

VI. SERVICE INFORMATION

CAUTION: MM 12 service information is included for use only by qualified technical service personnel. There are no user serviceable parts in the MM 12.

VI-1. DISASSEMBLY PROCEDURE.

1. To gain access to all internal assemblies, remove the rear pan as follows: set the MM 12 on the bench top with the front panel facing up and the LINE CORD UNPLUGGED FROM ANY AC OUTLET. Remove the 16 phillips #6-32 thread-forming screws from the outside perimeter of the front panel.
2. Lift the front panel assembly upward out of the pan and flip it over TO YOUR LEFT and lay it face down (on the knobs) on the bench right next to the pan. There is enough service loop in the line cord to allow this.
3. To completely remove the pan from the front panel assembly, remove the two phillips screws from the line cord retaining tab on the pan. Then pull the line cord and plug inward through the hole in the pan.

VI-2. GENERAL SERVICE PROCEDURE

1. PCB Component Replacement Due to the shallow depth of the PCBs, there should rarely be a need to remove one of these boards completely for servicing. PCB components may be replaced with the PCBs in place, using a desoldering tool and needlenose pliers (solder-wick may be used in place of a desoldering tool).
2. Replacing Broken or Defective Pots. Remove the knobs and shaft nuts (use 10mm nut driver) from all of the pots on that circuit board. Gently pull the PCB up from the front panel as far as the slack in the buss wires will allow. Now desolder and replace the defective pot
3. Complete removal of a Circuit Board. Remove the knobs and shaft nuts from all the pots on that board. Then cut each of the stranded buss wires ON THE FOIL SIDE ONLY, right next to the foil solder joint Then desolder the foil connections and pull the remaining buss wires out of the PCB holes. The PCB may now be completely removed. To replace, insert the board and tighten the shaft nuts. Reposition the buss wires in the PCB holes and resolder in place.

VI-3. SCHEMATICS AND ASSEMBLY DIAGRAMS.

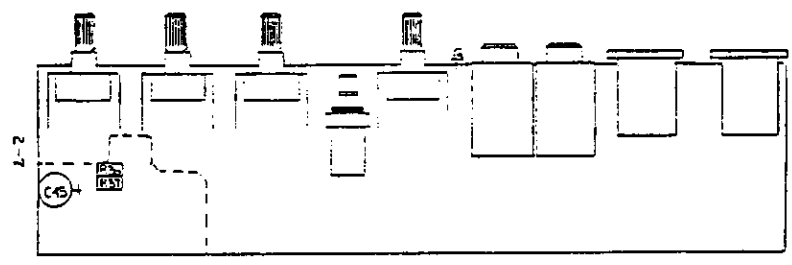
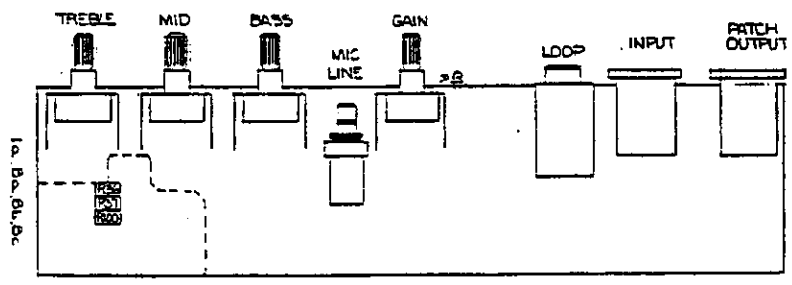
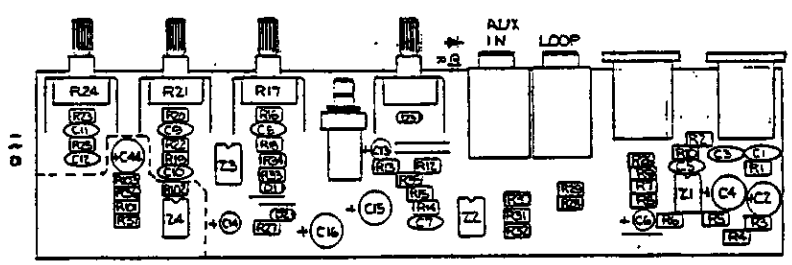
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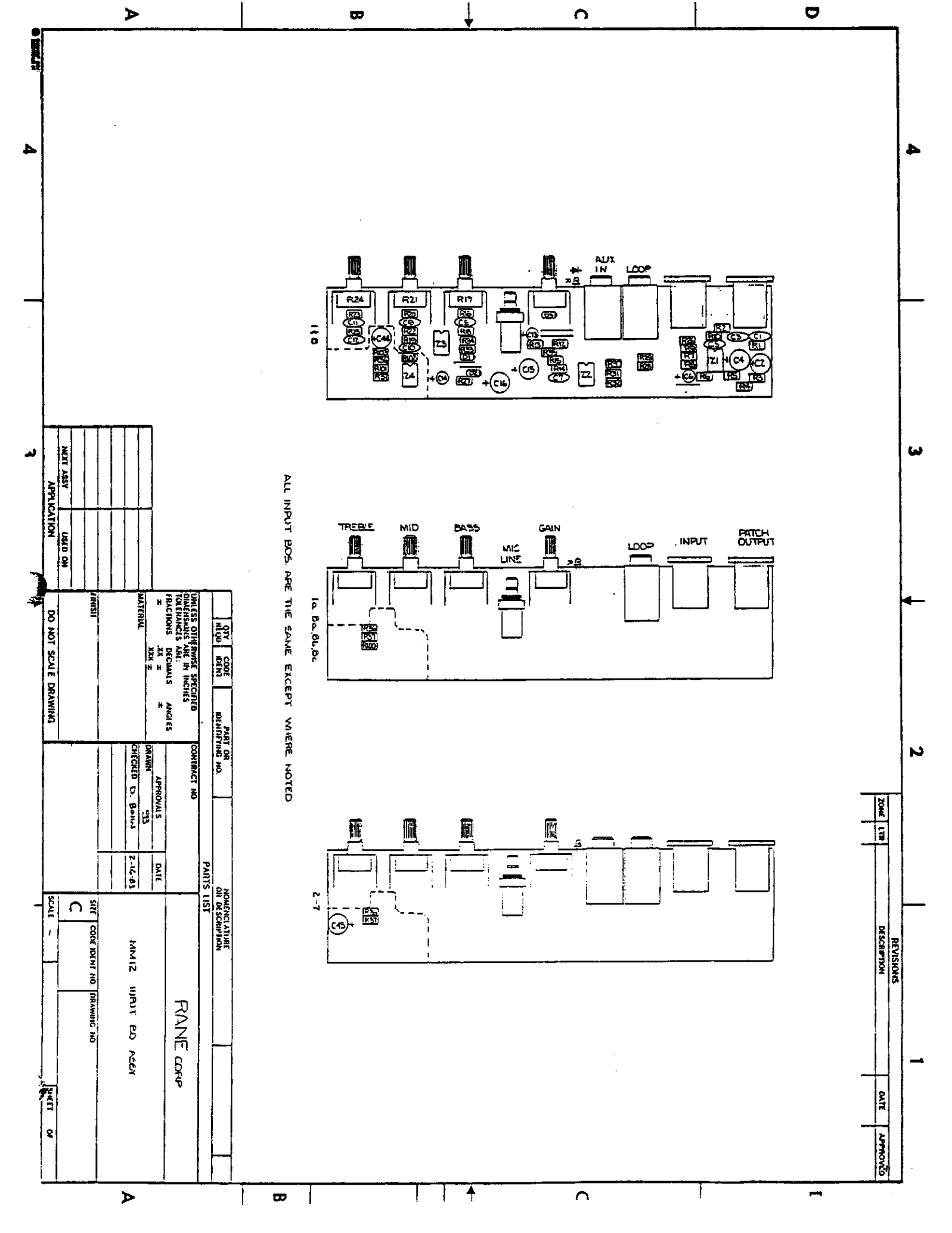


ALL INPUT BOS. ARE THE SAME EXCEPT WHERE NOTED

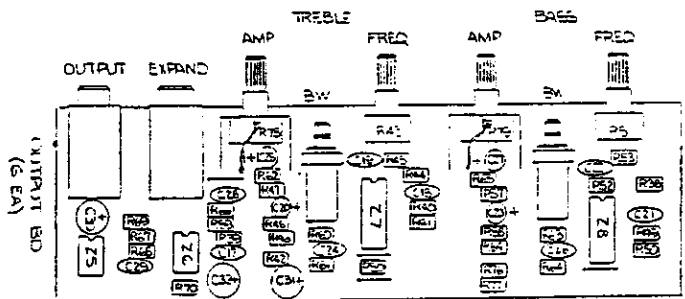
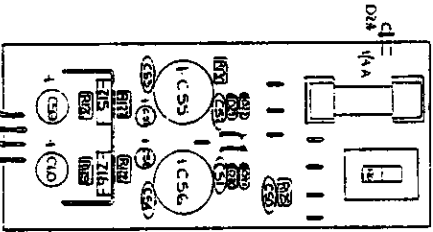
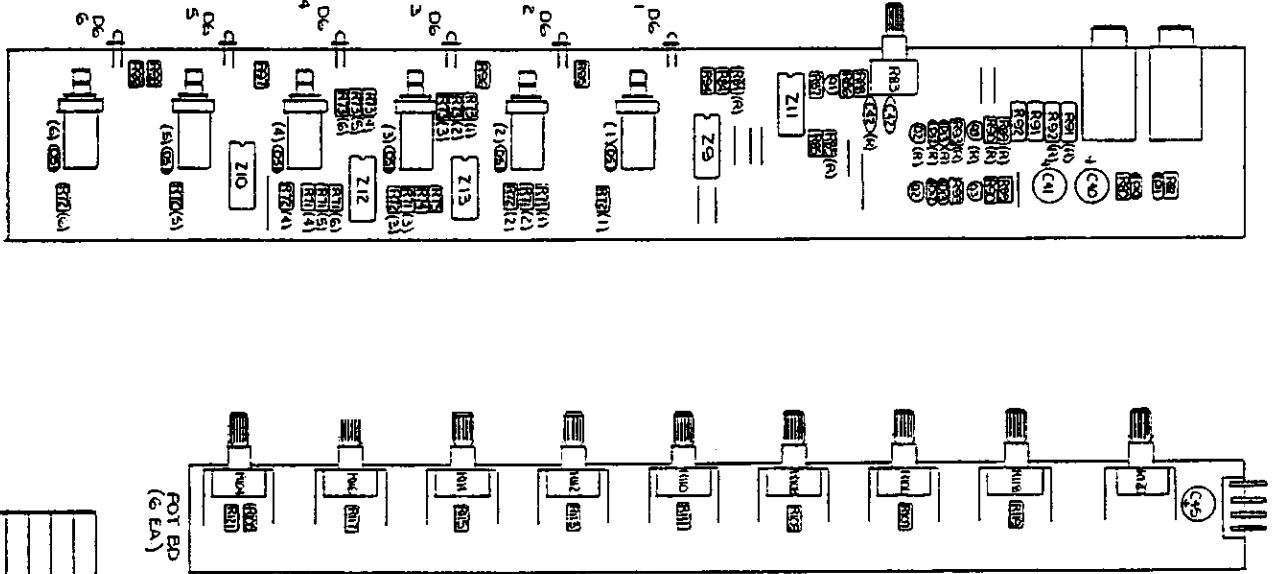
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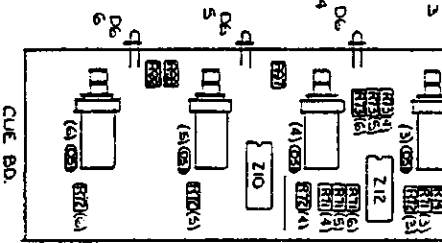
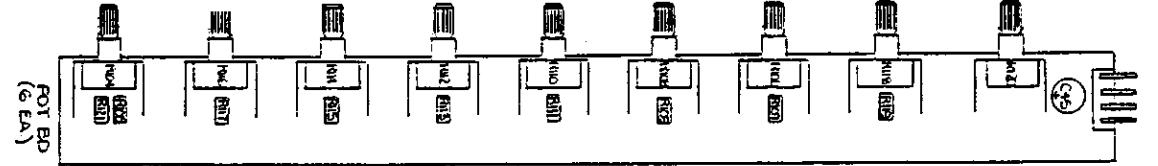
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS ± .005 DECIMALS ± .001 ANGLES ± .01 MATERIAL ±		CONTRACT NO. DRAWN BY: [Name] CHECKED BY: [Name] DATE: [Date]		NOMENCLATURE OR DESCRIPTION RANE CORP INPUT BO ASSEMBLY	
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FINISH USED ON APPLICATION		DO NOT SCALE DRAWING		SCALE: [Scale] SHEET OF [Total]	



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ZONE	LTR	DESCRIPTION	



QTY		CODE	PART OR	NOMENCLATURE	DATE
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UNLESS OTHERWISE SPECIFIED					
DIMENSIONS ARE IN INCHES					
FRACTIONS ARE:					
XX		=	ANGLES		
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CHECKED D. BOWEN					
DATE 2-3-53					
DATE 2-16-53					
CUE, POT, PW & OUTPUT BO ASSEMBLY					
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A

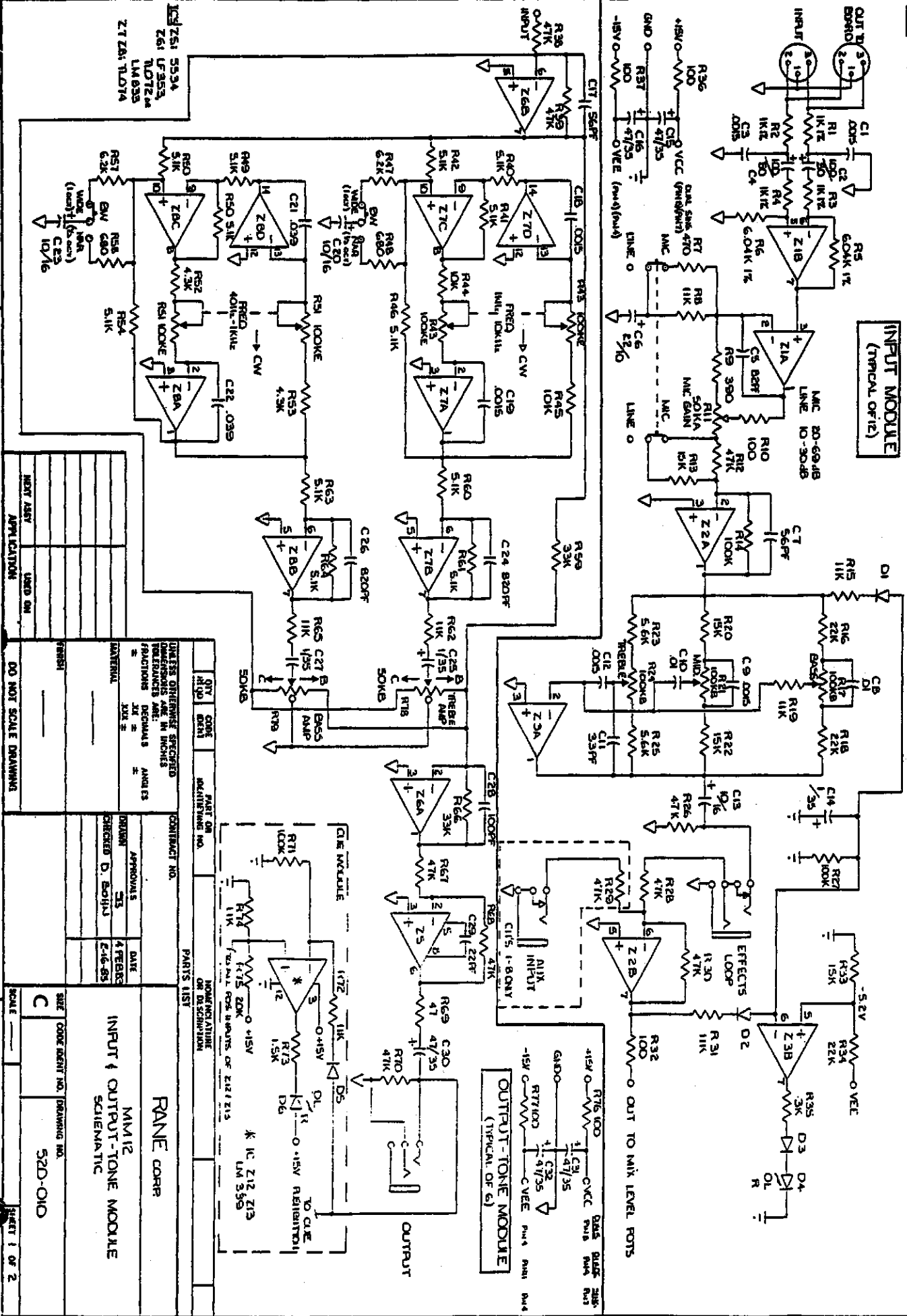
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ICSI ALL: 5532-411M833

INPUT MODULE
(TYPICAL OF 12)



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QTY	CODE	PART OR IDENTIFYING NO.	REWORKING NO.

UNIT WEIGHT SPECIFIED	CONTRACT NO.	APPROVALS	DATE

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INPUT & OUTPUT-TONE MODULE
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SHEET 1 OF 2

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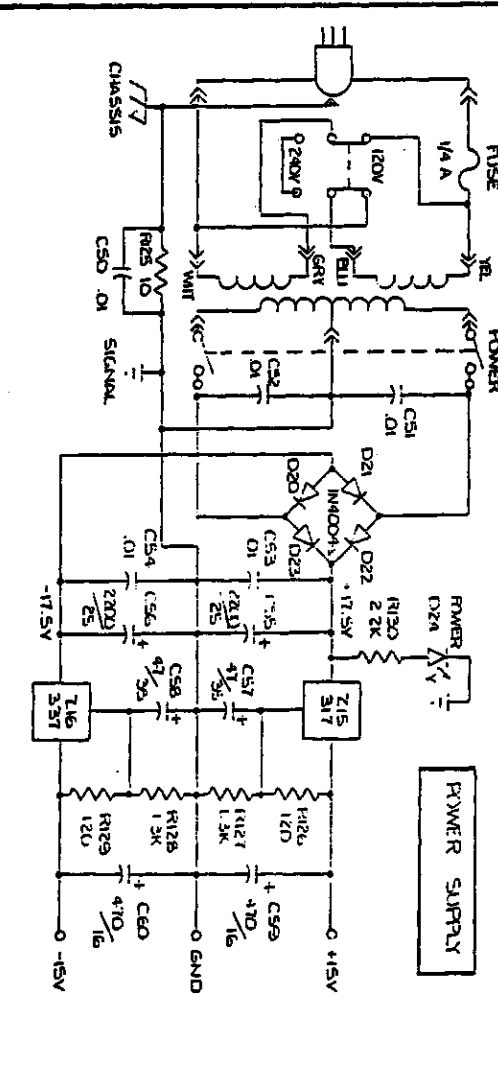
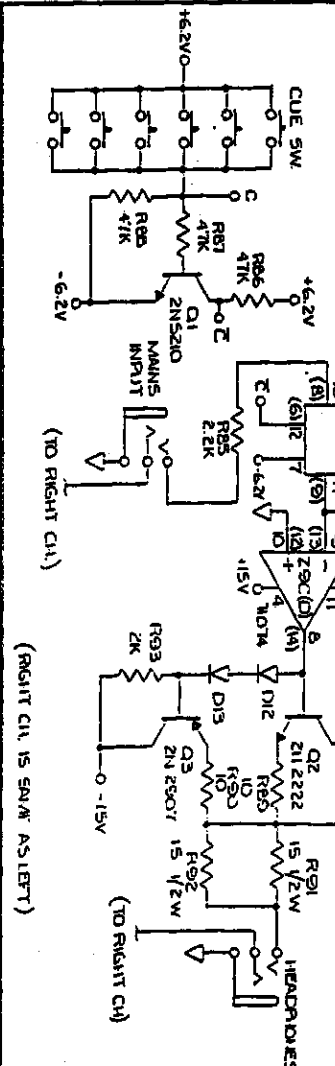
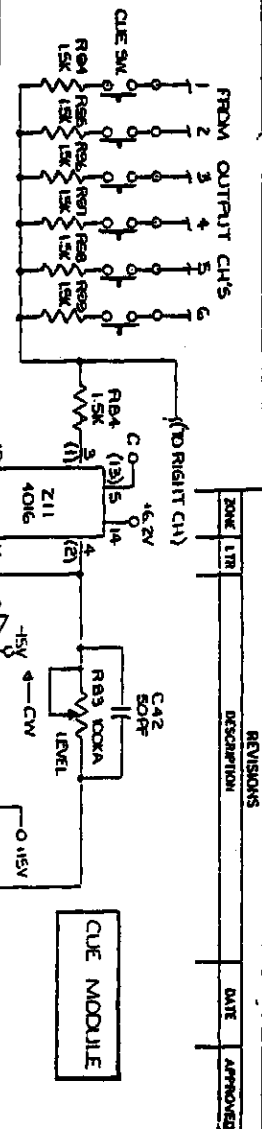
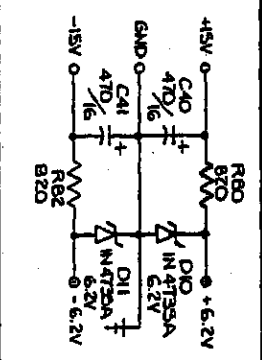
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NOTES
1. DIODES ARE IN 4446
2. RESISTORS ARE 1/4W 5%
3. RESISTORS ARE 1/4W 5%



R100	R101	R102	R103	R104	R105	R106	R107	R108	R109	R110	R111	R112	R113	R114	R115
470K	470K	470K	470K	470K	470K	470K	470K	470K	470K	470K	470K	470K	470K	470K	470K

Q100	Q101	Q102	Q103	Q104	Q105	Q106	Q107	Q108	Q109	Q110	Q111	Q112	Q113	Q114	Q115
LF351	LF351	LF351	LF351	LF351	LF351	LF351	LF351	LF351	LF351	LF351	LF351	LF351	LF351	LF351	LF351

INTERCONNECT

QTY	REQD	CONF	MEANT	PART OR IDENTIFYING NO.	HOMOLOGATION OR DESCRIPTION

REVISIONS

REV	DATE	APPROVED

DATE: 2-16-63

CHECKED BY: [Signature]

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SIZE: 520-010

SHEET 2 OF 2

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