THE "SPECKMIX MK II" 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. 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.

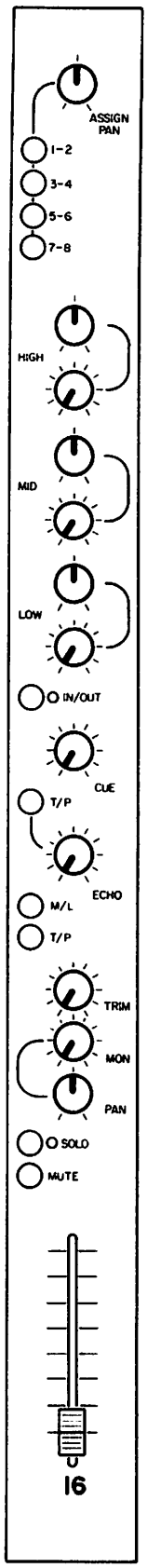
Should a defect develop within one year of purchase from SPECK ELECTRONICS or an authorized dealer, SPECK ELECTRONICS will supply the part or parts necessary at no charge. Labor is covered in this warranty for a period of ninety days. Although console owners should feel free to contact SPECK ELECTRONICS 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,12455 Branford Street, Unit 2, Arleta, California, 91331. 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



INPUT MODULE

[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, direct out, 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 switch in 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] MIKE TRIM This feedback type control adjusts the mike preamp gain.

[7] PGM/TAPE SELECT the alternate action switch selects program or tape output as a source for the monitor and cue controls.

[8] 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. A line level signal such as a synthesizer or drum machine may be plugged into the "patch point" at the rear of each channel. When this is done, the mike/line switch then becomes a line A/line B selector.

[9] ECHO SEND Allows a variable echo send to be sent from each module.

[10] ECHO PGM/TAPE SELECT This pushbutton switch selects the source for the echo send. Either post fader or tape output (pre).

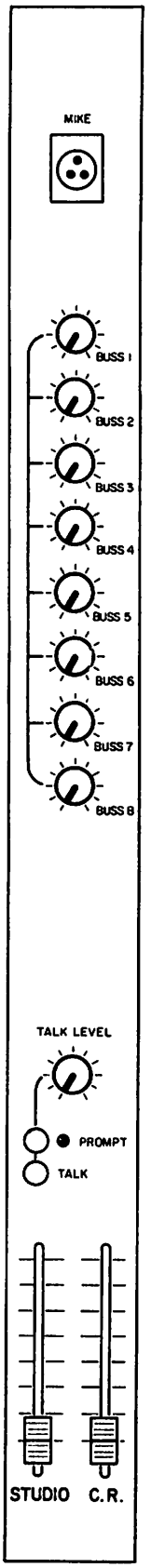
[11] CUE SEND Each input module has a cue send and is used to provide levels to the headphones. Once the operator is satisfied with the equalization settings, mike levels, and buss levels, it sometimes becomes necessary to provide a composit mix to the headphone system. The cue send can also be used as an echo send during mixdown.

[12] EQ IN/OUT This switch allows the audio signal to bypass the equalization section when depressed. An L.E.D. illuminates when the equalizer is in.

[13] EQUALIZER A 6 knob, 3 band, continous frequency sweep quasi-parametric equalizer allows 15 DB of boost or cut for each band.

[14] ASSIGN These 4 pushbutton switches in conjunction with the assign pan control allow assignment of mike or line signals to any combination oof submasters.

[15] ASSIGN PAN Allow continous 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.



[16] 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.

[17] STUDIO SLIDE FADER This slide fader is the master for the studio playback, and may be adjusted independent of the control room playback control.

[18] 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.

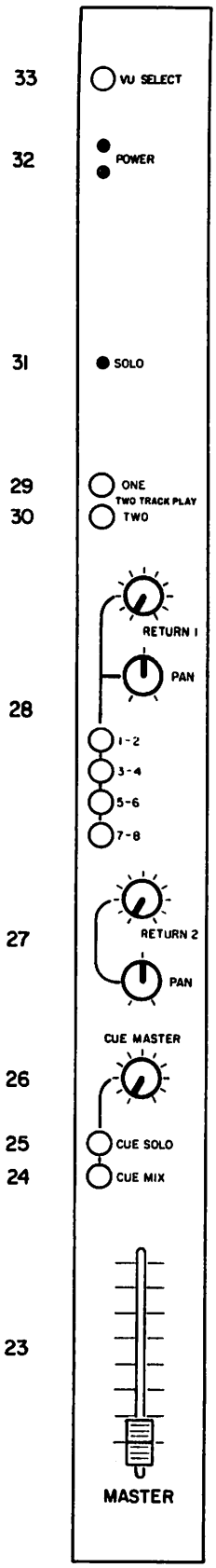
[19] CUE PROMPT This pushbutton allows the operator to talk directly to the headphones without muting the control room speakers. This allows two-way communications between the engineer and the artists... even while the multitrack is recording.

[20] TALK LEVEL This rotary potentiometer is a master level adjustment for the talk and cue prompt feature.

[21] BUSS MASTERS these 8 rotary controls act as masters from 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 varations of the 8 buss masters.

[22] MIKE INPUT The 3 pin XLR connector will accommodate any low inpedence dynamic microphone/gooseneck combination. The microphone may then be positioned for broadcast quality talkback to the studio or headphones.

TALK/BUSS MODULE



MASTER MODULE

[23] 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 signals to the 2 track mixdown recorder(s). 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 or 16 track recorder.

[24] 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.

[25] CUE SOLO Depressing this switch inhibits all other signals allowing the operator to set a headphone mix via the control room playback.

[26] CUE MASTER This control acts as the master playback for the headphone buss.

[27] 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.

[28] ECHO RETURN, PAN, AND ASSIGN-ONE This echo return section is similar to echo return two except it allows the echo 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. This return section also return to the stereo program signal and may be inhibited only when the 1-2 assign is depressed.

[29] 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.

[30] 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.

[31] SOLO INDICATOR This L.E.D. indicates the operation of a solo switch on the console and is in addition to the L.E.D. on each solo switch. 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.

[32] POWER INDICATOR The L.E.D.s when illuminated indicate the operation of the dual output power supply that powers the console's audio circuits.

[33] V.U. SELECT In the normal position (up) V.U meters 7 and 8 indicate the levels from buss out 7 and 8. When the switch is depressed (down) V.U. meters 7 and 8 indicates the levels from the left and right program master output.

SPECIFICATIONS
Speckmix Mk II Rev. B

MICROPHONE INPUT IMPEDENCE	150 OHMS
LINE INPUT IMPEDENCE	10K OHMS
PATCH POINT RETURN IMPEDENCE	10K OHMS
ECHO RETURN INPUT IMPEDENCE	10K OHMS
2 TRACK-ONE INPUT IMPEDENCE	10K OHMS
2 TRACK-TWO INPUT IMPEDENCE	10K OHMS

BUSS OUTPUT IMPEDENCE
MIKE PREAMP OUTPUT IMPEDENCE (PATCH POINT)
DIRECT OUT IMPEDENCE (INTERNAL POINT)
CUE FEED OUTPUT IMPEDENCE
CONTROL ROOM OUTPUT IMPEDENCE
STUDIO OUTPUT IMPEDENCE
PROGRAM FEED OUTPUT IMPEDENCE
ECHO SEND OUTPUT IMPEDENCE

ALL LINE OUTPUTS ARE DESIGNED TO DRIVE A 600 OHM LOAD AND MAY BE OPERATED INTO ANY LOAD 600 OHMS OR GREATER

	NORMAL	MAXIMUM
MICROPHONE INPUT LEVEL	-50 DBV	+ 5 DBV
LINE INPUT LEVEL	+ 4 DBV	+24 DBV
2 TRACK 1 INPUT LEVEL	+ 4 DBV	+24 DBV
2 TRACK 2 INPUT LEVEL	-10 DBV	+20 DBV
ECHO RETURN INPUT LEVEL	-10 DBV	+22 DBV

	NORMAL	MAXIMUM
DIRECT OUTPUT LEVEL	+ 4 DBV	+21 DBV
BUSS OUTPUT LEVEL	+ 4 DBM (0 VU)	+22 DBM
CUE OUTPUT LEVEL	-10 DBV	+22 DBV
PROGRAM FEED OUTPUT LEVEL	+ 4 DBM (0 VU)	+22 DBM
CONTROL ROOM FEED OUTPUT LEVEL	-10 DBV	+22 DBV
STUDIO FEED OUTPUT LEVEL	-10 DBV	+22 DBV
ECHO SEND OUTPUT LEVEL	+ 1 DBV	+22 DBV

OUTPUT BUSS HEADROOM +18 DB ABOVE 0 VU

	NORMAL	MAXIMUM
OUTPUT DISTORTION	.05% @ +4 DBV	.1% @ +22 DBV

FREQUENCY RESPONSE (MIKE IN/BUSS OUT) 15Hz (-1 DB) TO 20k Hz (-1 DB)

TEST CONDITIONS: -50 DBV SIGNAL AT MIKE INPUT.
MIKE/LINE SWITCH IN MIKE POSITION.
INPUT SLIDE FADER AT #10.
MIKE TRIM SET FOR FULL GAIN.
EQUALIZER SWITCH SET OUT.
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.

SPECIFICATIONS
Speckmix Mk II Rev. B

FREQUENCY RESPONSE (LINE IN/PGM OUT) 18Hz(-.5DB) TO 140K Hz(-.5DB)

TEST CONDITIONS: +4 DBV SIGNAL AT LINE INPUT.
MIKE/LINE SWITCH IN LINE POSITION.
INPUT FADER SET AT #10.
EQUALIZER SWITCH SET OUT.
MONITOR POT SET TO MAXIMUM.
PAN POT SET TO CENTER.
MASTER FADER SET AT #0.
FREQUENCY RESPONSE MEASURED AT PROGRAM FEED-LEFT.

NOISE MEASURMENT (MIKE IN/BUSS OUT)

TEST CONDITIONS: -50 DBV SIGNAL AT MIKE INPUT.
MIKE/LINE SWITCH IN MIKE POSITION.
INPUT SLIDE FADER SET AT #10.
EQUALIZER SWITCH SET OUT.
ASSIGN SWITCH 1-2 DEPRESSED.
SUBMASTER #1 ADJUSTED TO INDICATE 0 VU (+4 DBM) ON METER #1.
INPUT SIGNAL REMOVED.
NOISE MEASURED AT BUSS OUTPUT #1 WITH UNWEIGHTED FILTER.
MIKE TRIM POT SET AT MAXIMUM GAIN. -60 DBV
MIKE TRIM POT SET AT MINIMUM GAIN. -72 DBV

NOISE MEASURMENT (LINE IN/PGM OUT) -80 DBV

TEST CONDITIONS: +4 DBV SIGNAL AT LINE INPUT.
MIKE/LINE SWITCH IN LINE POSITION.
EQUALIZER SWITCH SET OUT.
MONITOR POT SET TO MAXIMUM.
PAN POT CENTERED.
MASTER SLIDER SET A #0.
ADJUST INPUT SLIDE FADER TO INDICATE 0 VU (+4 DBM) AT PROGRAM FEED OUTPUT-LEFT.
INPUT SIGNAL REMOVED AND TERMINATED WITH 10K OHMS.
NOISE MEASURED AT PROGRAM FEED OUTPUT-LEFT WITH A UNWEIGHTED FILTER.

LOW EQUALIZATION 50Hz-500Hz, 15 DB BOOST OR CUT
MID EQUALIZATION 500Hz-5KHz, 15 DB BOOST OR CUT
HIGH EQUALIZATION 5KHz-15KHz, 15 DB BOOST OR CUT

RECOMMENDED TALKBACK MICROPHONE AND XL ADAPTER
MIKE: SHURE MODEL 572-G
ADAPTER: SWITCHCRAFT P3M

POWER REQUIREMENTS BI-POLAR 16.5 VOLTS D.C., 1.25 AMP

DIMENSIONS WIDTH 35 3/8"(89.85cm)DEPTH 28"(71.12cm)HIGH 8"(20.cm)

SHIPPING WEIGHT (CRATED) APPROXMATELY 110 LBS (49.9kg)

POWER SUPPLY SPECIFICATIONS

HLD.12-1.5

OUTPUT SPECIFICATIONS:

OUTPUT RATING CHART			
	VOLTS	AMPS STEADY	SURGE
or	+12	1.8	
	+15	1.5	
or	-12	1.8	
	-15	1.5	

Line Regulation ..... ± 0.01% for 10% change

Load Regulation ..... ± 0.02% for 50% change

Ripple ..... 3.0mV maximum peak-to-peak

DC Output Adjustment Range ..... ± 5% minimum

Overload Protection ..... Automatic current limit / foldback

Reverse Voltage Protection ..... Provided on outputs

Transient Response Time ..... 50 μSec. at 50% load changes

INPUT SPECIFICATIONS:

Voltages ..... 115VAC & 230VAC (± 10%)

Frequency Range 47-440Hz
(10% derated output current for 50Hz units)

AC CONNECTION TABLE		
FOR USE AT	115V A.C.	230V A.C.
JUMPER	1-2, 3-4	2 - 3
APPLY A.C. AT	1 & 4	1 & 4
FUSE INPUT AT	1.0A	0.5A

GENERAL SPECIFICATIONS:

Operating Temperature Range ..... 0 to + 50°C
(Derate to 40% at + 70°C)

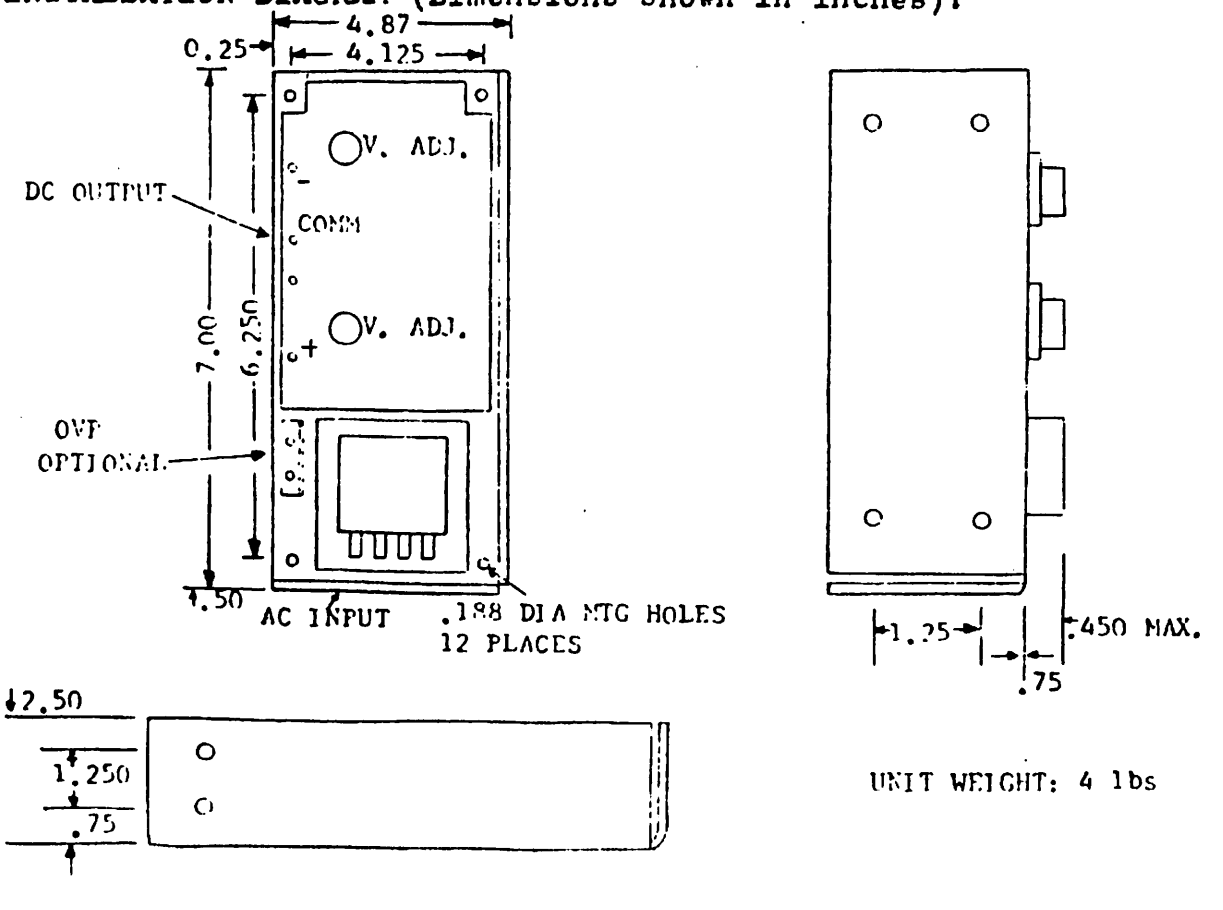
Temperature Coefficient (Typical) ..... ± 0.01%/°C

Stability ..... Within ± 0.05% (for 24 Hours after warm-up)

Vibration ..... Per MIL-STD-810C; Method 514

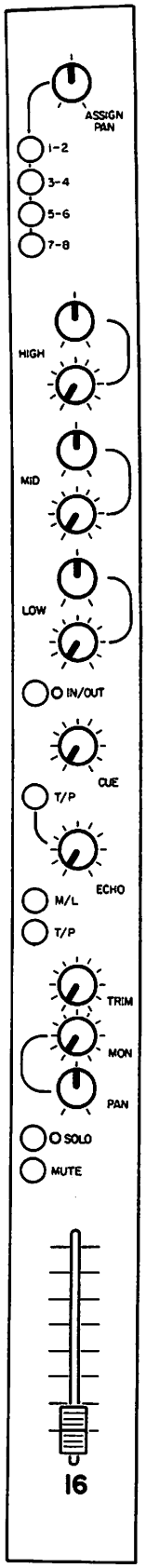
Shock ..... Per MIL-STD-810C; Method 516

INSTALLATION DIAGRAM (Dimensions shown in inches):

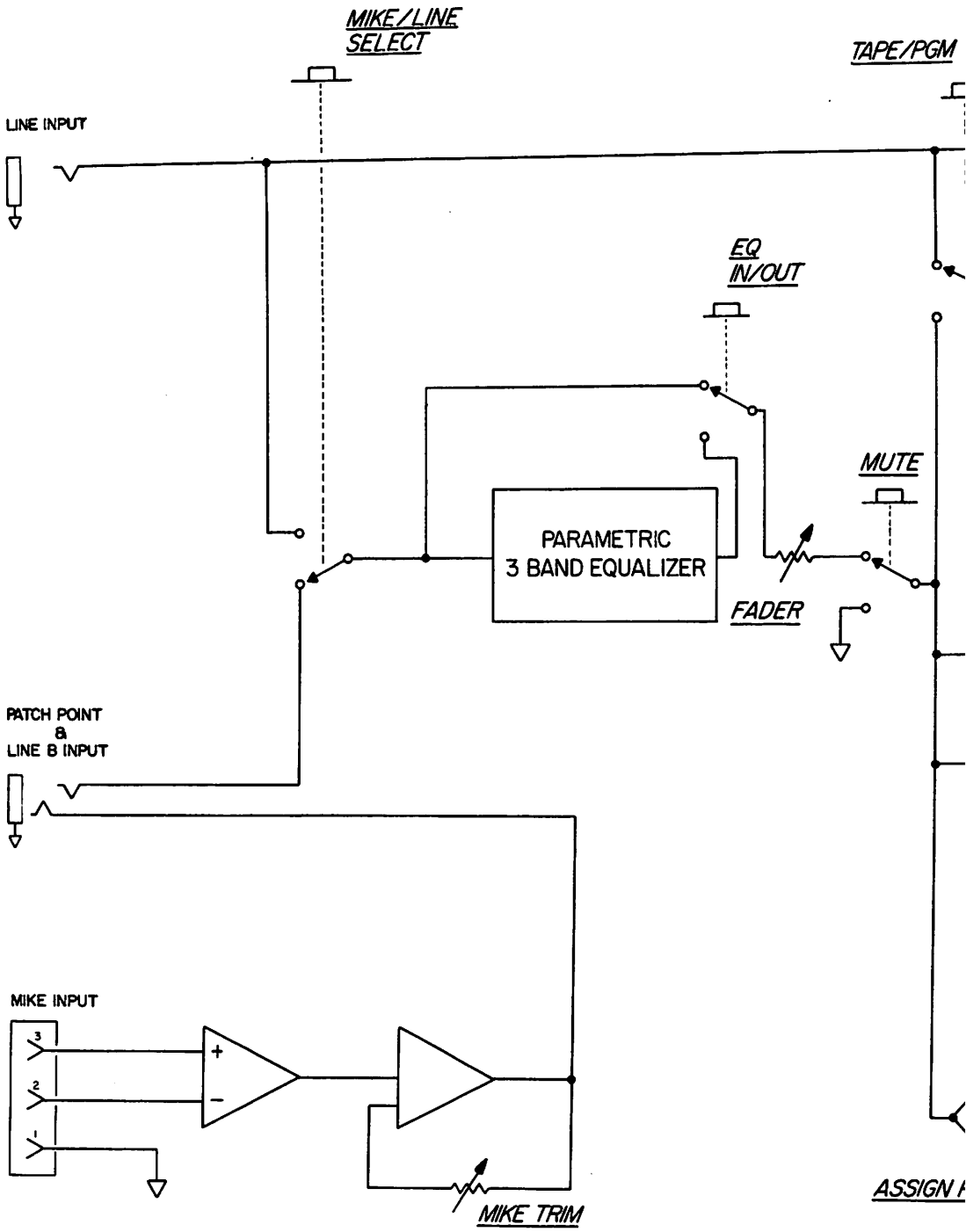


UNIT WEIGHT: 4 lbs

Signal Flow Diagrams

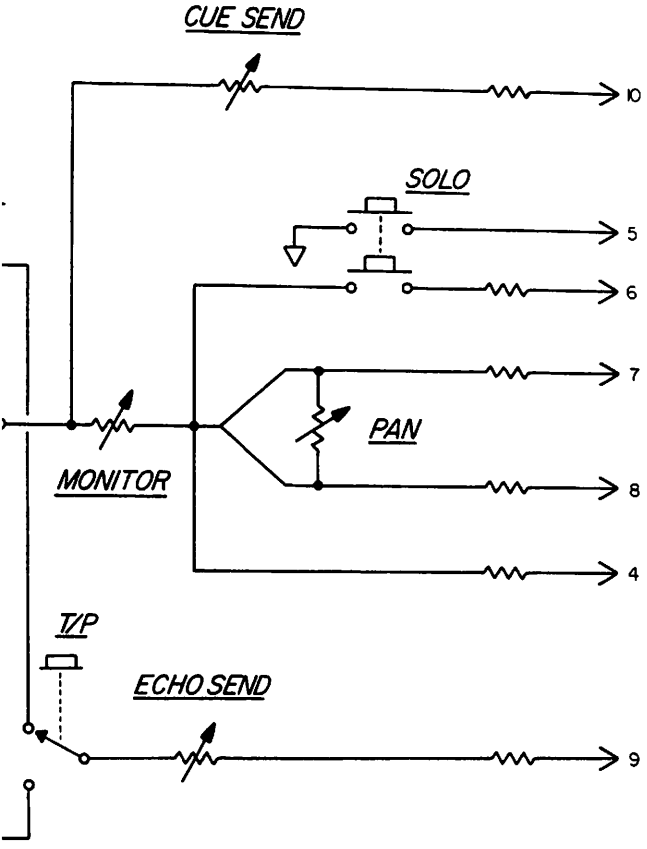


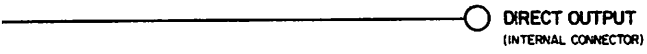
INPUT MODULE

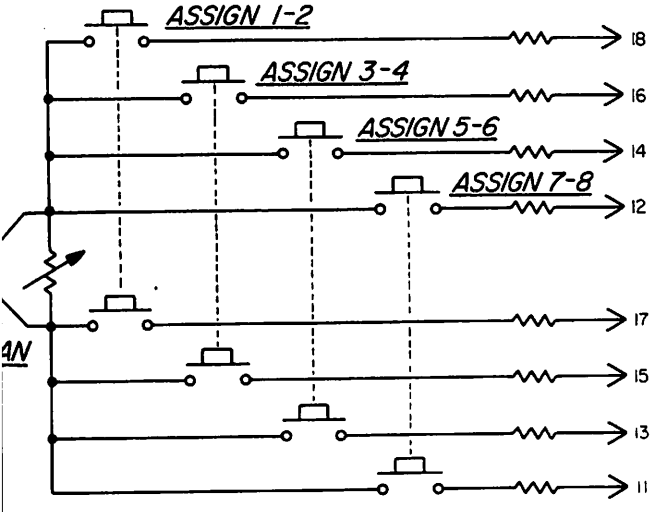


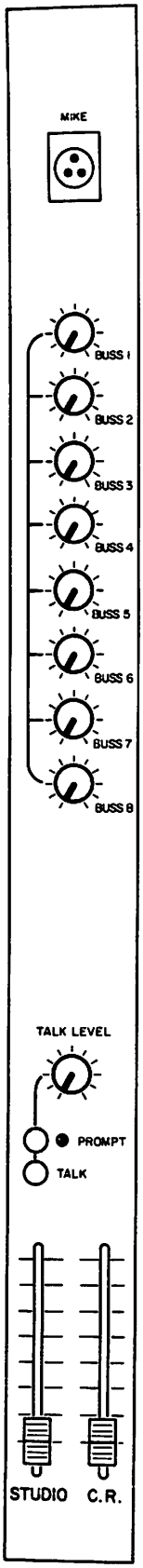
NOTES:

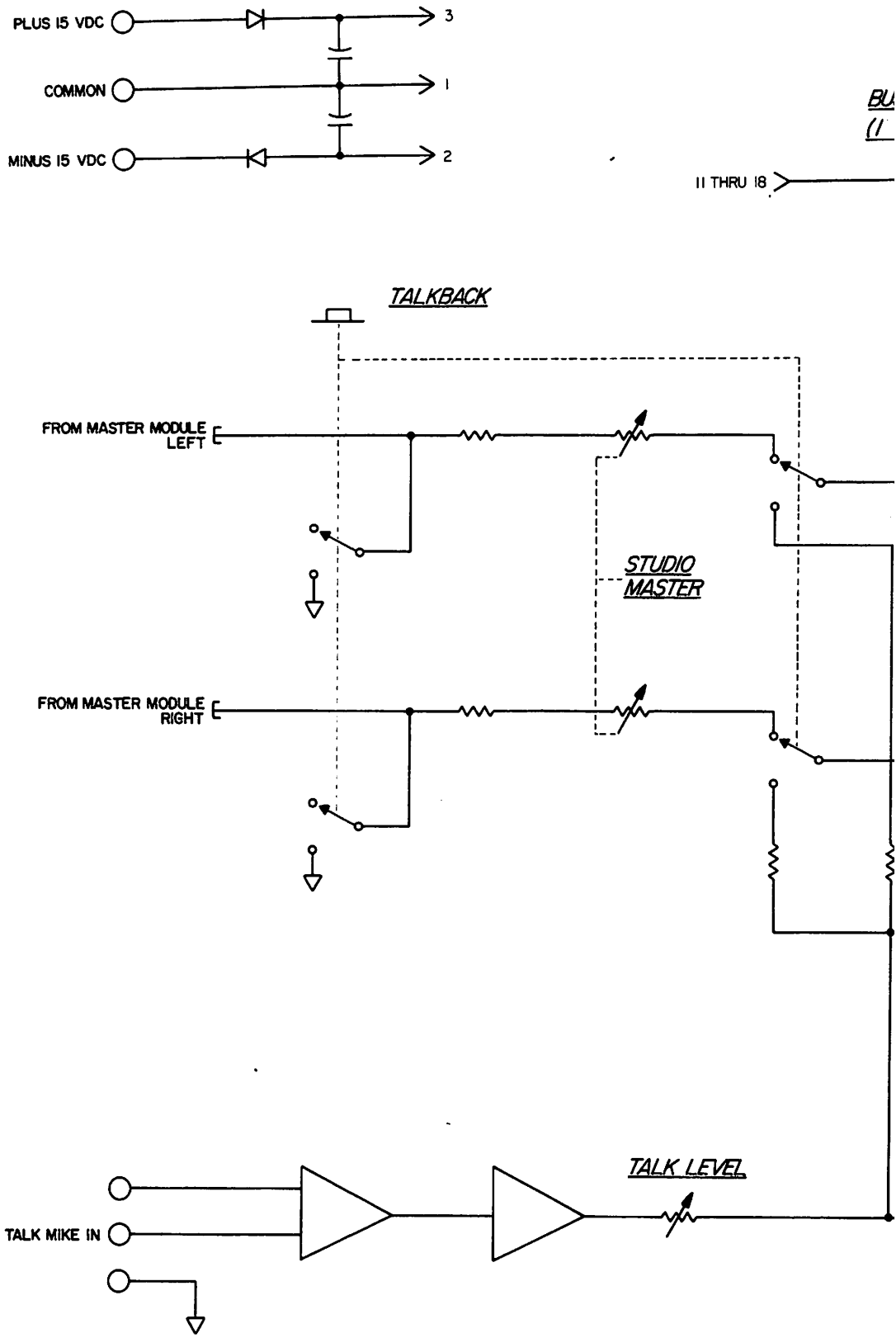
← INDICATES MOTHERBOARD CONNECTIONS


CUE SEND
10
SOLO
5
6
7
PAN
8
MONITOR
4
T/P
ECHO SEND
9


DIRECT OUTPUT
(INTERNAL CONNECTOR)

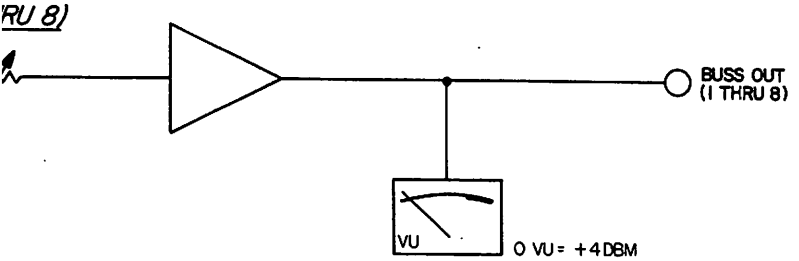

ASSIGN 1-2
18
ASSIGN 3-4
16
ASSIGN 5-6
14
ASSIGN 7-8
12
17
15
13
11

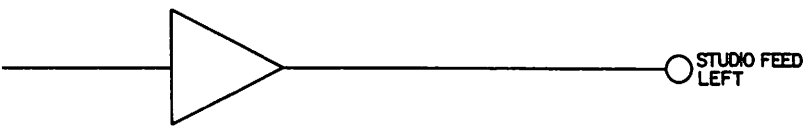


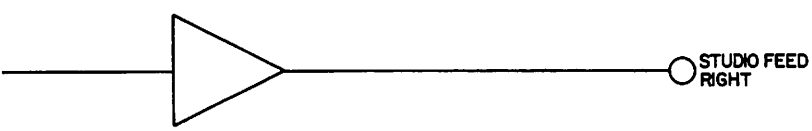


TALK/BUSS MODULE

MASTER
RU 8)



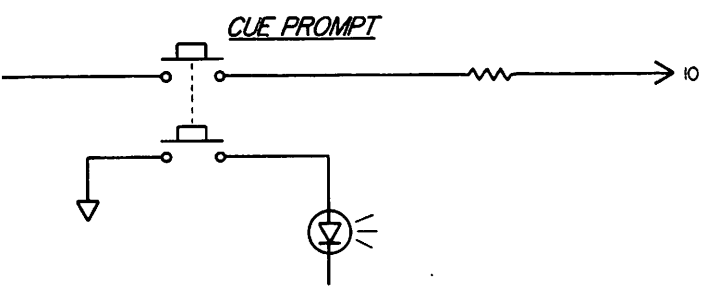


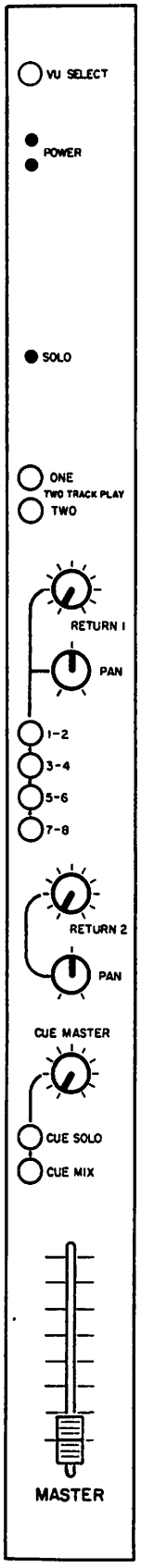


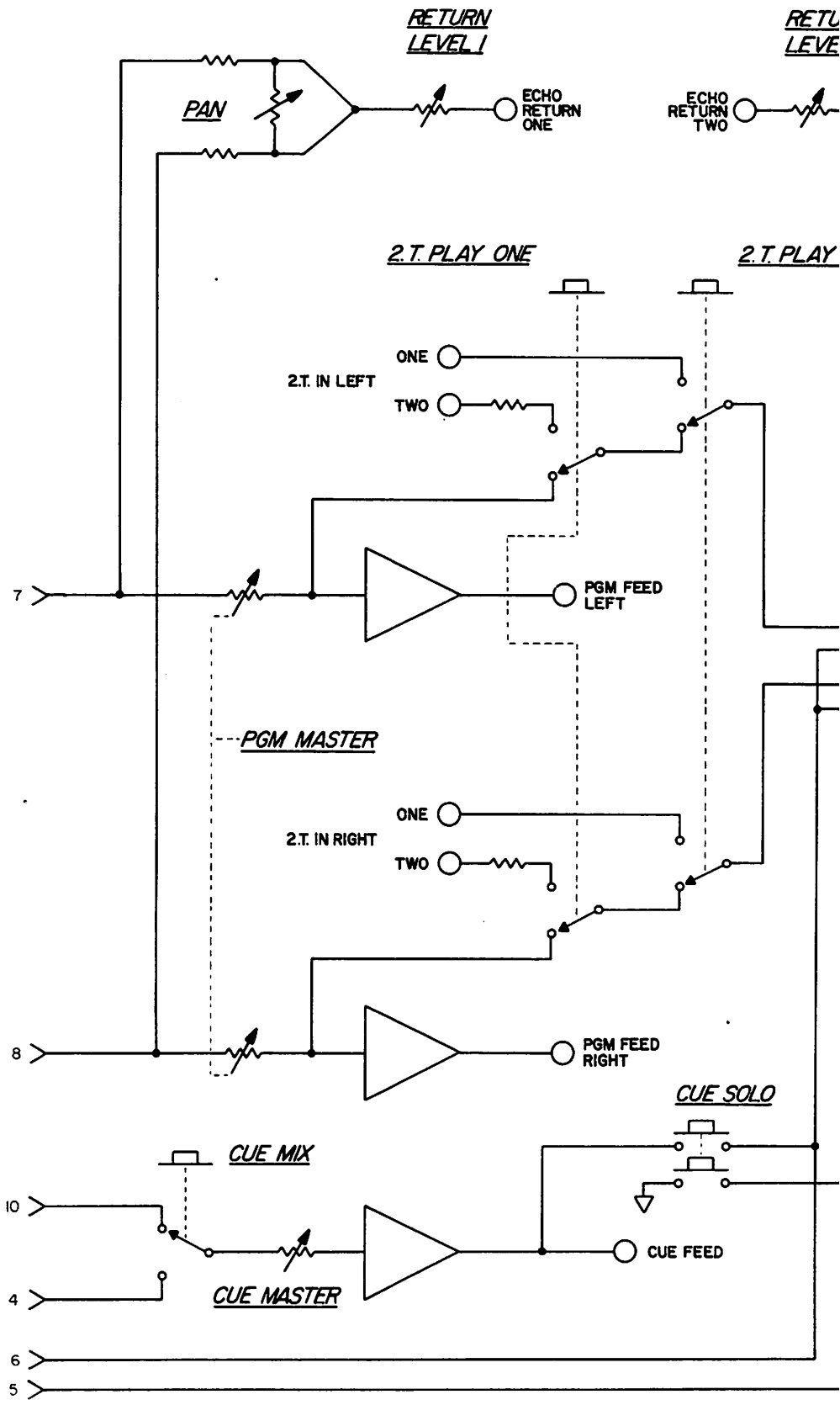
NOTES:

- ○— INDICATES CONNECTION TO THE OUTSIDE WORLD
- ← INDICATES MOTHERBOARD CONNECTIONS
- ⋹ INDICATES CONNECTION TO MASTER MODULE

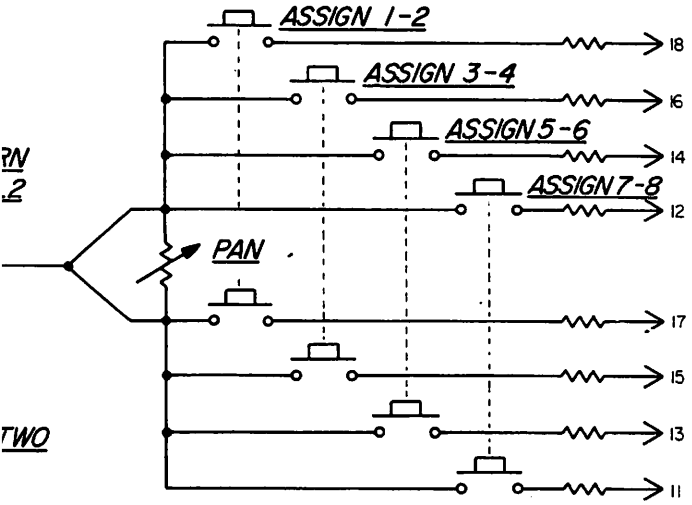
CUE PROMPT

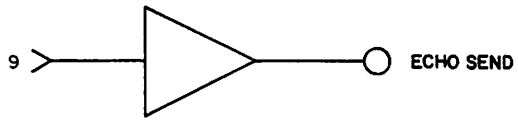


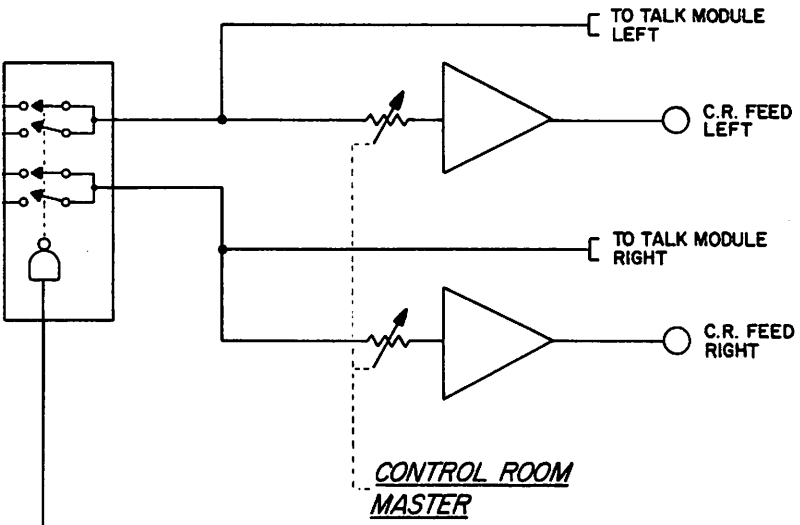


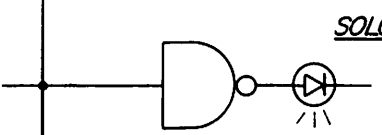


MASTER MODULE





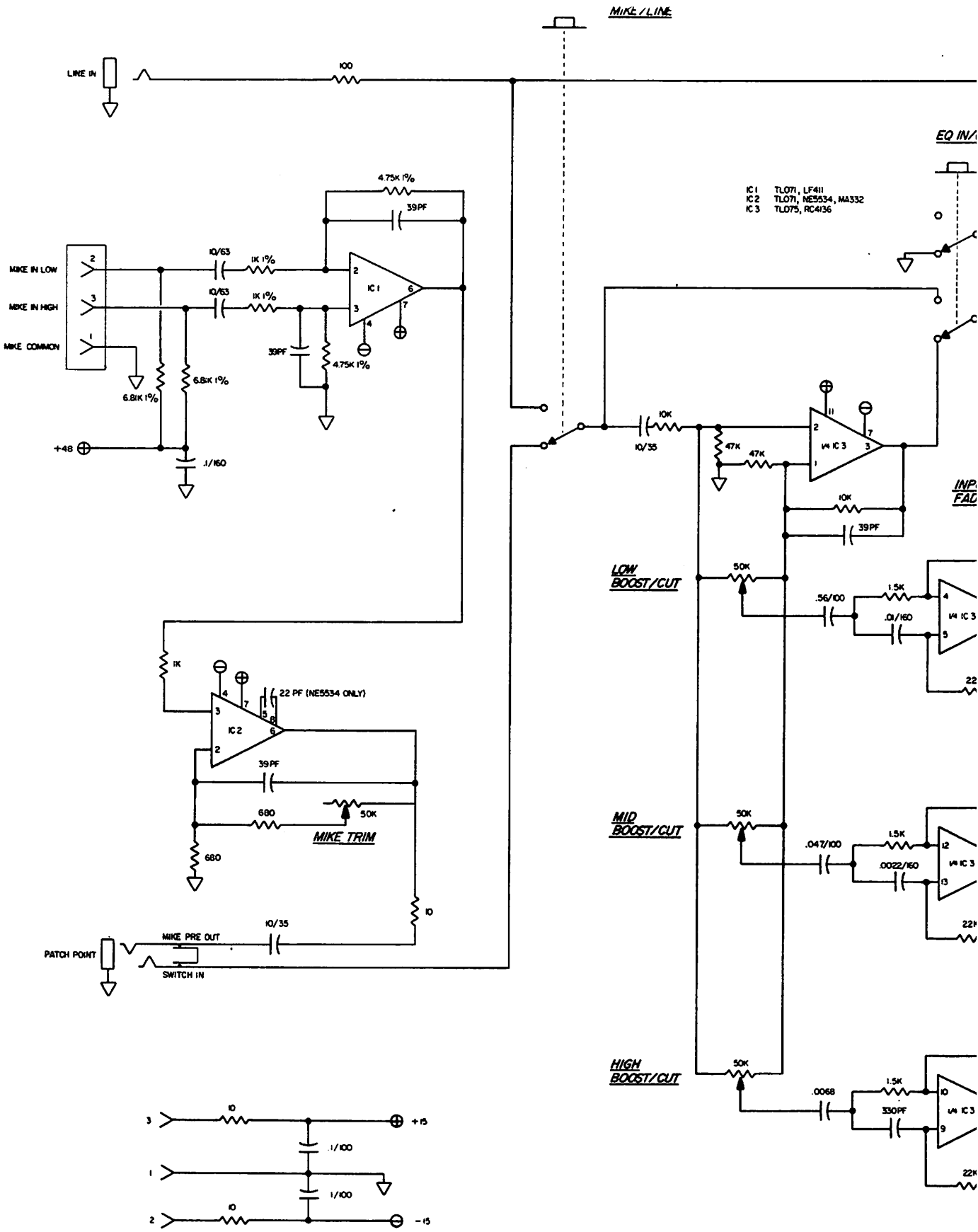




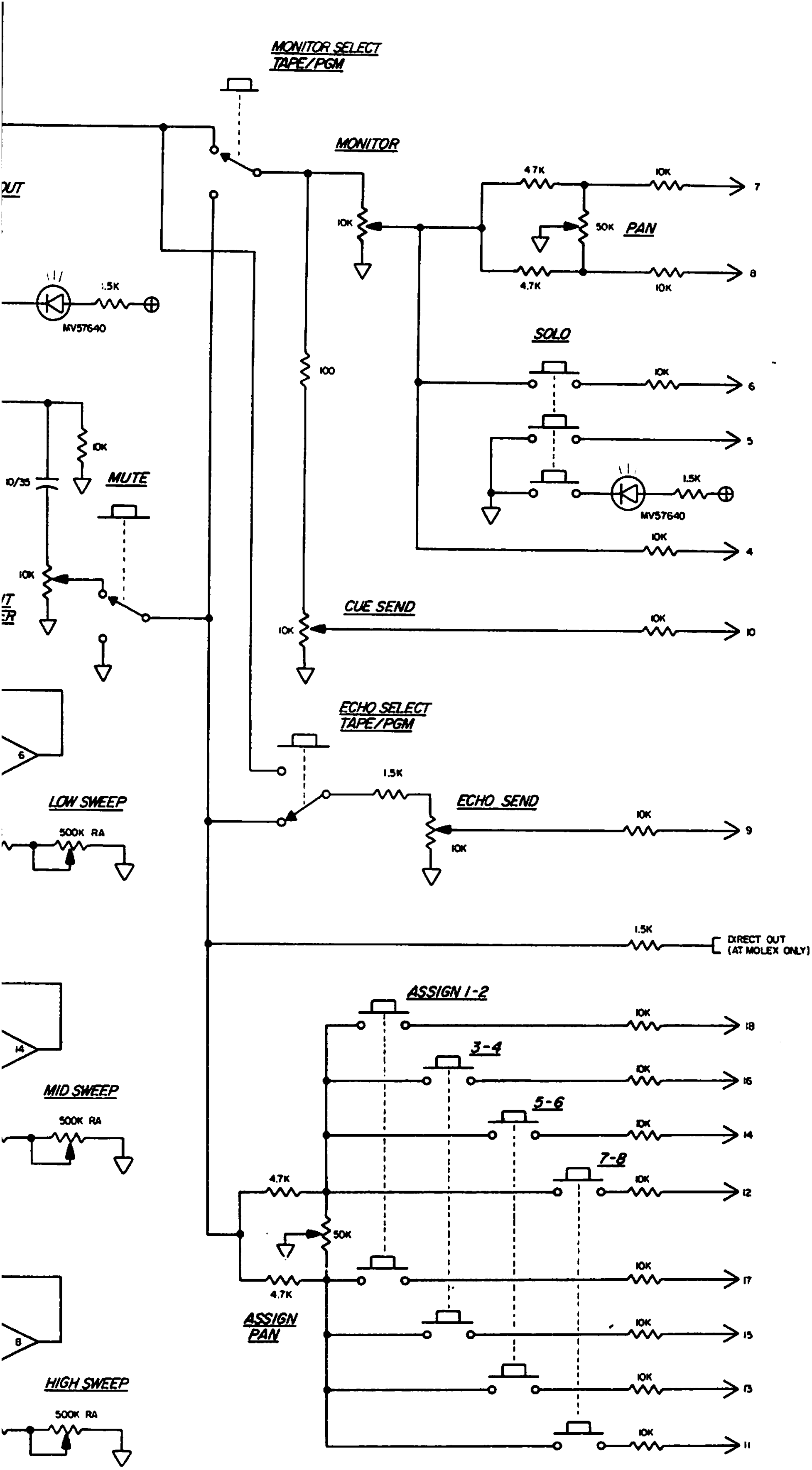
NOTES:

- ○— INDICATES CONNECTION TO THE OUTSIDE WORLD
- ← INDICATES MOTHERBOARD CONNECTIONS
- ⊐— INDICATES CONNECTION TO TALK/BUSS MODULE

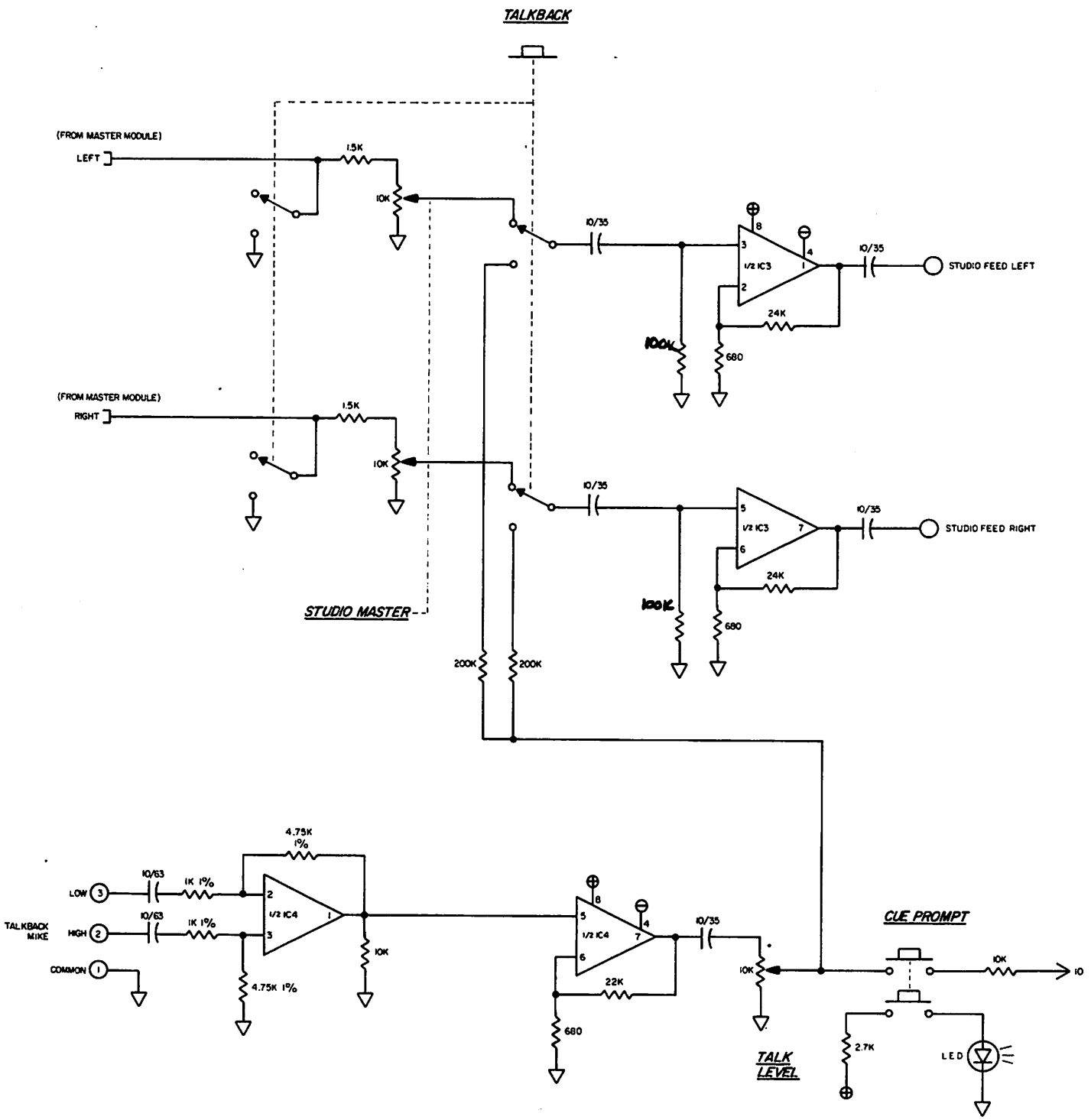
Schematics And P.C.B. Assembly



SCHEMATIC - INPUT MODULE

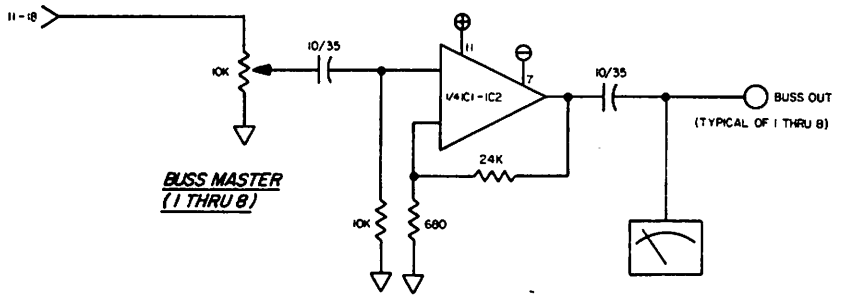


MONITOR SELECT
TAPE/PGM
MONITOR
4.7K
10K
7
10K
50K
PAN
4.7K
10K
8
1.5K
MV57640
SOLO
10K
6
5
100
10K
10/35
MUTE
1.5K
MV57640
10K
4
10K
CUE SEND
10K
10K
10
ECHO SELECT
TAPE/PGM
1.5K
ECHO SEND
10K
9
10K
LOW SWEEP
500K RA
1.5K
DIRECT OUT
(AT MOLEX ONLY)
ASSIGN 1-2
10K
18
3-4
10K
16
MID SWEEP
500K RA
5-6
10K
14
7-8
4.7K
10K
12
50K
4.7K
10K
17
ASSIGN
PAN
10K
15
HIGH SWEEP
500K RA
10K
13
10K
11



SCHEMATIC - TALK/BUSS MODULE (PART 1)

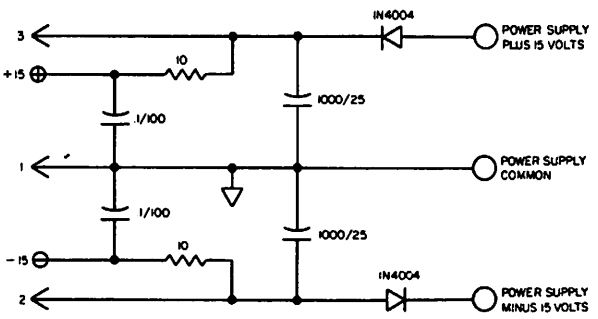
REVISION B-1

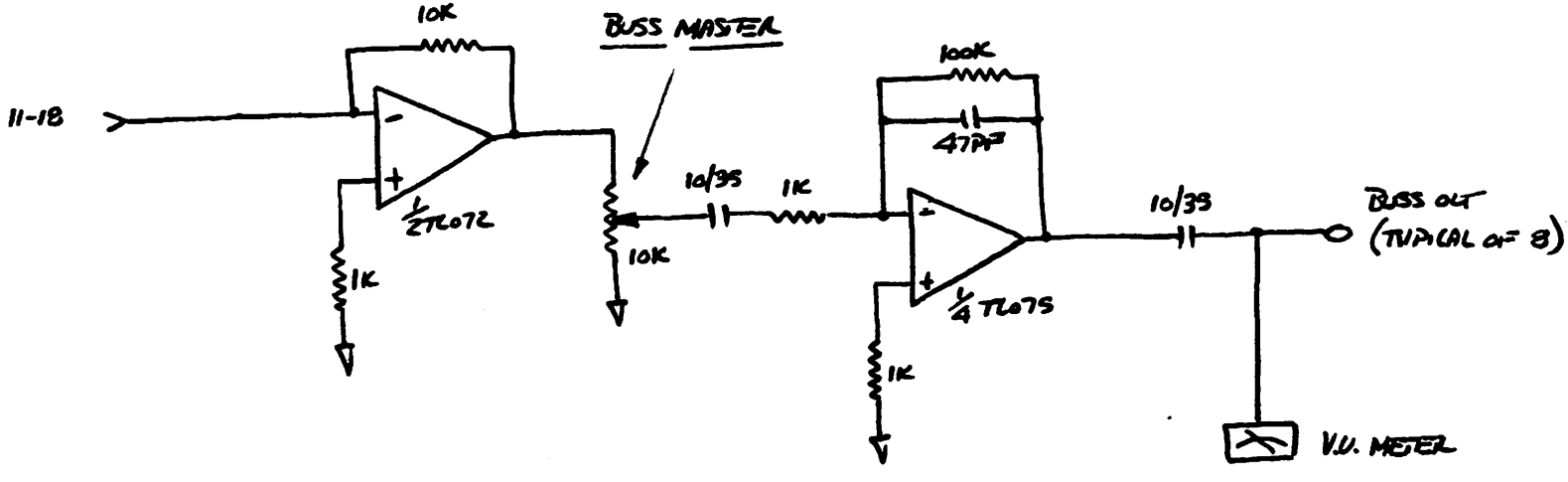


METERS 1-6 ARE CONNECTED TO BUSS OUT 1-6 RESPECTIVLY METERS 7 AND 8 ARE SWITCHED BETWEEN BUSS OUT 7 AND 8 OR LEFT AND RIGHT PROGRAM FEED.

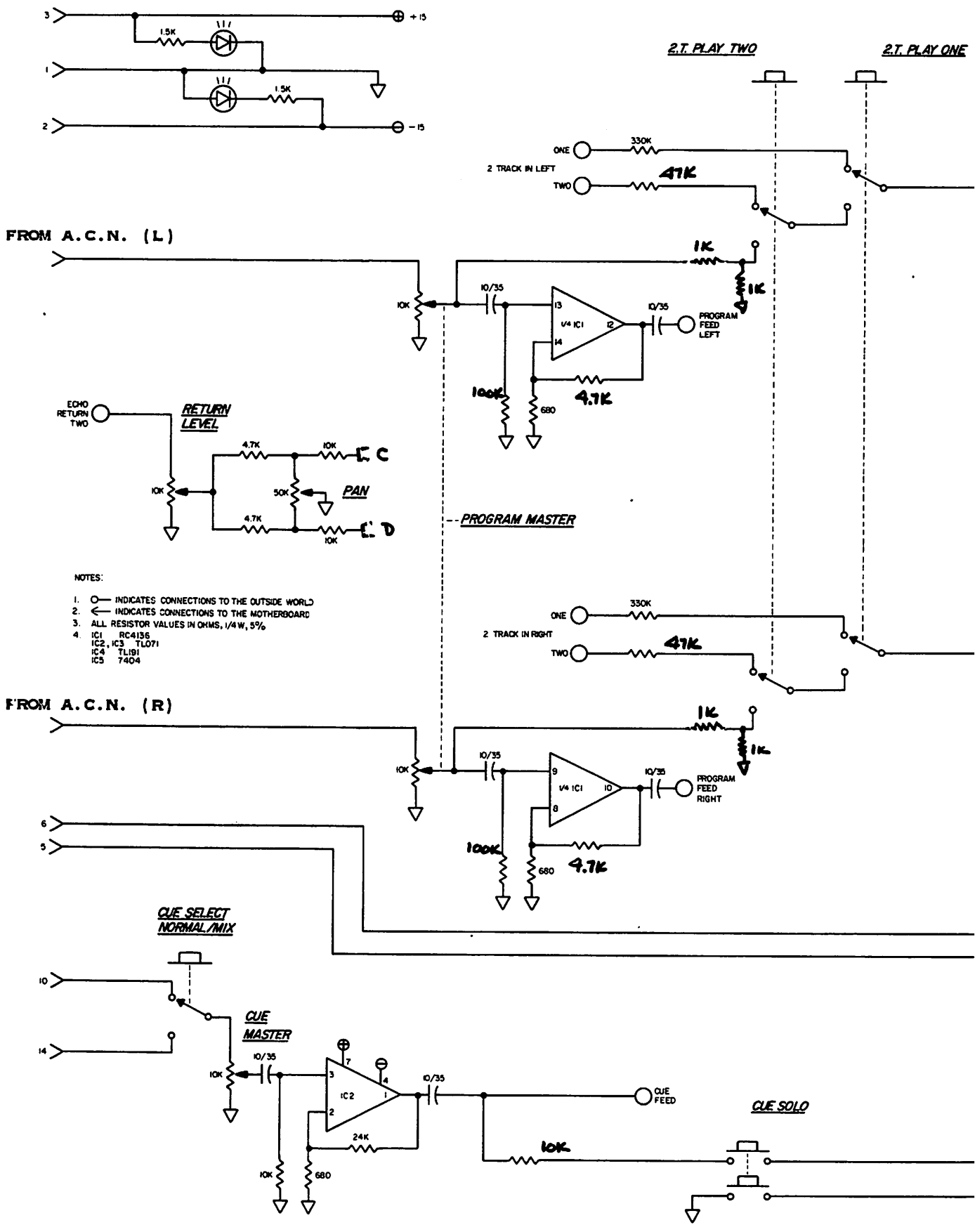
NOTES

1. O— INDICATES CONNECTIONS TO THE OUTSIDE WORLD
2. ←— INDICATES CONNECTIONS TO THE MOTHERBOARD
3. ALL RESISTOR VALUES IN OHMS, 1/4 W, 5%
4. IC1 - IC2 RC4136
   IC3 - IC4 TL072



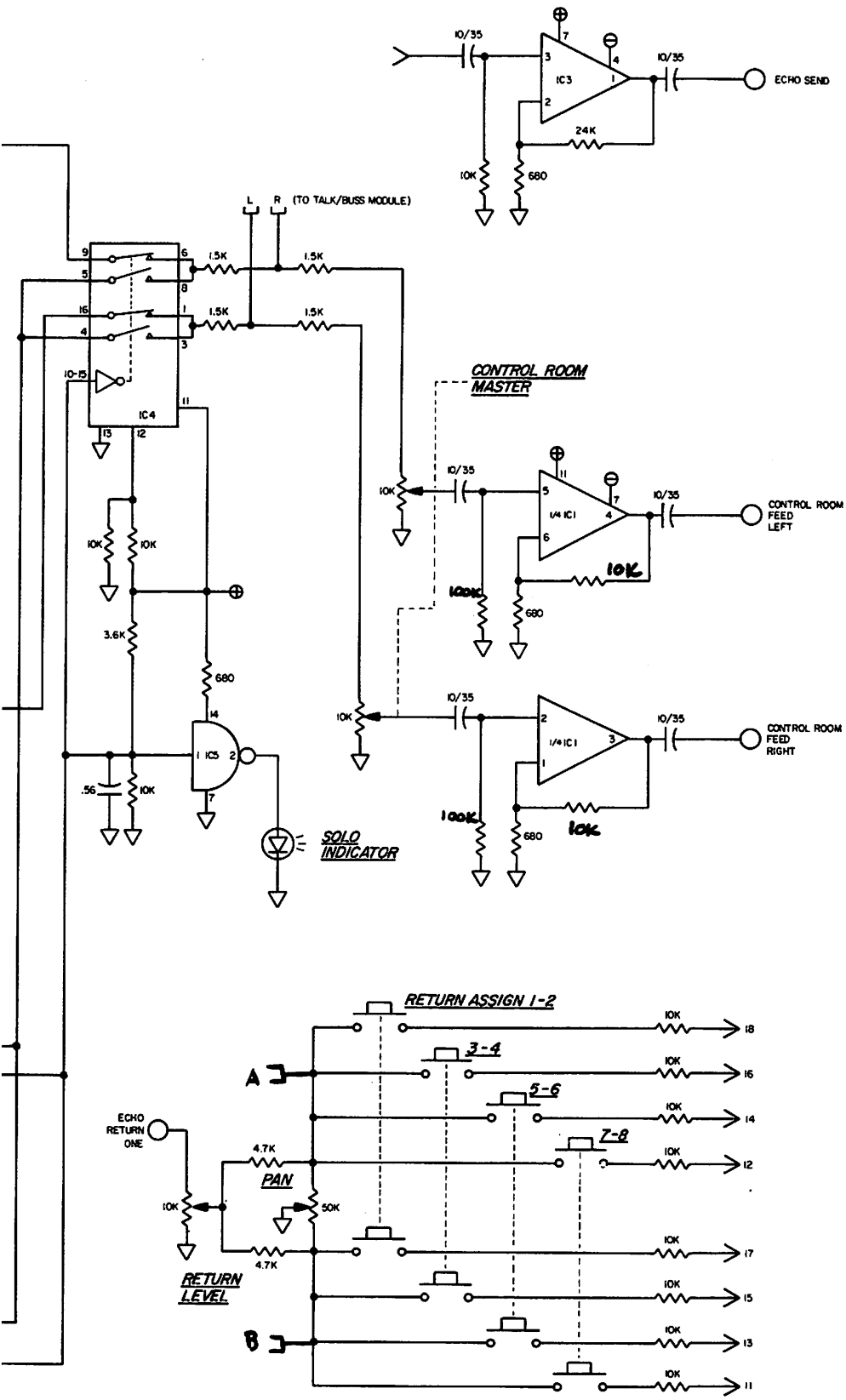


SCHEMATIC - TALK/BUSS MODULE (PART 2)
REVISION B-1

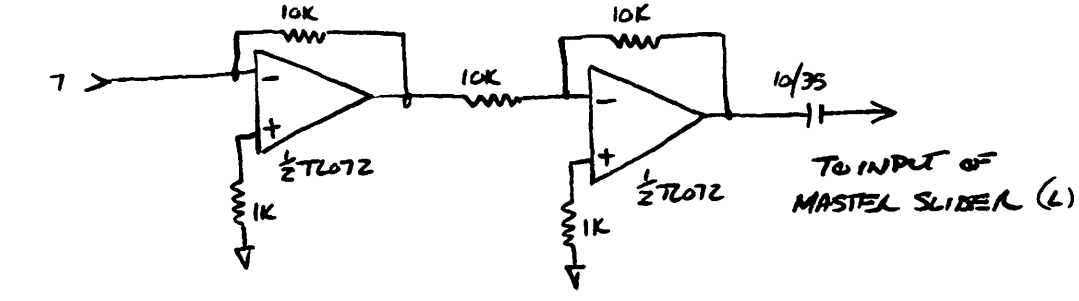


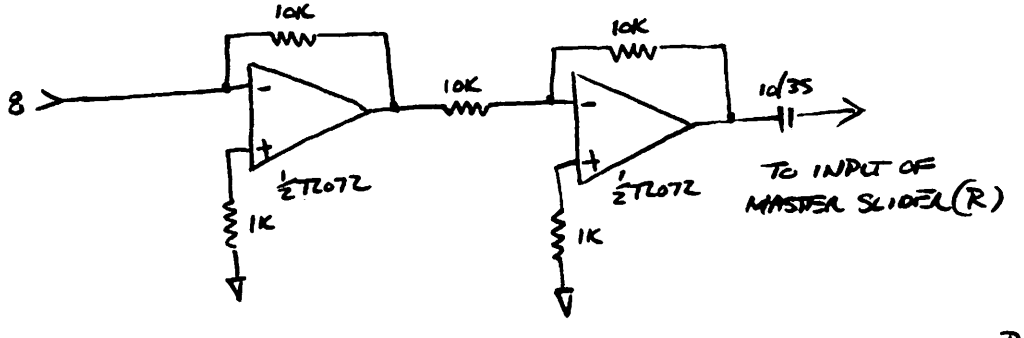
SCHEMATIC - MASTER MODULE (PART 1)

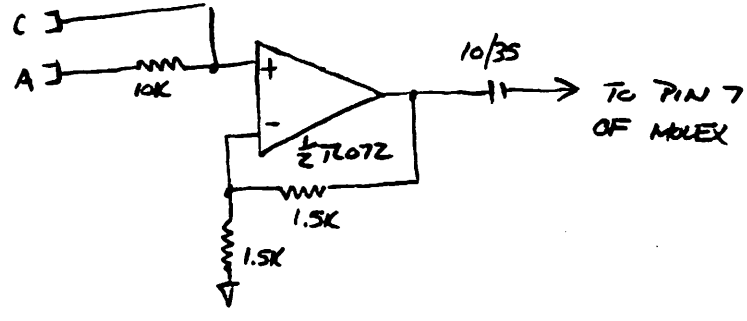
REVISION B-1

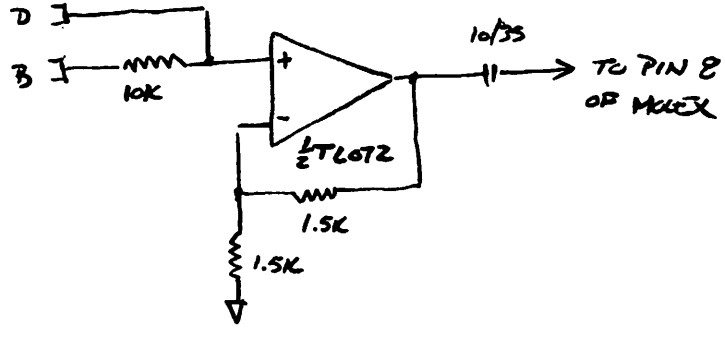

10/35
IC3
ECHO SEND
24K
10K
680
L
R
(TO TALK/BUSS MODULE)
1.5K
IC4
10-15
CONTROL ROOM
MASTER
IC1
CONTROL ROOM
FEED
LEFT
10K
100K
3.6K
IC5
.56
SOLO
INDICATOR
CONTROL ROOM
FEED
RIGHT

RETURN ASSIGN 1-2
3-4
5-6
7-8
A
B
ECHO
RETURN
ONE
4.7K
PAN
50K
RETURN
LEVEL
10K
18
16
14
12
17
15
13
11

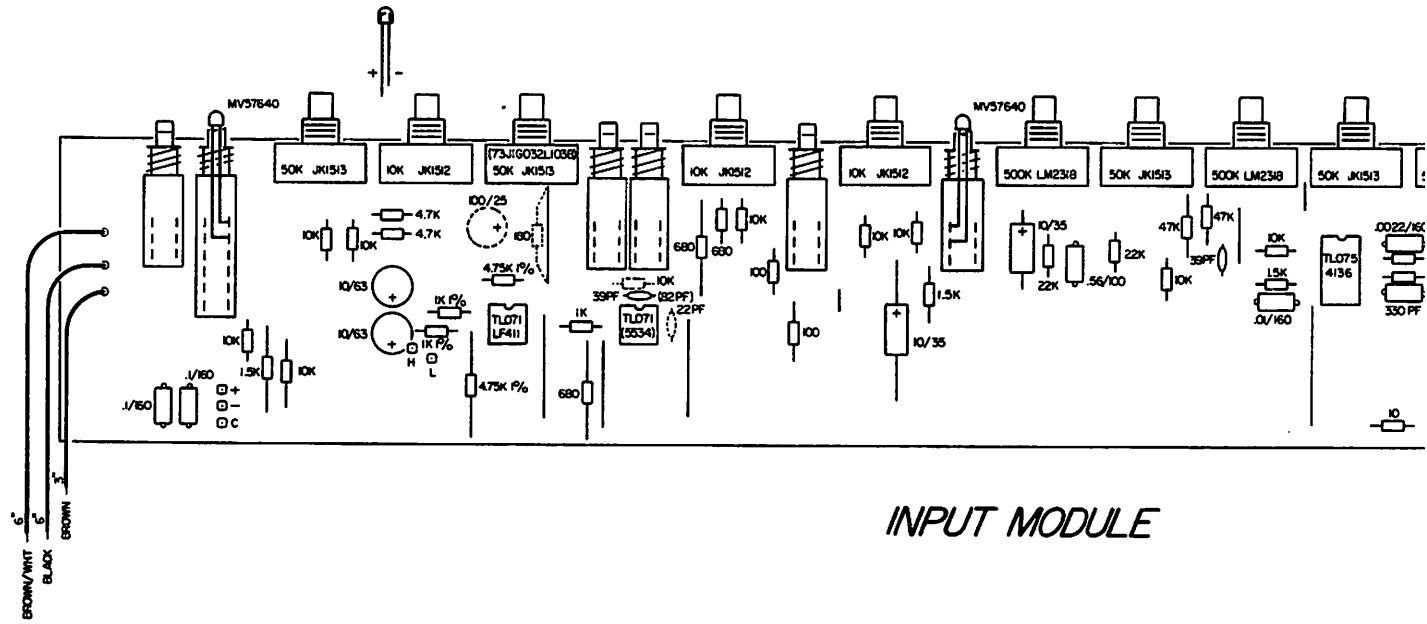




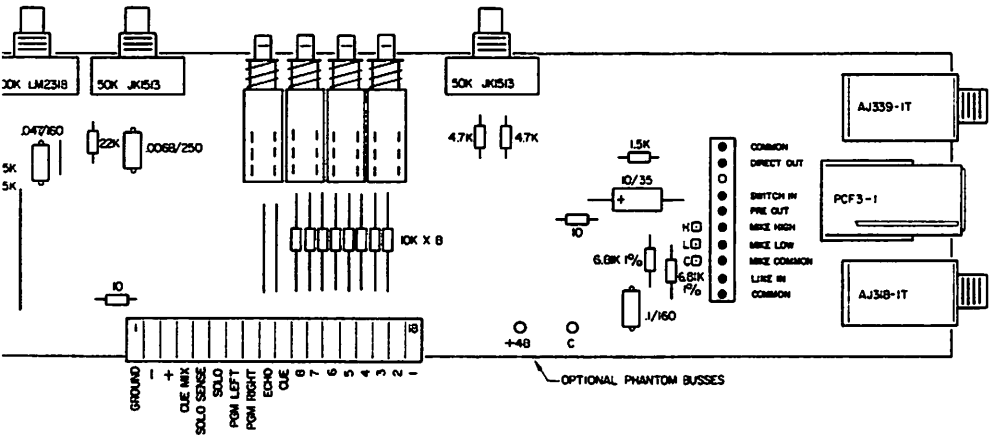


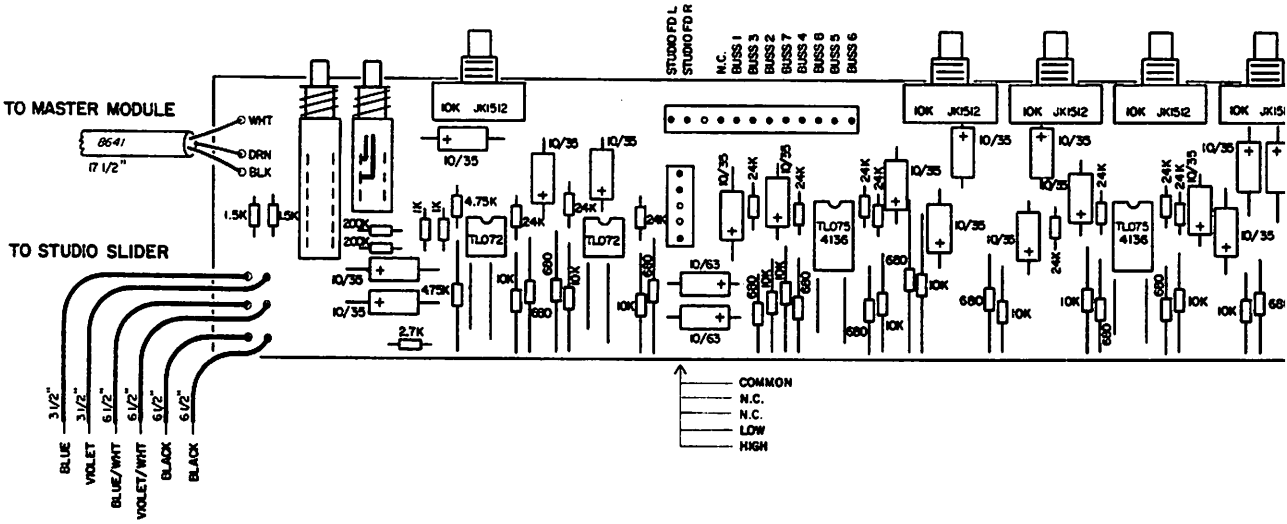


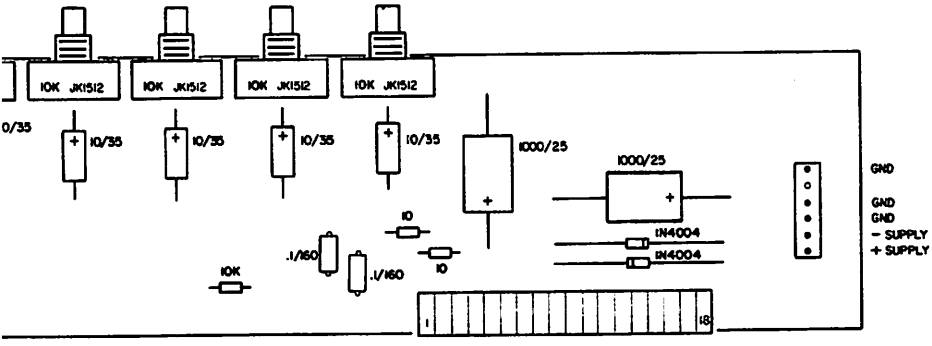
SCHEMATIC-MASTER MODULE (PART 2)
REVISION B-1



INPUT MODULE

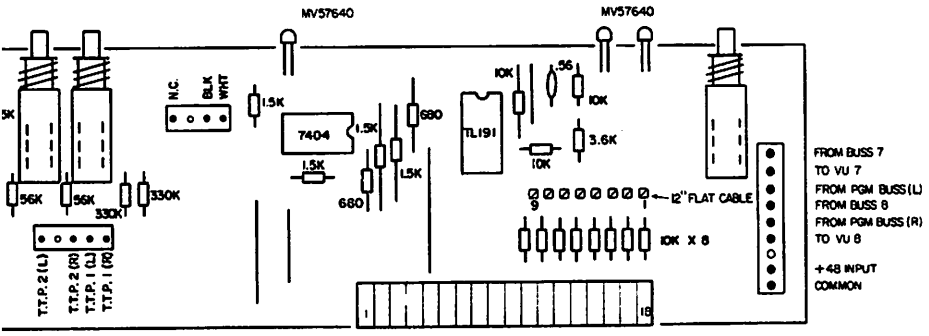

50K LM2318
50K JK1513
50K JK1513
.047/160
22K
.0068/250
4.7K
4.7K
1.5K
10/35
10
10K X 8
10
6.81K f%
6.81K f%
.1/160
AJ339-1T
PCF3-1
AJ348-1T
COMMON
DIRECT OUT
SWITCH IN
PRE OUT
MIKE HIGH
MIKE LOW
MIKE COMMON
LINE IN
COMMON
+48
C
OPTIONAL PHANTOM BUSSES
GROUND
CUE MIX
SOLO SENSE
SOLO
PGM LEFT
PGM RIGHT
ECHO
CUE


TO MASTER MODULE
8641
17 1/2"
WHT
DRN
BLK
TO STUDIO SLIDER
3 1/2"
BLUE
3 1/2"
VIOLET
6 1/2"
BLUE/WHT
6 1/2"
VIOLET/WHT
6 1/2"
BLACK
6 1/2"
BLACK
1.5K
1.5K
10K JK1512
10/35
STUDIO FD L
STUDIO FD R
N.C.
BUSS 1
BUSS 3
BUSS 2
BUSS 7
BUSS 4
BUSS 8
BUSS 5
BUSS 6
200K
200K
1K
1K
4.75K
TL072
24K
680
10K
10/63
TL075
4136
COMMON
N.C.
N.C.
LOW
HIGH

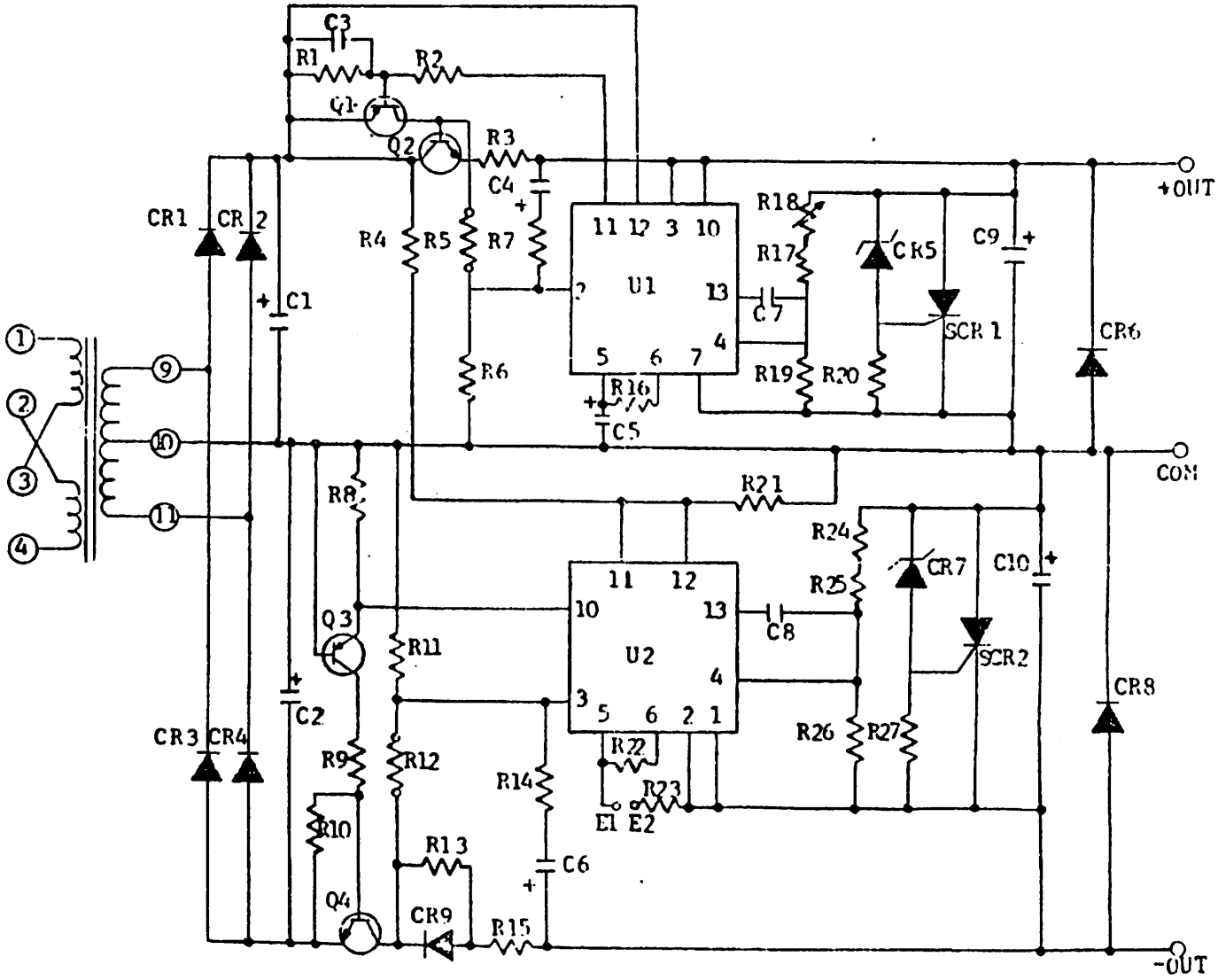


'ALK/BUSS MODULE

TO PROGRAM SLIDER
BLACK 6"
ORANGE/WHT 6"
BLACK 6"
RED/WHT 6"
ORANGE 4"
RED 4"
GREEN/WHT
YELLOW/WHT
YELLOW
BLACK
BLACK
GREEN
TO CONTROL ROOM SLIDER
PGM FD R
PGM FD L
CNTRL RM FD R
CNTRL RM FD L
CUE FD
ECHO SEND
ECHO RETURN 2
ECHO RETURN 1
MAS

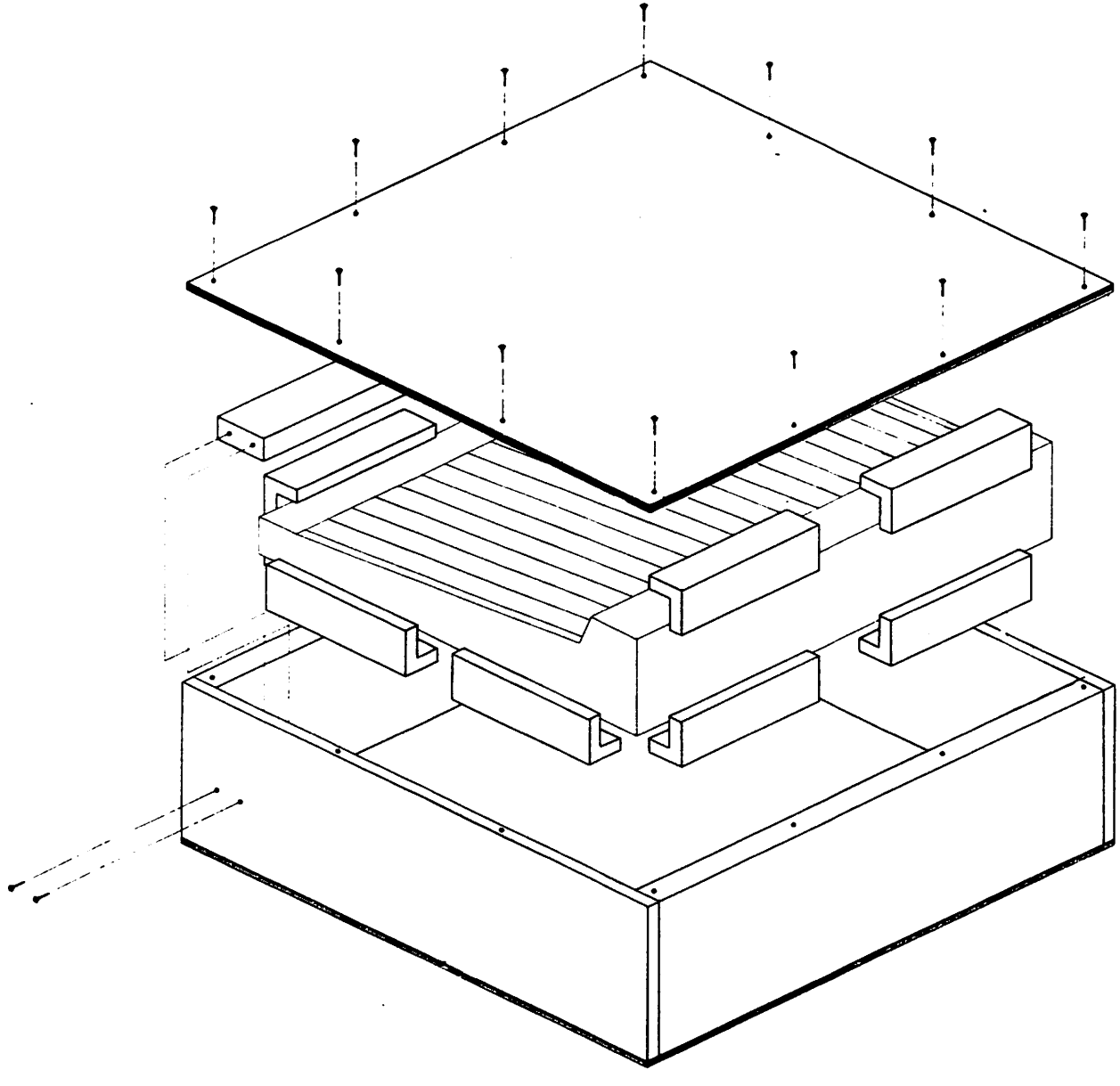

MV57640
MV57640
N.C.
BLK
WHT
1.5K
7404
1.5K
1.5K
680
680
1.5K
TL191
10K
56
10K
3.6K
10K
56K
56K
330K
330K
T.T.P. 2 (L)
T.T.P. 2 (R)
T.T.P. 1 (L)
T.T.P. 1 (R)
9
1
12" FLAT CABLE
10K X 8
1
16
FROM BUSS 7
TO VU 7
FROM PGM BUSS (L)
FROM BUSS 8
FROM PGM BUSS (R)
TO VU 8
+48 INPUT
COMMON

ER MODULE



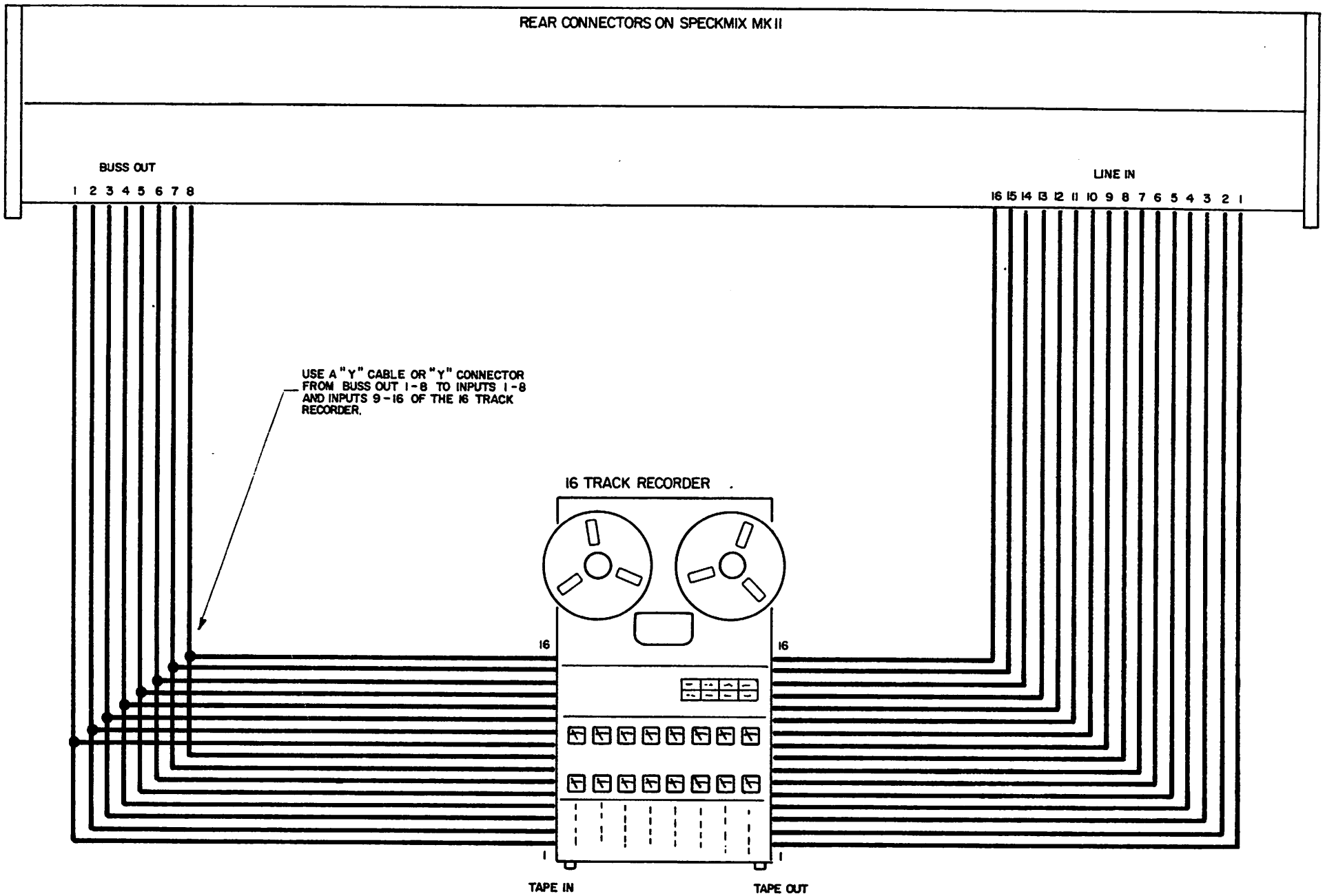
REF. DES.	PART NO.	DESCRIPTION
CR1,2,3,4,9	GP30B	DIODE, 3A/100V
CR6,8	1N4003	DIODE, 1A/200V
Q1	2N6554	TRANSISTOR
Q2,4	2N6569	TRANSISTOR
Q3	2N2907A	TRANSISTOR
U1,2	UA723	I.C. VOLTAGE REGULATOR
C1,2	3300/35V	CAPACITOR,ALUM,LYTIC
C3,7,8	.01/100V	CAPACITOR,FILM
C4,5,6,	10/25V	CAPACIOTR,ALUM,LYTIC
C9,10	100/35V	CAPACITOR,ALUM,LYTIC
R1	1K	RESISTOR,1/2W,5%
R2,4,8,9,	330	RESISTOR,1/2W,5%
R3,15	.22 OHM	RESISTOR,2W,5%,WW
R5	270	RESISTOR,1/2W,5%
R6,10,11	4.7K	RESISTOR,1/2W,5%
R7,12,13,14,16	240	RESISTOR,1/2W,5%
R17,25	750	RESISTOR,1/4W,2%
R18,24	2.5K	POTENTIOMETER,CERMET
R19,22,26	2K	RESISTOR,1/4W,2%
R21	1.5K	RESISTOR,1/2W,5%
R23	1K	RESISTOR,1/4W,2%
T1	11037	TRANSFORMER

POWER SUPPLY SCHEMATIC

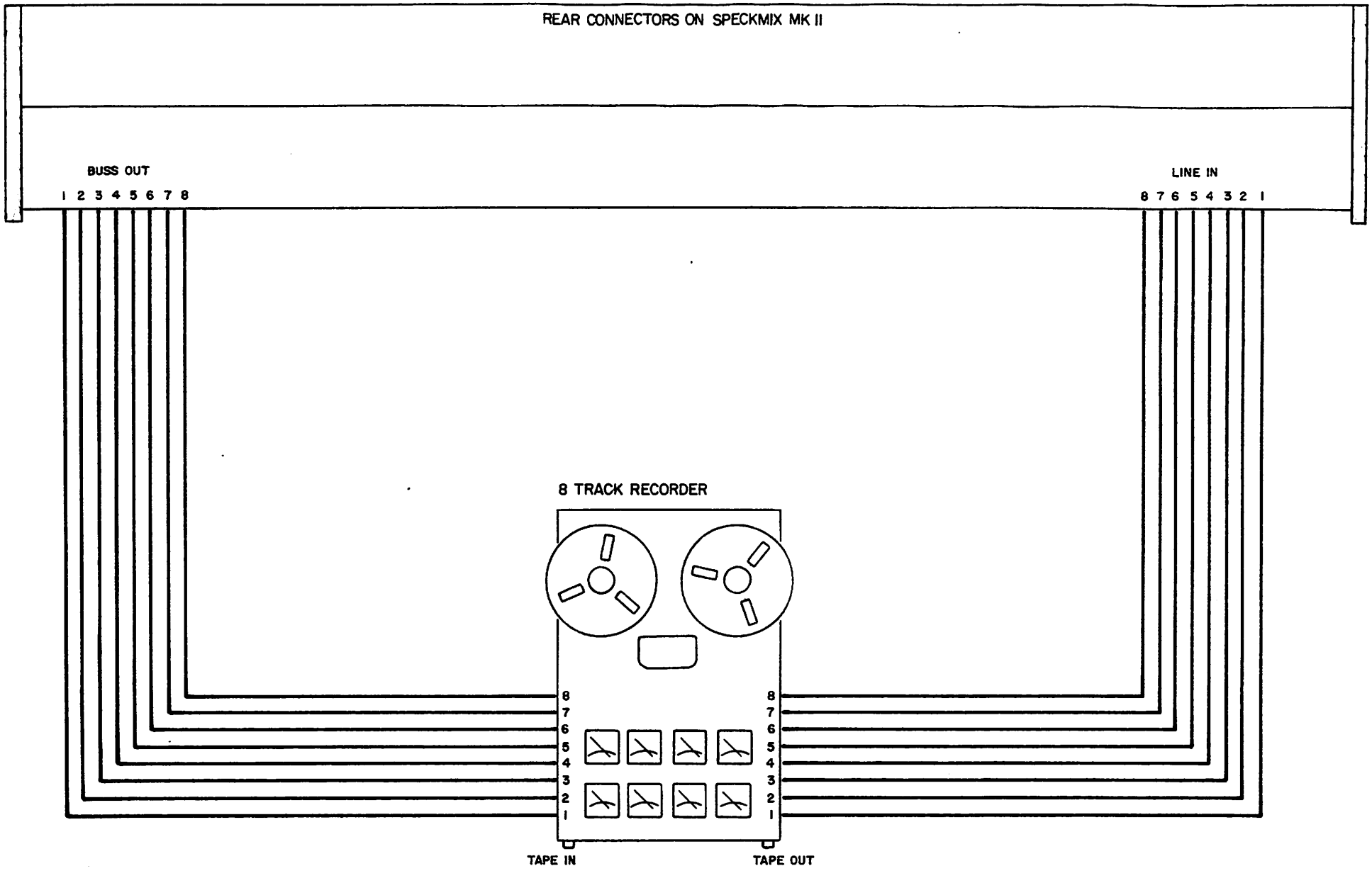


EXPLODED VIEW OF PACKING CRATE FOR THE SPECKMIX Mk II

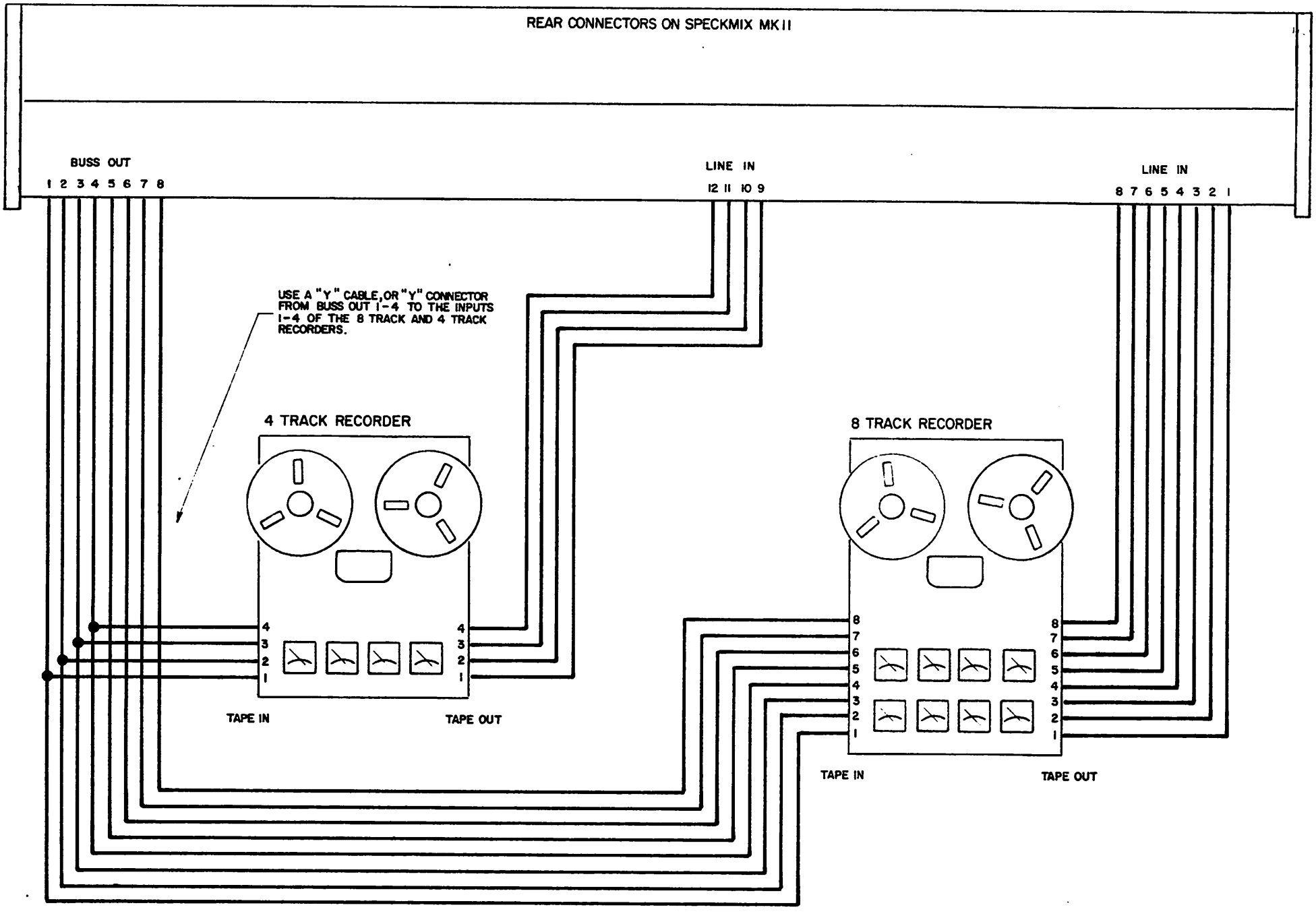
Diagrams Showing Equipment Interface



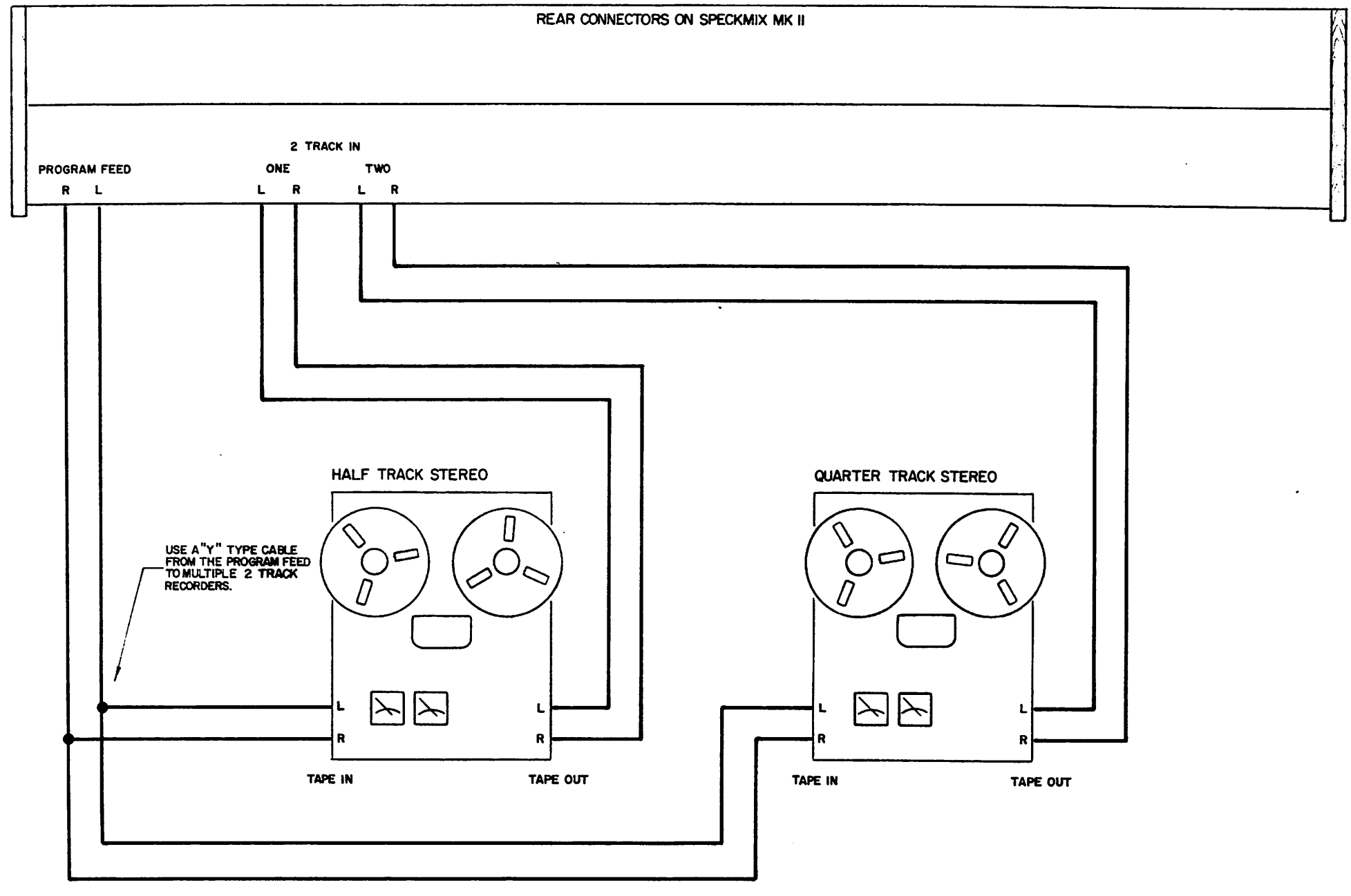
RECOMMENDED INTERFACE TO A 16 TRACK RECORDER



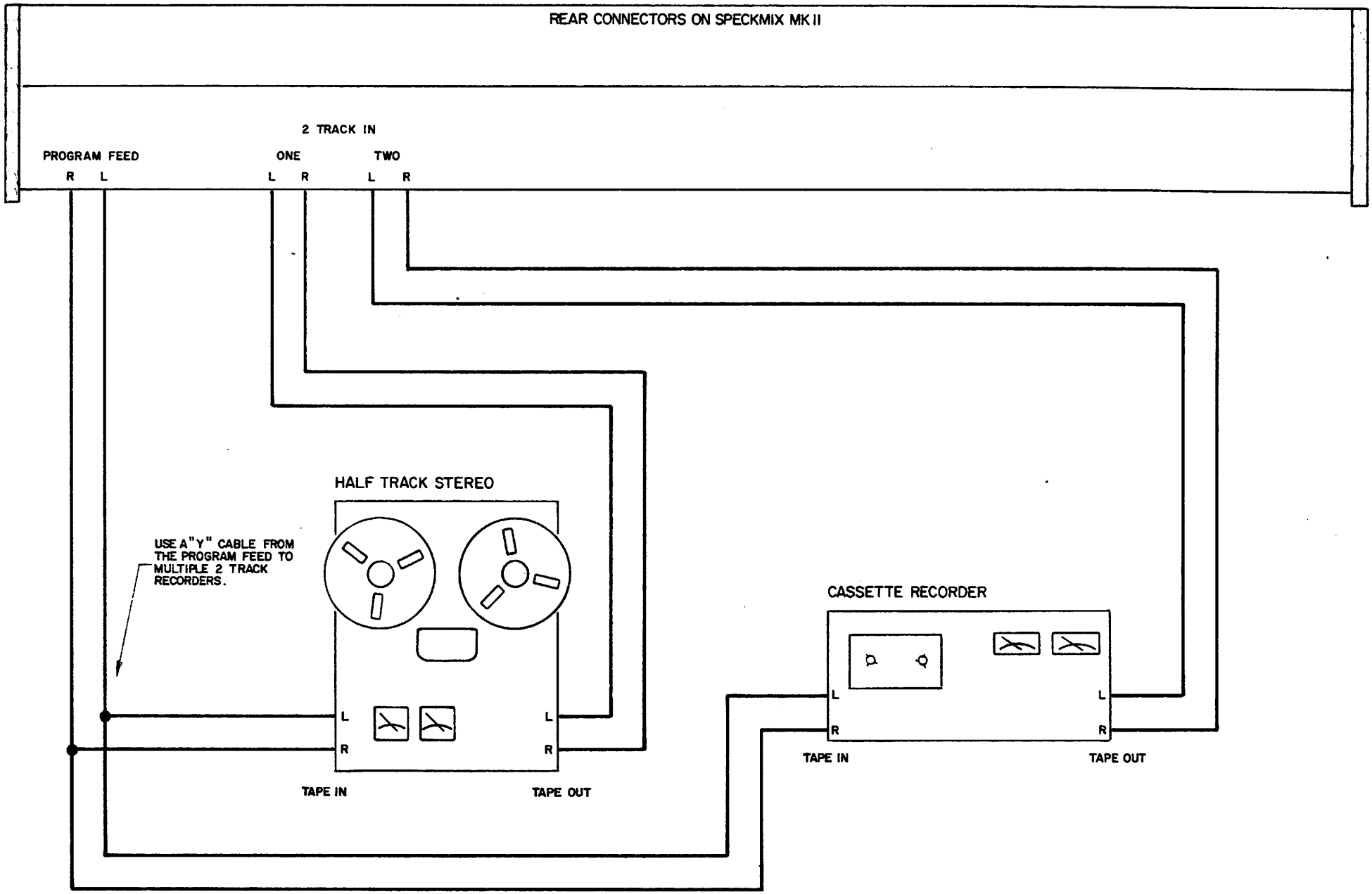
RECOMMENDED INTERFACE TO THE 8 TRACK RECORDER



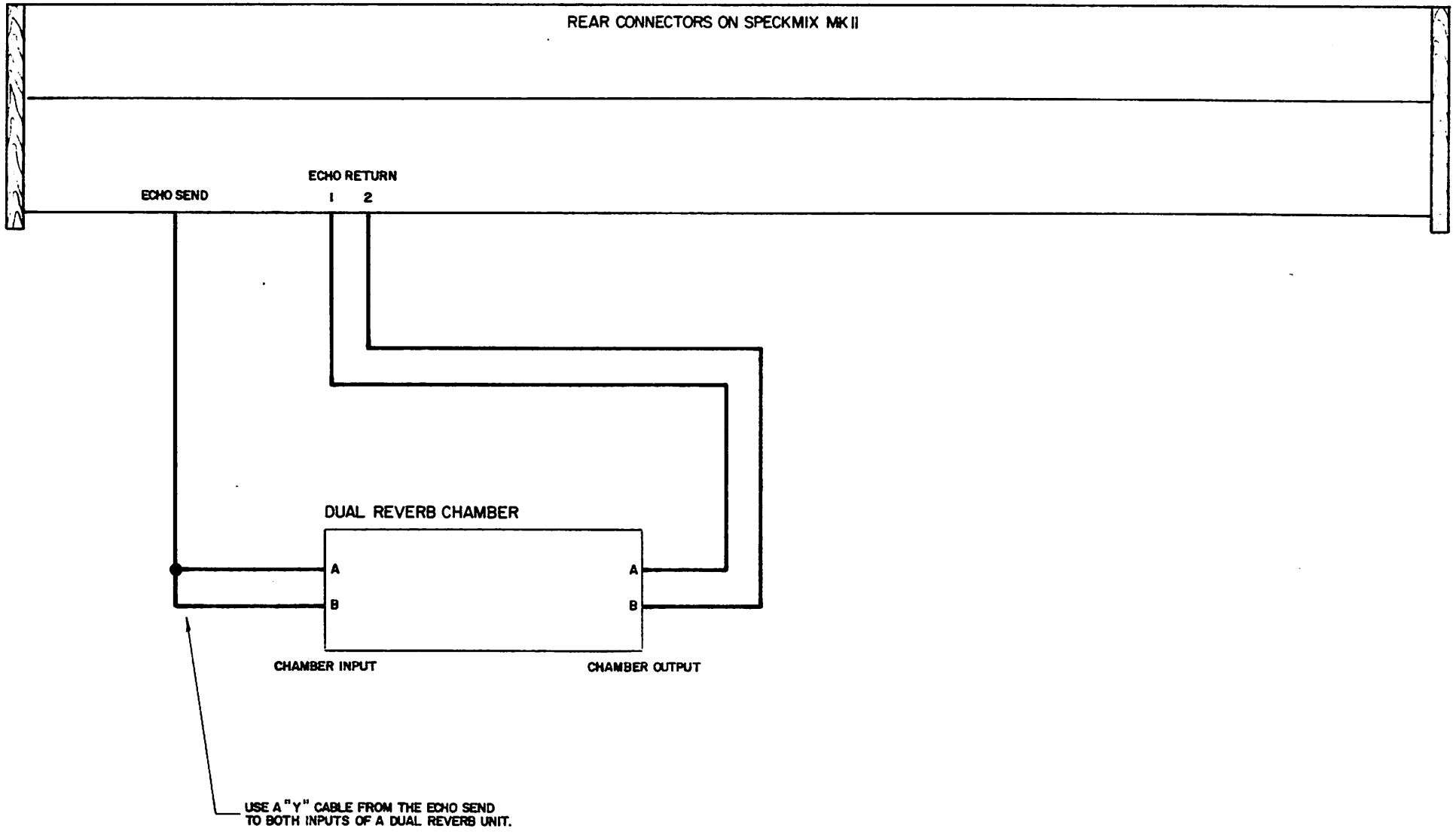
RECOMMENDED INTERFACE TO 4 TRACK AND 8 TRACK RECORDERS



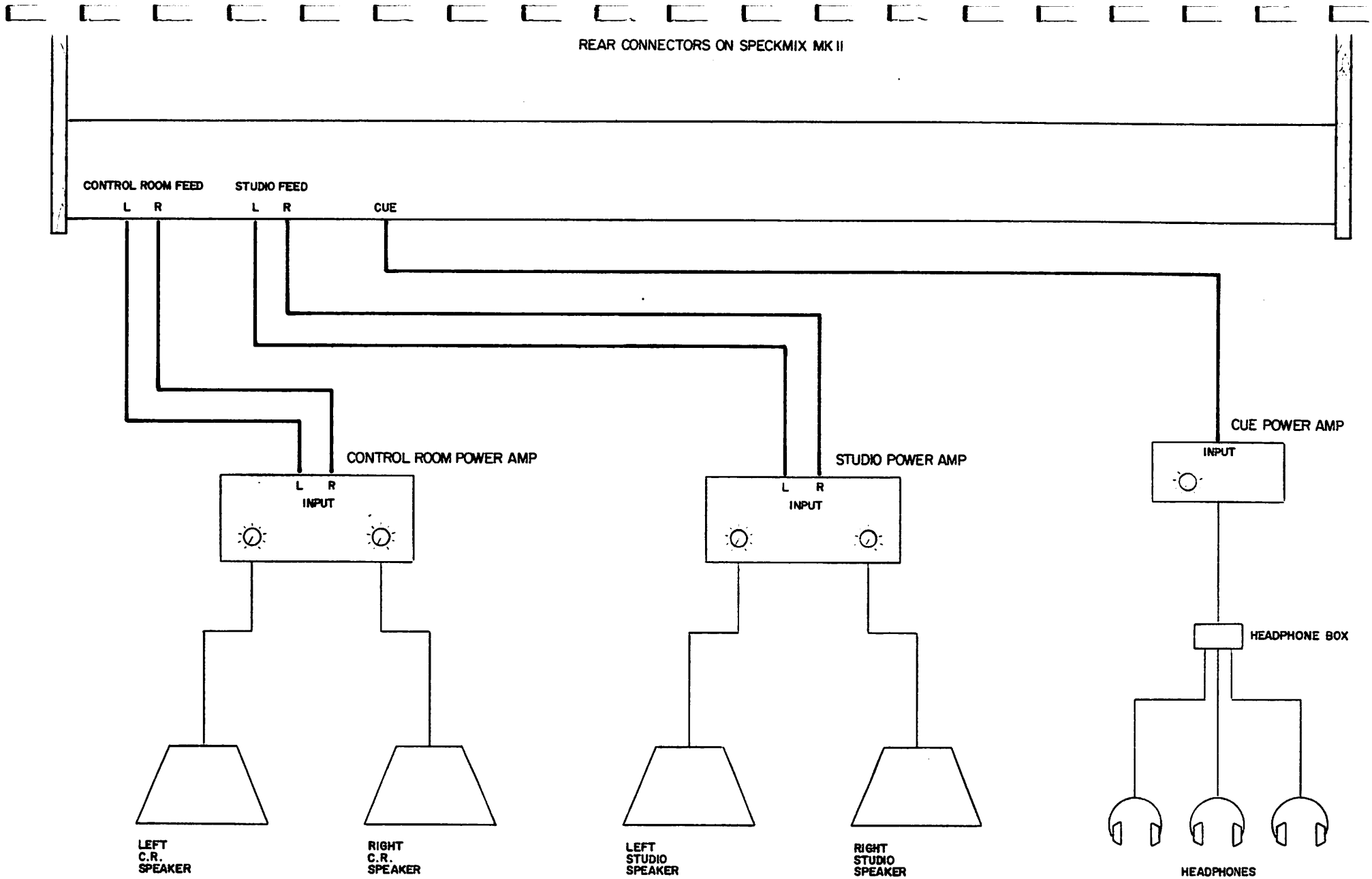
RECOMMENDED INTERFACE TO HALF TRACK AND QUARTER TRACK STEREO RECORDERS



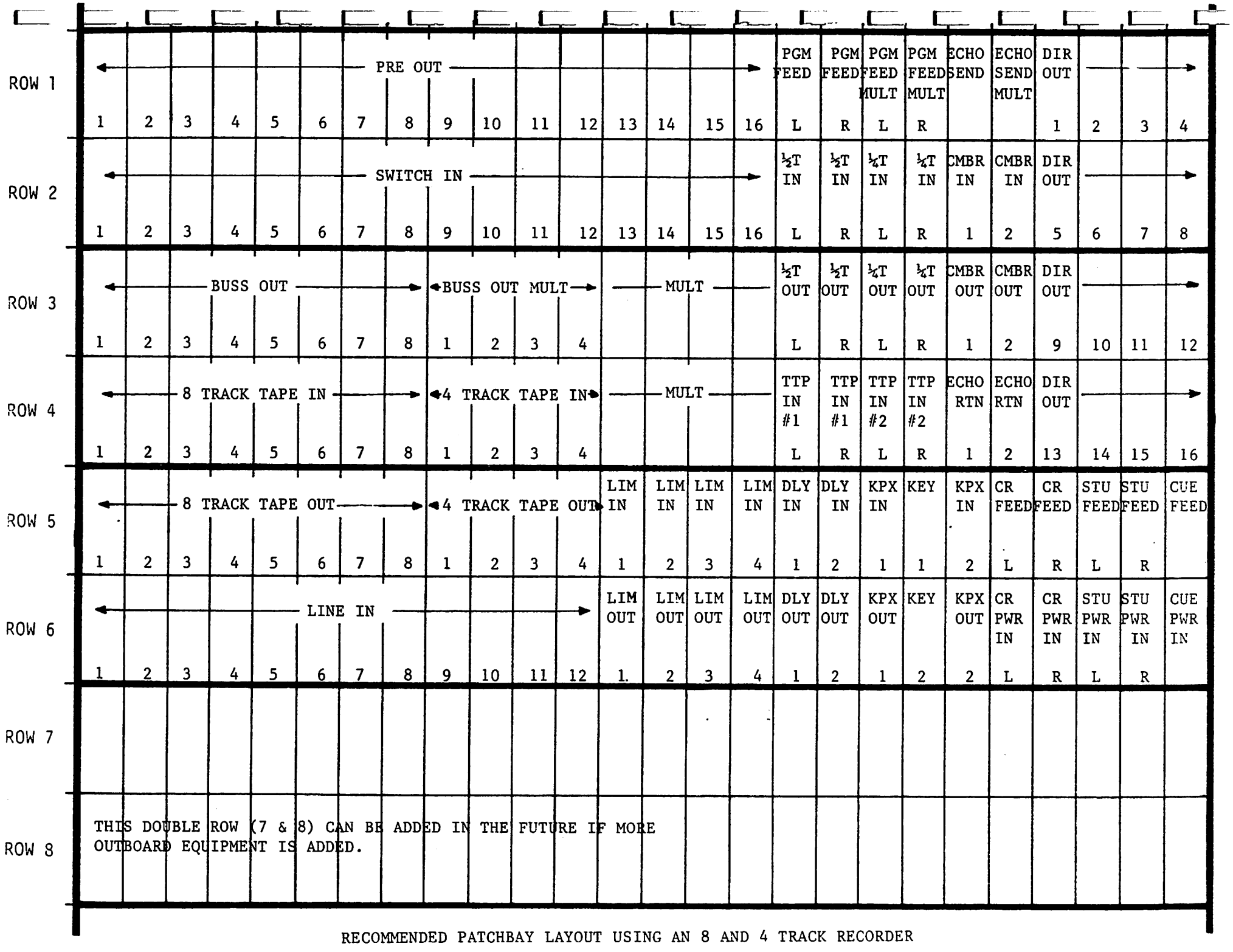
RECOMMENDED INTERFACE TO HALF TRACK AND CASSETTE RECORDERS



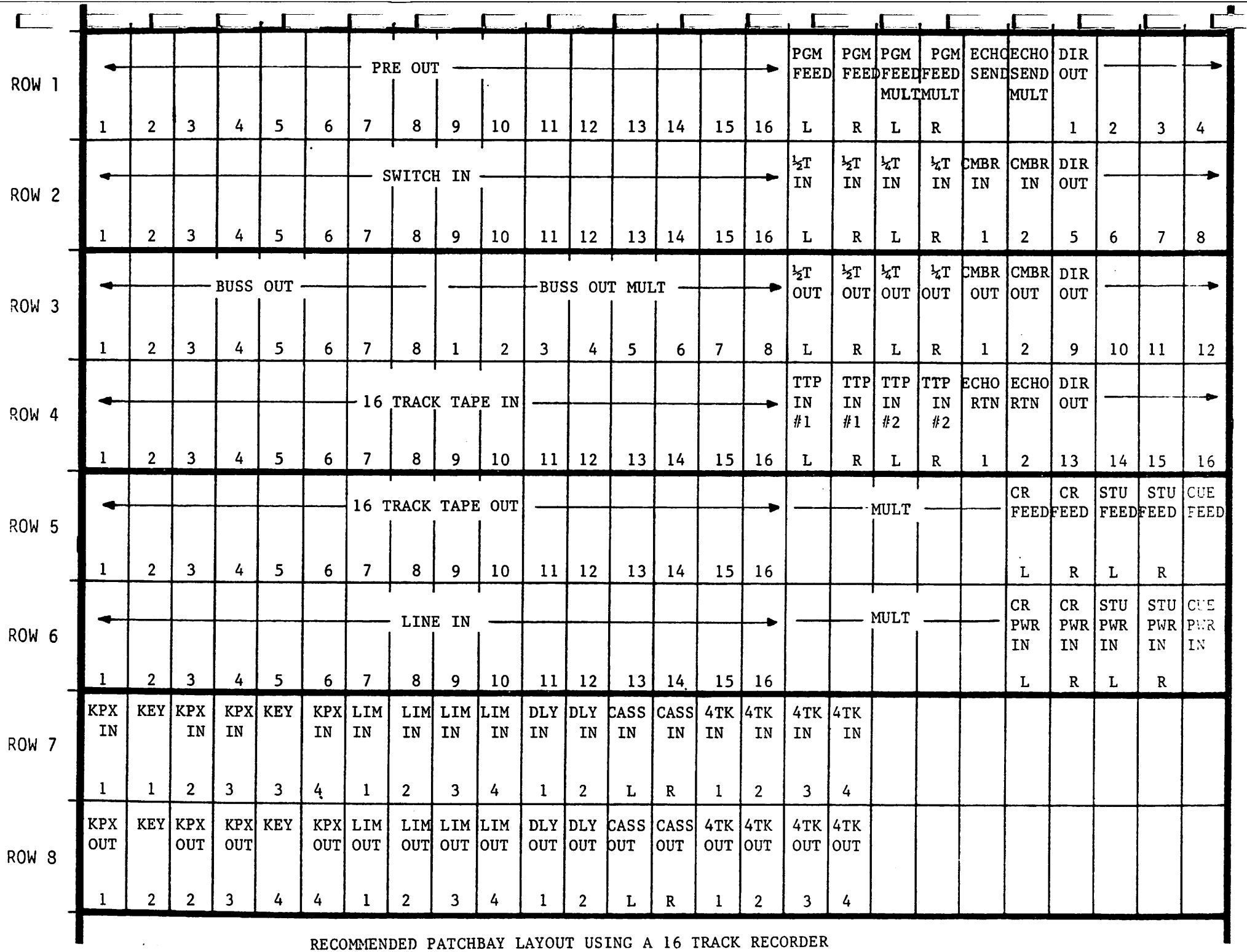
RECOMMENDED INTERFACE TO A DUAL CHANNEL REVERB CHAMBER



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



RECOMMENDED PATCHBAY LAYOUT USING AN 8 AND 4 TRACK RECORDER



RECOMMENDED PATCHBAY LAYOUT USING A 16 TRACK RECORDER

KEPEX IN	1	KEY	1	KEPEX IN	2	KEPEX IN	3	KEY	3	KEPEX IN	4	LIMIT IN	1	LIMIT IN	2	LIMIT IN	3	LIMIT IN	4	D.D.L. IN	1	D.D.L. IN	2	CASS IN	L	CASS IN	R
KEPEX OUT	1	KEY	2	KEPEX OUT	2	KEPEX OUT	3	KEY	4	KFPEX OUT	4	LIMIT OUT	1	LIMIT OUT	2	LIMIT OUT	3	LIMIT OUT	4	D.D.L. OUT	1	D.D.L. OUT	2	CASS OUT	L	CASS OUT	R
BUSS OUT	17		18		19		20		21		22		23		24		25		26		27		28		29		30		31		32
LINE IN	17		18		19		20		21		22		23		24		25		26		27		28		29		30		31		32
PRE OUT	1		2		3		4		5		6		7		8		9		10		11		12		13		14		15		16
SWTH IN	1		2		3		4		5		6		7		8		9		10		11		12		13		14		15		16
BUSS OUT	1		2		3		4		5		6		7		8		9		10		11		12		13		14		15		16
TAPE IN	1		2		3		4		5		6		7		8		9		10		11		12		13		14		15		16
TAPE OUT	1		2		3		4		5		6		7		8		9		10		11		12		13		14		15		16
LINE IN	1		2		3		4		5		6		7		8		9		10		11		12		13		14		15		16
LINE TWO	1		2		3		4		5		6		7		8																
LINE TWO	9		10		11		12		13		14		15		16																
PGM OUT	L	PGM OUT	R	PGM MULT	L	PGM MULT	R	ECHO SEND		ECHO MULT		ECHO MULT		ECHO MULT		CUE ECHO	1	CUE ECHO	2												
½ IN	L	½ IN	R	¼ IN	L	¼ IN	R	CMBR IN	1	CMBR IN	2	CMBR IN	3	CMBR IN	4	CMBR IN	5	CMBR IN	6												
½ OUT	L	½ OUT	R	¼ OUT	L	¼ OUT	R	CMBR OUT	1	CMBR OUT	2	CMBR OUT	3	CMBR OUT	4	CMBR OUT	5	CMBR OUT	6												
T.T.P. ONE	L	T.T.P. ONE	R	T.T P. TWO	L	T.T.P. TWO	R	ECHO RTN	1	ECHO RTN	2	ECHO RTN	3	ECHO RTN	4	CUE RTN	1	CUE RTN	2												
CNTRL RM.FD.	L	CNTRL RM.FD.	R	STUDIO FEED	L	STUDIO FEED	R	CUE FEED	1	CUE FEED	2																				
CNTRL PWR	L	CNTRL PWR	R	STUDIO PWR	L	STUDIO PWR	R	CUE PWR	1	CUE PWR	2					SLAP IN	1	SLAP IN	2												
4 TK OUT	1	4 TK OUT	2	4 TK OUT	3	4 TK OUT	4			PHONO	L	PHONO	R			SLAP OUT	1	SLAP OUT	2												

MULT

MULT

MULT

MULT

USING A STRAIGHT EDGE AND A SHARP KNIFE, CUT STRIPS AND INSERT INTO PATCHBAY DESIGNATION STRIPS