PACIFICA SERIES
AUDIO CONTROL CONSOLES

INSTRUCTION MANUAL

QUAD-EIGHT ELECTRONICS

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INTRODUCTION

The "Pacifica" is one of a new series of pre-engineered audio mixing and control consoles, and is equal in every performance aspect to our finest custom consoles. The Pacifica is configured as a 16, 24 or 36 modular input console with 8 mixing busses plus stereo mixdown and monitoring capability. Two independent cue mixing circuits are provided for each input, in addition to four separate mixing circuits usable for echo or foldback (i.e., stage monitoring in live recording or sound reinforcement applications). These six auxiliary send controls on every input give the Pacifica unmatched versatility in any situation.

The four Echo Send/Return modules feature complete equalization, solo, monitoring and tape or digital delay handling, and can serve as additional input modules for line level sources. Complete, separate control room and studio monitoring facilities are provided, plus extremely flexible communication systems capable of serving the complex needs or broadcast, live recording and sound reinforcement.

The console's complete patching facilities include Bantam jacks (mini-phone jacks) and an assortment of patch cords. Space is provided on the Pacifica top panel for up to 16 auxiliary devices (size 1-1/2" x 5-1/4" and 1-1/2" x 7"); these may be limiters, effects devices, tape remote controls, or any other accessories of the user's choosing.

The Pacifica is housed in a rugged metal frame with solid hardwood trim, and uses "mother board" construction to simplify manufacturing and increase the reliability of the finished console. Careful attention to even the smallest mechanical and electronic details assures many years of top quality performance.

DESIGN HIGHLIGHTS

Electronically, the console features a new microphone preamplifier using extremely low noise discrete semiconductor devices. Extensive use of discrete amplifiers is made throughout the console, with the use of IC's being reserved for those stages where they provide clear design advantages. A unique feature of the console is the elimination of all transformers except at the microphone input and program, echo and foldback outputs. Elsewhere, electronically balanced input amplifiers are used, offering superior transient and phase response to the transformers they replace. These features, plus its +28 dBm output and +24 dBm minimum headroom, make the Pacifica one of the cleanest, quietest consoles ever built.

The mechanical layout of the console emphasizes logic and convenience of use throughout. The sensibly designed panel is far less cluttered than many consoles of lesser capability, with no miniature knobs or switches, and no high-profile controls to introduce viewing parallax and confusion. The logical grouping of controls makes it easy for the engineer to ignore those functions which are not required in a particular application. Labeling of controls adheres to concise, standard terminology to make learning the console a simple process; terms which pertain only to a specific application (i.e. "track outputs", etc.) have been avoided in favor of more general terms which suggest the full capability of the console's many functions.

APPLICATIONS

The Pacifica is ideal for use in recording studios where it may be used for mixdown of large multi-track tapes, as well as for original recording of 8, 16 and 24 track master tapes. The console's extensive monitoring facilities (including studio and control room modules), highly flexible echo/reverb circuitry, plus the many cue and solo features are "musts" for serious studio work. The Communications module is particularly well suited to studio work, especially its built-in oscillator and slate/tone facilities. Electronic performance is of the utmost importance in recording since a given signal may flow through the same console many times. Thus, the Pacifica's extremely low noise and distortion, wide headroom and full frequency response all contribute to the mixing of audibly superior product.

Today theatrical and concert sound reinforcement has become a fine art. Here, the Pacifica's large input capability and its varied foldback/cue/monitoring capability are invaluable. The main program outputs can be used for house feeds, dressing room feeds, lobby feeds, etc. In addition, foldback and cue mixes enable the user to create the varied stage monitoring demanded by vocalists and instrumentalists. The Communications module provides the kind of control necessary to coordinate complex productions, and the oscillator is a valuable test/checkout tool. For extremely large productions, a separate Pacifica console may be assigned exclusively for stage monitoring. The Pacifica is very ruggedly constructed, and with its optional XLR connectors installed plus the addition of a custom traveling case, the console may be carted with confidence on large concert tours.

Broadcast applications include live "ON-AIR" audio mixing for radio and television, as well as pre and post production mixing. For production of TV shows with a studio audience, where the audio console must perform recording and reinforcement functions, the Pacifica is a natural choice. The console's wide headroom is

forgiving of level-setting errors, even before compression is applied to the signal. Sensible panel layout and convenient mute/solo/cue functions make the mixing job easier, thus providing more time for other aspects of the production. Modular "mother board" construction and Quad-Eight's proven reliability assure maximum dependability and greatly speed repairs in the rare event a problem does occur. The +28 dBm outputs provide enough gain overlap to accomodate passive devices and still maintain adequate line levels, and to drive more than one line to a full +24 dBm without distortion. Balanced inputs and outputs, an all-metal cabinet shell, plus skilled engineering of internal circuits all contribute to the Pacifica's high immunity to RF fields.

ABOUT THIS MANUAL

Following the Installation Instructions (Section II), there is a handy set of Brief Operating Instructions (Section III). These are simply panel drawings with capsule descriptions of the controls and features. Section IV, Operating Hints, outlines the procedures for setup of live mixes, mixdown of multi-track tapes, overdubbing of new tracks onto partially completed tapes, and so forth. Also included in this section are a variety of useful, time-saving hints to help you get the most from the Pacifica. Maintenance and Service information is contained in Section V, including instructions for module removal and replacement, meter lamp replacement, power supply voltage adjustment, and so forth. A kit of spare parts are supplied with the system, and we recommend maintaining the small inventory of meter lamps, modules, etc. so as to minimize down time for maintenance and repairs. General system documentation is included with the Drawings in Section VI.

We urge the console user to read this manual thoroughly before operating the Pacifica, and to consult it from time to time after becoming familiar with the console.

UNCRATING

The console is shipped in a conventional wood crate. Remove
the wood screws which secure the crate cover, and remove the
console. USE CARE IN OPENING THE CRATE SO AS TO PROTECT THE
CONSOLE FROM SCRATCHING OR GOUGING.

The console was inspected before it left the Quad-Eight factory,
and was in perfect condition. Inspect the unit for any obvious
physical damage which may have occurred in transit, and notify the
carrier immediately. It is your responsibility, the consignee, to
make damage claims. If damage is evident, we suggest retaining all
shipping materials. The shipment should include the console, left
and right leg assemblies (including hardware), an external power
supply, power supply cable, patch cords, and a spare parts kit.

LEG INSTALLATION

To allow clearance for installing the legs, set the console
atop a sturdy table or other surface which is at least 20 inches
above the floor.

(Refer to illustrations in Section VI.) Notice that three
studs protrude from each end of the console. These studs, while
part of the leg mounting hardware, alone are not sufficient to
secure the legs; two additional bolts are used for each leg.
Observe also that the two leg assemblies are not identical, but are
mirror images of one another. They are fabricated of square tubular
stock and have mounting holes drilled into only one side of each
leg. Cutouts beneath the top member of each leg provide access for
securing nuts and washers to the studs from the console. The
additional pair of bolts are inserted from the inside of the
console, and are tightened into nuts which have been welded inside
the vertical leg members.

STEP 1.   Remove the rear cover panels on the console to provide
          access for two of the leg mounting bolts, and for future
          wiring access; the screws need be loosened only one turn.

STEP 2.   Remove the desk area panel (blank panel) at the right
          front corner of the console by removing the six allen
          screws that secure it. Set aside the panel.

STEP 3.   Remove input modules 1 through 4 to provide access for one
          of the left leg mounting bolts by unscrewing two allen-head
          screws, one each at the extreme top and bottom of the
          input module. Then thread the module extractor tools

(supplied with the console) into the holes in the module
from which the allen screws were removed. Pull the
module straight up, and set it aside.

NOTE: The left and right leg assemblies may be distin-
guished by the position of the trapped nuts in their
vertical members. The trapped nut on each leg which is
closer to the top is the front of the leg, and the access
holes in the leg must face inward toward the console.

STEP 4. Locate the left leg assembly and slide it over the studs
protruding from the left side of the console. Place a
5/16" flat washer over each stud, and loosely thread a
5/16"-18 nut to hold the washers on the studs.

STEP 5. Insert the two 1/4-20 x 2" bolts through the holes
inside the console frame so the bolts enter the vertical
supports in the leg assembly. One bolt is inserted near
the front of the console, (near where the fader of input
module #1 was located), and the other bolt is inserted
from the rear of the console (where the rear panel was
removed). Place 1/4" flat washers and thread 1/4"-20 nuts
over the bolt ends inside the leg assembly.

STEP 6. Hold the 1/4" nuts with a suitable wrench, and tighten
the bolts securely. Then use a wrench to tighten the
5/16" nuts on all three studs.

STEP 7. Replace input modules 1 through 4, using care to align the
card ege connectors on the circuit boards with the sockets
on the mother board; when proper physical alignment is
obtained, the module front panel will be about 1/8" above
the adjacent installed panels. Press the module firmly in
place. Notice the captive nuts in the console mounting
rails are spaced with plastic tubing to allow for final
adjustment of module position. Insert the two allen
screws through each module and tighten them partially.
When all four modules are in place, tighten the allen
screws securely.

STEP 8. The right leg is installed in the same manner as the left
leg. One leg mounting bolt can be inserted in the front
of the console where the desk panel was removed, and the
other from the rear of the console, where one of the cover
panels was removed.

STEP 9. Replace the desk area panel and secure it with its six
allen screws. Leave the rear panels off to allow for
power supply and audio interface wiring.

LOCATION OF THE CONSOLE

The 24-channel Pacifica console weighs approximately 700 pounds (320 kg), distributed approximately equally on the two legs. Since it is always advantageous to minimize mechanical vibration in audio mixing consoles, the unit should be mounted on a sturdy floor or riser. Leveling feet on the legs should then be adjusted to compensate for floor irregularities and eliminate rocking.

Avoid placing the console in direct sunlight, atop or immediately adjacent to heating or air conditioning ducts, or next to strong sources of electromagnetic fields such as motors, neon or fluorescent lamp ballasts, etc. Be sure to consider input and output cabling when designing a space for permanent installations.

CABLE ENTRY

Audio and power cables are routed into the connection bay via 3" cutouts toward the rear and on either side, beneath the console. The three cover plates on the console rear panel may be removed for access to the audio and power connection points.

POWER SUPPLY INSTALLATION

The power supply is located on a separate chassis and linked to the console by a detachable "umbilical" cable. It may be mounted in its own case for portable use, or in a standard 19" relay rack for permanent installations. If the supply must be located immediately adjacent to the console, place it on the right side so that it is nearer the high-level signals (as opposed to the mic-level signals at the input modules). This will minimizes hum induction for the quietest possible operation.

Before connecting the supply to the mains, verify the mains voltage with a suitable meter, and check that it is within reasonable tolerance to the labeled supply voltage.

It is a good idea to plug the supply into the AC mains and check it for correct output voltages prior to connection to the console. (Consult the schematic diagram for voltages and pin assignments). The supply should be unplugged from the mains during the time the umbilical cable is being connected to the console. Attach one end of the pre-wired umbilical cable to the barrier strip on the supply, route the cable through the opening on the side of the console near Input Module #1, and attach the end to the barrier strip provided (see illustration, Section VI).

(indicating AC current). Also, be sure the console is not connected to a circuit which is on a dimmer, and verify the proper outlet polarity. Use a Ground Loop Impedance Tester (GLIP) if one is available.

It is a good idea to plug the supply into the AC mains and check it for correct output voltages prior to connection to the console. (Consult the schematic diagram for voltages and pin assignments). The supply should be unplugged from the mains during the time the umbilical cable is being connected to the console. Attach one end of the pre-wired umbilical cable to the barrier strip on the supply, route the cable through the opening on the side of the console near Input Module #1, and attach the end to the barrier strip provided (see illustration, Section VI).

Plug the supply into the AC mains, turn it ON, and observe the console. Recheck the supply voltages with the console connected. Meter lights should be illuminated, channel ON buttons should light when pressed, and LED's should light when corresponding functions are selected. If any unusual noises are observed, shut off the power immediately and locate the problem. The supply is thoroughly fused. If fuses continue to blow, shut off the system and locate the problem; DO NOT USE FUSES OF A HIGHER CURRENT RATING THAN IS SPECIFIED FOR A GIVEN MAINS VOLTAGE.

AUDIO CABLE CONNECTIONS

Audio input and output cables are connected to multi-pin terminal blocks in the rear of the console. These blocks provide three terminals for each cable; signal high, signal low, and ground (audio common). Optional versions of the Pacifica have 3-pin XL-type connectors (Cannon type) instead of multi-pin input/output terminal blocks.

NOTE: Multi-pin terminal block pin assignment is described in Section VI of this manual, as the layout will vary with different console configurations.

It is recommended that only high quality, dual-conductor shielded cable be utilized. Belden 8451 or its equivalent is excellent for permanent installations, but a heavier, rubber-insulated cable with a densely braided shield, such as Belden 8412, is suggested for portable applications.

Where low level audio cables must cross AC or speaker-level lines, try to maintain at least 1 foot separation and/or to cross the lines at right angles.

ground. Cold water pipes used to be recommended for earth grounds, but these are no longer reliable because water companies have begun using non-conductive couplings at the entrance to buildings. The best way to obtain a ground is to drive your own 4- to 6-foot long copper-clad steel rod into moist salted earth, or to use one of the newer chemical ground rods.

The Pacifica console's cabinet serves as the unit's chassis ground. The audio circuitry floats from ground within the console, and is grounded to the console only where cables enter and exit. The power supply chassis is grounded to the power mains.

To avoid ground loops, some engineers prefer to ground the shield at the output of each device and to not connect the shield to the input of the following device. Some prefer to tie the shield at both ends of each cable, but to float all equipment from the AC mains except the main audio console. In some areas it is illegal to interrupt the ground (third wire) of an AC power feed. QUAD-EIGHT DOES NOT RECOMMEND OR TAKE ANY RESPONSIBILITY FOR VIOLATION OF LOCAL ELECTRICAL CODES.

This section is intended to serve as a reminder for the experienced console operator. For a more thorough understanding of the Pacifica console and its functions, we recommend studying the block diagrams (single line diagrams) in Section VI of this manual, and reading the Operating Hints in Section IV.

COLOR CODING

To aid the operator, the Pacifica's control knobs are color coded as follows:

> Silvertone = equalizer frequency control
> Red = level adjustment (except echo circuits)
> Blue = echo level adjustment
> Black = pan, mic trim & other functions

METER PANEL; FEATURES & FUNCTIONS

1. PROGRAM BUS VU METERS
   Illuminated meters with true VU-ballistics indicate levels on the program mixing busses. If the PPM option has been ordered, the VU meters can be set to display peak program level (PPM) by means of a toggle switch on the vertical member of the meter pod just to the left of the stereo meters. 0 VU is equivalent to an output level of +4 dBm.

2. STEREO BUS VU METERS
   Same as program meters, but indicate level on Left and Right output busses.

3. MONO & VU METERS
   Same as program meters, but indicates level on mono console output.

4. AUXILIARY VU METER
   Same as program meters, but instead of being connected to an output bus, the meter input appears on the patch bay. Thus, the auxiliary meter may be used for testing purposes, to check the oscillator level, or to monitor signals not normally available at the program meters.

5. TALKBACK MICROPHONE
   Located in the vertical member to the right of the stereo meters, the microphone is activated by the Talkback Selector buttons on the Communications Module.

6. ECHO/FOLDBACK VU METERS
   Normally indicate level on Echo Send busses, except when VU RTN button is pressed on corresponding Echo module, in which case the meter indicates echo return level.
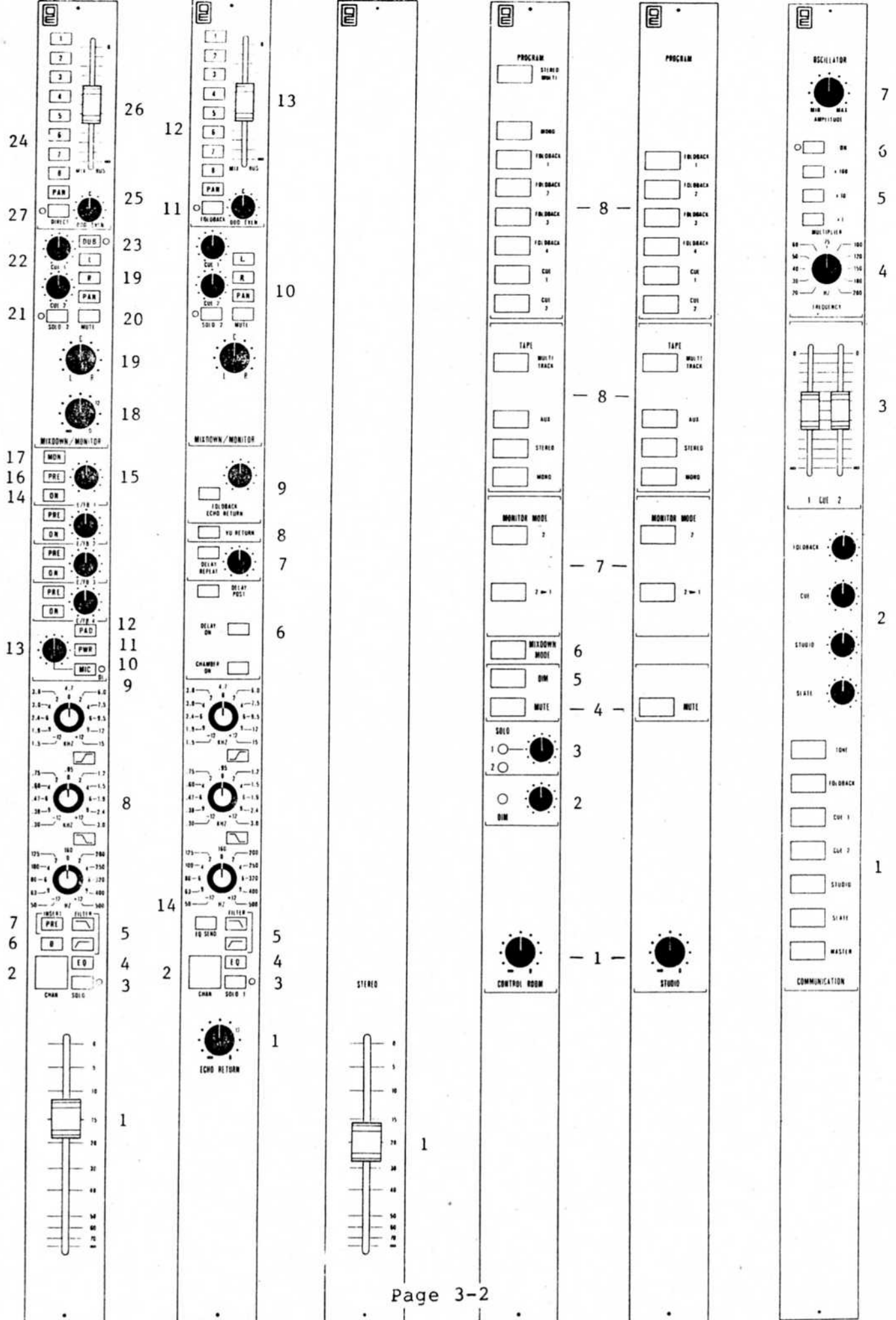
FIGURE 3-1. KEY TO MODULE FEATURES & FUNCTIONS.

NOTE: Refer to Figure 3-1 when reading the "Features & Functions" descriptions for the various modules.

INPUT/OUTPUT MODULE   (Model 7200) &
INPUT/MASTER MIX MODULE (Model 7200M); FEATURES & FUNCTIONS

1. CHANNEL FADER
    This precision, straight-line, conductive plastic fader adjusts
    the level of any signals assigned to the program mixing busses
    and the direct channel output. If the appropriate PRE-POST
    switches are in POST position, the fader also adjusts the level
    of signals applied to the echo/foldback busses. The fader is
    accurately calibrated from 0 to -55 dB, and beyond -55 dB it is
    tapered to infinite attenuation (no audio passes through).

2. CHANNEL ON/OFF SWITCH
    This latching pushbutton, labeled with the channel number,
    lights when the channel is ON.

3. SOLO 1 SWITCH
    Pressing this button allows individual channel monitoring
    without interruption of the program signals. The solo is
    "non-positional"; it is heard centered in the left and right
    monitor speakers regardless of the actual stereo pan pot
    position or bus assignment of the channel.

4. EQ IN/OUT SWITCH
    When this button is pressed in, the 3-band channel equalizer is
    activated. When the button is out, the equalizer is electri-
    cally bypassed (defeated). Operation is silent and does not
    cause "clicks" in the audio.

5. LOW & HIGH FILTER SWITCHES
    As suggested by the nomenclature on the buttons, these switches
    activate shelving filters. The low filter (high pass) is fixed
    at a 12 dB/octave slope, 3 dB down at 70 Hz. The high filter
    (low pass) also has a 12 dB/octave slope and is 3 dB down at
    15 kHz.

6. PHASE SWITCH
    When pressed in, this button inverts the polarity of the
    signal throughout the module (similar to a 180° phase shift).

7. INSERT "PRE" SWITCH
    With the button out, the channel's signal processing patch
    point is normally after the equalizer, just before the fader.
    With the button in, the insert point is moved ahead of the
    equalizer (pre-equalizer and pre-fader).

8. 3-BAND CHANNEL EQUALIZER

The equalizer provides +12 dB of equalization at 33 discrete equalization points. The 33 points extend from 50 Hz to 15 kHz and are covered in three bands with overlapping ranges. Frequency selection and amount of equalization are adjustable with step-type controls for repeatable settings. Peak/dip curves are available in all three bands, and "shelf" selector switches adjacent to the upper and lower bands convert them from peak/dip to shelving characteristics. (See Figure 3-2.)
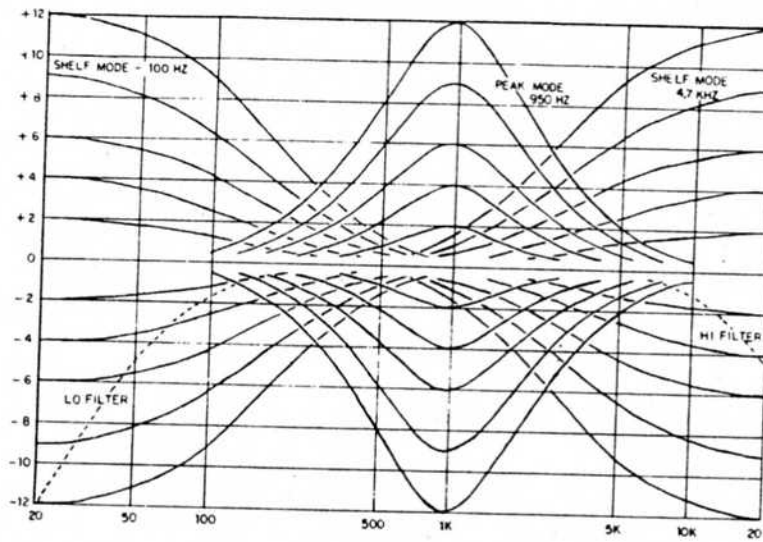

FIGURE 3-2. TYPICAL EQUALIZATION CURVES.

9. OVERLOAD INDICATOR

This Light Emitting Diode flashes when the channel signal level exceeds a certain preset maximum.* The signal level is sensed at the microphone preamp output or the differential line amp input, depending on whether the mic or line input is in use. If the threshold is set at or near +24 dBm, the LED serves as a channel overload indicator. A threshold at or near +4 dBm enables the LED to serve as a program indicator (i.e., a flashing LED would indicate that the input is active).

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* The Threshold level for the entire console is adjustable by means of a control behind the arm rest. See Section V for details.

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10. MIC SELECTOR SWITCH
This pushbutton serves as a Mic/Line selector. With the button out, the module normally derives signal from its Line input at nominal +4 dBm levels. When this button is engaged, the signal is instead derived from the Mic input at nominal -55 dBm levels.

11. MIC POWER SWITCH
Pressing in this button applies 48 VDC phantom power to the channel's mic input, provided the necessary DC supply has been installed. All Pacifica consoles include universal power wiring, but the phantom supply is an option which must be added when required.

12. MIC PAD SWITCH
Pressing in this button inserts a fixed 20 dB attenuation pad in the microphone input ahead of the transformer so as to avoid saturation of the primary winding with high-level mic inputs.

13. MIC GAIN TRIM
This rotary feedback-type control varies the gain of the microphone preamplifier over a 34 dB range. When used in conjunction with the mic pad, there is a total of 54 dB of gain adjustment range available to optimize signal-to-noise ratio and provide a wider lattitude of fader adjustment.

14. ECHO/FOLDBACK ON/OFF SWITCHES (4)
Four switches allows the signal to be turned ON (button in) or turned OFF (button out) independently on each Echo/Foldback bus.

15. ECHO/FOLDBACK LEVEL CONTROLS (4)
Four controls allows the signal level to be adjusted independently on each on each Echo/Foldback bus. These four mixing circuits may be used for echo send, foldback, or auxiliary mixing.

16. ECHO/FOLDBACK "PRE" SWITCHES (4)
Each of these four switches selects either pre-fader (button in) or post-fader (button out) audio for application to the Echo/Foldback mixing circuits.

17. ECHO/FOLDBACK #1 MONITOR SWITCH
Pressing this button in feeds the #1 Echo/Foldback mixing circuit with signal from the Monitor system, enabling "wet" monitoring during a "dry" recording. That is, there can be an echo or reverb effect in the monitor while the output to the tape machine has no such effect.

18. MONITOR LEVEL CONTROL
This control sets the level sent to the stereo monitor output busses.

19. PAN POT & ASSIGNMENT SWITCHES (L,R & PAN)
The rotary control allows for continuous positioning of the
audio signal in the stereo mix bus panorama. Alternately,
the "L" and "R" buttons assign signal directly to their respec-
tive channels (i.e., equal to a full left or full right setting
of the pan pot); pushing both the "L" and "R" buttons effects a
center assignment. The "L" and "R" buttons assign the signal
only when the "PAN" button is out; the rotary control assigns
signal only when the "PAN" button is in.

20. MIXDOWN/MONITOR MUTE SWITCH
Pressing this button removes the channel signal from the stereo
mix without affecting any other signals (i.e., mute has no
effect on the channel's Direct Output or Echo/Foldback outputs.

21. SOLO 2 SWITCH   SIP
Pressing this button allows an individual channel (or channels)
to be monitored by interrupting the signal from all non-soloed
channels. The solo is "positional"; it is heard in the "PAN" or
"L"-"R" assigned stereo perspective at a level proportional to
the individual channel level. Any signal also being sent to
the echo chamber (or delay) from the soloed channel is also
heard. Solo 2 does not interrupt the program outputs.

22. CUE LEVEL (1 & 2)
These rotary controls adjust the audio level fed to two indepen-
dent cue mixing circuits; the two cue circuits may be used to
carry a stereo cue feed if desired.

23. DUB SWITCH
Pressing in this button selects the "Dub" (overdub) mode for
this module and causes the adjacent LED indicator to turn ON.
Nonselected modules and their cue and monitor circuits are fed
with signals from tape; selected modules are fed with program
signals.

24. MIX BUS ASSIGN SWITCHES (8)
These latching pushbuttons assign the channel signal to any
combination of the 8 mixing busses. Both the Input and Input/
Monitor modules are equipped with these assign switches.

25. MIX BUS PAN POT & ASSIGNMENT SWITCH
When this Pan button is engaged, the rotary control allows for
continuous panning of the channel output between odd-numbered
mixing busses (on the left) and even-numbered mixing busses (on
the right). When the Pan button is out, the pan pot has no
effect, and the mix bus assign switches assign full channel
output level directly to each mixing bus. This pan function
is not related to the stereo pan busses (#19 above).

26. MIX BUS MASTER (INPUT/MASTER MODULE ONLY)
   This straight-line control sets the level for one of the eight
   direct mixing bus outputs. As a group, the Mix Bus Master
   controls on the eight Input/Master modules (channels 1 to 8)
   set the direct output level of mixing busses 1 to 8 respectively.

27. DIRECT SWITCH
   On Input modules, the Direct switch functions as a channel
   output ON/OFF switch, interrupting the feed to the channel's
   direct output when the LED is not illuminated.

   The output of an Input/Master module normally consists of
   whatever channels have been assigned to the mix bus correspon-
   ding to that module (i.e. bus 1 through 8). Engaging the
   Direct switch on one of these modules bypasses the mixed bus
   which is controlled by the Mix Bus Master control, and routes
   the channel signal directly to its appropriate metered output.
   Thus, the 8 mix bus outputs do not appear at their normal
   connection points, but they remain accessible via the patch bay
   if needed. An LED lights when the "Direct" mode is selected.

ECHO SEND/RETURN MODULE   (Model 7200E); FEATURES & FUNCTIONS.

1. ECHO RETURN LEVEL
   A rotary control (or optional straight-line fader) sets the
   level applied to both the 8 mixing busses and to the stereo
   mixdown/monitor output.

2. ECHO RETURN ON/OFF SWITCH
   This illuminated latching pushbutton displays the echo return
   channel number (1 to 4), and lights when the channel return is
   On.

3. SOLO 1 SWITCH
   Pressing this button allows individual echo return channel
   monitoring without interruption of the program signals. The
   solo is "non-positional"; it is heard "centered" between the
   left and right monitor speakers regardless of the actual stereo
   pan pot position or bus assignment of the channel.

4. EQ IN/OUT SWITCH
   When this button is pressed in, the 3-band echo return equalizer
   is activated. When the button is out, the equalization is
   electrically defeated. Operation is silent and does not
   cause "clicks" in the audio. (See curves in Figure 3-2.)

5. LOW & HIGH FILTER SWITCHES
   As suggested by the nomenclature on the buttons, these switches
   activate shelving filters. The low filter (high pass) is fixed
   at a 12 dB/octave slope, 3 dB down at 70 Hz. The high filter
   (low pass) also has a 12 dB/octave slope and is 3 dB down at
   15 kHz.

6. CHAMBER ON, DELAY ON & DELAY POST SWTICHES
   The Pacifica's echo system accommodates both a conventional
   chamber device and a digital or tape delay device. When
   the Chamber ON, Delay ON and Delay Post switches are Out, the
   Echo Send Mix output is sent to both the chamber and delay
   devices.

   a) Engaging only the Chamber On switch picks up the return
   line from the chamber and applies the signal to the Echo Return
   Level control, and monitor and mix bus selectors.

   b) Engaging only the Delay On switch picks up the return from
   the delay device and applies the signal to the Echo Return
   Level control, etc.

   c) Engaging both the Chamber On and Delay ON switches routes
   the echo send mix first to the delay unit's input, then from
   the delay output to the chamber input, and finally returns the
   signal from the chamber's output to the module's Echo Return
   Level Control, etc. (i.e., delay followed by chamber).

d) Engaging the Delay Post switch, in addition to Chamber On and Delay On, exchanges the position of the chamber and delay device in the signal chain.

7. DELAY REPEAT SWITCH & LEVEL CONTROL
If the delay device is in use, engaging this switch enables the delayed audio to be recirculated back to the module input. In this way, multiple repeats can be created without external patching. The number of repeats is adjusted with the Delay Repeat Level control, making a popular effect instantly available.

8. VU RETURN SWITCH
Normally, the echo send signal level is displayed on the Echo VU meter. When this switch is engaged, that meter displays the signal level returned from the chamber and/or delay device.

9. FOLDBACK ECHO RETURN SWITCH & LEVEL CONTROL
The switch is used to turn the echo "On" or "Off" in the Foldback circuit. The control varies the amount of echo return added to the foldback signal.

10. PAN POT & ASSIGNMENT SWITCHES, MIXDOWN/MONITOR MUTE SWITCH, SOLO 2 BUTTON, CUE LEVEL CONTROLS
These function identically to their counterparts on the input module.

11. FOLDBACK SELECTOR
Latching this pushbutton selects the foldback mode, turning "On" the Foldback Output and simultaneously removing the module's echo return signal from mix bus assignment and mixdown/monitor circuits. Regardless of switch position, echo can always be returned to the Cue busses. If it is desired to place the module in Foldback mode, and to return echo to the foldback bus, press the Foldback Echo Return switch (#9 above).

12. MIX BUS ASSIGN
These function identically to their counterparts on the input module.

13. ECHO SEND/FOLDBACK MASTER
This straight-line control functions as an Echo Send level control in the echo mode, and as a Foldback Master level control in the foldback mode.

14. EQUALIZER & EQ SEND SWITCH
The 3-band, 33-frequency equalizer is identical to that used in the Input Modules. Normally, the equalizer would affect the echo return signal (from the delay and/or chamber). When the adjacent EQ SEND switch is engaged, the equalizer instead affects the echo send signal (to the delay and/or chamber).

STEREO MASTER FADER (A SEPARATE MODULE); FEATURES & FUNCTIONS.

1. STEREO MASTER
   This is straight-line fader controls the stereo program output
   level.

   NOTE: Additional electronics are contained within this module,
   including the stereo mixing amplifiers, stereo booster
   amplifiers and the mono mixing amplifier.

CONTROL ROOM MONITOR MODULE   (7200CR)
STUDIO MONITOR MODULE   (7200S); FEATURES & FUNCTIONS.

   Note: these two modules are identical with the exception
   of those features marked with an asterisk (*). These
   features are meaningful only in the control room environ-
   ment and are not present on the Studio Monitor module.

1. CONTROL ROOM (OR STUDIO) LEVEL
   This rotary control adjusts the level of the control room (or
   studio) monitor speakers.

2.* DIM LEVEL
   When the talkback function is engaged, or the Dim pushbutton is
   depressed, the ontrol room monitor level drops to the level
   preset with this control. An LED lights whenever the control
   room monitors are dimmed. In this way, feedback is avoided
   (or local conversations can be carried on) without the need for
   complete monitor muting, and without disturbing the basic
   settings of the monitor level control.

3.* SOLO LEVEL
   This control determines the monitor level when the Solo 1
   function is engaged. There are two Solo LED's, one for Solo 1
   and one for Solo 2. The LED's light whenver the corresponding
   Solo switch is engaged on any input module.

4. MUTE PUSHBUTTON
   Depressing this button turns the control room (or studio)
   monitors entirely Off.

5.* DIM PUSHBUTTON
   Depressing this button reduces the control room monitor level
   to the level preset with the Dim Level control (#2 above).

6.* MIXDOWN MODE SELECTOR
   Depressing this pushbutton selects the "mixdown" mode of
   operation for the console. In this mode, the channel stereo
   pan pot and "L" - "R" assignment switches derive their signals
   directly from the channel fader instead of the monitor circuits.
   In addition, the channel Monitor Level control is defeated.

7. OUTPUT MODE SELECTORS
    These two switches allow checking mono compatibility of a
    stereo program. The "2" button is engaged for normal stereo
    monitoring, while the "2>1" button combines the "L" and "R"
    signals into a mono feed which is sent only to the left channel
    monitor amplifier and speaker.

8. MONITOR SOURCE SELECTORS (PROGRAM & TAPE)
    These switches permit monitoring of a variety of signals
    from tape machines, console mix busses, and other sources, as
    indicated by nomenclature on the module panels.

COMMUNICATIONS MODULE   (7200C); FEATURES & FUNCTIONS

1. TALKBACK SELECTOR SWITCHES
    The signal from the control room talkback microphone (located
    on the meter panel to the right of the stereo program meters)
    is preamplified and compressed. Depressing any of these push-
    buttons then routes the processed talkback signal to the
    indicated bus or busses, with the exceptions described below:
       TONE applies a sine wave signal from the module's test
       oscillator to the slate/tone bus; the oscillator is auto-
       matically turned On regardless of the front panel "Oscillator
       On/Off" switch position. Frequency and level can be adjusted
       as desired.
       SLATE applies the talkback signal, combined with a 30 Hz
       tone, to the slate/tone bus, and is useful for identification
       announcements on tapes. For normal playback, the voice
       announcement can be heard above the 30 Hz tone without
       difficulty. During fast tape winding, the 30 Hz tone is
       multiplied to some higher frequency, and can be heard as a
       distinct "beep", thus aiding the operator in finding the spot
       on the tape.
       MASTER simultaneously applies the talkback signal to the
       Slate, Studio, Cue 1, Cue 2, and Foldback busses.

2. TALKBACK LEVEL CONTROLS
    These four rotary controls provide for independent adjustment of
    the talkback signal level applied to their respective busses
    when the corresponding Talkback Selector buttons are engaged.
    The 30 Hz slate tone is factory set to -10 VU.

3. CUE MASTER LEVEL CONTROLS
    These two straight-line faders set the overall levels on the
    Cue 1 and Cue 2 output busses.

4. OSCILLATOR FREQUENCY CONTROL
    This stepped rotary control provides precise frequency adjustment
    at 11 points, covering a 1 decade range.

5. OSCILLATOR RANGE SELECTOR SWITCHES
    In conjunction with the Oscillator Frequency Control (#4 above),
    these 3 buttons provide a full 20 Hz to 20,000 Hz range for the
    test oscillator. Thus, the oscillator may be used for cali-
    brating tape machines and checking console performance.

6. OSCILLATOR ON/OFF SWITCH
    Turns the oscillator completely OFF to eliminate any possibility
    of leakage into the program. The adjacent LED lights when the
    oscillator is On.

7. OSCILLATOR AMPLITUDE
    This rotary control sets the oscillator output level to the Tone
    bus (#1 above) and to the console's patch bay.

GAIN STRUCTURE & NOMINAL OPERATING LEVELS

The Pacifica has at least 24 dB of headroom throughout the system. Thus, it is rather forgiving of carelessly set bus levels. However, it is always best to know what the nominal and maximum levels are at input and output points, and to set pads, faders and trimmers so that maximum signal-to-noise ratio and minimum distortion can be preserved.

Inspect the console schematic diagram in Section VI, and notice that the levels and gains are included as part of that drawing. The dB gain or loss at a given circuit point is specified in square brackets (i.e., [-6]), while the actual signal level in dBm at the nominal setting is specified in a diamond shaped box <+4>.

The concerned operator will know the nominal and maximum input and output levels with which his auxiliary equipment is designed to operate, or can learn so from checking the manufacturers' specifications. He will then set the auxiliary equipment and/or the console to maintain the highest possible signal levels without danger of distortion.

For example, how should the gains on the Pacifica input module be set if a condenser microphone specified at nominal -45 dBm output level is placed in front of a kick drum? According to the console block diagram, the nominal mic input level is -55 dBm. Thus, the nominal mic output is already 10 dB hotter. However, kick drums produce considerable acoustic level which in turn can cause the mic to generate nominal levels around -20 dBm, 35 dB hotter than the nominal mic input level. The Mic Trim control will provide up to 34 dB of attenuation, not quite enough. Thus, it would be advisable to switch in the 20 dB Pad, dropping the condenser mic's output down from -20 to -40 dBm. The Mic Trim control could then be adjusted for another 15 dB of loss, bringing the condenser mic level down to the specified -55 dBm.

In the preceding discussion, the input fader could have been used to obtain the needed 35 dB loss, but remember there is only about 24 dB of headroom, and this would mean that the nominal level through the equalizer/filter stage would be 11 dB into clipping, and peaks would sound even worse. In instances where the nominal mic output is somewhat higher than -55 dBm, but still low enough that the Pad and/or Mic Trim control need not be used, the Fader could be used to reduce the level. However, bear in mind that the nominal Fader setting is -15 dB, and this would require the Fader to be kept at a lower setting, substantially reducing the available Fader control range. Thus, it is probably better to set each channel's Mic Trim control for the necessary attenuation and to operate all Faders at the same nominal setting. (This not only

gives a full range of control, it improves performance and it
simplifies mixing by allowing the operator to preset faders at the
same uniform "ON" point, and to fade in channels without concern
about "hitting the right level".)

If a console output must be reduced considerably in level to
accommodate sensitive auxiliary equipment, it is best not to reduce
the level with one of the console's output controls. Instead,
lower the setting on the input of the auxiliary device, or use a
pad at that input. This maintains maximum signal level in the lines
between the equipment, providing better isolation from noise.

If more and more input channels are brought into a mix so that
a given mix bus signal level rises too high, there are two ways to
handle the situation; the bus' output fader can be lowered, or if
the output fader is already fairly low relative to the nominal
setting of 0 dB loss, then all the input faders can be brought
down slightly.

Gains and losses need not be calculated with great accuracy; it
is sufficient to understand the principle and to operate the
console and auxiliary equipment in a sensible way. The Pacifica
console has a sufficiently quiet noise floor and high enough
headroom and output drive capability to cover fairly large errors
without creating audible noise or distortion.

HOW TO SET UP FOR RECORDING A LIVE MIX

It is necessary to provide three major functions when setting
up the console for a live recording session:

(1)   Route the console's microphone inputs (or line inputs, in
      the case of line-level electric instruments) to the
      appropriate program outputs for feed to the multi-track
      tape recorder.

(2)   Create a rough stereo mix of the output to the multi-track
      tape machine for reference in the control room.

(3)   Create a rough stereo mix (or monaural mixes) of the
      output to the multi-track tape machine for use by the
      performers (i.e., a headphone cue mix).

Initially, prepare the console for these functions by setting
the following switches and controls as described on the next page.
Functions not mentioned are either non-functional in this mode of
operation, or are unimportant during the initial setup procedure
and may be adjusted later as required.

SWITCH/CONTROL	SETTING

CONTROL ROOM MONITOR MODULE

1.	Control Room Level	Nominal (2 o'clock).
2.	Mute & Dim Switches	Buttons out.
3.	Mixdown Mode	Button out (nonselected).
4.	Output Mode Selector	#2 Button in.
5.	Program Selectors	Stereo.
	STEREO MASTER FADER	Nominal (#10).

INPUT MODULES & INPUT/MASTER MODULES

1.	Fader	Nominal (#15).
2.	Channel On/Off Switch	Button in (channel On).
3.	Mic Selector	Button in for microphone input; button out for line-level input
4.	Mic Pad*	Button out (nonselected).
5.	Mic Gain Trim*	Full clockwise (no attenuation).
6.	Mic Power Switch*	Button in only for use with 48V phantom powered microphones.
7.	Monitor Level Control	Nominal (#12).
8.	Pan Switch	Button out (nonselected).
9.	"L" & "R" Switches	Press in either or both to assign the channel to left, right or center position for rough mix.
10.	Dub Switch	Button out (nonselected).
11.	Mix Bus Assign (1-8)	Buttons out (nonselected); initially, use the direct bus outputs, not the mixing busses.
12.	Mix Bus Master †	Nominal setting (#0).
13.	Direct Output Switch	Button in (selected).

ECHO SEND/RETURN MODULES

1.	Echo Return On/Off	Button out (nonselected).

COMMUNICATIONS MODULE

1.	Communication Switches (Tone, Foldback, Cue 1, Cue 2, Studio, Slate, Master).	Buttons out (nonselected)
2.	Oscillator On/Off	Button out (nonselected).

STUDIO MONITOR MODULE

1.	Studio Level	Nominal (2 o'clock).
2.	Mute Switch	Button in (selected).
3.	Output Mode Selector	#2 Button in.
4.	Program Selectors	Not important because studio monitor speakers are not being used.

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*Applicable only when mic input is selected.
†Input/Master Mix Modules only.

Use the SOLO 1 buttons to identify each track (to hear only that channel's mic or line input in the monitor). For microphone inputs, set the faders at nominal (#15) and adjust the MIC GAIN TRIM and MIC PAD as necessary to obtain the desired program levels; it is generally best to record at high levels, and to balance the channel levels during mixdown.

To listen to a mix of channel levels, use the MONITOR LEVEL CONTROL on each input channel. Channel equalization may be used during recording, although many engineers prefer to do most of the equalization during mixdown. Adjust the equalizers as you wish.

In order that the performers may hear what each other are doing, use one of the CUE LEVEL controls on each input module, assigning the channels to create a headphone mix. Monitor the mix as you are creating it by selecting the appropriate PROGRAM button on the Studio Monitor Module. The overall CUE levels are set with the pair of CUE sliders on the Communications module. If several performers wish to hear different mixes, use both CUE controls; additional headphone mixes may be obtained with the four ECHO/FOLDBACK controls.

If the performers wish to hear echo and/or reverb in their headphone mixes, but you wish to keep the recording "dry" (free of echo or reverb), select the FOLDBACK ECHO RETURN switch on one or more of the Echo Send/Return modules, and adjust the adjacent level control accordingly. Be sure to send an appropriate effects mix out to the echo and/or reverb by adjusting the ECHO/FOLDBACK send controls on the input channels. Echo may be equalized as required.

To communicate with performers, engage the CUE button(s) on the Communications module, adjust the CUE LEVEL control(s) and speak. Also, press the FOLDBACK button on this module if foldback is being used for an additional headphone mix. The control room monitors are automatically muted to prevent feedback.

When initially rolling tape, it is desirable to apply reference tones to the tape. Turn ON the oscillator in the Communications module, adjusting its amplitude and frequency as required. The oscillator is applied to the program outputs by pressing the TONE button. To identify a tape, or to identify segments of a tape, press the SLATE button. This applies a 30 Hz tone to the program outputs at the same time it actiaves the talkback mic for voice announcements to these outputs. The tone is not usually audible when the tape is played back at normal speed, but during fast wind with the tape in contact with the heads, the tone is heard as a high-pitched "beep" to signal the desired point has been reached.

It is sometimes desirable to group several inputs for control by a sub-master control. This can be done with the Input/Master modules. For example, in a 16-track recording, channels 1 and 17 through 20 might be used for drum mics. All could be assigned to

buss 1, rather than to Direct outputs, and the Mix Bus Master fader on channel 1 would then simultaneously fade the entire drum set. Similar sub-groups could be done by assigning several channels to a different mix bus and using the corresponding Mix Bus Master.

HOW TO SET UP FOR MIXDOWN OF A MULTI-TRACK TAPE TO STEREO, AND FOR OVERDUBBING

It is necessary to provide several major functions when setting up the console for mixdown and overdubbing:

(1) Route the line inputs (multi-track tape inputs) to the input modules.

(2) Create a final stereo mix from the output of the multi-track tape machine for feed to the stereo master recorder.

(3) Create separate mono or stereo headphone cue mixes for any performer(s) who will be overdubbing.

(4) Activate the mic input for any channel(s) which will be used to do the overdubbing.

(5) Feed the stereo mix to the studio monitors while performers are there but are not overdubbing.

Initially, prepare the console for these functions by setting the following switches and controls as described below. Functions not mentioned are either non-functional in this mode of operation, or are unimportant during the initial setup procedure and may be adjusted later as required.

SWITCH/CONTROL	SETTING
CONTROL ROOM MONITOR MODULE	
1. Control Room Level	Nominal (2 o'clock).
2. Mute & Dim Switches	Buttons out.
3. Mixdown Mode	Button out (nonselected).
4. Output Mode Selector	#2 Button in.
5. Tape Selectors	Multi-track.
STEREO MASTER FADER	Nominal (#10).
INPUT MODULES & INPUT/MASTER MODULES	
1. Fader	Off (infinite attenuation).
2. Channel On/Off Switch	Button in (channel On).
3. Mic Selector	Button out (unless channel is designated for overdubbing).
4. Monitor Level Control	Nominal (#12).

SWITCH/CONTROL	SETTING
5. Pan Switch, "L" & "R" Switches & Pan Pot	Use same settings as during initial recording; if not known, select PAN button and adjust PAN control.
6. Dub Switch	Button out (nonselected) on most channels; if an overdub is to be done, select this button on an unused channel.
7. Mix Bus Assign (1-8)	Buttons out (nonselected).
8. Direct Output Switch	Button out (nonselected).

ECHO SEND/RETURN MODULES

1. Echo Return Level	Nominal (2 o'clock).
2. Echo Return On/Off	Button in (selected) for echo/foldback channels to be used.
3. Chamber, Delay & Delay Repeat Switches	Select Chamber On, Delay On, or both for effects explained in the Brief Operating Instructions. If multiple echoes are desired, Select Delay Repeat and adjust the control for desired number of echoes.
4. Echo Send Master	Nominal setting (#0).

COMMUNICATIONS MODULE

1. Communication Switches (Tone, Foldback, Cue 1, Cue 2, Studio, Slate, Master)	Buttons out (nonselected).
2. Oscillator On/Off	Button out (nonselected).

STUDIO MONITOR MODULE

1. Studio Level	Nominal (2 o'clock).
2. Mute Switch	Button out (nonselected) unless overdubbing is to be done near studio monitors.
3. Output Mode Selector	#2 Button in.
4. Tape Selectors	Multi-track tape button in (selected).

Use the SOLO 1 buttons to identify each track (to hear only that channel's mic or line input in the monitor). SOLO 2 allows you to hear the position of that input in the stereo perspective. Initially set the faders at nominal (#15), then adjust them as necessary to obtain the desired stereo program balance.

You will be hearing the same mix that is being applied to the stereo mastering machine; use the CHANNEL FADERS to obtain the level balance. Channel equalization may applied to separate vocals and instruments by emphasizing different frequency ranges, and to correct for undesirable tonal qualities. Low cut filters can cut rumble on predominantly mid-high frequency channels, and high cut

filters can eliminate excess noise on predominantly low frequency channels.

In order that the performers may hear the mixdown, the studio monitor speakers may be left On. If overdubbing is to be done in the studio, turn Off the studio monitor speakers and use the CUE LEVEL controls on each input module, assigning the channels to create a headphone mix. Monitor the mix as you are creating it by selecting the appropriate PROGRAM button on the Studio Monitor Module. The overall CUE levels are set with the pair of CUE sliders on the Communications module.

The Cue mix will carry the signal from the tape machine's record heads (sync playback) if any OVERDUB button is pressed. Because pressing an OVERDUB button switches the channel's input from multi-track tape to microphone, it is desirable to press an OVERDUB button on an unused channel so the cue system can monitor the sync signal. Then, the channel(s) to be "punched in" (corresponding to the track to be placed in record mode) can have its mic input activated when its OVERDUB button is pressed.

To introduce echo and/or reverb to the mix, assign the desired channels to those ECHO/FOLDBACK busses you wish to use, and adjust the Echo Send/Return modules corresponding to those busses. The echo can be applied to the headphone cue busses by adjusting the CUE controls on the Echo modules. Equalize the echo as desired. In most cases, the VU RTN button will be disengaged so the VU meters display echo send level; however, the return level can be checked by pressing in the button.

To communicate with performers, engage the CUE button(s) and/or STUDIO buttons on the Communications module, adjust the CUE LEVEL control(s) and speak. Also, press the FOLDBACK button on this module if foldback is being used for an additional headphone mix. The control room monitors are automatically muted to prevent feedback.

The oscillator may be used to align the tape machine or to place reference tones on the tape, and the slate/tone feature may be used as described in the preceeding subsection on LIVE RECORDING.

To check for monaural compatibility in a stereo mix, switch the Control Room Monitor module's Output Mode to 2>1 position. This creates a monaural blend of the stereo program. There may be a center-channel build-up of some 3 dB, but otherwise the mix should change little with respect to the balance of the various inputs. If a particular vocal or instrument disappears or drops in volume, and it is a sound source that is being picked up by more than one input channel, one mic may be out of phase with the others. Press the Phase Reversal (polarity reversal) switch for those channels (one at a time) until the offending input is discovered, and leave that phase switch engaged.

HOW TO SET UP FOR SOUND REINFORCEMENT AND STAGE MONITORING

The procedure for setting up a sound reinforcemement mix is similar to that for setting up a recording mix. Since most reinforcement is stereo (or mono), the console can be placed in MIXDOWN MODE (engage the "mixdown" switch on Control Room Monitor module) so that the input faders set the level on the stereo outputs. The Echo/Foldback busses are used for foldback (i.e., for stage monitor mixes). The Cue busses may be used for additional stage monitor mixes.

The Foldback sends should be set for pre-fader take-off points (PRE buttons in) so that when the house mix is adjusted with the channel faders, the stage monitor mix is unaffected.

While it is desirable in recording to mix all busses at the highest possible nominal level, and to raise some busses even higher on occasion, this technique is not suitable for sound reinforcement. Since there is a maximum level above which feedback will occur, that level is the ceiling. When additional channels are brought into the mix or one channel must be given more emphasis in the mix, it may be necessary to reduce the level on all other channels.

The Control Room Monitor module can be used for monitoring in the mixing booth, while the Studio Monitor module can be used to handle the stage monitors and any off-stage monitors (i.e., dressing rooms, lobby areas, etc.). Use the Control Room Monitor module with headphones, and use the SOLO buttons to identify channel inputs and to troubleshoot bad mics, etc. during a performance.

SECTION V
MAINTENANCE & SERVICE

MODULE REMOVAL & REPLACEMENT

To remove a module, unscrew two allen-head screws, one each at the extreme top and bottom of the input module. Then thread the module extractor tools (supplied with the console) into the holes in the module from which the allen screws were removed. Pull the module straight up, until it clears the console.

To replace the module, gently reinsert it its original position using care to align the module's card edge connectors with the corresponding sockets on the mother board. When properly aligned, the module front panel will rest approximately 1/8" higher than adjacent fully seated modules. Once alignment is assured, press the module firmly down into its sockets. Remove the extractor tools and replace the allen screws.

METER LAMP REPLACEMENT

Remove the meter pod rear panel behind the meter(s) to be serviced by turning the each panel screw one full turn in a counterclockwise direction (it is not necessary to remove the screw).

The meters are mounted four to a circuit board, and each board is hinged at its base. The front of the board may be accessed by depressing the two latches located on the upper inside surface of the meter pod (see illustrations, Section VI). It will be necessary to use two hands in order to release both latches simultaneously. As soon as the latches are released, the board will pivot on its hinge toward the rear panel, exposing the meter lamps.

NOTE: If the peak/VU option is installed, an additional circuit board will be "piggy-backed" behind the meter circuit board. It may be necessary to remove this second, smaller board in order to gain full access to the front of the meter board. Two screws fasten the smaller board to the main meter board; once they are removed, the smaller board may be unplugged and set aside.

To remove the lamp, grasp it, push it into its socket, and turn it counterclockwise approximately 1/4-turn. Then pull the lamp out of the socket. A small quantity of lamps are included with the spares kit. The proper replacement lamp is a #1829 (bayonet base, 28 volt dc).

After changing the lamp(s), swing the meter circuit board back in place and push it forward until the latches snap behind it. Then replace the meter pod rear panel and secure it by turning the screws approximately one full turn clockwise.

PEAK INDICATOR THRESHOLD LEVEL ADJUSTMENT

The Master LED Threshold control is located on the extreme right side of the console, behind the arm rest. The threshold at which the LED turns on may be adjusted from maximum sensitivity (+4 dBm) to minimum sensitivity (never turns On) by rotating the control clockwise. To obtain a given threshold adjustment:

   a) Apply the test oscillator to any channel's line input via the console's patch bay.

   b) Use an external dB meter or voltmeter to set the console's test oscillator to the desired threshold level.

   c) Turn the Threshold control behind the armrest until the LED just turns On.

CALIBRATION OF VU METERS ON STANDARD CONSOLE

Remove the meter pod rear panel behind the meters to be serviced by turning each panel screw one full turn counterclockwise.

The meters are mounted 4 to a circuit board, and each board has 4 calibration controls, one per meter.

   NOTE: If the console has the peak/VU option, see below for peak offset adjustment, and see page 5-1 for access to VU meter for calibration.

To calibrate a meter, use the following procedure:

   a) Apply the test oscillator to any channel's line input via the the console's patch bay. Set oscillator frequency to 1 kHz. Set level control to +4 dB.

   b) Route signal from input channel to appropriate metered output via the output assign switches.

   c) Using an accurately calibrated voltmeter with a dB scale, such as a Hewlett-Packard Model 400F, monitor the desired output via the console's patch bay.

   d) Set the channel's fader to result in an output level of +4 dB.

   e) Adjust the console VU meter's calibration control to result in a 0 dB reading on the VU meter scale.

PEAK CALIBRATION OF METERS ON CONSOLE WITH PEAK/VU OPTION

The peak/VU option is factory preset for a peak-to-VU reading differential of 8 dB. If a different calibration is required, proceed as follows:

1. Set peak meter mode selector switch to peak mode.

2. Repeat steps (a), (b), and (c) of standard VU meter calibration (see previous page).

3. Set channel fader to result in an output of +12 dB on the voltmeter (peak differential of 8 dB above the +4 dB output). If more or less differential than the 8 dB offset is desired, set the fader accordingly (i.e., set the fader for +14 dB output if a 10 dB differential is desired).

4. Adjust the peak/VU calibration control on the peak/VU piggyback circuit board to result in a 0 dB reading on the console's VU meter.

POWER SUPPLY VOLTAGE ADJUSTMENT

The Model 7280 Power Supply included with the Pacifica console is preset at the factory for proper voltage outputs. Should the voltage outputs require recalibration, the procedure is as follows:

a) Remove the dress panel by removing the mounting screw on each side to gain access to voltage adjustment controls. The control functions are marked on the sub panel.

b) The console should be connected to the supply so that the adjustment will compensate for any loading effects.

c) Connect a voltmeter to the appropriate terminals at the console (not at the supply). The barrier strip in the console is marked to indicate the various voltages and returns.

d) Insert a small slotted screwdriver through the appropriate hole in the supply sub panel, and gradually adjust the voltage. Clockwise rotation increases the voltage output.

NOTE: The power supply has over-voltage protection which will automatically shut off the output if the voltage is adjusted to greater than 10% of the nominal rating. Should the protection circuits activate, turn Off the power supply, turn the voltage adjustment counterclockwise, turn On the supply, and adjust for proper voltage output.

e) Disconnect the voltmeter and replace the power supply dress panel.

POWER SUPPLY REMOTE SENSING

If it is necessary to operate the power supply at a distance from the console which is beyond that of the power supply cable included with the console, it may be desirable to use the remote sensing feature of the power supply. Refer to the Power Supply Remote Sensing Schematic diagram in Section VI, or consult the Quad-Eight factory for details.

WARRANTY

The console will be presented to the buyer complete and operable in accordance with specifications and block schematics. We warrant the equipment to be free from defects in workmanship, materials and fabrication for one (1) year under normal and proper use, service and maintenance.

Performance of Quad-Eight manufactured equipment according to the specifications will be guaranteed for a period of one (1) year. This guarantee will not apply with respect to Quad-Eight equipment and/or component parts thereof which have been altered,* or which have been subjected to misuse, negligence, and/or accidental damage.

Any warranty item(s) which must be returned to the factory for service will require a return authorization prior to shipment to Quad-Eight or its affiliated service representatives. It is the responsibility of the buyer to pay for insurance and shipment to Quad-Eight; Quad-Eight will pay for return freight only if a return authorization has accompanied the item(s). At our option, Quad-Eight will repair or replace the item(s).

This guarantee does not apply if uncrated equipment is moved into areas where construction is going on. Under no condition shall Quad-Eight be liable for damages or loss incurred, or for any personal injury, or property damage incidental to the use of Quad-Eight equipment.

FACTORY SERVICE

The factory or its affiliated service representatives will, for a reasonable fee based on time, material and shipping costs, repair equipment which is out of warranty. If a repair estimate is desired, the equipment must first be submitted to Quad-Eight or its service representative along with a note describing the nature of the problem and requesting an estimate of repair costs.

PLEASE CONTACT THE FACTORY BEFORE RETURNING ANY EQUIPMENT.

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* Other than modifications pursuant to Quad-Eight's supervision.

SYSTEM SPECIFICATIONS

Pacifica series consoles meet or exceed the following specifications:

FREQUENCY RESPONSE   20 Hz to 20 kHz, +1 dB,
30 Hz to 20 kHz, $\overline{+}0.5$ dB, measured at any level up to +24 dB§ from microphone input to any output.

NOISE   Mic input equivalent input noise, -129 dBV; Line input (remix); 84 dB S/N ratio with normal control settings, +4 dB in and +4 dBm out.

HEADROOM   Minimum headroom, mic preamp, +28 dB; All other amplifiers, +24 dB.

DISTORTION   Less than 0.25% total harmonic distortion measured at any level up to +24 dB output and any frequency from 30 Hz to 20 kHz (typically less than 0.1% THD).

GAIN   80 dB overall (higher gains available).

CROSSTALK   Greater than 75 dB isolation, 30 Hz to 10 kHz channel-to-channel, at normal control settings;
Greater than 70 dB, 20 Hz to 20 kHz.

POWER REQUIREMENTS   115 V or 230 V AC, 50 Hz or 60 Hz.

SHIPPING WEIGHT   Approximately 700 lbs. (318 kg) for 24 input system.

CONSOLE DIMENSIONS   [INCHES & (cm)]

Frame input capacity	Length*	Height	Depth**
16 channels	66.0 (168)	39.0 (99)	41.0 (104)
24 channels	79.0 (200)	39.0 (99)	41.0 (104)
36 channels	103.7 (263)	39.0 (99)	41.0 (104)

* incl. legs   **incl. arm rest

§ 0 dB reference is 0.775 volts RMS.

SYSTEM COMPLEMENT

Model No. or Function	Description	Frame Size			Supplied
		16	24	36	
7200M	Input/Master Mix	8	8	8	8
7200	Input/Output	8	16	28	up to 28
7200E	Echo Send/Return	4	4	4	4
7200SR	Stereo Module	1	1	1	1
7200CR	Control Room Monitor	1	1	1	1
7200S	Studio Monitor	1	1	1	1
7200C	Communication/ Oscillator	1	1	1	1
VU Meter	16 Program, Left, Right 4 Echo, Mono, Aux	24	24	32	24
VU Option	24 Program	--	32	--	--
Patch Bay	Bantam tip-ring-sleeve jacks		240		up to 336
In/Out Connections	Terminal Block (std.) XLR optional (mating connectors supplied)	as required 64	as required 80	as required 104	as req'd. up to 104
Auxiliary Devices	Space provided for up to 8 1-1/2" x 7" and up to 8 1-1/2" x 5-1/4".				

Schematic Diagrams
1. Program Block Schematic Diagram

2. Monitor Block Schematic Diagram

3. Detailed Block Schematic Diagram

4. Input Module Schematic Diagram

5. Echo Module Schematic Diagram

6. Stereo Module Schematic Diagram

7. Control Room Monitor Module Schematic Diagram

8. Studio Monitor Module Schematic Diagram

9. Communications Module Schematic Diagram

10. Power Supply Schematic Diagram

Other Wiring Diagrams
11. Power Supply Inter-supply Harness

12. Power Supply Local & Remote Voltage Sensing

13. Power Supply Transformer Connections for 115/230 VAC Conversion

Other Drawings
14. Console Leg Assembly Detail

15. Console Rear View (includes meter pod access & input/output
        wiring locations)

16. Multi-pin Terminal Block Wiring Information

17. Power Cable Length/Wire Gauge Connection Chart

Printed Circuit Board Parts Locator Diagrams

18. Master Input/Inut Main Board

19. Master Input/Input Stereo Control Board

20. Master Input/Input Equalizer Microphone Preamp Board

21. Echo Main Board

22. Stereo Board

23. Control Room Board

24. Studio Board

25. Communications Board
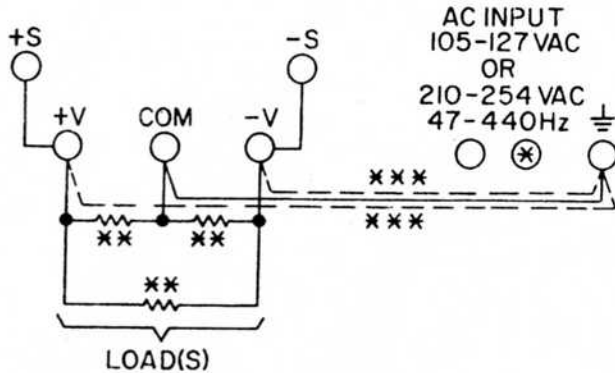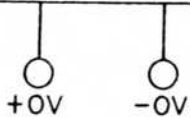
* CONNECT UNGROUNDED (HOT) LEAD
  TO THIS TERMINAL.

** LOAD(S) CAN BE CONNECTED IN ANY
   CONFIGURATION.

*** FOR POSITIVE OR NEGATIVE GROUND,
    DISCONNECT JUMPER FROM TERMINALS
    COM & ⏚ AND RECONNECT TO TERMINALS
    +V & ⏚ OR −V & ⏚.

Local Sensing Connection.
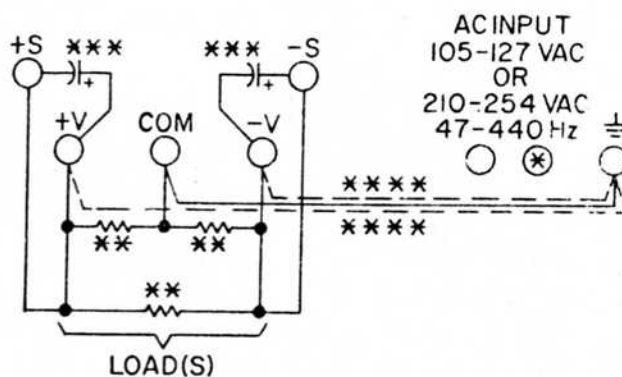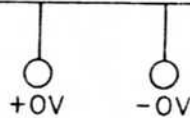
* CONNECT UNGROUNDED (HOT) LEAD
  TO THIS TERMINAL.

** LOAD(S) CAN BE CONNECTED IN ANY
   CONFIGURATION.

*** A 2.5MF, ELECT., CAP. MAY BE REQUIRED.

**** FOR POSITIVE OR NEGATIVE GROUND,
     DISCONNECT JUMPER FROM TERMINALS
     COM & ⏚ AND RECONNECT TO TERMINALS
     +V & ⏚ OR −V & ⏚.

Remote Sensing Connection.
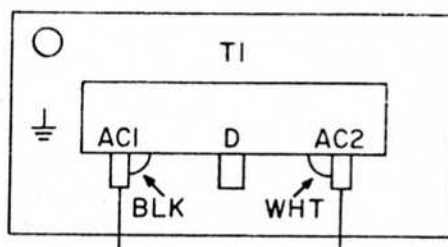
CONNECTION SHOWN IS FOR 105–127 VAC. FOR 210–254 V
INPUT, DISCONNECT BLK & WHT TRANSFORMER LEADS FROM
TERMINALS AC1 & AC2 AND RECONNECT BOTH LEADS TO
TERMINAL D.

Transformer Connections for AC Input Conversion.
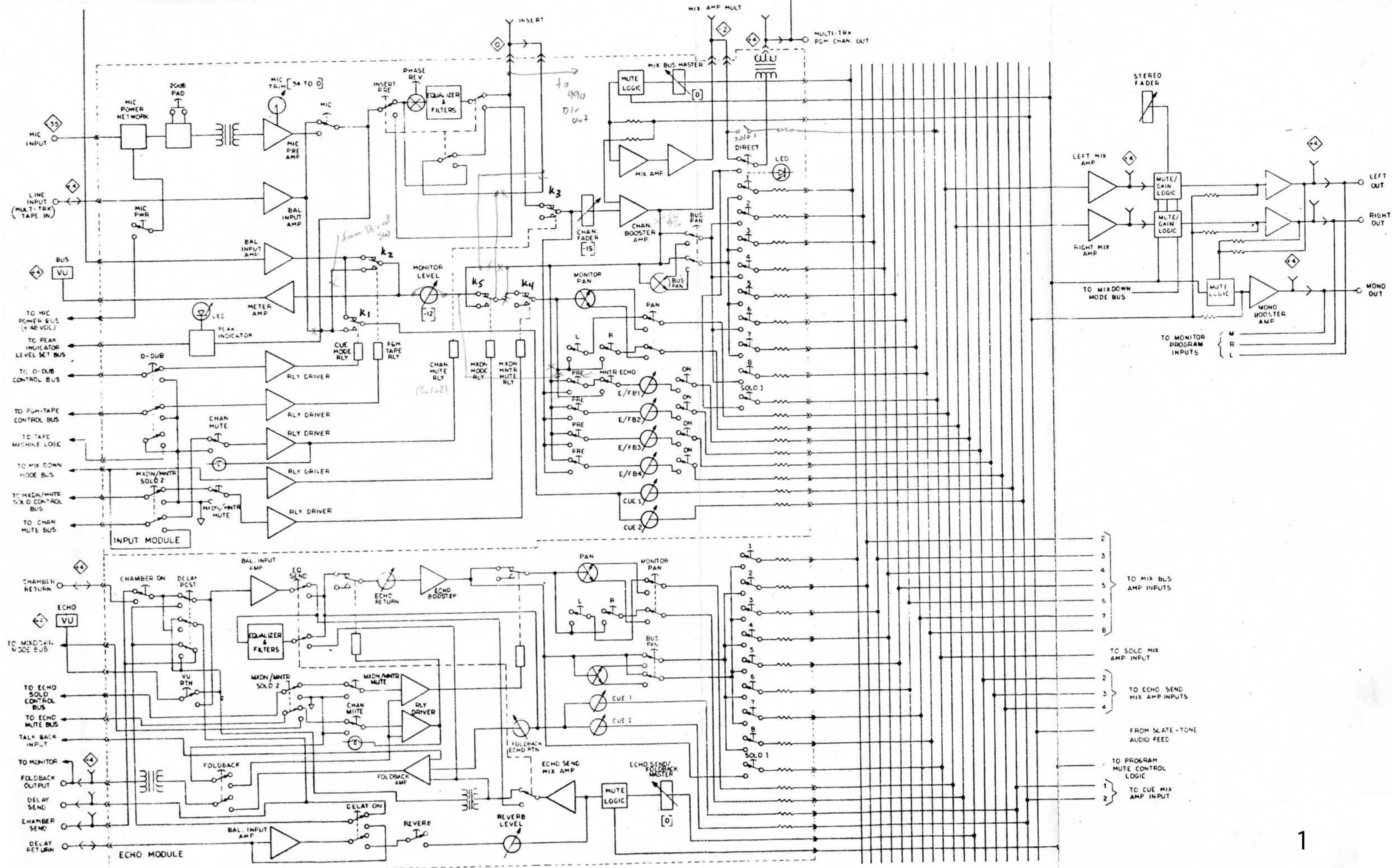
PROGRAM BLOCK SCHEMATIC

MONITOR BLOCK SCHEMATIC

2
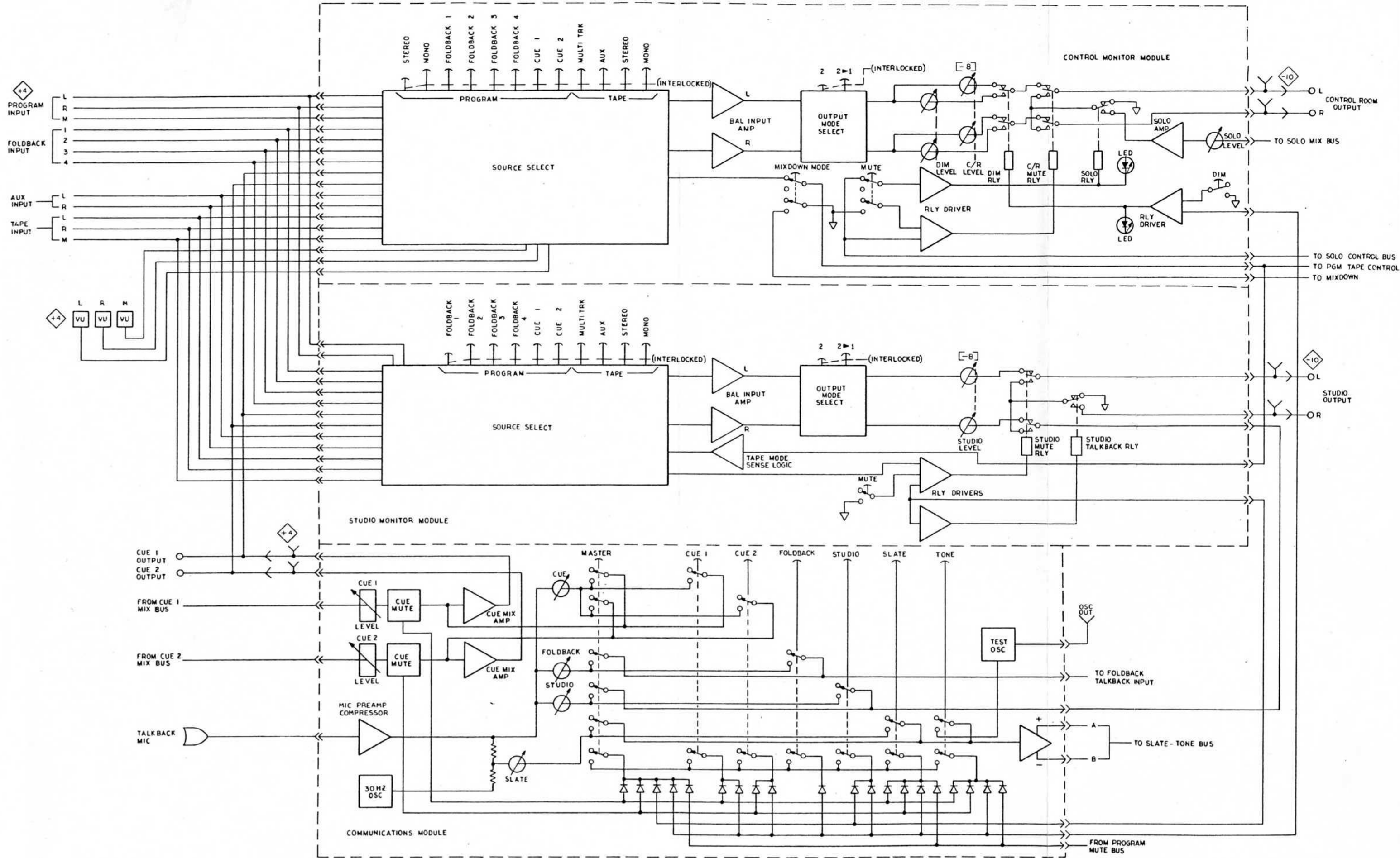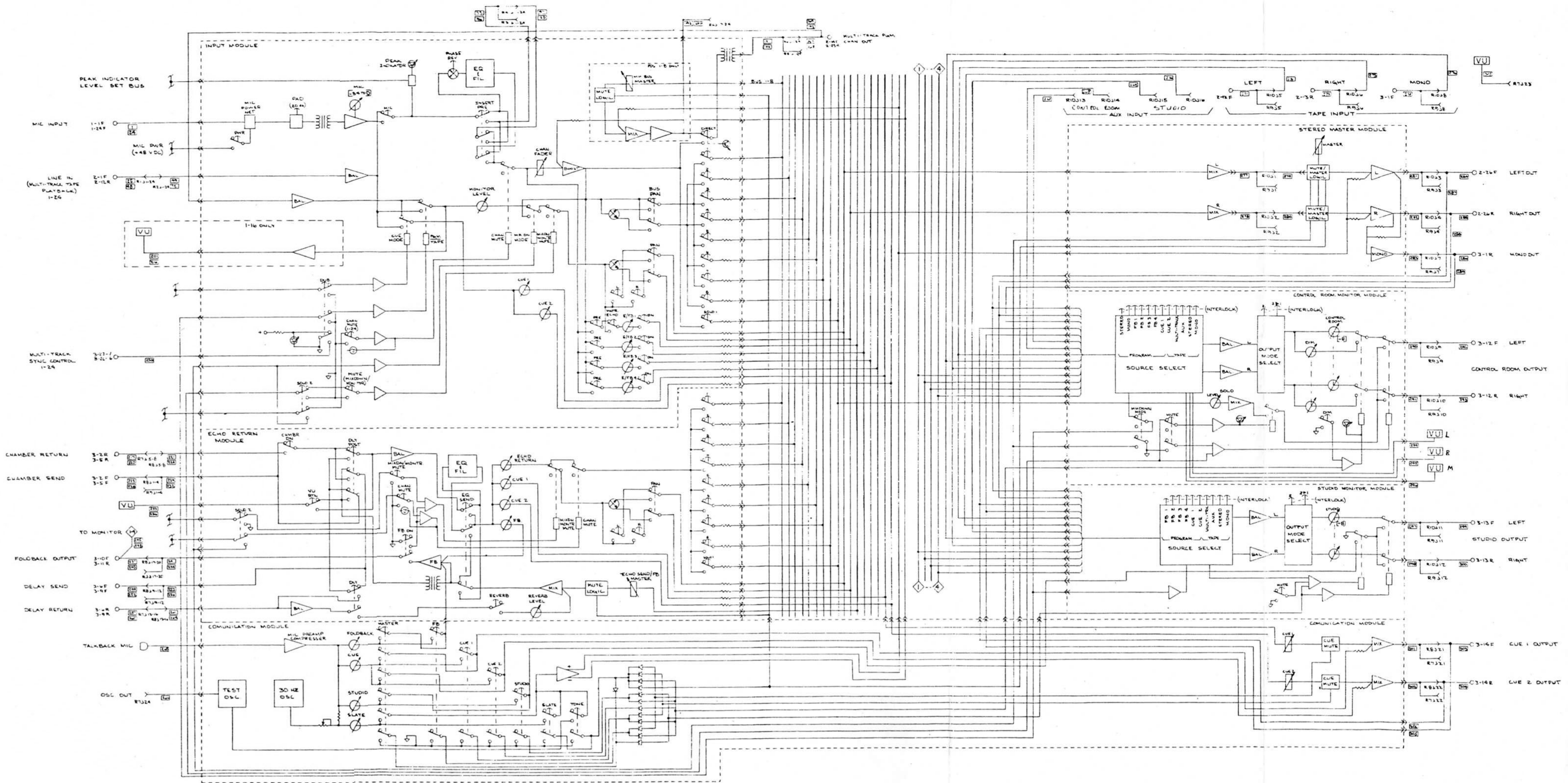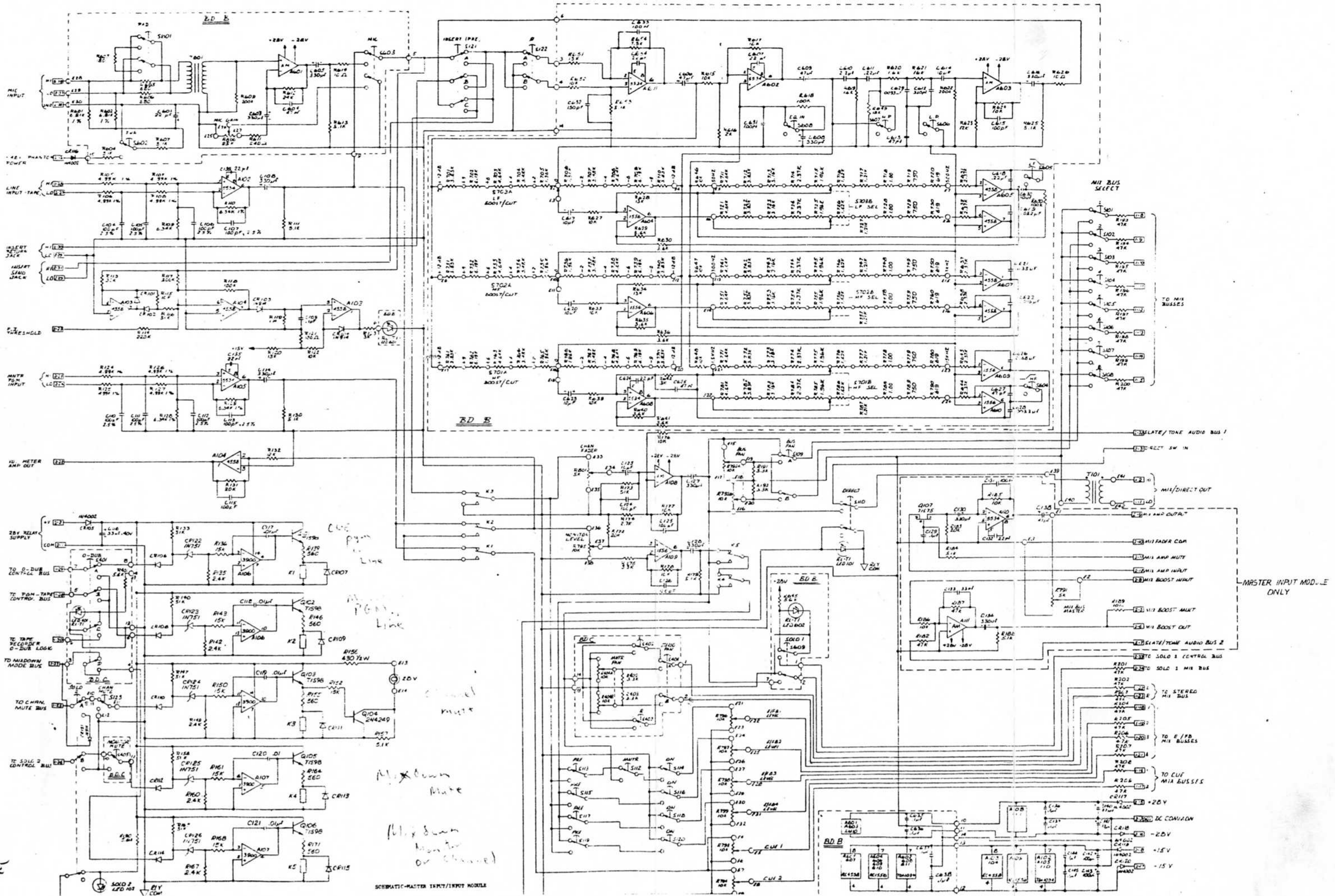
INPUT MODULE

SCHEMATIC-MASTER INPUT/INPUT MODULE

4
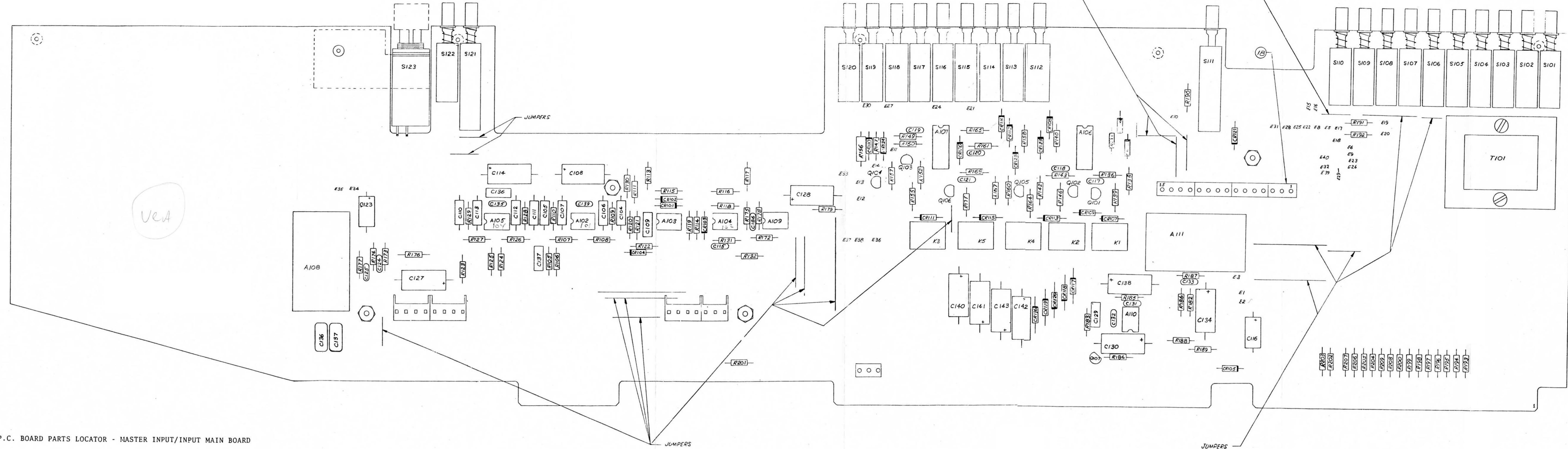
P.C. BOARD PARTS LOCATOR - MASTER INPUT/INPUT MAIN BOARD
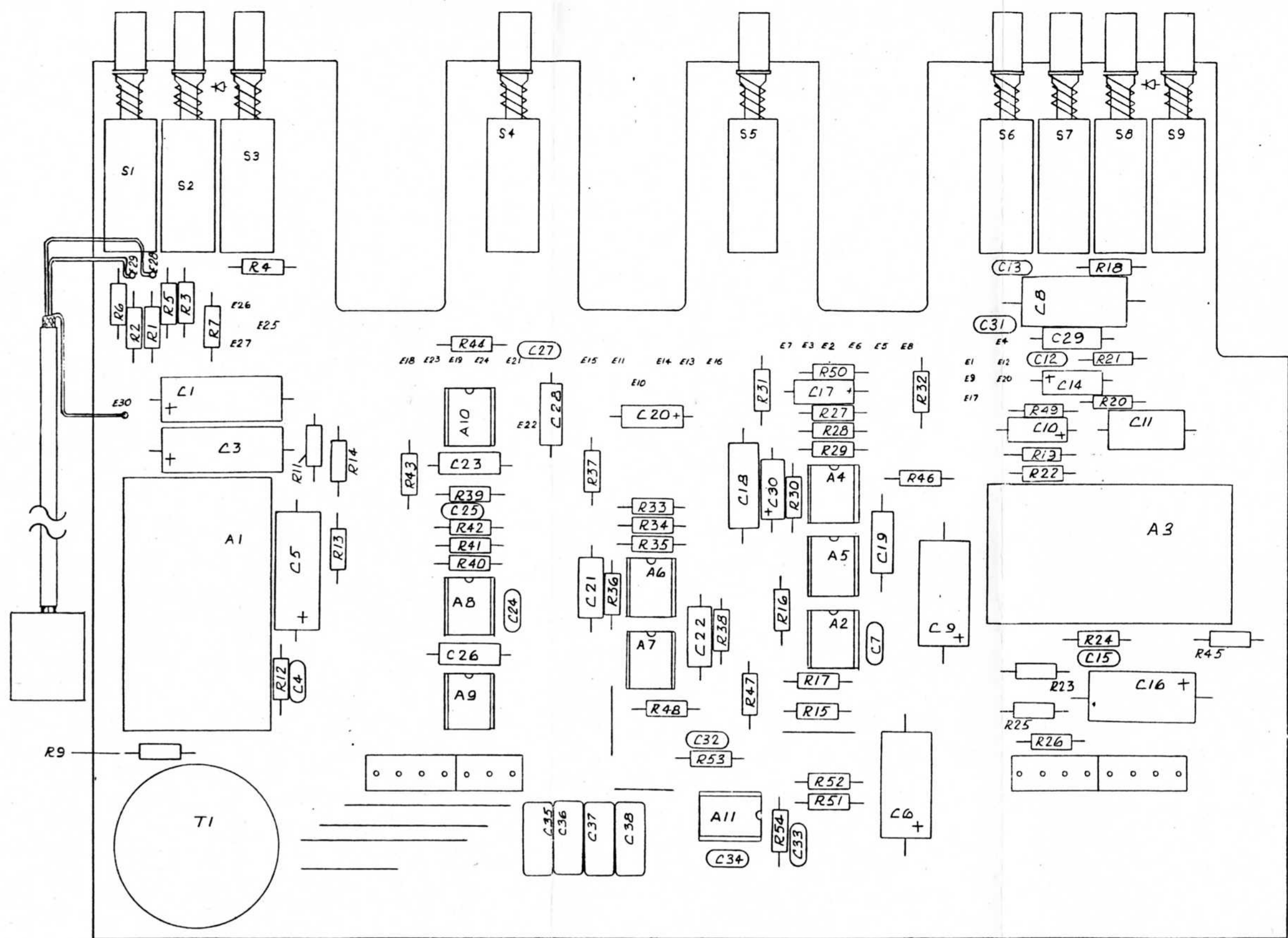
P.C. BOARD PARTS LOCATOR - MASTER INPUT/INPUT EQUALIZER MIC
PREAMP BOARD

20

S401 S402 S403 S404 S405

R404

R402

R403

R401

JUMPER
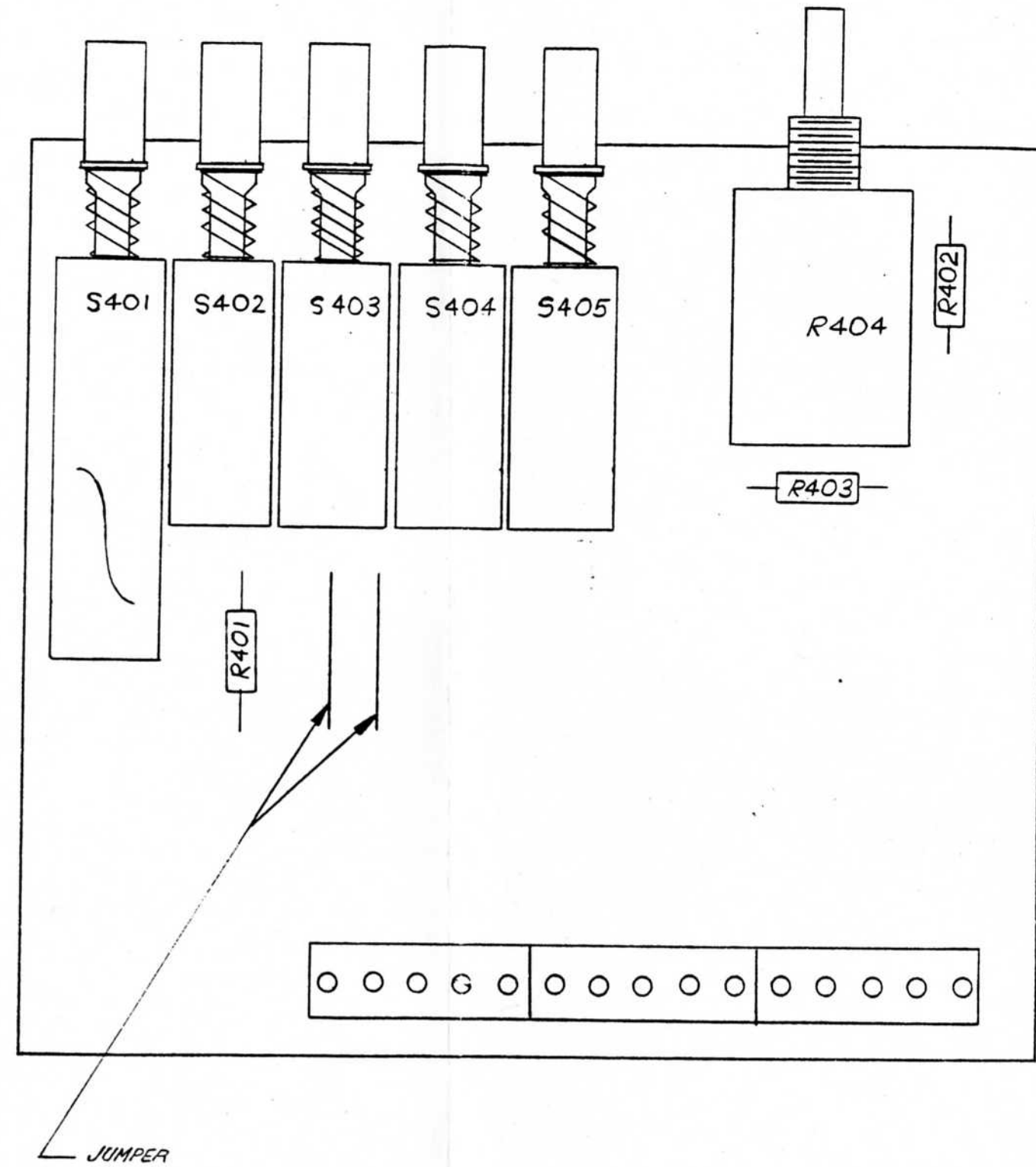
P.C. BOARD PARTS LOCATOR - MASTER INPUT/INPUT STEREO CONTROL BOARD
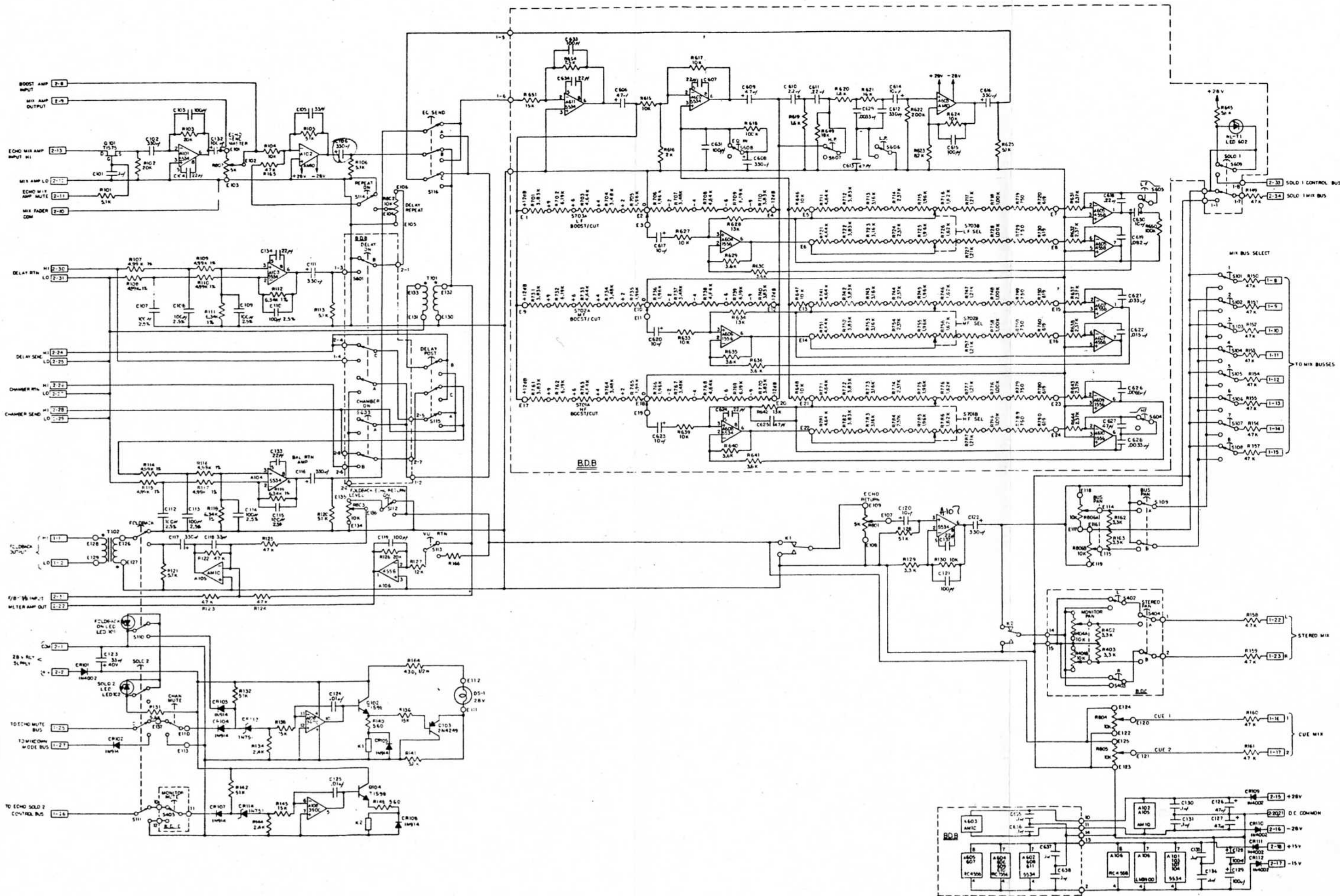
ECHO MODULE

SCHEMATIC - ECHO MODULE

5.
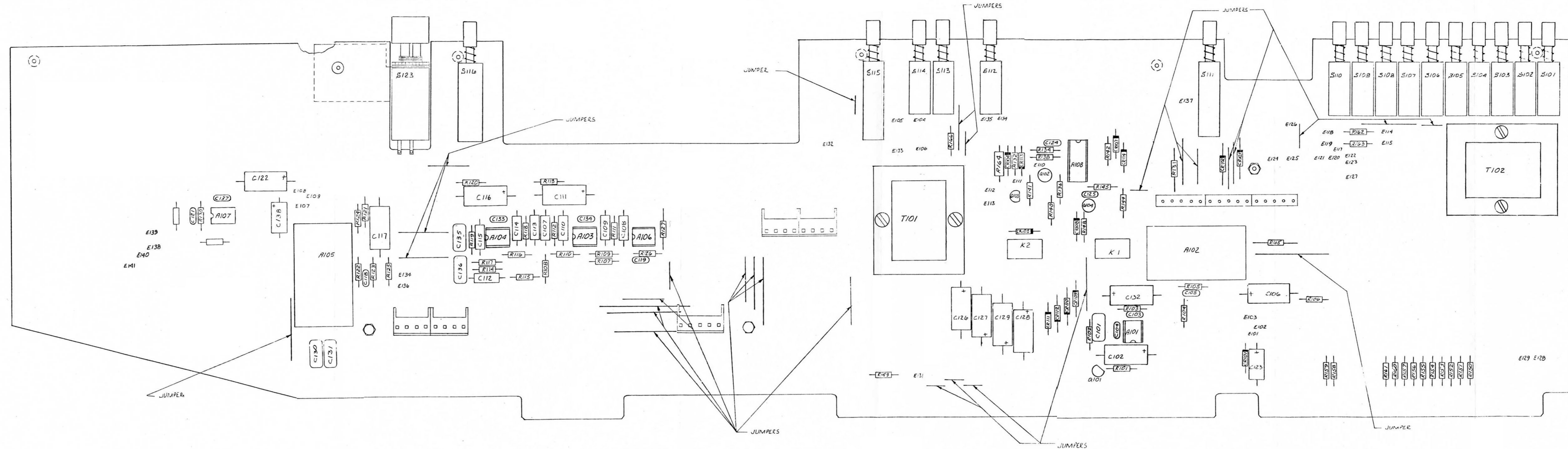
P.C. BOARD PARTS LOCATOR - ECHO MAIN BOARD
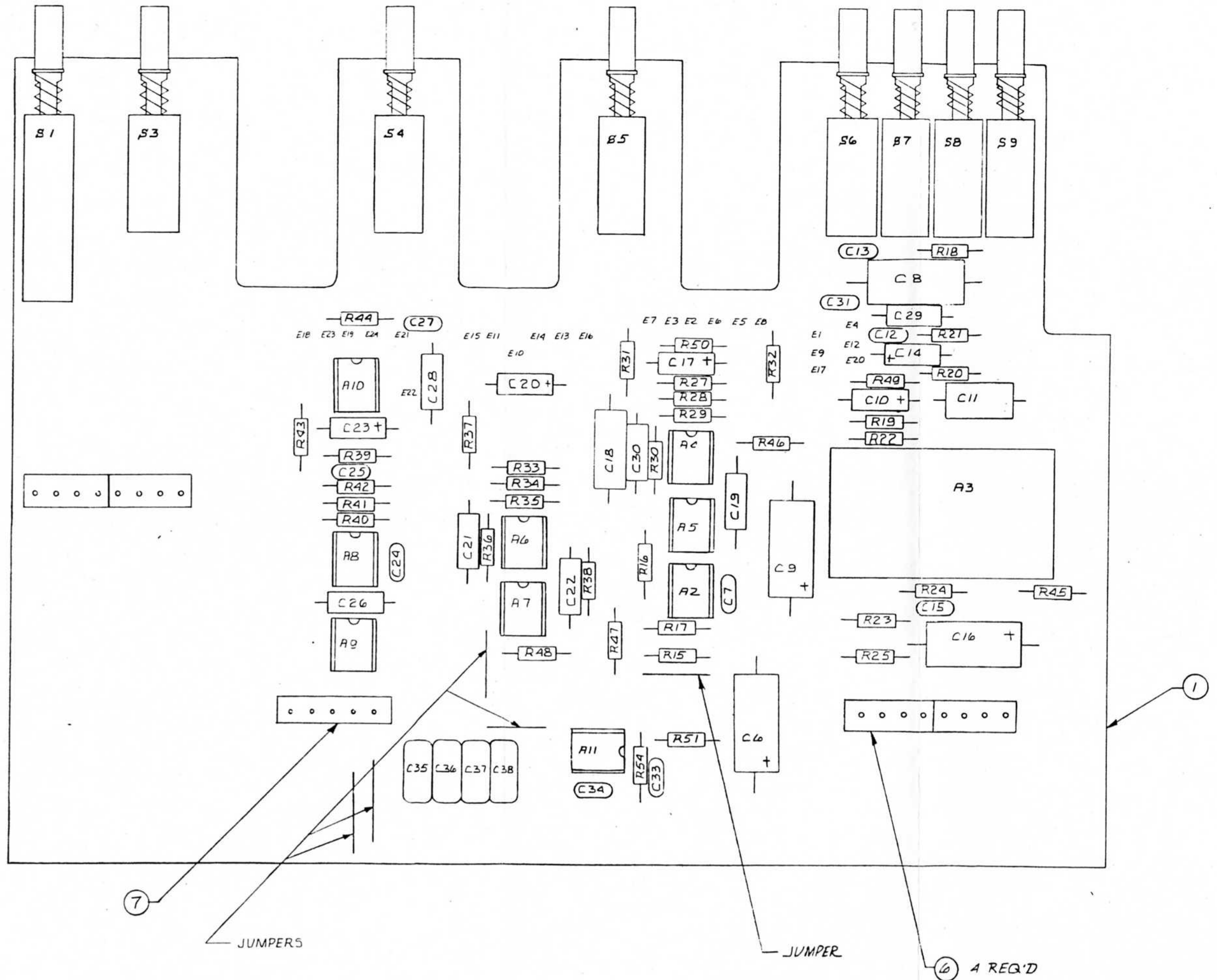
P.C. BOARD PARTS LOCATOR - ECHO EQUALIZER BOARD

21 p

S402 S403 S404 S405

R404

R402

R403

JUMPER

P.C. BOARD PARTS LOCATOR - ECHO STEREO CONTROL BOARD

21E
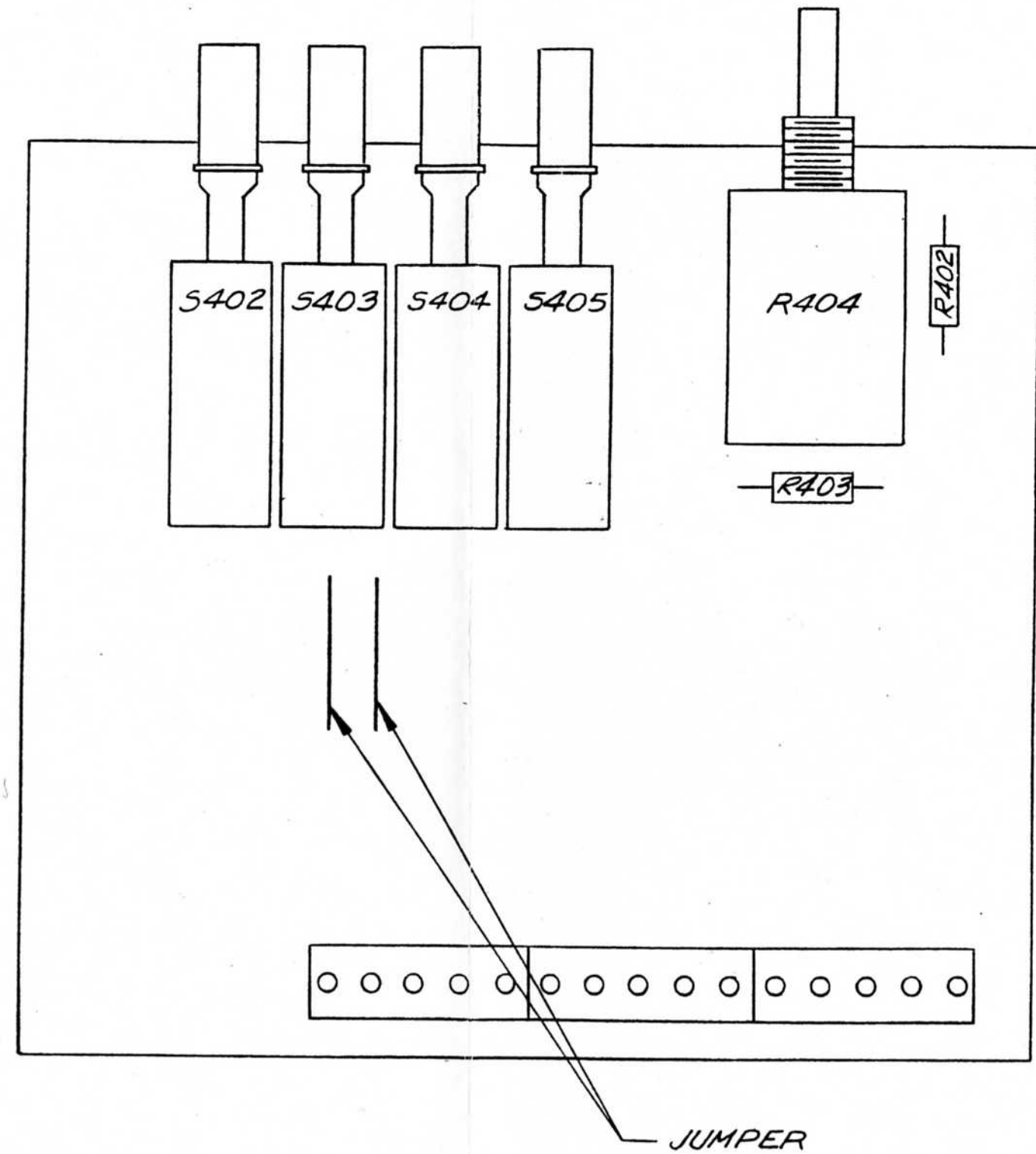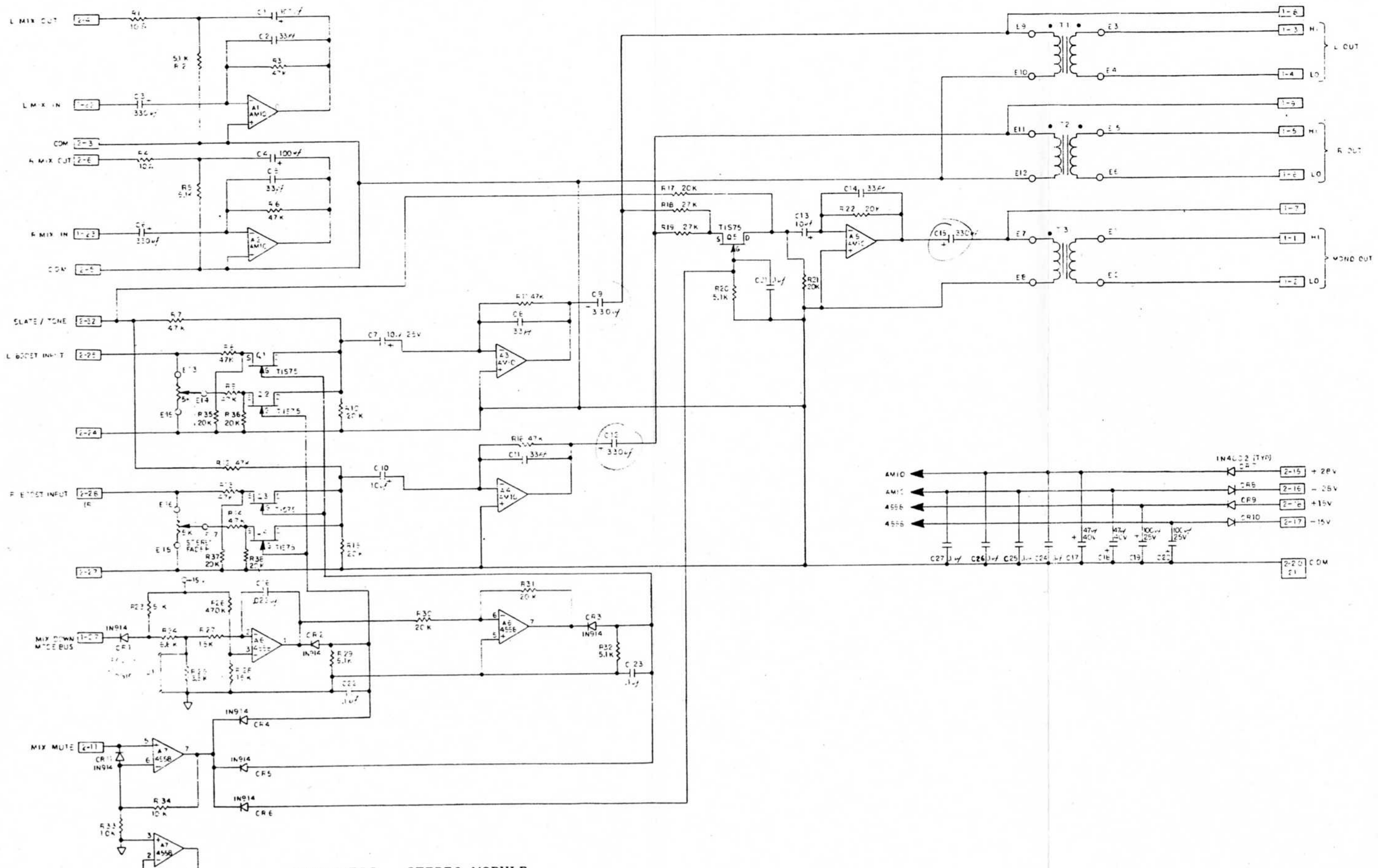
SCHEMATIC - STEREO MODULE

ARD PARTS LOCATOR - STEREO BOARD

22
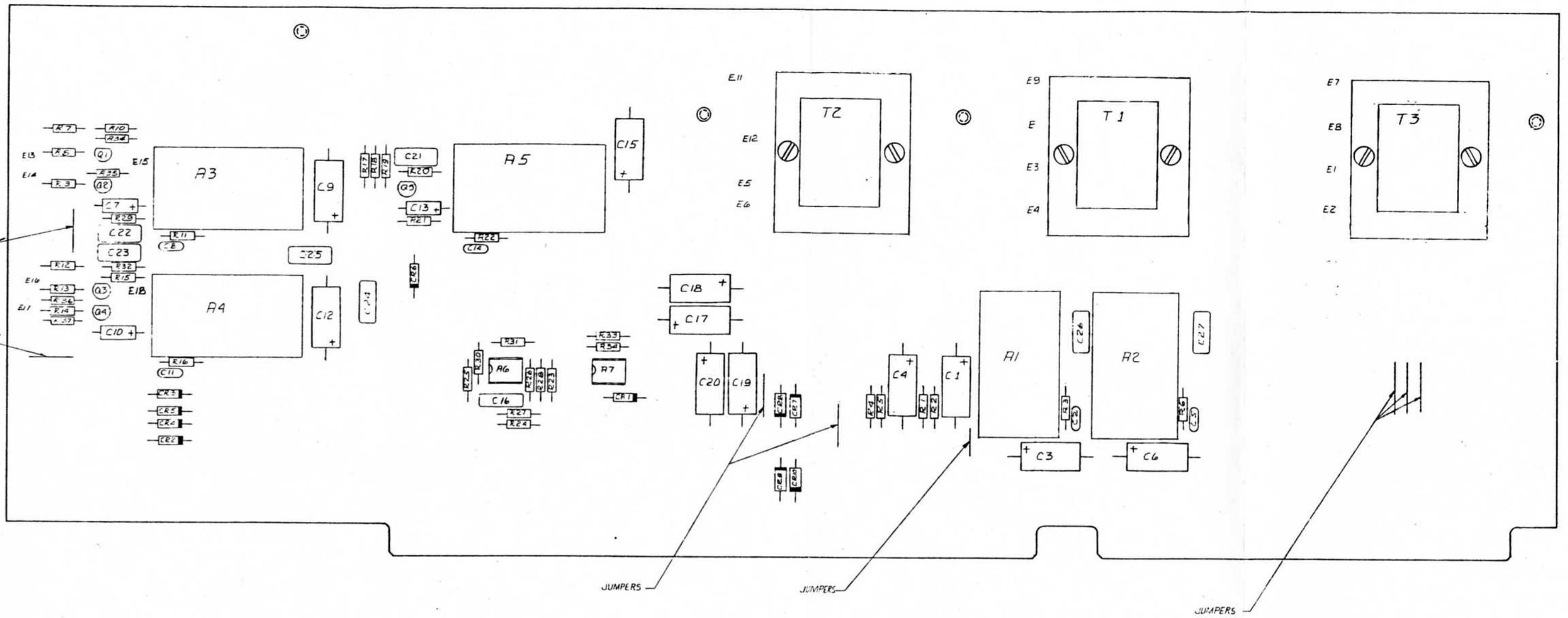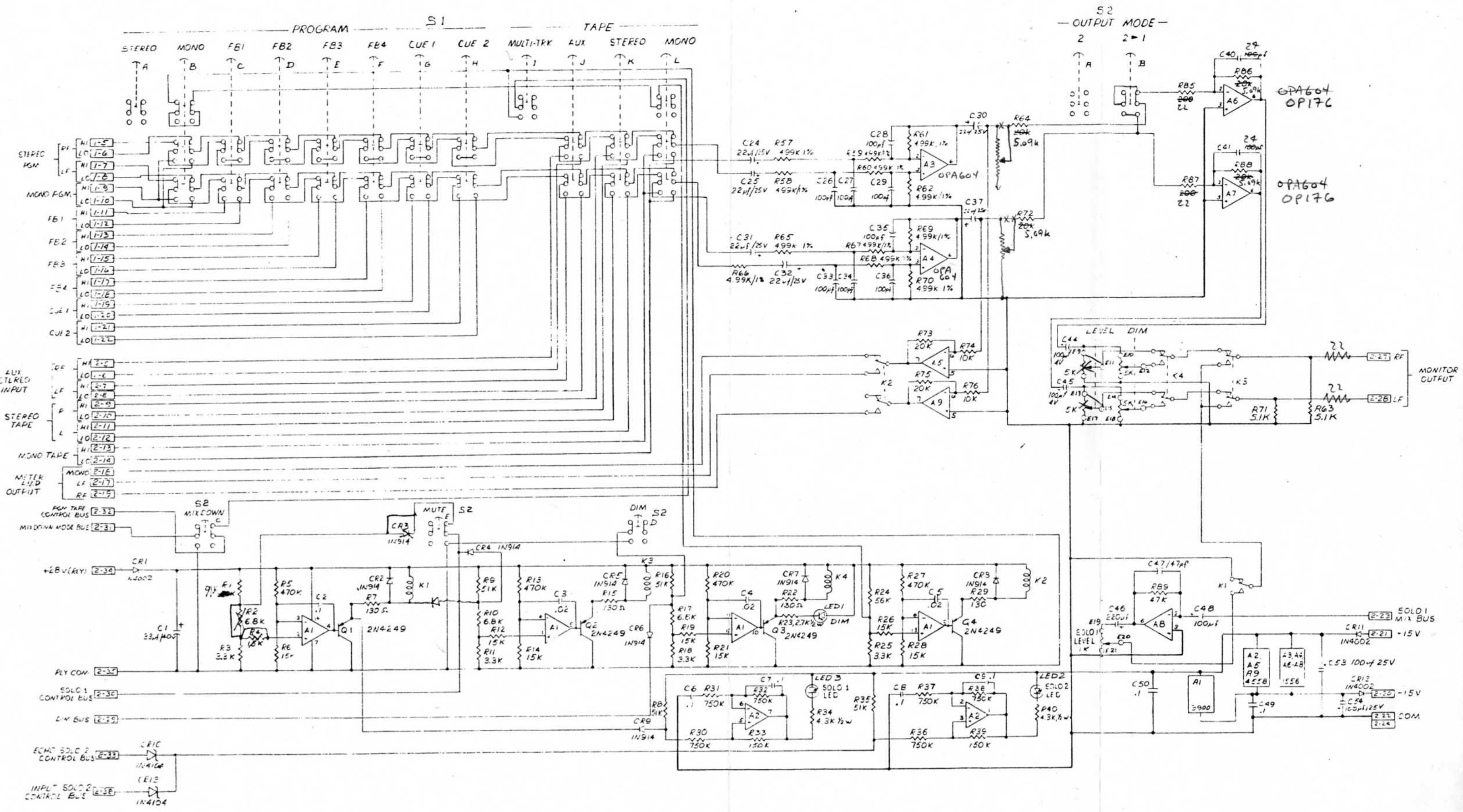
SCHEMATIC - CONTROL ROOM MODULE

.7
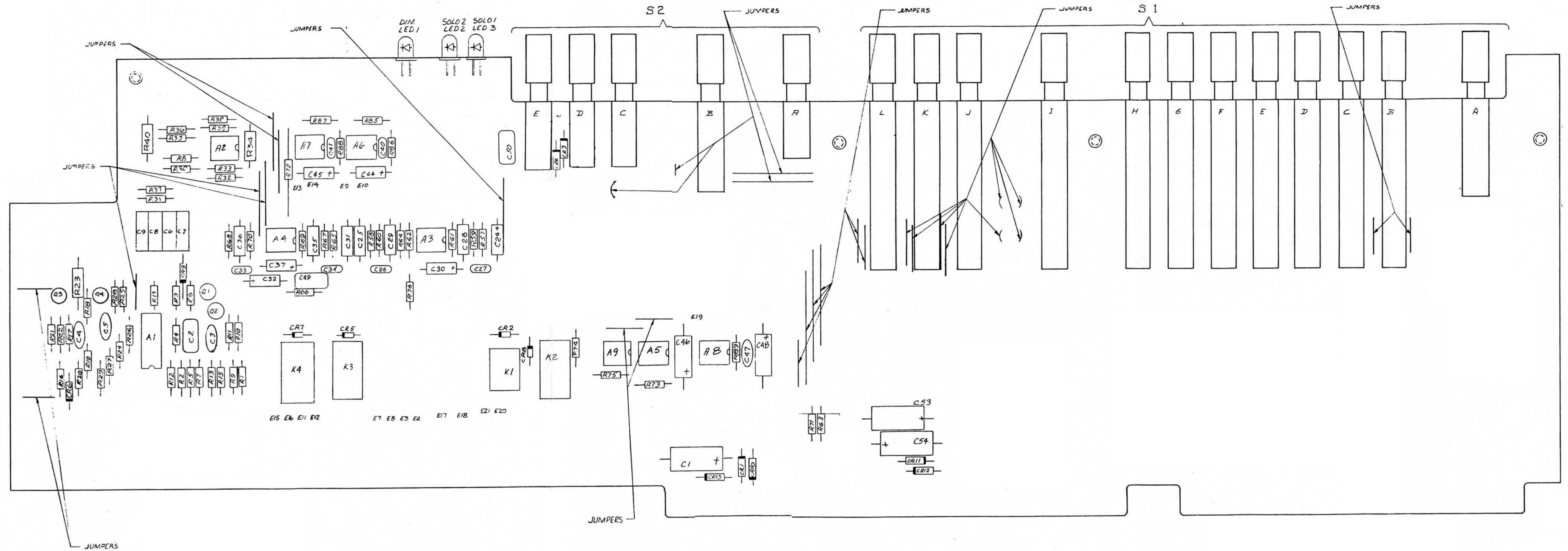
P.C. BOARD PARTS LOCATOR - CONTROL ROOM BOARD
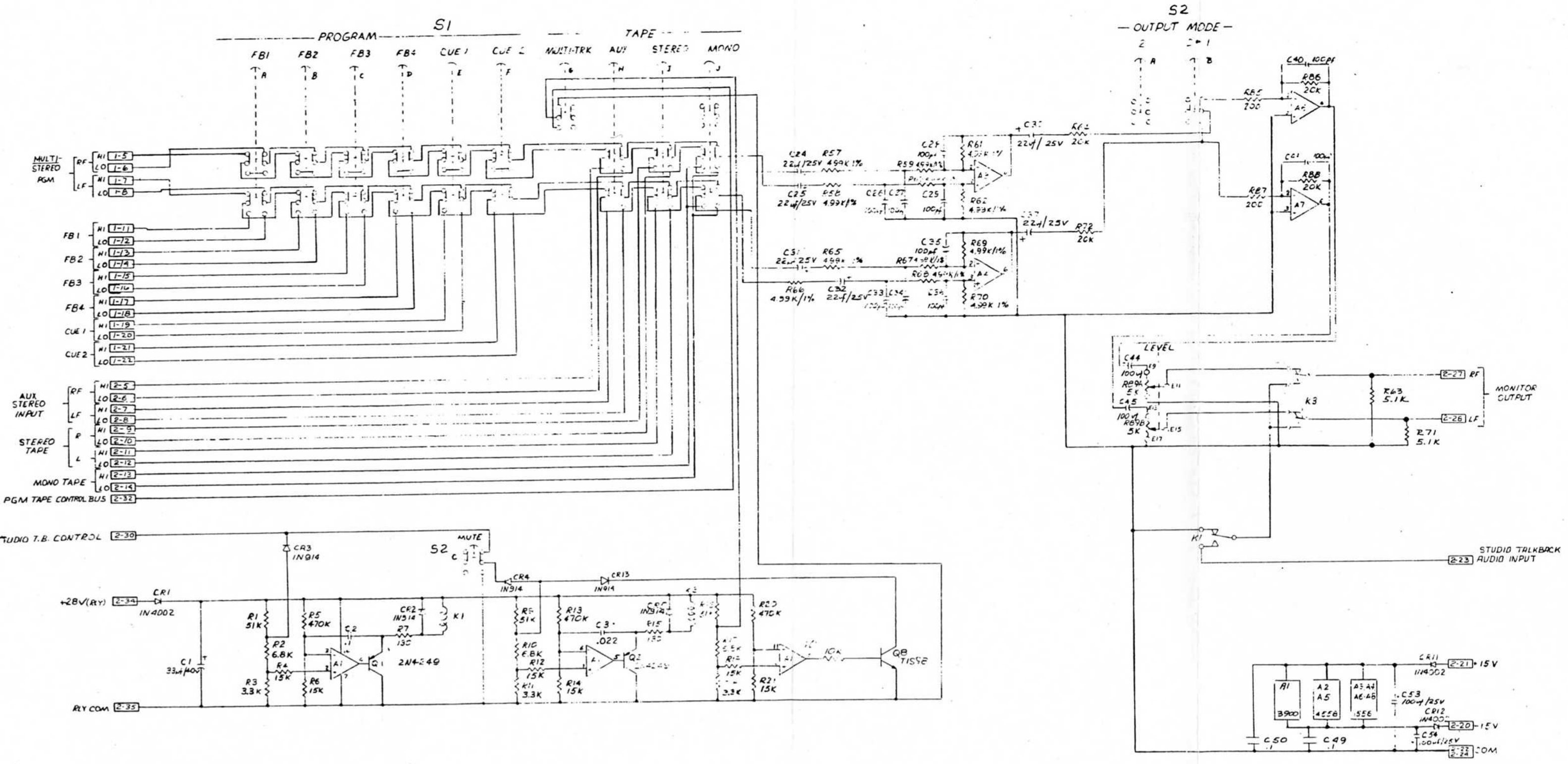
SCHEMATIC STUDIO MODULE

P.C. BOARD PARTS LOCATOR - STUDIO BOARD

COMMUNICATIONS

SCHEMATIC - COMMUNICATIONS MODULE
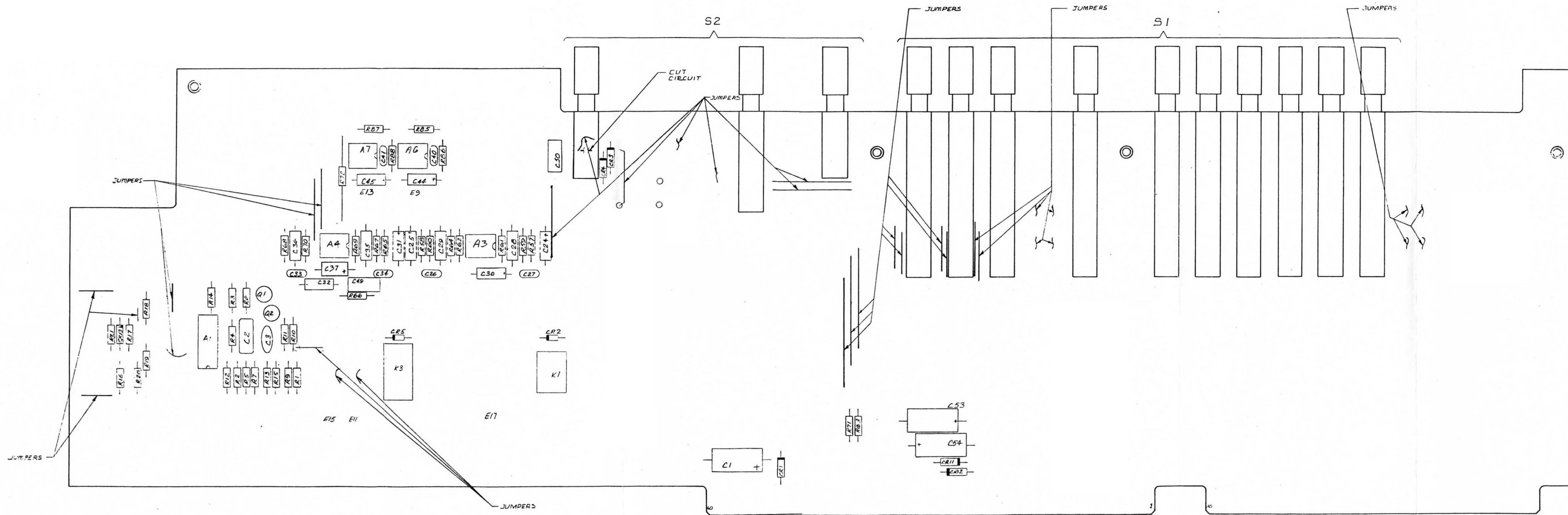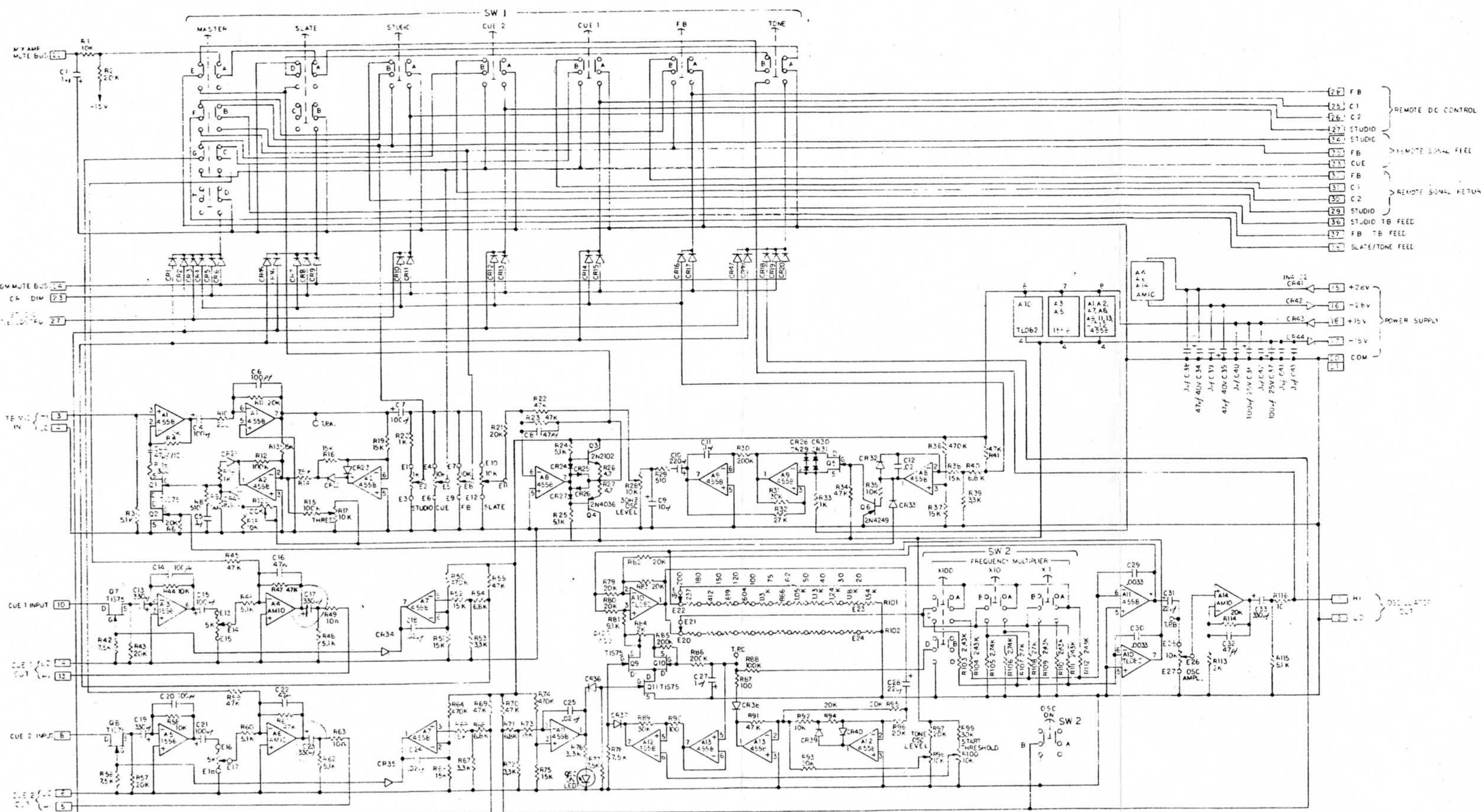
SW 2

304 STACKPOLE
77 13

9.
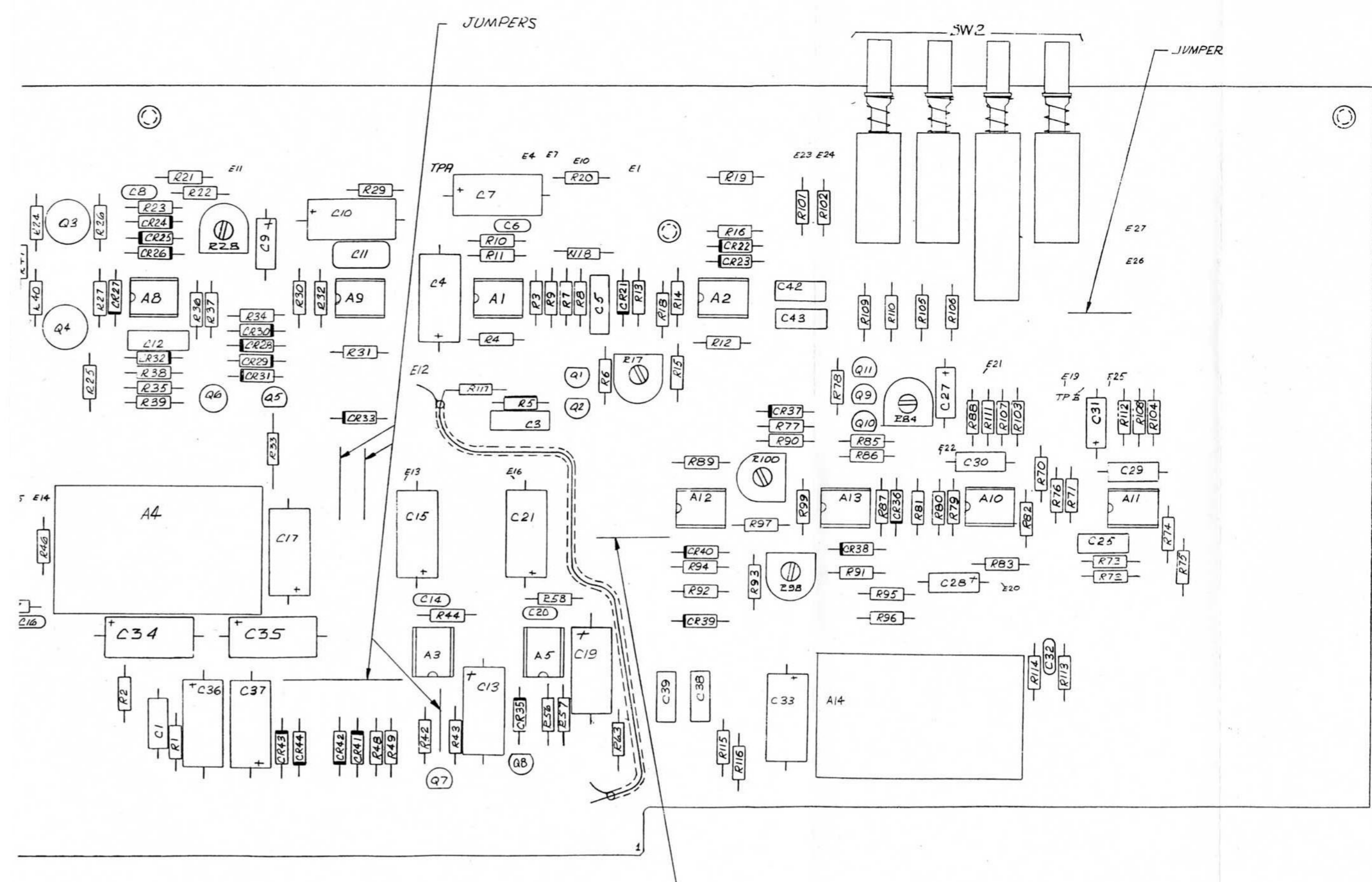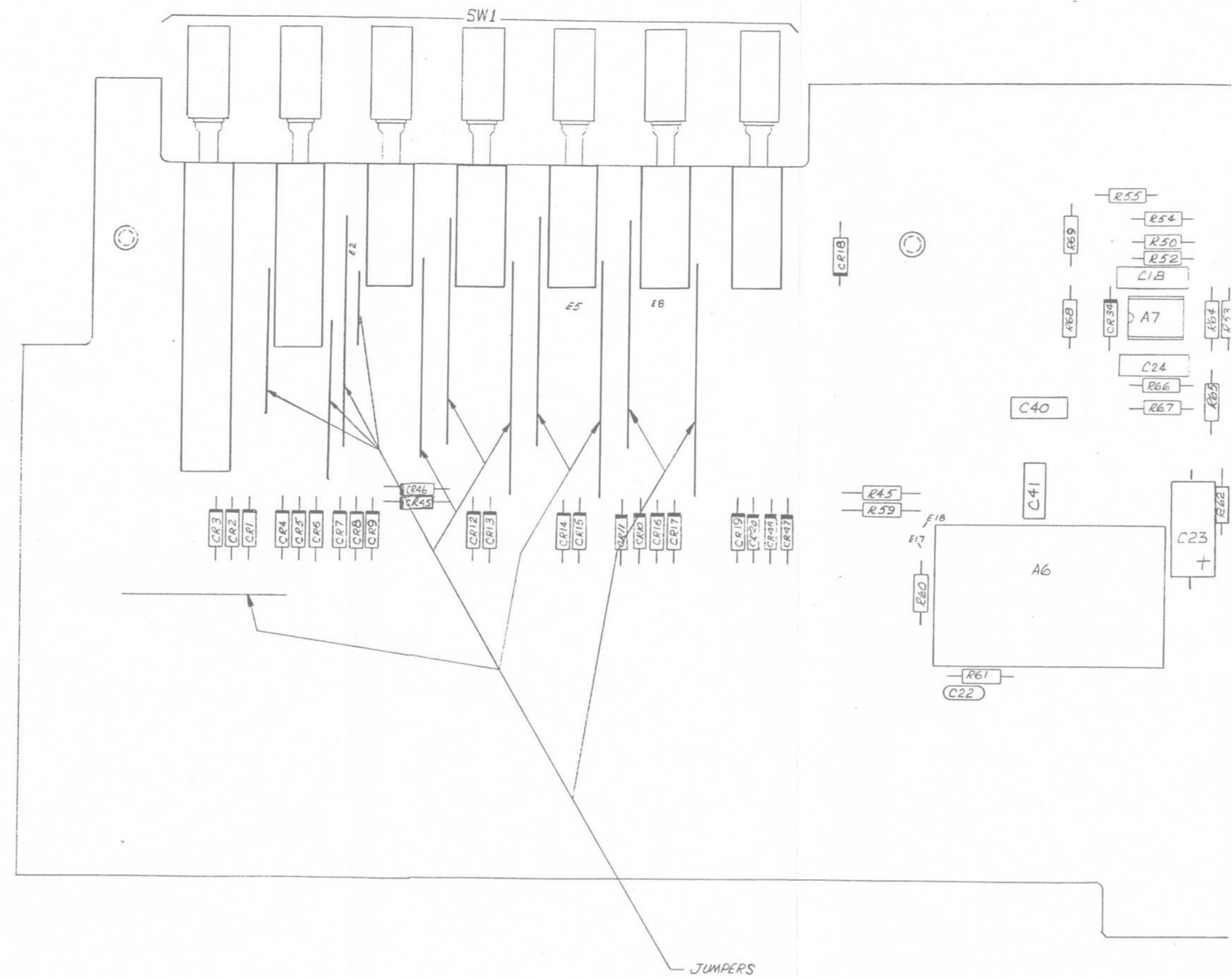
P.C. BOARD PARTS LOCATOR - COMMUNICATIONS BOARD
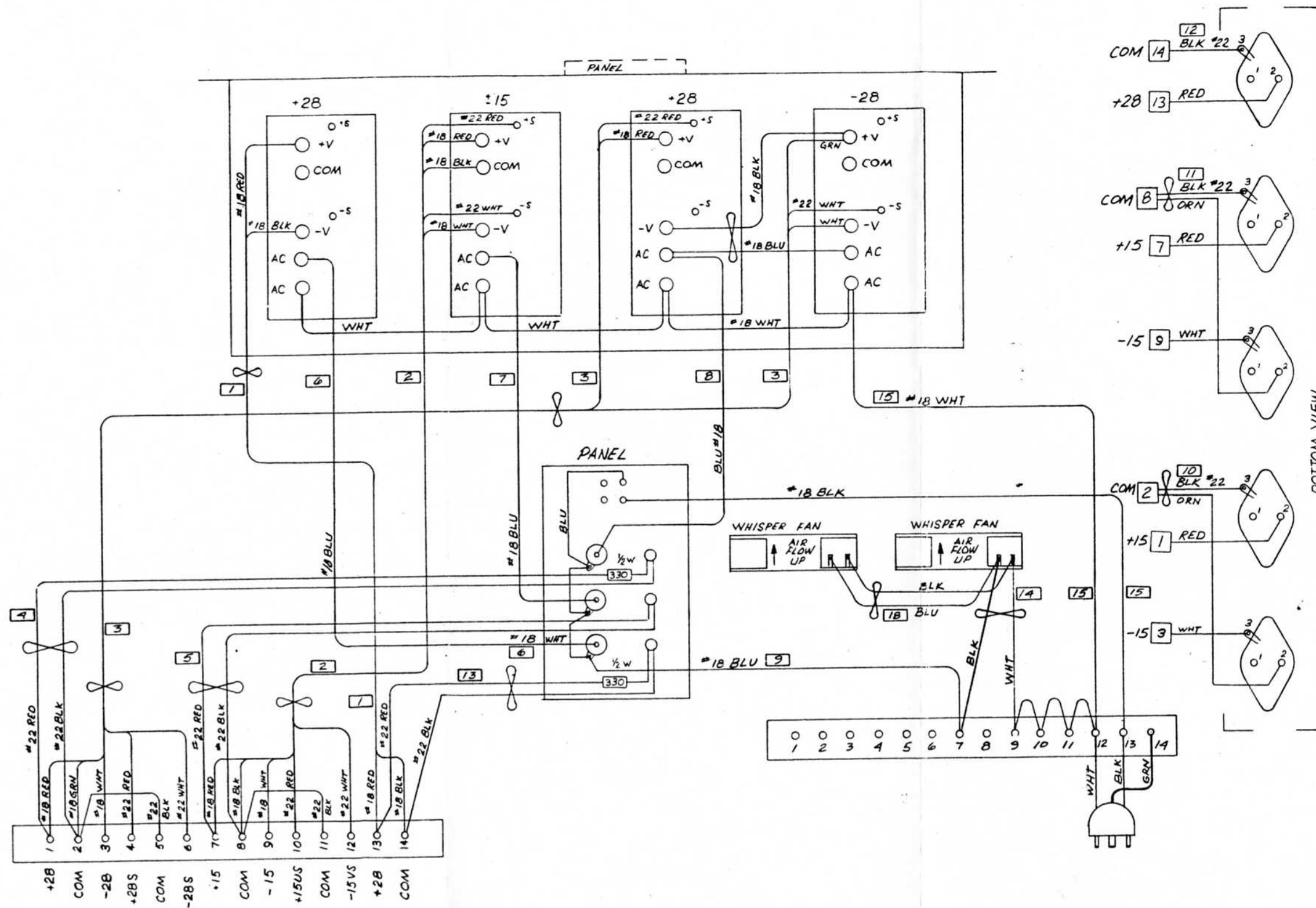
Power Supply **A**

WIRING DIAGRAM POWER SUPPLY

10 A

SCHEMATIC DIAGRAM
REGULATED POWER SUPPLY
MODEL LND-W-152

△ **LAMBDA**
ELECTRONICS
MELVILLE, NEW YORK

THIS SCHEMATIC APPLIES TO UNITS
BEARING SERIAL NO. PREFIX A.
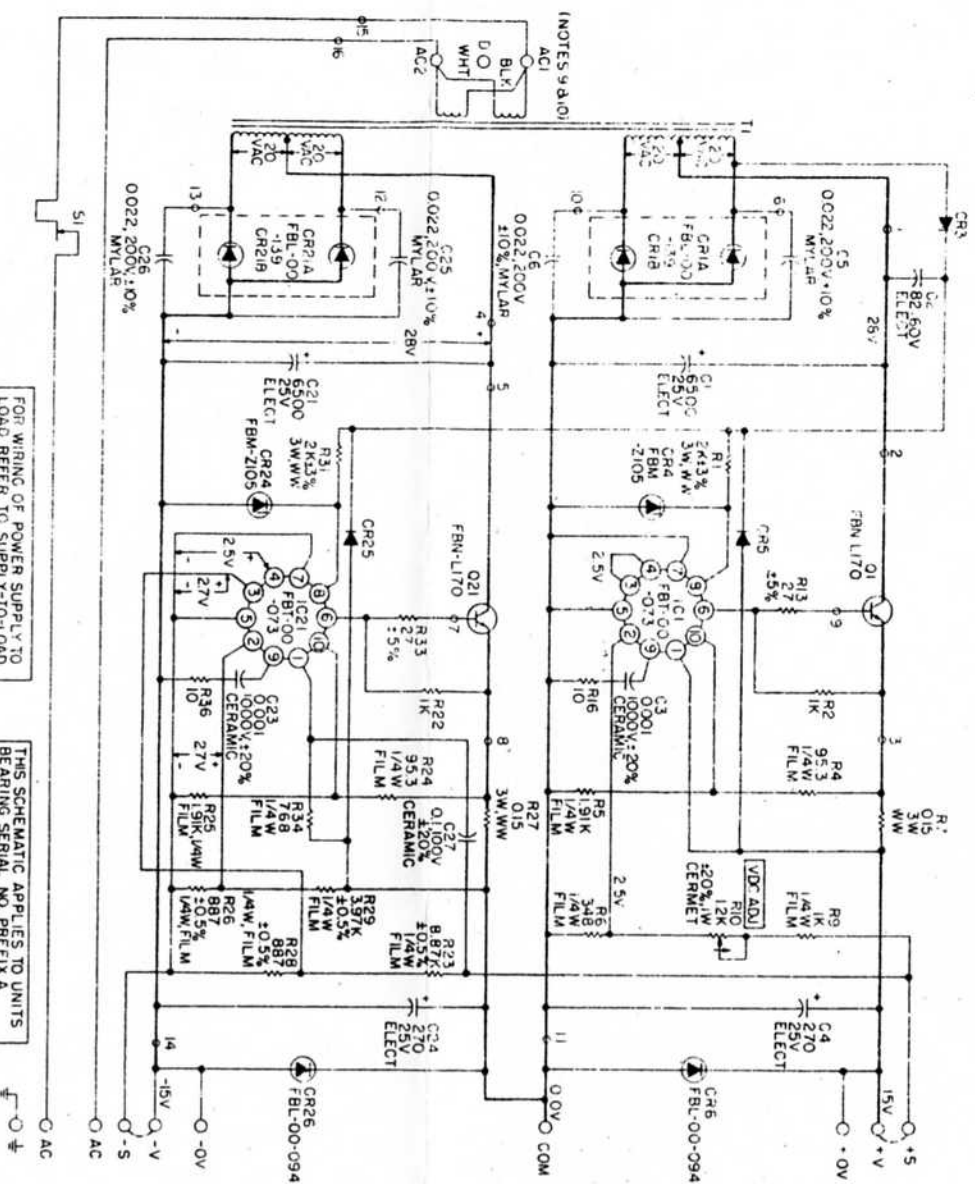
FOR WIRING OF POWER SUPPLY TO
LOAD REFER TO SUPPLY-TO-LOAD
WIRING DIAGRAMS.
DOTTED CONNECTIONS SHOWN
INDICATE JUMPERS IN PLACE
FOR LOCAL SENSING CONNECTION.

(NOTES 9 & 10.)

GICMATIC **POWER SUPPLY** B

10 B

A A

DC POWER WIRING
TERMINAL

I THRU 4 INPUT &
OUTPUT WIRING BLOCKS

PEAK METER
ADAPTER BOARD

DEPRESS LATCH HERE
FOR ACCESS TO METER
LAMPS (2 LATCHES PER
METER BOARD)

CUST. CABLE
ACCESS HOLE
(I EACH END)

SECTION A-A
METER LAMP
REPLACEMENT
DETAIL

OPT EQUIPTMENT FOR
CONVERTING VU METER
TO PEAK METER

REAR VIEW CONSOLE

1/4-20x2 HEX HEAD BOLT
REAR PANEL REMOVED
TO MOUNT LEG BOLT

1/4-20x2 HEX H   BOLT
INPUT MODULI   THRU 4
REMOVED TO   NT LEG BOLT

5/16-18 NUT (3)
5/16 FLAT WASHER (3)

CONSOLE LEG ASSEMBLY DETAIL

1/4 20x2 HEX HEAD BOLT
REAR PANEL REMOVED TO
MOUNT LEG BOLT

1/4-20x2 HEX HEAD BOLT
DESK PANEL REMOVED
TO MOUNT LEG BOLT

5/16-18 NUT (3)
5/16 FLAT WASHER (3)