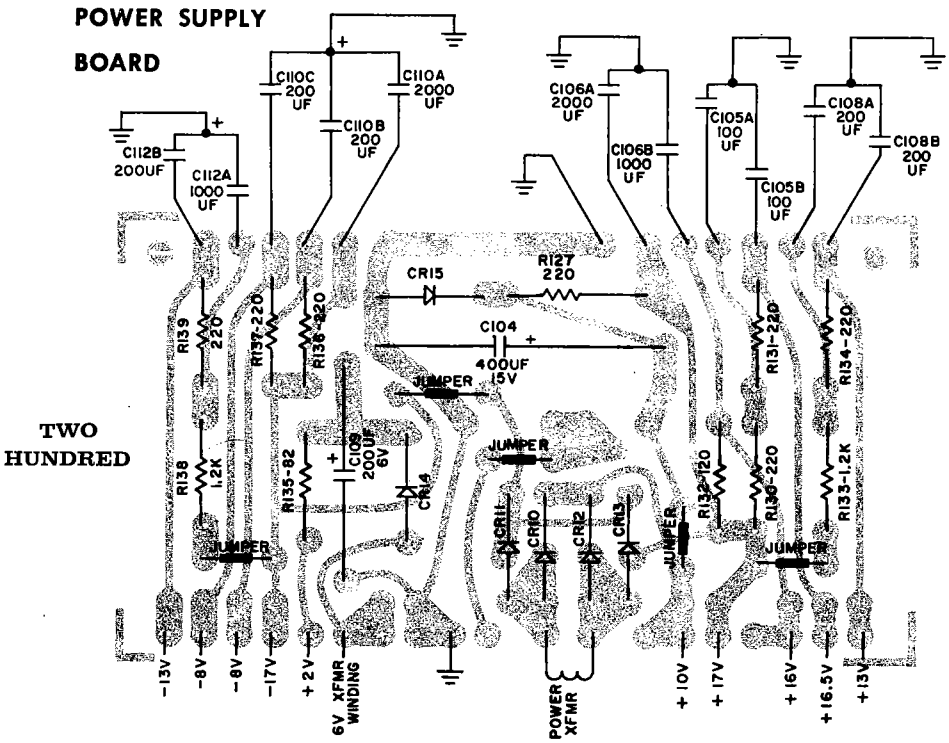
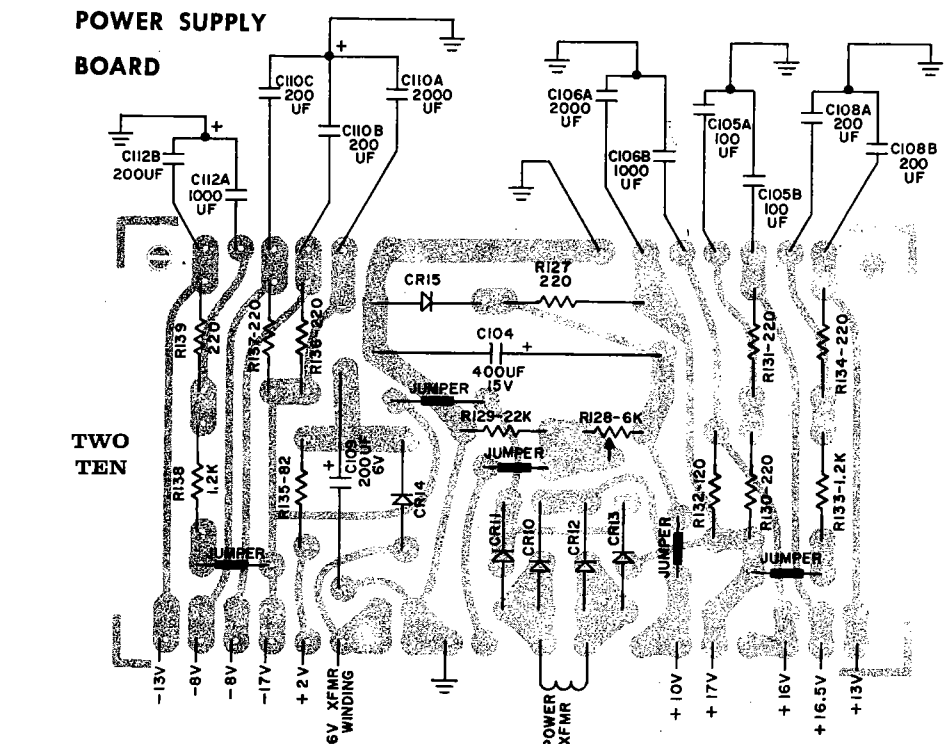
SERVICE AND TECHNICAL MANUAL

MODELS

TWO HUNDRED TWO TEN





harman kardon
INCORPORATED
55 AMES COURT, PLAINVIEW, N. Y. 11803

ALIGNMENT PROCEDURES

Do not attempt alignment unless the following equipment is available.

EQUIPMENT DESCRIPTION

1. FM Signal Generator
2. Oscilloscope
3. AC VTVM
4. Audio Generator
5. Multiplex Stereo Generator
6. AM Signal Generator

RF AND IF ALIGNMENT

Function Selector FM STEREO

STEP	CONNECT SIGNAL GENERATOR	GENERATOR FREQUENCY	DIAL SETTING	OUTPUT INDICATOR	ADJUST	ADJUST FOR	NOTES
1	To Antenna Terminals Through A 270 Ohm Resistor On Hot Side	Approx. 100 MC, Where There Is No Station — 400 CPS, 75KC Deviation	Same As Generator	D.C.V.T.V.M. On Positive Terminal Of C38 And Ground	1st, 2nd, 3rd FM IF Transformer, L7, L8, L5, FM Output Coil In Tuner & Primary Of Ratio Detector L6	Maximum Indication On Meter DC	Maintain Low Enough Input Level So That Limiter Is Below Saturation (Limiting). Use 2/3 Of Obtainable Max. Indication On DC Meter As Reference. Set R31 To Physical Center
2	Same	90 MC 400 CPS 75 KC Deviation	90 MC	Same	Osc. Trimmer	Same	Same
3	Same	106 MC 400 CPS 75 KC Deviation	106 MC	Same	Antenna Trimmer & RF Trimmer	Same	Same
4	Same	Same	Same	"FM Output" As Per FM IF Board Layout	Ratio Detector Secondary L6	Zero DC Volts	Inject Enough Signal So That Limiter Is Well Saturated

MULTIPLEX ALIGNMENT PROCEDURE

Function selector in FM Stereo

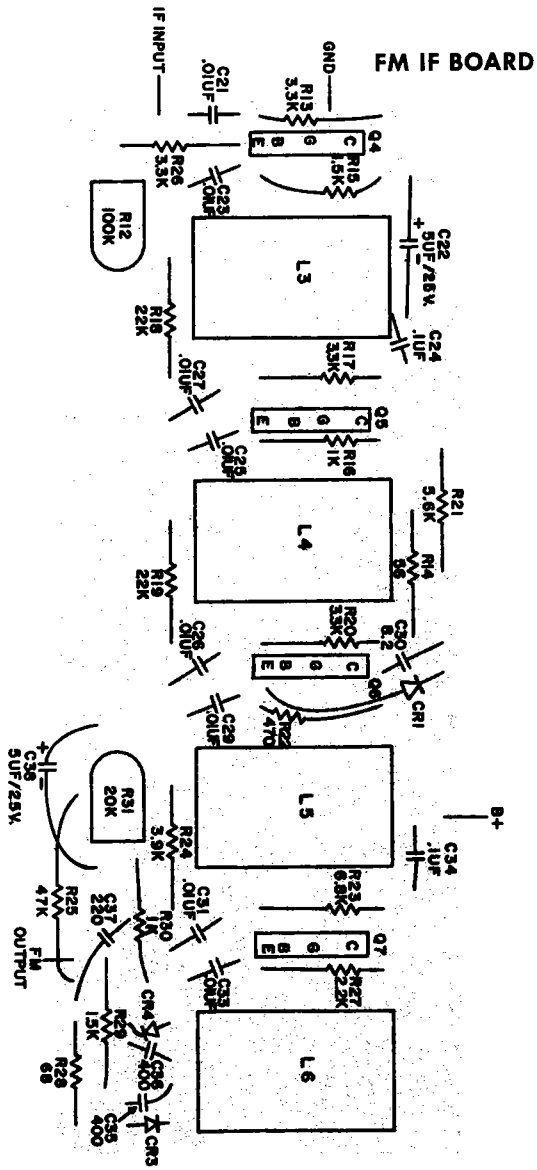
STEP	CONNECT SIGNAL GENERATOR	GENERATOR FREQUENCY	DIAL SETTING	OUTPUT INDICATOR	ADJUST	ADJUST FOR	NOTES
1	Junction of R69, L10 and C45	Audio Generator 67 KC	—	AC VTVM AT Junction R41, C50, L13	67 KC Coil, L10	Minimum	FM Stereo
2		Audio Generator 72 KC	—		72 KC Coil L11	Minimum	FM Stereo
3	Antenna Terminals Through Dummy Resistor	100 MC Modulated 100% By Stereo Multiplex Generator	100 MC	VTVM at Collector of Q8	Stereo Bias Adjust R40	10 Volts DC	—
4	Same	Same	Same	Scope at 38KC Transformer Secondary Junction L14, CR6	Top & Bottom of 19 KC Coil L13 and L14	Maximum	Stereo Indicator Should be Lit After This Adjustment
5	Same	Same	Same	Scope at Minimum Channel	38 KC Transformer L14	Minimum	

AM ALIGNMENT PROCEDURE

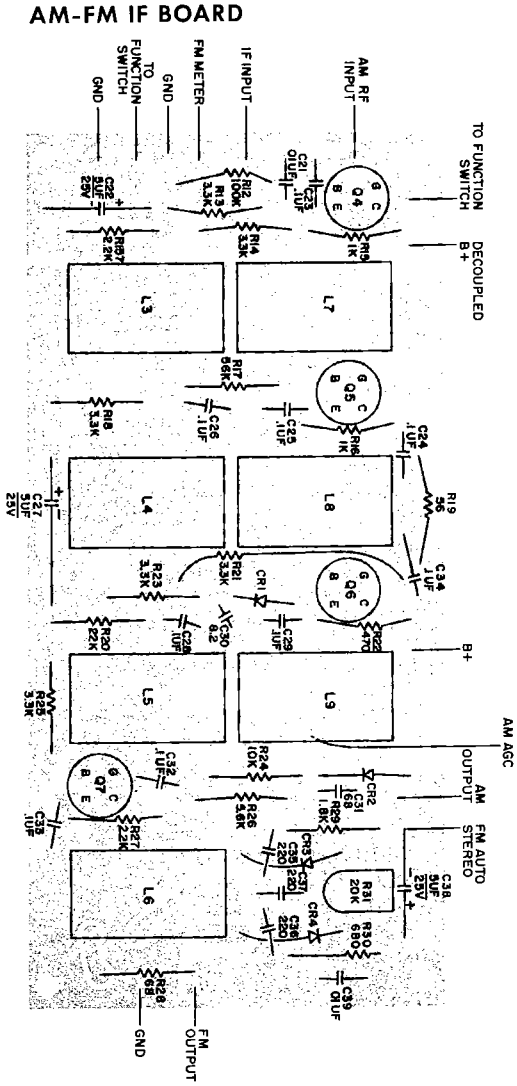
1. Use lowest input signal for usable indication. (Function Switch in AM)

STEP	ALIGN.	GENERATOR SETTING FREQ.	GENERATOR SETTING MOD.	FEED SIGNAL	OUTPUT INDICATOR	DIAL SETTING	ADJUST	ADJUST FOR	NOTES
1	IF	455 KC	400 CPS	Base of Q4 thru .001 MFD Cap	AC VTVM at Tape Output Jack	Low End	1st, 2nd & 3rd AM IF Trans. L7, L8, L9	Maximum Meter Indication	
2	OSC	600 KC	400 CPS	Couple signal loosely by loop around loopstick	Same	600 KC	Osc. Coil L17	Same	
3	OSC	1400 KC	400 CPS	Same	Same	1400 KC	Osc. Trimmer	Same	
4	Repeat Steps 2 and 3								
5	RF	600 KC	400 CPS	Same	Same	600 KC	Loopstick Ring RF Trans.	Same	
6	RF	1400 KC	400 CPS	Same	Same	1400 KC	Antenna Trimmer RF Trimmer	Same	
7	Repeat steps 5 and 6.								

FM IF BOARD

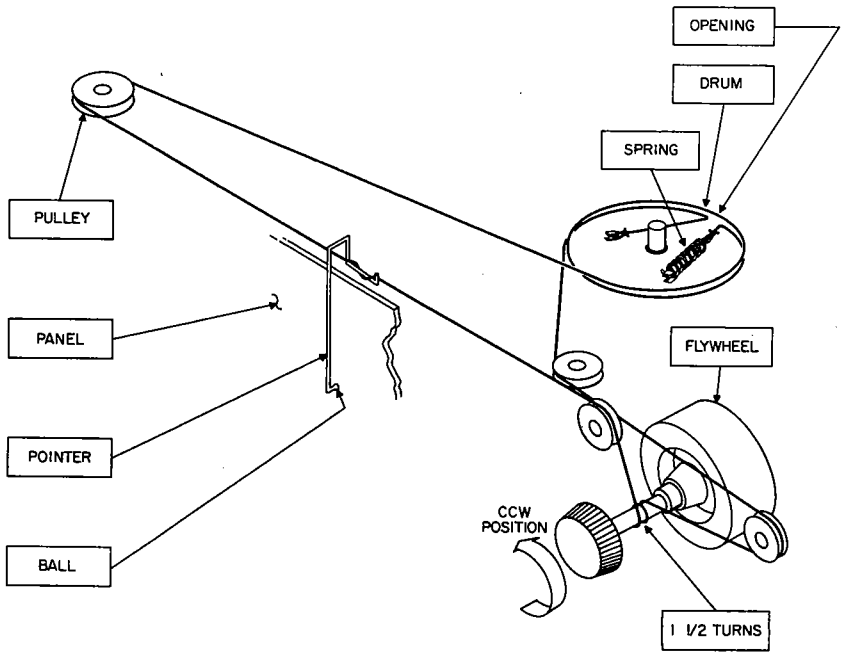


AM-FM IF BOARD



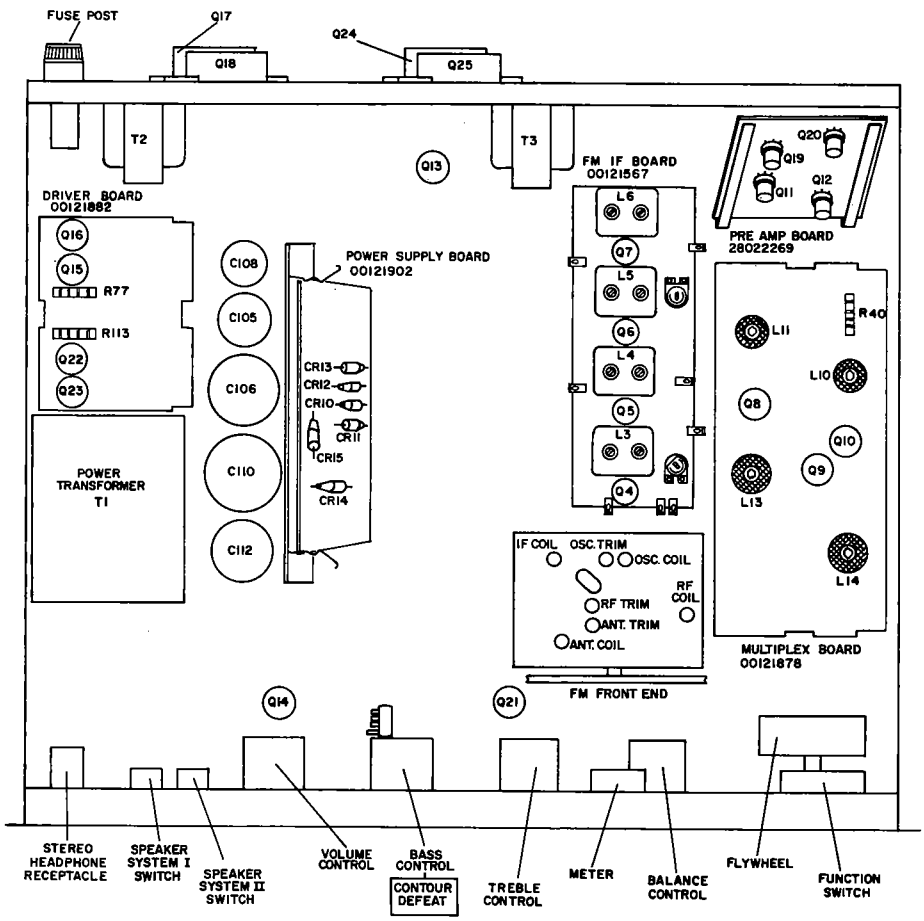
STRINGING DIAGRAM

TWO HUNDRED



CHASSIS LAYOUT

TWO HUNDRED



FM FRONT END ASS'Y
00322159

FM IF BOARD
00121567

LIGHT BOX

TUNING METER

MULTIPLEX BOARD
00121878

DRIVER BOARD
00121882

PREAMP BOARD
28022269

POWER SUPPLY BOARD
00121902

FUNCTION SWITCH
1- PHONO MONO
2- PHONO STEREO
3- TAPE RCDR/AUX
4- FM MONO
5- FM STEREOMATIC

NOTES
1- ALL RESISTORS IN OHMS UNLESS FOLLOWED BY K (1000) OR M (1 MILLION)
2- ALL CAPACITORS IN PF (PICOFARADS) UNLESS FOLLOWED BY UF (MICROFARADS)
3- ALL VOLTAGES TAKEN WITH V.T.V.M. WITH ZERO SIGNAL UNLESS OTHERWISE SPECIFIED
4- ALL VOLTAGES TAKEN WITH R113 & R77 SET FOR MAX. OUTPUT AT 4Ω

HARMAN-KARDON INC.
MODEL TWO HUNDRED

RUN # 300

90722447 C

FM FRONT END ASSEMBLY 00322159

AM/FM IF BOARD 00121269

AM BOARD 00121879

MULTIPLEX BOARD 00121878

PREAMP BOARD 28022269

DRIVER BOARD 00121882

POWER SUPPLY BOARD 00121883

LIGHT BOX

TUNING METER

ANTENNA 300Ω FM

AM

TAPE TAPE AMP/AUX OUT

PHONO MAG

RIGHT CHANNEL

LEFT CHANNEL

FUNCTION

TAPE MONITOR

VOLUME

BALANCE

TREBLE

BASS

CONTOUR-PUSH, DEFEAT-PULL

SPEAKER SYSTEM

STEREO PHONES

ON-OFF SWITCH

AC OUTLET

117VAC 60~

FUNCTION SWITCH
1-PHONO MONO
2-PHONO STEREO
3-TAPE RCDR/AUX
4-FM MONO
5-FM STEREOMATIC
6-AM

NOTES
1-ALL RESISTORS IN OHMS UNLESS FOLLOWED BY K(1000) OR M(1,000,000).
2-ALL CAPACITORS IN PF (PICOFARADS) UNLESS FOLLOWED BY UF (MICROFARADS)
3-ALL VOLTAGES TAKEN WITH V.T.V.M. WITH ZERO SIGNAL UNLESS OTHERWISE SPECIFIED.
4-ALL VOLTAGES TAKEN WITH R113 & R77 SET FOR MAX OUTPUT AT 4Ω.

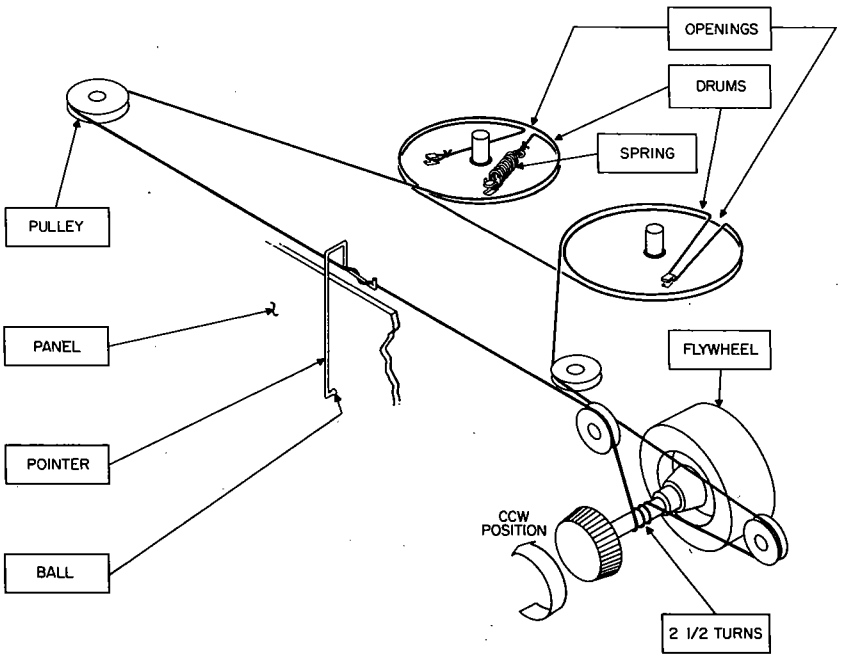
HARMAN-KARDON INC.
MODEL TWO TEN

RUN # 301

90722448 B

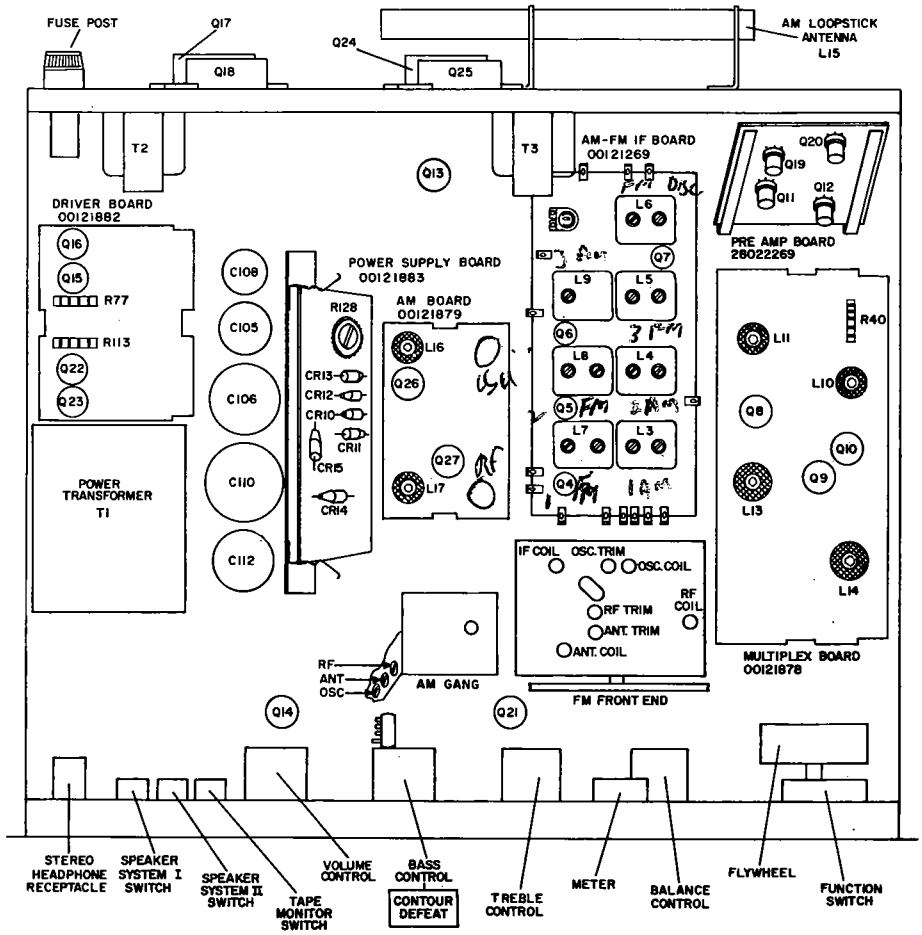
STRINGING DIAGRAM

TWO-TEN

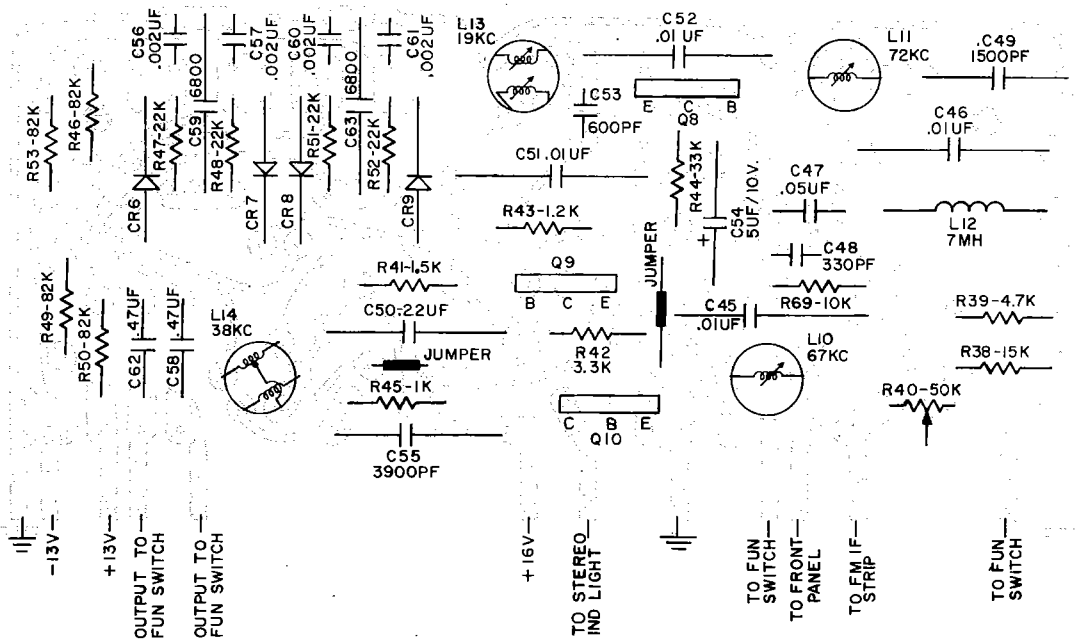


CHASSIS LAYOUT

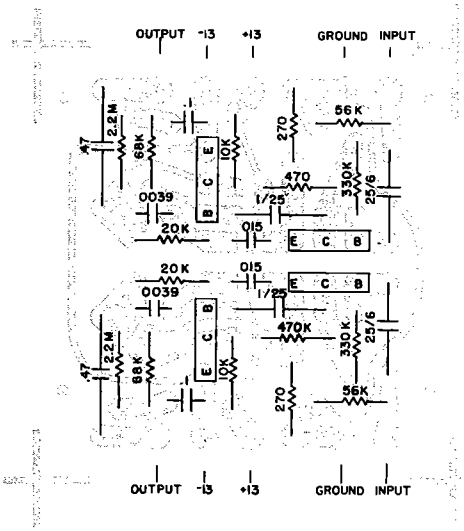
TWO-TEN



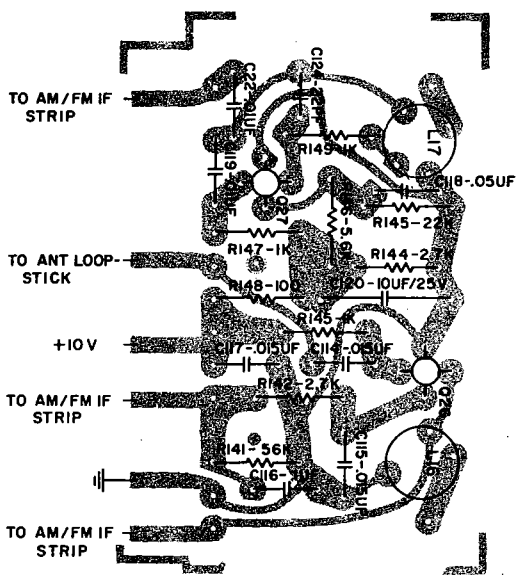
MULTIPLEX BOARD



PRE-AMP BOARD



AM BOARD



DRIVER BOARD