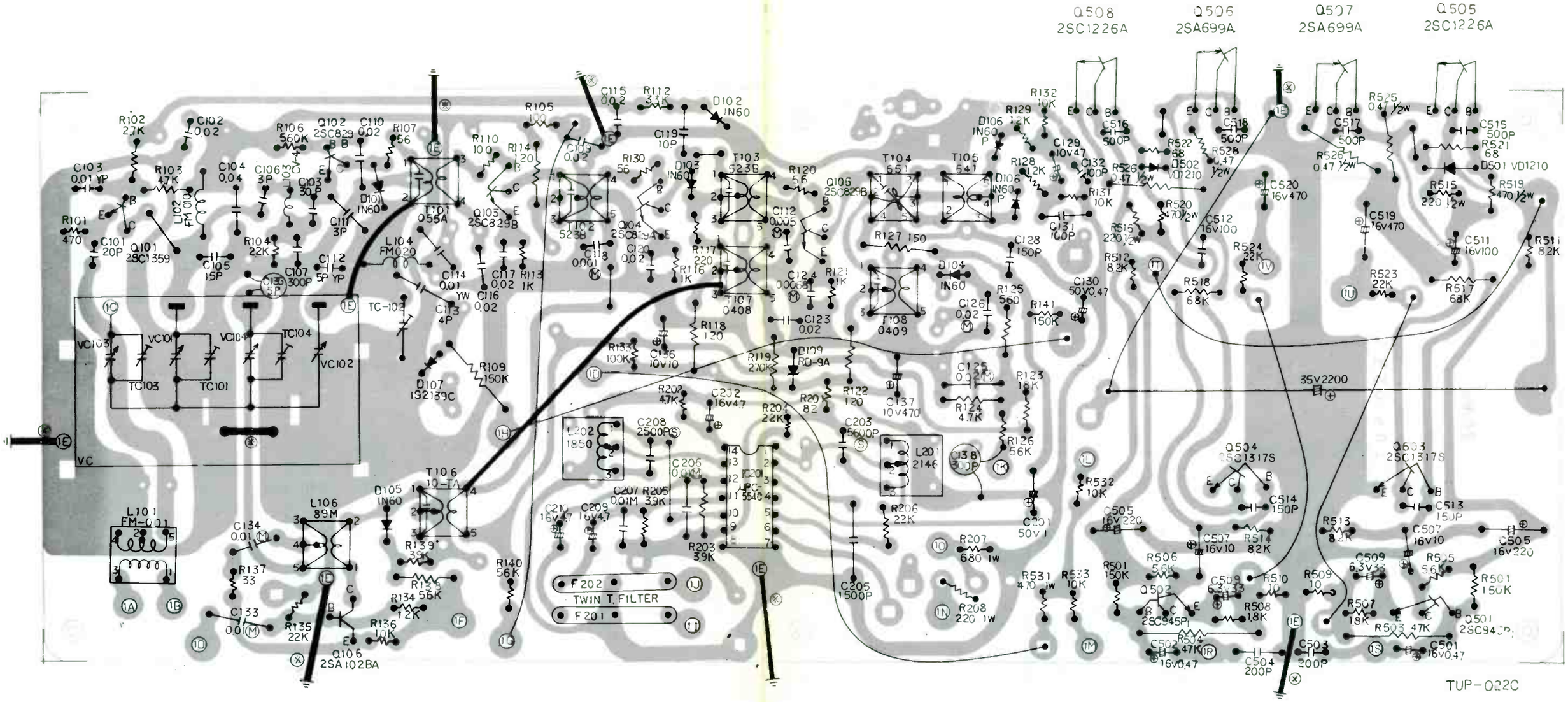
VOLTAGES

ITEM	BASE	EMITTER	COLLECTOR
Q101	1.1V	0.4V	8.7V
Q102	2.7V	2.1V	8.8V
Q103	2.9V	2.2V	8.6V
Q104	2.8V	2.1V	8.6V
Q105	4.1V	3.6V	9.0V
Q106	6.0V#	6.2V#	0.0V#
Q301,302	0.55V*	0.0V*	1.2V*
Q303,304	1.2V*	0.65V*	12.5V*
Q401,402	2.5V	1.9V	7.0V
Q501,502	3.3V	2.7V	6.2V
Q503,504	0.6V	0.0V	11.0V
Q505	12.0V	11.5V	27V
Q506	11.0V	11.5V	0.0V
Q507	12.0V	11.5V	27V
Q508	11.0V	11.5V	0.0V

NOTE: All measurements made in FM mode unless otherwise designated.

* Denotes measurement made in Tape.
\# Denotes measurement made in AM.





Pages 53-55 Courtesy of J. C. PENNEY CO., INC.

AZIMUTH ADJUSTMENT (See figure 7.)

1. Set the tape player to track 2.
2. Connect two VTVMs to the output of the left and right output channel
3. Using either an RCA 321 test tape or recorded music, play the tape and adjust screw A in figure 7, for a balanced maximum output.

HEIGHT ADJUSTMENT

NOTE

RCA TEST TAPE 328 is recorded with a 400 Hz tone above and below channel 2. When adjusting, if the tone gets louder, adjust for minimum by turning the adjustment screw in the opposite direction.

1. Set tape player to track 2.
2. Play the tape and adjust screw B for minimum sound on channel 1.

CROSSTALK ADJUSTMENT

NOTE

Test tape RCA 328 has 400Hz on channels 1, 3, 5, and 7 and no signal or channel 2, 4, 6, and 8.

1. Using the VTVM, play each channel and measure the power ratio between each odd and even numbered track. It should be at least 30db.
2. If the power ratio is out of tolerance, repeat the Azimuth and Height adjustments.
3. Lock screws A and B place, using glyptal or glue.

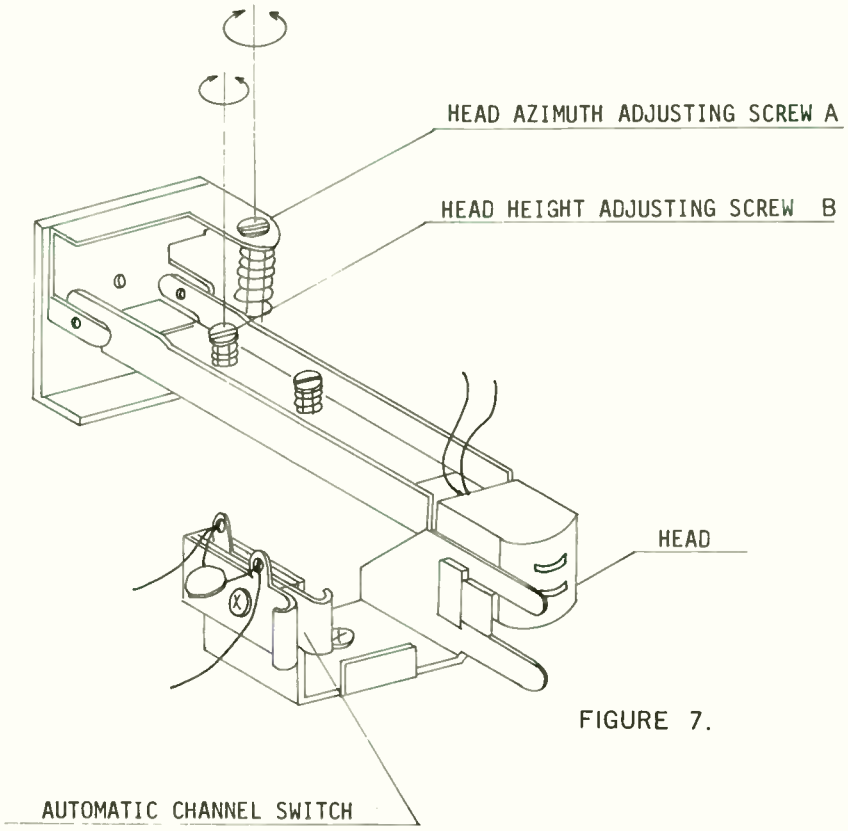
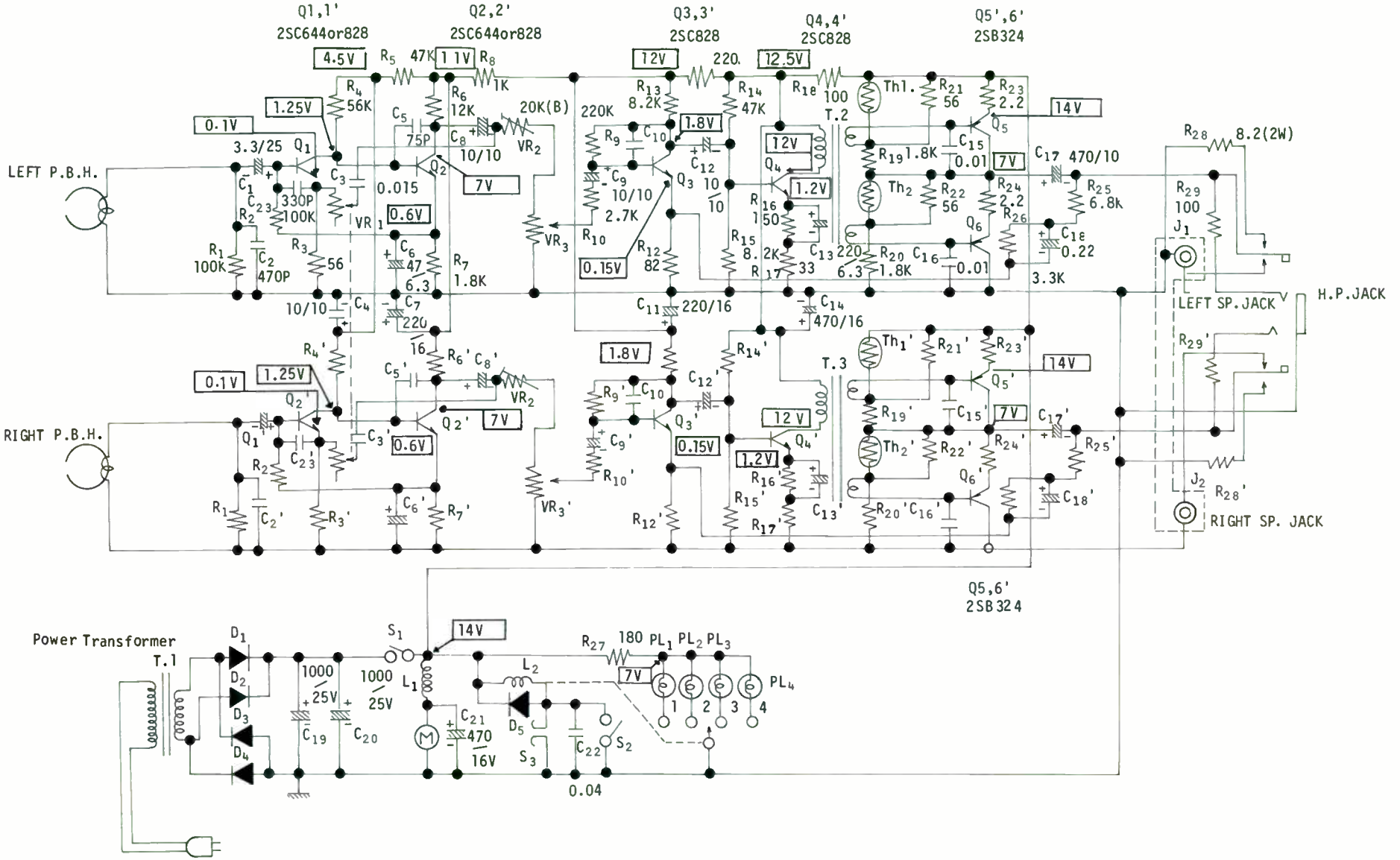
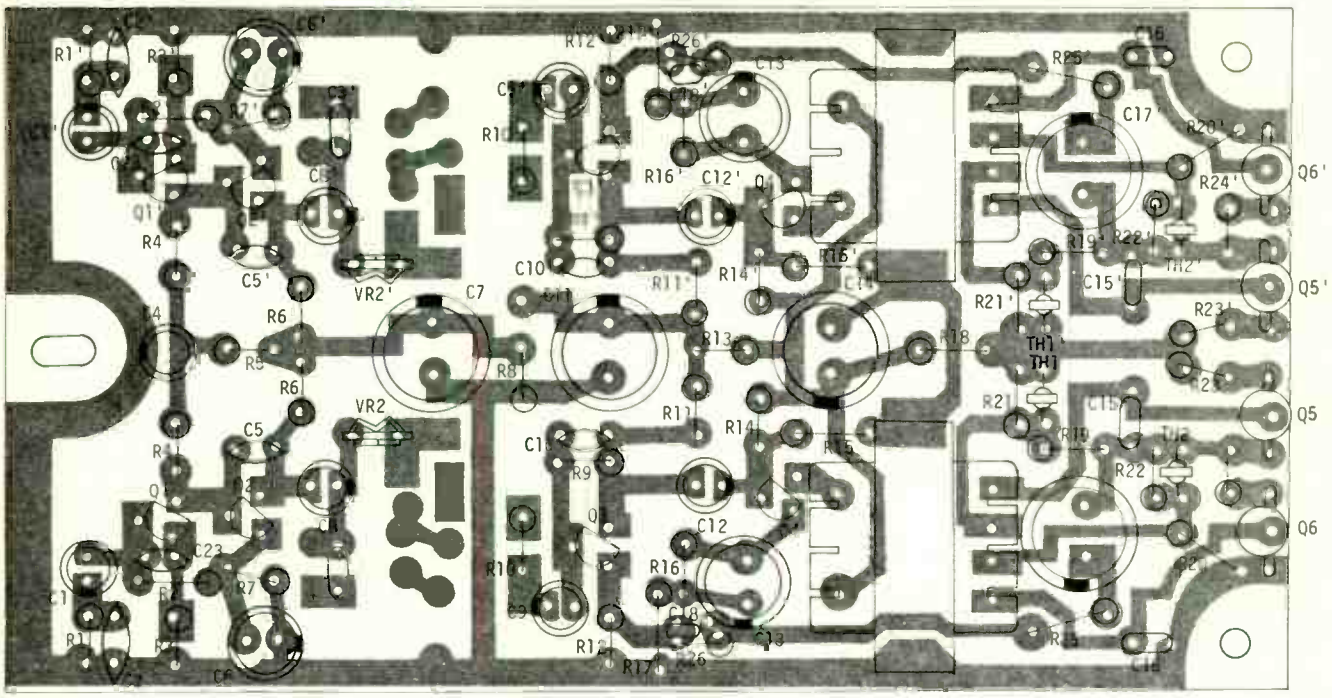


FIGURE 7.





SEMICONDUCTORS

ITEM	PART NO/TYPE
D1	SR-1K
D2	SR-1K
D3	SR-1K
D4	SR-1K
D5	SR-1K
Q1	2SC644 (2SC828F)
Q2	2SC644 (2SC828F)
Q3	2SC828
Q4	2SC828
Q5	2SB324
Q6	2SB324

ELECTROLYTIC/VARIABLE CAPS

ITEM	PART NO.	VALUE	
C1	1204335	3.3 uF	25 V
C4	1202106	3.3 uF	10 V
C6	1201476	47 uF	6.3 V
C7	1203227	220 uF	16 V
C8	1202106	3.3 uF	10 V
C9	1202106	3.3 uF	10 V
C11	1203227	220 uF	16 V
C12	1202106	3.3 uF	10 V
C13	1201227	220 uF	6.3 V
C14	1203477	470 uF	16 V
C17	1202477	470 uF	20 V
C18	1211224	.22 uF	
C19	1204108	1000 uF	25 V
C20	1204108	1000 uF	25 V
C21	1208477	470 uF	16 V

CONTROLS/SPECIAL RESISTORS

ITEM	PART NO.	DESCRIPTION
R23	1326229	2.2 ohm 1/4 W
R24	1326229	2.2 ohm 1/4 W
R28	1340829	8.2 ohm 2 W
Th1	MT-70	Thermistor
Th2	MT-70	Thermistor
Th3	MT-70	Thermistor
Th4	MT-70	Thermistor
VR1	139N360	Dual Tone
VR2	1390127	Volume Range
VR3	139N361	Volume

COIL/TRANSFORMERS

ITEM	PART NO.
L1	117B004
T1	118G015
T2	115S095
T3	115S095

MISCELLANEOUS

ITEM	NAME	PART NO.
M	Motor, Tape Drive	164N014
PBH	Head, 8-Track	165N017
S1	Switch, Power	1624011
S2	Solenoid, Track Change	1661015
	Belt, Tape Drive	21V0003
	Speaker	1520131

CABINET PARTS

NAME	PART NO.
Cabinet, Main	27C7054
Panel, Front	21F7054
Knob, Control	21N7174
Knob, Channel	21N7175
Cabinet, Speaker	27C7053

8. ALIGNMENT PROCEDURE

8.1 FM/AM IF ALIGNMENT

• FM SECTION

a) Connect a 0.01μF capacitor between TP1 and ground before the alignment.
b) Connect a 220kΩ resistor in series with the vertical input terminal of the oscilloscope.
c) Remove the meter lead from terminal 18, then terminate a 4.7kΩ resistor between terminal 18 and ground.
d) Connect the vertical input to terminal 18.
e) Set the selector switch to FM MONO.
f) Connect the output lead of the sweep generator to the FM antenna terminals.
g) Set the output level of the sweep generator to 90dB.
h) Adjust the primary and secondary cores of T6 to obtain a symmetrical pattern.
i) Set the output level of the sweep generator to 70dB.
j) Adjust the cores of T4 and T5 for maximum gain and symmetry of the pattern.
k) Vary the output level of the sweep generator from 60dB to 100dB, then keep the top of the pattern flat and make sure that the center frequency does not drift. If it drifts, repeat steps (g) to (j).
l) Remove the capacitor (4.7μF) from terminal 28.
m) Disconnect the vertical input from terminal 18, then reconnect it to TP1.
n) Set the output level of the sweep generator to 70dB.
o) Observe the S-curve pattern when adjusting the cores of T7. (Linearity is improved by the primary core; symmetry by the secondary core.)
p) Disconnect the 0.01μF capacitor from TP1 after the alignment has been completed.
q) Connect the capacitor (4.7μF) to terminal 28 after the alignment has been completed.

• AM SECTION

a) Turn the selector switch to AM.
b) Connect the output lead of the sweep generator to the AM antenna terminal.
c) Connect the vertical input of the oscilloscope to the TAPE REC jack.
d) Set the output level of the sweep generator to 75dB.
e) Adjust the IFT cores (T9, T10, T11) as shown in Fig. 1, for maximum gain and symmetrical pattern.

8.2 FM/AM TRACKING ALIGNMENT

• FM SECTION

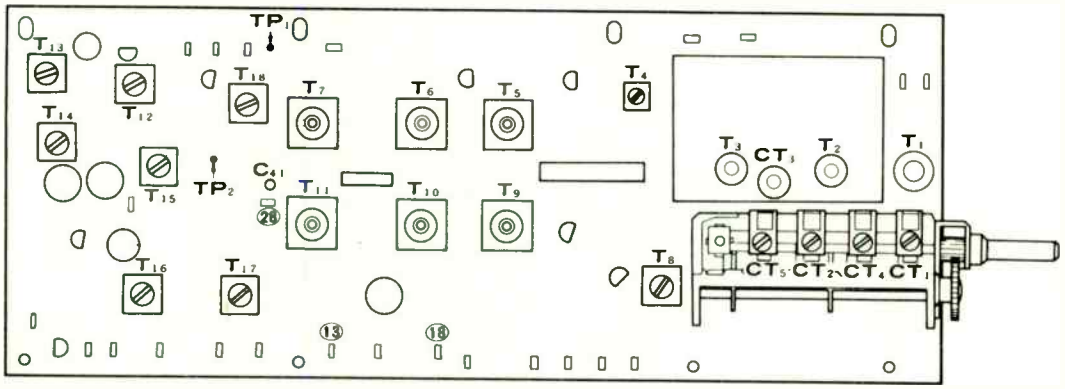
a) Turn the selector switch to FM MONO.
b) Connect the output leads of the FM signal generator to the FM antenna terminals.
c) Set the FM signal generator to modulation 400Hz, 30% and output level 15dB frequency 90MHz; also set the tuner dial at 90MHz.
d) Connect the VTVM and oscilloscope (in parallel) to the TAPE REC jack.
e) Observing the output level on the VTVM, adjust the following cores for maximum reading on the meter.
T3 ..... Oscillator circuit
T1 ..... Antenna circuit
T2 ..... RF circuit
f) Set the frequency of the FM signal generator and the tuner dial to 106MHz.
g) Adjust as follows:
Trimmer capacitor CT3 : Oscillator circuit
Trimmer capacitor CT1 .. Antenna circuit
Trimmer capacitor CT2 ..... RF circuit
h) Repeat steps (e) to (g) several times.
i) Set the output level of the FM signal generator to maximum tuning meter deflection.
j) Adjust the primary core of T7 for minimum sound distortion.

• AM SECTION

a) Turn the selector switch to AM.
b) Connect the AM signal generator to the AM antenna terminal.
c) Set the AM signal generator to modulation 400Hz, 30%, output level 30dB, frequency 600kHz. Set the tuner dial at 600kHz.
d) Connect the VTVM and oscilloscope (in parallel) to the TAPE REC jack.
e) Observing the output level on the VTVM, adjust the following cores for maximum reading.
T8 ..... Oscillator circuit
Ferrite loopstick antenna: Antenna circuit
f) Set the AM signal generator and the tuner to 1,400kHz.
g) Observing the output level on the VTVM, adjust the following cores for maximum reading.
CT5 ..... Oscillator circuit
CT4 ..... Antenna circuit
h) Repeat alignments (c) to (g) several times.
i) After these alignments, lock the trimmer capacitor with paint.

8.3 MPX DECODER ALIGNMENT

a) Modulate the FM signal generator output by FM MPX modulator.
b) Turn the selector switch to FM AUTO.
c) Connect the FM signal generator to the FM antenna terminals.
d) Set the FM MPX modulator to modulation; main 1kHz (L+R) 60%, pilot 8~10%.
e) Set the output level of the FM signal generator to 60dB.
f) Turn the tuning knob to maximum reading on the signal meter.
g) Set the modulation of the FM MPX modulator to pilot only.
h) Connect the oscilloscope to TP2.
i) Adjust the transformers (T13, T14, T15) until the output level of the 19kHz becomes maximum on the scope.
j) Set the FM MPX modulator to pilot with L or R signal.
k) Connect the dual-trace oscilloscope and VTVM to the TAPE REC jacks.
l) Adjust the semi-fixed potentiometer on the tuner unit until the output level of the L or R signal becomes maximum on the scope.

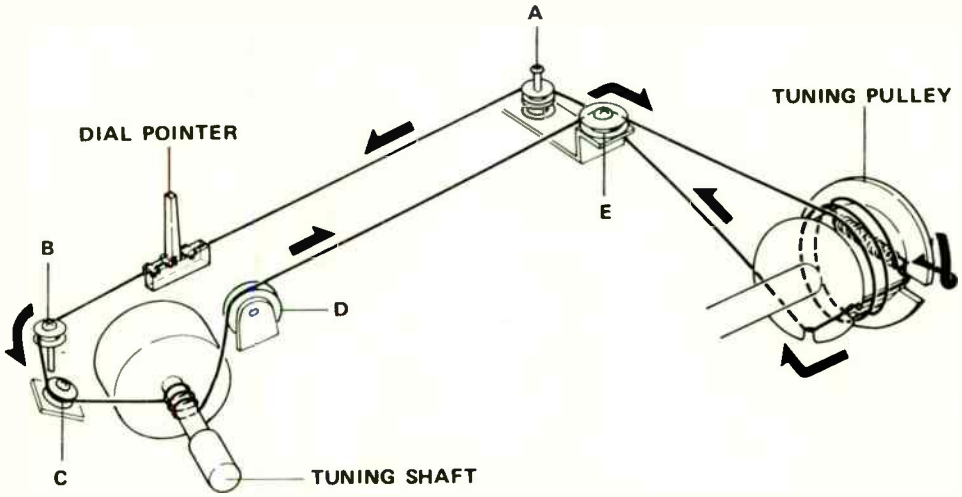


TUNER UNIT (AWE-008)

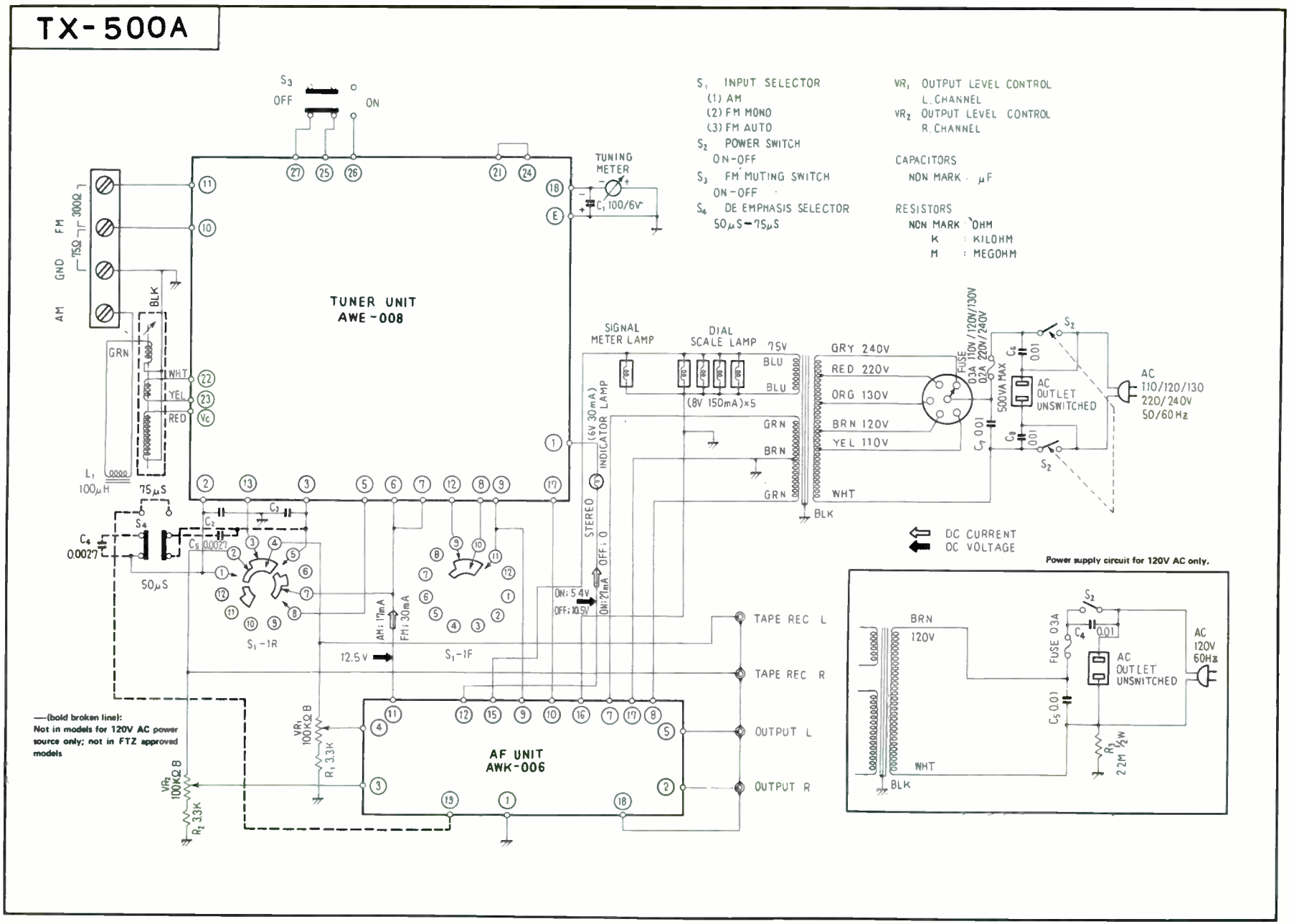
Fig. 1

7. DIAL CORD STRINGING

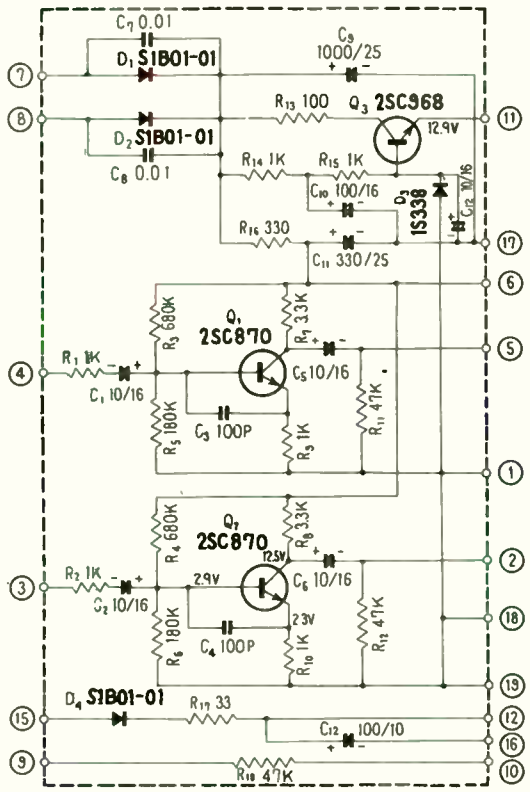
1. Set the tuning capacitor to minimum capacitance.
2. Tie one end of the string to the spring on the tuning pulley.
3. Wind the string ½ turn around the tuning pulley.
4. Pull the string around the small pulley A then fasten it to the dial pointer.
5. Lead the string around the small pulleys B and C, then wind it 3 turns around the tuning shaft.
6. Lead the string around the small pulleys D and E.
7. Wind string 2 turns the tuning pulley.
8. Finally, tie the end of the string to the remaining side of the spring on the tuning pulley.
9. Tune the tuner to high end. Fasten the dial pointer to the string so that it indicates the high end on the dial scale.

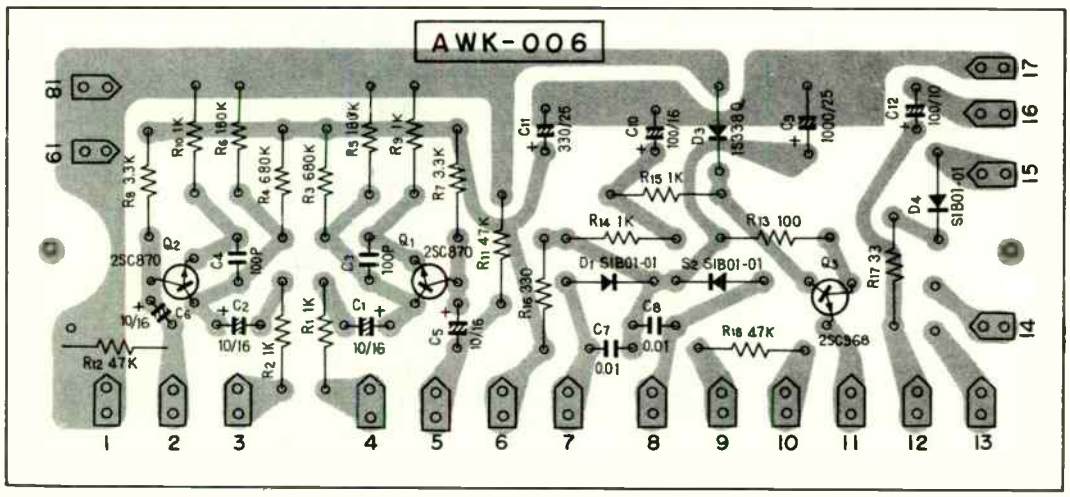


TX-500A

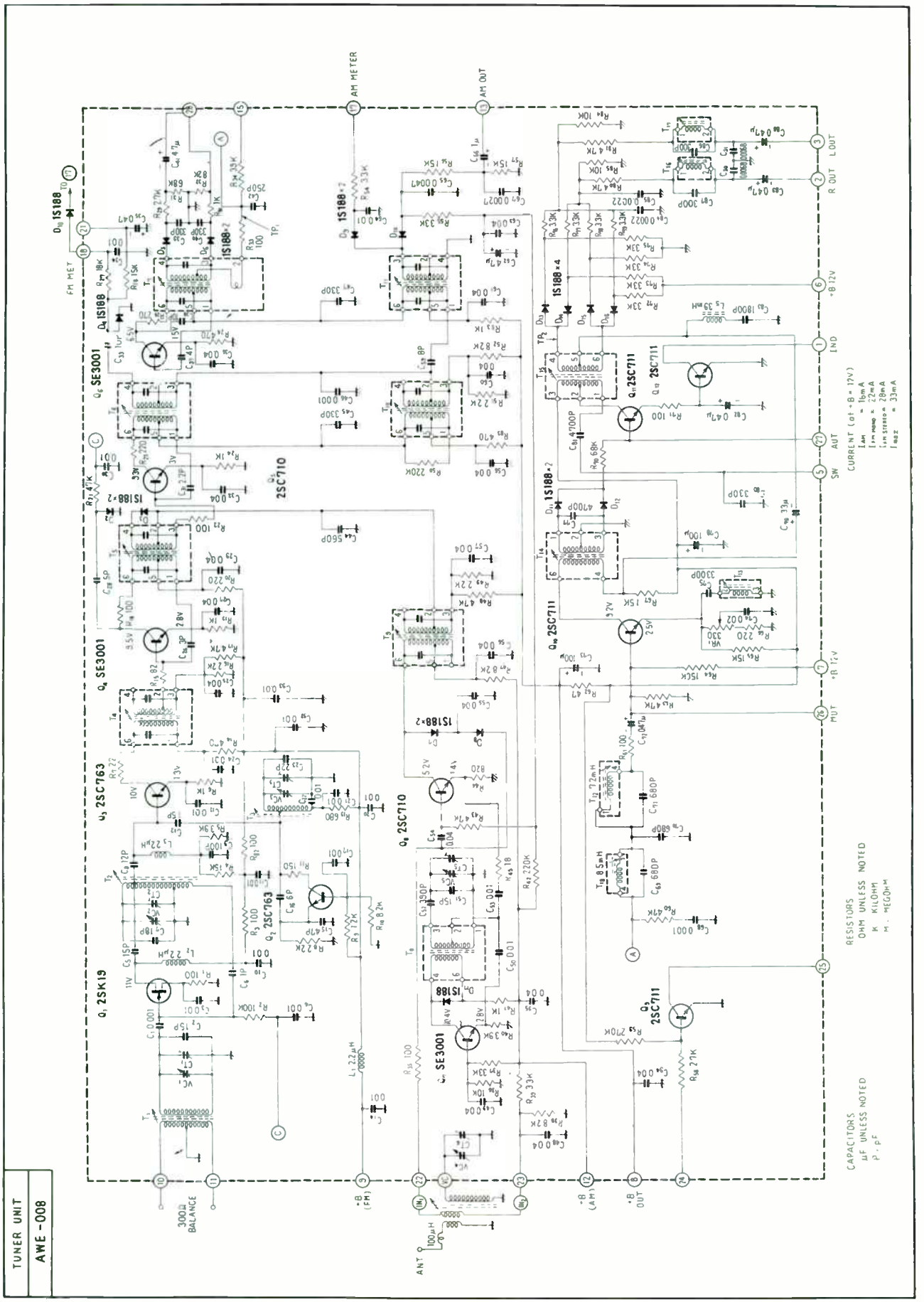


AF UNIT
AWK- 006

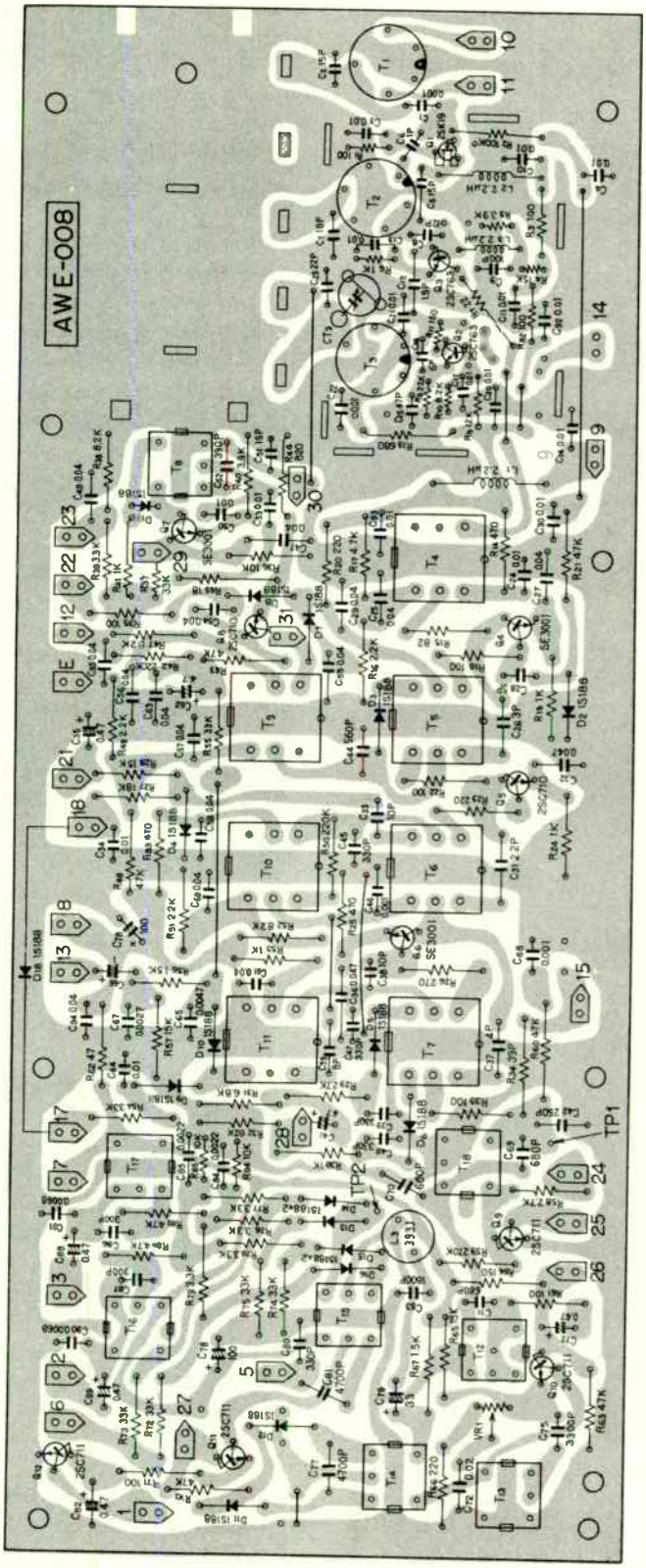




10.2 TUNER UNIT (AWE-008)



TUNER UNIT
AWE-008



SEMICONDUCTORS

ITEM	PART NO/TYPE
(TUNER; AWE-008)	
D2	1S188FM-1
D3	1S188FM-1
D4	1S188FM-1
D5	1S188FM-1
D6	1S188FM-1
D7	1S188FM-1
D8	1S188FM-1
D9	1S188FM-1
D10	1S188FM-1
D11	1S188FM-1
D12	1S188FM-1
D13	1S188FM-1
D14	1S188FM-1
D15	1S188FM-1
D16	1S188FM-1
D17	1S188FM-1
D18	1S188FM-1
Q1	2SK19-Y
Q2	2SC763-D (2SC763-C)
Q3	2SC763-D (2SC763-C)
Q4	SE3001
Q5	2SC710R-D (2SC710R-C)
Q6	SE3001
Q7	SE3001
Q8	2SC710-D (2SC710R-D)
Q9	2SC711-F
Q10	2SC711-E (2SC711-F)
Q11	2SC711-E (2SC711-F)
Q12	2SC711-F
(AF; AWK-006)	
D1	SIB01-01
D2	SIB01-01
D3	1S338Q
Q1	2SC870-E (2SC870-F)
Q2	2SC870-E (2SC870-F)
Q3	2SC968Y-2 (2SC968Y-3)

ELECTROLYTIC/VARIABLE CAPS

ITEM	PART NO.	VALUE
(MAIN CHASSIS)		
C1	CEA101P6	100 uF 6 V
(TUNER; AWE-008)		
C35	CEAR47P50	.47 uF 50 V
C41	CEA4R7P25	4.7 uF 25 V
C62	CEA4R7P25	4.7 uF 25 V
C66	CEA010P50	1 uF 50 V
C72	CEAR47P50	.47 uF 50 V
C73	CEA101P16	100 uF 16 V
C78	CEA101P16	100 uF 16 V
C79	CEA330P16	33 uF 16 V
C82	CEAR47P50	.47 uF 50 V
C88	CEAR47P50	.47 UF 50 V
C89	CEAR47P50	.47 uF 50 V
CT3	C43-007-A	Trimmer
VC	C64-046-A	Tuning Gang

(1) Model TX-500A/F
(2) Model TX-500A/FVZ
(3) Model TX-500A/KC
(4) Model TX-500A/KU

(AF; AWK-006)		
C1	CEA100P16	10 uF 16 V
C2	CEA100P16	10 uF 16 V
C5	CEA100P16	10 uF 16 V
C6	CEA100P16	10 uF 16 V
C9	CEA102P25	1000 uF 25 V
C10	CEA101P16	100 uF 16 V
C11	CEA331P25	330 uF 25 V
C12	CEA101P10	100 uF 10 V

CONTROLS/SPECIAL RESISTORS

ITEM	PART NO.	DESCRIPTION
(CHASSIS)		
VR1	ACP-003-0	100K Output Level
VR2	ACP-003-0	100K Output Level
(TUNER; AWE-008)		
VR1	C92-065-A	330 ohms Separation

COIL/TRANSFORMERS

ITEM	PART NO.
(CHASSIS)	
L1	T24-030-0
Power	ATT-034-0 (1,2)
	ATT-033-A (3,4)
(TUNER; AWE-008)	
L1	T24-028-A
L2	T24-028-A
L3	T24-028-A
L5	T75-006-B
T1	ATC-002-0
T2	ATC-004-0
T3	ATC-003-0
T4	T73-034-0
T5	T73-035-A
T6	T73-036-0
T7	T74-011-0
T8	ATB-001-A
T9	T71-028-0
T10	T71-028-0
T11	T72-022-0
T12	T75-027-0
T13	T75-023-0
T14	T75-024-0
T15	T75-025-0
T16	T75-028-0
T17	T75-028-0
T18	T75-029-0

MISCELLANEOUS

ITEM	NAME	PART NO.
S1	Switch, Selector	S13-027-0
S2	Switch, Power	S11-016-A (1,2)
		S11-014-A (3)
		ASA-008-A (4)
S3	Switch, Muting	ASK-009-A
S4	Switch, De-emphasis	S41-022-A (1)
	Fuse, 0.2A	E21-016-0 (1,2)
	Fuse, 0.3A	E21-017-0 (3)
		E21-030-0 (4)
	Fuse 0.5A	E21-019-A (2,3)
		AEK-005-0 (4)
	Fuse, 2A	E21-026-0 (2,3)
		AEK-002-0 (4)
	Meter Tuning	AAW-003-0
	Selector, Voltage	AKR-001-0 (1,2)

CABINET PARTS

NAME	PART NO.
Assembly, Front Panel	ANB-086-0
Cover, Metal	ANE-004-B
Knob, Power/Selector	A12-229-0
Knob, Tuning	AAA-003-A
Knob, Muting	A19-095-A

Pages 63-74 Courtesy of RCA SALES CORP.

NOTE: FOR COMPLETE RECORD CHANGER INFORMATION, SEE PHOTOFACT SET 1173, FOLDER 6.

AM and FM ALIGNMENT PROCEDURE

General Alignment Conditions

1. Signal Input must be kept as low as possible to avoid AGC and limiting action (Use highest sensitivity of output indicator).
2. Markers must be accurate (crystal controlled or checked) and must not distort oscilloscope trace.
3. Standard modulation is 400 Hz at 30% amplitude.
4. Set volume control at maximum unless otherwise indicated.

Step	Signal Source—	Output Indicator—	Set Signal to—	Set Radio Dial to—	Adjust—	Adust for—	Step
1	Set Function Switch on AM						1
2	Sig. Gen.— connected to a Loop or Short piece of wire placed near AM antenna	V.T.V.M.— connected across speaker voice coil	455 KHz (modulated)	Quiet point on band	T206 (3rd AM IF)	Maximum	2
3					T203, T204 (2nd AM IF)		3
4					T104 (1st AM IF)		4
5			550 KHz (modulated)	550 KHz	L108 (AM osc. coil)		5
6			1600 KHz (modulated)	1600 KHz	CT105 (AM osc. trim)		6
7			600 KHz (modulated)	600 KHz (rock gang)	L106 (AM ant. coil)		7
8			1400 KHz (modulated)	1400 KHz (rock gang)	CT104 (AM ant. trim)		8
9	Repeat steps 2 thru 8 as necessary to obtain maximum sensitivity						9
10	Set Function Switch on FM						10
11	Sweep Gen.— connected to TP1 & Ground thru a 0.04μf cap, & 2.2k in series in each lead	Oscilloscope— connected to TP3 & ground through network	10.7 MHz with 10.6; 10.7 10.8 MHz markers	Quiet point on band (RV404 at minimum)	Detune T208 (Toward Top)	Maximum gain with symmetrical curve centered at 10.7 MHz with 10.6 & 10.8 MHz markers at approx. 10%, but not more than 25%, down slope of curve	11
12					T207 (5th FM IF)		12
13					T205 (4th FM IF)		13
14					T202 (3rd FM IF)		14
15					T201 (2nd FM IF)		15
16					T102, T103 (1st FM IF)		16
17					T207 (5th FM IF)	Retouch to obtain optimum symmetrical response	17
18					T208 (Demodulator)	Symmetrical "S" curve centered at 10.7 MHz	18
19	Marker Gen.— loosely coupled to FM antenna	V.T.V.M.— connected across speaker voice coil (RV404-max.)	88 MHz (modulated)	88 MHz	L105 (FM osc. coil)	Maximum	19
20			108 MHz (modulated)	108 MHz	CT103 (FM osc. trim)		20
21			90 MHz (modulated)	90 MHz	L102 (FM ant. coil)		21
22					L103 (FM RF coil)		22
23			106 MHz (modulated)	106 MHz	CT101 (FM ant. trim)		23
24					CT102 (FM RF trim)		24
25	Repeat steps 11 thru 24 as necessary to obtain maximum sensitivity and symmetry						25

ADJUSTMENT OF TUNING METER AND MUTING

Set Function Switch on FM.
AFC Switch off.

Step	Signal Source—	Output Indicator—	Set Signal to—	Set Radio Dial to—	Adjust—	Adjust for—	Step
1	Sig. Gen.— connected to FM ant. terminals	VTVM— connected to P208 & ground	90MHz (Modulated)	90MHz	T209	Maximum	1
2					RV202	0.2V to 0.7V	2

MULTIPLEX ALIGNMENT PROCEDURE

INSTRUMENTS REQUIRED

Signal Source

1. FM-Stereo Simulator (RCA WR-52A or equivalent)

Output Indicator

2. Oscilloscope (RCA WO-91B or equivalent)

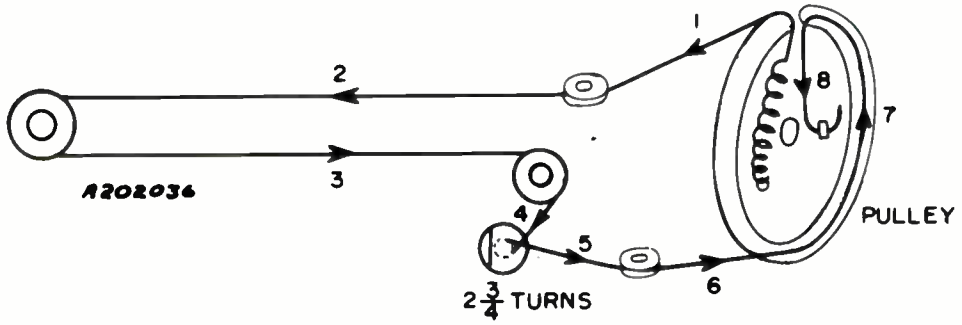
Tools

3. Hex head alignment tool
4. Non-magnetic screwdriver

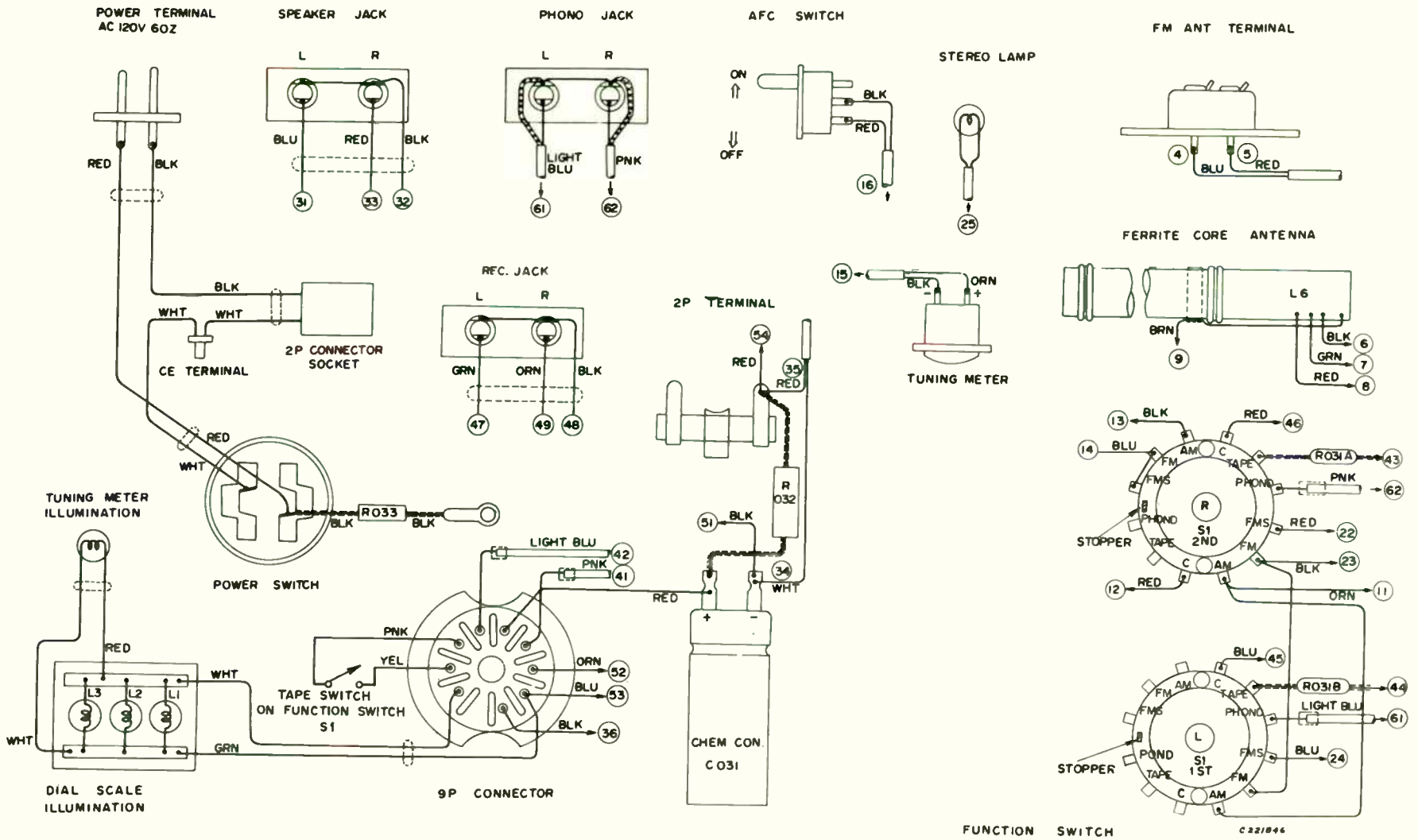
GENERAL ALIGNMENT CONDITIONS

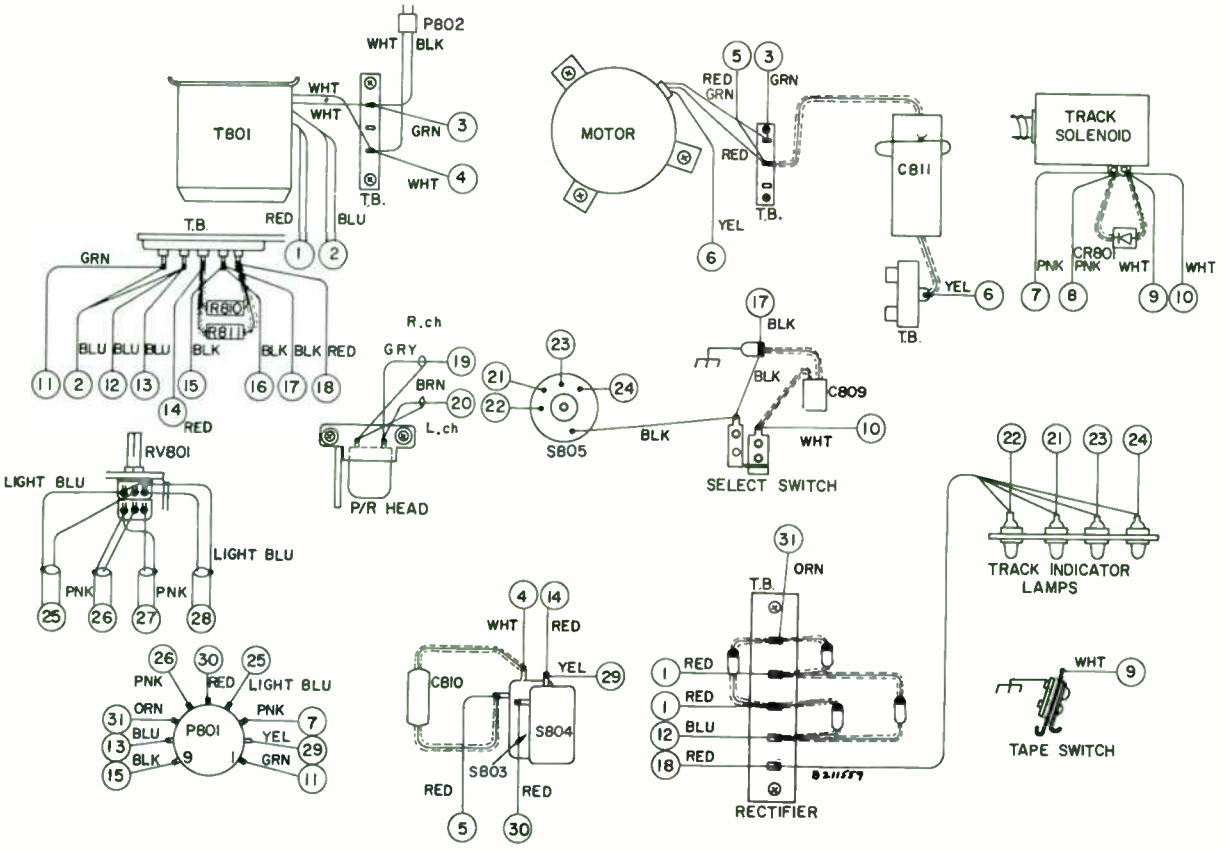
1. Connect low side of output indicator to chassis ground as close as possible to high side connection.
2. RF deviation should be set to approximately 75 KHz.
3. Input signal should be held at a level that will not produce limiting.
4. FM-Stereo Simulator connected across FM antenna terminals. Tune radio to 100 MHz. AFC on.

Step	19 KHz Subcarrier Level Set to—	Frequency Selector Set to—	Function Selector Set to—	Output Indicator Connected to—	Adjust—	Adjust for—	Step
1	Set Radio Function Switch to "FM-Stereo"						1
2	Turn RV 301 fully counterclockwise and RV 302 fully clockwise						2
3	2%	Set "19 KHz off/ Normal/ Set 19 KHz Subcarrier Selector Switch to— Set 19KHz Subcarrier	Stereo Left	Term 1 of T303	L303 (19 KHz trans.)	Maximum (Stereo indicator light should be ON.)	3
4					T301 (38 KHz trans.)		4
5					RV301	Adjust clockwise until indicator light goes OFF, then counterclockwise until indicator light just comes ON.	5
6	Zero				Turn RV 302 fully counterclockwise (Indicator light should go OFF)		6
7	5%				RV302	Adjust clockwise until indicator light just comes ON.	7
8	10%	1000 Hz		P310	T302	Minimum and correct Phase	8
9			Stereo Right	P311			9
10	Repeat steps 10 & 11 to obtain equal minimums						10

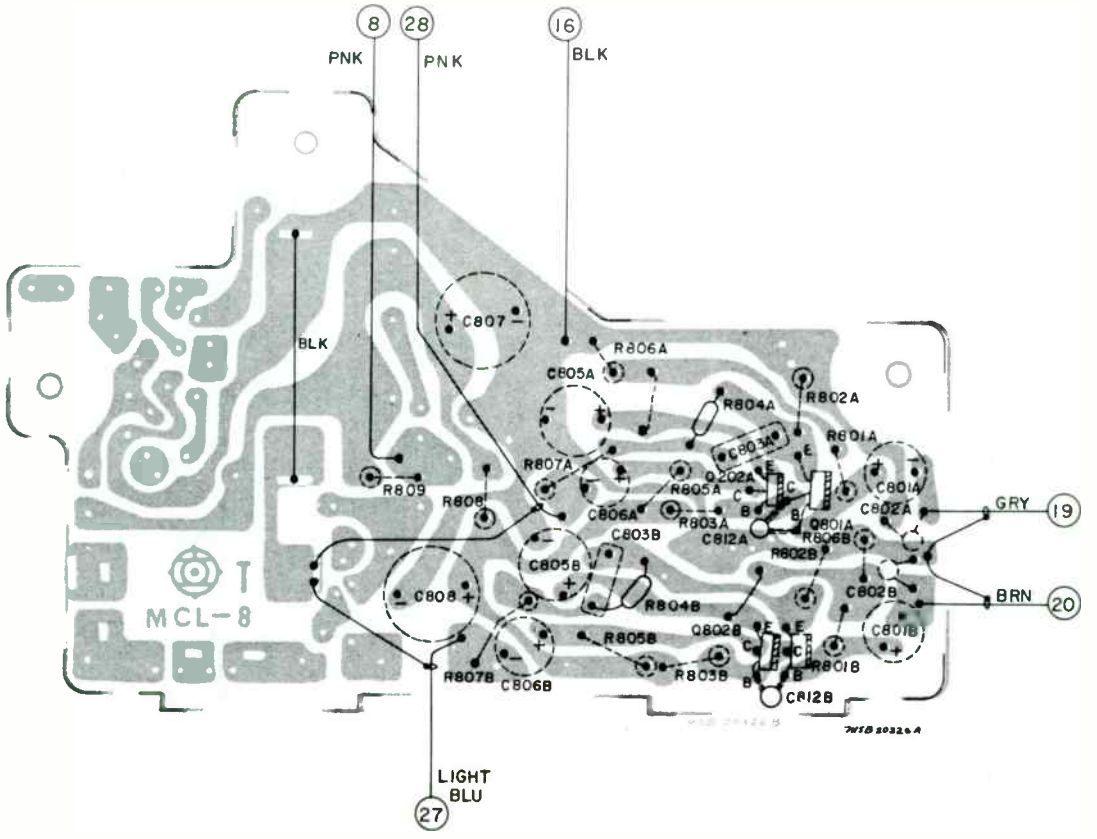


Dial Cord Arrangement

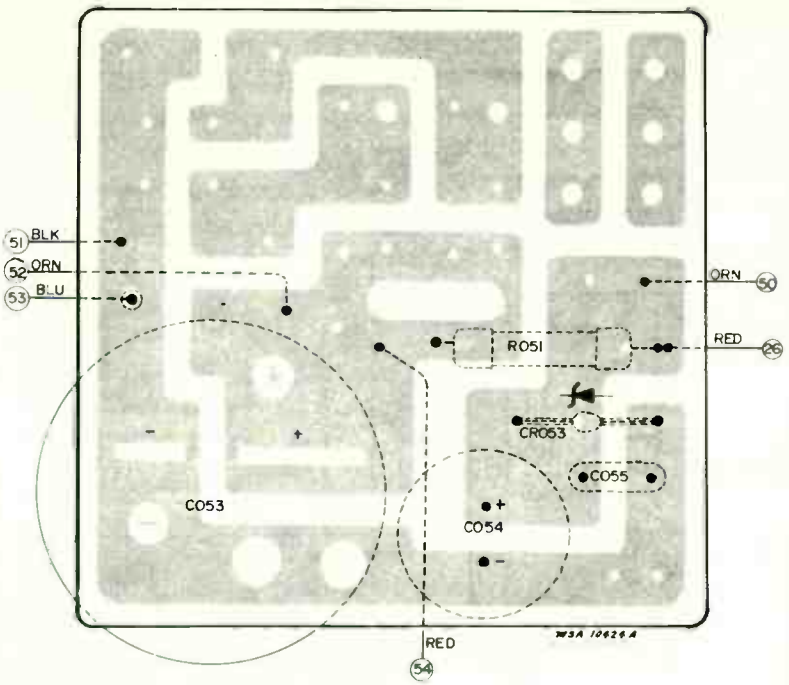




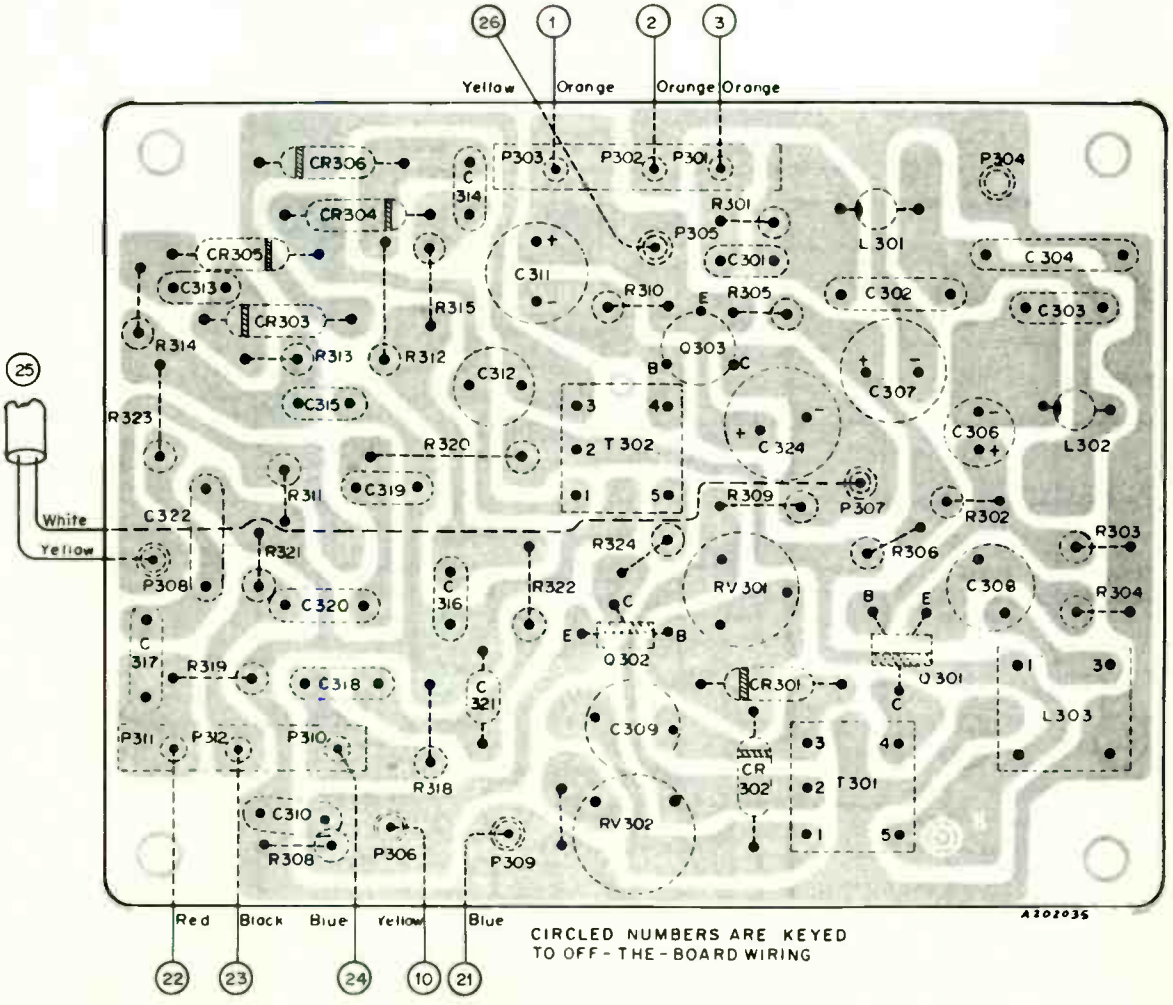
Tape Chassis Wiring Diagram



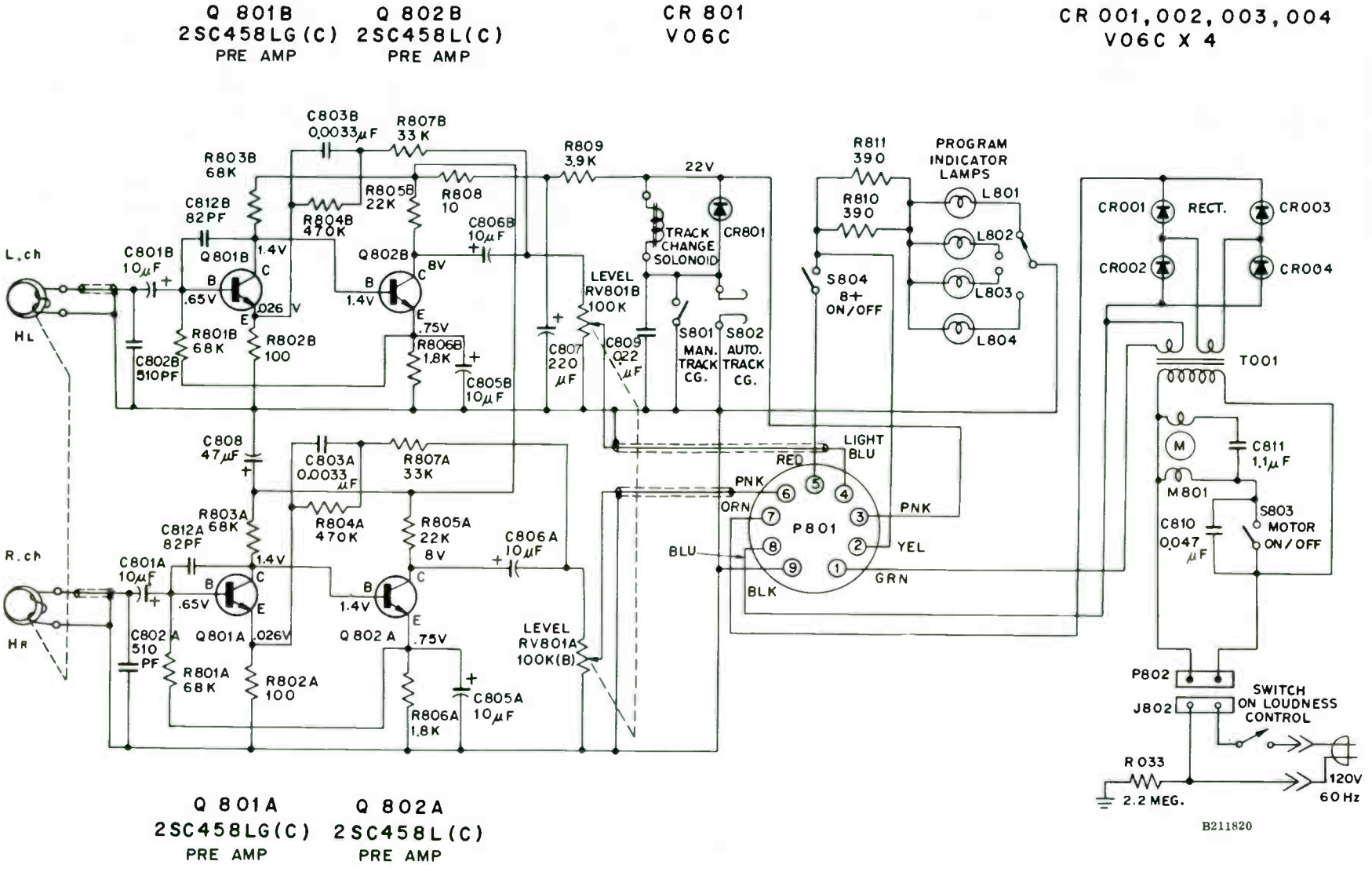
Tape Preamp Board—Component Location (Wiring View)

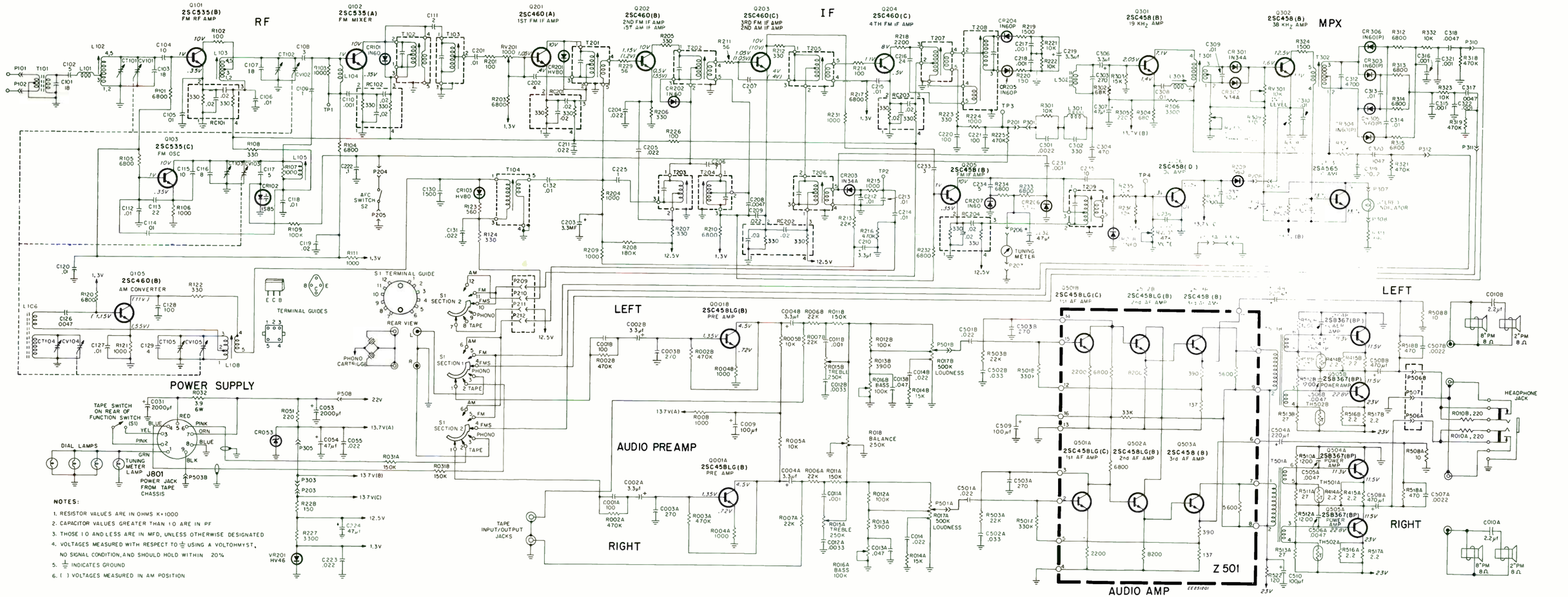


Power Supply Board—Component Location (Wiring View)

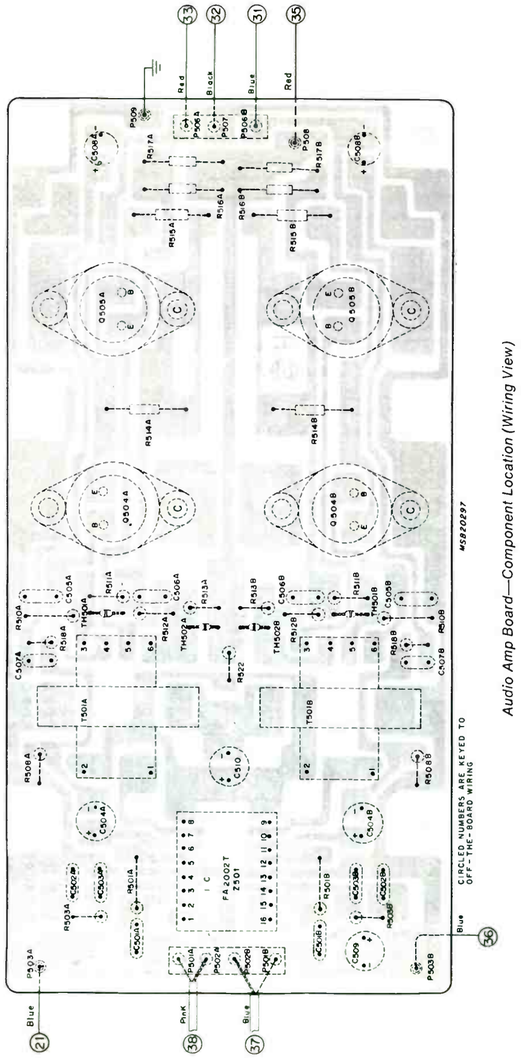


Multiplex Board—Component Location (Wiring View)

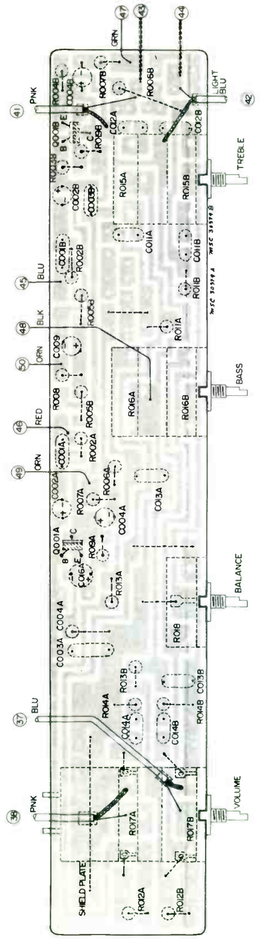




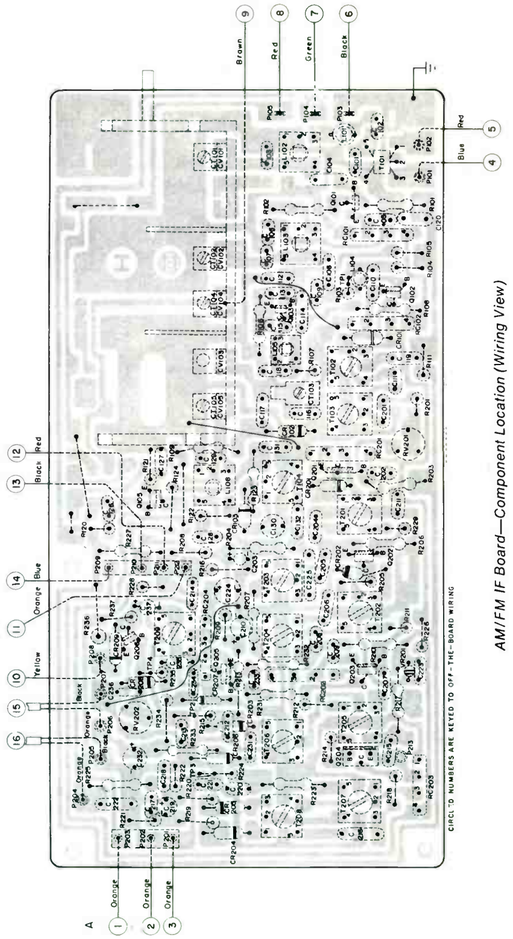
Schematic Diagram—YZD 598



Audio Amp Board—Component Location (Wiring View)



Tone Board—Component Location (Wiring View)



AM/FM IF Board—Component Location (Wiring View)

SEMICONDUCTORS

ITEM	PART NO.	TYPE
CR001	166593	V0-6C
CR002	166593	V0-6C
CR003	166593	V0-6C
CR004	166593	V0-6C
CR053	166985	AW01-13
CR101	226344	1N60
CR102	123276	1S85WT
CR103	168706	HV-80
CR201	168706	HV-80
CR202	226344	1N60
CR203	59395	1N34A
CR204	167572	1N60P
CR205	167572	1N60P
CR206	59395	1N34A
CR207	226344	1N60
CR208	226344	1N60
CR209	226344	1N60
CR301	59395	1N34A
CR302	59395	1N34A
CR303	167572	1N60P
CR304	167572	1N60P
CR305	167572	1N60P
CR306	167572	1N60P
CR801	166593	V0-6C
Q001	127355	2SC458LG(B)
Q101	124412	2SC535
Q102	124412	2SC535
Q103	124412	2SC535
Q105	125390	2SC460
Q201	125390	2SC460
Q202	125390	2SC460
Q203	125390	2SC460
Q204	125390	2SC460
Q205	122519	2SC458
Q206	122519	2SC458
Q301	125389	2SC458
Q302	125389	2SC458
Q303	165737	2SA565
Q504	167285	2SB367
Q505	167285	2SB367
Q801	127355	2SB458CLG
Q802	127354	2SC458C
CR201	168692	HV-46
Z501	169403	FA2002T

ELECTROLYTIC/VARIABLE CAPS

ITEM	PART NO.	VALUE	
C002	126917	3.3 uF	16 V
C004	126917	3.3 uF	16 V
C009	127097	100 uF	16 V
C010		2.2 uF	12 VNP
C031	127042	2000 uF	25 V
C053	127042	2000 uF	25 V
C054	165721	47 uF	16 V
C210	169261	3.3 uF	25 V
C219	169261	3.3 uF	25 V
C224	165721	47 uF	16 V
C232	165721	47 uF	16 V
C237	167570	10 uF	25 V
C306	169261	3.3 uF	25 V
C307	165721	47 uF	16 V
C311	169261	3.3 uF	25 V
C324	165721	47 uF	16 V
C504	168700	220 uF	6.3 V
C508	168700	220 uF	6.3 V
C509	128829	100 uF	16 V
C801	117713	10 uF	6.3 V
C805	117713	10 uF	6.3 V
C806	116988	10 uF	10 V
C807	166916	220 uF	25 V
C808	165723	47 uF	25 V

CT101, CT102, CT104, CT105, CV101, CV102, CV103, CV104, CV105	165340	Tuning Gang
CT103	125405	Trimmer

CONTROLS/SPECIAL RESISTORS

ITEM	PART NO.	DESCRIPTION
R015	166989	100K Dual Bass
T016	166991	250K Dual Treble
R017	166990	500K Dual Loudness
R018	166992	250K Balance
RV201	169400	1000 Ohm RF Level
RV202	169402	47K Muting
RV301	169401	10K Stereo Indicator Level
RV302	169400	1000 ohm Threshold
RV801	166868	100K Dual Tape Level
TH501	127186	Thermistor 13D27
TH502	127186	Thermistor 13D27

COIL/TRANSFORMERS

ITEM	PART NO.	ITEM	PART NO.
L101	167035	T104	127192
L102	165742	T201	168695
L103	165742	T202	168695
L104	167035	T203	125465
L105	165743	T204	123281
L106	127171	T205	168695
L108	167068	T206	165659
L301	167014	T207	165657
L302	167014	T208	125392
L303	168699	T209	168693
T001	169818	T301	168697
T101	125404	T302	168698
T102	168693	T501	169406
T103	168694		

MISCELLANEOUS

ITEM	NAME	PART NO.
RC101	Component Combination	168951
RC102	Component Combination	168951
RC201	Component Combination	168951
RC202	Component Combination	168951
RC203	Component Combination	168951
RC204	Component Combination	168951
S1	Switch, Function	166974
S2	Switch, AFC	123713
S801	Switch, Manual Track Change	166863
S802	Switch, Auto Track Change	166840
S803	Switch, Motor, On/Off	123694
S804	Switch, B+ ON/Off	123694
	Assembly, Record Changer	RP-234A-5
	Assembly, Tape	TCT-800
	Cartridge, Phono	131779
	Head, Tape	166834
	Motor, Tape Drive	166857
	Solenoid, Track Change	166842
	Speaker, 2"	165717
	Speaker, 8"	166984
	Stylus, Phono	133707

CABINET PARTS

NAME	PART NO.
Assembly, Main Cabinet	166969
Assembly, Speaker Cabinet	166998
Back, Main Cabinet	166968
Back, Speaker Cabinet	166983
Base, Record Changer	135640
Knob, Channel Shift	166982
Knob, Tuning	165755
Knob, Control	165756
Panel, Control	166981

Pages 75-86 Courtesy of RADIO SHACK

ALIGNMENT PROCEDURE

Do not attempt alignment unless the following equipment is available.

EQUIPMENT DESCRIPTION

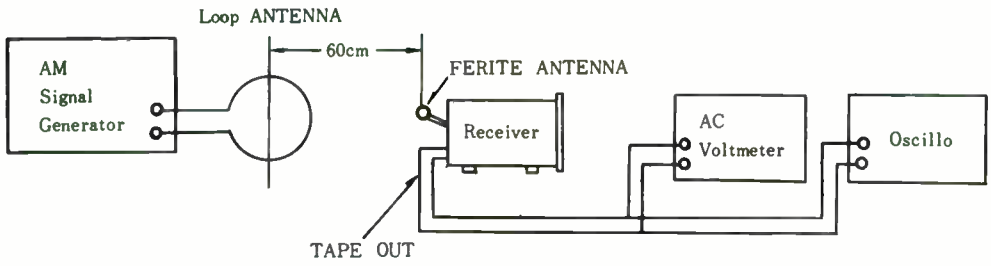
1. AM Signal Generator
2. Oscilloscope
3. AC Voltmeter
4. FM Signal Generator
5. Stereo Modulator
6. Audio Generator
7. Distortion meter

AM IF & RF ALIGNMENT

Output of signal generator should be no higher than necessary to obtain an output reading.
Set SELECTOR switch SW1 to AM.

STEP	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RECEIVER DIAL SETTING	INDICATOR	ADJUSTMENT	REMARK
1	Refer Fig. 1	455 KHz (400 Hz Mod.)	Point of non-interference. (on/about 600 KHz)	Output meter to TAPE OUT jack.	CF 401 T401 (1st IFT) T402 (2nd IFT)	Adjust for maximum reading.
2	Same as Step 1	600 KHz (400 Hz Mod.)	600 KHz	Same as step 1	L401 (OSC coil) L451 (ANT coil)	Adjust for maximum reading.
3	Same as Step 1	1400 KHz (400 Hz Mod.)	1400 KHz	Same as step 1	TC105 (OSC Trimmer) TC104 (ANT Trimmer)	Adjust for maximum reading. Repeat steps (2) and (3)

Note : Remove line cord antenna from FM external antenna terminal when aligning.



AM ALIGNMENT CONNECTION

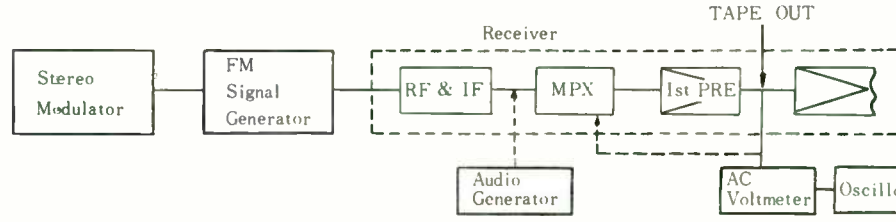
FM RF AND IF ALIGNMENT

Signal generator output should be no higher than necessary to obtain an output reading.
Set Selector switch to FM.
Signal Generator deviation : 75 KHz

STEP	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RECEIVER DIAL SETTING	INDICATOR	ADJUSTMENT	REMARKS
1	Connect to FM Antenna Terminal through FM Dummy antenna (300 Ω)	90 MHz (400 Hz, Mod)	90 MHz	AC Voltmeter connected to TAPE OUT jack	L103 (FM OSC Coil) L101 (FM ANT Coil) L102 (FM RF Coil)	Adjust for maximum reading on AC Voltmeter
2	SAME	106 MHz (400 Hz, Mod)	106 MHz	SAME	TC103 (FM OSC Trimmer) TC101 (FM ANT Trimmer) TC102 (FM RF Trimmer)	Adjust for maximum reading
Repeat step 1 & 2 until no further improvement is possible.						
3	SAME	90 MHz (400 Hz, Mod)	90 MHz	SAME	T101 (FM IFT)	Adjust for maximum reading
4	SAME	SAME	SAME	SAME	T201 (DISCRI TRANS)	Adjust for null point on Tuning Meter (M2)
5	SAME	SAME	SAME	Distortion Meter connected to TAPE OUT jack	T201 Bottom	Adjust for minimum distortion

MPX ALIGNMENT

Connection

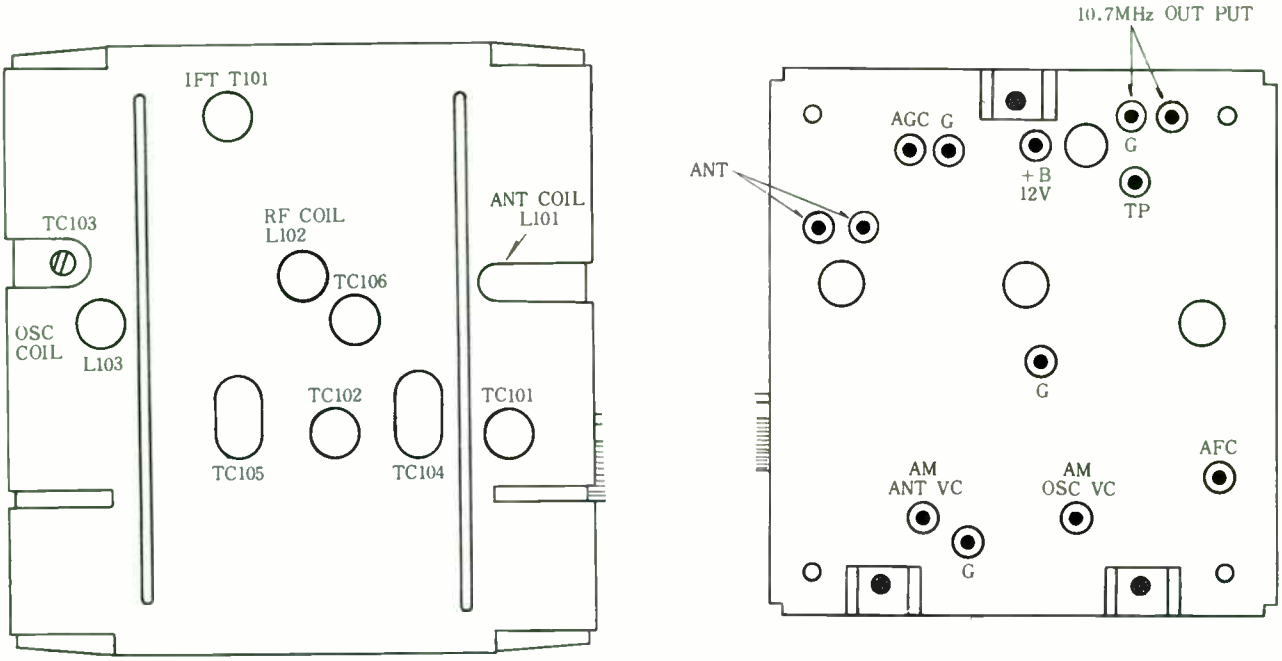


Set SELECTOR Switch SW1 to FM.
Tune for 98 MHz on band.
Signal Generator output level ; 60 dB, Deviation : 75 KHz at 100% modulation of composite signal.
Connect Signal Generator to FM Antenna Terminal through FM Dummy Antenna (300 Ω)

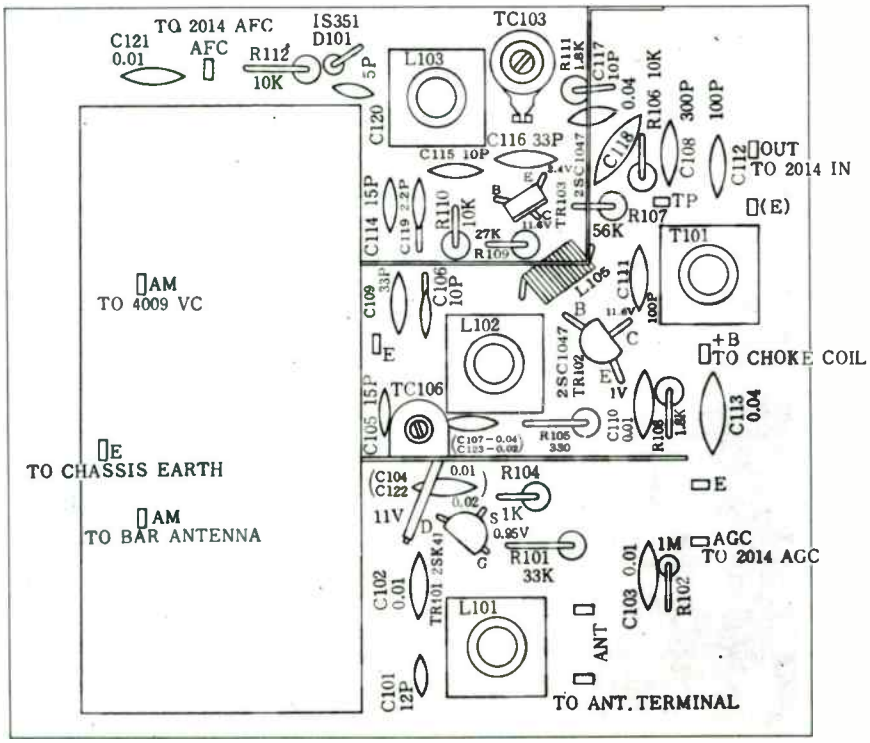
STEP	19 KHz (PILOT SIGNAL) MODULATION Levelset	SIGNAL GENERATOR Freq. Set to	OUTPUT INDICATOR Connnected to	ADJUST	ADJUST for	NOTE
1		Audio Generator (connected to input of MPX board 3008) 67 KHz	AC Voltmeter T303 Center point (sec.)	L302	Minimum	
2	1~2%	Stereo Modulator 19 KHz (pilot only)	AC Voltmeter collector of TR303 on MPX board 3008.	T301 T302	Maximum	Stereo Beacon lamp becomes most light.
3	8%	Composite 1 KHz L channel	AC Voltmeter TAPE OUT jack of L channel.	T303	Minimum	
4	8%	Composite 1 KHz R channel	Same as step 3.	VR503 (1K)	Minimum	AC Voltmeter reading should be at least 30 dB below reading in step 3.
5	8%	Composite 1 KHz R channel	AC Voltmeter to REC OUT jack of R channel.	—	—	Same AC Voltmeter reading as obtained in step 3 (< ±2 dB)
6	8%	Composite 1 KHz L channel	Same as step 5.	—	—	AC Voltmeter reading should be at least 30 dB below reading in step 5.

IF not obtained 30 dB below reading by step 6, readjust VR503 so that both reading in step 5 and step 6 become 30 dB.

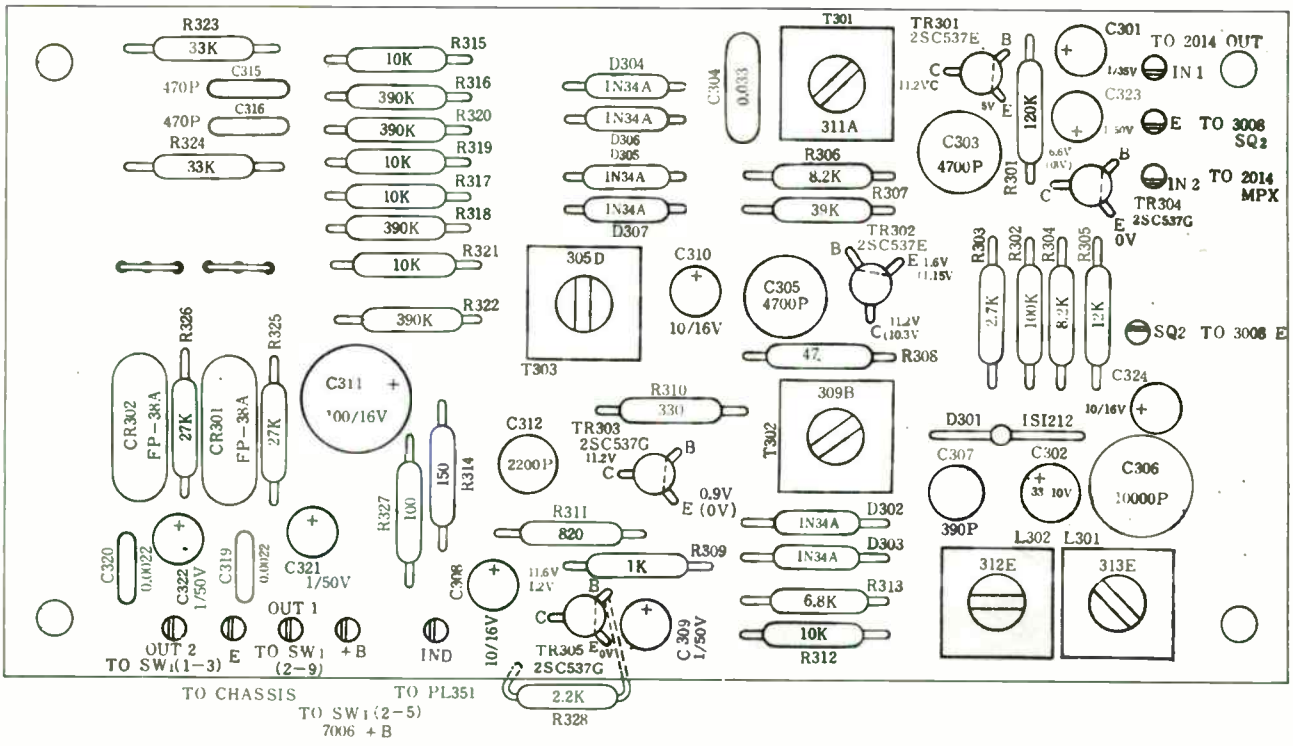
TUNER FRONT END 1013



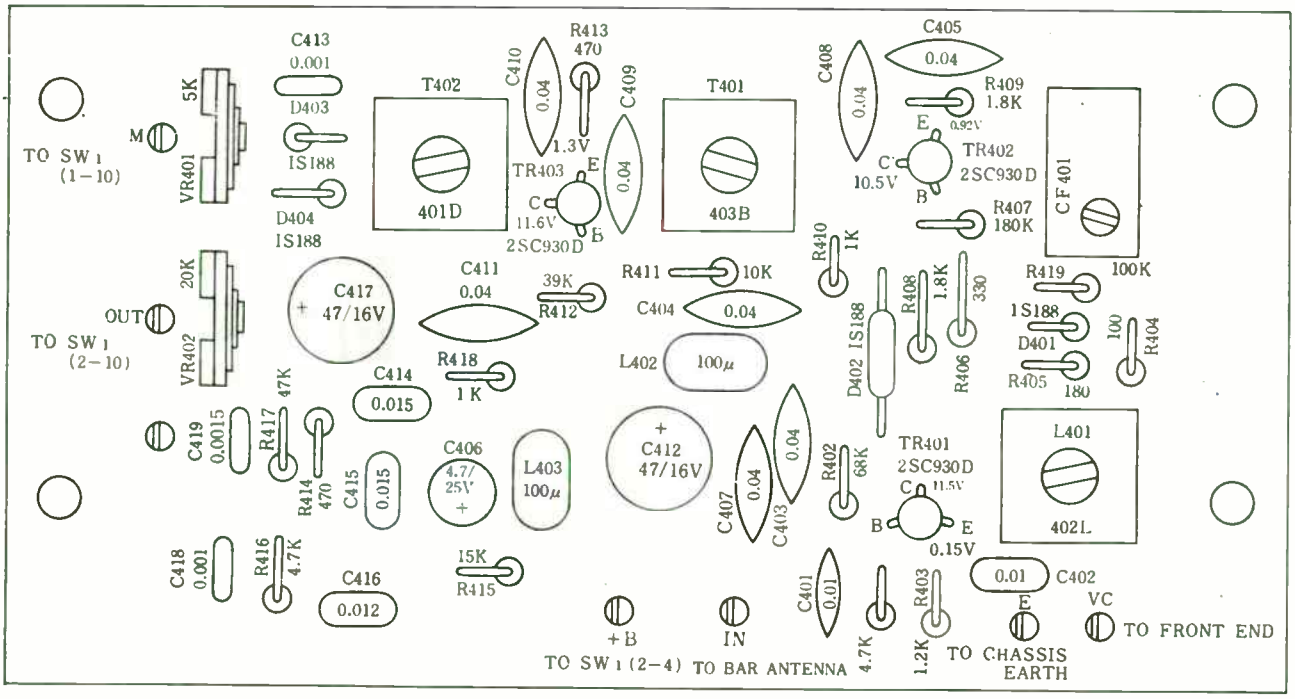
FRONT END BOARD 1013 (TOP VIEW)



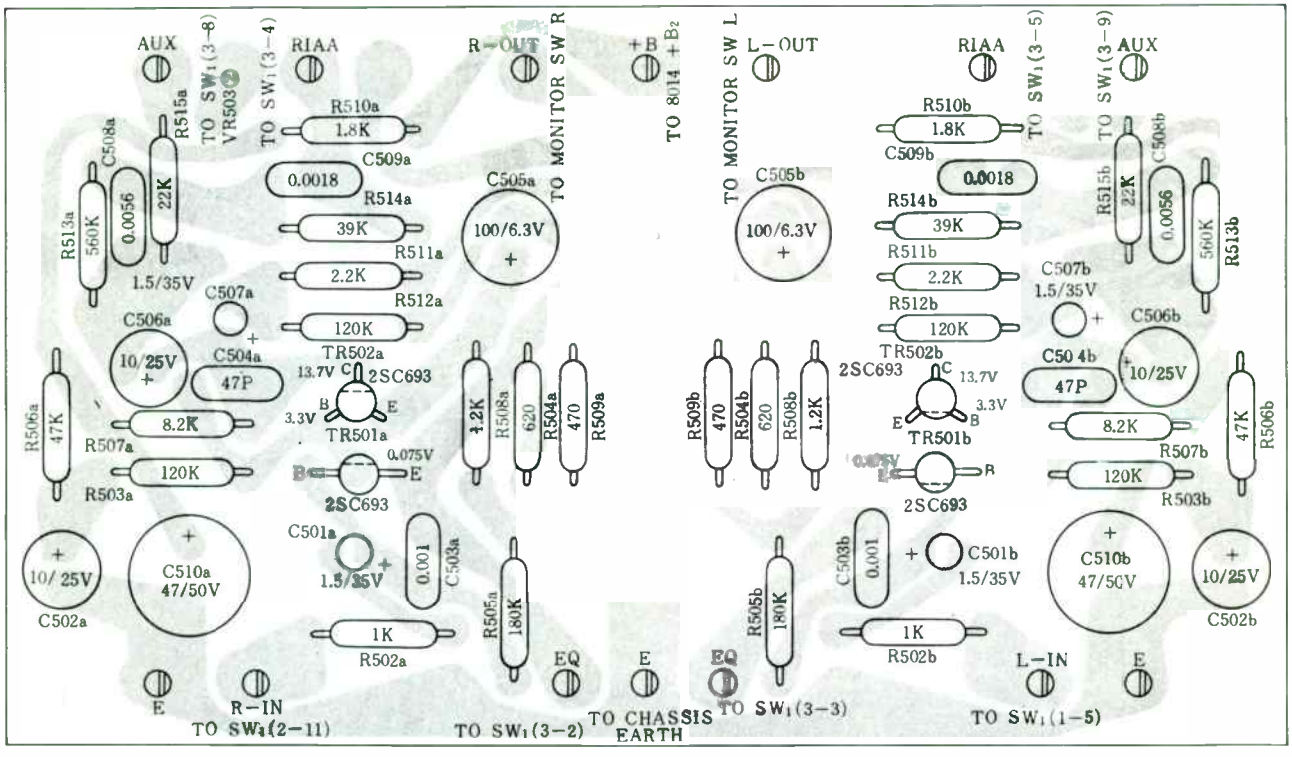
3008 MULTIPLEX BOARD (TOP VIEW)



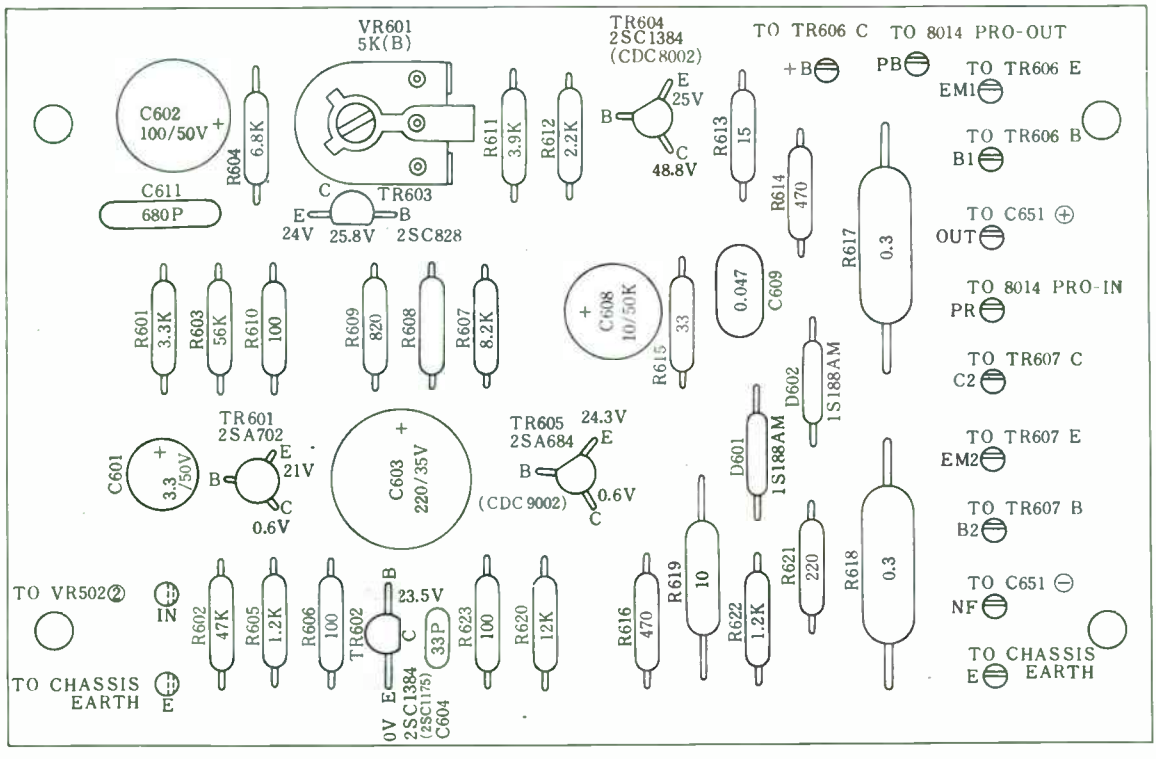
4009 AM CONV. & IF BOARO (TOP VIEW)



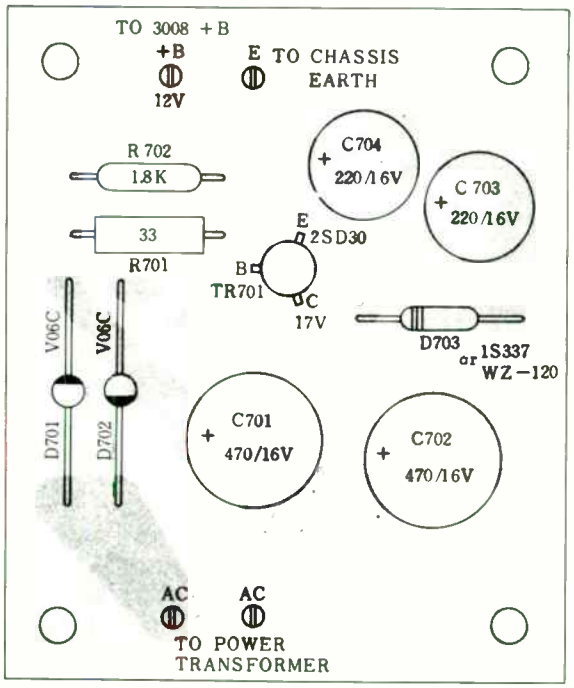
5015 PRE-AMPLIFIER BOARO (TOP VIEW)



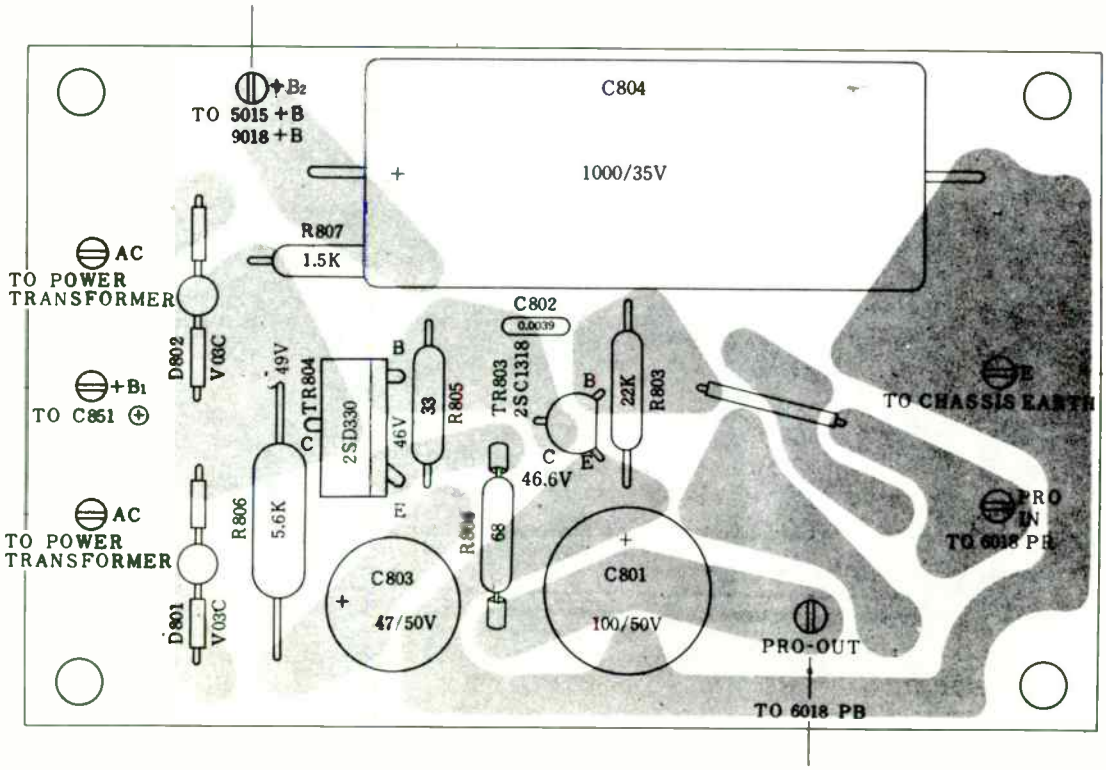
6018 MAIN AMPLIFIER BOARD (TOP VIEW)



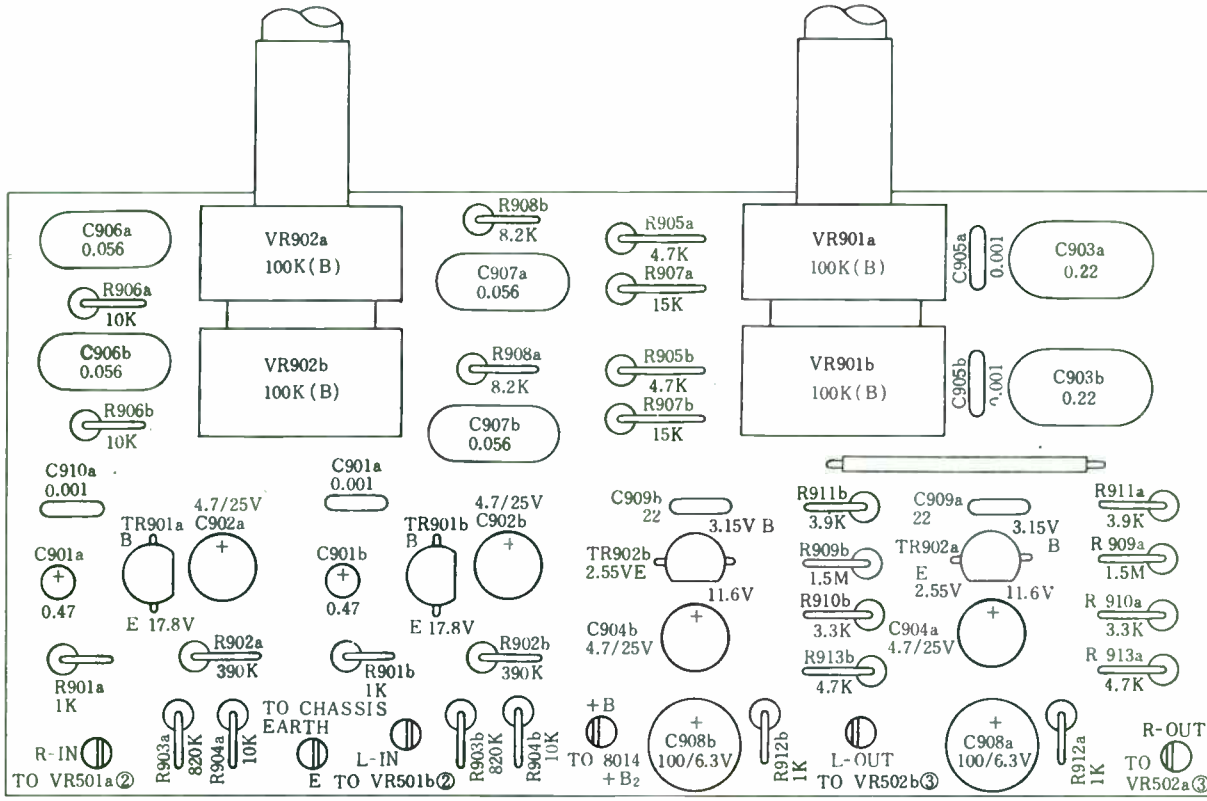
7006 TUNER POWER SUPPLY BOARD (TOP VIEW)



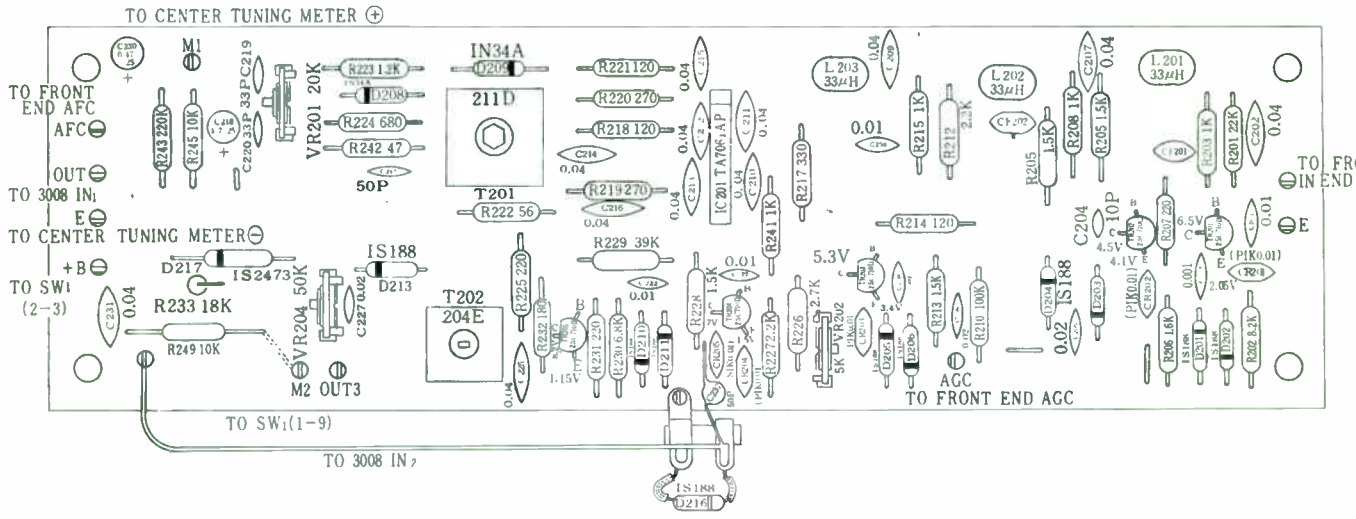
8014 POWER SUPPLY BOARD (TOP VIEW)



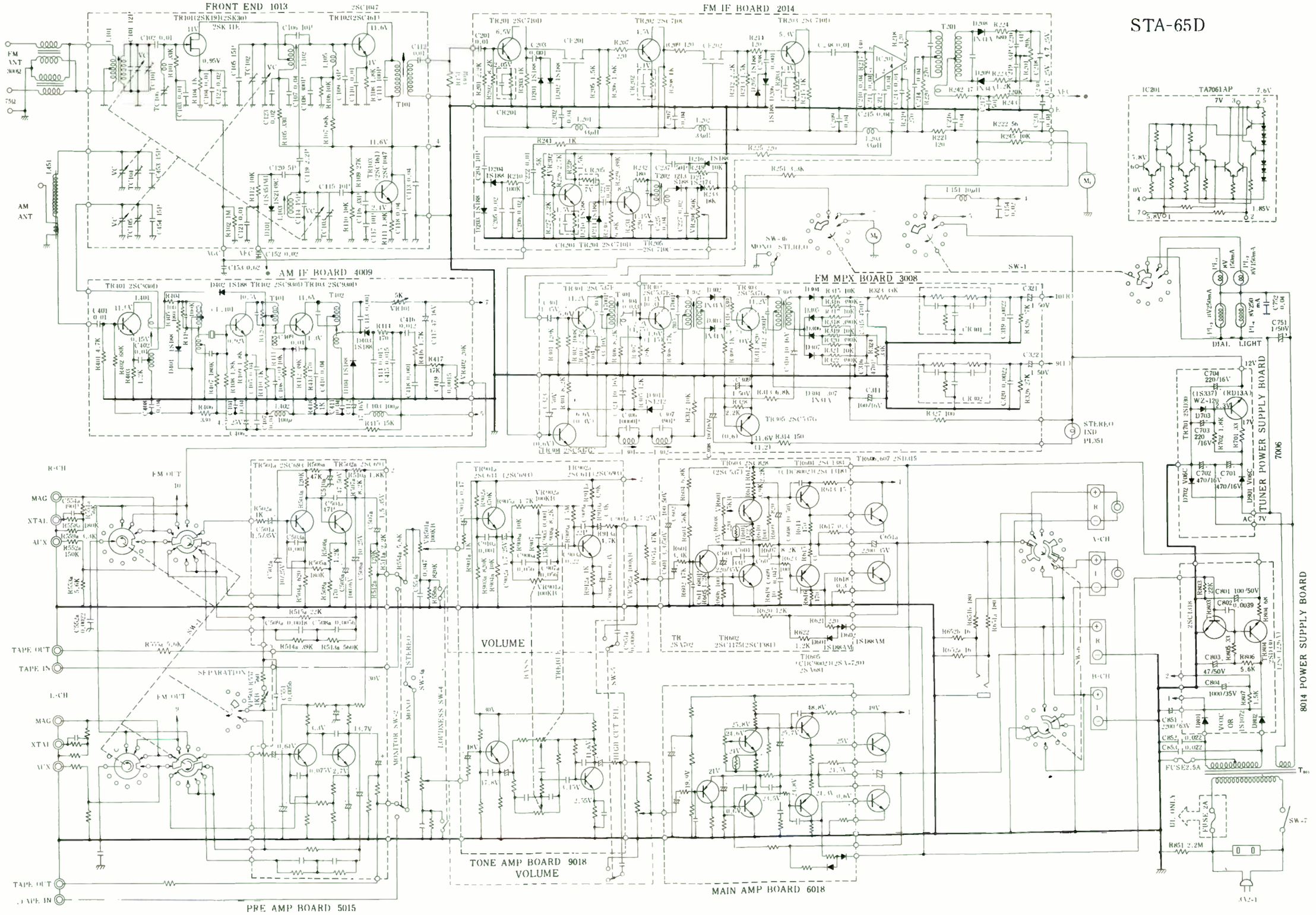
9018 TONE CONTROL BOARD (TOP VIEW)



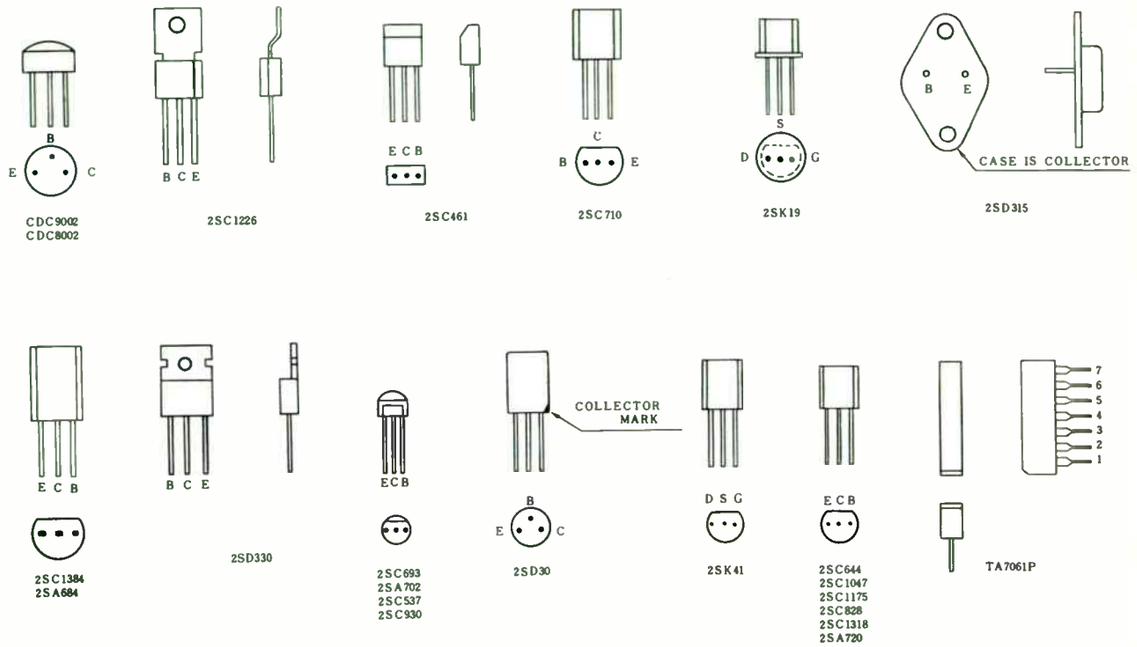
2014 FM IF BOARD (TOP VIEW)



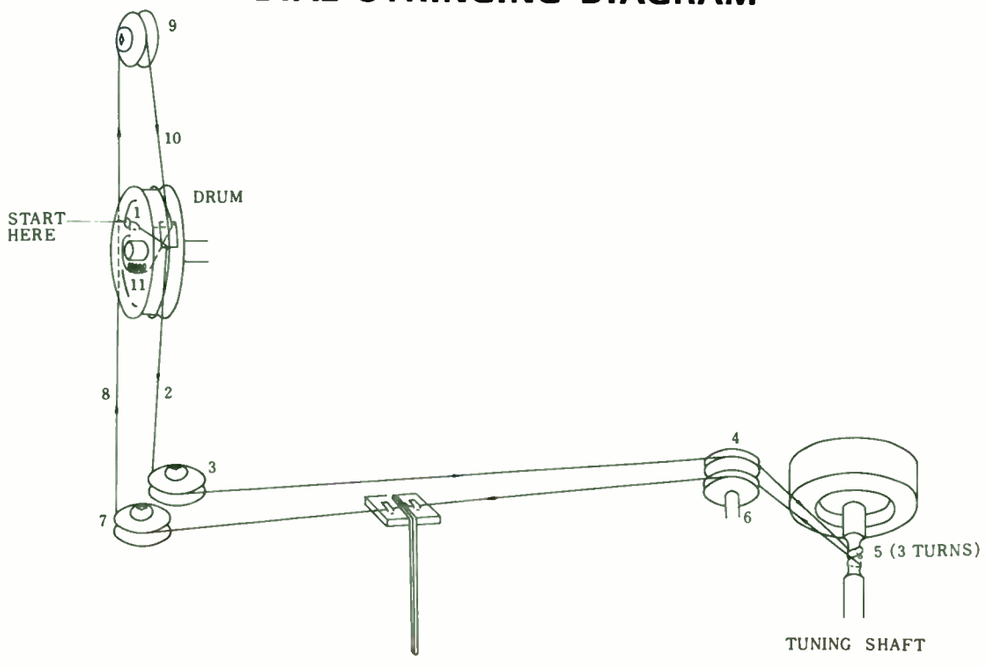
STA-65D



TRANSISTOR CONNECTIONS



DIAL STRINGING DIAGRAM



SEMICONDUCTORS

ITEM	PART NO./TYPE
D101	1S351M
D201	1S188FM
D202	1S188FM
D203	1S188FM
D204	1S188FM
D205	1S188FM
D206	1S188FM
D208	1N34AYL
D209	1N34AYL
D210	1S188FM
D211	1S188FM
S213	1S188FM
D216	1S188FM
D301	1S1212
D302	1N34AYL
D303	1N34AYL
D304	1N34AYL
D305	1N34AYL
D306	1N34AYL
D307	1N34AYL
D401	1S188FM
D402	1S188FM
D403	1S188FM
D404	1S188FM
D601	1S188FM
D602	1S188FM
D701	V06C
D702	V06C
D703	WZ-120
D801	V03C
D802	V03C
IC201	TA7061AP
TR101	2SK41E
TR102	2SC1047C
TR103	2SC1047C
TR201	2SC710D
TR202	2SC710C
TR203	2SC710D
TR204	2SC710D
TR205	2SC710C
TR301	2SC537E
TR302	2SC537E
TR303	2SC537G
TR304	2SC537G
TR305	2SC537G
TR401	2SC930D
TR402	2SC930D
TR403	2SC930D
TR501	2SC693a
TR502	2SC693a
TR601	2SA702(U)
TR602	2SC1384(R)
TR603	2SC828(R)
TR604	2SC1384(R)
TR606	2SD315
TR607	2SD315
TR701	2SD30
TR803	2SC1318S
TR804	2SD330
TR901	2SC644(R)
TR902	2SC644(R)

ELECTROLYTIC/VARIABLE CAPS

ITEM	PART NO.	VALUE	
C218		4.7 uF	25 V
C230		.47 uF	25 V
C301		1 uF	35 V
C302		33 uF	50 V
C308		10 uF	16 V
C309		1 uF	50 V
C310		10 uF	16 V
C311		100 uF	16 V
C321		1 uF	50 V
C322		1 uF	50 V
C323		1 uF	50 V
C324		10 uF	16 V
C406		4.7 uF	25 V
C412		47 uF	16 V
C417		47 uF	16 V
C501		1.5 uF	35 V
C502		10 uF	25 V
C505		100 uF	6V
C506		10 uF	25 V
C507		1.5 uF	35 V
C510		47 uF	50 V
C601		3.3 uF	35 V
C602		100 uF	50 V
C603		220 uF	35 V
C608		10 uF	50 V
C651		2200 uF	35 V
C701		470 uF	16 V
C702		470 uF	16 V
C703		220 uF	16 V
C704		220 uF	16 V
C751		1 uF	50 V
C801		100 uF	50 V
C803		47 uF	50 V
C804		1000 uF	35 V
C851		2200 uF	63 V
C901		.47 uF	35 V
C902		4.7 uF	25 V
C904		4.7 uF	25 V
C908		100 uF	6V
TC103	(26010023)	Trimmer	
TC106	(26010062)	Trimmer	
VC101	(26250061)	Tuning Gang	

CONTROLS/SPECIAL RESISTORS

ITEM	PART NO.	DESCRIPTION
R617		0.3 ohms 10% 2 W WW
R618		0.3 ohms 10% 2 W WW
TH601		Thermistor D-22A
VR201	(28100008)	20K Detector Balance
VR202	(28100034)	5000 ohms
VR204	(28100020)	50K
VR401	(28100034)	500 ohms
VR402	(28100008)	20K
VR501	(28200006)	100K Dual Volume
VR502	(28200006)	100K Dual Volume
VR503	(28100030)	1000 ohms Separation
VR601	(28100024)	5000 ohms
VR901	(28000040)	100K Dual Treble
VR902	(28000040)	100K Dual Bass

COIL/TRANSFORMERS

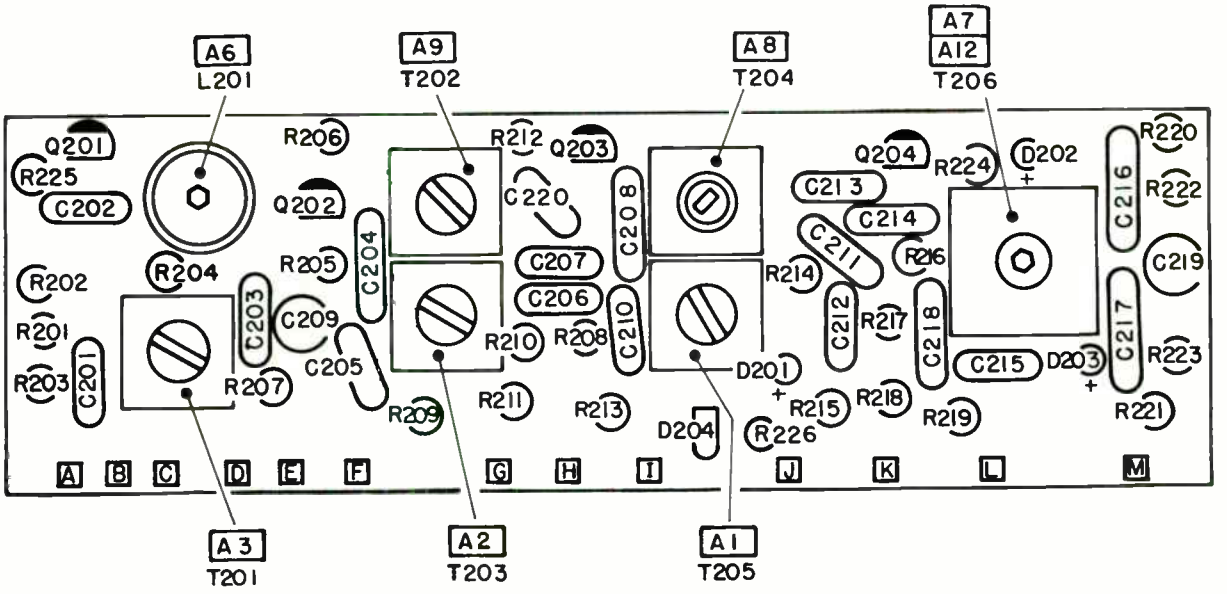
ITEM	PART NO.
L101	(35501071)
L102	(33301022)
L103	(35501066)
L105	(35500070)
L151	(35500040)
L201	(35500090)
L202	(35500090)
L203	(35500090)
L301	(35603135)
L302	(35603125)
L401	(35504026)
L402	(35504020)
L403	(35500020)
T101	(35701061)
T201	(35702114)
T202	(35702045)
T301	(35603111)
T302	(35603092)
T303	(35603054)
T401	(35704032)
T402	(35504020)
T801	(35900044)

MISCELLANEOUS

ITEM	NAME	PART NO.
CF201	Filter, Ceramic	(35300004)
CF202	Filter, Ceramic	(35300004)
CF401	Filter, Ceramic	(35300003)
CR201	Component Combination	(43700005)
CR202	Component Combination	(43700005)
CR203	Component Combination	(43700005)
CR204	Component Combination	(43700005)
CR205	Component Combination	(43200001)
CR301	Component Combination	(43300002)
CR302	Component Combination	(43300002)
M1	Meter, AM Tuning	(60120001)
M2	Meter, FM Tuning	(60075009)
SW1	Switch, Function	(27100015)
SW2	Switch, Monitor	(27600001)
SW3	Switch, Mono/Stereo	(27600001)
SW4	Switch, Loudness	(27600001)
SW5	Switch, High Filter	(27600001)
SW6	Switch, Speaker	(27100018)
SW7	Switch, Power	(27200019)

CABINET PARTS

NAME	PART NO.
Cabinet, Wood	(85016005)
Panel, Front	(10075001)
Knob, Tuning	(29074001)
Knob, Power	(29075001)
Knob, Volume	(29038001)



LOCATION OF PARTS
(I F Module)

MPX ALIGNMENT PROCEDURE

1. Equipment required: High impedance VTVM meter, MPX generator and 69 KHz generators.
2. Set receiver to FM MPX 98 MHz
3. Extreme care should be exercised to insure that coils are adjusted precisely. Input signal level should be as specified.
4. Only required adjustments should be made. Complete realignment should be avoided except when necessary.

T401, L402, T402 ALIGNMENTS

STEP NO.	INPUT LEVEL TO TUNER	INPUT SIGNAL MOD.	VTVM TO	ADJUSTMENTS
1.	Below Limiting	19 KHz	T.P. 3	Adjust A20 for Max.
2.	Below Limiting	19 KHz	T.P. 3	Adjust A21 for Max.
3.	Below Limiting	19 KHz	T.P. 3	Adjust A22 for Max.
4.	1000 uv or above limiting	MPX Mod. 1000 Hz	L & R Terminals	Adjust A21 for equal Separation on both channels

SCA TRAP ALIGNMENT

1. Connect 69 KHz (± 500Hz) generator through a 47K resistor to T.P.I. on IF Module.
2. Set generator for approximately 2.0 volts
3. Short to ground the input to IF module (Pin E)
4. Connect V.T.V.M. to T.P.2 on MPX module.
5. Adjust A19 for a minimum reading on V.T.V.M.

ALIGNMENT PROCEDURE

Tuning Range AM 530 - 1640 K Hz
FM 87.0 - 108.0 M Hz

IF Frequency AM 455 K Hz
FM 10.7 M Hz

Standard Output Test Level: 50 mw (0.9 volts across 8 ohm, speaker V.C.)

Standard Test Signal: AM 400 Hz, 30% Modulation
FM 400 Hz, 22.5 K Hz Deviation

AM ALIGNMENT

OPERATION	GENERATOR CONNECTION	INPUT SIGNAL FREQUENCY	BAND	POSITION OF TUNING COND	METER OR OSCILLOSCOPE	ADJUSTMENT	PURPOSE
1.	Test Loop	455K Hz	AM	Open	Output Meter Across Speaker	A1 A2 A3	Align IF
2.	Test Loop	1640 KHz	AM	Open	Same	A4	Set Osc.
3.	Test Loop	1400 KHz	AM	1400 KHz	Same	A5	Align AM Ant. Cir.
4.	Test Loop	600 KHz	AM	600 KHz	Same	A6	**Ck. Point

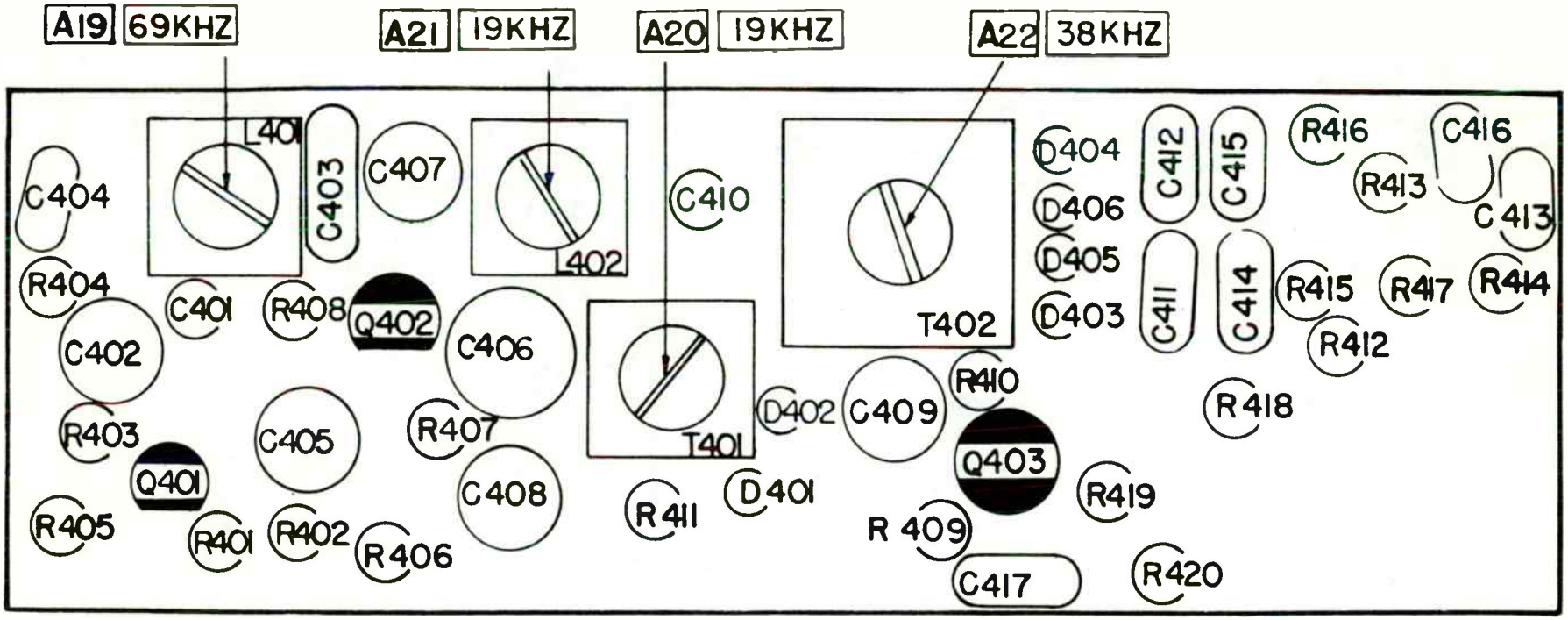
** Rock tuning condenser through 600 kc while simultaneously slowly tuning A6 to obtain maximum output. Repeat steps 2 through 4 in sequence until no further change is noted.

FM ALIGNMENT

5.	To Emitter of Q2 thru .05 UF & 1000 ohm in series	10.7 MHz modulated low signal level	FM	Minimum interference position	Output meter across speaker	A7,A8 A9,A10	Align FM IF for Max. output
6.	To Emitter of Q2 thru .05 UF & 1000 ohm in series	10.7 MHz modulated. Increase generator voltage above limiting	FM	Minimum interference position	Connect d.c. VTVM to Point [1] TP 1	A12	Adjust accurately for zero d.c. volts. There will be a positive or negative voltage on either side of the correct setting.
7.	FM Antenna	108.5 MHz Modulated	FM	High End	Output Meter Across Speaker	A13	Set Osc.
**8.	FM Antenna	87.5 MHz		Low End	Same	A14	Set Osc.
*9.	FM Antenna	106 MHz Modulated		Tuned to 106 MHz	Same	A15	Align RF for Max. Output
*10.	FM Antenna	90 MHz Modulated		Tuned to 90 MHz	Same	A16	Align RF

** Repeat steps 7 and 8 in sequence until proper coverage is obtained.

* Repeat steps 9 and 10 in sequence until no further track improvement is obtained

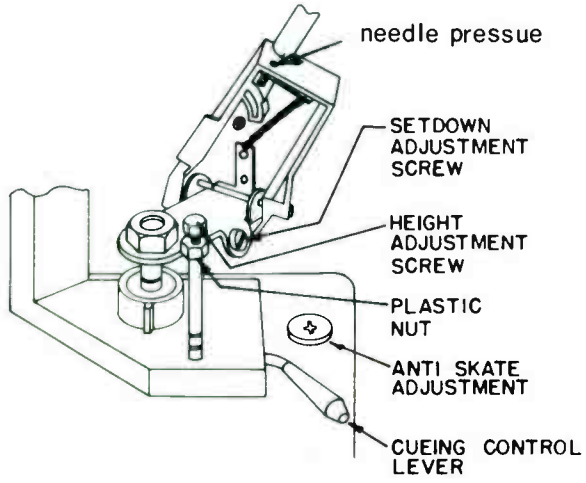


LOCATION OF PARTS
(MPX Module)

ADJUSTMENTS

RECORD CHANGER, MODELS 132.91460301 AND 132.91460303.

This changer has been accurately pre-adjusted for correct stylus set-down, stylus pressure and tone arm height. If new adjustments should ever be needed, make them with a 12" record; then position will be correct for all sizes.



Tone Arm Height

To raise, hold plastic nut (33) firmly and turn screw head (32) by hand counterclockwise; to lower, turn screw head (32) clockwise. Adjust stylus to clear a full stack of records by 1/8".

Needle Set-Down

The set-down position of the needle on the record is adjusted by means of the needle adjusting screw (29). This screw is adjusted to obtain correct set-down for a 12" record. It should be adjusted so the needle will set down 1/8" from the outside edge of the record. This adjustment should be made with a 12" record on the turntable. When the needle set-down is adjusted correctly for 12" record, it will automatically be correct for 7" and 10" records.

Needle Pressure (2 to 6 grams)

NOTE: It is necessary to use a needle pressure gauge in adjusting the needle pressure of the tone arm. One can be obtained from a local hi-fi store. The needle pressure indicator on the side of the tone arm is for reference only and indicates an increase or decrease in the nominal needle pressure setting.

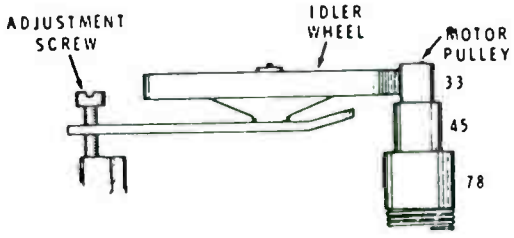
Turn needle pressure adjusting screw (19) clockwise to reduce needle pressure; counterclockwise to increase pressure.

Anti-Skate (40)

This control has three positions: 2, 4, and 6 grams. Set this control to the number that is closest to the needle pressure setting. This anti-skate feature prevents the tone arm from making quick lateral movements, such as skating through the "lead-in" grooves of a record.

Idler Pulley

Disconnect changer from AC source and remove turntable (185). Set speed selector knob on 33 and control knob to start so idler pulley (132) rests against the 33 rpm step on the motor pulley (141). Using a screwdriver, turn adjustment screw (136) until idler pulley (132) is centered on the 33 rpm step of motor pulley. Check the alignment of idler pulley (132) at all speeds and readjust if necessary. Move the control knob to Stop and replace turntable (185) taking care not to damage idler pulley (132).



LUBRICATION

The mechanism has been thoroughly lubricated at the factory and under normal use should not require additional lubrication for at least one year, However, after prolonged use, it may be necessary to lubricate parts as specified.

Use a medium grade grease only on these parts:

1. Speed change arm (161)
2. Idler pulley arm (135)
3. Bearing surfaces of operating plate (119)
4. Gear teeth, bearing and cam track on cam gear (124)
5. Ball race (183)

Use a light machine oil on these parts:

1. Tone arm raising spindle (87
2. Idler pulley spindle on pulley arm. (135)
3. Upper and lower bearings of motor (141)

NOTE: Oil or grease should never be applied to or allowed to collect on the rubber tire of the idler pulley (132), the inside surface of the driving rim of turntable (185) or on the motor pulley.

MAINTENANCE

RECORD CHANGER, MODELS 132.91460300 AND 132.91460302

SET DOWN

1. Place a 12-inch record on the turntable.
2. Move the tone arm, by hand to the center of the record.
3. Cycle the changer by rotating the turntable by hand, in a clockwise direction, until the tone arm has moved over the record and has begun to lower.
4. Stop rotating the turntable when the needle is about 1/2-inch above the record.
5. Raise the tone arm and turn set-down screw (119) until the needle is positioned directly above the center of the lead-in grooves of the record.
6. Cycle changer automatically and check the needle landing point.

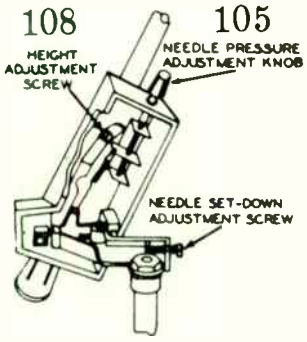
TONE ARM HEIGHT (TUBE TYPE TONE ARM)

Tube type tone arm height is adjusted by means of height adjusting screw (106). To raise the tone arm height, turn this screw clockwise. To lower the tone arm, turn counter-clockwise. Adjustments should be made so that the tone arm clears the rest post by one-eight (1/8) inch.

NEEDLE PRESSURE

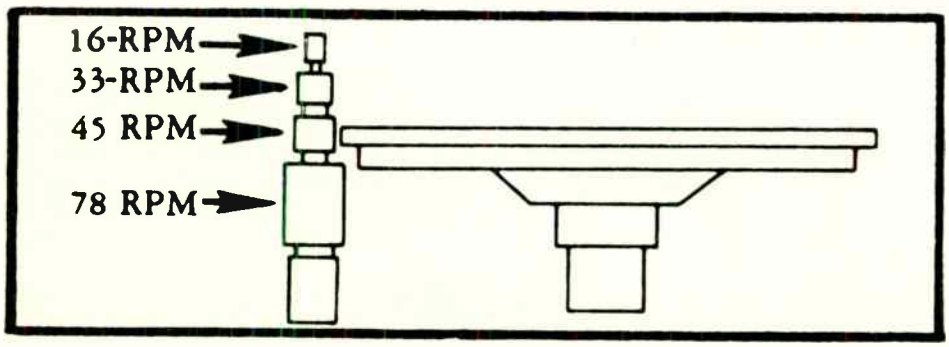
Needle pressure is adjusted by the tone arm weight adjusting screw (105). To lower tone arm weight turn the adjusting screw in a counter-clockwise direction. To increase tone arm weight, turn the adjusting screw in a clockwise direction.

The needle pressure should be checked with a gram scale and set **Min. 4.5 – Max. 6.5 Grams.**



IDLER ADJUSTMENT

To adjust the idler wheel height, set the speed selector knob to the 45 RPM position and turn the idler height adjusting screw until the idler wheel is approximately centered on the 45 RPM step of the motor pulley. NOTE ; The bottom edge of the idler wheel should never ride on the adjacent steps of the motor pulley.



SEMICONDUCTORS

ITEM	PART NO.	TYPE
(RADIO)		
D1	2002207-2	
D2	47126-3	
D3	47126-3	
D4	249508-3	
D5	2002209-9	
D201	2495083	1N60
D202	48287-4	1N52
D203	48287-4	1N52
D204	2495083	1N60
D205	2495083	1N60
D401	2495083	1N60
D402	2495083	1N60
Q1	95170-1	
Q2	95170-1	
Q3	95296	
Q4	95296	
Q5	95221	
Q6	95221	
Q7	95296	
Q8	95296	
Q9	95221	
Q10	95221	
Q10	95258-1	
Q12	95258-1	
Q13	95258-2	
Q14	95258-2	
Q15	95221	
Q201	95171-4	
Q202	95170-2	
Q203	95170-2	
Q204	95170-2	
Q401	95221	
Q402	95221	
Q403	99103	
(TAPE)		
Q101	2010088-49	2SC945R
Q102	2010499-52	2SC870F
Q201	2010088-49	2SC945R
Q202	2010499-52	2SC870F

ELECTROLYTIC/VARIABLE CAPS

ITEM	PART NO.	VALUE
(RADIO)		
C1	2002855-15	Tuning Gang
C22	49385-15	150 uF 10V
C23	49385-1	10 uF 3V
C41	49385-6	10 uF 10 V
C42	49385-6	10 uF 10 V
C51	49385-15	150 uF 10 V
C52	49385-15	150 uF 10 V
C55	67012-15	2 uF 25 V
C56	67012-15	2 uF 25 V
C57	56012-24	500 uF 15 V
C58	67012-24	500 uF 15 V
C59	67012-2	1000 uF 25 V
C60	49385-25	1000 uF 25 V
C61	67012-1	500 uF 25 V
C209	49385-9	2 uF 10 V
C219	49385-9	2 uF 10 V
C402	49385-2	10 uF 10 V
C405	49385-2	10 uF 10 V
C408	49385-2	10 uF 10 V
C409	49385-10	2 uF 10 V
(TAPE)		
C101	2010494-5	47 uF 16 V
C102	2003073-47	10 uF 10 V
C104	2010494-6	33 uF 10 V
C106	2003073-47	10 uF 10 V
C201	2010494-5	47 uF 16 V
C202	2003073-47	10 uF 10 V
C204	2010494-6	33 uF 10 V
C206	2003073-47	10 uF 10 V

CONTROLS/SPECIAL RESISTORS

ITEM	PART NO.	DESCRIPTION
(RADIO)		
R67	2475488	.68 ohm 10% 1 W
R68	2475488	.68 ohm 10% 1 W
R69	2475488	.68 ohm 10% 1 W
R70	2475488	.68 ohm 10% 1 W
R37	2009795-11	100K Volume
R38	2009795-11	100K Volume
R39	2009795-7	20K Treble
R40	2009795-7	20K Treble
R41	2009795-7	20K Bass
R42	2009795-7	20K Bass
R75	2009795-6	50K Balance
R225	67067-47	4.7 ohm 5%

COIL/TRANSFORMERS

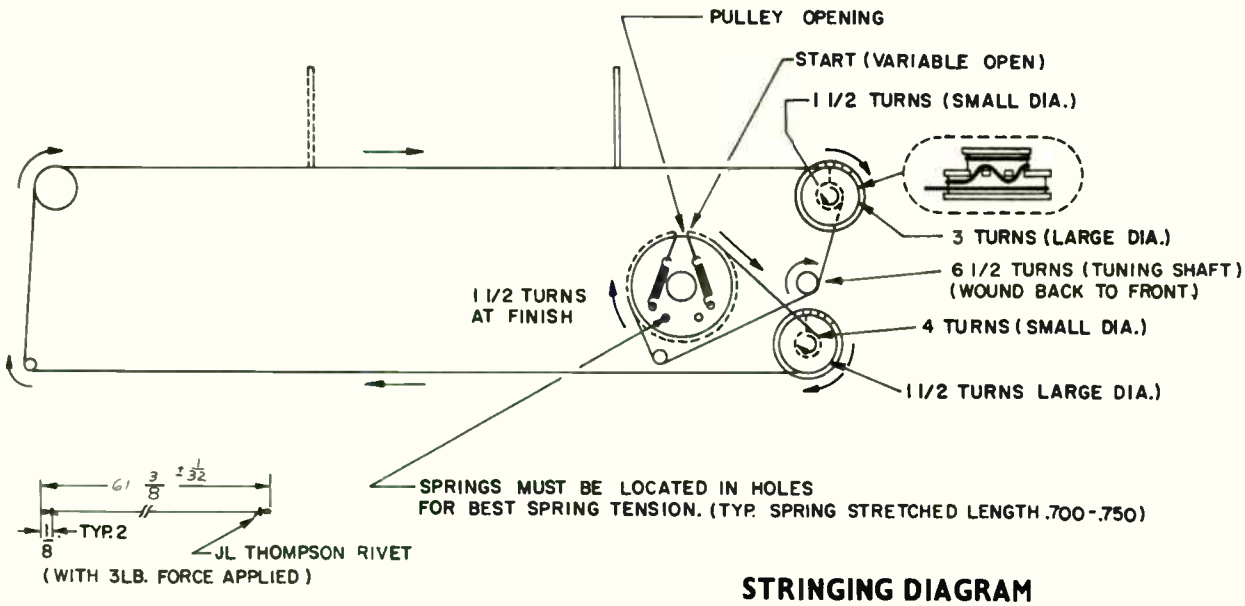
ITEM	PART NO.
(RADIO)	
L1	96543-11
L2	96543-3
L3	2005361-2
L4	49515-1
L5	49515-1
L6	96543-4
L7	93303-2
L201	45783-46
L401	96477-6
T1	96543-12
T2	2009725-10
T3	2009996-6
T201	2009724-10
T202	2009725-30
T203	2009724-20
T204	2009725-20
T205	2009724-30
T206	96535-4
T401	96477-8
T402	96477-9

MISCELLANEOUS

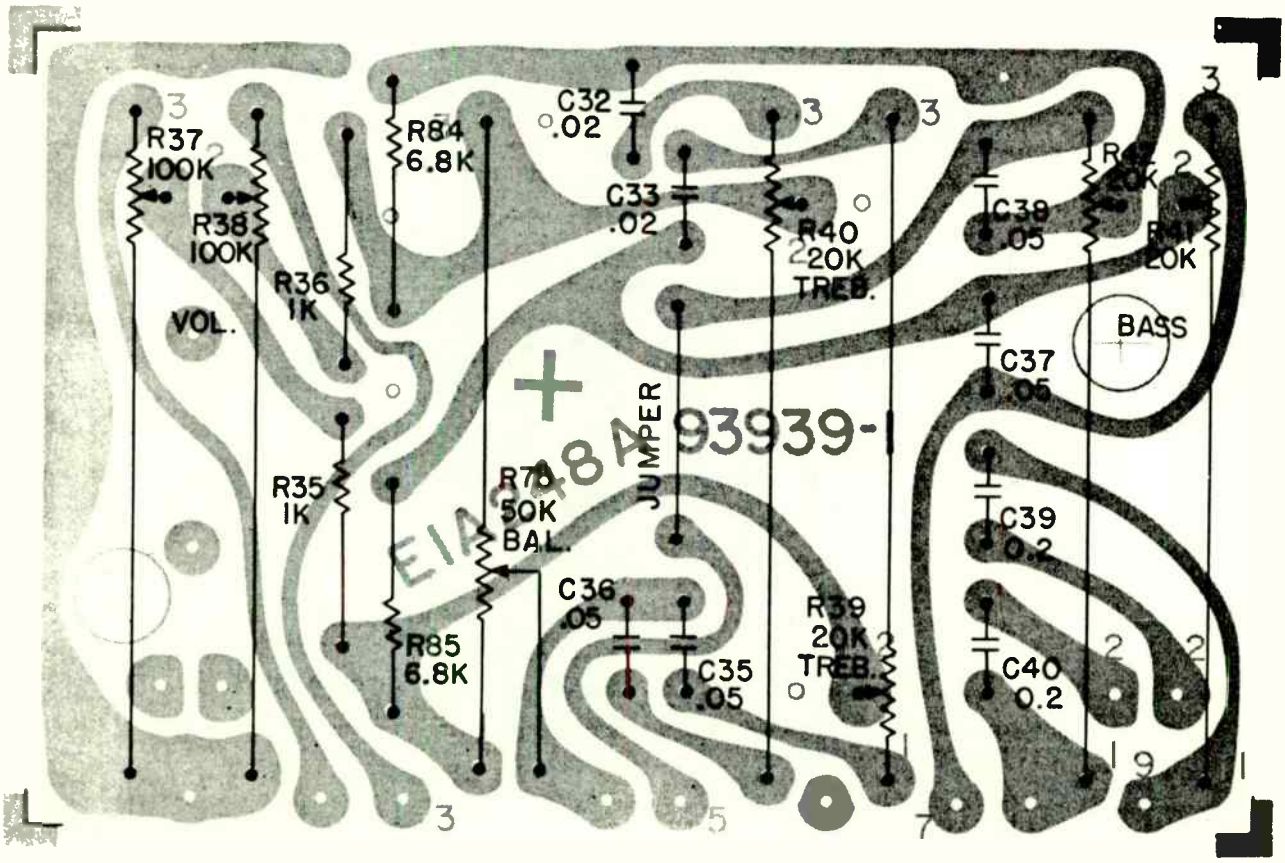
ITEM	NAME	PART NO.
(RADIO)		
RC1	Component Combination	47796-7
SW1-6	Switch, Function	2006919-5
SW7	Switch, AFC	2008914
	Module, IF	93228-9
	Module, MPX	93395-3
	Module, Slide Control	93961-3
(TAPE PLAYER, MODELS 132.91460300,132.91460301)		
	Belt, Tape Drive	2010499-34
	Head, 8-Track	2010499-40
	Motor, Tape Drive	2010499-38
	Solenoid, Track Change	2010499-35
	Switch, Channel Select	2006431-68
(TAPE DECK, MODELS 132.91460302 AND 132.91460303)		
	Belt, Tape Drive	2006431-85
	Diode, Solenoid (10D-1)	2010494-11
	Head, 8-Track	2006431-74
	Motor, Tape Drive	2006431-184
	Switch, Program Change	2006431-68
	Solenoid, Track Change	2010494-18
(RECORD CHANGER, MODELS 132.91460300 AND 132.91460302)		
	Assembly, Record Changer (VM S1273-L44)	2011138-2
	Cartridge, Phono	57-89122
	Motor, Phono Drive	42150
	Needle, Phono	57-88332
(RECORD CHANGER, MODELS 132.91460301 AND 132.91460303)		
	Assembly, Record Changer (BSR-123R)	2006703-15
	Cartridge, Phono	57-89061
	Motor, Drive	TP8
	Needle, Phono	57-88441

CABINET PARTS

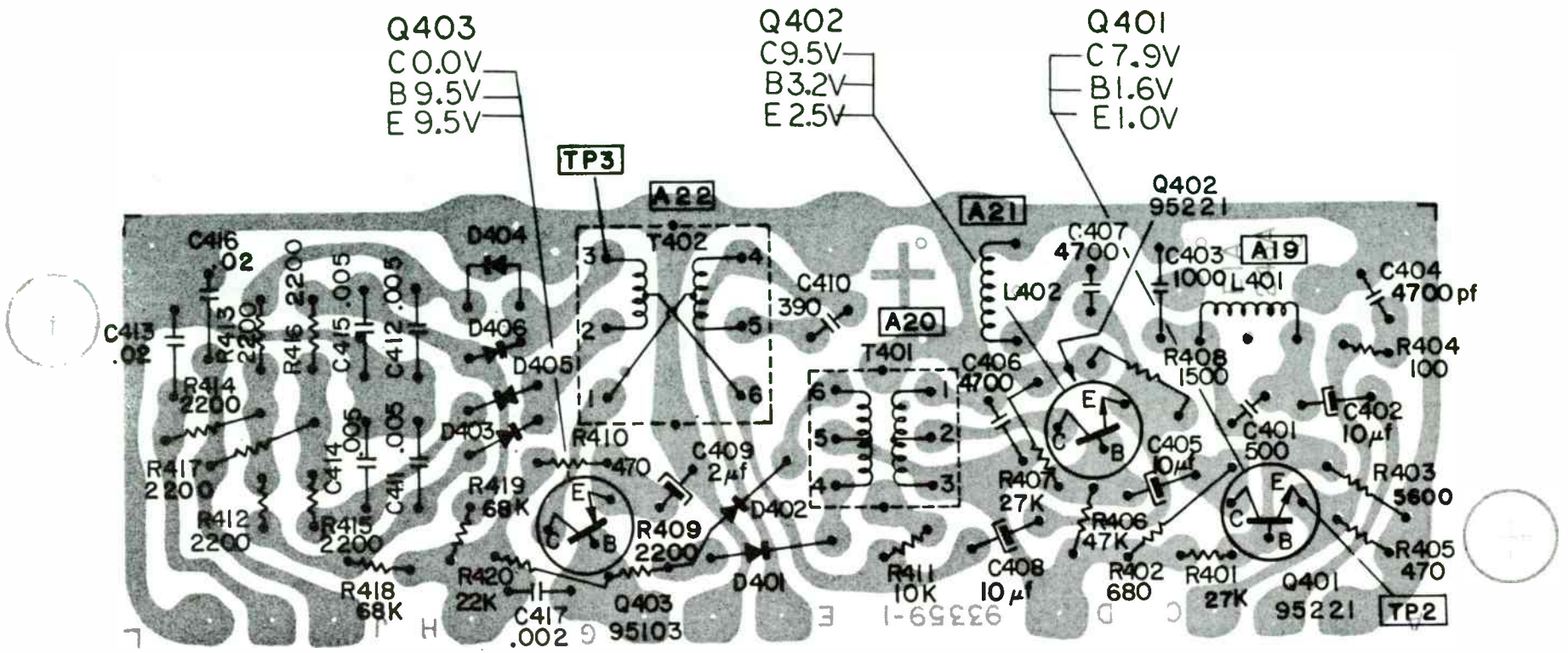
NAME	PART NO.
Cover, Dust	2011650-1
Top, Cabinet (Models 132.91460300/02)	2011752-1
Top, Cabinet (Models 132.91460301/03)	2012177-1
Front, Cabinet	2011720-2
Crystal, Front	2011759-1
Knob, Tuning	2011310-2
Knob, AFC	2011311-1
Knob, Function	2011453-1
Knob, Slide Control	2011312-1
Knob, Program Select	2010386



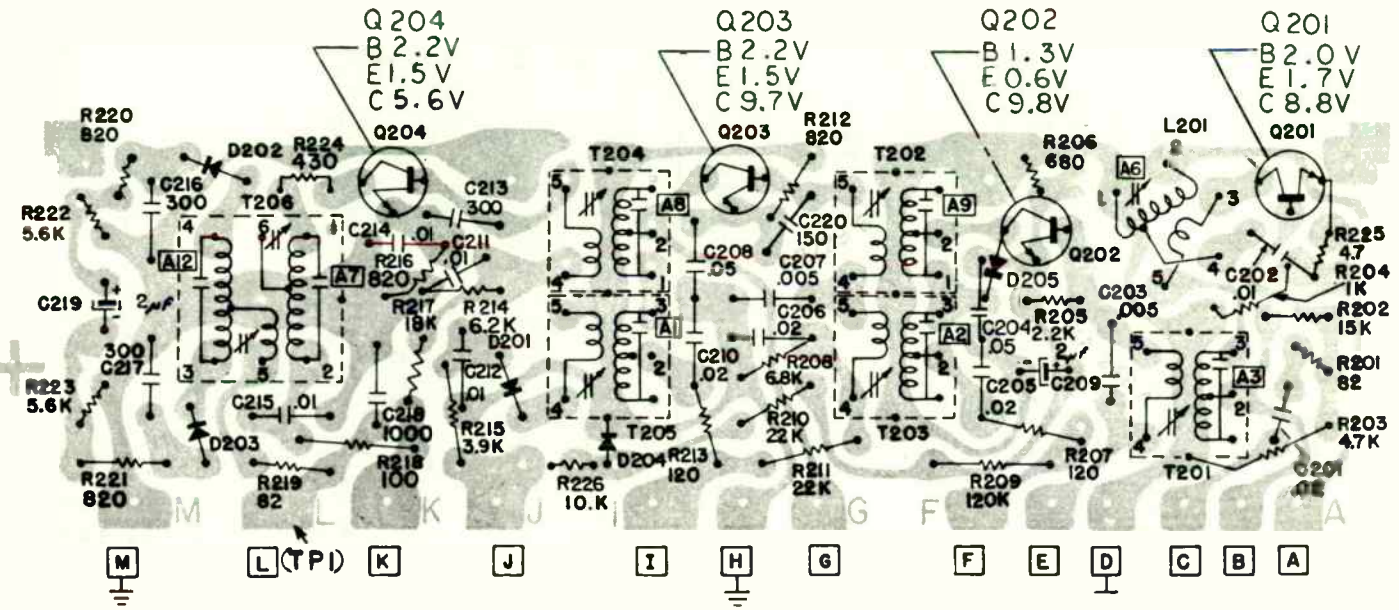
STRINGING DIAGRAM



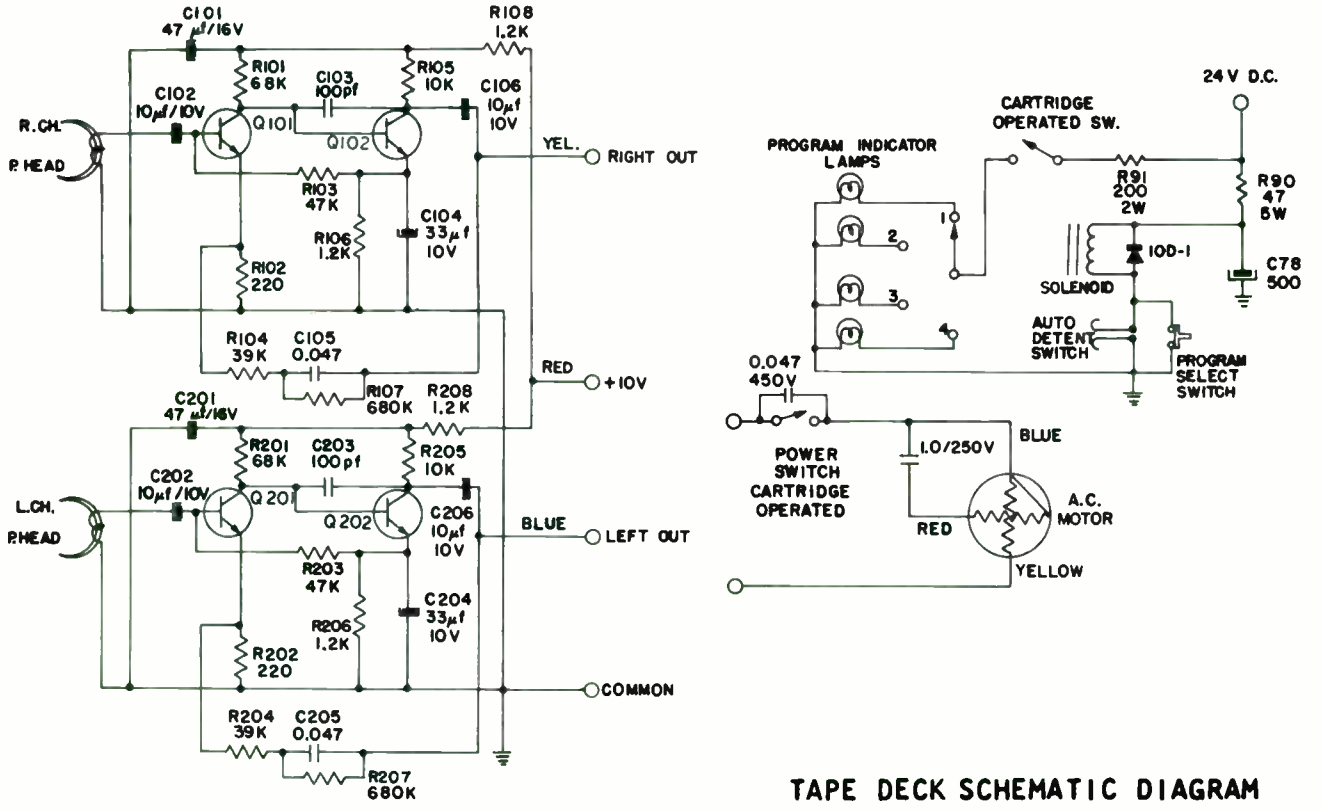
Control Module Parts



MPX BOARD DIAGRAM
(Bottom View)

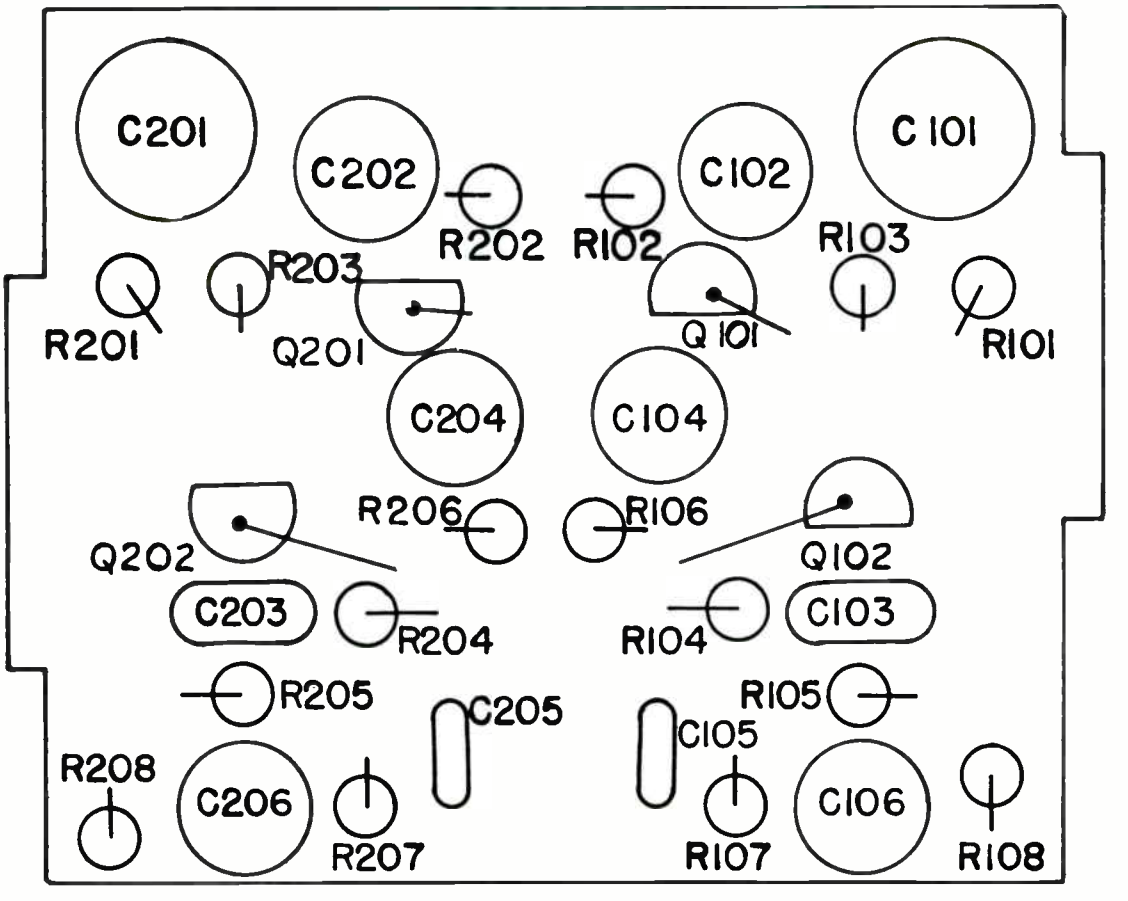


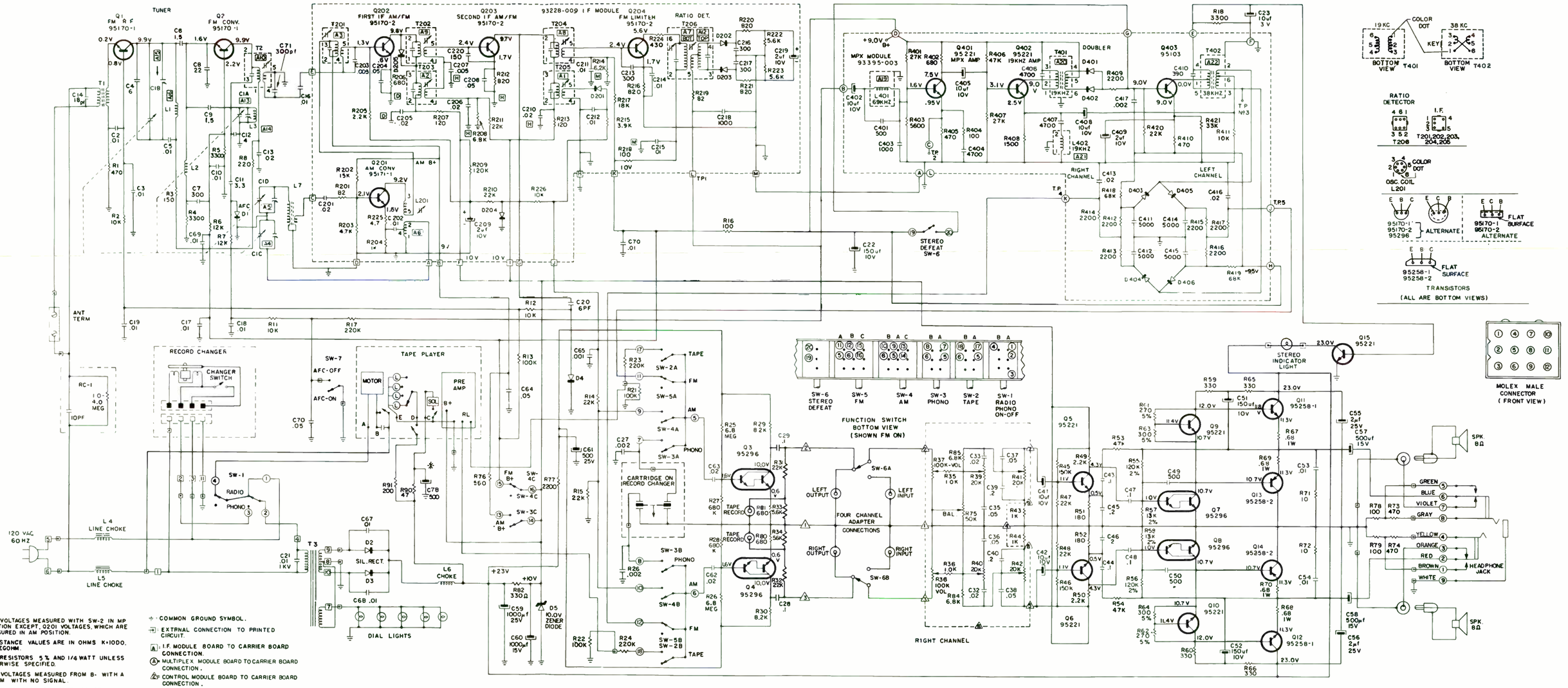
I F BOARD DIAGRAM
(Bottom View)



TAPE DECK SCHEMATIC DIAGRAM

TAPE DECK PRE-AMP.





ALL VOLTAGES MEASURED WITH SW-2 IN MP POSITION EXCEPT, Q201 VOLTAGES, WHICH ARE MEASURED IN AM POSITION.

RESISTANCE VALUES ARE IN OHMS K=1000. M=MEGOHM.

ALL RESISTORS 5% AND 1/4 WATT UNLESS OTHERWISE SPECIFIED.

ALL VOLTAGES MEASURED FROM B- WITH A V.T.V.M. WITH NO SIGNAL.

ALL CAPACITORS 25 VOLTS UNLESS OTHERWISE SPECIFIED.

CAPACITANCE VALUES LISTED IN DECIMALS ARE IN MICROFARADS (uf) AND VALUES GREATER THAN 1.0 ARE IN PICOFARADS (pf), UNLESS OTHERWISE SPECIFIED.

⏚ COMMON GROUND SYMBOL.

→ EXTRNAL CONNECTION TO PRINTED CIRCUIT.

A I.F. MODULE BOARD TO CARRIER BOARD CONNECTION.

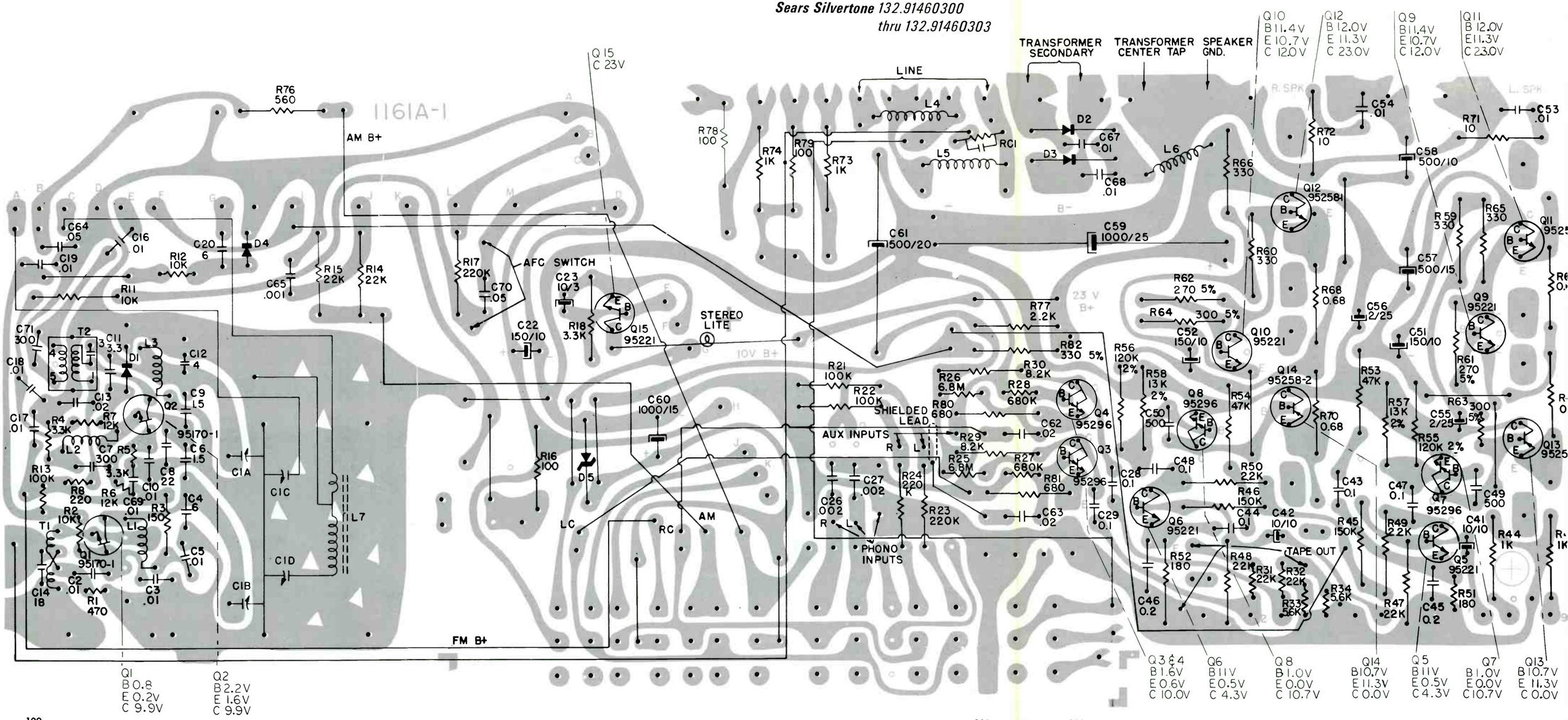
A MULTIPLEX MODULE BOARD TO CARRIER BOARD CONNECTION.

A CONTROL MODULE BOARD TO CARRIER BOARD CONNECTION.

2 MOLEX PLUG CONNECTIONS (NUMBERS).

* IF C78 IS NOT USED VALUE OF R90 WILL BE 10 OHMS

Sears Silvertone *132.91460300*
thru 132.91460303



Pages 103-116 Courtesy of SONY CORP. OF AMERICA

ALIGNMENT INSTRUCTIONS

CAUTION: Use isolation transformer or observe polarity when connecting test equipment.
Maintain line voltage at 120VAC. Allow a 15-minute warm-up period.
Use only enough generator output to obtain a suitable indication.

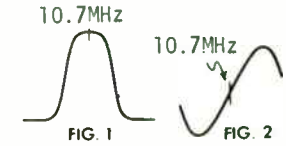


FIG. 1 FIG. 2

AM ALIGNMENT—SELECTOR IN AM POSITION

Connect generator across loop fashioned of several turns of wire. Set volume at maximum.

GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
455kHz 400-hertz Modulation	Tuning gang fully open	Output meter across voice coil	T402,T401	Adjust for maximum. Repeat until no further improvement is noted.
600kHz	Tune to signal	"	L402	Adjust for maximum.
1640kHz	"	"	CT402	Adjust for maximum.
1400kHz	"	"	CT402	Adjust for maximum. Repeat AM alignment until no further improvement is noted.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR—SELECTOR IN FM POSITION

High side of generator thru .001mfd to Jct. C104 & L102 low side to ground.

GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
10.7MHz Unmodulated	Point of non-interference	DC probe of VTVM to Cathode D201, common to ground.	T201 (Pri) T101	Adjust for maximum.
"	"	DC probe of VTVM to Jct.R220 & C207 common to ground.	T201 (Sec)	Adjust for zero reading. A positive or negative reading will be obtained on either side of correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR—SELECTOR IN FM POSITION

High side of generator thru .001mfd to point Jct. C108 & L102, low side to ground.
Use only enough marker signal for indication. Use 60-hertz frequency modulated signal with 450kHz sweep. Use 60-hertz sawtooth voltage in scope for horizontal deflection.

GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
10.7MHz 450kHz Sweep	Point of non-interference	Vert input of scope to Cathode D201, low side to ground.	T201 (Pri) T101	Disconnect stabilizing capacitor C 210 Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown. Reconnect C 210.
"	"	Vert input of scope to Jct.R220 & C207 low side to ground.	T201 (Sec)	Adjust T201SEC to place marker at center of S curve similar to Fig. 2. Readjust T201 (Pri.) for maximum amplitude and straifhtness of line.

FM RF ALIGNMENT—SELECTOR IN FM POSITION

Connect generator across antenna terminals with 120-ohm carbon resistor in series with each lead.
Adjustment of coils by bending should not be attempted unless the coil is deformed or replaced.

GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
88MHz Unmodulated	Low freq end	DC probe of VTVM to Cathode D201 common to ground.	L103, L102, L101	Adjust for maximum.
108 MHz Unmodulated	Tune to signal	"	CT103,CT102, CT101	Adjust for maximum. Repeat FM RF steps until no further improvement is noted.

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

High side of generator thru 47K to Jct. R220 & C207			low side to ground.
GENERATOR FREQUENCY	INDICATOR	ADJUST	REMARKS
.67kHz	Vert input of scope thru 47K to Collector Q301 low side to ground.	L301	Adjust for MINIMUM.
19kHz	Vert input of scope thru 47K to Anode D201, low side to ground.	MU301	Adjust for maximum.
19kHz	Vert input of scope thru 47K to Anode D303, low side to ground.	L302	Adjust for maximum 38kHz response.

3-7. POWER-AMPLIFIER ADJUSTMENTS

Note: There are two adjustments in the power amplifier. One is dc bias adjustment and the other is ac balance adjustment. These adjustments should be alternately repeated two or three times after replacing any of the power-amplifier transistors until the best operation is obtained.

Dc-Bias Adjustment

Serious deficiencies in performance, such as thermal runaway of power transistors, will result if this adjustment is improperly set

CAUTION

To avoid accidental power transistor damage, increase the ac line voltage gradually, using a variable transformer, while measuring the voltage across emitter resistor R543 (emitter of Q508 to ground). See Fig. 3-20. Check to see that the reading does not exceed 25mV. If it does, turn off the power as soon as possible, then check and repair the trouble in the power amplifier board.

Test Equipment Required

1. Dc millivoltmeter
2. Variable transformer
3. Screwdriver with 3mm (1/8") blade

Preparation

1. Remove the record changer
2. Connect the dc millivoltmeter between the emitter of Q508 and ground, as shown in Fig. 3-20

Procedure

1. Set the semifixed resistors (Fig. 3-21) on the power-amplifier board as follows:

   Rv506 (L-CH) (dc bias) . . . . . fully counter clockwise
   Rv606 (R-CH) (dc bias) . . . . . fully counter clockwise
   Rv505 and Rv605 (ac balance). . . mid position

2. Set the variable transformer for minimum output.
3. Turn on the POWER switch, then increase the line voltage up to the rated value.
4. Adjust Rv506 and (Rv606) to obtain 25 mV readings on the meter.

Ac-Balance Adjustment

Excessive harmonic distortion at high levels will result if this adjustment is improperly set.

Test Equipment Required

1. Audio oscillator
2. Attenuator, 600 ohm unbalanced
3. Oscilloscope
4. Resistor, 600 Ω 1/4 W
5. Dummy load, 8 Ω 15 W
6. Screwdriver with 3 mm (1/8") blade
7. Connecting Cord

Preparation

Set the receiver's control as follows:

FUNCTION selector . . . . . TAPE
MODE selector . . . . . .MONO
VOLUME control . . . . . minimum

Procedure

1. With the equipment connected as shown in Fig. 3-22 , set the POWER switch to the ON position and feed a 1-kHz, 0.775-V (0 dB) signal to the TAPE input jack through the attenuator.

2. While watching the waveform on the oscilloscope, alternately turn the VOLUME control and adjust Rv505 (Rv605). Set Rv505 (Rv605) so that the positive and negative peaks of the output waveform are simultaneously clipped (as shown in Fig. 3-23) when increasing the VOLUME control just beyond the point that causes distortion.

3. Repeat dc and ac balance adjustments two or three times.

4. After completing the adjustment, apply a drop of lock paint to Rv505 (Rv605) and Rv506 (Rv606).

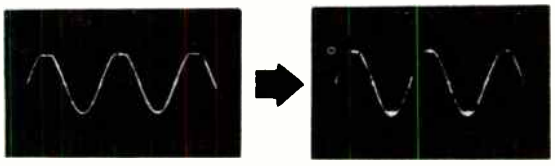


Fig. 3-23 Output wave form of ac balance adjustment

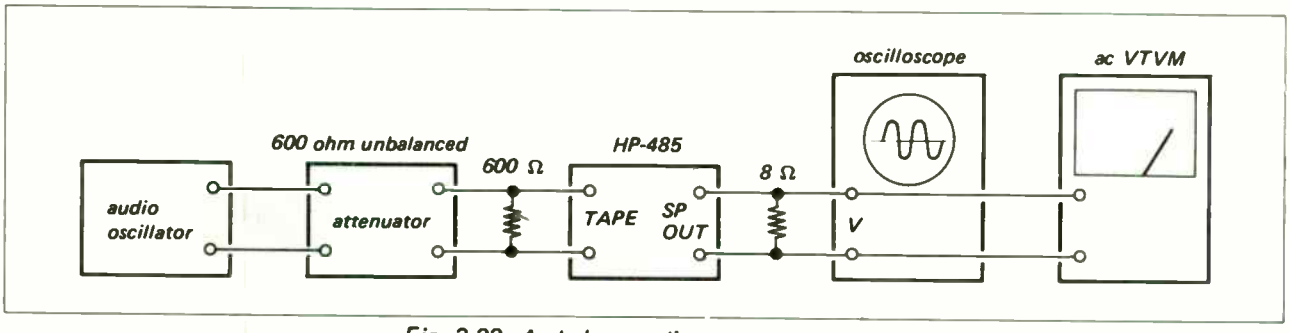


Fig. 3-22 Ac-balance adjustment test setup

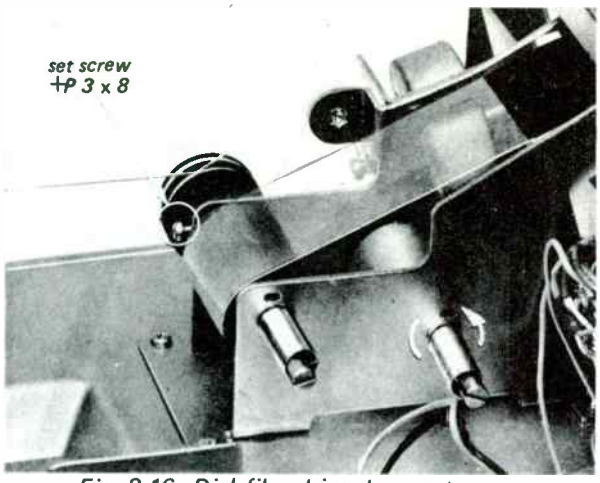


Fig. 2-16 Dial film drive drum set screw

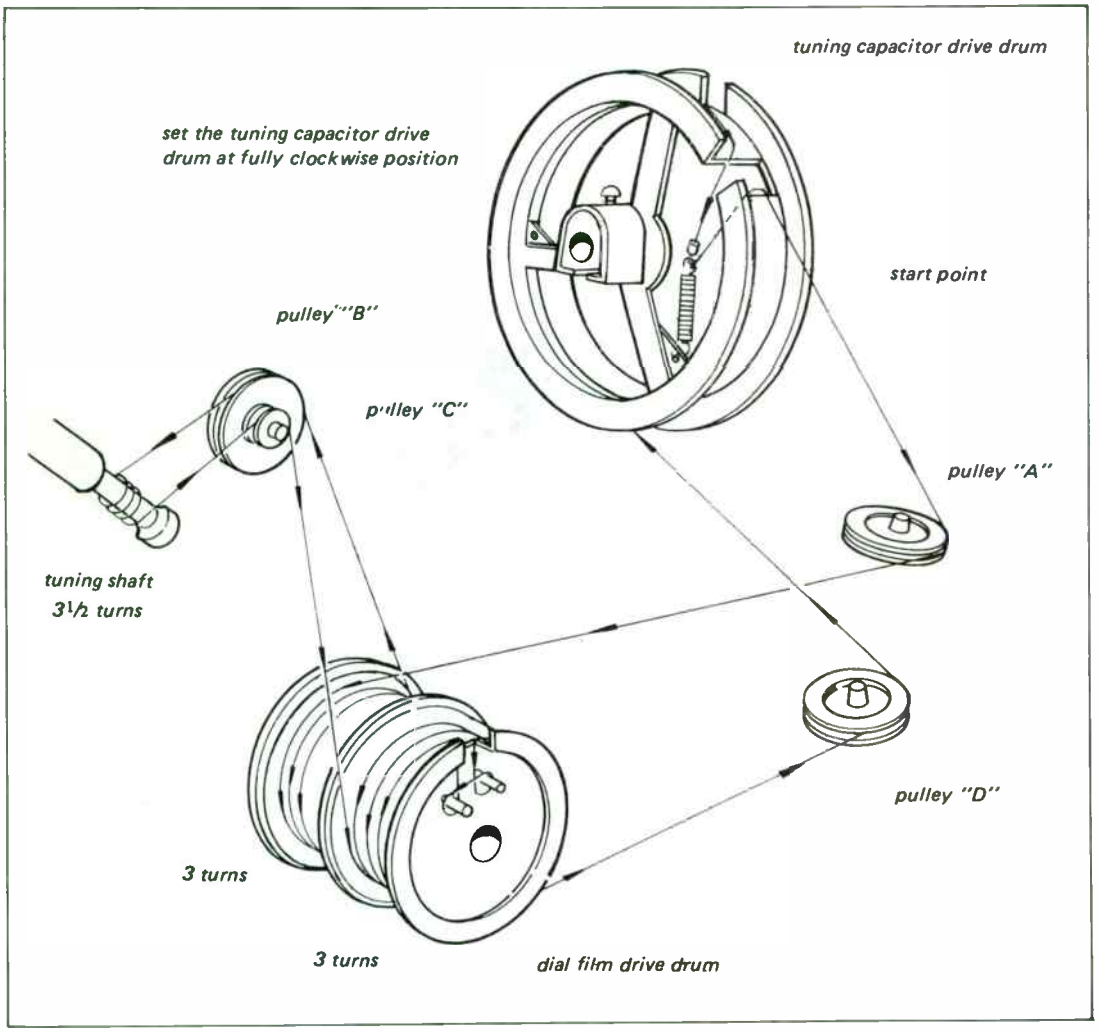


Fig. 2-14 Complete dial cord stringing

2-8. DIAL FILM REPLACEMENT

Preparation

1. Remove the wooden case and front panel

2. Pull out the dial lamp

Procedure

1. Release the two coil springs on each dial-film drive-drum shaft, by using a screw driver's blade as shown in Fig. 2-17.

2. Loosen the set screw (+P 3 X 8) of the dial-film drive drum so that the dial-film drive drum rotates freely. See Fig. 2-16.

3. Peel off the defective dial film. Both ends of the film are fixed to the drums with double-coated tape.

4. Wipe off any dust or oil which may have accumulated on the dial film drum. Use a cloth moistened with denatured alcohol.

5. While referring to Fig. 2-18, fix the low end of the dial film to the film drum (1) with double-coated tape.

6. Run the film over the green surface and rollers, then fix the other end to film drum (2). Do not tape over the hole for the set screw.

7. Roll up the film on film drum (1) and install the coil spring for film drum (1) on its shaft. See Fig. 2-16. Twist the coil spring one counterclockwise turn to give the dial film the proper tension.

8. Roll up the film on film drum (2) and install the coil spring on its shaft.

9. Perform the mechanical dial calibration

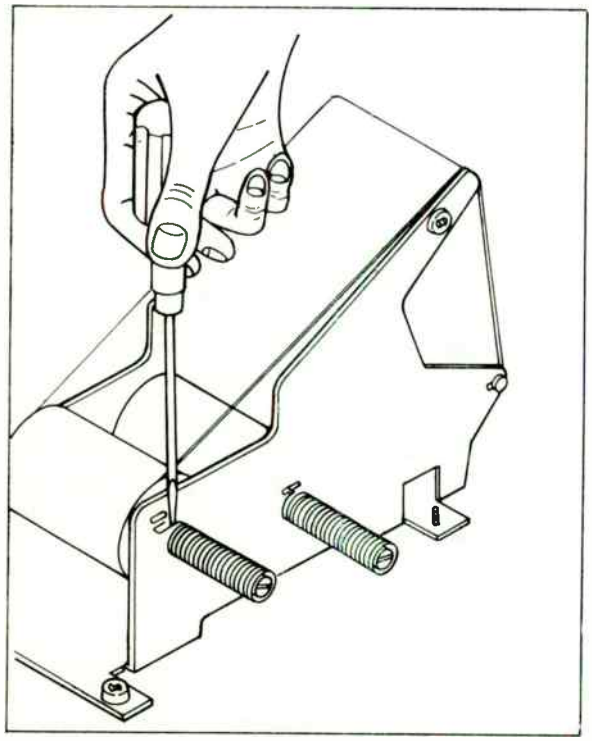


Fig. 2-17 Coil spring removal

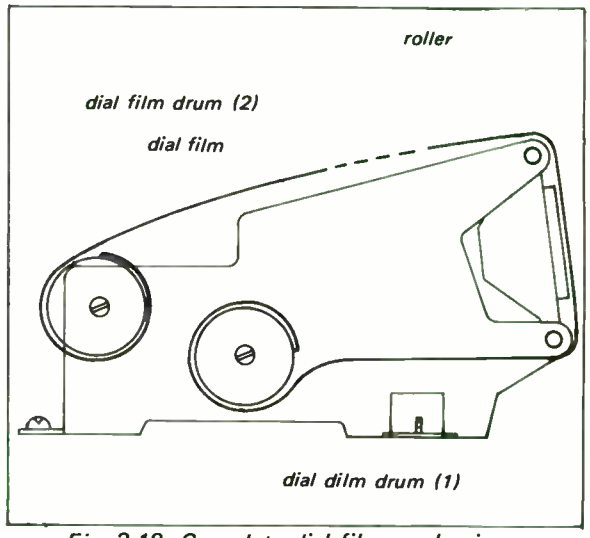


Fig. 2-18 Complete dial film mechanism

SEMICONDUCTORS

ITEM	PART NO./TYPE
D101	1S351M
D102	1T243M
D201	1T22A
D202	1T22A
D301	1T23A
D302	1T23A
D303	1T22A
D304	1T22A
D305	1T22A
D306	1T22A
D401	1T23A
D402	1T23A
D701	1T243M
D702	1T243M
D801	SH-1S
D802	SH-1S
D803	SH-1S
D804	10DC-2
Q101	2SK23
Q102	2SC710
Q103	2SC710
Q201	2SC710
Q202	2SC633A
Q203	2SC710
Q204	2SC633A
Q205	2SC710
Q301	2SC633
Q302	2SC633
Q303	2SC633
Q401	2SC633
Q402	2SC710
Q403	2SC710
Q404	2SC710
Q501	2SC631
Q502	2SC632
Q503	2SC631
Q504	2SC634
Q505	2SC634
Q506	2SC634
Q507	2SC895
Q508	2SC895
Q601	2SC631
Q602	2SC632
Q603	2SC631
Q604	2SC634
Q605	2SC634
Q606	2SC634
Q607	2SC895
Q608	2SC895
Q701	2SD28

ELECTROLYTIC/VARIABLE CAPS

ITEM	PART NO.	VALUE	
C117	1-121-415	10 uF	16 V
C210	1-121-402	33 uF	10 V
C216	1-121-398	10 uF	25 V
C220	1-121-403	33 uF	16 V
C307	1-121-398	10 uF	25 V
C308	1-121-415	100 uF	16 V
C312	1-121-403	33 uF	16 V
C314	1-127-021	.33 uF	10 V
C316	1-121-398	10 uF	25 V
C318	1-127-022	.47 uF	10 V
C329	1-127-021	.33 uF	10 V
C330	1-127-021	.33 uF	10 V
C422	1-121-391	1 uF	50 V
C424	1-121-415	100 uF	16 V
C425	1-121-344	3.3 uF	25 V
C426	1-121-344	3.3 uF	25 V
C501	1-121-344	3.3 uF	25 V
C502	1-121-391	1 uF	50 V
C505	1-121-742	47 uF	3.15 V
C506	1-121-396	4.7 uF	50 V
C512	1-127-021	.33 uF	10 V
C517	1-127-019	.1 uF	10 V
C518	1-121-742	47 uF	3.15 V
C519	1-121-738	10 uF	50 V
C521	1-121-741	150 uF	3.15 V
C522	1-121-398	10 uF	25 V
C523	1-121-404	33 uF	25 V
C525	1-121-361	470 uF	35 V
C528	1-127-019	.1 uF	10 V
C601	1-121-344	3.3 uF	25 V
C602	1-121-391	1 uF	50 V
C605	1-121-742	47 uF	3.15 V
C606	1-121-396	4.7 uF	50 V
C612	1-127-021	.33 uF	10 V
C617	1-127-019	.1 uF	10 V
C618	1-121-742	47 uF	3.15 V
C619	1-121-738	10 uF	50 V
C621	1-121-741	150 uF	3.15 V
C622	1-121-398	10 uF	25 V
C623	1-121-404	33 uF	25 V
C625	1-121-361	470 uF	35 V
C628	1-127-019	.1 uF	10 V
C701	1-121-358	220 uF	16 V
C702	1-121-413	100 uF	6.3 V
C802	1-121-423	220 uF	50 V
C803	1-121-417	100 uF	50 V
C804	1-121-788	1000 uF	63 V
CT101, CT102, CT401, CT402, CV101, CV102, CV103, CV401, CV402	1-151-197	Tuning Gang	
CT103	1-141-087-21	Trimmer	

CONTROLS/SPECIAL RESISTORS

ITEM	PART NO.	DESCRIPTION
R548	1-207-347	3.9 ohm 4 W WW
R648	1-207-347	3.9 ohm 4 W WW
RV501 & RV601	1-222-320	50K Dual Bass
RV502 & RV602	1-222-320	50K Dual Treble
RV503 & RV603	1-222-325	100K Dual Balance
RV504 & RV604	1-222-326	100K Dual Volume
RV505	1-221-410	100K AC Balance
RV506	1-221-410	100K DC Bias
RV605	1-221-410	100K AC Balance
RV606	1-221-410	100K DC Bias
RV801	1-221-647	1000 ohm Separation

COIL/TRANSFORMERS

ITEM	PART NO.
B101	1-417-025-12
IFT101	1-403-556-21
IFT201	1-403-291
IFT401	1-403-152
IFT402	1-403-128
L101	1-401-391
L102	1-425-547
L103	1-405-434
L301	1-407-418
L302	1-425-260-12
L401	1-401-386-12
L402	1-405-391
MU301	1-425-548

MISCELLANEOUS

ITEM	NAME		PART NO.
CF201	Filter, Ceramic	10.70 MHz (RED)	1-403-562-11
CF202		10.66 mHz (BLACK)	1-403-562-21
CF203		10.75 MHz (WHITE)	1-403-562-31
CF204		10.62 MHz (GREEN)	1-403-562-41
		10.78 mHz (YELLOW)	1-403-562-51
CF401	Filter, Ceramic 455 kHz		1-403-153-14
MU301	Unit, MPX		1-425-548
S1	Switch, Function		1-514-684-12
S2	Switch, Mode		1-514-301-24
S3	Switch, Loudness		1-514-301-24
S4	Switch, Main Speaker		1-514-301-24
S5	Switch, Remote Speaker		1-514-301-24
S6	Switch, Power		1-513-346-23
S7	Switch, AFC		1-514-524
	Assembly, Record Changer		Garrard 3500
	Motor, Drive		60510/003

CABINET PARTS

NAME	PART NO.
Assembly, Wooden Cabinet	X-48020-01
Assembly, Dial Escutcheon	X-48020-09
Panel, Front	4-802-040
Knob, Tuning	2-054-017
Knob, Function	X-48020-07
Knob, Tone/Balance	2-054-018
Knob, Volume	4-802-052

2-2. ADJUSTMENTS

Disconnect the power cord and protect the stylus whenever possible before making any adjustment. Actuate the mechanism by rotating the turntable by hand.

Stylus Force - should be that recommended by the manufacturer of the pickup cartridge fitted. To set stylus force, make sure that the pickup arm is in its free position, then turn the milled knob (A) at the back of the pickup arm counterclockwise until the pointer (B) indicates 0 on the scale. Release the counterbalance weight by turning its milled nut (C) clockwise, then slide the weight forwards or backwards until the arm is in balance, and retighten the nut. Turn the milled knob again until the pointer indicates the stylus force required on the calibrated scale. This scale represents a range of 0 to 5 grams in one gram steps.

Pickup Lowering Position - is moved inwards by turning the horizontal screw (D), at the front of the pickup arm bracket clockwise, and outwards by turning it counterclockwise. To check the position, load a record for automatic play, move the control to AUTO, then to OFF just before stylus tip lands on the record.

Pickup-arm Lifting Height - is increased by turning the vertical screw (E) at the front of the pickup arm bracket clockwise, and reduced by turning it counterclockwise. The stylus tip should be 3/4" above the top face of one record on the turntable as the pickup arm returns to its rest. To check this height, start to play a record, move the control to AUTO, then to OFF as the arm begins to return to its rest, thus leaving the pickup above the record.

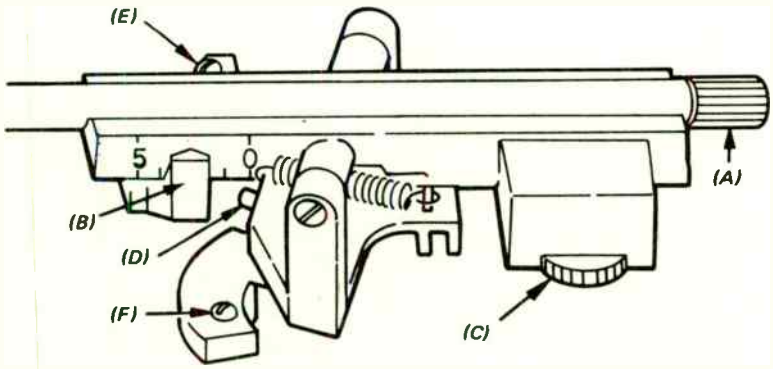


Fig. 2-2 Maintenance and adjustment, tone arm

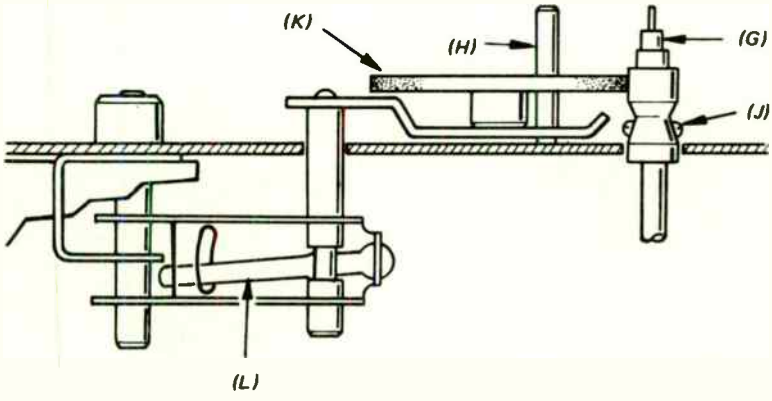


Fig. 2-3 Maintenance and adjustment, motor pulley and intermediate wheel

Cueing Height - is the height to which the pickup arm is lifted by the cueing mechanism, and should be set so that the stylus tip is 3/4" above the top face of one record on the turntable when the cueing lever is fully raised.

When the unit has switched off automatically and the cueing lever is down, the lifting platform molding should touch the pickup base (upper casting) and move upward as soon as the cueing lever is raised.

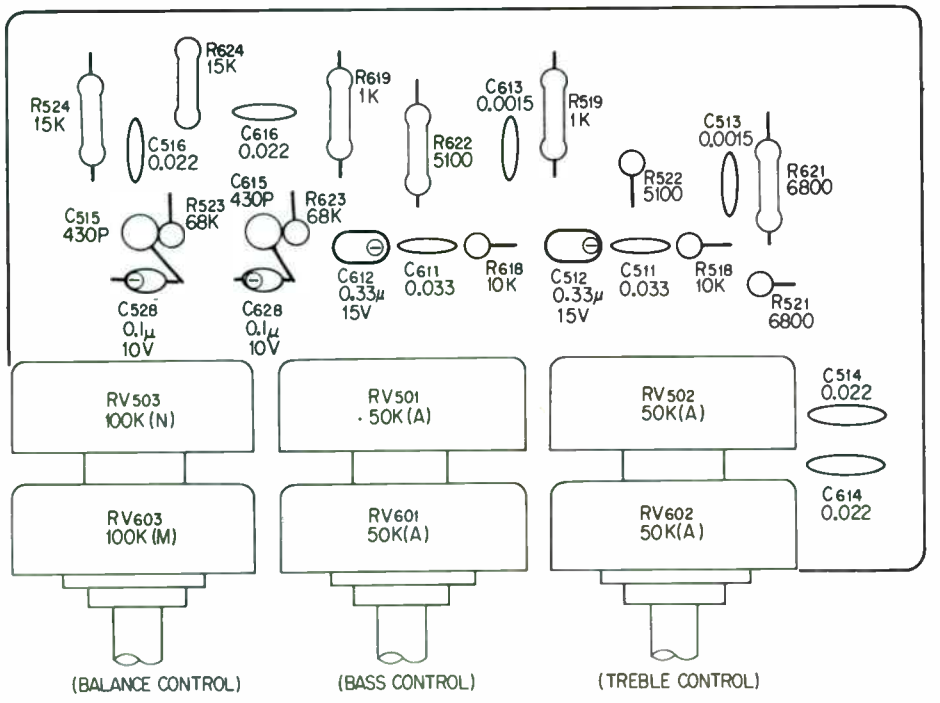
If necessary, turn the recessed screw (F) at the front of the top of the lifting platform to set its height.

Motor-Pulley Height - (4-Pole motor only) should be such that the top of the stepped pulley (G) is level with the intermediate-wheel stop pin (H) in the unit plate. To adjust, slacken both set screws (J), raise or lower the pulley then retighten the screws equally.

Intermediate-Wheel Height - When the motor-pulley height is correctly set, the intermediate-wheel (K) should run in the center of the appropriate pulley step and not rub the adjacent step. (The smallest step is not used). If necessary, adjust the blue spring-steel height-setting blade (L) beneath the unit plate. By sliding this blade up or down, the spindle on which the intermediate wheel is mounted is raised or lowered.

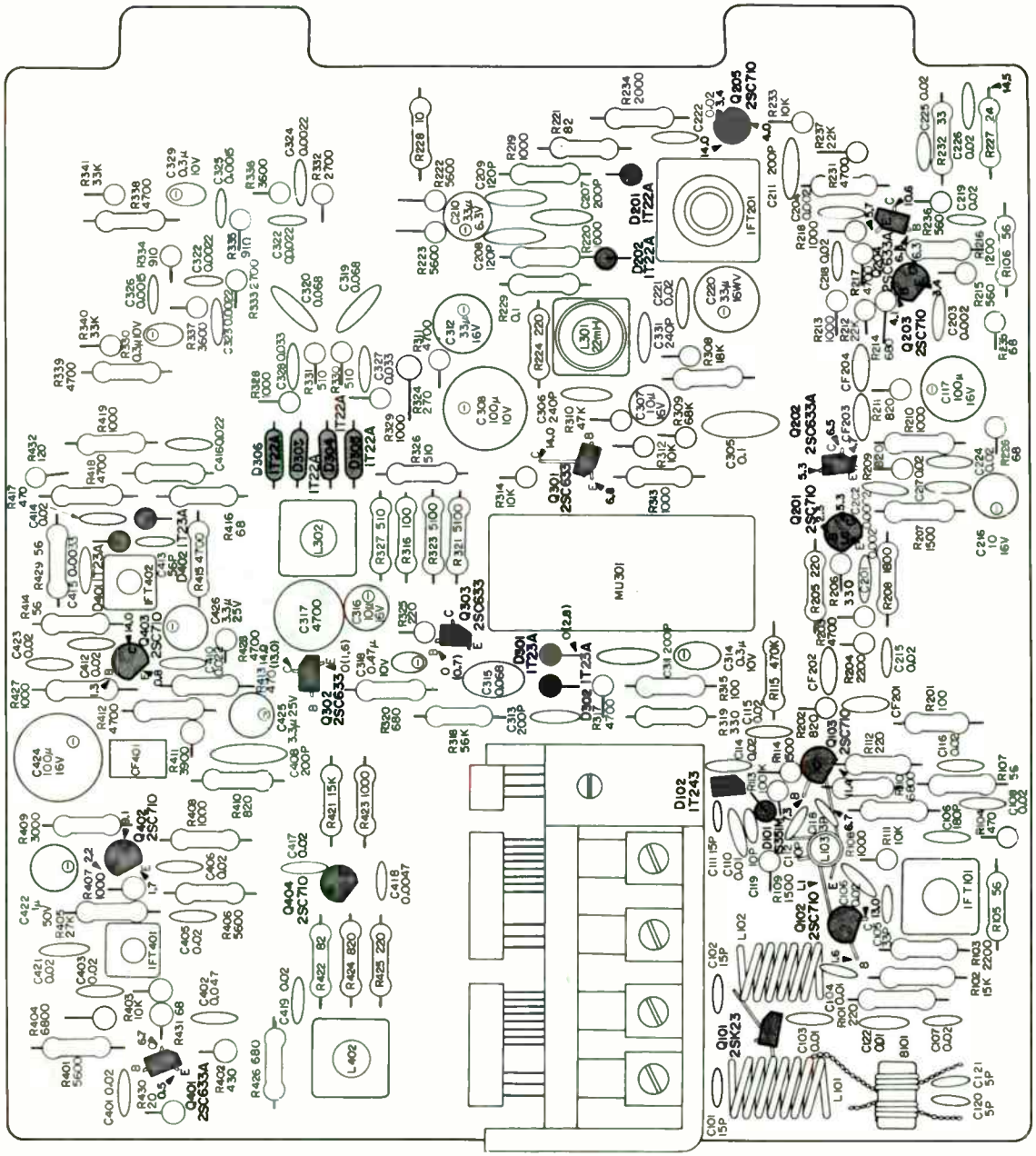
MOUNTING DIAGRAM–Tone Control Board

–Component Side–

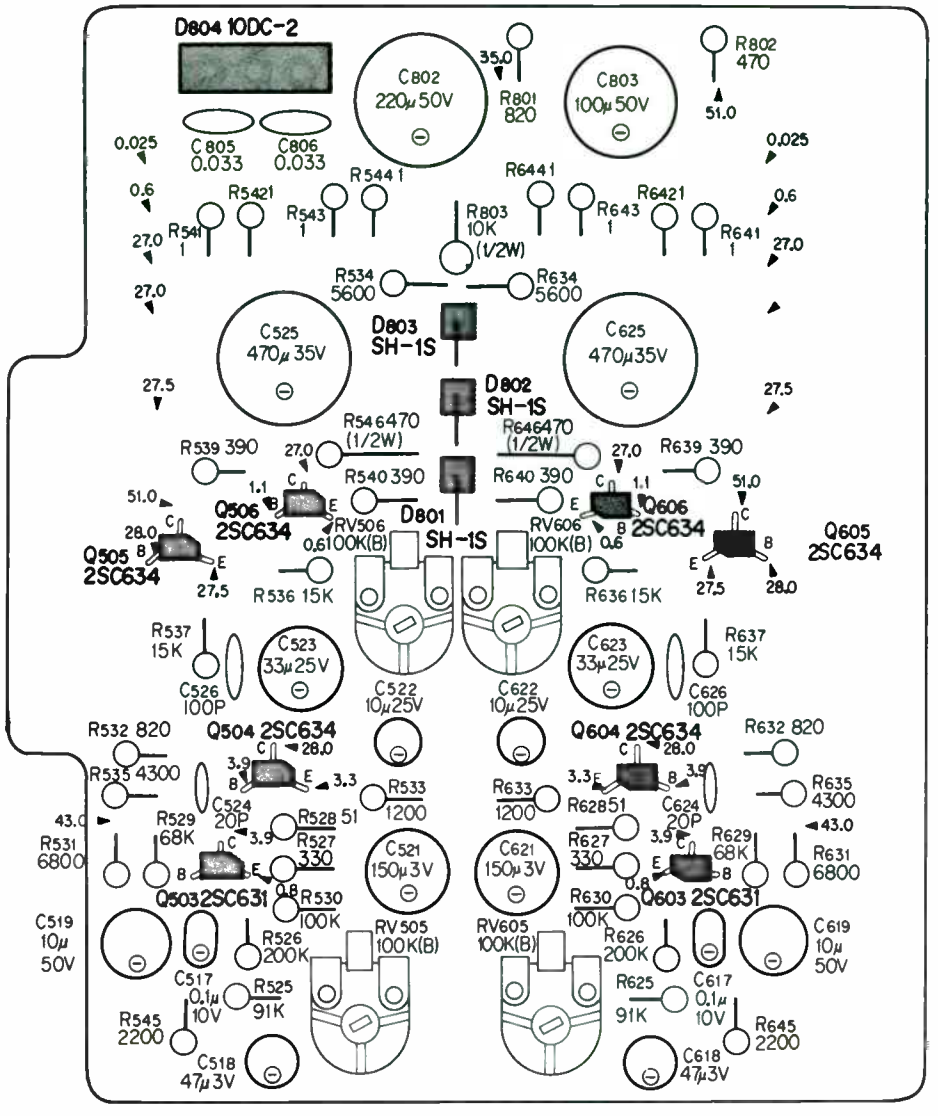


MOUNTING DIAGRAM–Tuner and MPX Board

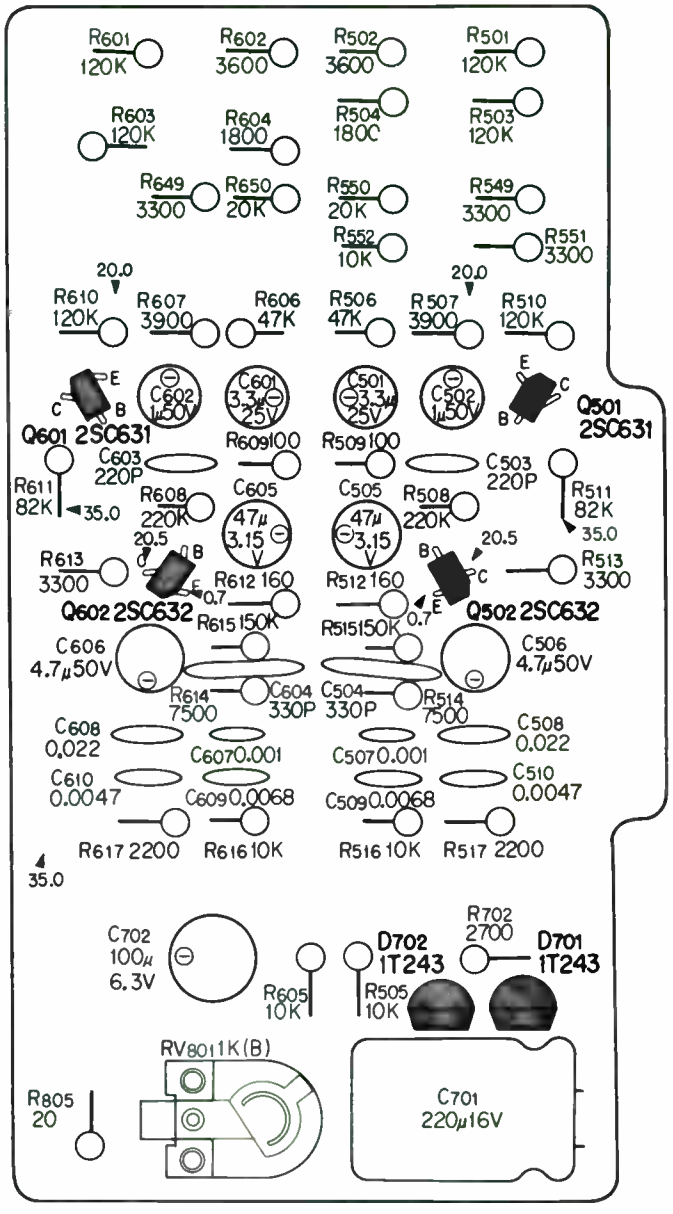
–Component Side–



MOUNTING DIAGRAM—Power Amplifier Board
—Component Side—



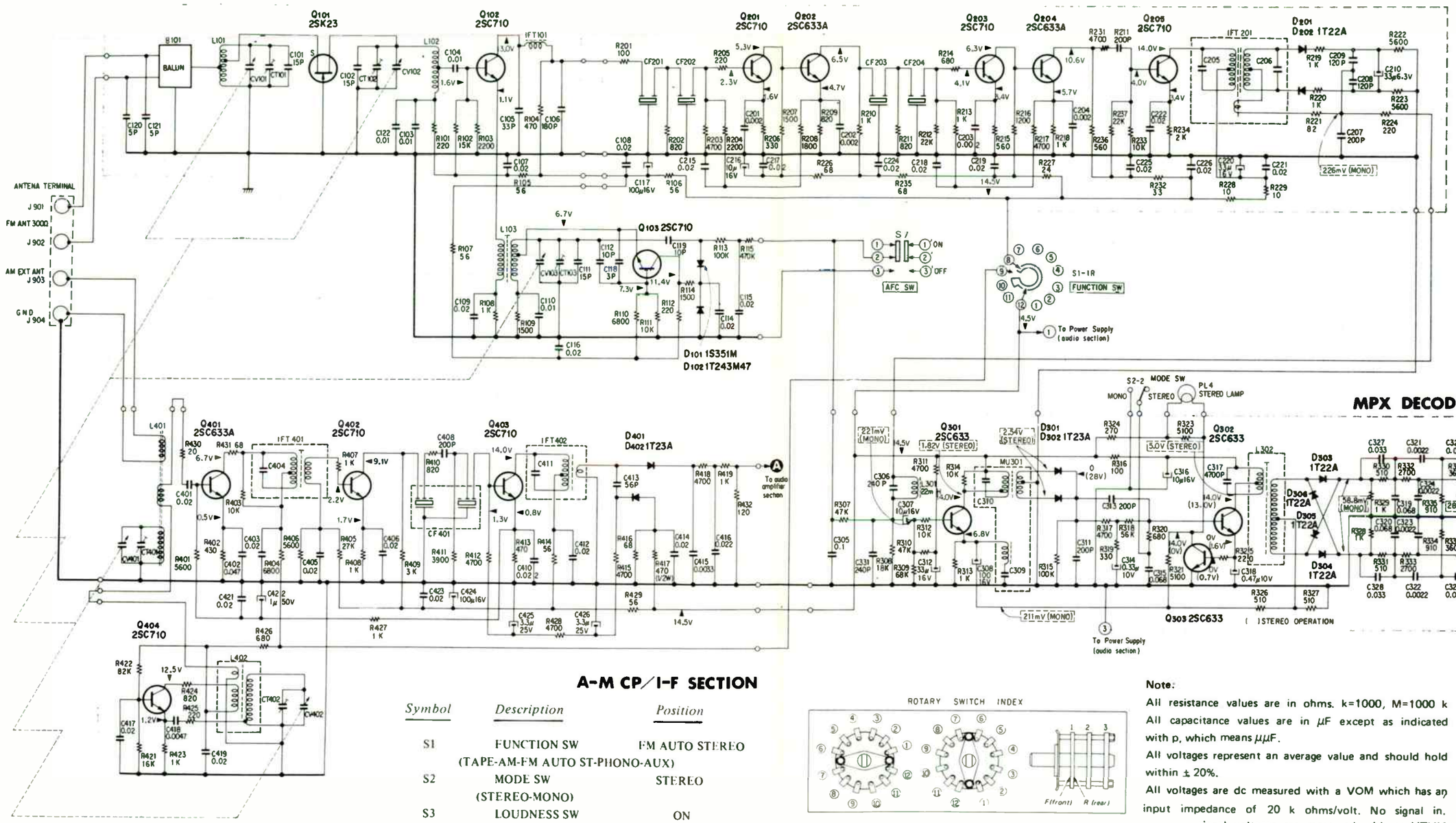
MOUNTING DIAGRAM—Preamplifier Board
—Component Side—



SCHEMATIC DIAGRAM—Tuner Section

FM FRONT-END SECTION

FM I-F SECTION



A-M CP/I-F SECTION

Symbol	*Description*	*Position*
S1	FUNCTION SW (TAPE-AM-FM AUTO ST-PHONO-AUX)	FM AUTO STEREO
S2	MODE SW (STEREO-MONO)	STEREO
S3	LOUDNESS SW	ON
S4	SPEAKER SW (MAIN)	ON
S5	SPEAKER SW (REMOTE)	OFF
S6	POWER SW	ON
S7	AFC SW	ON
S8	TURNTABLE SW	ON

ROTARY SWITCH INDEX

Note:

All resistance values are in ohms. k=1000, M=1000 k

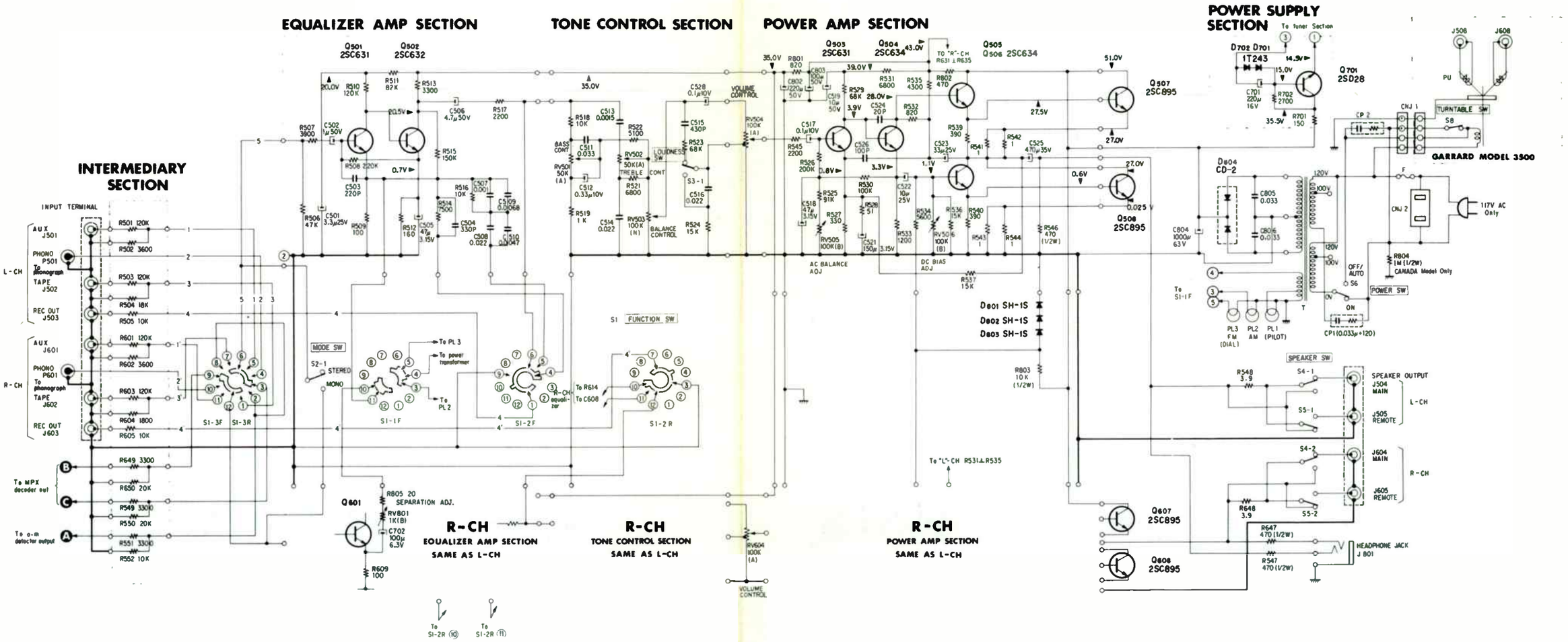
All capacitance values are in μF except as indicated with p, which means μμF.

All voltages represent an average value and should hold within ± 20%.

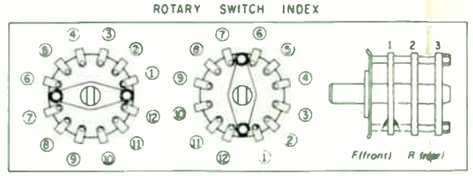
All voltages are dc measured with a VOM which has an input impedance of 20 k ohms/volt. No signal in.

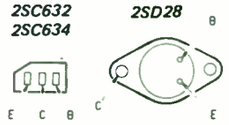
signal voltages are measured with ac VTVM when receiving an fm signal of 1000 μV, 400 Hz 100% mod.

SCHEMATIC DIAGRAM—Audio Section



Symbol	*Description*	*Position*
S1	FUNCTION SW (TAPE-AM-FM AUTO ST-PHONO-AUX)	FM AUTO STEREO
S2	MODE SW (STEREO-MONO)	STEREO
S3	LOUDNESS SW	ON
S4	SPEAKER SW (MAIN)	ON
S5	SPEAKER SW (REMOTE)	OFF
S6	POWER SW	ON
S7	AFC SW	ON
S8	TURNTABLE SW	ON





Note:

All resistance values are in ohms. k=1000, M=1000 k

All capacitance values are in μF except as indicated with p, which means μμF.

All voltages represent an average value and should hold within ± 20%.

All voltages are dc measured with a VOM which has an input impedance of 20 k ohms/volt. No signal in.

RECORD CHANGER ADJUSTMENT (MODEL GEN-6254A/6284A)

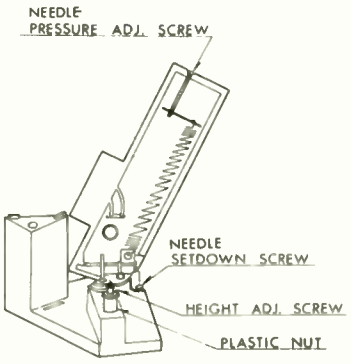
TONE ARM ADJUSTMENTS

TONE ARM HEIGHT

If tone arm fails to clear top record of a stack of six records on the turntable, lift tone arm, hold plastic nut firmly and turn height adjustment screw counter clockwise to raise tone arm. Proper adjustment is when needle clears top record by 1/8 inch. This will automatically set tone arm when a single record is being played.

NEEDLE SETDOWN

If needle fails to land on starting groove of record, lift tone arm and turn needle set down screw clockwise to move tone arm towards center, or counter clockwise to move tone arm away from center of record. Make adjustment using a 12 inch record.



8-TRACK TAPE PLAYER MECHANICAL ADJUSTMENTS

TAPE HEAD ADJUSTMENT

Head Adjustments are normally required in cases of cross-talk, loss of, or noisy high frequency response or if the Head has been replaced. A suitable test tape should be used for the Azimuth and Height Adjustments. Use standard equipment item 21617 or equivalent. Connect 8 ohm loads (either speakers or dummy resistors) across the output of each channel and set treble control to maximum position. Use an AC VTVM and a Phillips Head Screwdriver for the Head Adjustments.

AZIMUTH (See Figure 1 and 2)

With the test tape, proceed as follows:

1. Insert the test tape cartridge into tape slot and position Head to program 2 and advance to Sequence B.
2. Set Balance control for maximum output from right channel.
3. Connect VTVM across the right channel output (track 6 information 8 KHz will be presented).
4. Adjust Volume control for approximately 0.5 volts on VTVM.
5. Alternately adjust Azimuth Adjusting Screws (42, 26 and 43) for maximum output, as follows:
   A. Adjust tape head with screw (42) in Fig.1 so that tape head is perpendicular to chassis.
   B. Adjust height of screw (26) to 7 mm (¼"). (See Fig.2) Adjust screw (43) to have tape head at 90° to chassis.

Misadjustment of these screws will cause poor High Frequency Response.

Fig. 1

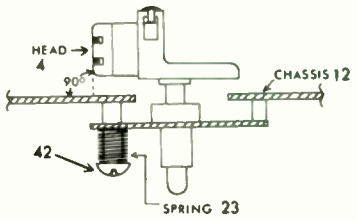
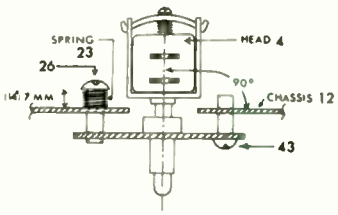


Fig. 2



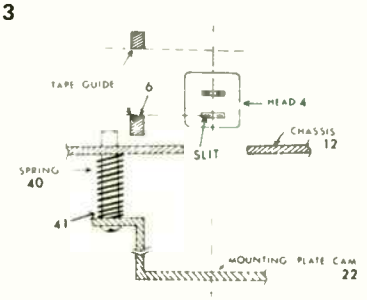
HEIGHT (See Figure 3)

6. Set Balance control for maximum output from left channel.
7. Connect VTVM across the left channel output (track 2 information approximately 125 Hz will be presented).
8. Adjust Volume control for approximately 0.5 volts on VTVM.
9. Adjust Head Height Adjusting Screw (41) for a null.

Misadjustment of this screw will cause cross-talk and/or poor separation.

10. Repeat steps 5 and 9 to optimize these adjustments, then fasten adjusting screws in place with glyptal or other non-hardening cement.

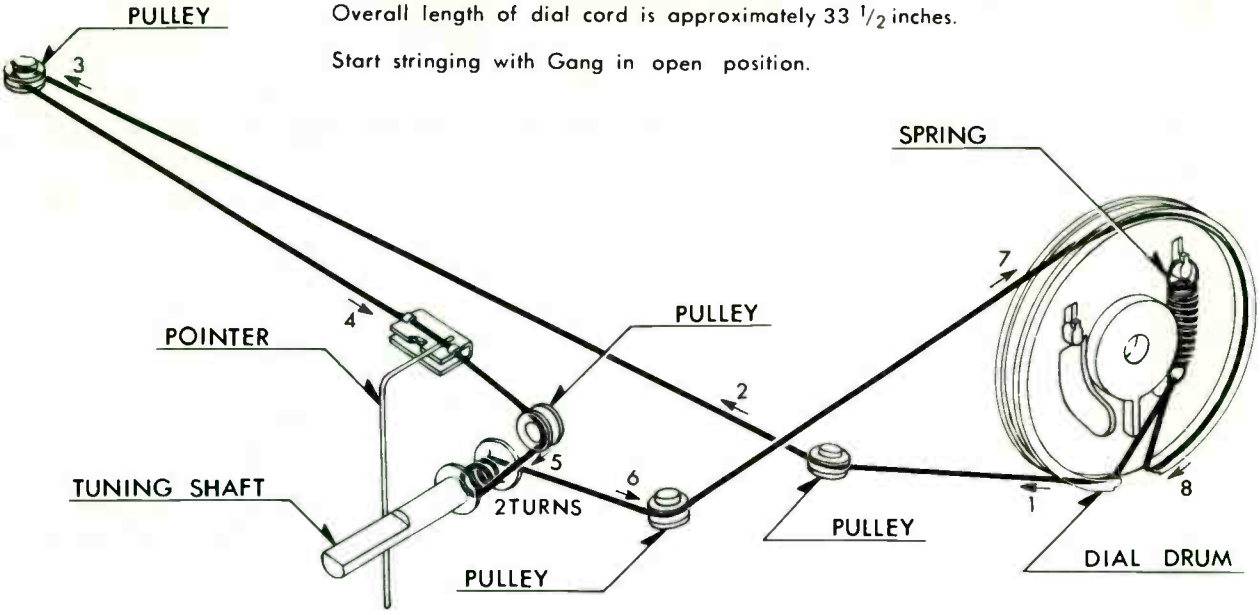
Fig. 3



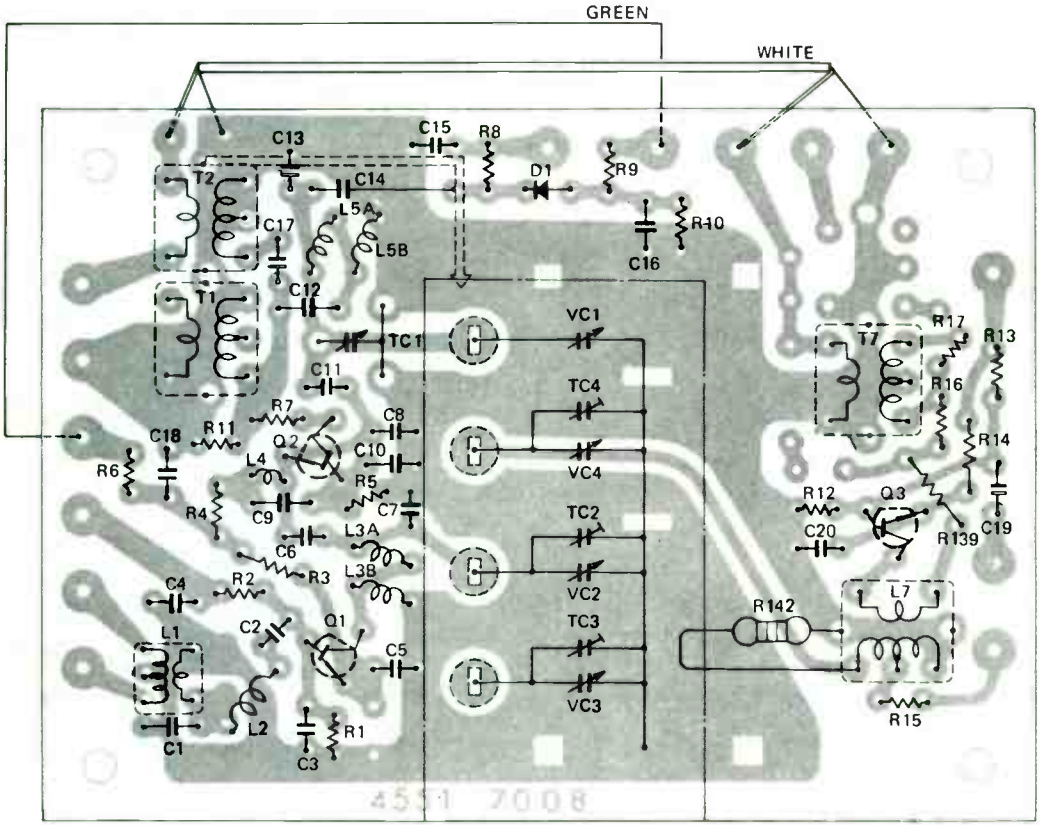
DIAL CORD STRINGING

Overall length of dial cord is approximately 33 1/2 inches.

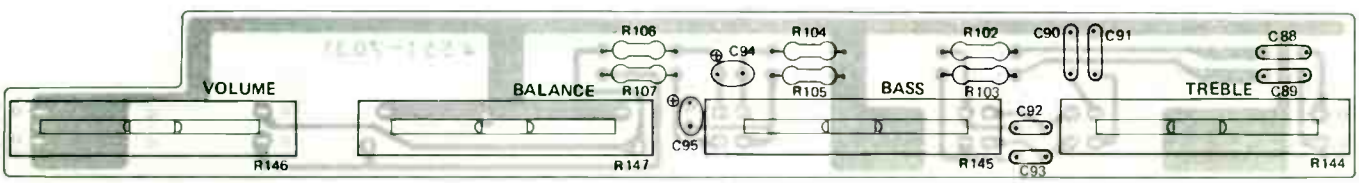
Start stringing with Gang in open position.



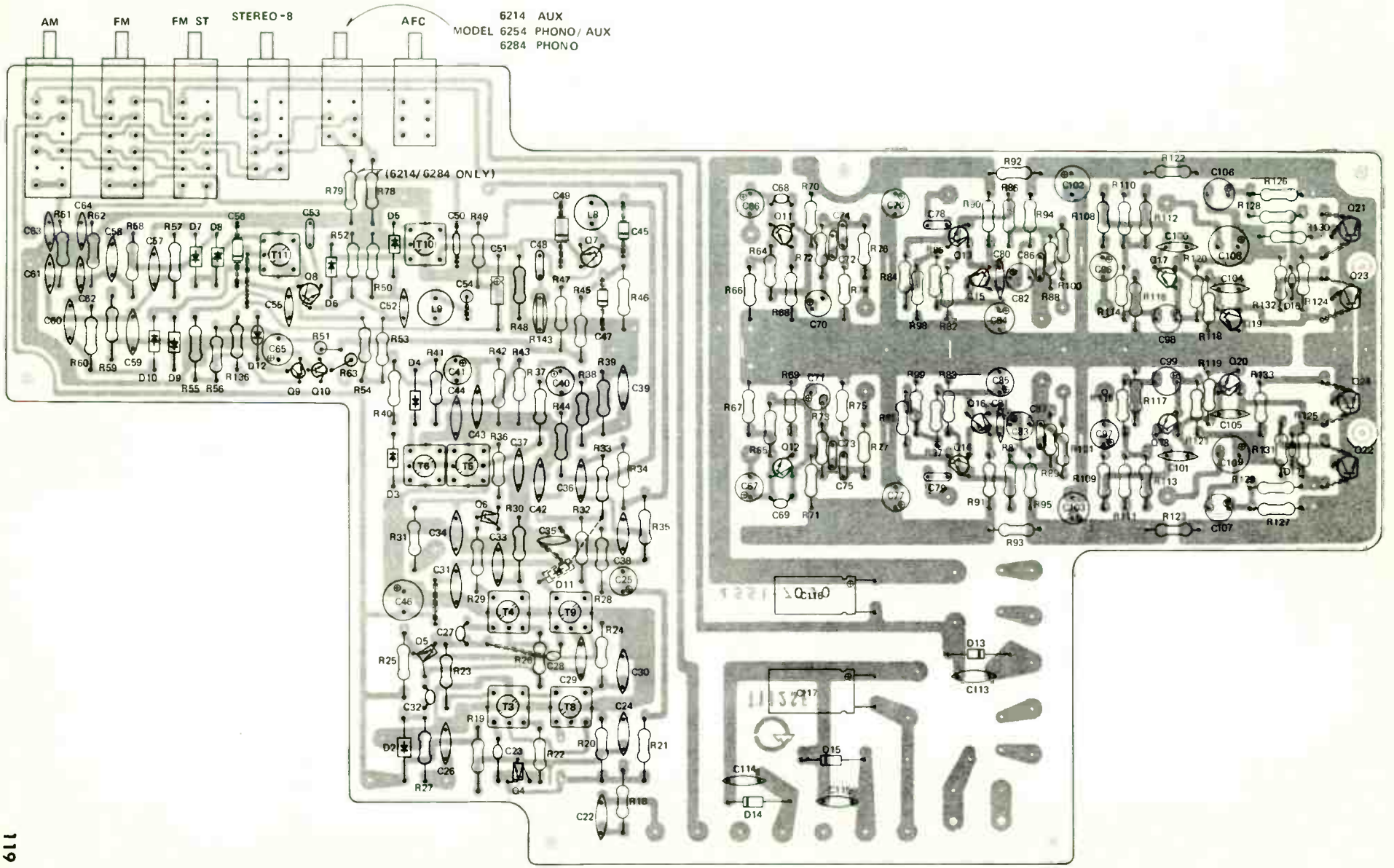
BOTTOM VIEW OF P.C. BOARD (TUNER)



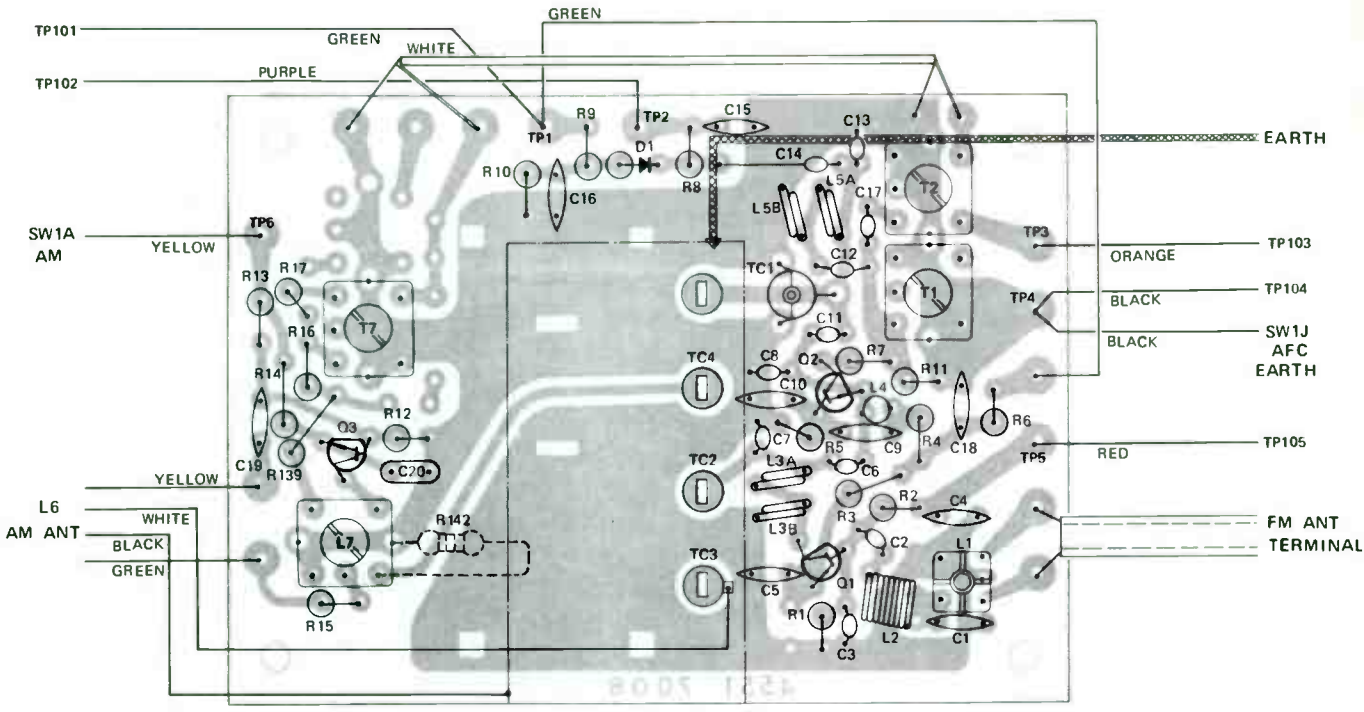
TOP VIEW OF P.C. BOARD (TONE CONTROL)



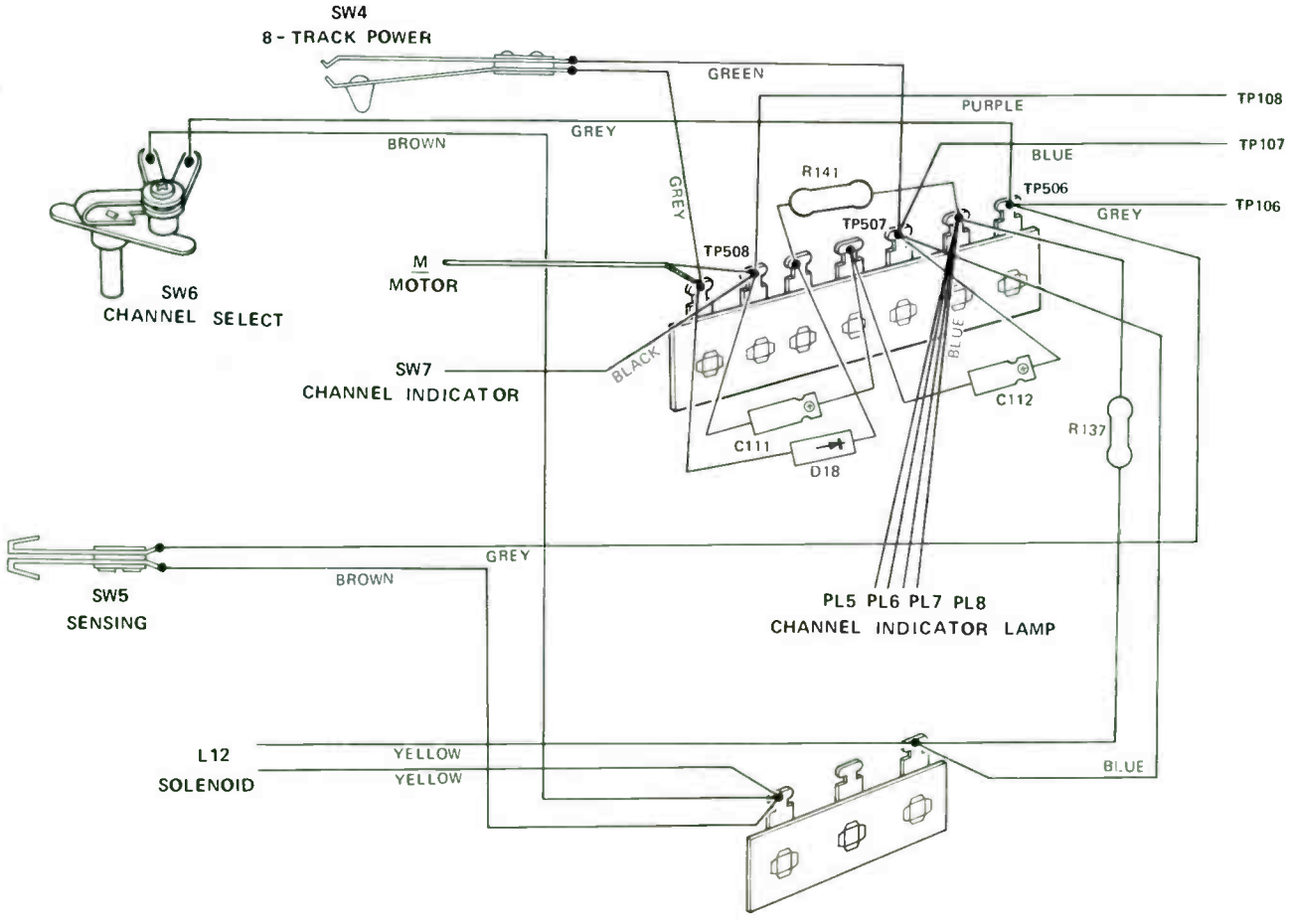
TOP VIEW OF P.C. BOARD (IF/AUDIO/POWER SUPPLY)

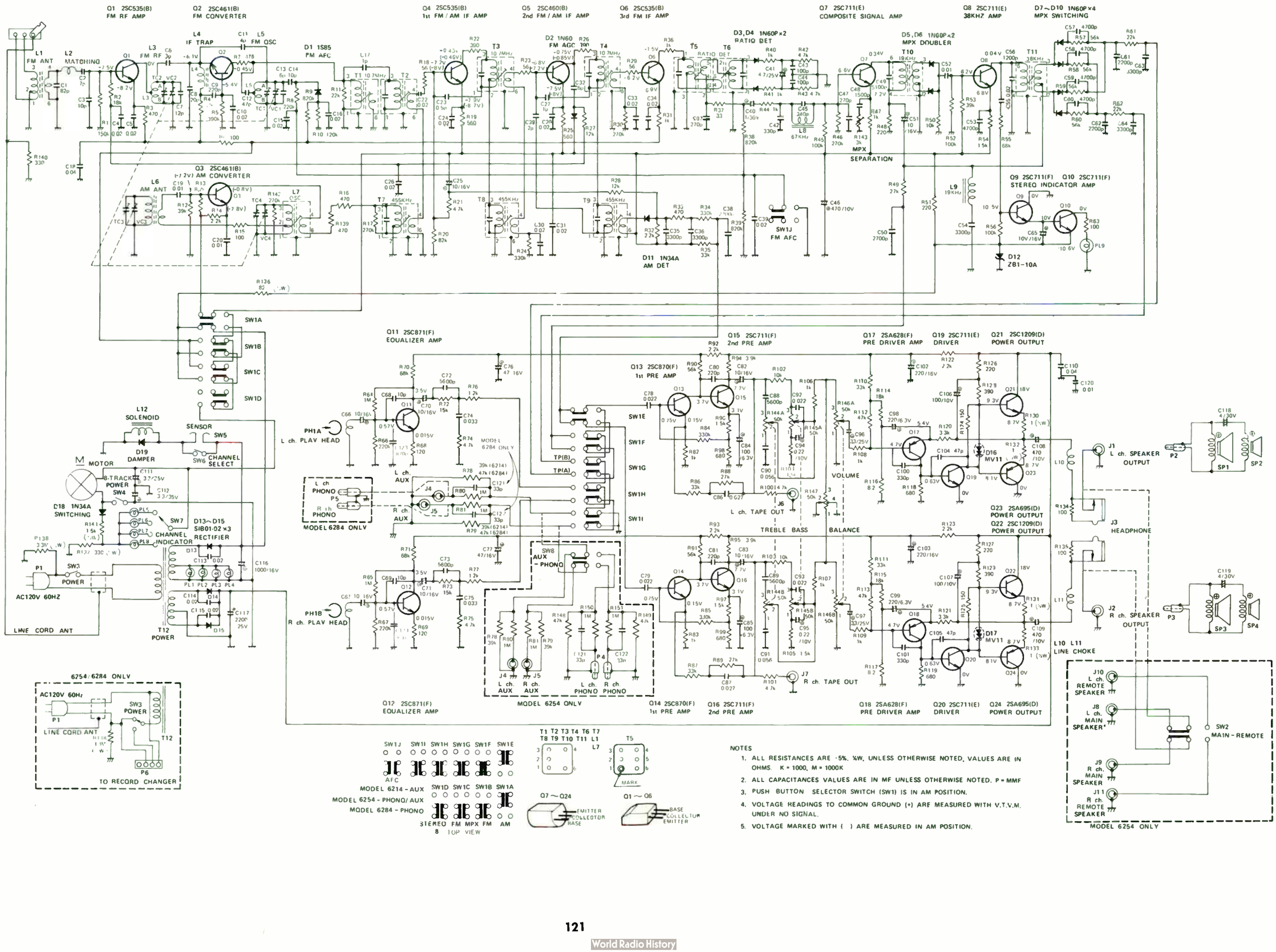


TUNER P.C. BOARD (TOP VIEW) - WIRING DIAGRAM



8-TRACK TAPE PLAYER WIRING DIAGRAM





NOTES

1. ALL RESISTANCES ARE ·5%, ¼W, UNLESS OTHERWISE NOTED, VALUES ARE IN OHMS. K = 1000, M = 1000K
2. ALL CAPACITANCES VALUES ARE IN MF UNLESS OTHERWISE NOTED. P = MMF
3. PUSH BUTTON SELECTOR SWITCH (SW1) IS IN AM POSITION.
4. VOLTAGE READINGS TO COMMON GROUND (+) ARE MEASURED WITH V.T.V.M. UNDER NO SIGNAL.
5. VOLTAGE MARKED WITH ( ) ARE MEASURED IN AM POSITION.

Wards Airline GEN-6214A, GEN-6254A, GEN-6284A

ALIGNMENT

Equipment Required

1. RF Signal Generator
2. Electronic Voltmeter A.C.V.T.V.M.

General

1. Signal input must be as low as possible to avoid overload and clipping. (Use highest sensitivity of output indicator.)
2. Volume control at maximum, Bass, Treble Balance at mechanical center.
3. Standard modulation is 1000 Hz at 30%.
4. Connect 8 ohm dummy load across SP. Jack.

Step	Connect Signal Source To-	Connect Output Indicator To-	Set Signal Generator To-	Set Radio Dial To-	Adjust-	Adjust For-	Step
	Push the AM Button						
1	Loop of several turns of wire connected across gen. leads. Place loop close to the AM antenna.	A.C.V.T.V.M. across SP. Jack	455 KHz AM Mod.	Tuning gang closed	T7 T8 T9	Maximum output on V.T.V.M.	1
2			520 KHz AM Mod.	Tuning gang closed	L7		2
3			1650 KHz AM Mod.	Tuning gang closed	TC4		3
4	Repeat Steps 2 and 3 for optimum sensitivity						4
5	Same as above	A.C.V.T.V.M. across SP. Jack	600 KHz AM Mod.	Tune for signal	L6	Maximum output on V.T.V.M.	5
6			1400 KHz AM Mod.		TC3		6
7	Repeat Steps 5 and 6 for optimum sensitivity						7
	Push the FM Button						
1	Place gen. leads across FM ant. terminals.	A.C.V.T.V.M. across SP. Jack	10.7 MHz FM Mod.	Tuning gang closed	T1 T2 T3 T4 T5	Maximum output on V.T.V.M.	1
2		DC probe across C37	10.7 MHz (Unmod.)		T6	Zero reading, a positive or negative reading will be obtained on either side of correct setting.	2
3	Repeat Steps 1 and 2 for optimum sensitivity						3
4	Same as above	A.C.V.T.V.M. across SP. Jack	86.5 MHz FM Mod.	Tuning gang closed	L5A B	Maximum output on V.T.V.M.	4
5			109.5 MHz FM Mod.	Tuning gang open	TC1		5
6	Repeat Steps 4 and 5 for optimum sensitivity						6
7	Same as above	A.C.V.T.V.M. across SP. Jack	90 MHz FM Mod.	Tune for signal	L3A B	Maximum output on V.T.V.M.	7
8			106 MHz FM Mod.		TC2		8
9	Repeat Steps 7 and 8 for optimum sensitivity						9

MULTIPLEX ALIGNMENT

EQUIPMENT REQUIRED

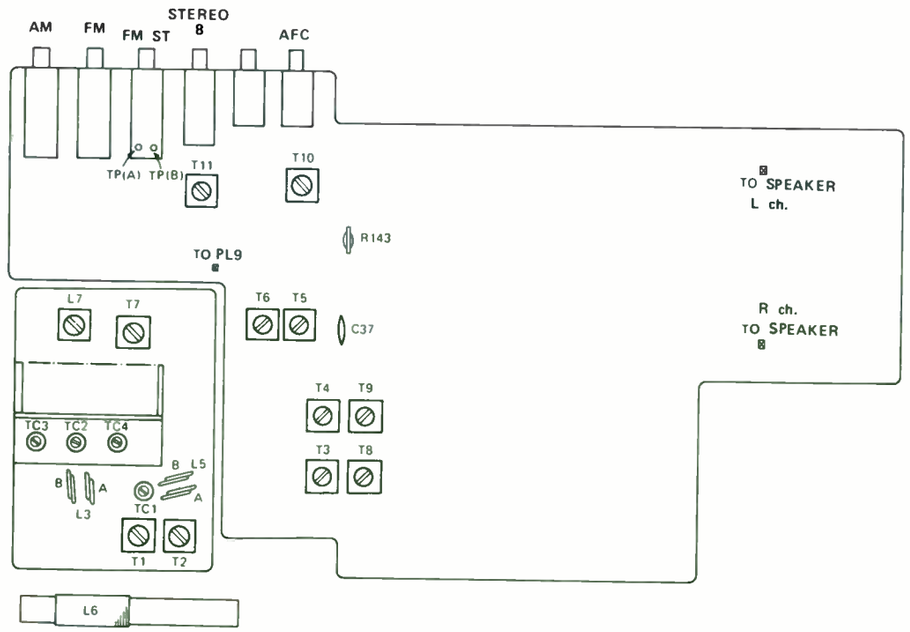
1) FM-Stereo Simulator.
2) Oscilloscope or V.T.V.M.

PRELIMINARIES

1) Connect FM-Stereo Simulator to FM antenna terminals.
2) Tune radio to a 100 MHz Signal from the FM-Stereo Simulator.
3) AFC "ON".
4) Connect low side of oscilloscope or V.T.V.M. to chassis ground adjacent to point where high side is connected.
5) Set RF deviation to approximately 75 KHz.
6) Keep 100 MHz input signal above limiting level.
7) Set 19 KHz subcarrier level to 10 %.

Step	Stereo Simulator Setting Modulation Freq.	Stereo Simulator Setting Function	Output Indicator	Point Adjusted	Adjust For-
1	19 KHz	Stereo left	Stereo Indicator Lamp. (PL9)	T10 T11 R143	Adjust to have stereo indicator lit.
2	1 KHz	Stereo left	Oscilloscope or VTVM to TP(A)	T10 R143	Minimum dip between two peaks.
3	1 KHz	Stereo left	Oscilloscope or VTVM to TP(A)	T11	Minimum dip between two peaks but balanced reading between step 3 and step 4.
4	1 KHz	Stereo right	Oscilloscope or VTVM to TP(B)	T11	
5	Repeat step 3 and 4, to obtain same level at Left and Right channels.				

CHASSIS ALIGNMENT LAYOUT



SEMICONDUCTORS

ITEM	PART NO.	TYPE
D1	J241184	1S85(WT)
D2	1N60	1N60
D3 &	J24820	1N60(P)
D4		
D5 &	J24820	1N60(P)
D6		
D7 &	J24820	1N60(P)
D8		
D9 &	J24820	1N60(P)
D10		
D11	1N34A	1N34A
D12	24MW1065	ZB1-10
D13	24MW871	SIB01-02
D14	24MN871	SIB01-02
D15	24MW871	SIB01-02
D16	24MW1113	MV11
D17	24MW1113	MV11
D18	J241183	FR2-02
D19	J241183	FR2-02
Q1	J24812	5613-535(B)
Q2	J24852	5613-461(B)
Q3	J24852	5613-461(B)
Q4	J24812	5613-535(B)
Q5	J24812	5613-535(B)
Q6	J24812	5613-535(B)
Q7	24MW1059	5613-711(E)
Q8	24MW1059	5613-711(E)
Q9	J24817	5613-711(F)
Q10	J24817	5613-711(F)
Q11	24MW1060	5613-871(F)
Q12	24MW1060	5613-871(F)
Q13	24MW807	5613-870(F)
Q14	24MW807	5613-870(F)
Q15	J24817	5613-711(F)
Q16	J24817	5613-711(F)
Q17	24MW1061	5611-628(F)
Q18	24MW1061	4511-628(F)
Q19	24MW1059	5613-711(E)
Q20	24MW1059	5613-711(E)
Q21 &	24MW1062	2SC1209(D)
Q23		2SA695(D)
Q22 &	24MW1062	2SC1209(D)
Q24		2SA695(D)

ELECTROLYTIC/VARIABLE CAPS

ITEM	PART NO.	VALUE	
C25	32MW881	10 uF	16 V
C40	J32728	1 uF	50 V
C41	J32655	4.7 uF	25 V
C46	32MW885	470 uF	10 V
C51	J321054	10 uF	16 V
C65	32MW881	10 uF	16 V
C66	32MW881	10 uF	16 V
C67	32MW881	10 uF	16 V
C70	32MW881	10 uF	16 V
C71	32MW881	10 uF	16 V
C76	32MW887	47 uF	16 V
C77	32MW887	47 uF	16 V
C82	32MW881	10 uF	16 V
C83	32MW881	10 uF	16 V
C84	32MW888	100 uF	6.3 V
C85	32MW888	100 uF	6.3 V
C94	J32739	.22 uF	10 V
C95	J32739	.22 uF	10 V
C96	32MW889	3.3 uF	25 V
C97	32MW889	3.3 uF	25 V
C98	32MW890	220 uF	6.3 V
C99	32MW890	220 uF	6.3 V
C102	32MW1002	220 uF	16 V
C103	32MW1002	220 uF	16 V
C106	J32898	100 uF	10 V
C107	J32898	100 uF	10 V
C108	32MW885	470 uF	10 V
C109	32MW885	470 uF	10 V
C111	32MW1003	3.3 uF	35 V
C112	32MW1003	3.3 uF	35 V
C116	32MW893	1000 uF	16 V
C117	32MW992	2200 uF	25 V
C118	J321056	4 uF	30 VNP
C118	J321056	4 uF	30 VNP
TC1	35MW390	Trimmer	
TC2			
TC3			
TC4			
VC1	35MW417	Tuning Gang	
VC2			
VC3			
VC4			

(1) Model GEN-6214A
(2) Model GEN-6254A
(3) Model GEN-6284A

CONTROLS/SPECIAL RESISTORS

ITEM	PART NO.	DESCRIPTION
R130	CB51R0	1 ohm 1/2 W
R131	CB51R0	1 ohm 1/2 W
R132	CB51R0	1 ohm 1/2 W
R133	CB51R0	1 ohm 1/2 W
R143	25MW566	3000 ohm Separation
R144	J25595	50K Dual Treble
R145	J25596	50K Dual Bass
R146	J25596	50K Dual Volume
R147	J25597	50K Balance

COIL/TRANSFORMERS

ITEM	PART NO.
L1	61MW958
L2	61MW1029
L3	61MW960
L4	J61726
L5	J611068
L6	J60260 (1,2)
	J60264 (3)
L7	61MW512
L8	J61790
L9	J61790
L10	61MW1031
L11	61MW1031
L12	39MW563
T1	62MW673
T2	62MW542
T3	J62521
T4	J62521
T5	J62522
T6	J62385
T7	62MW546
T8	62MW518
T9	62MW678
T10	62MW679
T11	62MW679
T12	J11406

MISCELLANEOUS

ITEM	NAME	PART NO.
(COMMON)		
L12	Solenoid, Tape	39MW563
PH	Head, Tape	39MW557
SW1	Switch, Function Selector	J12470
SW4	Switch, 8-Track Power	12MW366
SW5	Switch, Sensing	12MW365
SW6	Switch, Channel Select	12MW363
SW8	Switch, Phono/Aux	J12472
	Belt, Drive	39MW555
	Motor, Tape Drive	J33934
(MODEL GEN-6214A)		
SP1	Speaker, Woofer	J10155
SP2	Speaker, Tweeter	J10156
SP3	Speaker, Woofer	J10155
SP4	Speaker, Tweeter	J10156
(MODEL GEN-6254A)		
SP1	Speaker, Woofer	E10163
SP2	Speaker, Tweeter	E10165
SP3	Speaker, Tweeter	E10165
	Assembly, Record Changer (BSR)	C129R-MW1
	Cartridge, Phono	SC7M-2-ST17
	Stylus, Phono	B-8XSD
(MODEL GEN-6284A)		
SP1	Speaker, Woofer	J10155
SP2	Speaker, Tweeter	J10156
SP3	Speaker, Woofer	J10155
SP4	Speaker, Tweeter	J10156
	Assembly, Record Changer (BSR)	C138R-MW1
	Cartridge, Phono	SC7M-3-ST16
	Stylus, Phono	B-7X

CABINET PARTS

NAME	PART NO.
(COMMON)	
Assembly, Dial Panel	J16333
Knob, Volume/Treble/Bass/Balance	J50872
Knob, Tuning	J50872
Button, Power	J50873
Assembly, Function Button	J50874
(MODEL GEN-6214A)	
Assembly, Main Cabinet	J70580
Assembly, Front Panel	J70583
Cabinet, Speaker	J70586
(MODEL GEN-6254A)	
Assembly, Main Cabinet	J70581
Assembly, Front Panel	J70584
Cabinet, Speaker	E7198
Cover, Dust	E70937
(MODEL GEN-6284A)	
Assembly, Main Cabinet	J70582
Assembly, Front Panel	J70585
Cabinet, Speaker	J70588
Cover, Dust	E70950

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