

THE "SPECKMIX 16" RECORDING CONSOLE

OPERATING INSTRUCTIONS  
AND  
SERVICE MANUAL

## **SPECK ELECTRONICS WARRANTY**

Speck Electronics products are warranted to the original owner to be free of defects in material or workmanship.

This warranty does not apply to incandescent lamps, fuses, slide potentiometers, or any product subject to accident, misuse, neglect or failure to comply with normal maintenance procedures or if the serial number has been defaced, altered, or removed; nor will Speck Electronics accept responsibility for damages resulting from improper installation, alterations or unauthorized parts or repairs. If the product is modified by the customer without permission, the customer agrees to pay for parts and labor necessary to remove the modification before repair. The cause of defect is in the sole judgment of Speck Electronics.

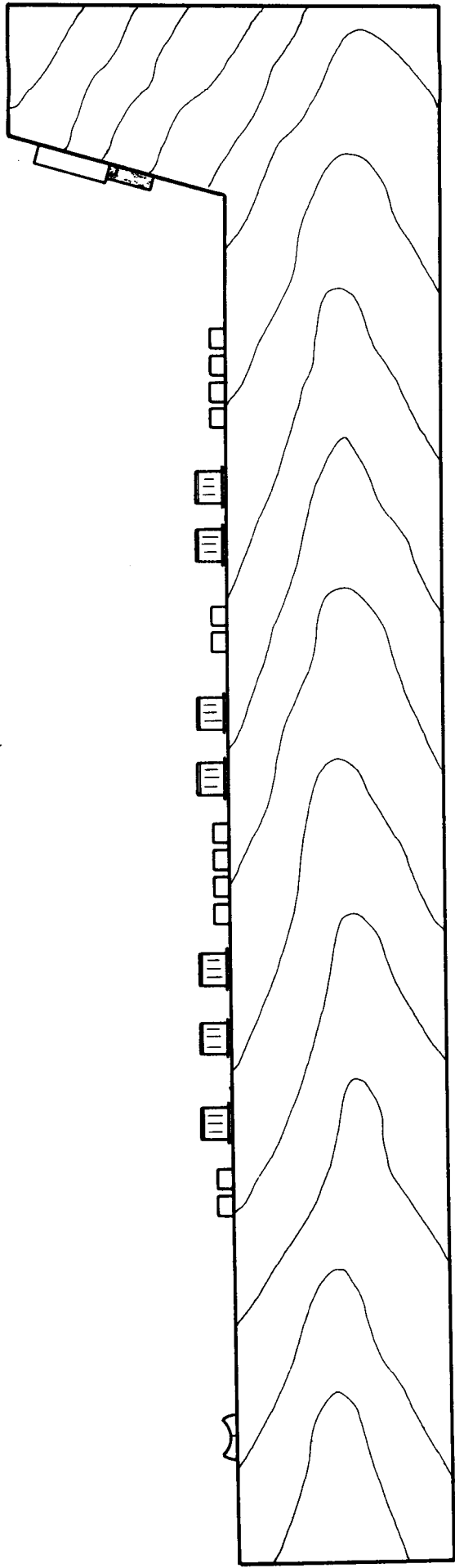
Should a defect develop within one year of purchase from Speck Electronics or an authorized dealer, Speck Electronics will supply the part or parts necessary at no charge. Labor is covered in this warranty for a period of ninety days. Although console owners should feel free to contact Speck Electronics direct, at any time, in reference to technical questions and warranty repairs; outside service, repairs or pickups are not covered under this warranty. A written "service/repair" contract may be negotiated at the time of sales.

Consoles or larger items should be shipped air freight. Single modules and smaller items should be shipped U.P.S., U.P.S. Blue, or express air freight (Emery or Federal Express).

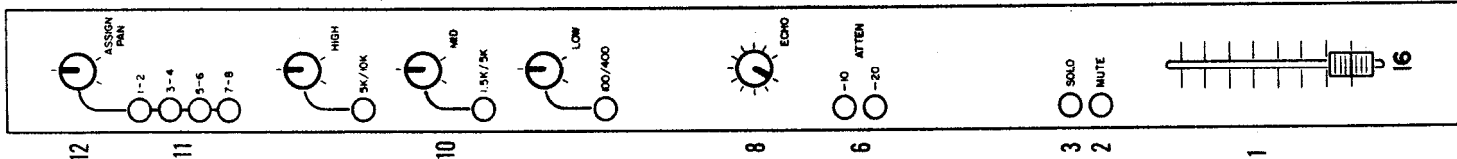
Any item returned for warranty repair should be sent, if possible, in the original shipping crate or packing container, prepaid to Speck Electronics. If in our opinion the shipping crate or packing container is improper for return shipping, we reserve the right to supply a new container at a minimal charge.

In the interest of improving Speck consoles and related products; designs and specifications are subject to change without notice. It should be mentioned that if a change is necessary for any reason, we make every effort to document that change and send an "update notice" to all customers at no charge.

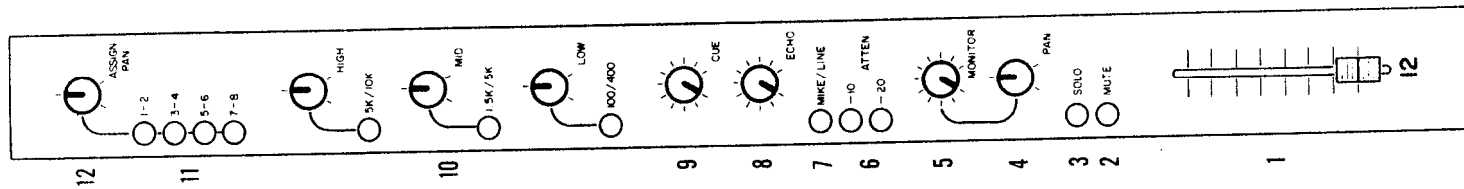


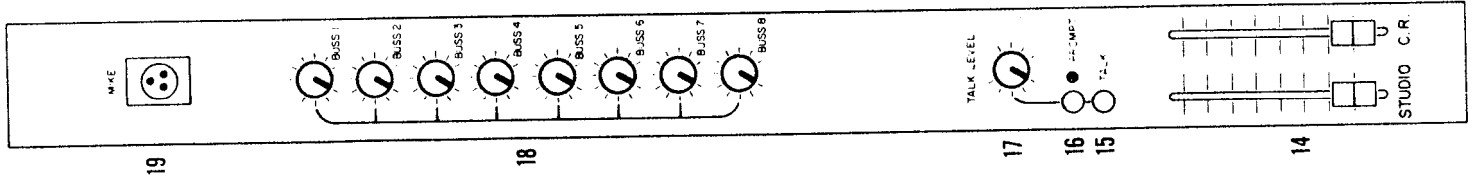


CONSOLE DESCRIPTION AND SPECIFICATIONS

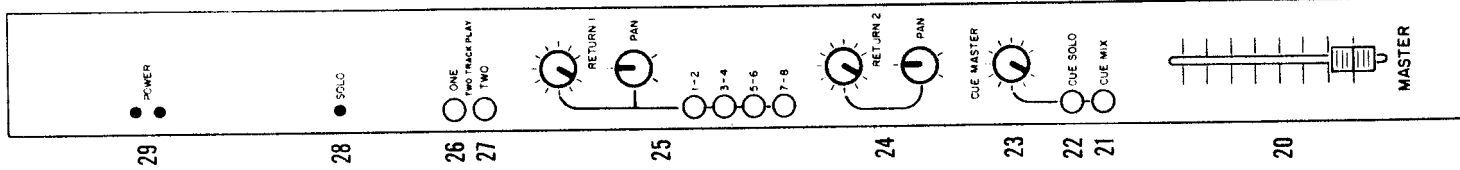


- 1 **SLIDE FADER** The purpose of the slide fader is to act as the primary level control for the input module. The slider is capable of controlling the stereo program, echo send, and assign section in either the mike or line input position.
- 2 **MUTE** This silent alternate action switch will mute the audio signal when depressed. This switch is electrically located in the signal path after the input slide fader allowing the engineer to inhibit the mike signal assigned to a buss output or line signal being mixed down to the 2 track. The monitor signal on it's respective channel will not be affected by this switch.
- 3 **SOLO** The purpose of the solo switch is to allow any particular module to be heard alone without having to lower the levels or in any way change the positions of controls on adjacent modules.
- 4 **PAN** This rotary control allows placement of program or monitor signals at any point between left and right.
- 5 **MONITOR** This potentiometer allows an audio adjustment of each tape track during recording. Although this control is increased to maximum during mixdown, it may be used as a line trim control.
- 6 **ATTENUATION** Two pushbutton switches are provided to attenuate the mike preamp signal 10 or 20 decibels. When both the -10 and -20 switches are depressed, the mike preamp gain is attenuated 37 db.
- 7 **MIKE/LINE SELECT** The mike/line switch is used to select the desired signal source to each input module; a low level or microphone signal when in the mike position, or a high level or tape recorder signal in the line position.
- 8 **ECHO SEND** Allows a variable echo send level to be sent from each module.
- 9 **CUE SEND** Each input module has a cue send and is used to provide levels to the headphones. Once the operator is satisfied with the equalization settings, mike levels, and buss levels it sometimes becomes necessary to provide a composite mix to the head-phone system. The cue send can also be used as an echo send during mixdown.
- 10 **EQUALIZER** A 3 band, 6 frequency equalizer allows 12 db of boost or cut for each band.
- 11 **ASSIGN** These 4 pushbutton switches in conjunction with the assign pan control allow assignment of mike or line signals to any combination of submasters.
- 12 **ASSIGN PAN** Allows continuous left-right positioning of the assigned signal. All odd numbered busses are panned to the left and even numbered busses are panned to the right.





- 13 CONTROL ROOM SLIDER The overall control room playback volume is adjusted with this stereo slide fader and does not interact with any other level control.
- 14 STUDIO SLIDE FADER This slide fader is the master for the studio playback, and may be adjusted independent of the control room playback control.
- 15 TALK When this switch is depressed, the control room playback level is inhibited to prevent feedback and talkback is possible to the studio playback. The talk switch also bypasses the studio playback master control.
- 16 CUE PROMPT This pushbutton switch allows the operator to talk directly to the headphones without muting the control room speakers. This allows two-way communications between the engineer and the artists...even while the 8 track is recording.
- 17 TALK LEVEL This rotary potentiometer is a master level adjustment for the talk and cue prompt feature.
- 18 BUSS MASTERS These 8 rotary controls act as masters to the 8 track assign switching from all input modules and the echo return - one. Since the record levels and calibrations on the multitrack recorder are referenced to the console's V.U. meters, the buss masters can be considered the master record controls to the multitrack recorder. The console's V.U. meters and output levels respond directly to the variations of the 8 buss masters.
- 19 MIKE INPUT The 3 pin XLR connector will facilitate any low impedance microphone/gooseneck combination. The microphone may then be positioned for broadcast quality talkback to the studio or headphones



- 20 MASTER SLIDE FADER This stereo slide fader acts as the master level for the stereo program output. During mixdown, this is the control that is used to "fade out" the signal to the 2 track mixdown recorder. As many as 4 recorders can be operated simultaneously with this control. Since the stereo buss is independent of the multitrack assign section, a stereo mix can be achieved even while a recording is being made on the 8 track.
- 21 CUE MIX When this button is activated, the normal mix from the individual cue send is defeated and a composite cue mix is fed to the headphones. This composite mix is derived from the input modules and lets the headphones hear exactly what the operator hears in the control room.
- 22 CUE SOLO Depressing this switch inhibits all other signals, allowing the operator to set a headphone mix via the control room playback.
- 23 CUE MASTER This control acts as the master playback for the headphone buss.
- 24 ECHO RETURN AND PAN - TWO The echo return section allows the return of a reverb chamber or delay device to the stereo program signal. The ECHO knob adjusts the intensity of the signal and the PAN knob allows the positioning of the signal in the stereo mix.
- 25 ECHO RETURN, PAN, AND ASSIGN - ONE This echo return section is similar to echo return one except it allows the return of a reverb chamber to the multitrack buss. The ECHO knob adjusts the intensity of the signal, the PAN allows the positioning to the 4 assign switches, and the ASSIGN allows assignment to the multitrack busses.
- 26 2 TRACK PLAY - ONE This alternate action switch inhibits the control room and studio program signal and allows the playback of a +4 dbm 2 track recorder/reproducer. This switch can be activated during the mixdown to compare 2 track playback (slightly delayed) with the stereo program signal.
- 27 2 TRACK PLAY - TWO The operation of this switch is identical to the TWO TRACK PLAY ONE switch, except that it allows playback of a -10 dbm recorder/reproducer.
- 28 SOLO INDICATOR This L.E.D. indicates the operation of a solo switch on the console. This includes the solo switches on the 16 input modules as well as the cue solo. The solo circuit will not interrupt or interfere with the 8 track buss or the 2 track mixdown signals since any soloed input module(s) are heard in the monitor system only.
- 29 POWER INDICATOR The L.E.D.s when illuminated indicate the operation of the dual output power supply that powers the consoles audio circuits.



## SPECIFICATIONS

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Microphone input impedance	150 ohms
Line input impedance	10K ohms
Echo return input impedance	10K ohms
2 track - one input impedance	10K ohms
2 track - two input impedance	10K ohms

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Buss output impedance	All line outputs are designed to drive a 600 ohm load and may be operated into any load 600 ohms or greater.
Cue feed output impedance	
Control room output impedance	
Studio output impedance	
Program feed output impedance	
Echo send output impedance	

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	NORMAL	MAXIMUM
Microphone input level	-50 dbv	+ 7 dbv
Line input level	+ 4 dbv	+20 dbv
2 track #1 input, level	+ 4 dbv	+20 dbv
2 track #2 input level	-10 dbv	+20 dbv
Echo return input level	-10 dbv	+15 dbv

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	NORMAL	MAXIMUM
Buss output level	+ 4 dbm (0 VU)	+22 dbm
Cue output level	-10 dbv	+22 dbv
Program feed output level	+ 4 dbv	+22 dbv
Control room feed output level	-10 dbv	+22 dbv
Studio feed output level	-10 dbv	+22 dbv
Echo send output level	+ 4 dbv	+22 dbv

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Output buss headroom	+18 db above 0 VU
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	NORMAL	MAXIMUM
Output distortion (20-20Khz)	.05% @ +4 dbv	.1% @ +22 dbv

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Frequency response (mike input to buss output)	23hz-20Khz $\pm$ 1 db
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TEST CONDITIONS: -50 dbv signal at mike input  
mike/line switch in mike position  
input slide fader at #10  
-10 and -20 attenuation switches off  
equalizer set to flat  
assign switch 1-2 depressed  
assign pan centered  
submaster #1 adjusted to indicate 0 VU (+4 dbm)  
on meter #1  
frequency response measured at buss output #1

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## SPECIFICATIONS

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Frequency response (line input to program output) 18hz-40Khz  $\pm$  .5db

TEST CONDITIONS: +4 dbv signal at line input  
Mike/line switch in line position  
Input fader set at #10  
Equalizer set to flat  
Monitor pot set to maximum  
Pan pot set to center  
Master slide fader set at #0  
Frequency response measured at program feed - left

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Noise (mike input to buss output) N.F. -72 db

TEST CONDITIONS: -50 dbv signal at mike input  
Mike/line switch in mike position  
Input slide fader set at #10  
-20 attenuation on  
Equalizer set to flat  
Assign switch 1-2 depressed  
Assign pan centered  
Submaster #1 adjusted to indicate 0 VU (+4 dbm)  
on meter #1  
Input signal removed  
Noise measured at buss output #1 with low pass filter

Noise (line input to program feed output) N.F. -80 db

TEST CONDITIONS: +4 dbv signal at line input  
Mike/line switch in line position  
Equalizer set to flat  
Monitor pot set to maximum  
Pan pot centered  
Master slide fader set at #0  
Adjust input slide fader to indicate 0 VU (+4 dbv) at  
program feed output - left  
Input signal removed and terminated with 10K ohms  
Noise measured at program feed output - left with a low pass  
filter

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Low equalization	100hz and 400hz, 12 db boost or cut
Mid equalization	1.5Khz and 5Khz, 12 db boost or cut
High equalization	5Khz and 10Khz, 12 db boost or cut

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Recommended talkback microphone and XL adapter	Shure model 572 G Switchcraft P3M
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Power requirements	Bi-polar 15 volts D.C. .48 amp
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Dimensions	Width 35 $\frac{1}{4}$ "(89.5cm) Depth 27 $\frac{3}{4}$ "(70.5cm) Height 7 $\frac{3}{8}$ "(18.7cm)
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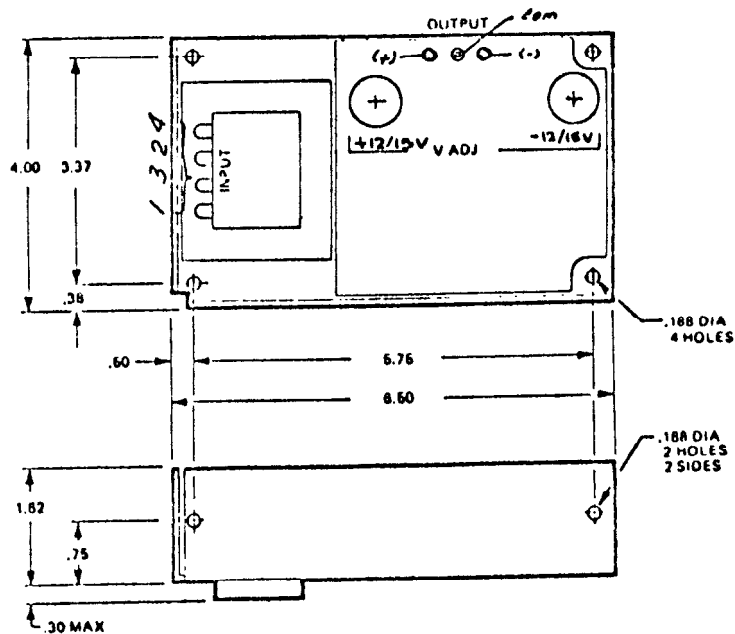
Shipping weight	Approximately 90 lbs (41kg)
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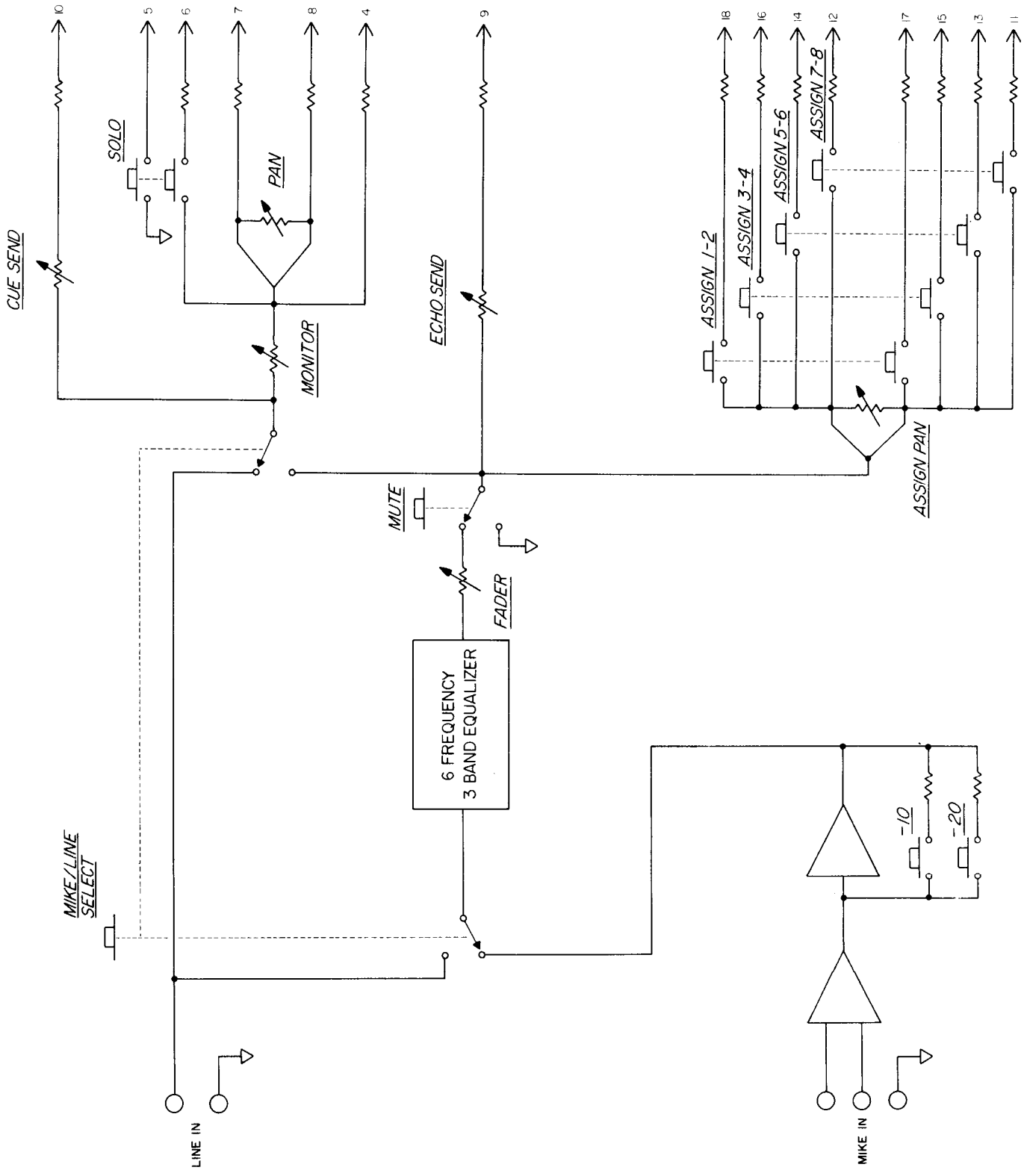
SPECIFICATIONS FOR THE POWER SUPPLY - SIERRACIN MODEL 2BB15D

A.C. input 105-125/210-250 VAC, 47-63 hz (derate 10% for 50hz operation). For non-standard input configurations consult factory.

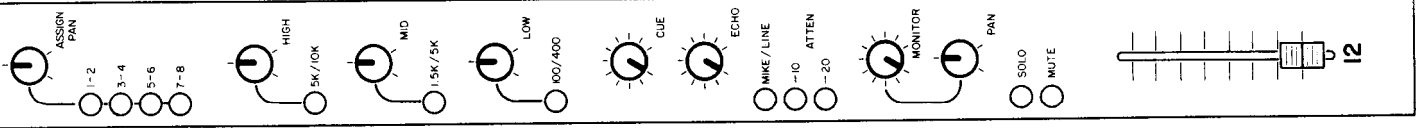
For use at	Fuse rating	Jumper	Apply power to
115 VAC	1 amp	1-3, 2-4	1 & 4
230 VAC	.5 amp	2-3	1 & 4
D.C. output ratings	15 volts @ .8 amps (All output voltages are adjustable $\pm$ 5% minimum)		
Regulation	Line regulation: $\pm$ .15% maximum for varations of 105 to 125 VAC or 210 to 250 VAC. Load regulation: $\pm$ .15% maximum for 100% load change.		
Output ripple	3 mVpp typical, 10mVpp maximum		
Overcurrent protection	Current foldback type on all outputs.		
Operating temperature	Units are convection colled. Do not restrict air-flow over chassis for maximum ratings. Operating temperature: 0-60 degrees C maximum (100% current to 40 degrees C, 80% current to 50 degrees C, 60% current to 60 degrees C).		

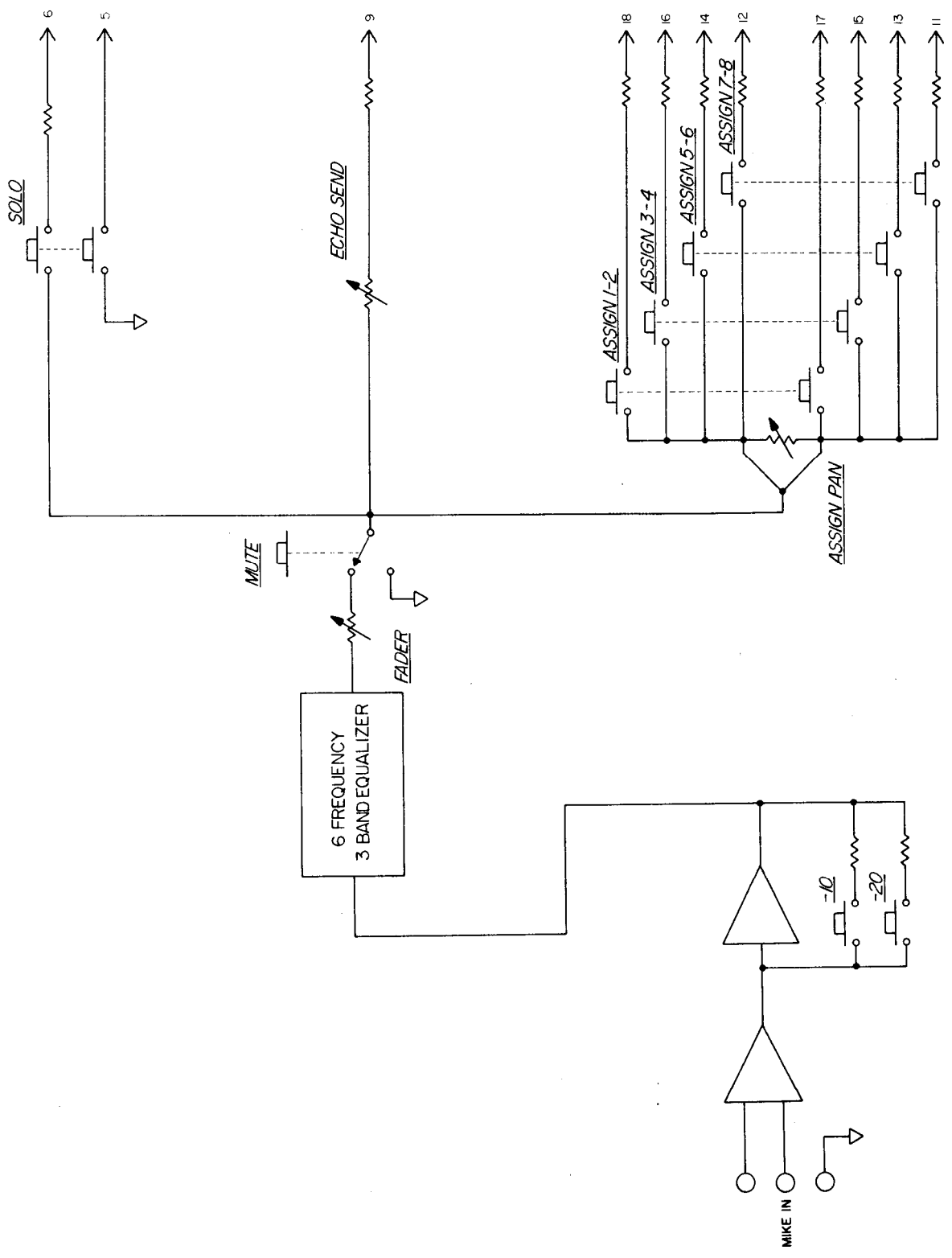
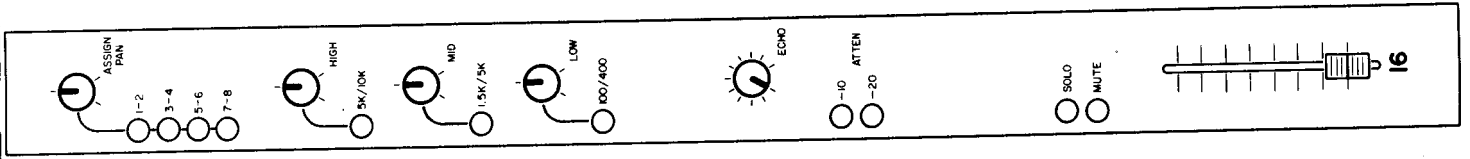


SIGNAL FLOW DIAGRAMS

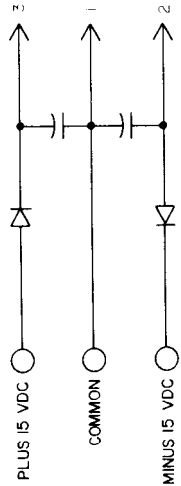
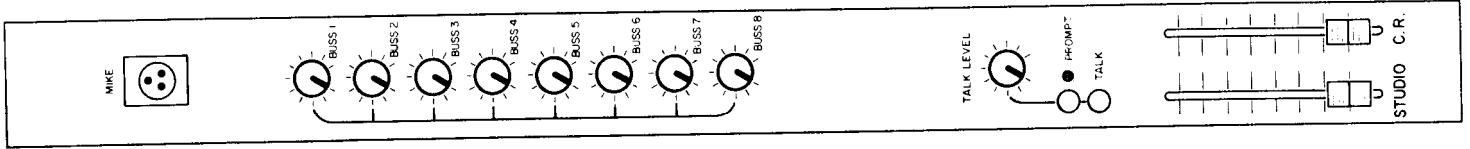


**NOTES:**  
 ○ INDICATES CONNECTION TO THE OUTSIDE WORLD  
 ← INDICATES MOTHERBOARD CONNECTIONS

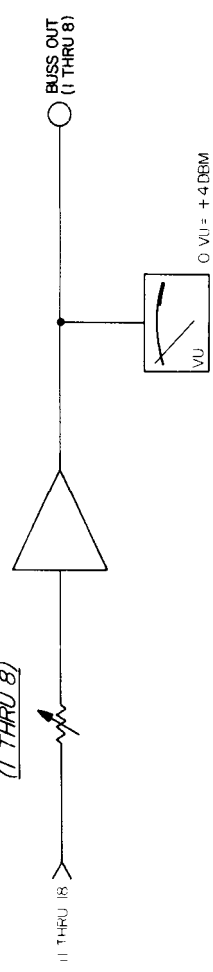




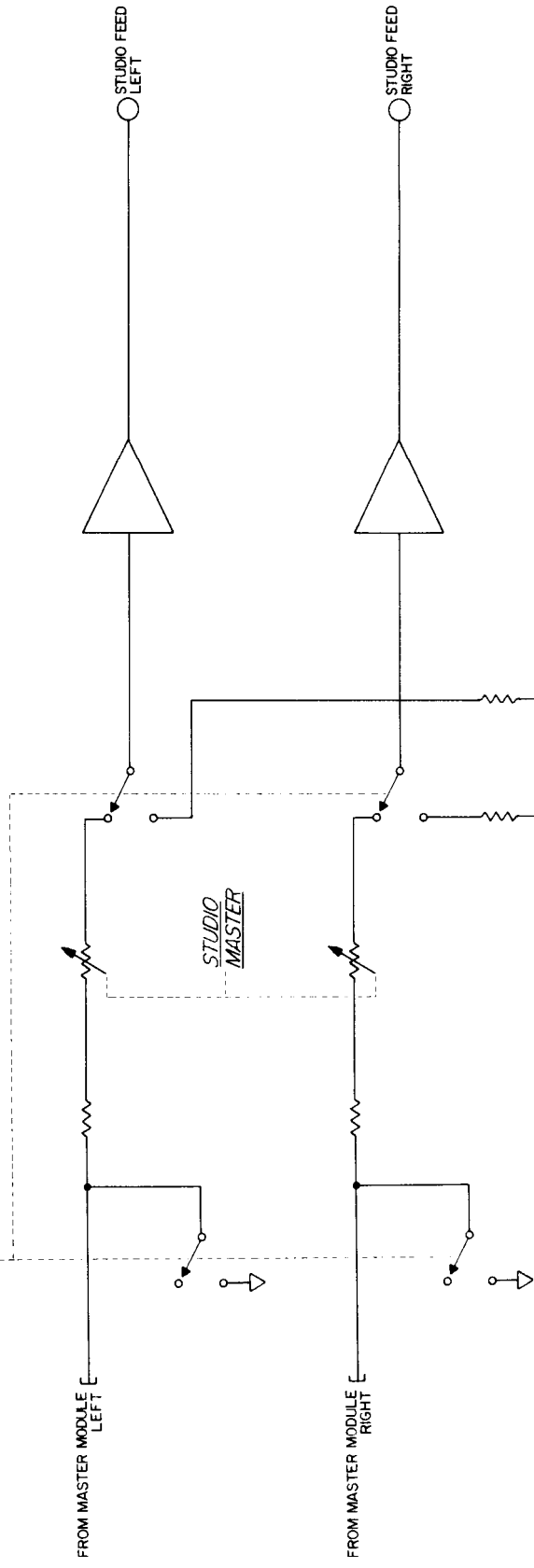
**NOTES:**  
 ○ INDICATES CONNECTION TO THE OUTSIDE WORLD  
 ← INDICATES MOTHERBOARD CONNECTIONS



BUSS MASTER  
(1 THRU 8)



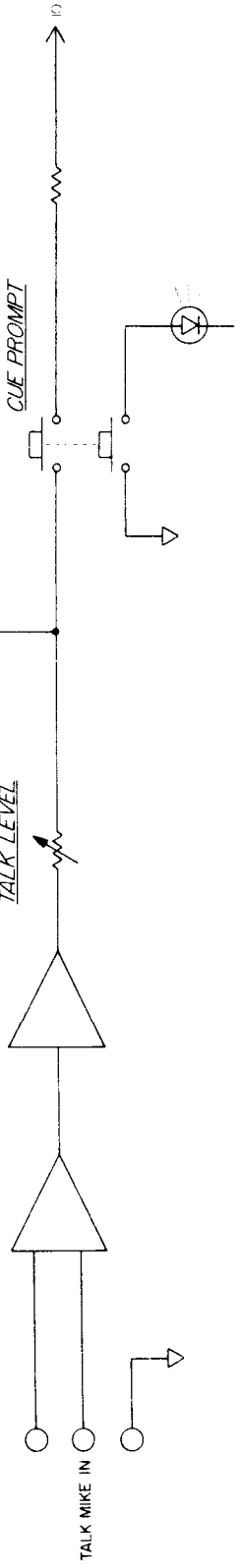
TALKBACK

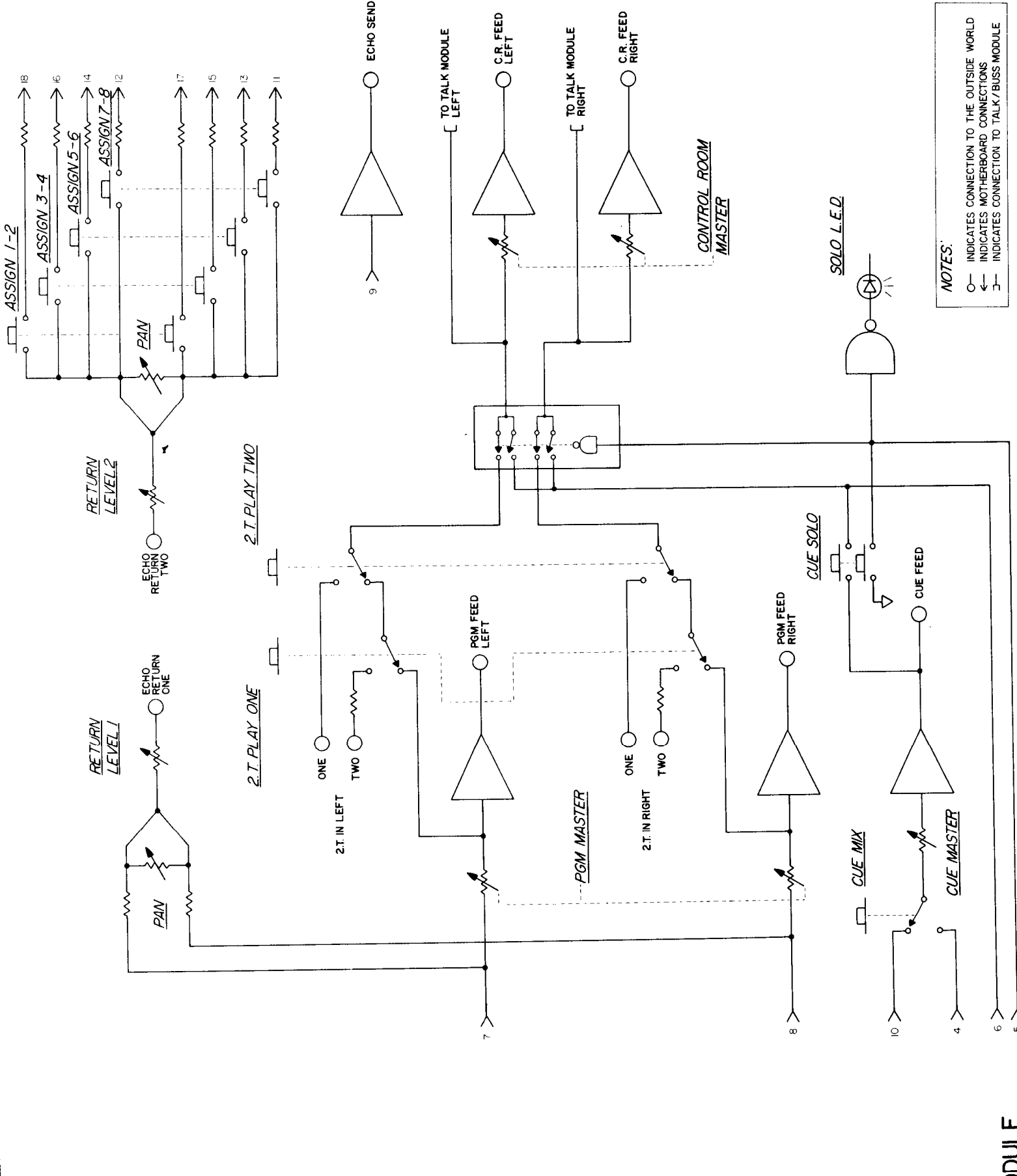
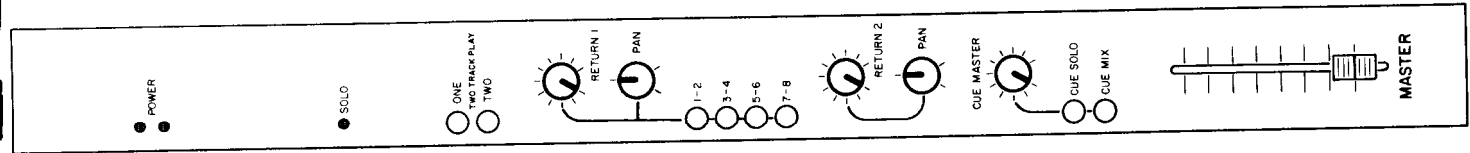


STUDIO MASTER

**NOTES:**  
 ○— INDICATES CONNECTION TO THE OUTSIDE WORLD  
 ← INDICATES MOTHERBOARD CONNECTIONS  
 E— INDICATES CONNECTION TO MASTER MODULE

TALK LEVEL



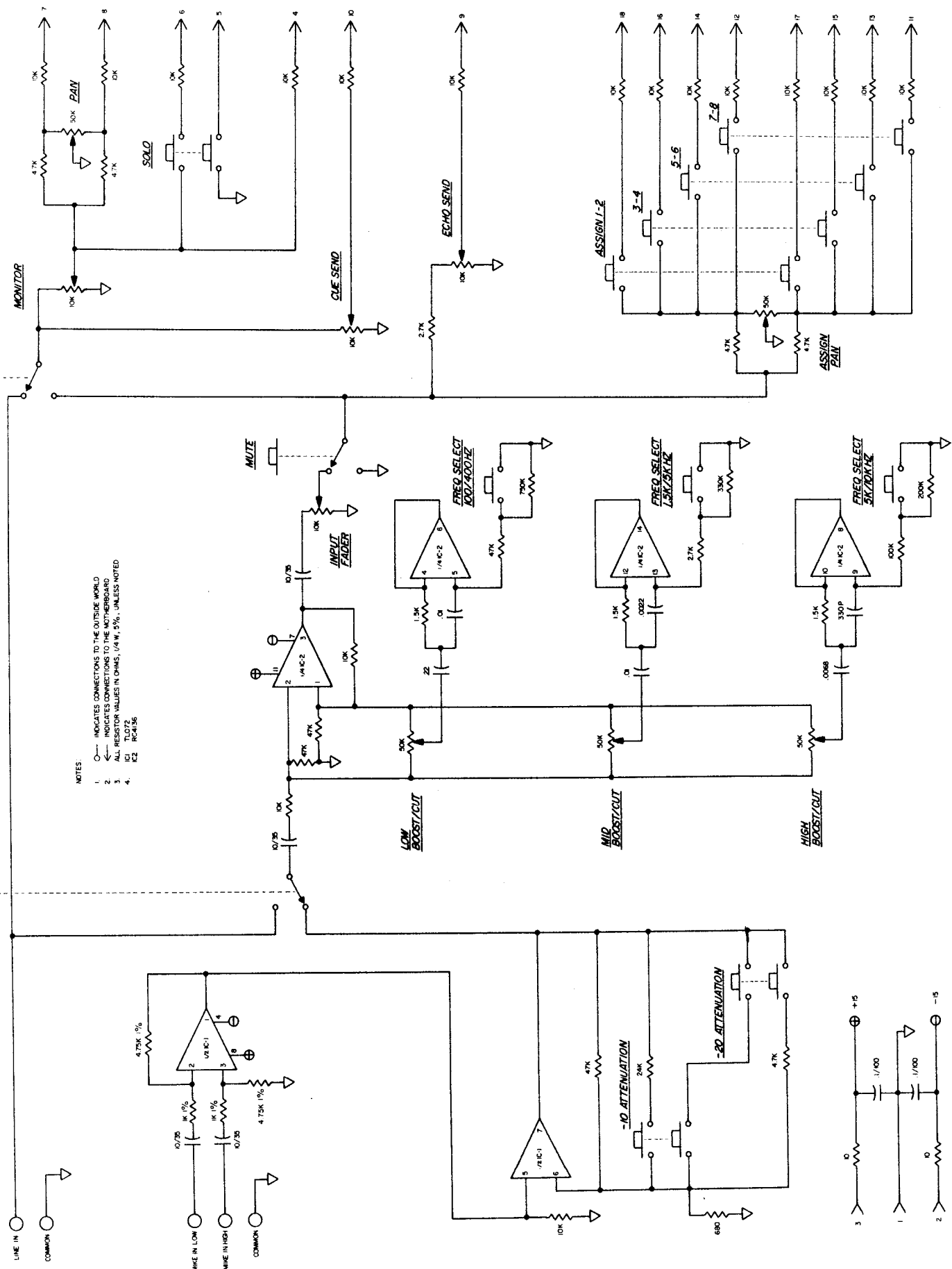


**NOTES:**  
 ○ INDICATES CONNECTION TO THE OUTSIDE WORLD  
 ← INDICATES MOTHERBOARD CONNECTIONS  
 ┌─┐ INDICATES CONNECTION TO TALK/BUSS MODULE

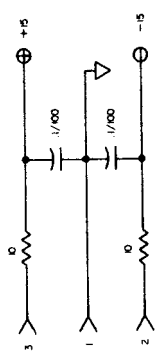


SCHEMATICS AND P.C.B. ASSEMBLY

INPUT SELECT  
MIXE/LINE



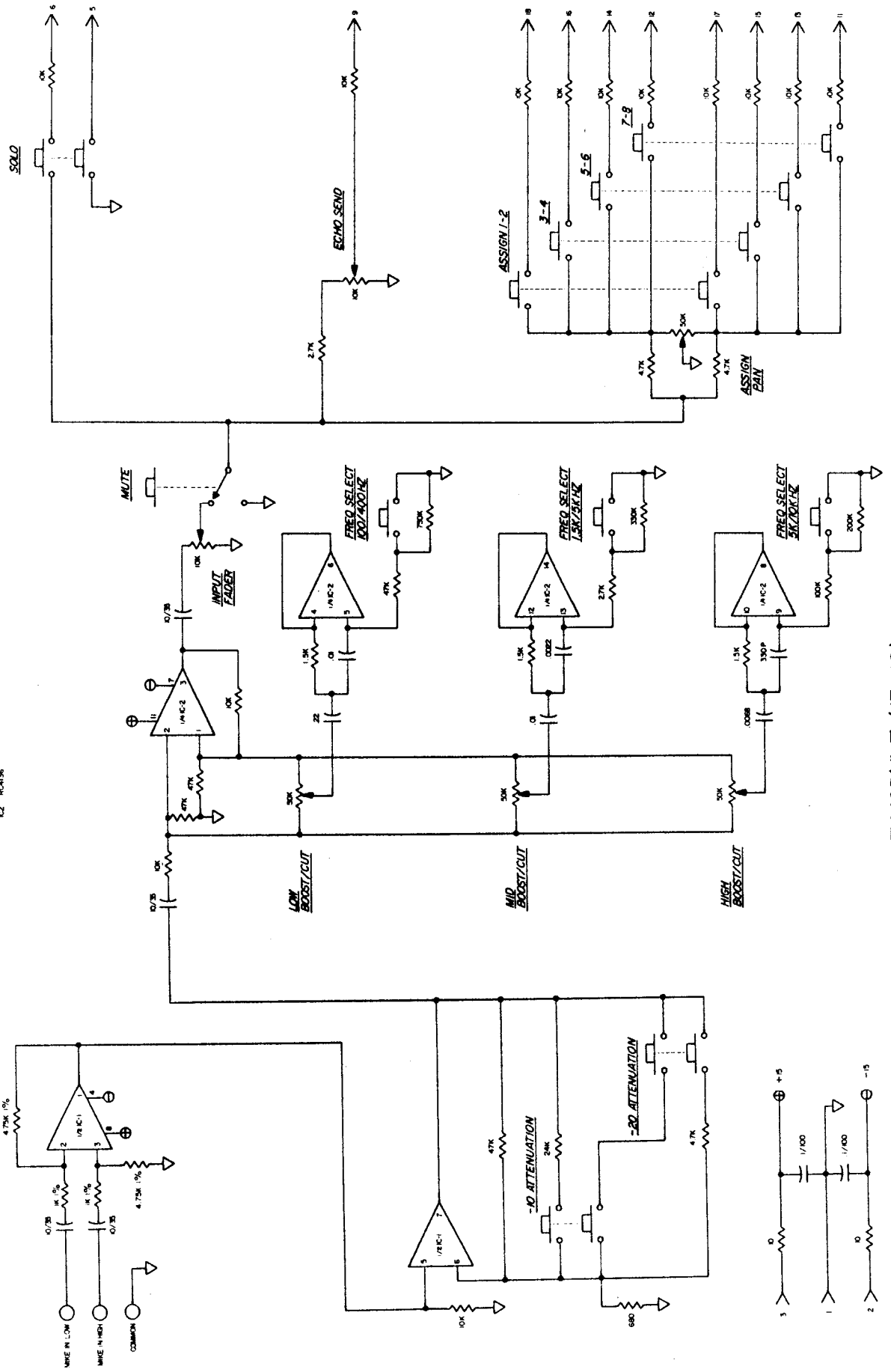
- NOTES:
1. ○--- INDICATES CONNECTIONS TO THE OUTSIDE WORLD
  2. ←--- INDICATES CONNECTIONS TO THE MOTHERBOARD
  3. ALL RESISTOR VALUES IN OHMS, 1/4W, 5%, UNLESS NOTED
  4. IC1 TL072
  - IC2 RC4136



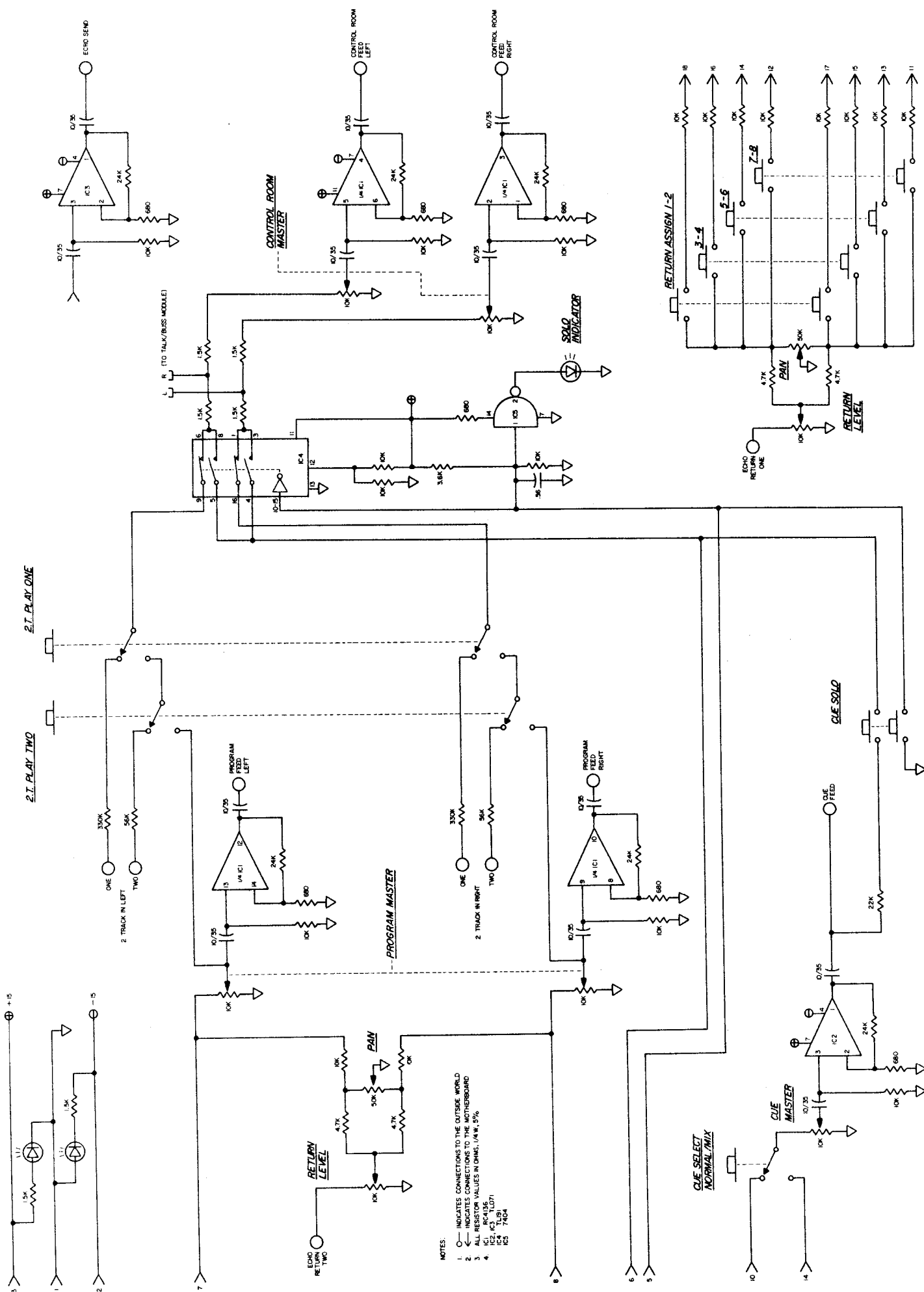
SCHEMATIC - INPUT MODULE (1-12)

NOTES:

- 1. ○ INDICATES CONNECTIONS TO THE OUTSIDE WORLD
- 2. ← INDICATES CONNECTIONS TO THE MOTHERBOARD
- 3. ALL RESISTOR VALUES IN OHMS, 1/4 W, 5%, UNLESS NOTED
- 4. K1 TL072
- 5. K2 RC4136

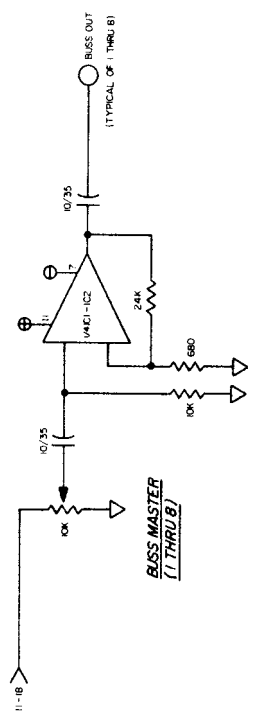


SCHEMATIC - INPUT MODULE (13-16)

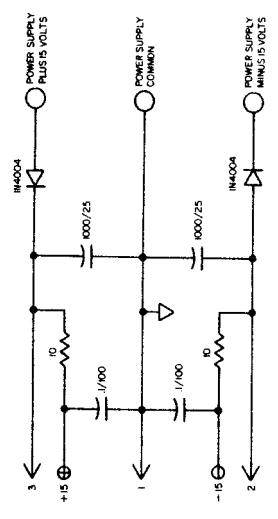
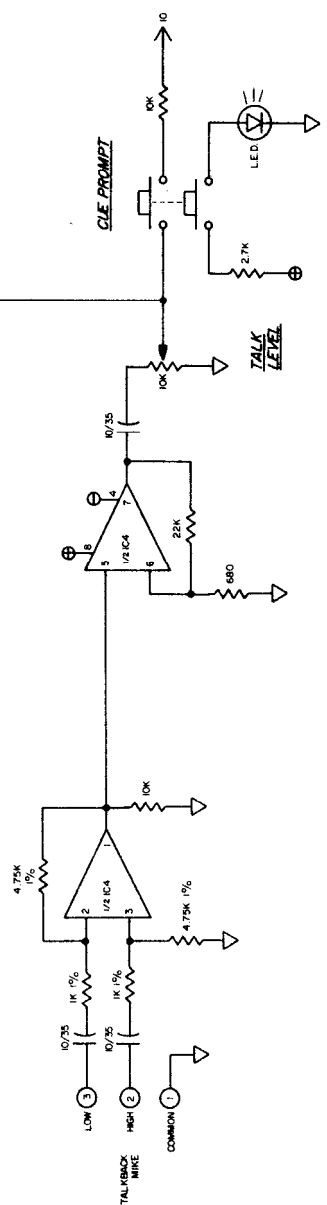
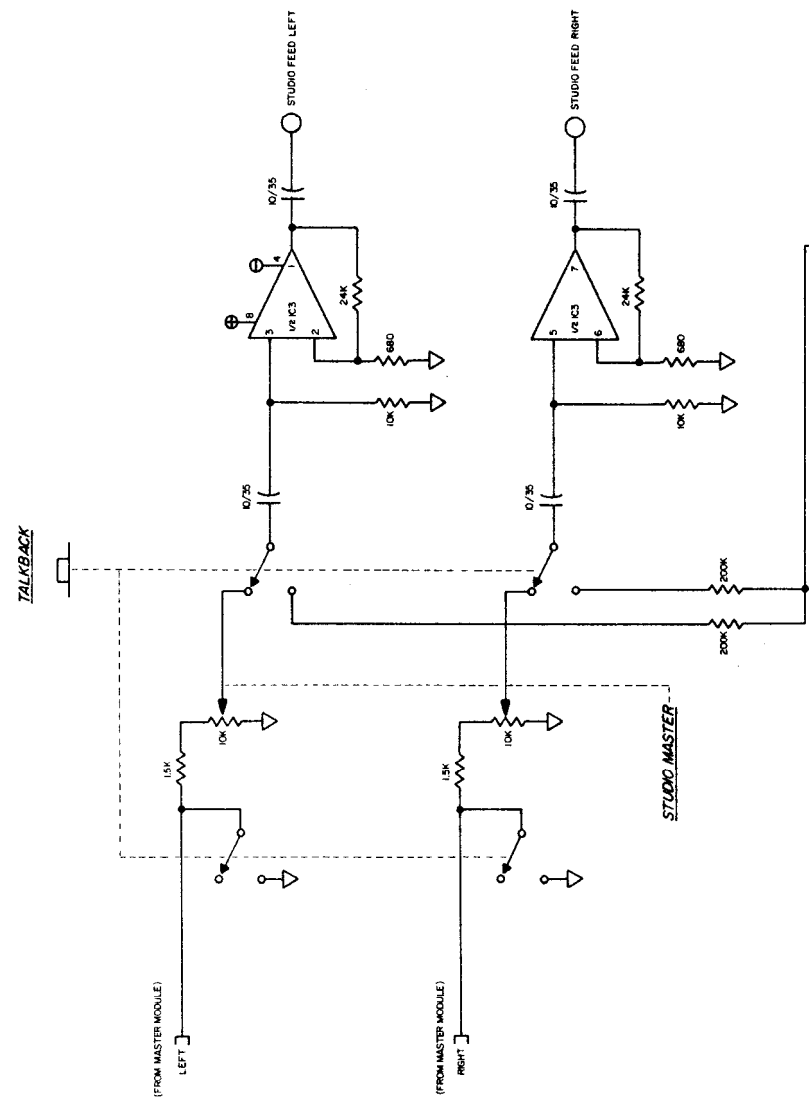


- NOTES:
1. O — INDICATES CONNECTIONS TO THE OUTSIDE WORLD
  2. C — INDICATES CONNECTIONS TO THE MOTHERBOARD
  3. ALL RESISTOR VALUES IN OHMS, 1/4W, 5%
  4. IC1 — RC4136
  5. IC2, IC3, IC4 — 74136
  6. IC5 — 74136

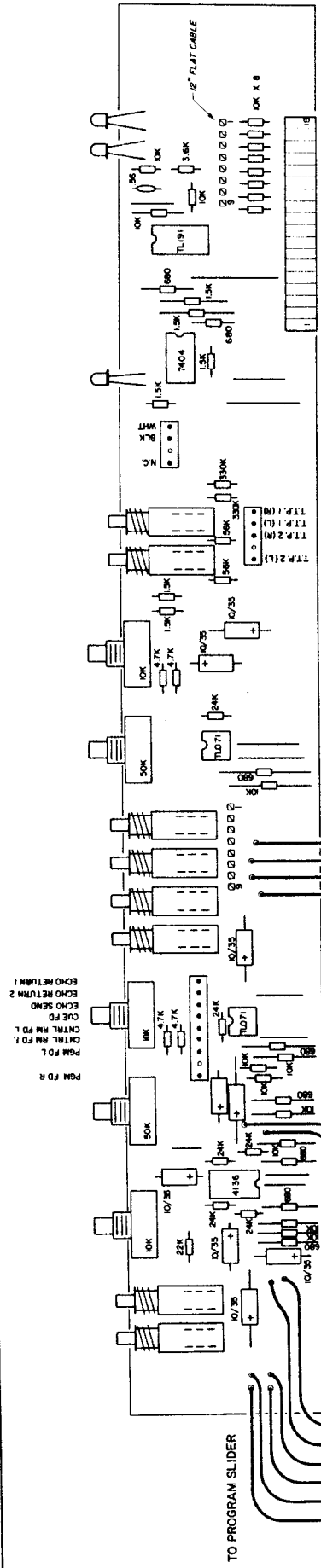
SCHEMATIC - TALK/BUSS MODULE



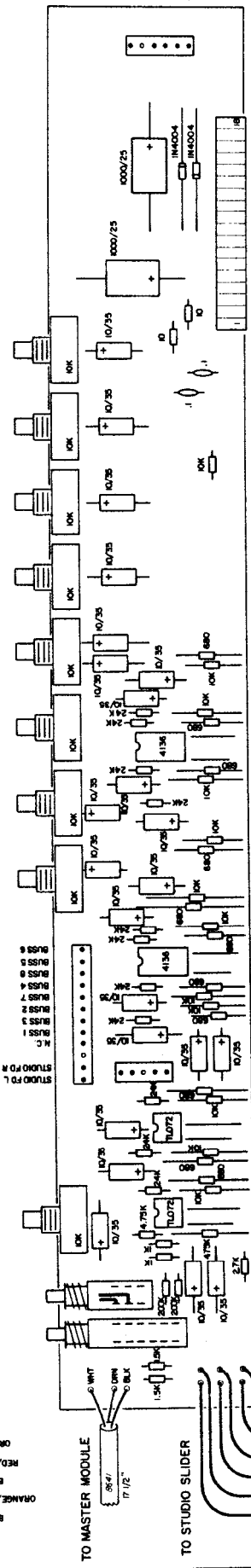
- NOTES:
1.  $\circ$  INDICATES CONNECTIONS TO THE OUTSIDE WORLD
  2.  $\leftarrow$  INDICATES CONNECTIONS TO THE MOTHERBOARD
  3. ALL RESISTOR VALUES IN OHMS, 1/4W, 5%
  4. IC1-IC2 RC4136 IC3-IC4 TL072



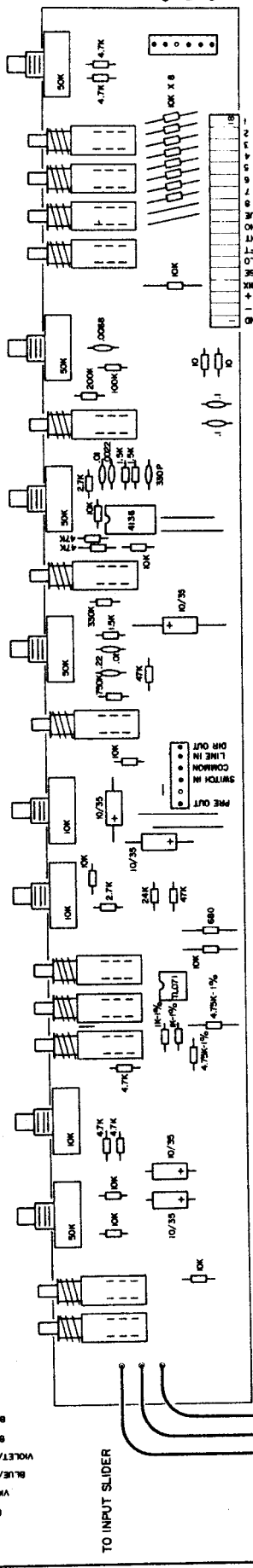
SCHEMATIC - MASTER MODULE



MASTER MODULE



TALK/BUSS MODULE



INPUT MODULE

PWM PD R  
 PFM PD L  
 CTRL. RM PD L  
 CTRL. RM PD R  
 CUE PD  
 ECHO SEND  
 ECHO RETURN 2  
 ECHO RETURN 1

STUDIO PD R  
 BUSS 6  
 BUSS 5  
 BUSS 4  
 BUSS 3  
 BUSS 2  
 BUSS 1  
 N.C.

COMMON  
 N.C.  
 LOW  
 HIGH

SWITCH IN  
 COMMON  
 LINE IN  
 DIR OUT  
 PRE OUT

GROUND  
 CUE IN  
 CUE LEFT  
 CUE RIGHT  
 PFM LEFT  
 PFM RIGHT

TO PROGRAM SLIDER  
 1. RED  
 2. ORANGE  
 3. RED/WHT  
 4. BLACK  
 5. ORANGE/WHT  
 6. BLACK

TO MASTER MODULE  
 1. WHT  
 2. BLK  
 3. 1.5K  
 4. 1.5K  
 5. 1.5K  
 6. 1.5K

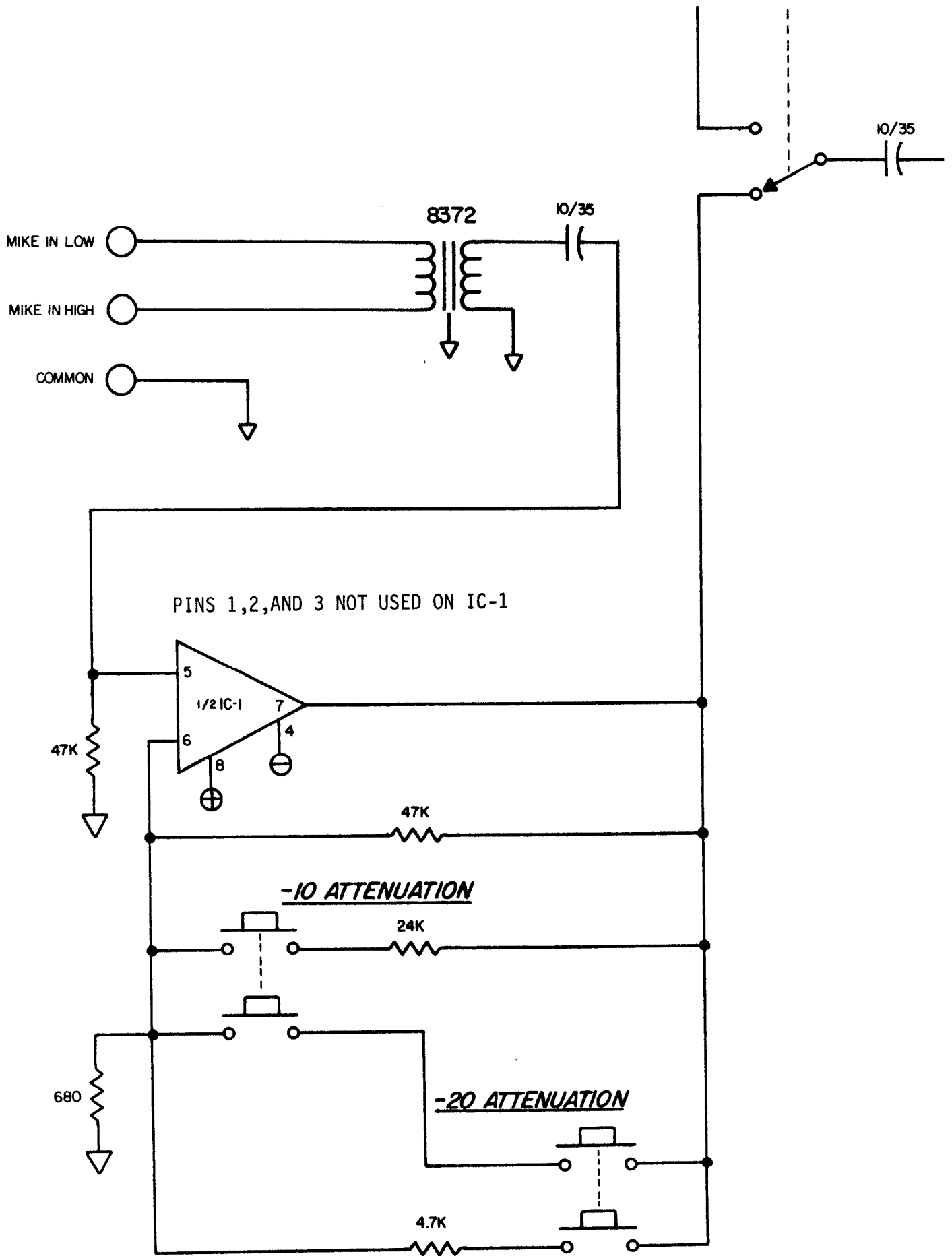
TO STUDIO SLIDER  
 1. 3.12" BLK  
 2. 3.12" VLT  
 3. 3.12" VLT/WHT  
 4. 3.12" BLK  
 5. 3.12" BLK  
 6. 3.12" BLK

TO INPUT SLIDER  
 1. 3.12" BRN/WHT  
 2. 3.12" BLK  
 3. 3.12" BRN

GROUND  
 GND  
 GND  
 GND  
 - SUPPLY  
 + SUPPLY

LINE IN  
 COMMON  
 MAKE IN HIGH  
 MAKE IN LOW  
 COMMON

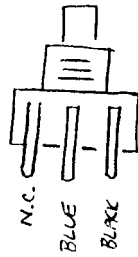
SUPPLEMENTAL INPUT MODULE SCHEMATIC FOR THE "SPECKMIX 16" CONSOLE  
MODEL E-02 WITH TRANSFORMERS



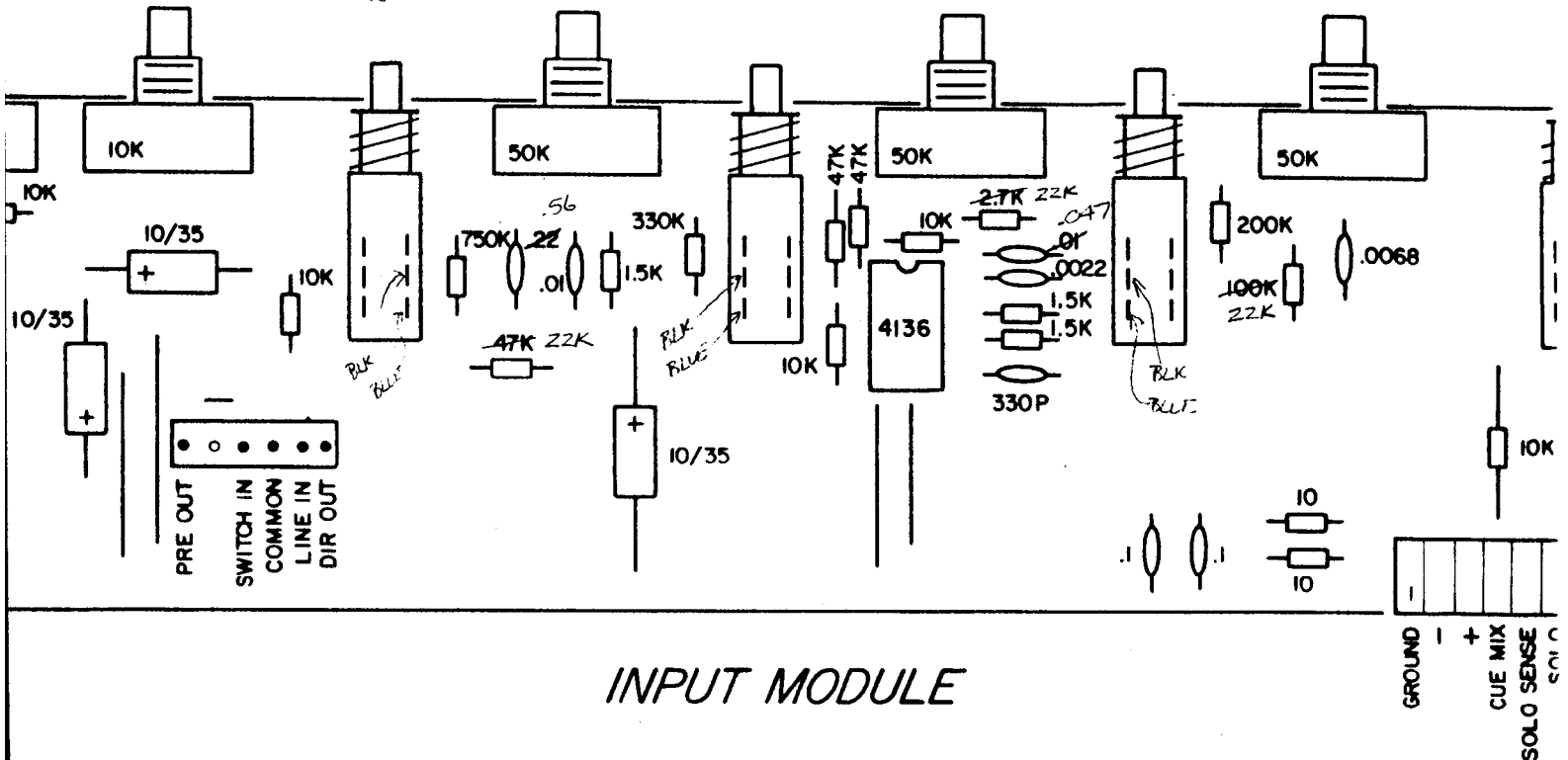




## Modification from 3 band switchable EQ to 3 band sweepable EQ

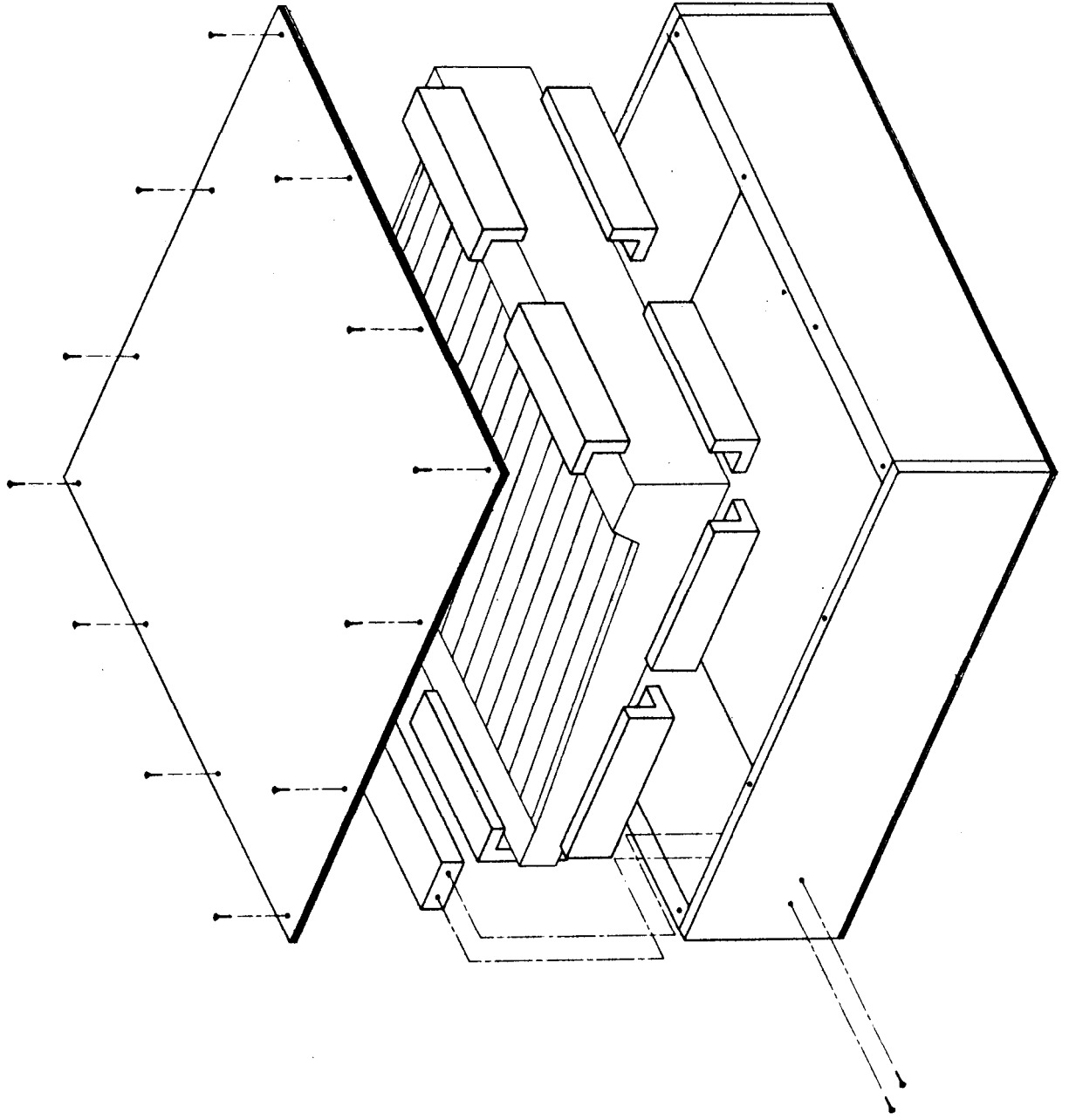


500K (reverse audio taper) 3 places



### INPUT MODULE

- INSTRUCTIONS:
- \*REMOVE THE THREE (3) FREQUENCY SELECT SWITCHES.
  - \*REMOVE THE 47K, 2.7K, AND 100K RESISTORS AS SHOWN ABOVE AND REPLACE WITH 22K RESISTORS.
  - \*REMOVE THE .22 MFD CAP AND REPLACE WITH THE .56 MFD CAP.
  - \*REMOVE THE .01 MFD CAP AS SHOWN ABOVE AND REPLACE WITH THE .047 MFD CAP.
- SOLDER THE BLACK AND BLUE WIRES TO THE CIRCUIT BOARD IN THE POSITIONS THE SWITCHES WERE IN. (3 PLACES)
- SOLDER THE BLACK AND BLUE WIRES TO THE POTS AS SHOWN ABOVE. (3 PLACES)
- WHEN RE-INSTALLING THE INPUT CIRCUIT BOARD, POSITION THE NEW E.Q. POTS SO THE LEADS FACE THE CIRCUIT BOARD.



EXPLODED VIEW OF PACKING CRATE FOR THE "SPECKMIX 16"

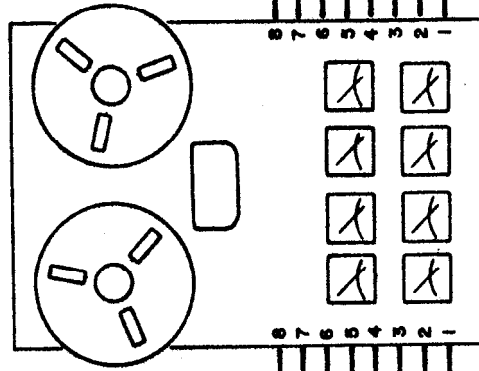
DIAGRAMS SHOWING EQUIPMENT INTERFACE

REAR CONNECTORS ON "SPECKMIX 16"

LINE IN  
8 7 6 5 4 3 2 1

BUSS OUT  
1 2 3 4 5 6 7 8

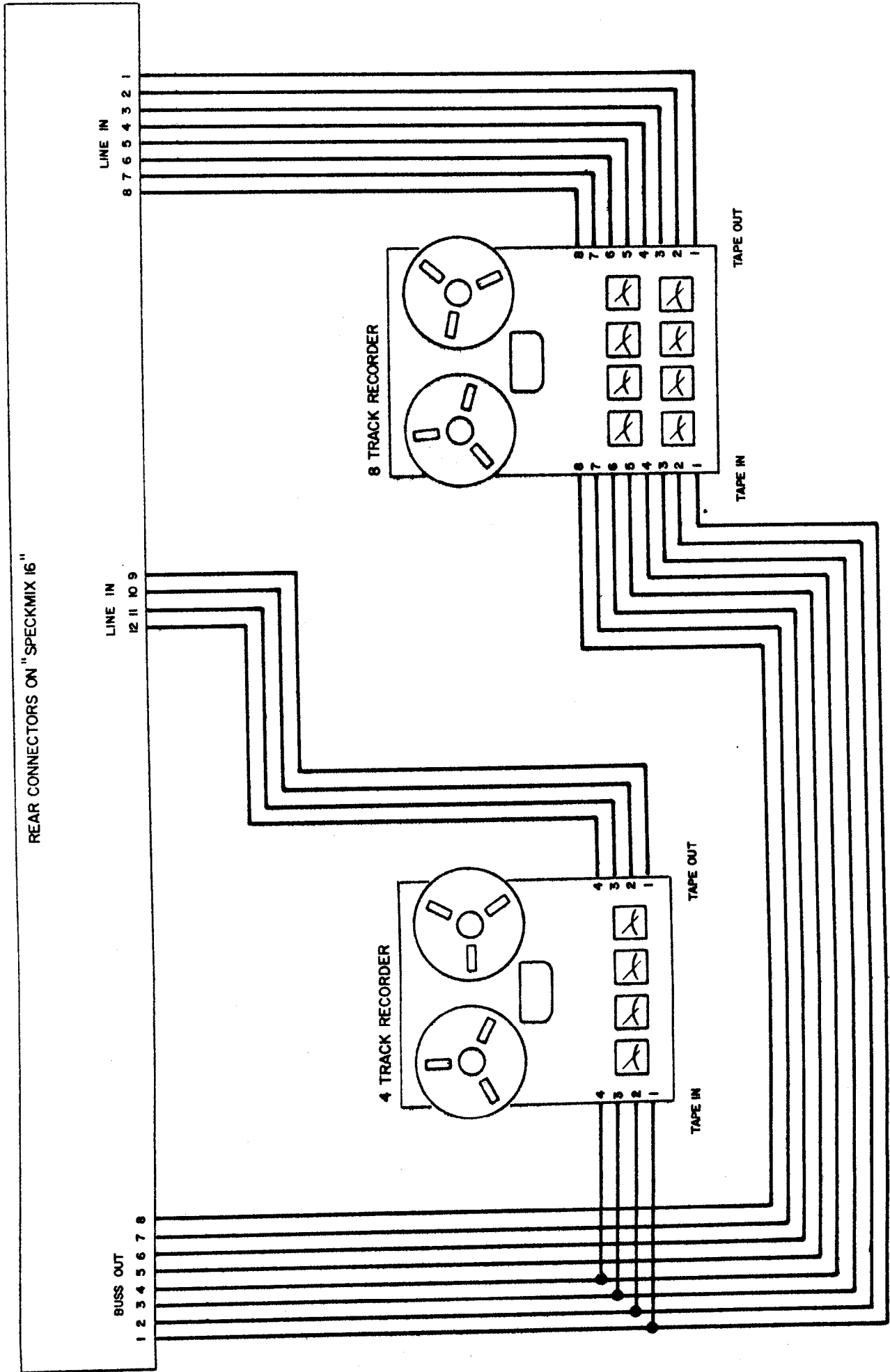
8 TRACK RECORDER



TAPES IN

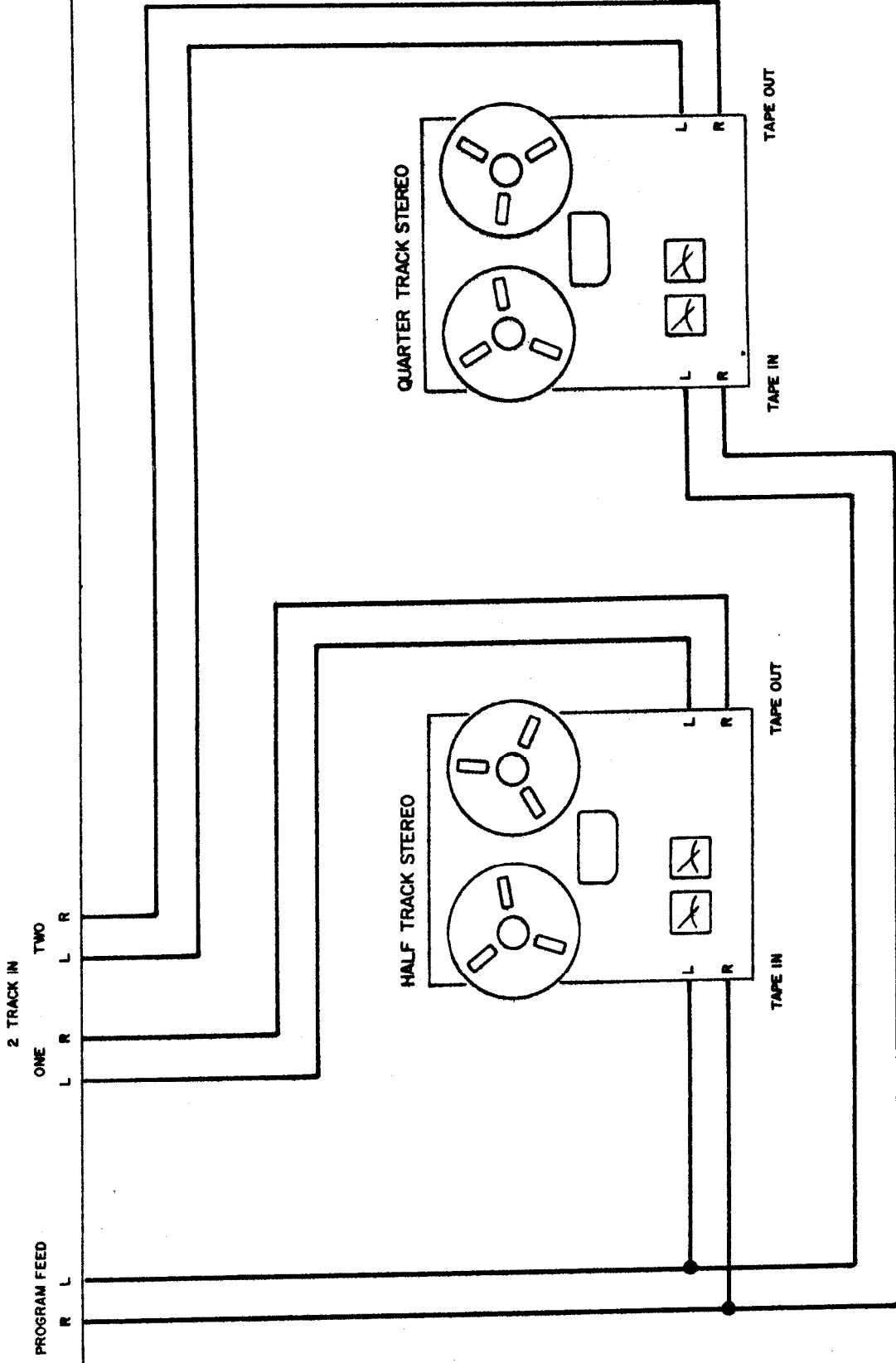
TAPES OUT

RECOMMENDED INTERFACE TO THE 8 TRACK RECORDER



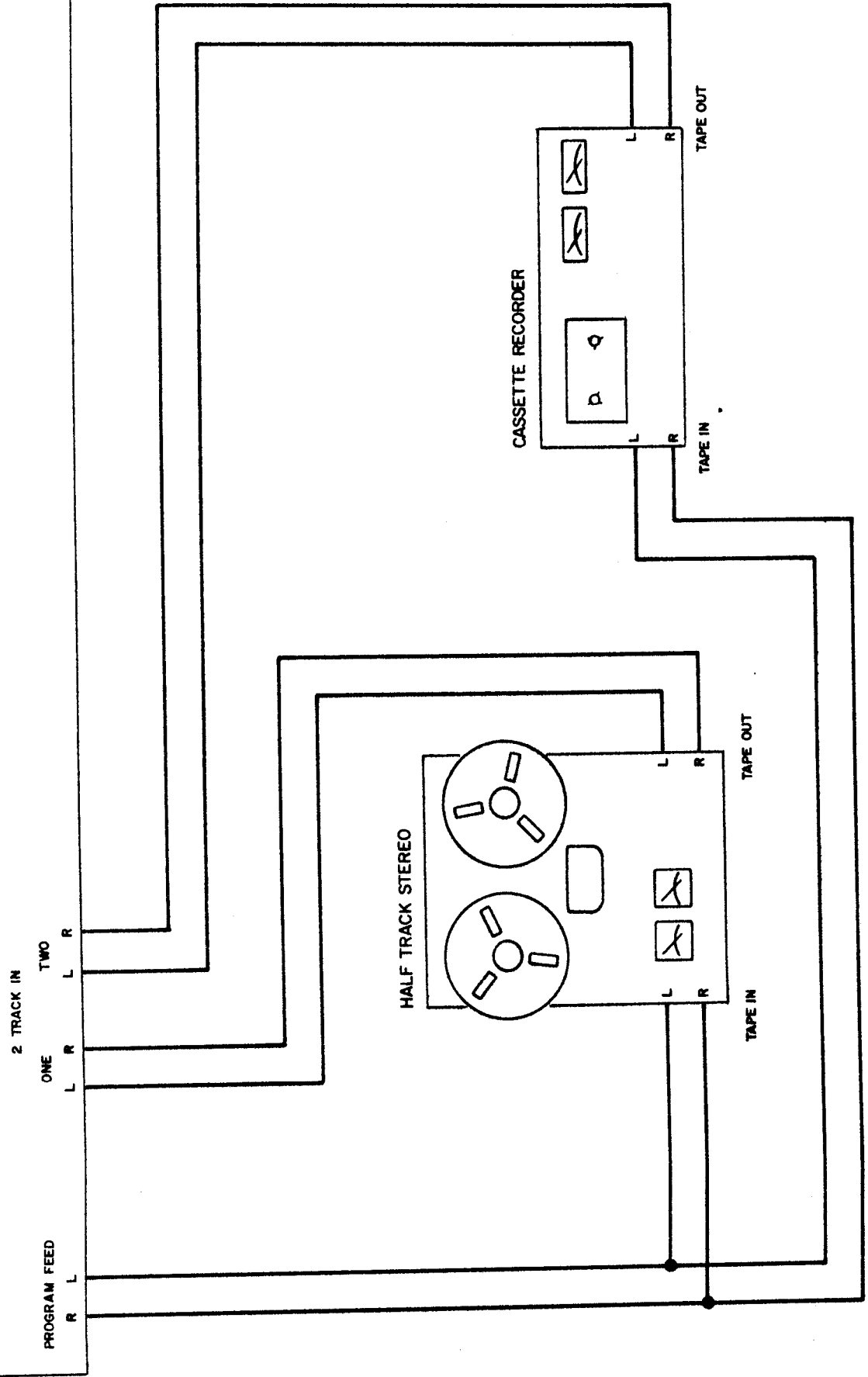
RECOMMENDED INTERFACE TO 4 TRACK AND 8 TRACK RECORDERS

REAR CONNECTORS ON "SPECKMIX 16"

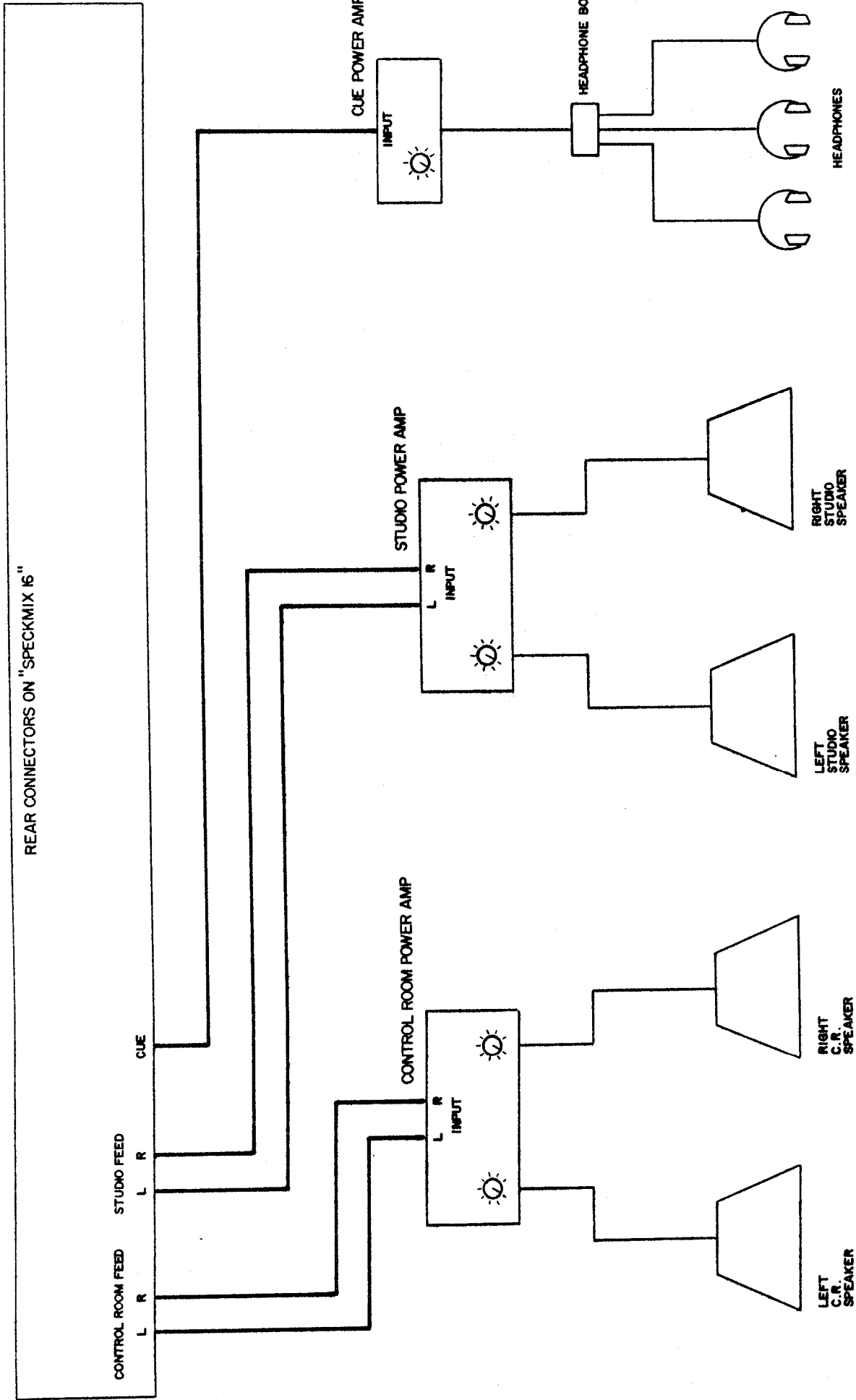


RECOMMENDED INTERFACE TO HALF TRACK AND QUARTER TRACK STEREO RECORDERS

REAR CONNECTORS ON "SPECKMIX 16"

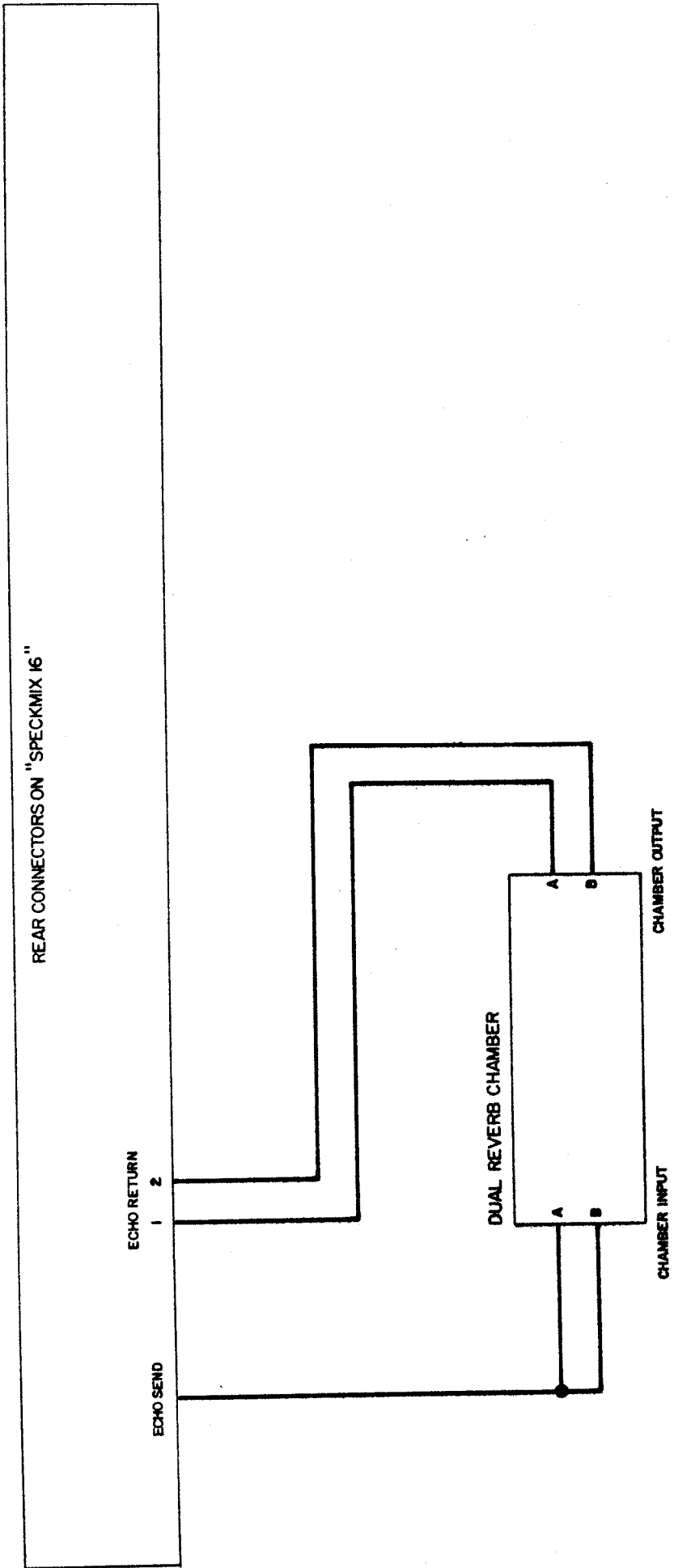


RECOMMENDED INTERFACE TO HALF TRACK AND CASSETTE RECORDERS



RECOMMENDED INTERFACE TO CONTROL ROOM, STUDIO, AND CUE POWER AMPS





RECOMMENDED INTERFACE TO A DUAL CHANNEL REVERB CHAMBER