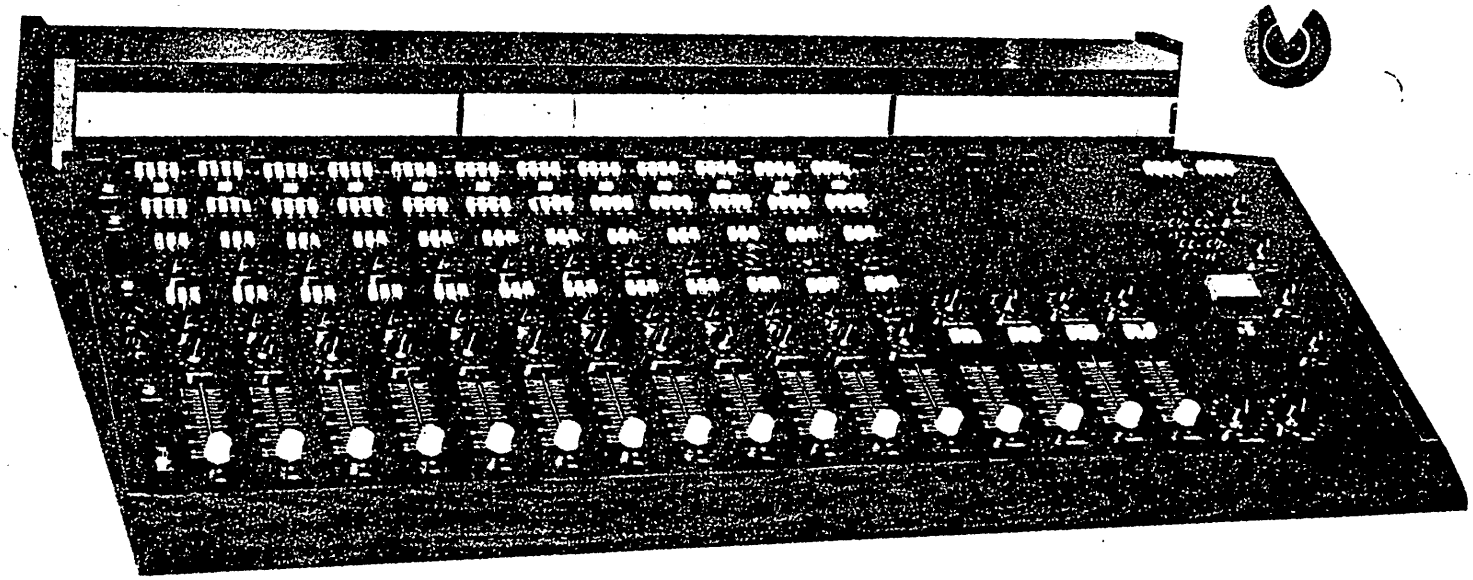
am4a

mixer system

Cetec Audio

DON KING
Customer Service Manager



12 MIC/LINE equalized inputs with echo send

4 Outputs plus Stereo or Mono mixdown outputs

XLR connectors

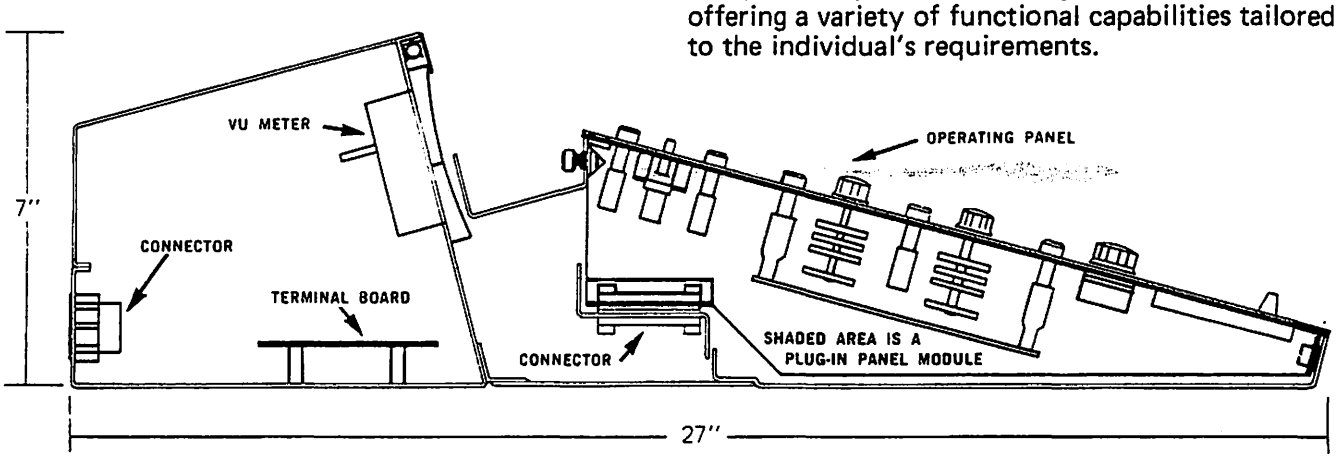
Complete capability for Recording and Broadcast Studio production applications.

Cetec INC.
a subsidiary of Computer Equipment Corp.

Building Block Construction

The Langevin am4a offers quality, flexibility and economy in a sophisticated sound mixer. The building block concept of the am4a lets you buy the channel combination you need. Just unpack, connect your input and output lines, drop in the modules . . . and you're ready to go.

Each block is a pre-wired, plug-in module. Pre-amplifier, line amplifier modification groups, and multi-channel gain control modules are available. . . and each channel provides true fidelity of sound. The unique housing assembly is pre-wired and ready to accept standard Langevin modules . . . offering a variety of functional capabilities tailored to the individual's requirements.



am4a HOUSING

The functional low silhouette design of the am4a mixer equips the operator with a convenient sloping work panel. Its overall height is 7 inches (17.78 cm) and depth is a compact 27 inches (68.58 cm). The housing is 45¼ inches wide (114.93 cm), and will accept 19 modules. Blank panels are used if the total number of modules does not completely fill the available housing capacity.

CONSTRUCTION FEATURES

Pre-wired circuitry and a solid state power supply within the mixer assembly provide the necessary interconnections and power requirements. The standard am4a has twelve input modules with full equalization and reverb send facilities. It is equipped with a four-gang board master and stereo and mono mix-down capabilities. Input and output lines are permanently wired to XL type connectors installed in the rear of the housing. Top quality, four-inch illuminated VU meters are provided.

OPTIONS

PROGRAM

AM-419AC Booster amplifier providing four rotary level controls, has gain of 24 dB for four-channel operation. Primarily intended as booster stage to provide balanced +4 dB monitor output of AM-407-type amplifier.

MG-71 Passive 8-to-1 combining network with eight individual input level controls, and two groups of four pushbuttons that allow selection of input sources.

NOTE: This module is designed to operate with a nominal input level of +4 dB, and has an insertion loss of 40 dB. It must be followed by an AM-407 amplifier, or any device with similar gain characteristics, in order to recover the insertion loss of the combining module.

MG-81 Passive control module with four rotary potentiometers. Primarily intended to be used in conjunction with AM-419AC booster amplifier in situations requiring separate monitor level controls for control room and studio operations.

MISCELLANEOUS

AB-4 Blank panel to fill in unused module space. Mounts same as normal modules.

INPUT

AM-411AS Standard microphone preamplifier, similar to AM-401AS, but providing pan pot instead of solo pushbutton. Output assignment switch is prewired and marked for the following functions:

Pos. 1 Output assigned to Channel 1.
Pos. 2 Output assigned to Channel 2.
Pos. 3 Output assigned through pan pot to Channel 3 and 4.
Pos. 4 Output assigned to Q-Bus.

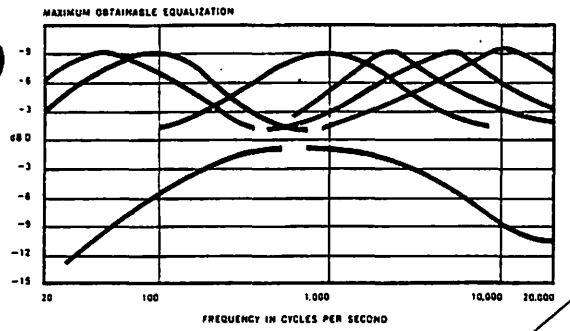
All switches may be down at the same time, facilitating a microphone feed to Channels 1, 2, 3, and 4. The pushbutton in position No. 4 is electrically interlocked to disconnect the output of the preamplifier from the bus system, applying signal to the Q-Bus only.

AM-449AS Passive input module designed primarily for broadcast applications. Will accept two groups of stereophonic input pairs at nominal level of +4 dB. Provided with four bridging input transformers and input selector switch. Includes dual straight-line mixer and OFF-AUDITION-Q switch.

NOTE: Two groups of four pushbuttons each are provided to assign each of the two output channels to any combination of four program buses. This module contains no equalization or reverberation facilities, since it is primarily used in conjunction with tape or disc playback facilities.

Standard
am4a mixer modules

Curves for AM-401AS Equalizers



AM-401AS

OUTPUT ASSIGN (push-push). Not interlocked.

SOLO (push momentary). For rehearsals. When depressed, all channels go dead except the one with the depressed button.

INPUT ATTEN dB (interlocked) One-down-at-a-time. Prevents overdrive.

HF (interlocked) Selects HF equalization boost peak frequency. 3, 5, 10 kHz.

DEGREE OF HF EQUALIZATION (rotary) 12 dB boost or attenuation

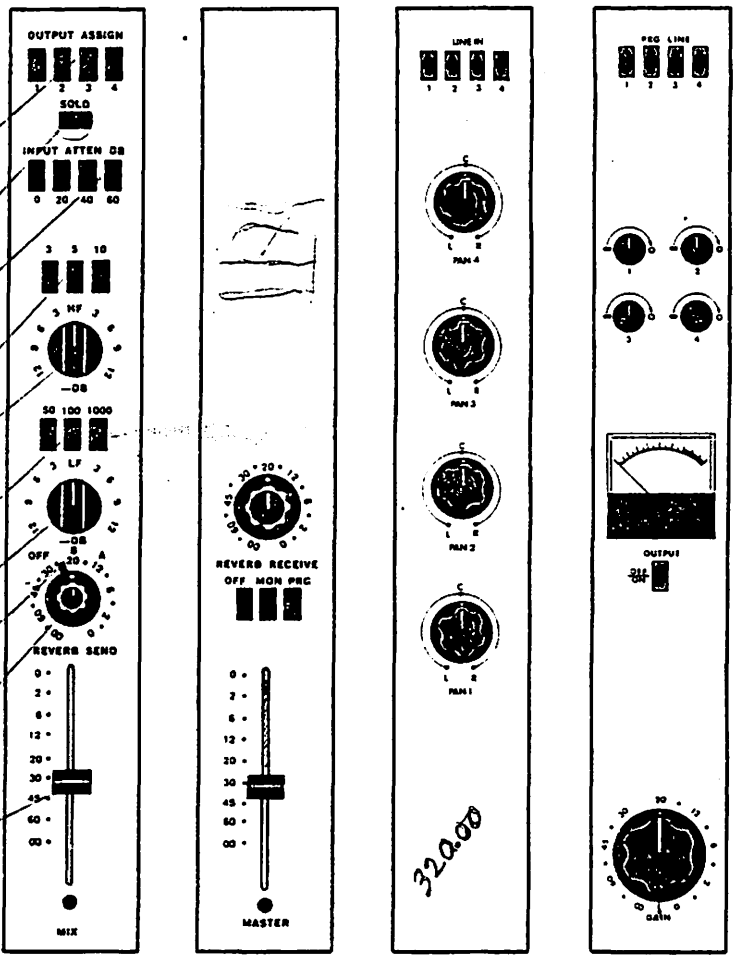
LF (interlocked) Selects LF equalization boost peak frequency. 50 Hz, 100 Hz, 1 kHz.

DEGREE OF LF EQUALIZATION (rotary) 12 dB boost or attenuation

REVERB POINT, B and A (interlock) Before or after mixer control.

REVERB SEND (stepless) NOTE: OUTPUT ASSIGN switches, top of panel, switch reverb and program.

MIX (stepless) for channel gain.



AM-401AS AM-407AS AM-439A AM-429B

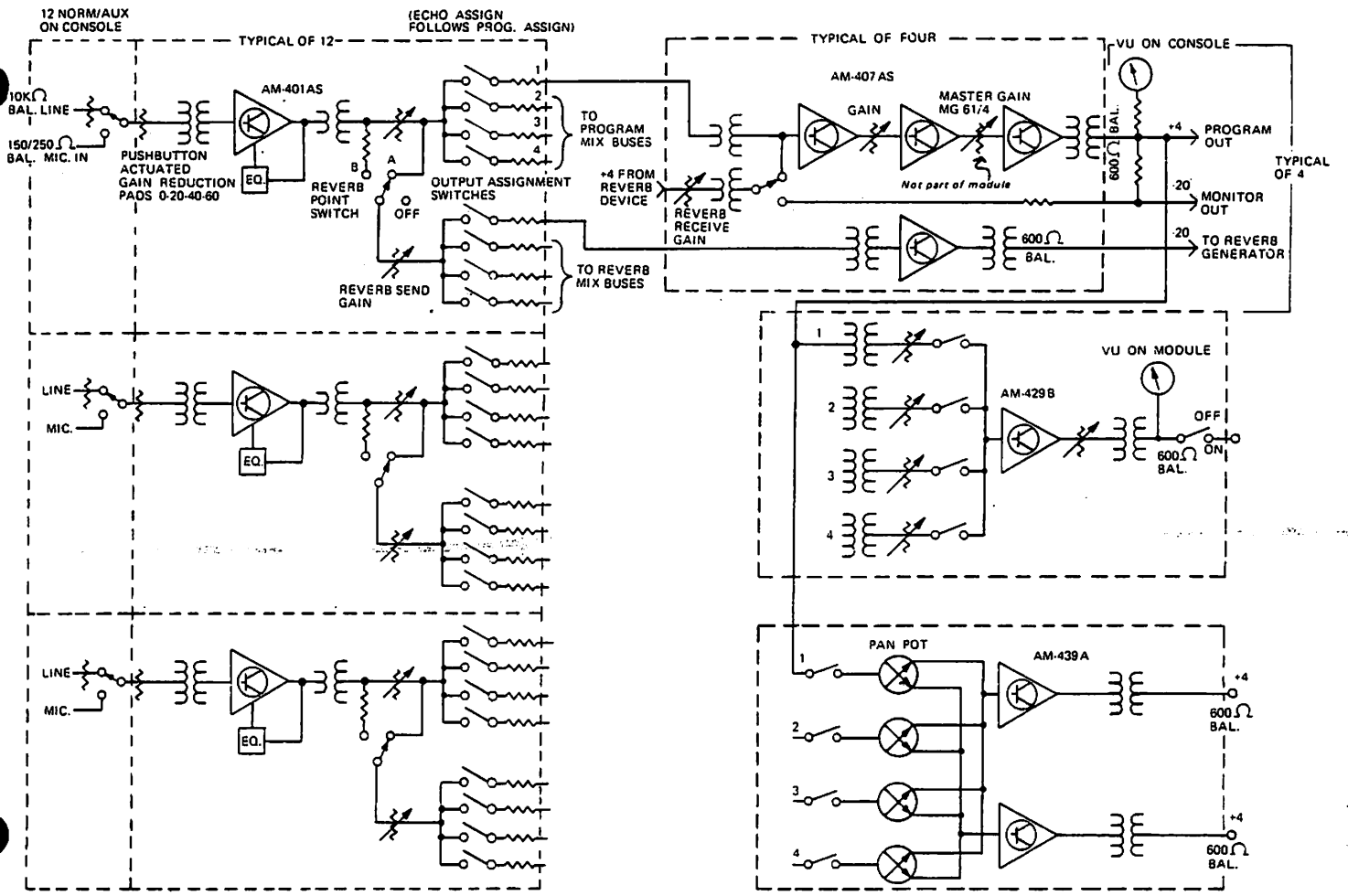
AM-407AS Program Module
Line amplifier with nominal program output of +4 dB; maximum output +22 dB. Amplifier has transformer coupled input and output and is provided with straight line submaster control and reverberation receive circuit. Reverb circuit has rotary level control and three-position, interlocked pushbutton switch. In the first position, it is possible to disable the reverb receive circuit; in the second position, to feed the reverb signal to the monitor circuit only; or, in the third position, to feed the reverb signal to the monitor and program channels simultaneously.
NOTE: A small feedback amplifier is provided as a booster for the reverberation-send line. The AM-407AS has a fixed gain, thus requires no control. If applicable, the board's master control is connected to the AM-407AS amplifier circuit and performs in conjunction with the sub-master control, which is located in the module's front panel.

TB-404
Talkback module. Fits into left trim panel of console. Permits slating, with or without tone, and talkback into studio monitor system.

AM-439A
A combining module designed to provide a stereo mixdown derived from the four main output buses of the am4a. Push-button switches allow the operator to select from any combination of the four main buses and four pan pots are used to place the selected signals to any position between the stereo outputs. Left and right stereo amplifiers provide unity gain output when the pan pots are in full left or right position.

AM-429B Mono Mixdown Module
Amplifier with 4-to-1 combining network primarily for use as monophonic feed from the four-channel output of console. Provided with rotary mixer for each input channel and four-position pushbutton switch, allowing for the selection of feed points. Provided with rotary output level control as well as output indicating meter.

MG-61/4 Master Control
Passive board master control module that is designed to control output level of four AM-407-type line amplifiers on one control.



am4a TECHNICAL SPECIFICATIONS

INPUT	
Source Impedance	Microphone, 250 ohms nominal. Balanced Line 15K ohm.
Level	60 dB signal to noise can be maintained with input level as low as -62 dBm. Proper operation of input attenuation buttons prevents overload with levels as high as +27 dBm. Any signal ranging from low level microphones to outputs of lines or tape recorders may be accommodated.
Power Requirements	45 to 50 VDC at 35 ma for each AM-401AS module.
OUTPUT	
Impedance	600 ohms balanced.
Level	Normal +4 dBm. Maximum +22 dBm
Frequency Response	Without LF or HF equalization, ± 1.0 dB, 20 Hz to 20 kHz.
Distortion	Not over .5% over the range 30 Hz to 20 kHz at output level of +20 dBm. Not over .1% kHz at +22 dBm.
Noise	Without LF or HF equalization, not to exceed a level of -122 dBm input equivalent.
GENERAL	
Power Mains	105/130 or 210/260 volts 50/60 Hz (Specify Voltage)
Dimensions	Height — 7 inches (17.78 cm) Width — 45¼ inches (114.93 cm) Depth — 27 inches (68.58 cm) Weight — Approximately 125 lbs. (56.70Kg)

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a subsidiary of Computer Equipment Corp

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CL-006-1173
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WARRANTY

Langevin guarantees this product to be free from defects of material and workmanship for a period of one year from date of manufacture.

Exceptions:

1) Langevin assumes no responsibility for any shipping damage.

2) Carbon-composition controls are guaranteed for ninety days after first use.

3) VU meters are warranted for four weeks from date of shipment.

4) Warranty is void if unauthorized repair or modification has resulted in damage or in deterioration of performance.

Within the guarantee periods, Langevin will replace or repair any part of the AM4A system at no cost to the purchaser or user except for his payment of one-way transportation to the factory at Santa Ana, California.

SHIPPING DAMAGE

No container that shows visible external damage should be unpacked, except in the presence of an official of the carrier (who should sign a statement as to nature of damage).

If concealed damage is discovered within any unpacked container which showed no visible external damage, the carrier should be notified immediately. An official should inspect, and sign a statemeht as to the nature of the damage.

The Interstate Commerce Commission has indicated that a carrier is as much responsible for concealed damage as for visible damage.

Please notify Langevin of any shipping damage.

REGISTRATION OF PURCHASE

If you have purchased this equipment through a dealer (or through any supplier other than the Langevin factory), please notify the factory of your purchase in letter form. This will place your name and address on the list for receipt of change notices and additions to this booklet.

FUSES

There are two fuseholders on the chassis of the power supply (which is under the top cover of the housing). They are marked AC and DC.

If the AC fuse fails, all power will be removed from the entire assembly.

If the DC fuse fails, amplifier power will be removed ... but the meter lamps will stay on.

Be sure and replace fuses with values as indicated on the supply chassis. Turn off power before removing or replacing a fuse.

Although years may go by before any fuse fails, it is well to keep spares handy. Why not tape boxes of fuses to the inside of the housing cover?

PORTABLE USE OF THE AM4A

Although compact, the AM4A was not designed to be a truly portable unit. In particular, the frame of the housing is not sufficiently braced to withstand rough handling.

It is suggested that, if an AM4A is to be made portable, a carrying case be constructed. This case should totally enclose the housing and should have padded supporting sections. The cover should have padded inserts that bear against the panels of the plug-in modules so that they will not loosen with vibration.

When using the AM4A on location, small portable reverberation generators can be connected for monitoring purposes only, and recordings made "dry". (See specifications for the Output Modules.) Proper reverberation can be added during remixing back at the studio.

FACTORY SERVICE

The Langevin factory will repair and/or refurbish any part of an AM4A at moderate cost.

It is recommended that you save one or more of the packing cartons for the modules so that this material can be used when returns are made.

Please correspond with Langevin before returning equipment.

THE AM4A MIXER IS A MODULAR ASSEMBLY that can be put together in a great number of different ways. It is unfortunate that no concise set of instructions can possibly be written that remains readable while covering all the variations that can exist.

In lieu of an instructions book, it is requested that you read the enclosed material which outlines the characteristics and specifications for the individual modules.

Also enclosed is a section for the housing of the AM4A. It is the variations in housing wiring that makes one system different from another.

If your system has any special modules ... or any modifications that are not considered to be "standard" ... you will find the pertinent sections enclosed.

Regardless of the possibly unique properties of your particular AM4A, there are certain comments that will apply. Indeed, most of these comments hold good for mixing systems in general ... not just for the Langevin AM4A. Please read the section below:

O P E R A T I O N

INPUT OVERLOAD Input Modules and Preamplifiers are often overdriven, resulting in distortion. The AM401 Input Modules have inbuilt Input Attenuators, a 4-key interlocked push-switch (0, 20, 40 and 60 dB). The proper key should be selected so that overdrive does not occur.

The "normal" positions of all mixer controls, sub-masters, masters and board (grand) masters on the AM4A are with the knobs each set at about "10". Any time that a mixer control on an Input Module must be run further CCW than about "30" in order to maintain proper Vu meter level, over-drive is probably occurring ... and the next higher Input Attenuator button should be pressed.

Input over-drive will be accompanied by a slight upward flashing of the "status" light on an Input Module.

VU METERS Do not allow Vu Meters to bang their pegs continuously, as this will only result in distortion being generated. The proper level for program exists when the pointers approach "0" on the scales fairly often, but go into the red portions only about once per ten seconds. (In public-address work, output level monitoring should be primarily by the level of the sound in the house. Vu meters are secondary-standard indicators.)

EQUALIZERS The best way to use variable equalizers is: *As little as possible.* They should be considered as crutches that are resorted to only if proper choice and positioning of microphones fails to achieve the desired end.

The equalizers in the AM4A use no inductors, and are free from ringing.

A studio that is equipped only with "flat" microphones probably cannot avoid use of the equalizers. In this case, the following comments may be of interest:

1) Try to avoid use of high-frequency equalization that boosts at 10 kHz or above. If possible, add brightness only in the 3 or 5 kHz region.

2) Some bass instruments that fall off in acoustic output at the extreme low end of the spectrum may benefit from boost at 50 or 100 Hz. In particular, small bass fiddles often require low-frequency augmentation. Also, rolling off the highs on a bass fiddle mike may help to reduce string slap.

3) 1000 Hz equalization boosting may help to maintain uniform speech and dialogue characteristic, and should be introduced as the actors distances from the mike decrease.

   NOTE: The 1000 Hz peaking equalization on the AM401 Input Module cannot be used with any other peaking frequency. In other words, do not attempt to boost at 1000 Hz *and* 3, 5 or 10 kHz.

4) The six push-keys marked 3, 5, 10, 50, 100 and 1000 on the AM401 have nothing to do with the response of an equalizer in the <u>rolloff</u> mode. They select boost peaks only.

LANGEVIN

AH21/13
AH21/19
HOUSINGS

BASIC HOUSINGS FOR THE AM4A MIXER SYSTEMS, TWO LENGTHS, WITH RESPECTIVE CAPACITIES OF THIRTEEN AND NINETEEN PANEL MODULES.

POSITIONING MODULES

To place a plug-in module in its panel position: 1) Lossen thumbscrew at top. 2) Engage nylon bushing at lower end of module with the short retaining stud in the housing. 3) Carefully lower the module into position, meshing the module connector with the housing connector. Never force a module.

To remove a module: 1) Loosen retaining thumbscrew at top of module. 2) Using the thumbscrew as a pull handle, raise the top of the module until the connectors disengage completely. 3) With your other hand, grasp one of the knobs on the module panel. 4) Remove the module with motion upward and toward the meter panel.

Do not remove or insert modules with power on the system.

HOUSING SIZES

The walnut end-sections are identical for both sizes of housings ... and are slightly larger than the cross-section of the metalwork. They measure approximately 27 1/2" (from front of armrest to rear of side-piece) by 7 1/8" (overall height of side-piece, not including distance the entire housing is raised off supporting desk by its feet).

The AH21/13 Housing (thirteen panel modules) is approximately 32 1/8" wide, overall.

The AH21/19 Housing (nineteen panel modules) is approximately 45 1/4" wide, overall.

MOUNTING THE HOUSING

The AM4A may be placed on any suitable desk, table or pedestal. Rubber feet support the housing approximately 1/4" above the mounting surface to prevent scratching furniture-type finishes. Should you desire to recess the AM4A into a specially constructed console, you may want to remove the front trim to realize a flush assembly. This trim is fastened by 4 or 6 machine screws accessible after removal of all modules.

If you are planning to use the bottom access holes for cable lines, or if you have XL-Connectors installed in these positions, a table cut-out is required to reach these points. It is also possible to have the housing assembly protrude 3 inches past the rear edge of the table to gain access to the bottom connectors.

CONNECTING THE AM4A

If you ordered your Mixer Assembly without XL-Type connectors, all leads are brought to the applicable terminal boards.

MICROPHONE INPUTS are always in multiples of 8 inputs per terminal board. The terminals marked "1" and "2" are balanced transformer inputs, "CT" is the transformer center, and "S" is the cable shield. The "S" terminal is grounded to chassis at the terminal board location.

The "INCOMING LINES" terminal boards accomadate 4 lines per board. Two sets of terminals are provided for each line. The amplifiers are always connected to the terminal pair toward the VU-Meter Panel, leaving a set of 4 terminals available for a level pad.

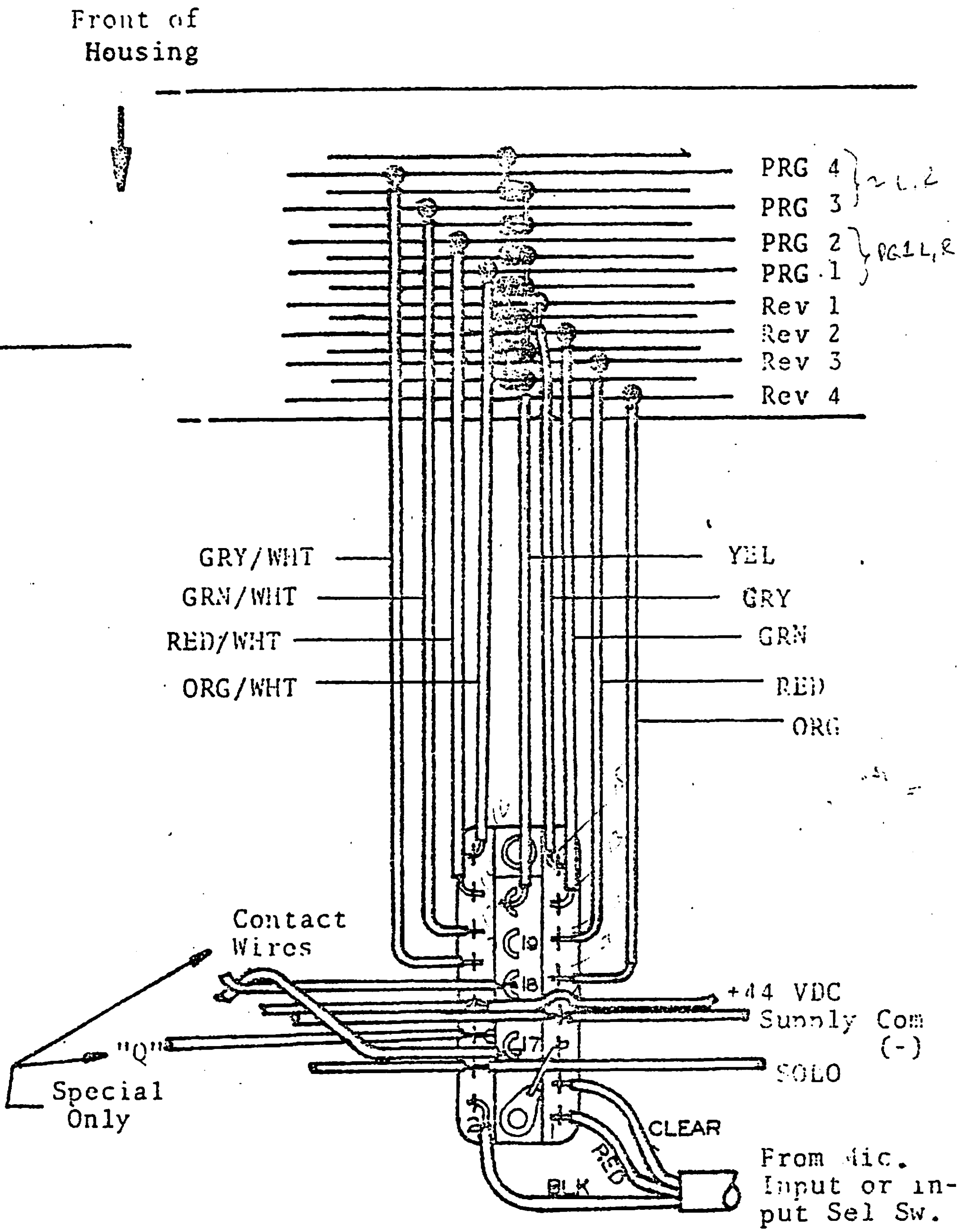
If your assembly is wired with XL-TYPE CONNECTORS, the terminal pairs are connected straight through, but these jumpers may be removed and a resistor level reduction network can be installed to obtain a compatible input level.

The "OUTPUT" and "MONITOR" lines are connected to the appropriately marked terminal boards. Unused terminals are not connected, and may be used by the installer for possible additional networks, or as tye-points. In a 4-channel assembly, for example, terminal groups 1 thru 4 are connected to the lines, and terminals 5 thru 8 are free.

If your AM4A is equiped with a "MONITOR GAIN CONTROL", terminal groups 1 thru 4 are BEFORE the control, and terminal groups 5 thru 8 are AFTER the control. The monitor amplifier #1 should be connected to terminal #5; amplifier #2 to terminal #6, and so on.

REVERBERATION SEND AND RECEIVE terminals are located on the same board, and all terminals are used.

For Power-Line Connection, see PS4800 Section.



461, 461AS, 421A, 401A

4. Used on - 401AS, 431A, 431AS . 441A, 441AS, 451A, 451AS
3. Wiring side of connector, CKT side of CKT BD Shown
2. DO NOT USE blank connector pins
1. Pin 6 is Direct Output, normally not used

Langevin
SANTA ANA CALIFORNIA
263251

TYPICAL CONNECTOR WIRING AH 21

DWN. BY	CHK. BY	DATE
RW	[illegible]	12-11-68

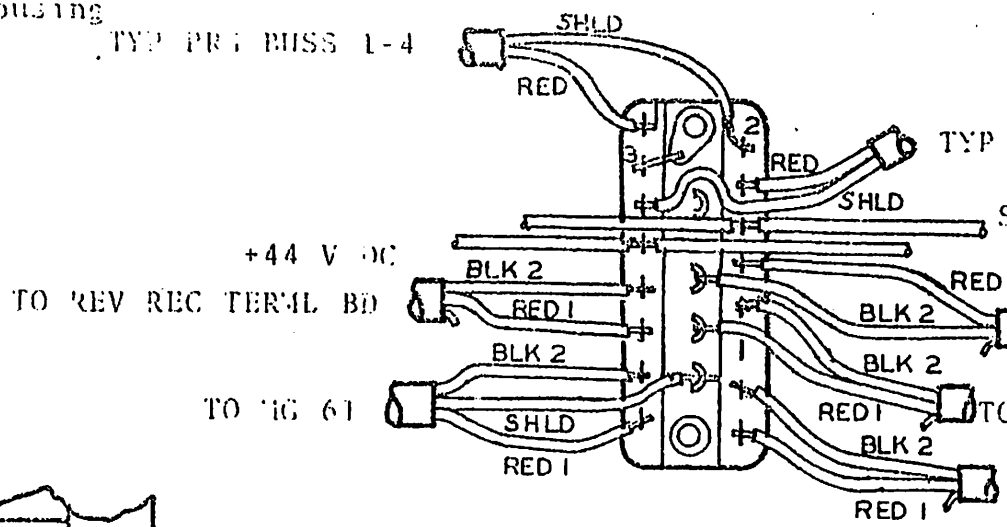
TOLERANCES UNLESS OTHERWISE NOTED

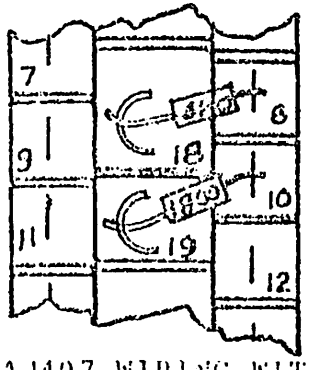
SURFACE ROUGHNESS / REMOVE ALL BURRS AND SHARP EDGES. / CONCENTRICITY WITHIN TIR. / HOLD NORMAL AND PARALLEL FACES WITHIN . PER INCH TIR.

SCALE

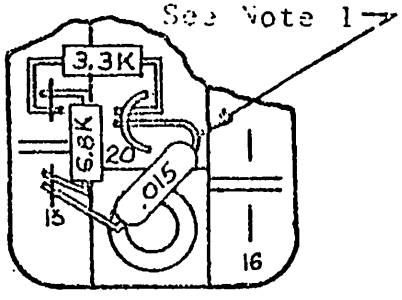
NEXT ASSEMBLY / USED ON / MATERIAL / FINISH

Front of Housing





A1407 WIRING WITH
AM419A, AM419AC,
AM419AH, AM419AS
(RESISTORS 1/4W, 5%)

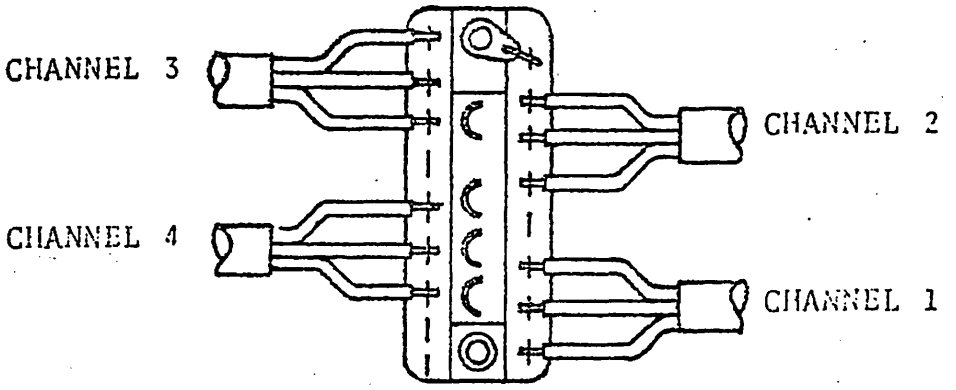


AM407 WIRING W/OUT
MG61 (RESISTORS 1/4W,
5%)

NOTES:
1. .015 Capacitor to be .01 if used with AM457A/MG71
2. Used on 407A, 407AS, 417A, 417AS

NEXT ASSEMBLY / USED ON	TOLERANCES UNLESS OTHERWISE NOTED X ± .XX± .XXX± SURFACE ROUGHNESS ✓ REMOVE ALL BURRS AND SHARP EDGES. CONCENTRICITY WITHIN TIR. HOLD NORMAL AND PARALLEL FACES WITHIN PER INCH TIR.	TYPICAL CONNECTOR WIRING			Langevin SANTA ANA CALIFORNIA
MATERIAL					
FINISH	SCALE	DWN. BY RW	CHK. BY CR	DATE 12-12-68	263261

FRONT OF HOUSING



NOTES:

1. Wiring side of connector shown.
2. Pins 17-20 may be used as tie points.
3. MG61/2 use channel 1 & 2 only.

TYPICAL CONNECTOR WIRING MG61/4

Longview SANTA ANA CALIFORNIA

263241

DWN. BY RW | CHK. BY | DATE 12-11-68

SCALE

TOLERANCES UNLESS OTHERWISE NOTED
X ± .XX ± .XXX ±
SURFACE ROUGHNESS
REMOVE ALL BURRS AND SHARP EDGES.
CONCENTRICITY WITHIN TIR.
HOLD NORMAL AND PARALLEL FACES WITHIN PER INCH TIR.

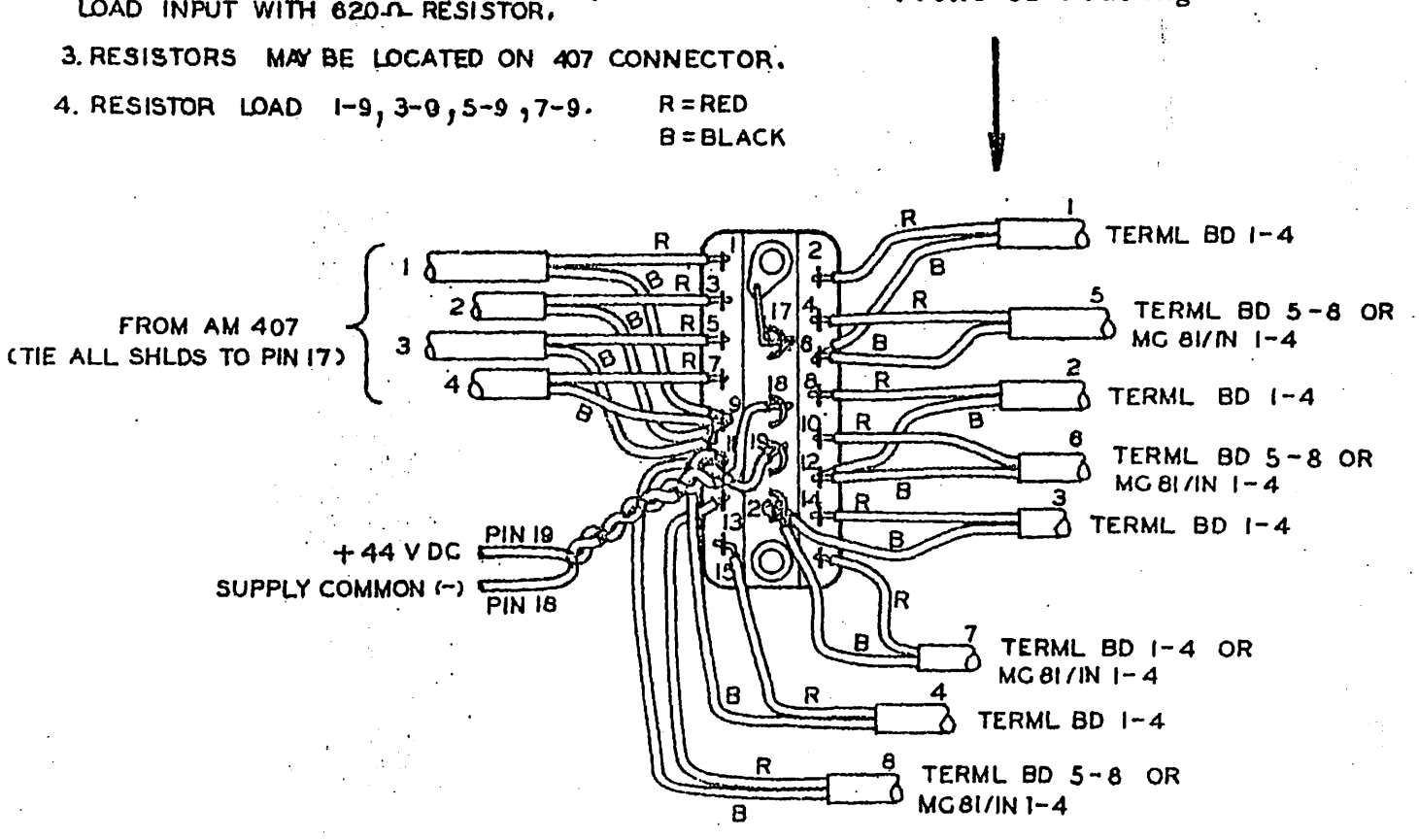
NEXT ASSEMBLY | USED ON
MATERIAL
FINISH

REVISIONS	
1	ADD NOTES RW 11/20/68

NOTES:

1. WHEN USED FOR MON. BOOST (A, AC) LOAD INPUT WITH 1800Ω RESISTOR.
2. WHEN USED FOR REV SEND BOOST (AM) LOAD INPUT WITH 620Ω RESISTOR.
3. RESISTORS MAY BE LOCATED ON 407 CONNECTOR.
4. RESISTOR LOAD 1-9, 3-9, 5-9, 7-9.

R = RED
B = BLACK



NEXT ASSEMBLY	USED ON
260864	AH21

MATERIAL

FINISH

TOLERANCES UNLESS OTHERWISE NOTED
X ± .XX± .XXX±
SURFACE ROUGHNESS ✓
REMOVE ALL BURRS AND SHARP EDGES.
CONCENTRICITY WITHIN TIR.
HOLD NORMAL AND PARALLEL FACES WITHIN PER INCH TIR.

SCALE

CONNECTOR RAIL WIRING AM 419A, AC, AM

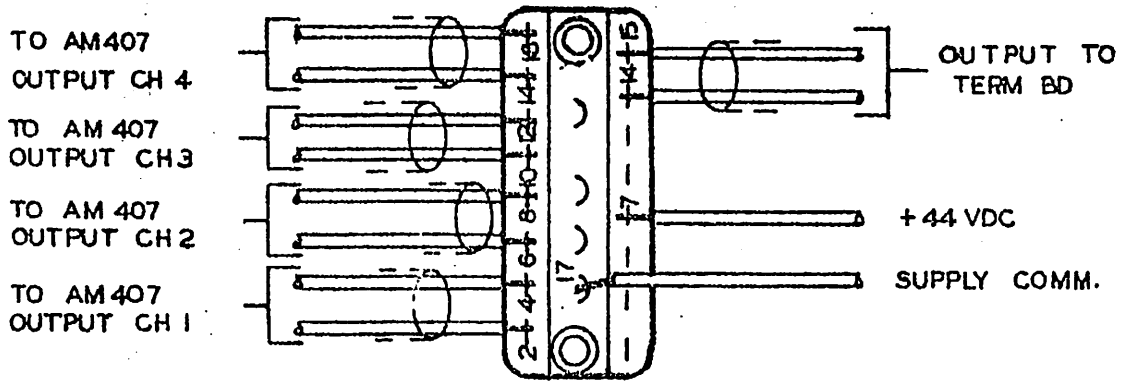
DWN. BY	CHK. BY	DATE
THA		20 FEB 68

Langevin
SANTA ANA
CALIFORNIA

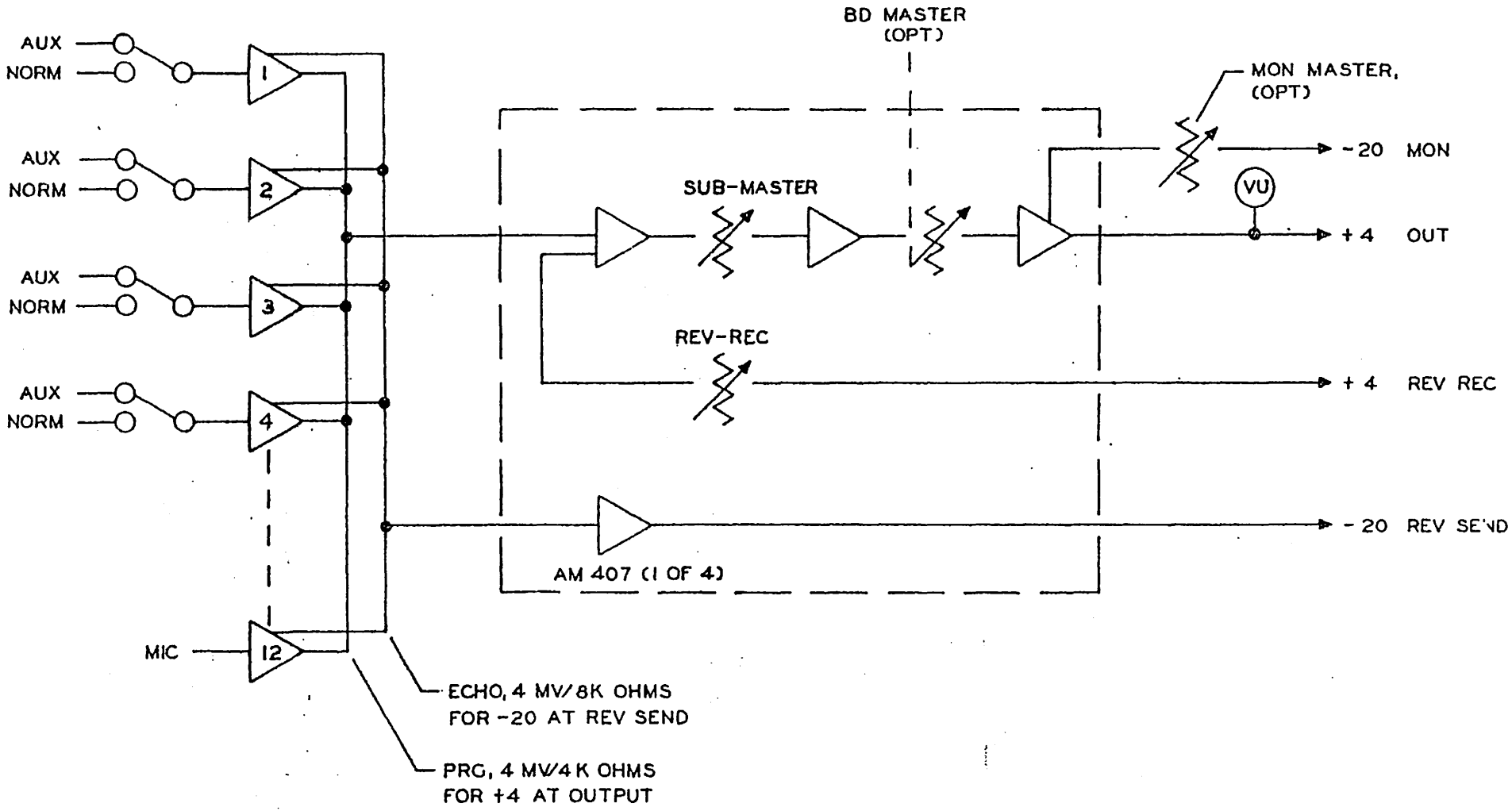
260591

REVISIONS

Front of Housing



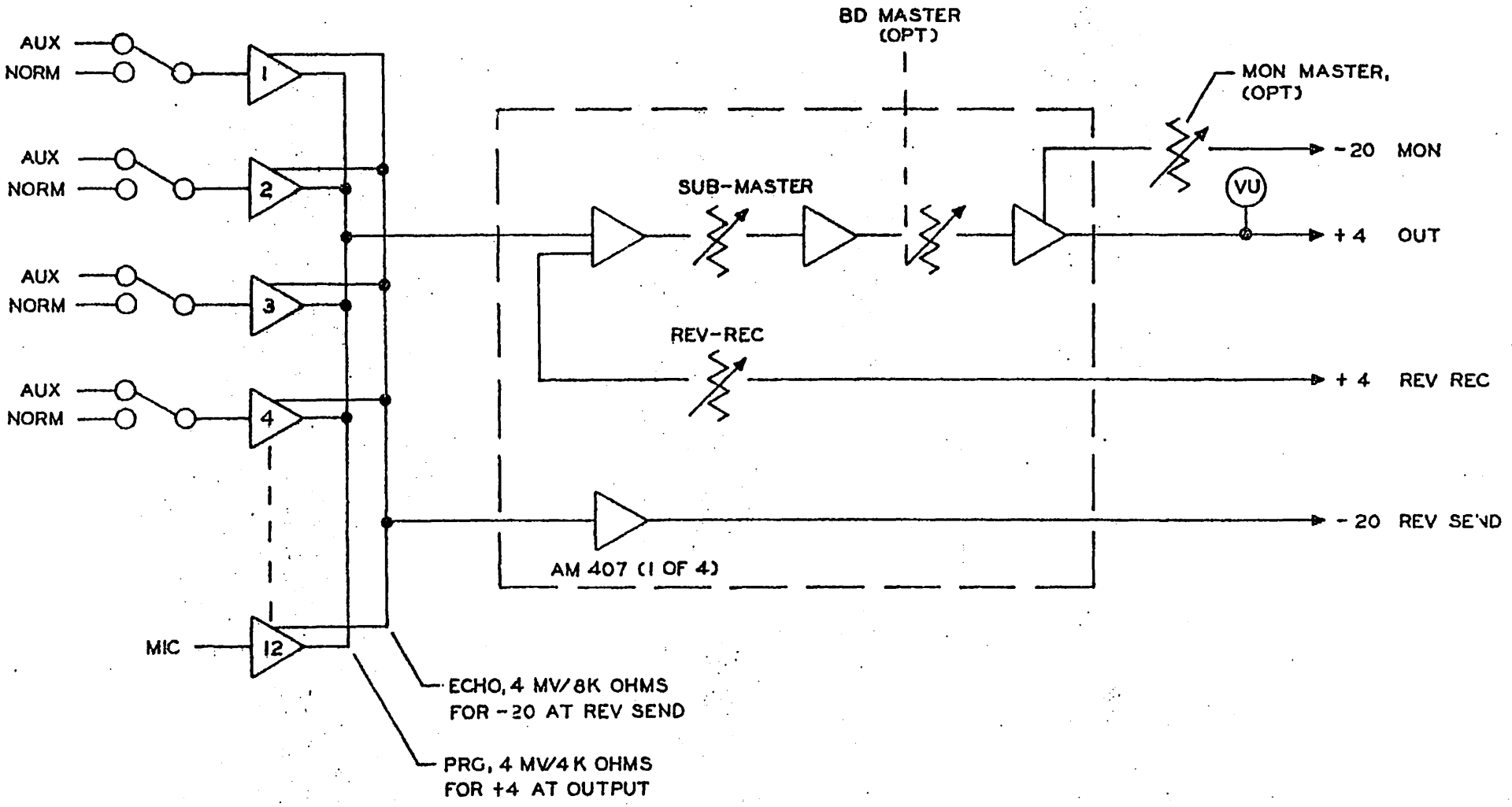
NEXT ASSEMBLY	USED ON AM4	TOLERANCES UNLESS OTHERWISE NOTED	CONNECTOR RAIL WIRING AM 429B	Langevin SANTA ANA CALIFORNIA
MATERIAL		SURFACE ROUGHNESS ✓ REMOVE ALL BURRS AND SHARP EDGES. CONCENTRICITY WITHIN TIR. HOLD RADIAL AND PARALLEL FACES WITHIN PER INCH TIR.		
FINISH		SCALE NONE	DWN. BY RW / CHK. BY / DATE 11-20-68	263171



All levels are based on - 56 DB input and all controls 10 DB below max.

Simplified System
AM4A MIXER

Hor 1/22/64

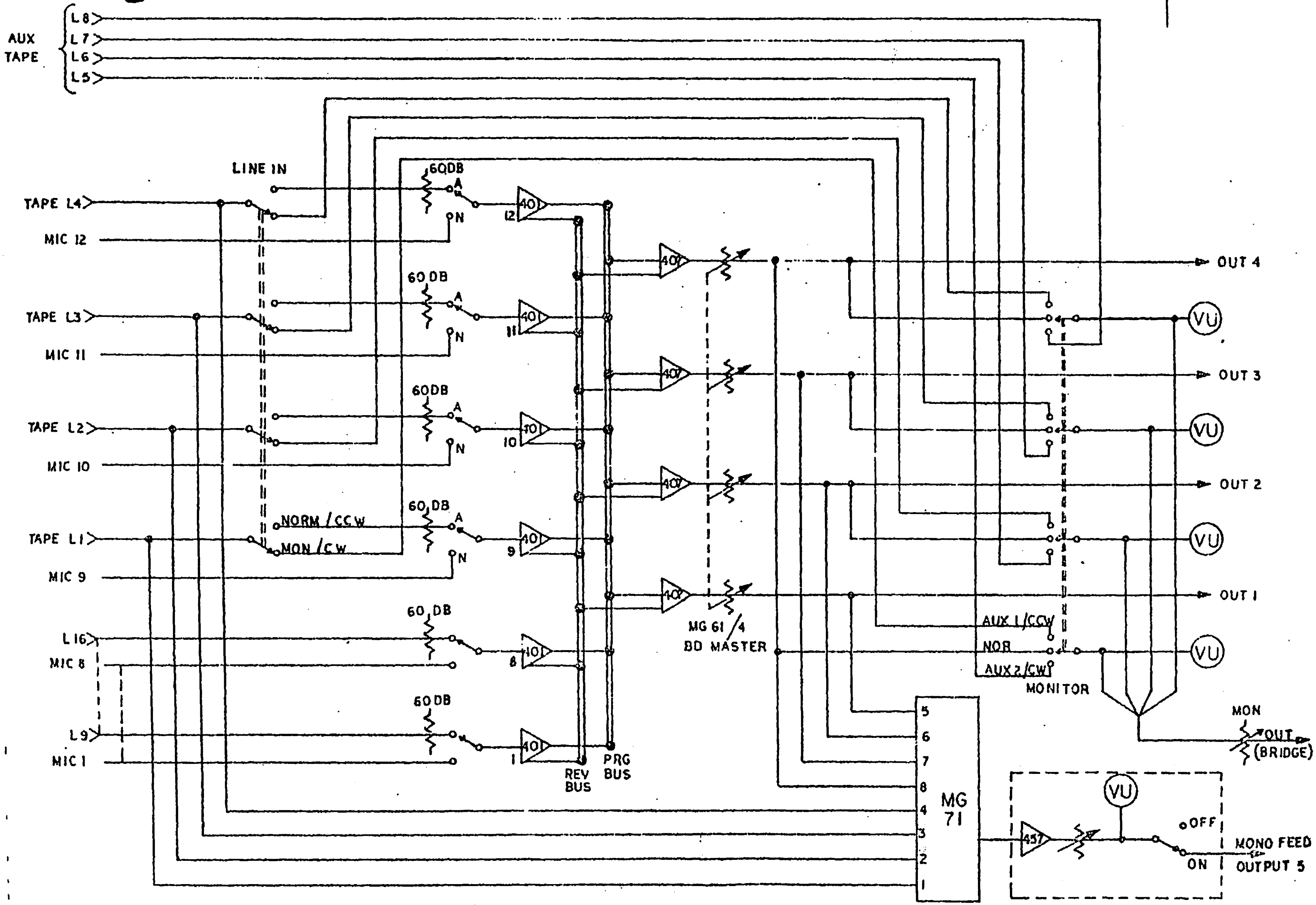


All levels are based on - 56 DB input and all controls 10 DB below max.

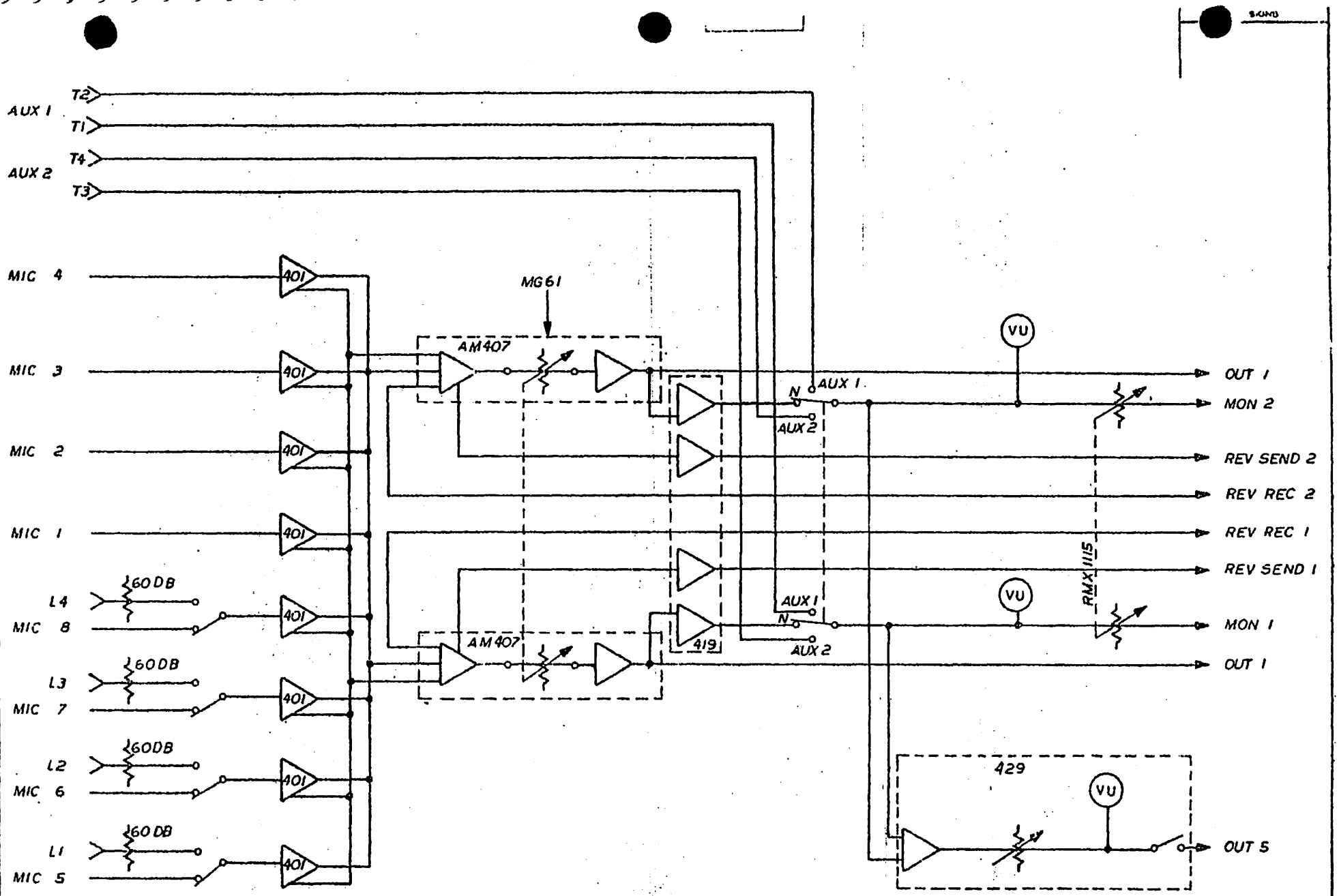
Simplified System
AM4A MIXER

Hen 1/22/64

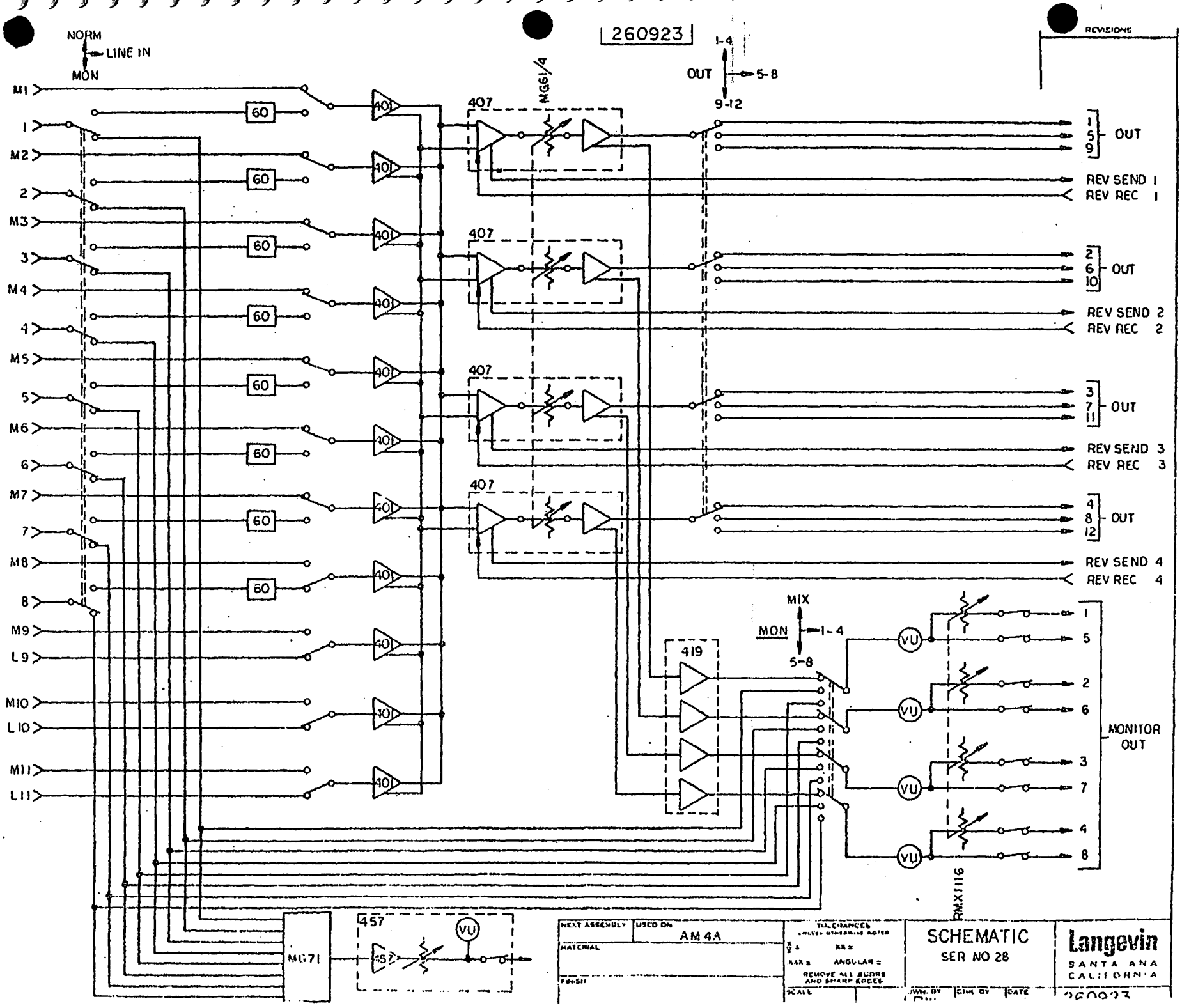
260723

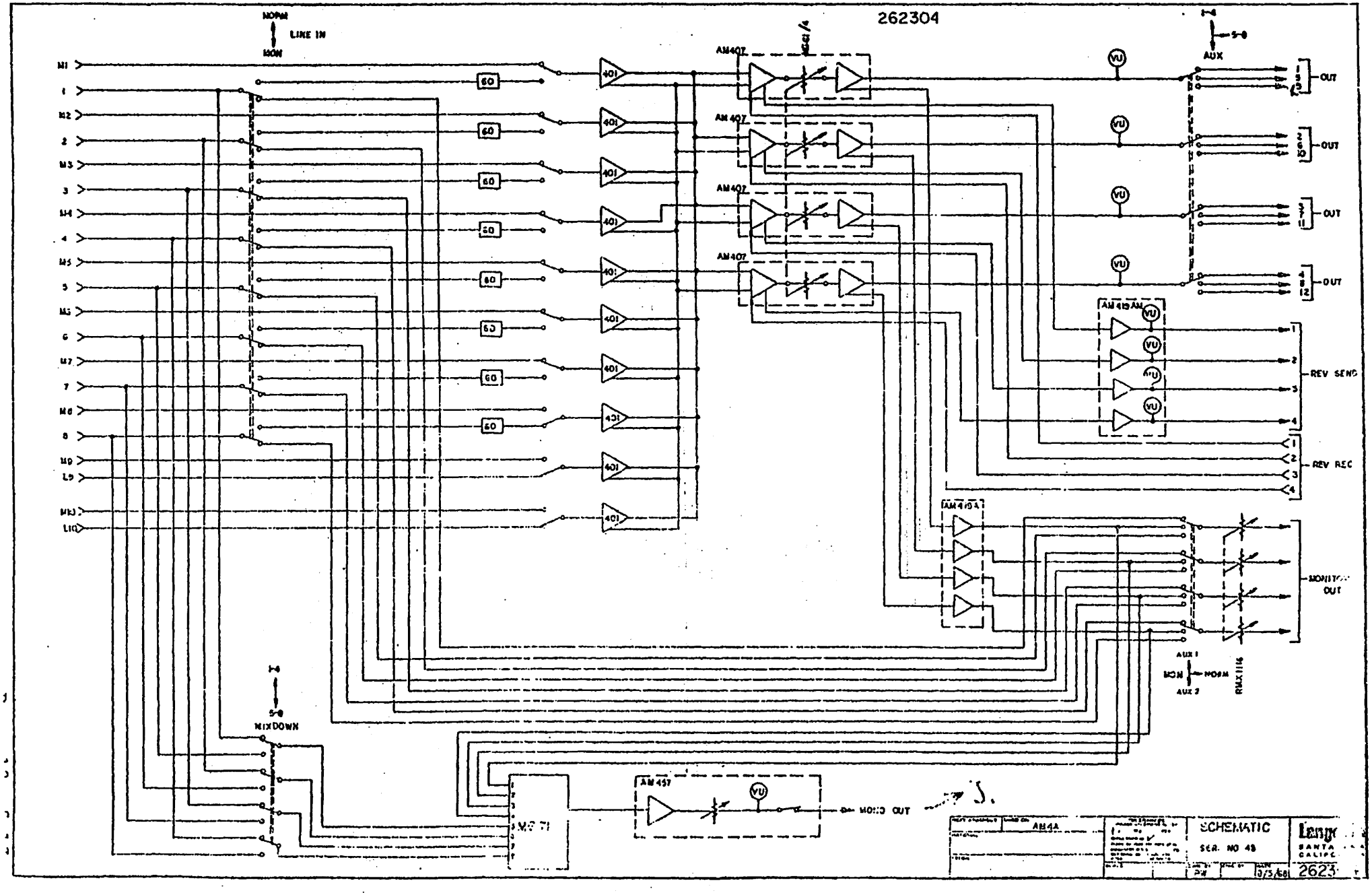


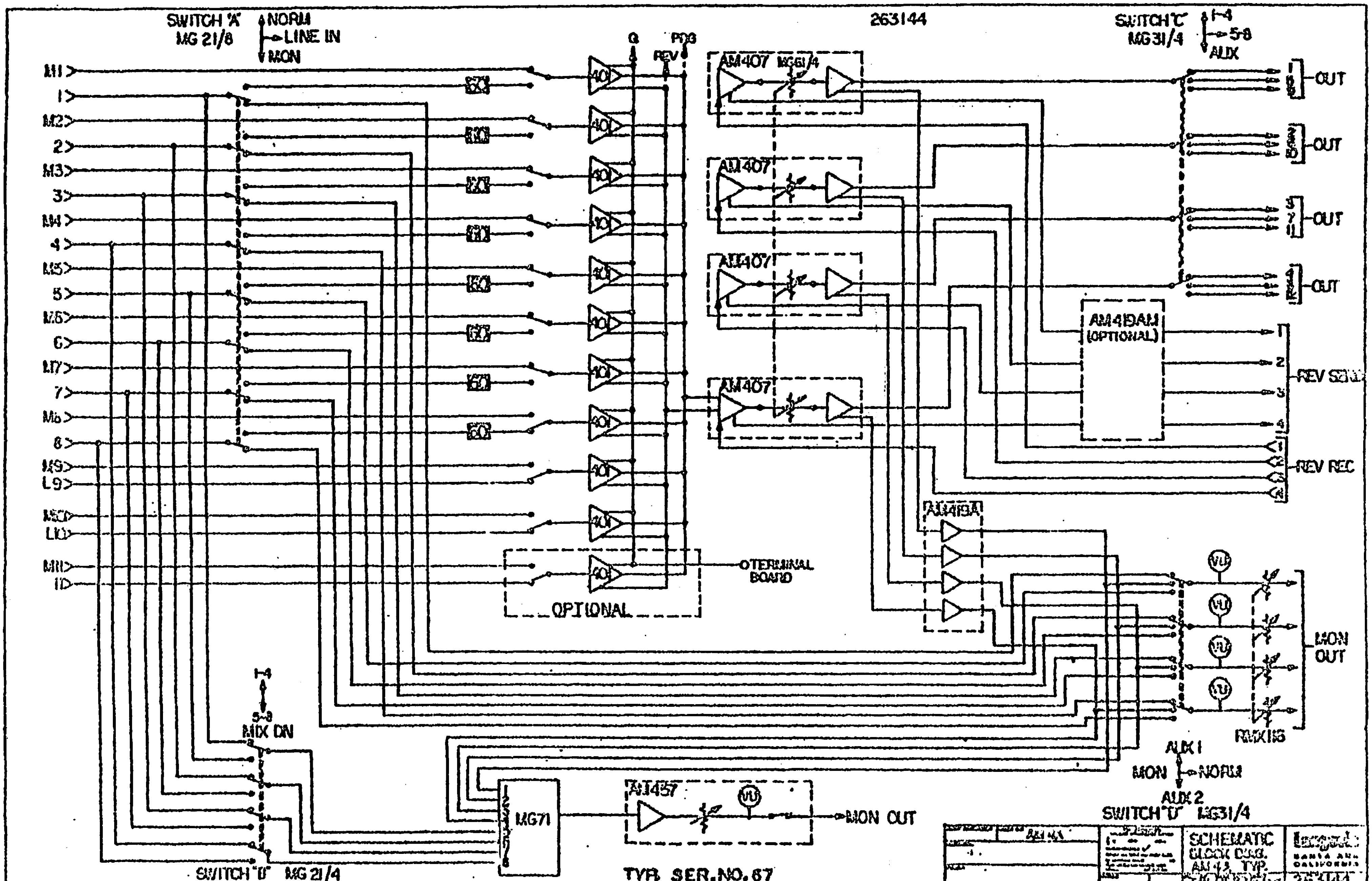
NEXT ASSEMBLY / USED ON: AM4	TOLERANCES UNLESS OTHERWISE NOTED — ANGULAR — REMOVE ALL BURRS AND SHARP EDGES	SCHEMATIC SER NO.5	Langevin SANTA ANA CALIFORNIA
MATERIAL	SCALE	DWN BY / CHK BY / DATE	260723
FINISH			



NEXT ASSEMBLY / USED ON: AM 4	TOLERANCES UNLESS OTHERWISE NOTED: X ±, XX ±, XXX ±, ANGULAR ±; REMOVE ALL BURRS AND SHARP EDGES	SCHEMATIC SER NO 14	Langevin SANTA ANA CALIFORNIA
MATERIAL	SCALE	DWN BY RW / CHK BY / DATE	26-919


260923
NORM
LINE IN
MON
M1
1
M2
2
M3
3
M4
4
M5
5
M6
6
M7
7
M8
8
M9
L9
M10
L10
M11
L11
60
40
407
NG61/4
OUT
1-4
5-8
9-12
1
5
9
OUT
REV SEND 1
REV REC 1
2
6
10
OUT
REV SEND 2
REV REC 2
3
7
11
OUT
REV SEND 3
REV REC 3
4
8
12
OUT
REV SEND 4
REV REC 4
MIX
MON
1-4
5-8
419
VU
1
5
2
6
3
7
4
8
MONITOR OUT
RMX1116
MG71
457
REVISIONS
NEXT ASSEMBLY
USED ON
AM 4A
MATERIAL
FINISH
TOLERANCES
REMOVE ALL BURRS AND SHARP EDGES
SCHEMATIC
SER NO 28
Langevin
SANTA ANA
CALIFORNIA
SCALE
DWN BY
CHK BY
DATE
260923


262304
NORM
LINE IN
MON
M1
1
M2
2
M3
3
M4
4
M5
5
M6
6
M7
7
M8
8
M9
L9
M10
L10
60
401
AM407
AM457
AUX
OUT
REV SEND
REV REC
MONITOR OUT
MIXDOWN
MIXDOWN OUT
AUX 1
AUX 2
SCHEMATIC
SER. NO 48
AM4A
SANTA CRUZ
CALIF.
2623


263144
SWITCH 'A' MG 21/8
NORM
LINE IN
MON
SWITCH 'C' MG31/4
1-4
5-8
AUX
Q
PGG
REV
AM407 MG61/4
AM407
AM407
AM407
OUT
OUT
OUT
OUT
AM419AM (OPTIONAL)
REV SEND
REV REC
AM418A
TERMINAL BOARD
OPTIONAL
MON OUT
RMX116
AUX 1
MON
NORM
AUX 2
SWITCH 'D' MG31/4
1-4
5-8
MIX DN
MG71
AM457
MON OUT
SWITCH 'D' MG 21/4
TYP. SER. NO. 67
SCHEMATIC
BLOCK DIAG.
AM 43 TYP.
263144

LANGEVIN

TYPE AM401 INPUT MODULE

THE TYPE 401 BASIC HIGH-GAIN INPUT MODULE HAS ROTARY OR STRAIGHT LINE MIXER CONTROLS, FOUR KEY OUTPUT ASSIGNMENT SWITCHES, AND MAY BE SUPPLIED WITH LOW AND HIGH FREQUENCY EQUALIZATION, REVERB SEND CIRCUITRY AND CUE/AUDITION SWITCHING.

This amplifier assembly is primarily intended for use in the AM4A and AM8A mixing console. It can be used in any other custom assembly where its performance characteristics and input/output parameters serve the necessary functions. If used with the above-mentioned mixer assemblies, the type AM401 amplifier module becomes part of the sloping panel area of the composite system.

AM401A

Rotary mixer with equalization, reverb send, and solo switching.

AM421A

Same as above but with additional off/cue/PRG switch.

AM431A

Identical to Model AM401A but without equalization.

AM441A

Identical to Model AM401A but without reverb send circuitry.

AM451A

Identical to Model AM401A but without equalization and reverb send circuitry.

AM461A

Identical to AM451A but with off/cue/PRG switch (switching compatible with Model AM421A).

NOTE: *Straight line mixer versions of most of the above modules are available by adding the letter "S" after the module designation.*

Most type AM401 amplifiers may be provided with cue switches. Consult factory for details.

THE AM421A IS NOT AVAILABLE WITH THE STRAIGHT LINE MIXER DUE TO LIMITED FRONT PANEL SPACE.

ELECTRICAL SPECIFICATIONS

All of the input modules described above are modular sections of the Langevin AM4A and AM8A assemblies. The following specifications are given for purposes of reference and as guidelines if these modules are used in custom assemblies.

INPUT IMPEDANCE:	*Approximately 2400 ohms regardless of status of input attenuator. May be driven from any source impedance between 50 and 600 ohms. Design center is 250 ohms.*
INPUT LEVEL:	*Maximum minus 20 dbm at 1000 hz with equalizers flat and input attenuator on "0". Signals as high as +30 dbm may be applied with the 60 db attenuator position depressed.*
GAIN:	*Input level of minus 56 dbm at 1000 hz will develop approximately 15.5 milli-volts of signal at the high impedance mixer buss with the mixer at "0" attenuation. A higher level output may be made available at customer request.*
FREQUENCY RESPONSE:	*See attached sheet.*
HARMONIC GENERATION:	*See attached sheet.*
NOISE GENERATION:	*Minus 122 dbm equivalent input noise from 20 hz to 20 Khz.*
POWER REQUIREMENT:	*45 volts DC at 35 mA maximum.*

OPERATIONAL DATA

OUTPUT ASSIGN SWITCH:	*Four independent push-push buttons, switching direct program and reverb-send.*

OPERATIONAL DATA (Continued)

SOLO SWITCH:	*Single spring-return button. Pressing solo button causes all input modules (except one with depressed button) to go dead. Useful during setup, but do not use during program-feed time.*
INPUT ATTEN. SWITCH:	*Four buttons, interlocked one-at-a-time. 0, 20, 40 and 60 db attenuation before input transformer.*
L. F. EQUALIZER:	*Variable, 12 db maximum in 3 db steps. Shape of roll-off curve not selectable. Boost curves may be peaked at 50 hz or at 100 hz.*
	NOTE: There is also a peaking frequency of 1000 hz associated with the L.F. equalizer. This is mainly for dialogue and other speech equalization. This peaking frequency should not be used with any peaking frequency on the H.F. equalizer.
H. F. EQUALIZER:	*Similar in action to L.F., above. Peak frequencies 3 Khz, 5 Khz and 10 Khz.*
REVERBERATION SEND: (see note #1)	*Selectable with three-button switch; OFF - B - A. (The B and A stand for before and after the program mixer control).*
STATUS LAMP: (see note #2)	*Visible through a hole in the panel just above mixer control. Glows half-bright when indicating proper amplifier operation. Flashes upward in brilliance to a slight degree when showing amplifier over-drive condition.*
MIXER CONTROL:	*Stepless.*
CUE/AUDITION SWITCH:	*The solo switch may be replaced with a push/push cue switch. This control may be wired at customer's request to provide an output signal from either before or after the mixer control. On the AM421 and AM461 amplifiers, the cue switch arrangement consists of three interlocked push buttons located immediately above the mixer control.*

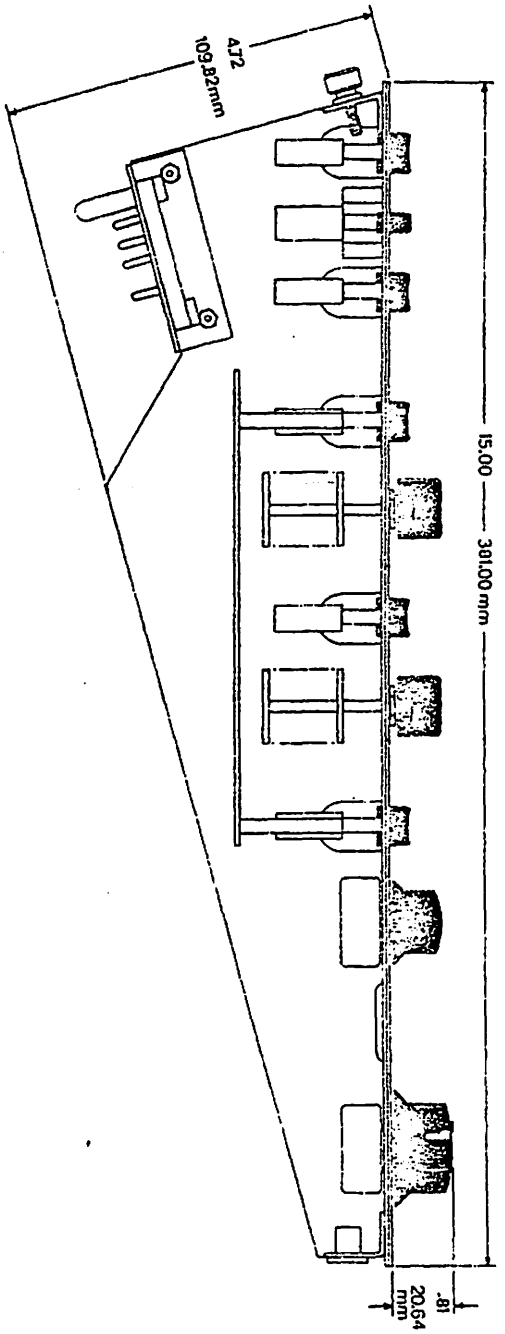
CUE/AUDITION SWITCH (Continued)

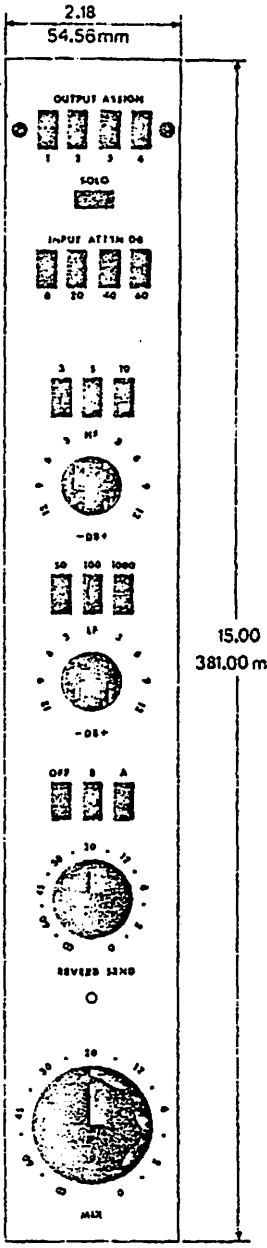
The function of this switch arrangement provides an "off" position in addition to the "cue" and "program" positions. All cue switches provide an auxiliary contact pair to control external indicator lights or relays. Consult factory for specific wiring arrangements.

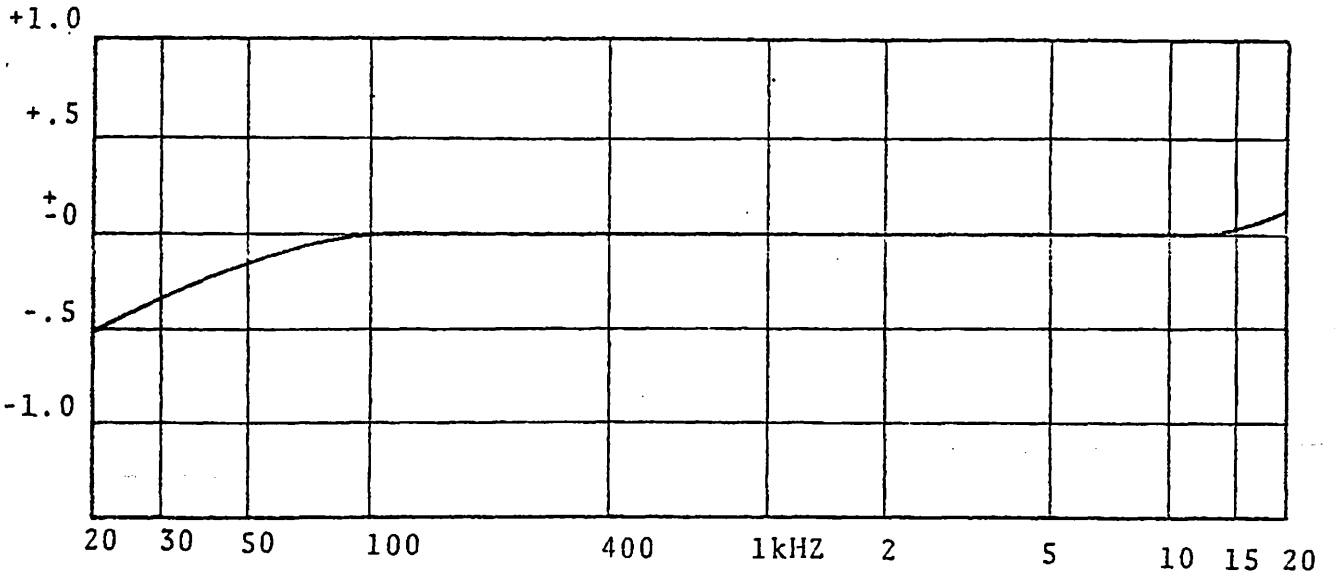
Note #1 - *Straight line units have a concentric reverb send control.*

Note #2 - *The status lamp is not provided in straight line mixers.*

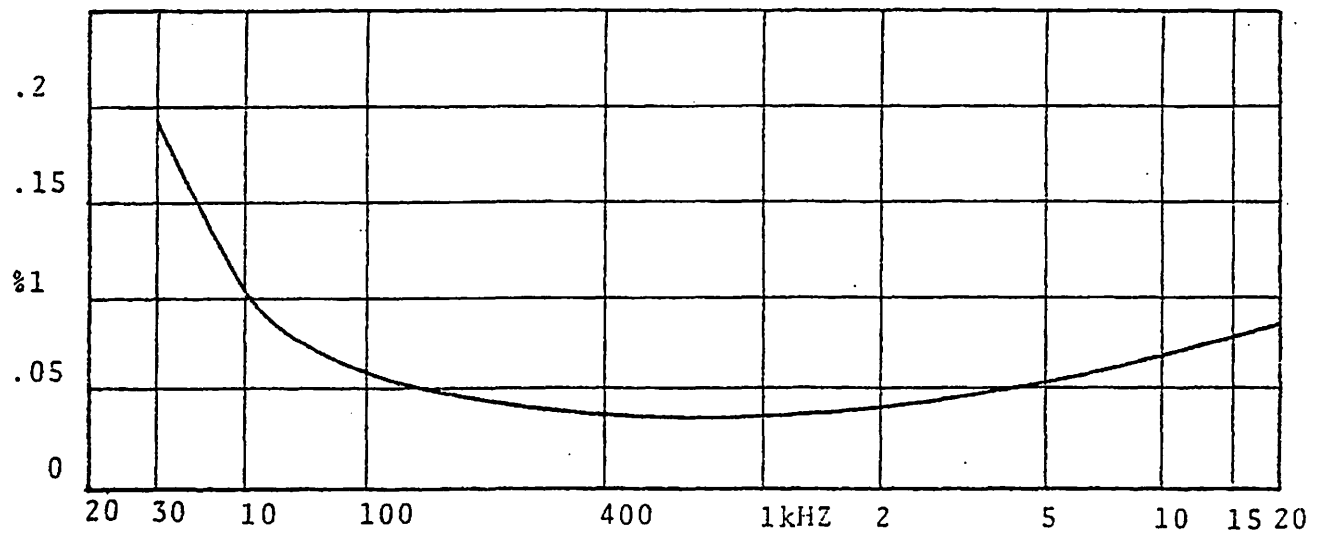
Langevin reserves the right to change this product without notification in order to institute desired changes at irregular intervals.


4.32
109.82mm
15.00
381.00 mm
.81
20.64
mm

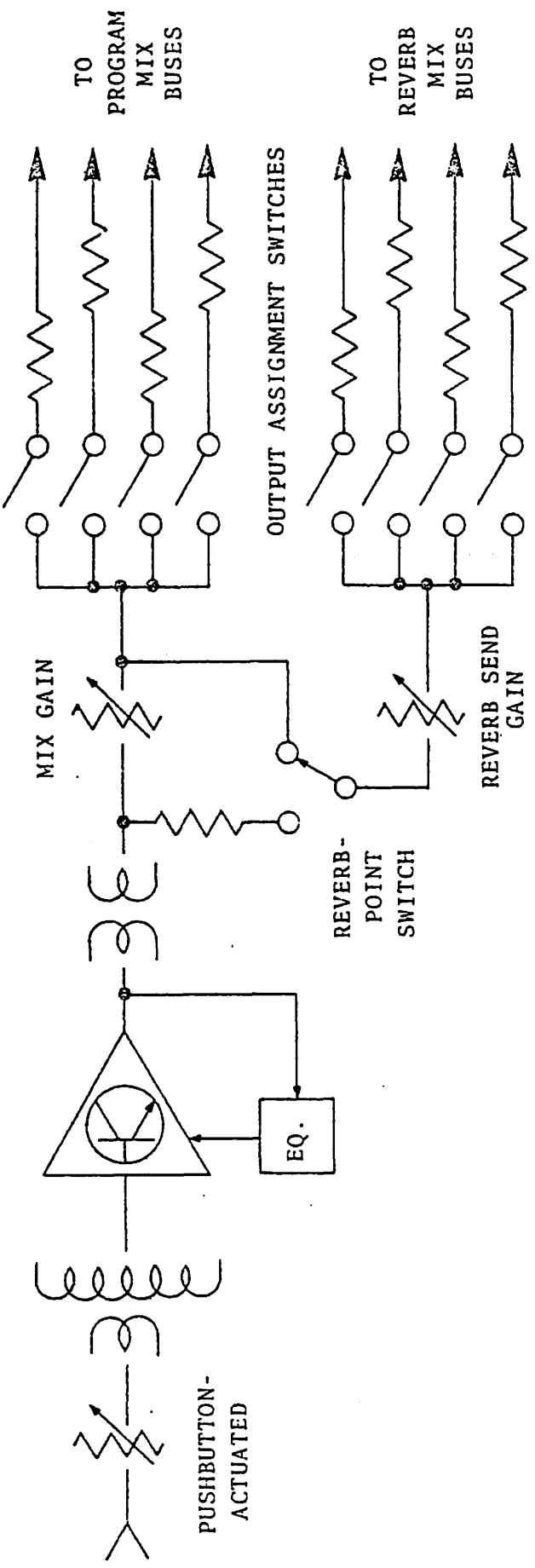

2.18
54.56mm
15.00
381.00 mm



TYPICAL FREQUENCY RESPONSE

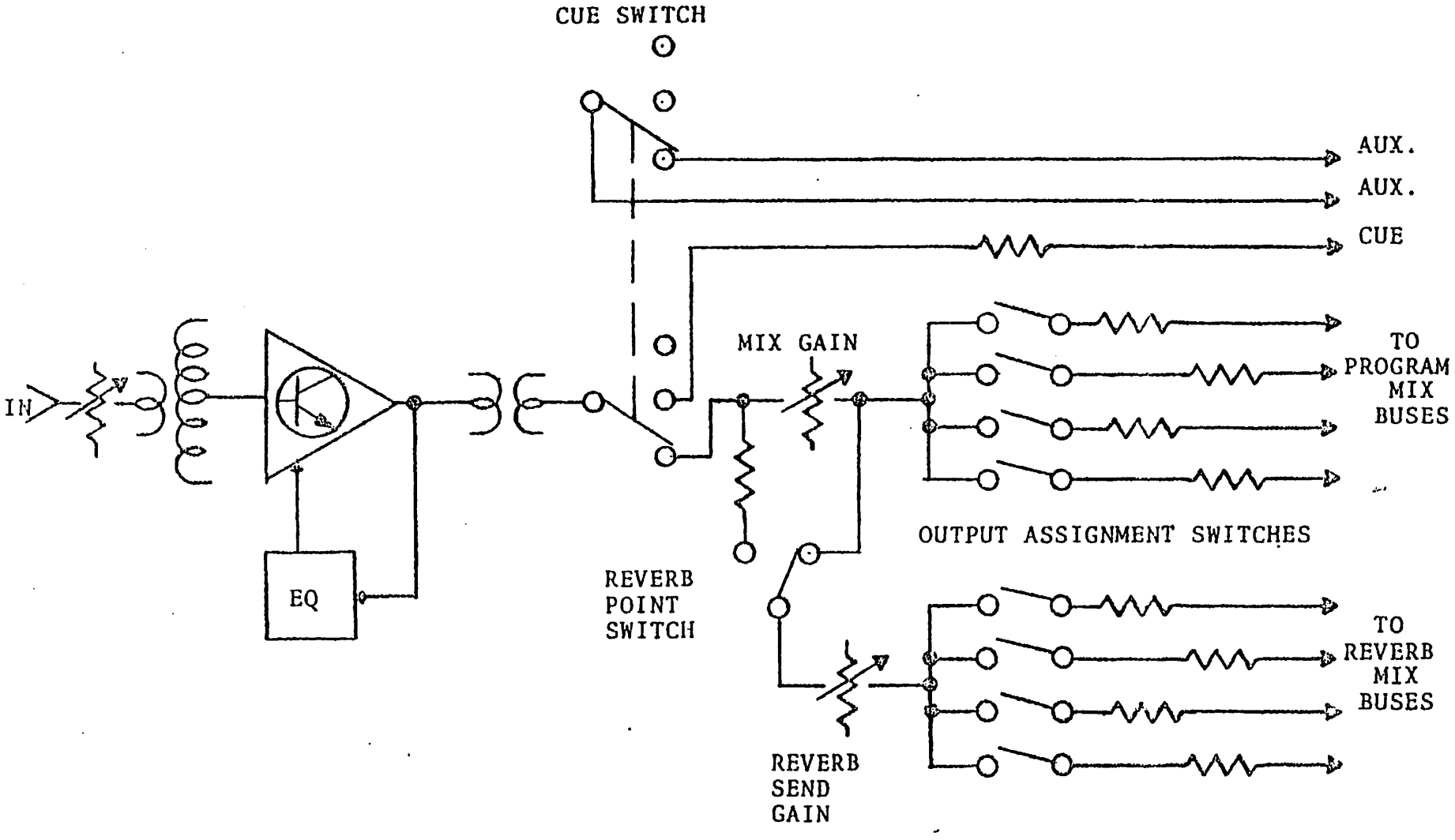


TYPICAL HARMONIC GENERATION

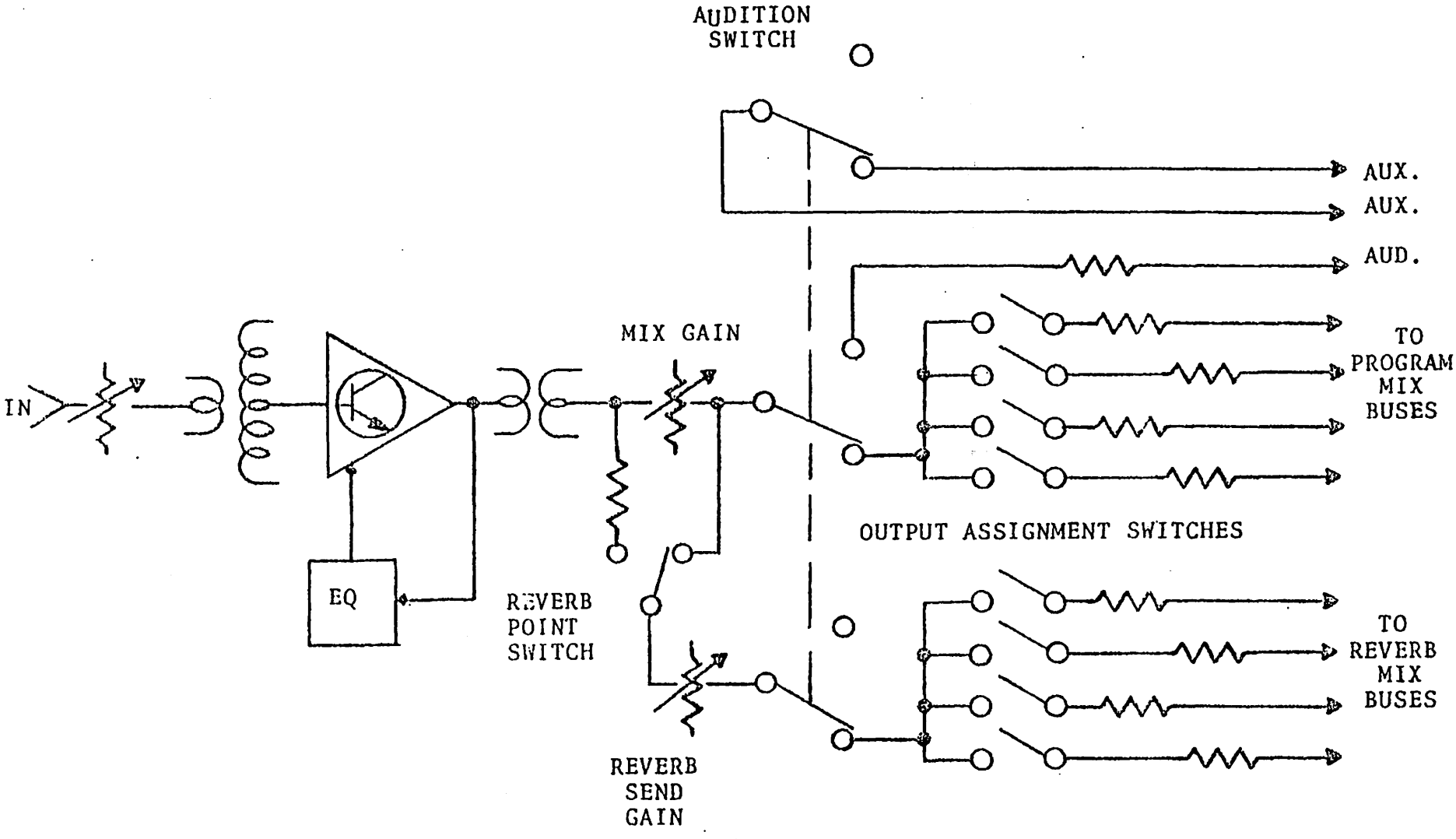


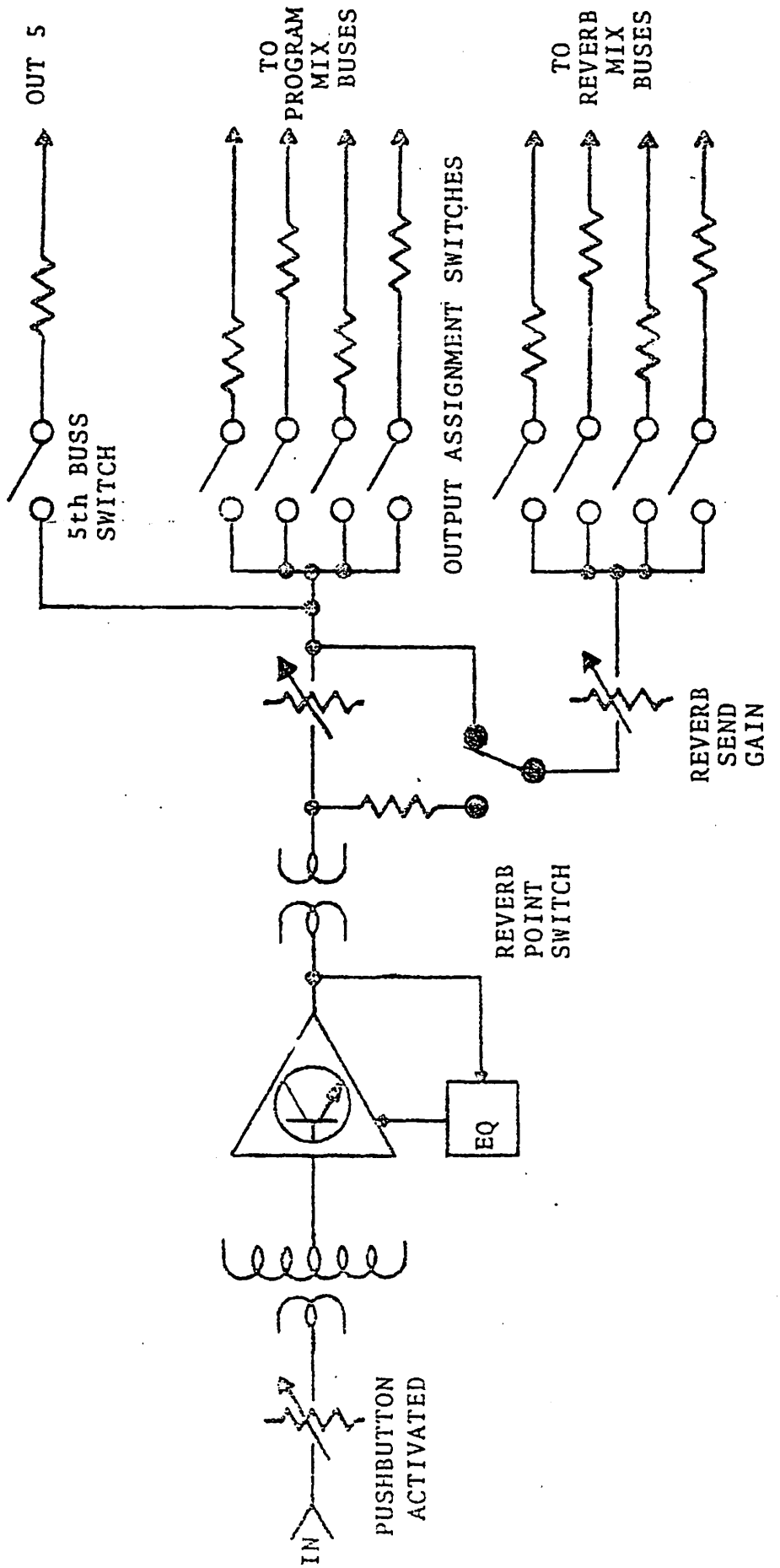
BLOCK DIAGRAM
AM401A

BLOCK DIAGRAM
AM421/AM401 (CUE)

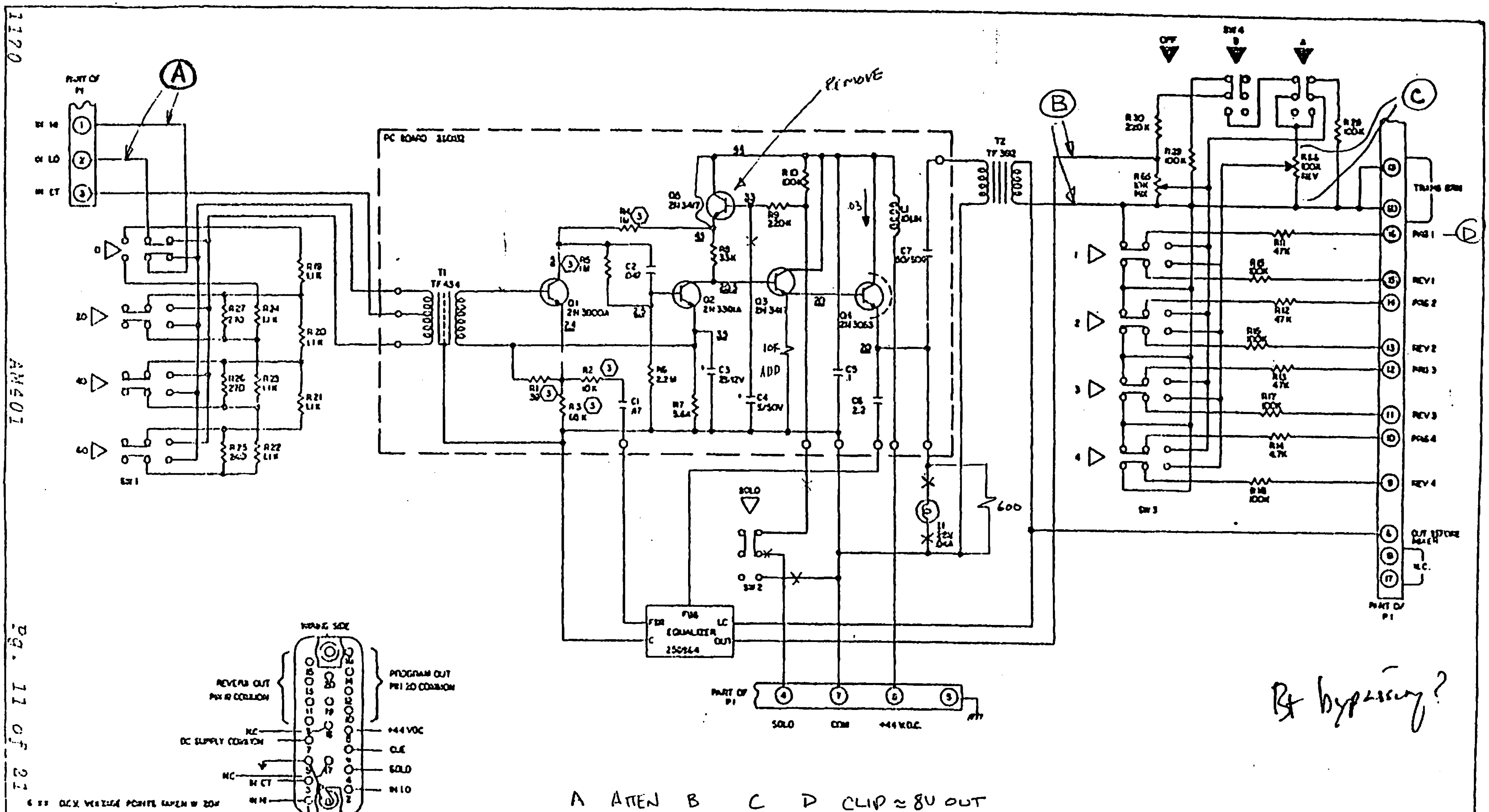


BLOCK DIAGRAM
AM401 (AUD)





BLOCK DIAGRAM AM401
(modification output 5th buss)



6 ** D.C.V. VOLTAGE POINTS TAKEN W 20K OHM VOLT METER REF TO COMMON

5 LAST R NO. 70 (31-64 ON EQUALIZER) NOT USED R67

4 LAST C NO. 24 (D24 ON EQUALIZER)

3 (3) CARBON FILM RESISTORS

2 ALL CAPACITORS IN MICROFARADS

1 ALL RESISTORS IN OHMS, 5%, 1/2 W

NOTES UNLESS OTHERWISE SPECIFIED

	A	ATTEN	B	C	D	CLIP ≈ 8V OUT
E	1V	-40	2.25V	.42V	.175V	GAIN ≈ 225X
THD			.03%		.023	

+4 -60 -9.27

+ -40 +4 2.75

AM 401

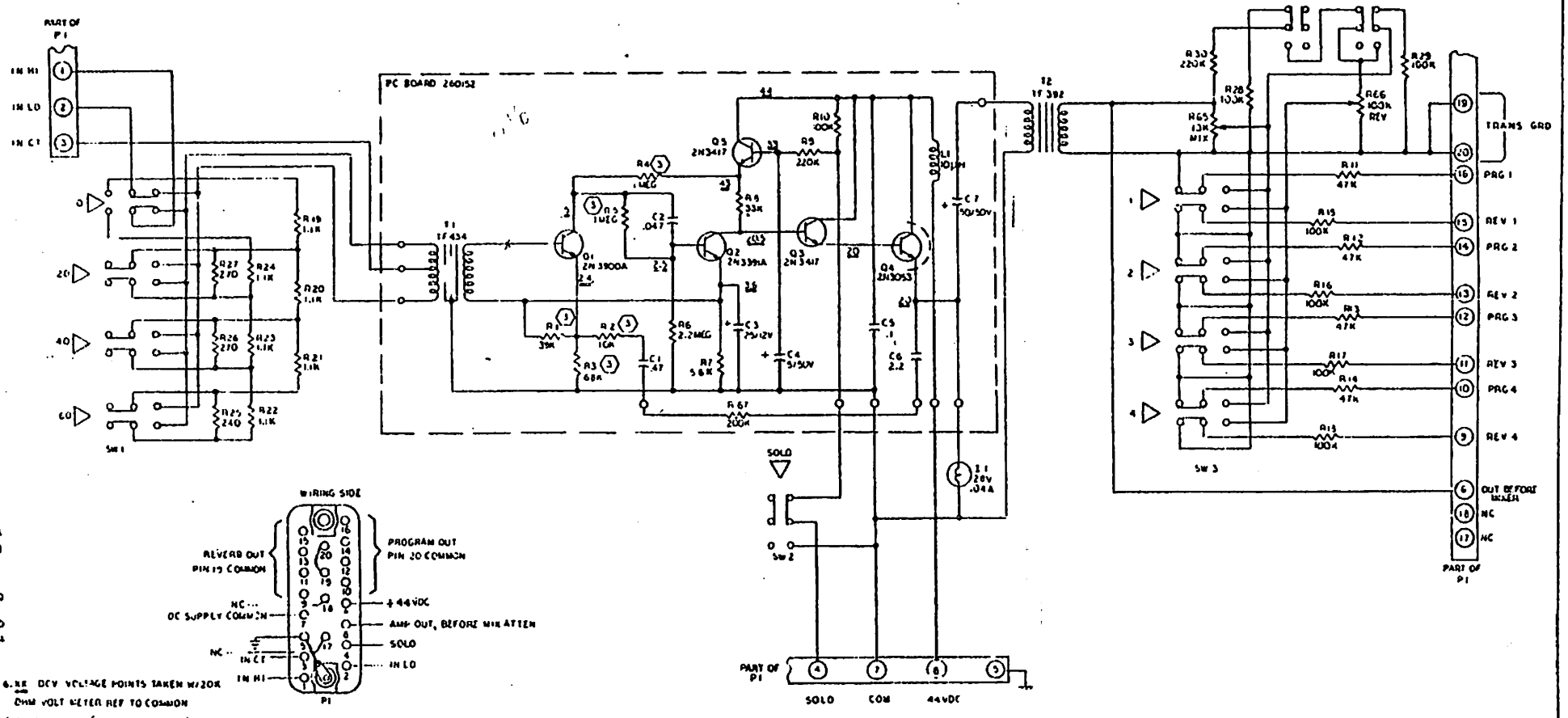
SCHEMATIC AM 401

Langevin SANTA ANA CALIFORNIA

260G-1

1120

AM401



6. ALL DCV VOLTAGE POINTS TAKEN W/20K OHM VOLT METER REF TO COMMON
5. LAST R NO 67 (51 TO 64 NOT USED)
4. LAST C NO.7
3. CARBON FILM RESISTORS
2. ALL CAPACITORS IN MICROFARADS
1. ALL RESISTORS IN OHMS, 5%, ½W

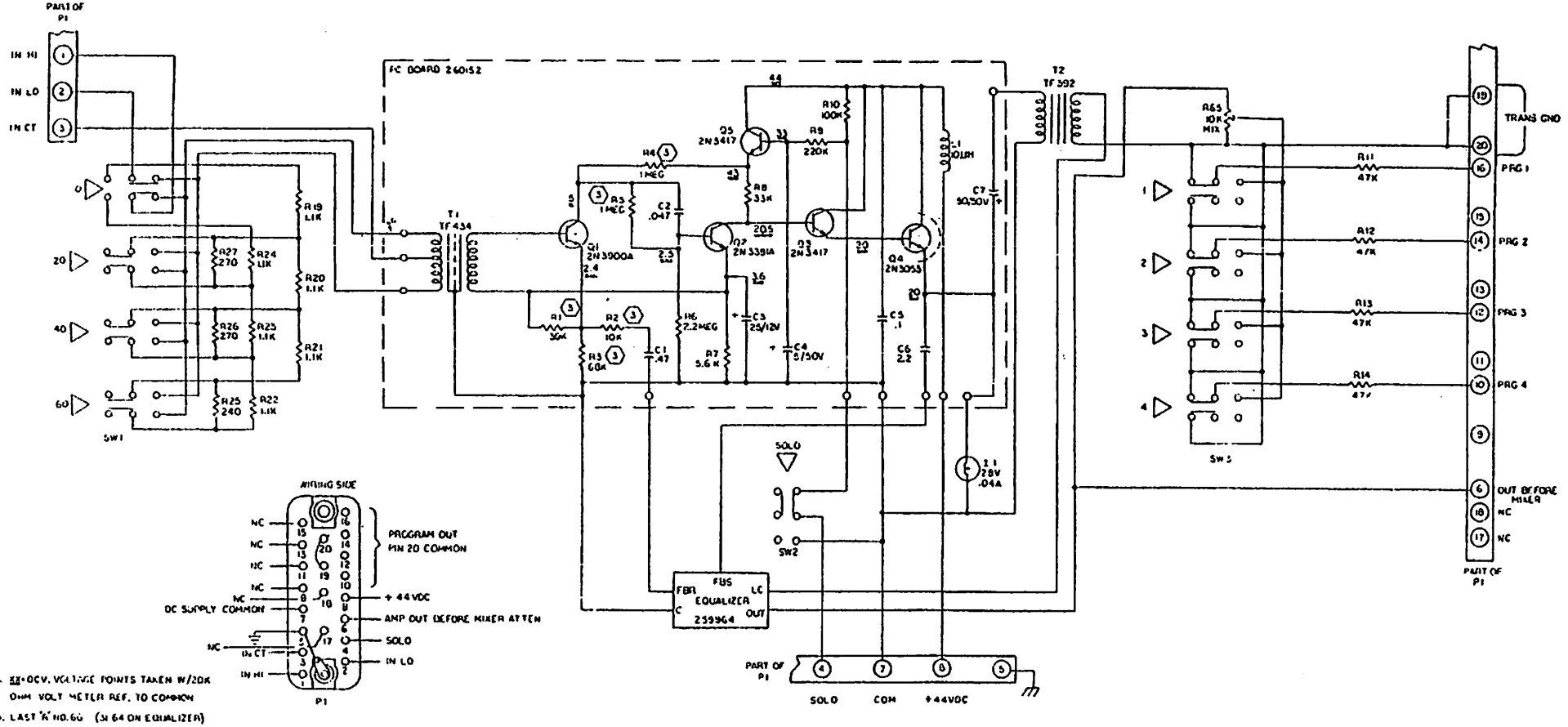
NOTES: UNLESS OTHERWISE SPECIFIED

	AM 431		SCHEMATIC AM 434	Langevin SANTA ANA CALIFORNIA
				262474

Fig. 13 of 21

1170

AM401



6. XX=DCV. VOLTAGE POINTS TAKEN W/20K OHM VOLT METER REF. TO COMMON
5. LAST "A" NO. 66 (A-64 ON EQUALIZER)
4. LAST "C" NO. 24 (B-24 ON EQUALIZER)
3. CARBON FILM RESISTORS
2. ALL CAPACITORS IN MICROFARADS
1. ALL RESISTORS IN OHMS, 5%, 1/2W

NOTES: UNLESS OTHERWISE SPECIFIED

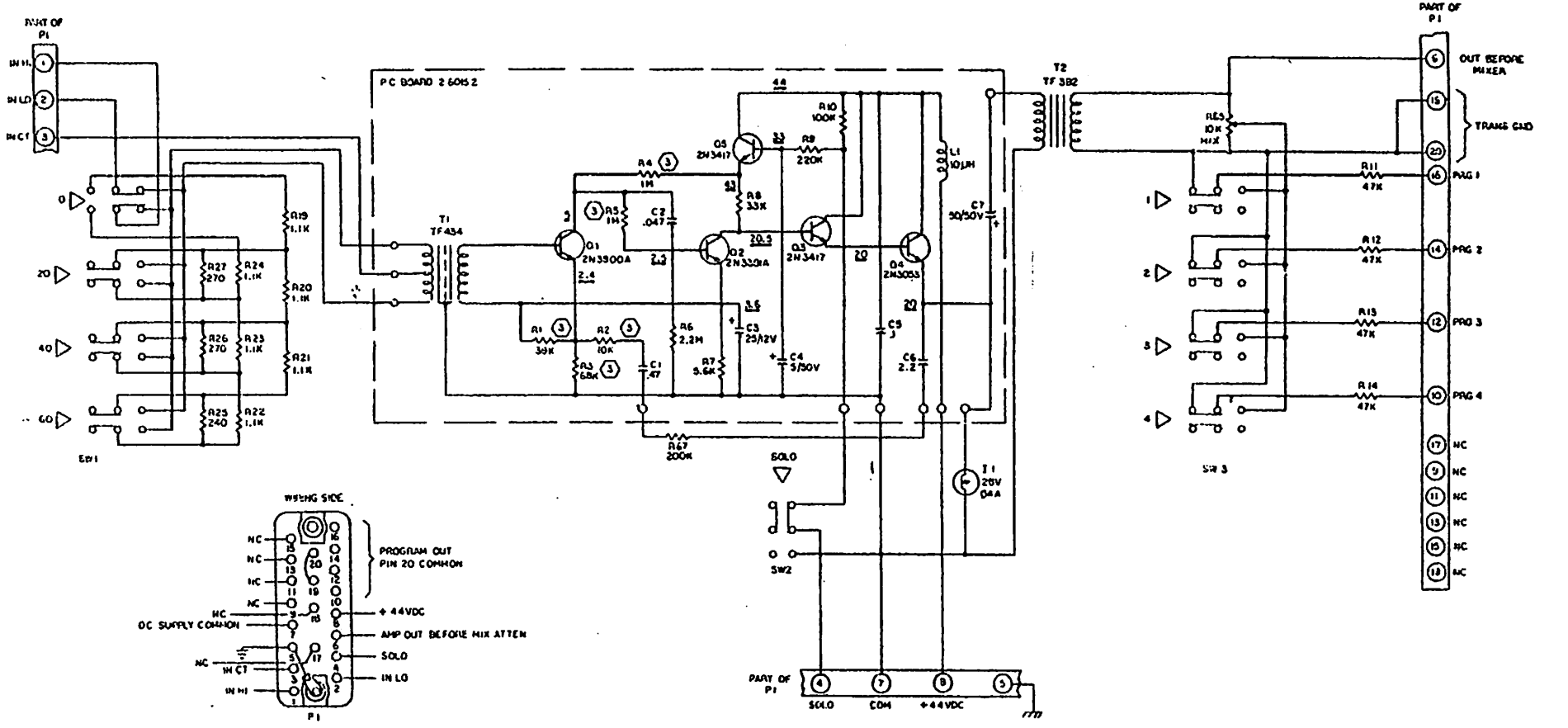
AM441A/AS		SCHEMATIC AM 441A/AS	Langevin
		UBC	262484

Pg. 14 of 27

1170

AM401

Pg. 15 of 27



6. ZERO DCV, VOLTAGE POINTS TAKEN W/20K OHM VOLT METER REF. TO COMMON
5. LAST 'R' NO. USED R67
4. LAST 'C' NO USED C7
3. CARBON FILM RESISTORS
2. ALL CAPACITORS IN MICROFARADS
1. ALL RESISTORS IN OHMS, 5%, 1/2W

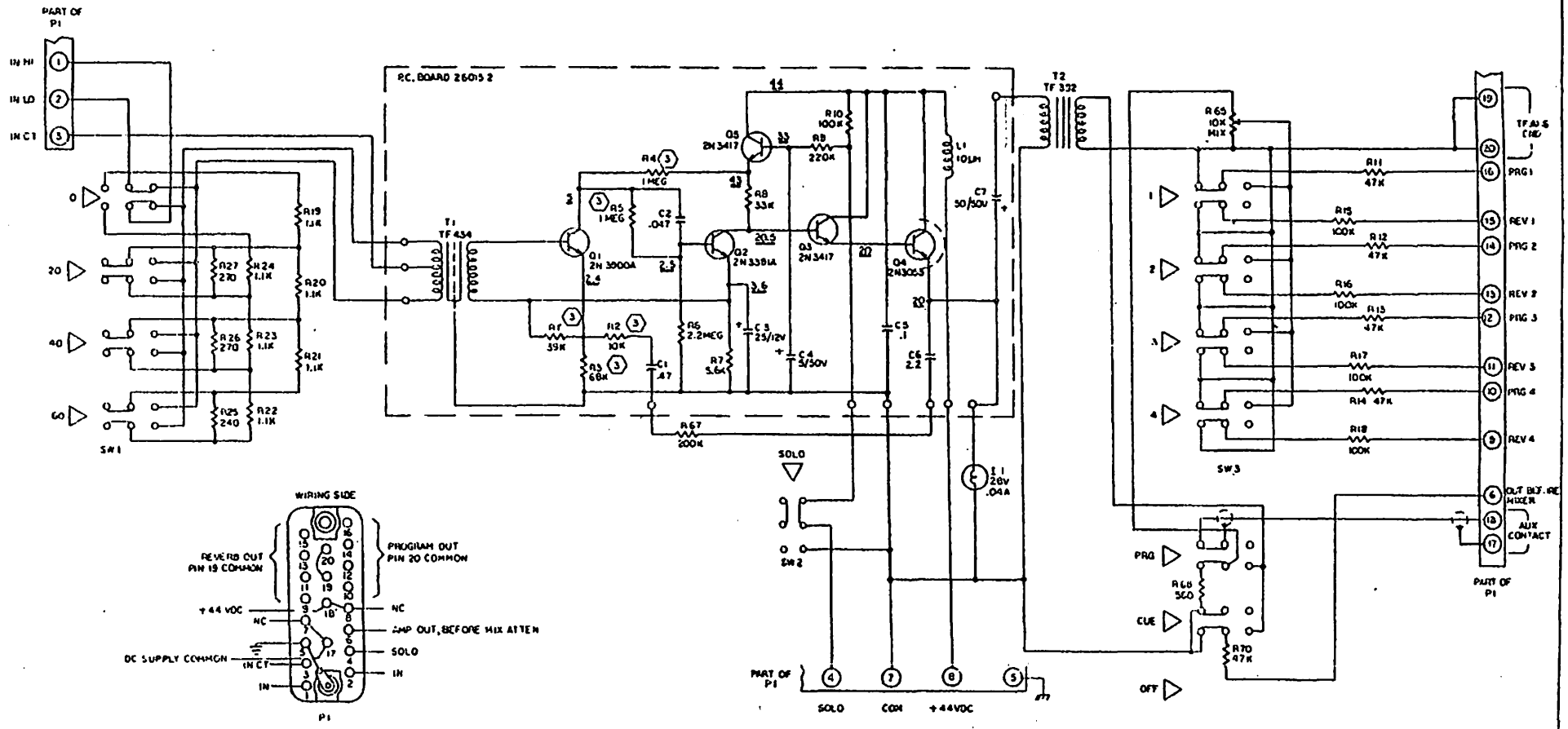
NOTES: UNLESS OTHERWISE SPECIFIED

AM451A/AS		SCHEMATIC AM451A/AS	Langevin
		JBC | V02 | 12-4-69	262434

1170

A-1401

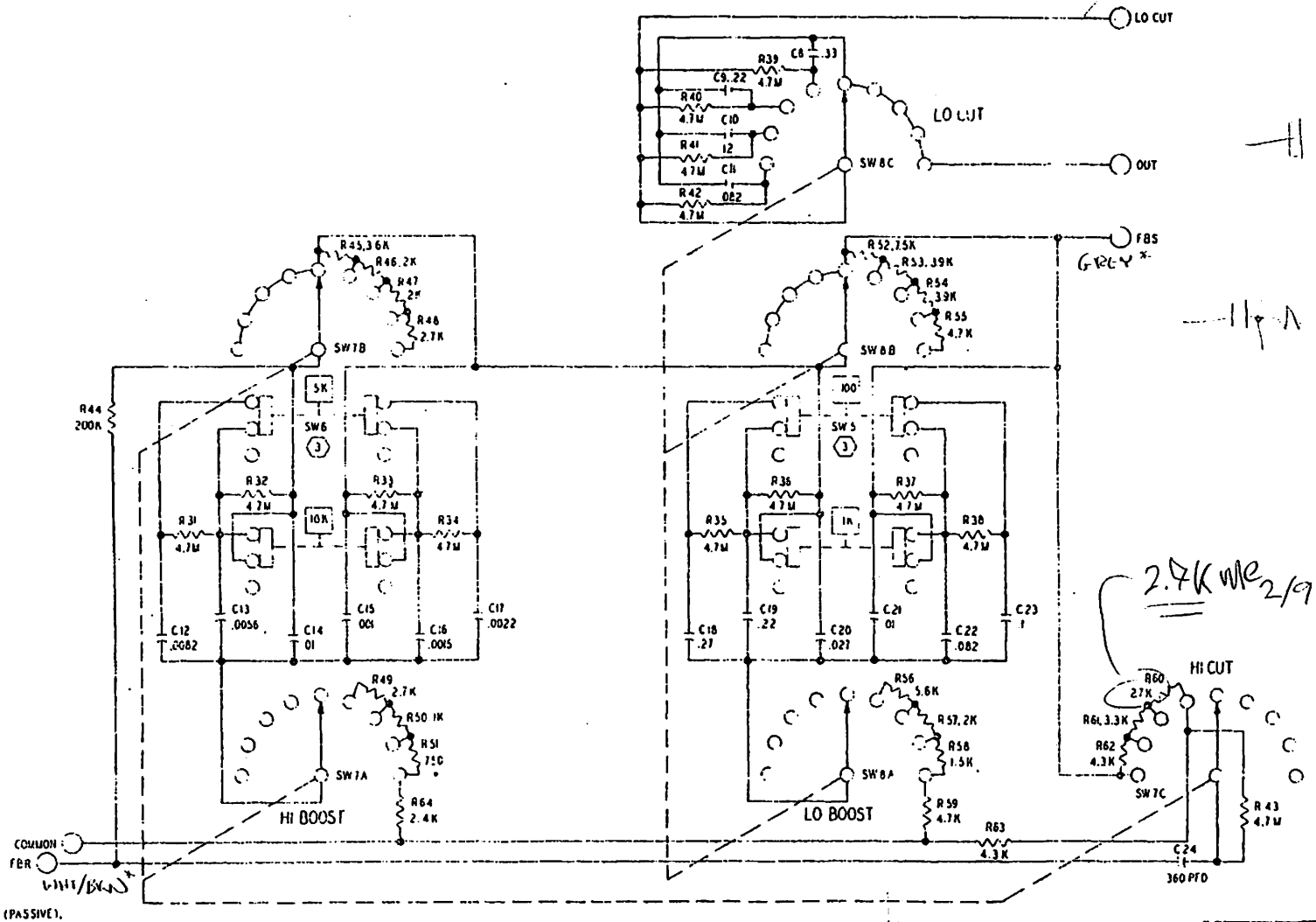
Pg. 16 of 21



6. AS+DCV. VOLTAGE POINTS TAKEN W/20K OHM VOLT METER REF. TO COMMON
5. LAST "R" IS 70
4. LAST "C" IS 7
3. CARBON FILM RESISTORS
2. ALL CAPACITORS IN MICROFARADS
1. ALL RESISTORS IN OHMS, 5%, 1/2W

NOTES: UNLESS OTHERWISE SPECIFIED

AM461A/AS		SCHEMATIC AM 461A/AS	Langevin
		LBC 12-1-69	263094



6. LAST C Nº 24, (C1-7 ON 260164).
5. LAST R Nº 66, (R1-30,65,66 ON 260164).
4. ROTARY SWITCHES IN 0 (FLAT) POSITION
3. CONTROLS SHOWN IN 3KHZ, 50KHZ POSITION (PASSIVE), NOT ON DIAGRAM.
2. ALL CAPACITORS IN UFD.
1. ALL RESISTORS IN OHMS, 1/4W, 5%.

NOTES

SCHEMATIC, EQUALIZER AM401

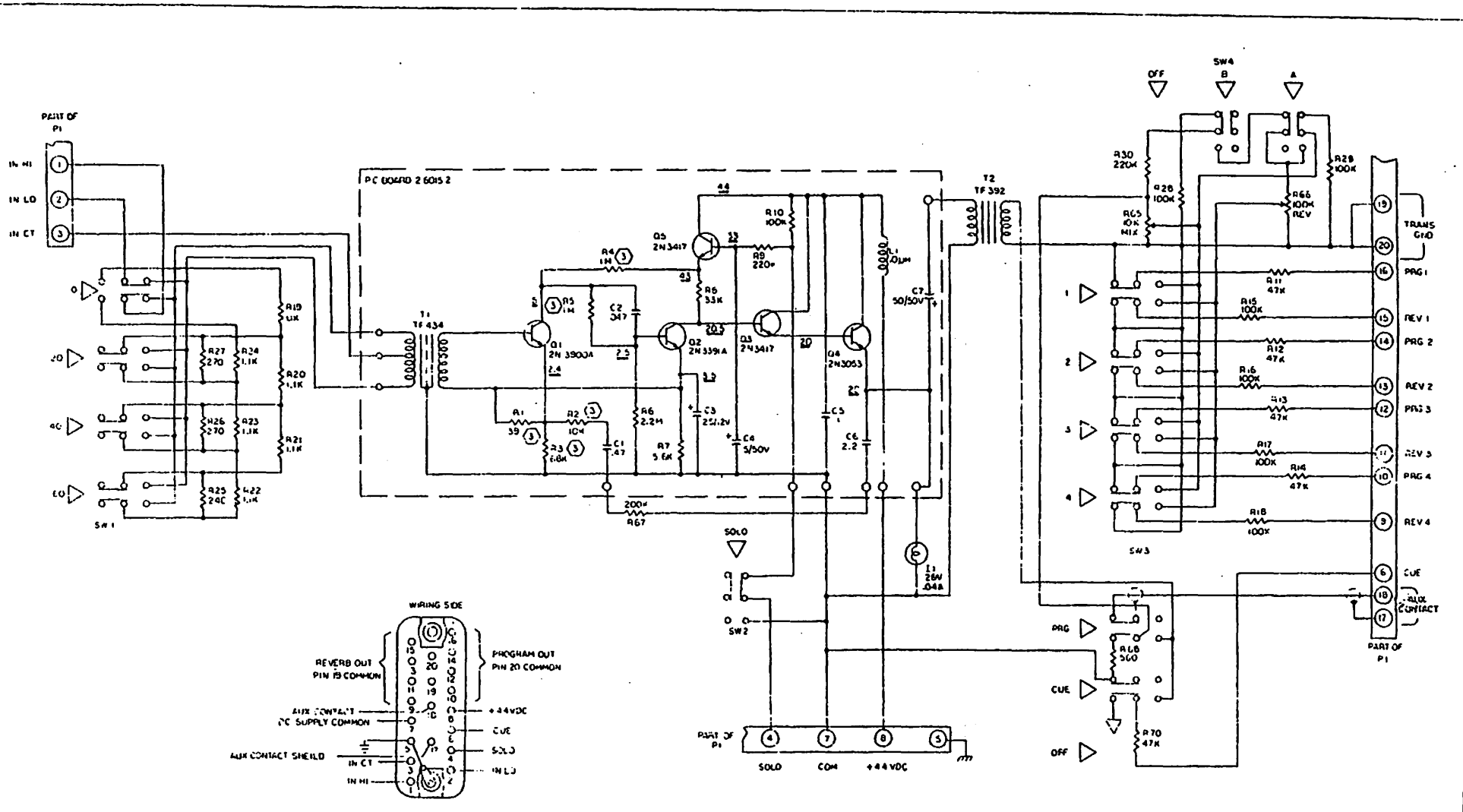
Langevin

1170 AM401 Pg. 18 of 21

1170

AM401

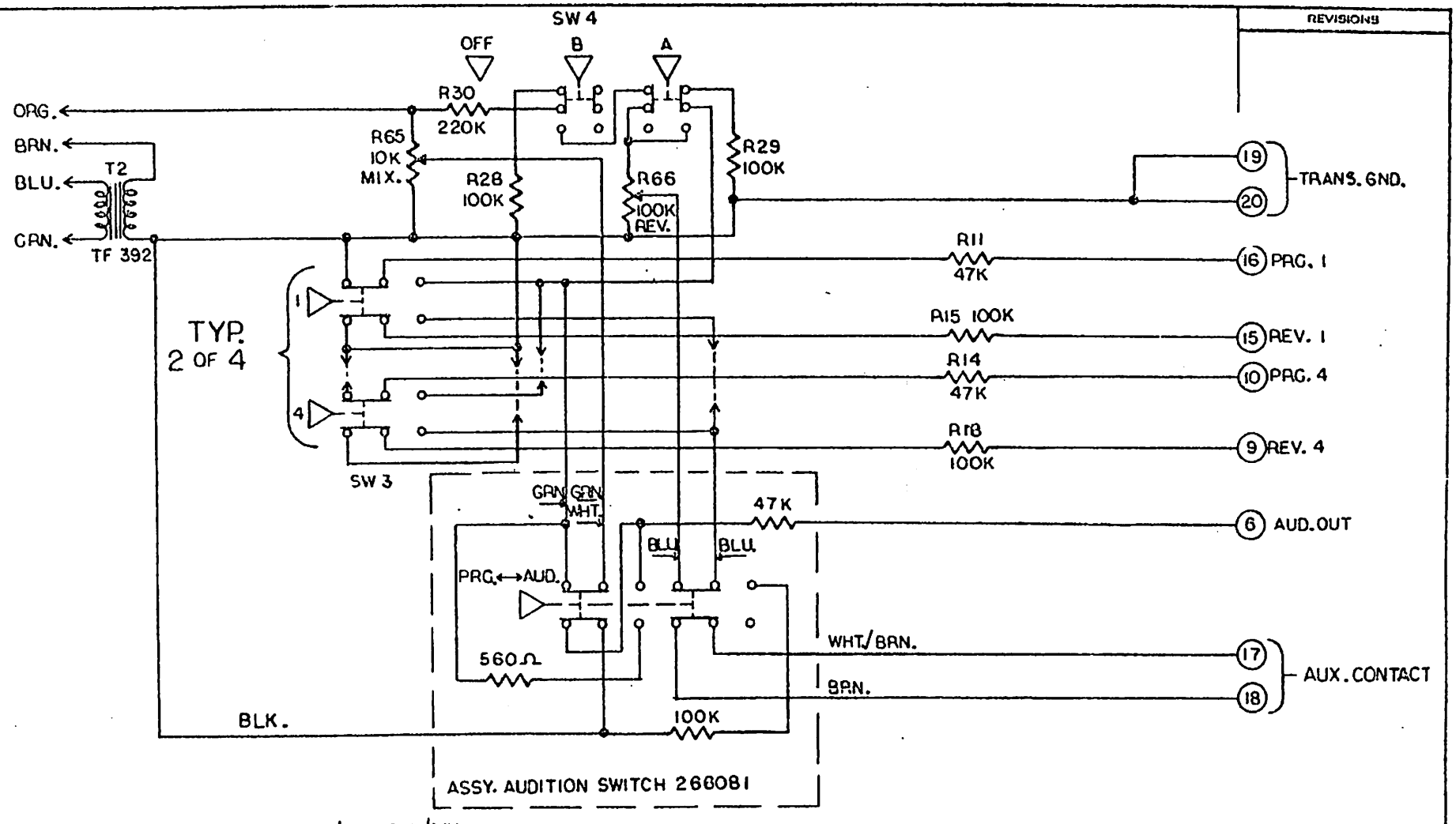
Pg. 17 of 21



6. 88+DCV. VOLTAGE POINTS TAKEN W. 20K OHM VOLT METER REF. TO COMMON
5. LAST R NO. 70
4. LAST C NO. 7
3. CARBON FILM RESISTORS
2. ALL CAPACITORS IN MICROFARADS
1. ALL RESISTORS IN OHMS, ±5%, 1/2W

NOTES: UNLESS OTHERWISE SPECIFIED

	AM 471 A	SCHEMATIC AM 471 A	Langevin
			265054



REVISIONS

2 BEFORE INSTALLATION DISCONNECT GRN/WHT, BLK/WHT AND ORG/WHT WIRES. TIE GRN/WHT AND BLK/WHT TOGETHER (SOLO SWITCH). THEN INSTALL AS SHOWN.

1. AUD. SWITCH, SIGNAL PICK-OFF AFTER MIXER

NOTES

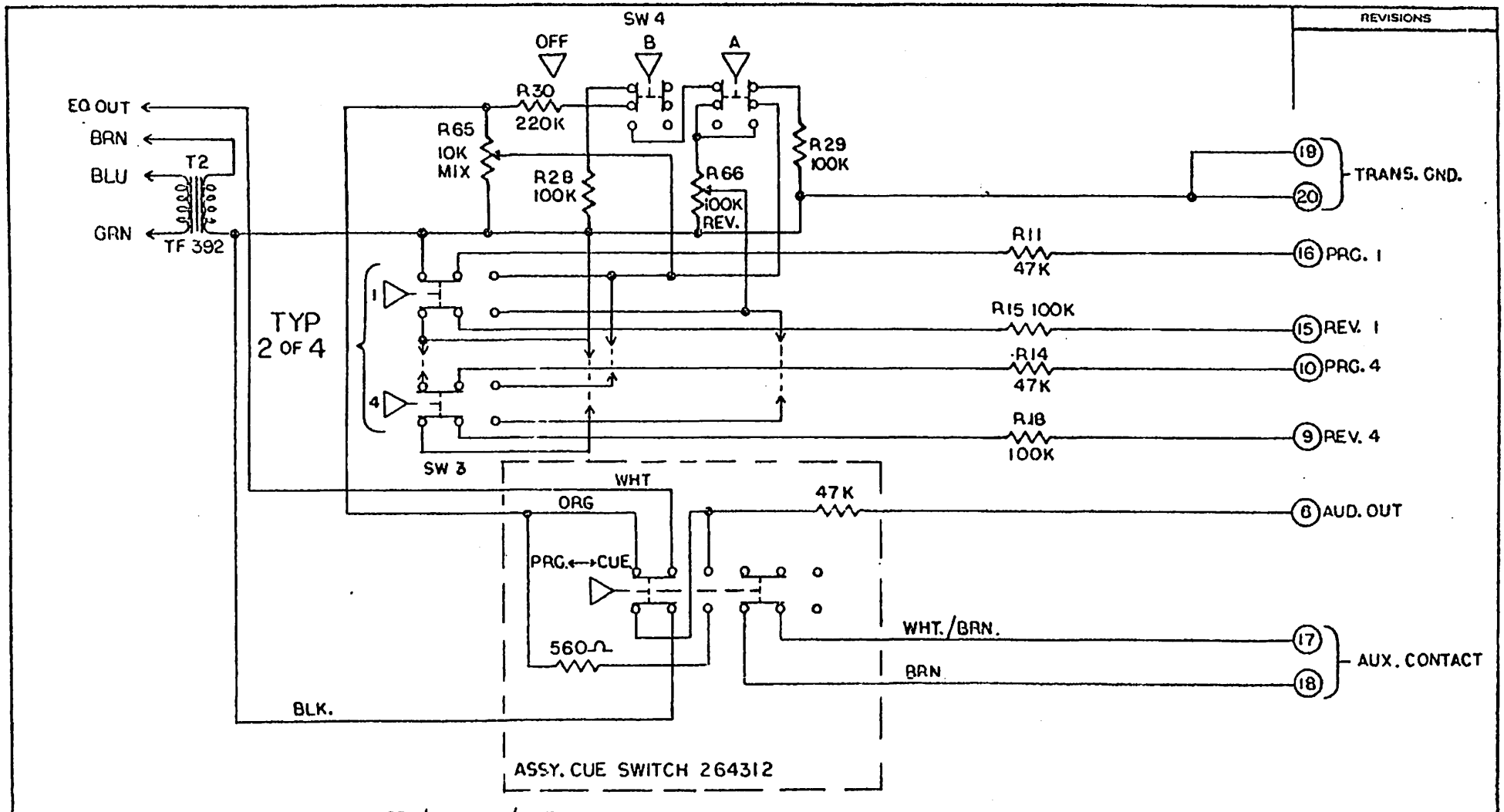
NEXT ASSEMBLY	USED ON AM 4(X)1
MATERIAL	
FINISH	
SCALE	

TOLERANCES UNLESS OTHERWISE NOTED

MODIFICATION
AUD. SWITCH

Langevin
SANTA ANA
CALIFORNIA

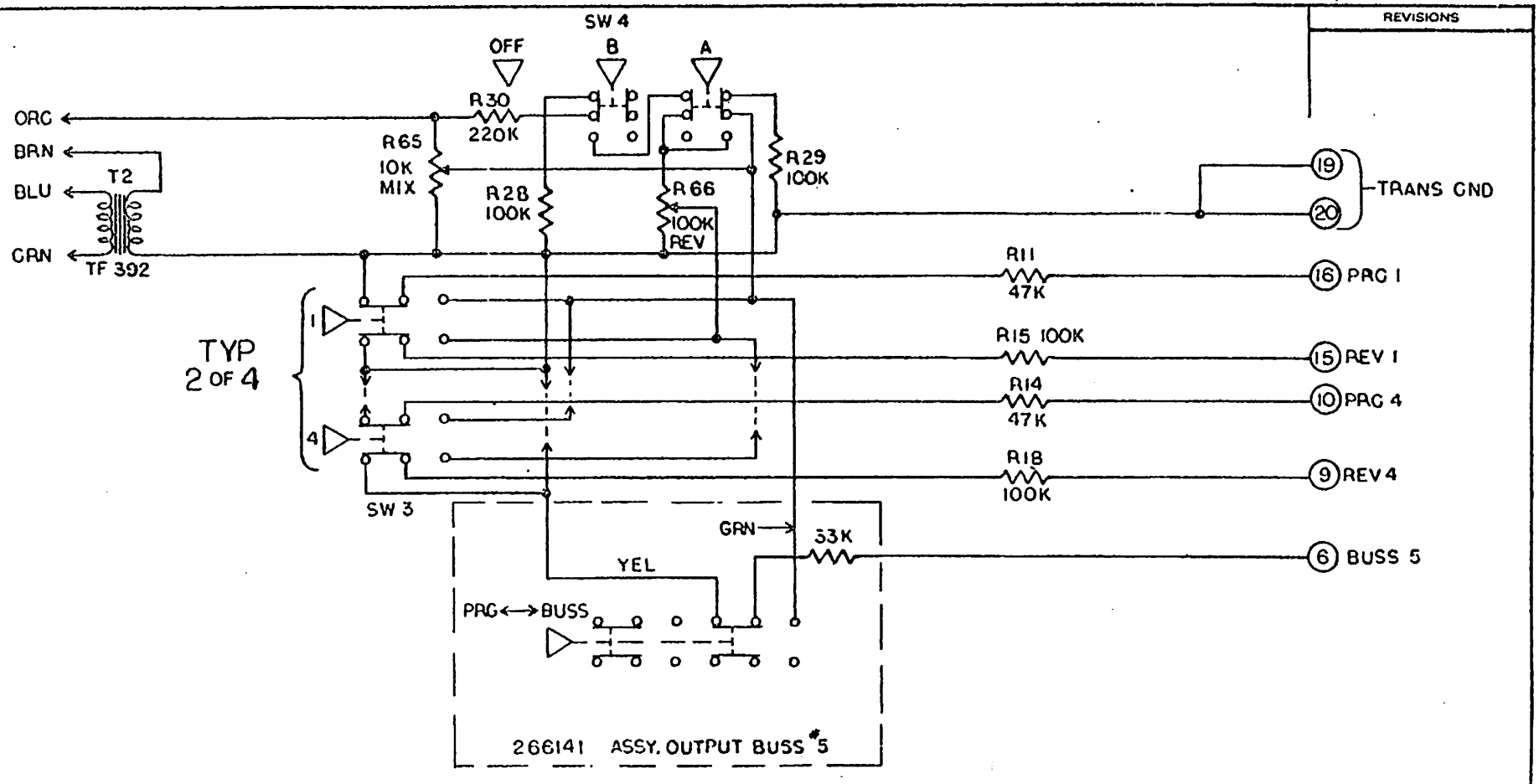
DWN. BY	CHK. BY	DATE	
JRC	[illegible]	3-17-70	266062



1. BEFORE INSTALLATION DISCONNECT GRN/WHT, BLK/WHT AND ORG/WHT WIRES, TIE GRN/WHT AND BLK/WHT TOGETHER (SOLO SWITCH). THEN INSTALL AS SHOWN.

NOTES:

NEXT ASSEMBLY / USED ON	TOLERANCES UNLESS OTHERWISE NOTED	MODIFICATION CUE SWITCH	Langevin SANTA ANA CALIFORNIA
MATERIAL			
FINISH			
SCALE		DWN. BY JBC / CHK. BY / DATE 3-19-70	266092



1 BEFORE INSTALATION DISCONNECT GRN/WHT, BLK/WHT AND ORG/WHT WIRES, TIE GRN/WHT AND BLK/WHT TOGETHER (SOLO SWITCH). THEN INSTALL AS SHOWN.

NOTES

NEXT ASSEMBLY	USED ON
MATERIAL	
FINISH	
SCALE	

TOLERANCES UNLESS OTHERWISE NOTED

DWN. BY JBC | CHK. BY [illegible] | DATE 3-23-70

MODIFICATION OUTPUT BUSS #5

Langevin
SANTA ANA CALIFORNIA

266132

LANGEVIN

AM407A/AS OUTPUT MODULE

BASIC OUTPUT MODULE, ROTARY OR STRAIGHT LINE GAIN CONTROL, FULL FACILITIES FOR FEEDING INTO AND RECEIVING FROM ONE REVERBERATION CHAMBER.

Plugs into the AM4A housing, and becomes part of the sloping-panel area of the composite system.

Contains two completely separate amplification systems:

1) A PROGRAM SECTION which receives signal from one mixer bus in the AM4A and also from the output of a reverb chamber. This section is equipped with a gain control on the panel (marked MASTER) and may also be equipped with an external auxiliary gain control for board (grand) master purposes.

2) A REVERB-SEND SECTION which receives signal from one reverb mix bus in the AM4A. The output of this section feeds the input of a reverb chamber.

3) REVERB RETURN the AM407 Output Module is equipped with three pushbutton keys (interlocked so that only one can be down at a time). They are marked: OFF - MON - PRG.

With the OFF button down, there will be of course no reverb signal returned to any part of the system.

With the PRG button down, the reverb return will be "normal" in that it will be mixed with the direct program within the module.

With the MON button down, the reverb return will be heard in the monitoring system that is connected to an AM4A Mixer, but will not be present at the program output terminals.

This latter condition allows, for instance, the monitoring of a studio setup with reverberation ... while recording "dry". This can be of real value for location recording where it is not feasible to have good (and therefore, bulky) reverberation chambers or generators. Proper reverb can be put in during remix back in the studio.

The Reverberation Return Control is effective in PRG and MON positions of the key switch assembly.

ELECTRICAL SPECIFICATIONS
FOR PROGRAM SECTION

Although this module is part of the AM4A, the following data ar stated for reference purposes:

INPUT IMPEDANCE	*To be driven from 4000 ohms or less, as used in the AM4A.*
MAX. INPUT LEVEL	*4.5 mV rms @ 1000 Hz before clipping, when set for maximum possible gain.*
MAXIMUM GAIN	*0.6 mV rms @ 1000 Hz at input will cause output of +4 dBm into 600 ohm load (master gain control and external gain control set for minimum attenuation).*
FREQ. RESPONSE	*Response curve will fit within a 1.0 dB envelope over the range 20 Hz to 20 kHz.*
HARMONIC GEN.	*See attached sheet.*
OUTPUT LEVEL	*+22 dBm maximum level into 600 ohm load.*

Right to institute changes without notification is reserved.

(Electrical Specs. for Program Section, continued)

NOISE GENERATION	*Not over 2.2 uV (referred to input) over range 20 Hz to 20 kHz. (4000 ohm input termination, maximum possible gain.)*
POWER REQUIREMENT	*Must be powered from external source of 45 V (50 max.) DC. Current: 50 mA max. (Current figure is for entire module.)*

ELECTRICAL SPECIFICATIONS

Reverb return signal is introduced into the PROGRAM SECTION. However, specs for it are listed separately here in order to avoid confusion. Please note that the High-frequency response is purposely attenuated in order to avoid "whizz" in the chamber.

INPUT IMPEDANCE	*May be driven from sources as high as 10,000 ohms. All data here are stated for the condition of bridging a 600 ohm line.*
GAIN (SENSITIVITY)	*Bridges +4 (or higher) dBm 600 ohm line, or may be driven from any 1.25 V rms (or higher) line up to 10,000 ohms impedance.*
FREQ. RESPONSE	*Down approximately 6 dB @ 8 kHz.*

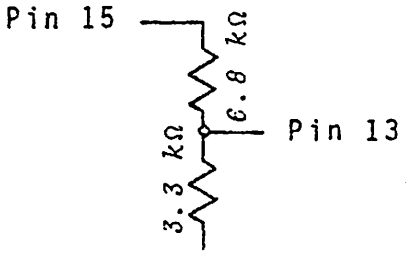
ELECTRICAL SPECIFICATIONS

REVERB SEND

As stated on the previous page, this section is independent of the program section. Please note that the low-frequency response is purposely attenuated in order to prevent "boom" in the chamber.

FREQ. RESPONSE	*Down approximately 6 dB @ 130 Hz.*
OUTPUT LEVEL	*With ALL controls on the AM4A set at "10" and with Vu meters indicating "0", the output level of this section will be approximately -20 dBm.*
OUTPUT IMPEDANCE	*To be loaded with 600 ohms.*

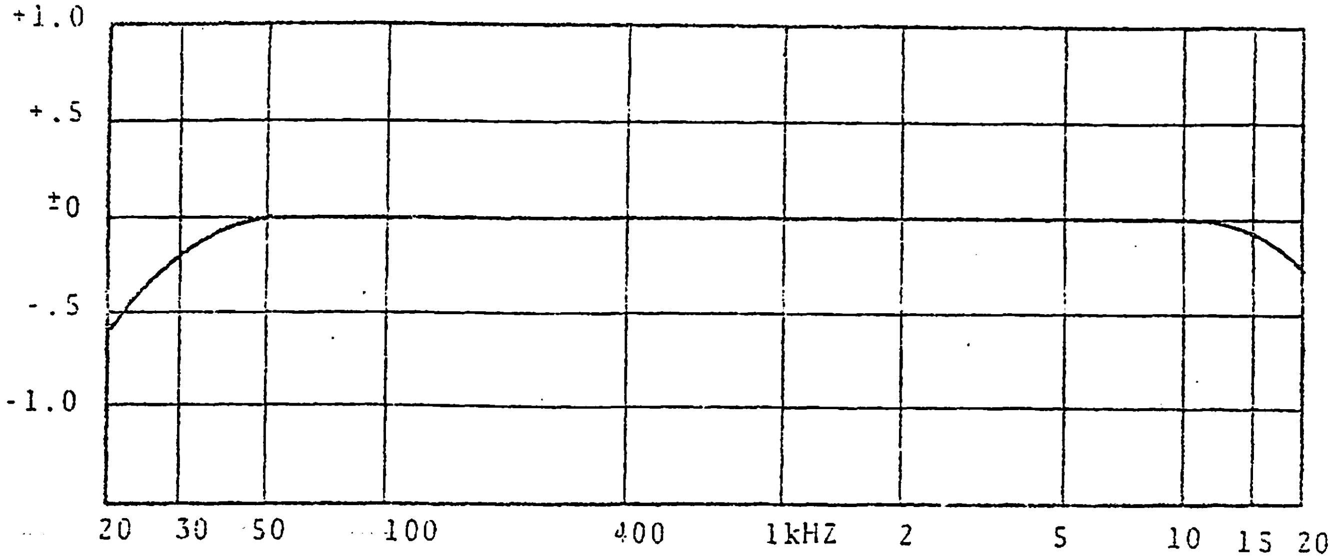
Any AM407A Output Module that is not interconnected with an external Board Master Control should be fitted with a fixed resistive divider at the female connector (part of the AM4A Housing). This divider should total 10,000 and the output tap should be at -10 dB. The following is sufficiently accurate:



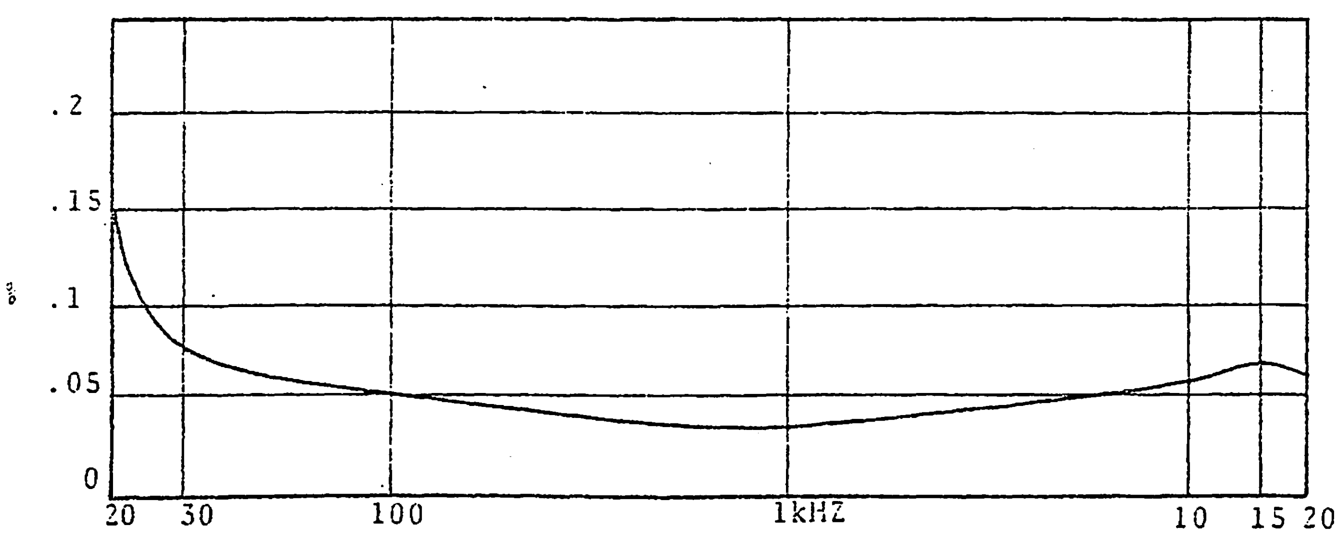
Pins 12/20

Monophonic versions of the AM4A will be equipped with the fixed resistors shown above in lieu of a Board Master Control unless the monophonic assembly is such that there are Sub-Master controls (for groups of microphones) plus a Board Master.

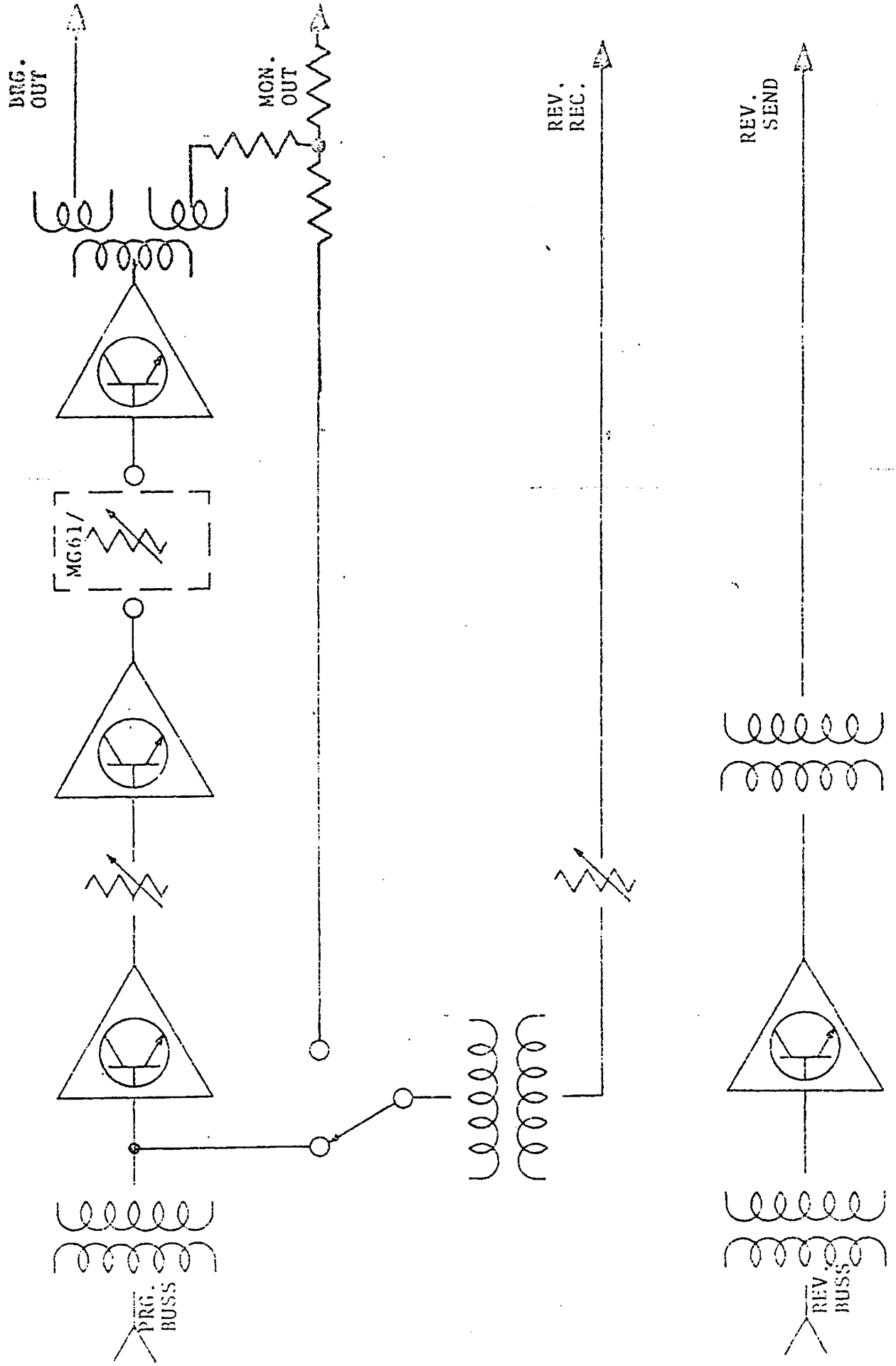
NOTE: All input and output circuits of this module, whether for direct program or for reverb, are transformer-isolated. Neither side of any incoming or outgoing winding is grounded.

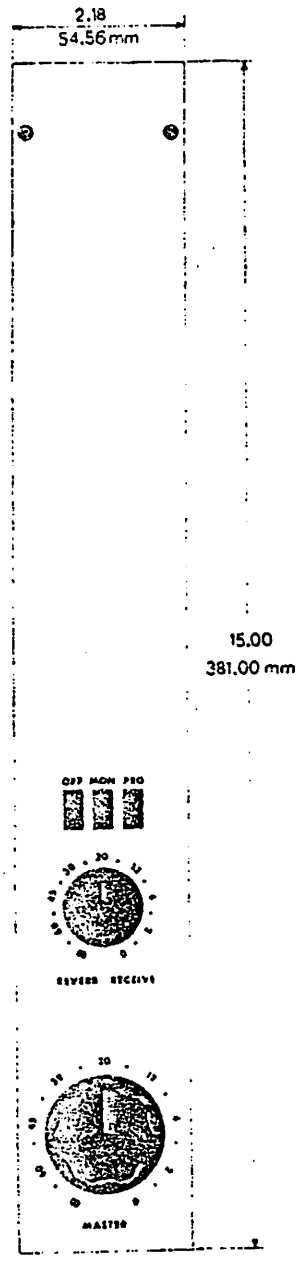


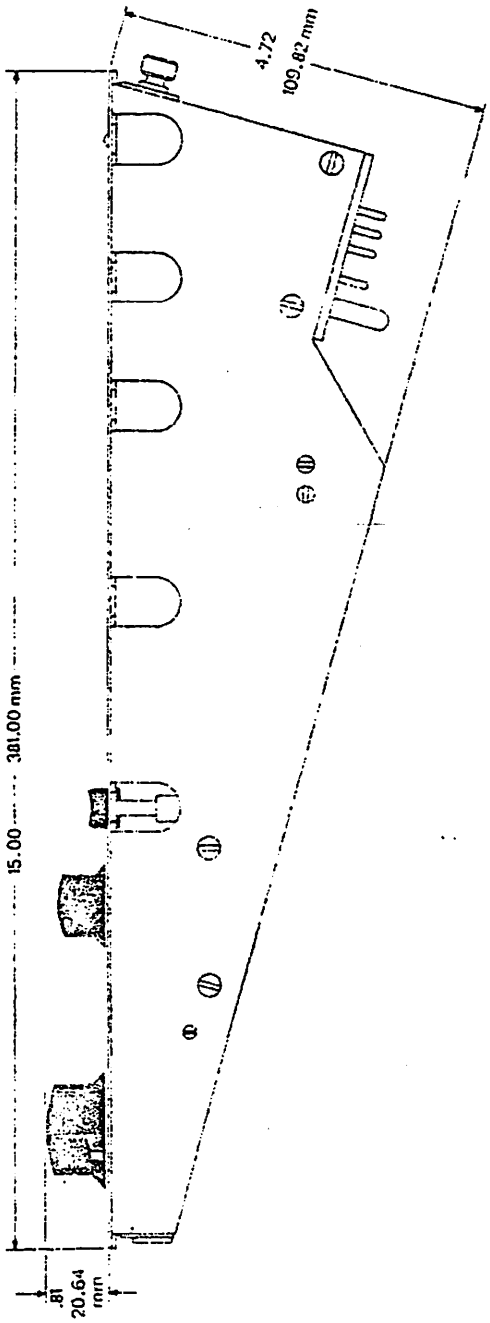
TYPICAL FREQUENCY RESPONSE

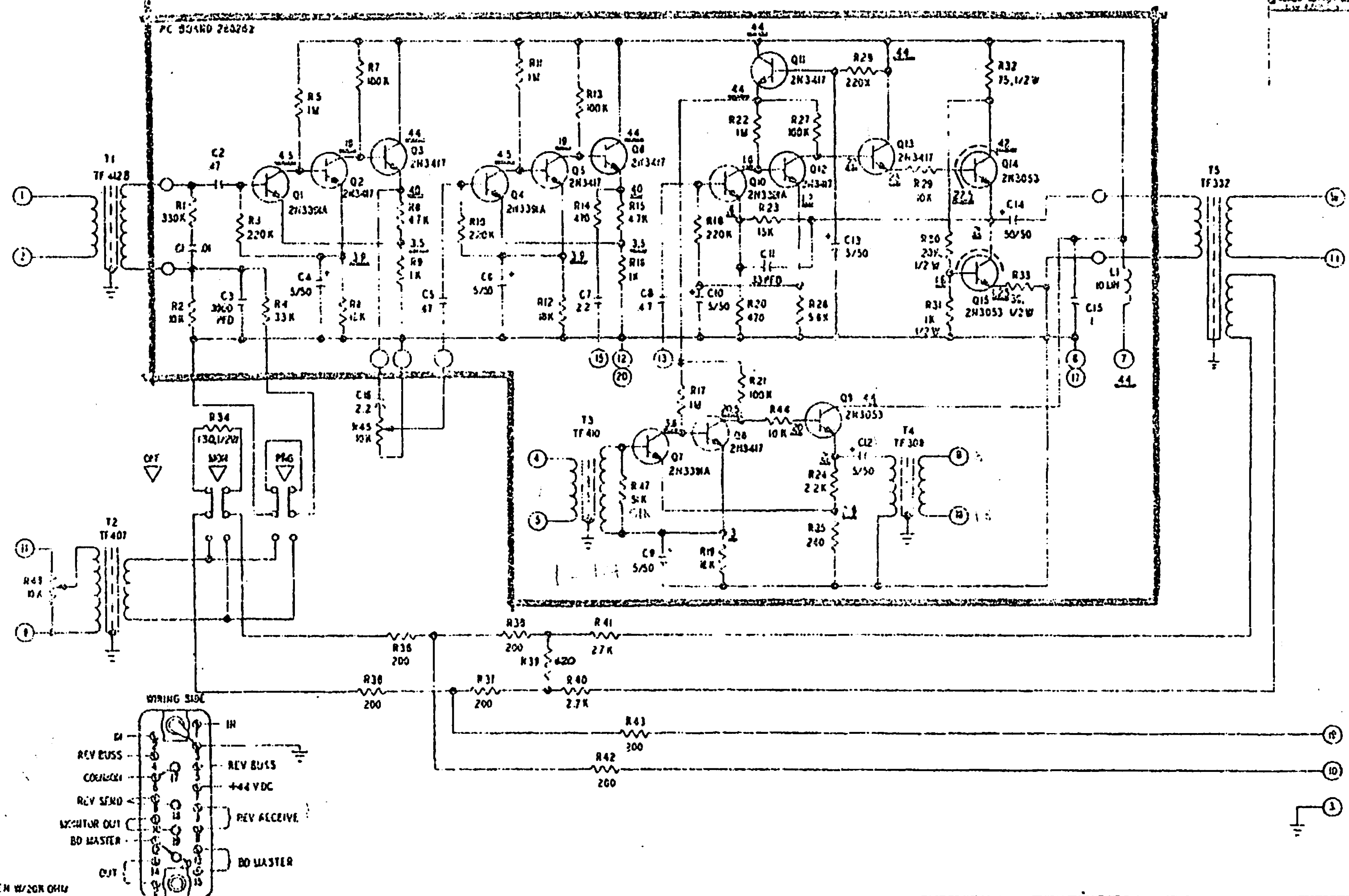


TYPICAL HARMONIC GENERATION


PRG. OUT
MON. OUT
REV. REC.
REV. SEND
MG61/
PRG. BUSS
REV. BUSS


2.18
54.56mm
15.00
381.00 mm
OFF MON PRO
REVERB RECEIVE
MASTER


4.72
109.82 mm
381.00 mm
15.00
.81
20.64
mm



3. XX = VOLTAGE POINTS TAKEN W/20K OHM DC VMETER REF TO COMMON.
2. CAPACITORS IN MICROFARADS.
1. RESISTORS IN OHMS, 5%, 1/4 W
NOTES: UNLESS OTHERWISE SPECIFIED

AM 407	SCHEMATIC AM 407
THA 1-5-12	260354

LANGEVIN

AM457A OUTPUT MODULE

BOOSTER AMPLIFIER, ROTARY GAIN CONTROL, OUTPUT METER, PROGRAM LINE ON/OFF SWITCH

Plugs into the AM4A housing, and becomes part of the sloping panel area of the composite system.

This amplifier is electrically identical to the Program Section of the basic AM407A amplifier. Reverberation send and receiving facilities as well as monitor outputs are not provided.

A small VU-Meter on the module front panel indicates the output level of the AM457A amplifier.

A reading of "O" is equivalent to +4 VU if the amplifier output is loaded with 600 Ohm.

This unit may be used to recover the insertion loss of the MG71 8:1 combining module.

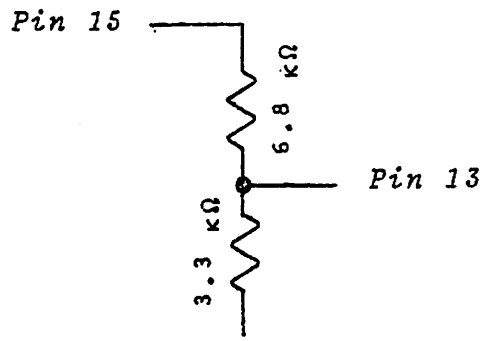
ELECTRICAL SPECIFICATIONS

Although this module is part of the AM4A, the following data are stated for reference purposes:

INPUT IMPEDANCE	*To be driven from 4000 ohms or less, as used in the AM4A.*
MAX. INPUT LEVEL	*4.5 mV rms @ 1000 Hz before clipping, when set for maximum possible gain.*
MAXIMUM GAIN	*0.6 mV rms @ 1000 Hz at input will cause output of +4 dBm into 600 ohm load (master gain control and external gain control set for minimum attenuation).*
FREQ. RESPONSE	*Response curve will fit within a 1.0 dB envelope over the range 20 Hz to 20 kHz.*
HARMONIC	*See attached sheet.*
OUTPUT LEVEL	*+22 dBm maximum level into 600 ohm load.*
NOISE GENERATION	*Not over 2.2uV (referred to input) over range 20 Hz to 20kHz. (4000 ohm input termination, maximum possible.*

POWER REQUIREMENT — *Must be powered from external source of 45 V (50 max.) DC. Current: 50 mA max. (Current figure is for entire module.)*

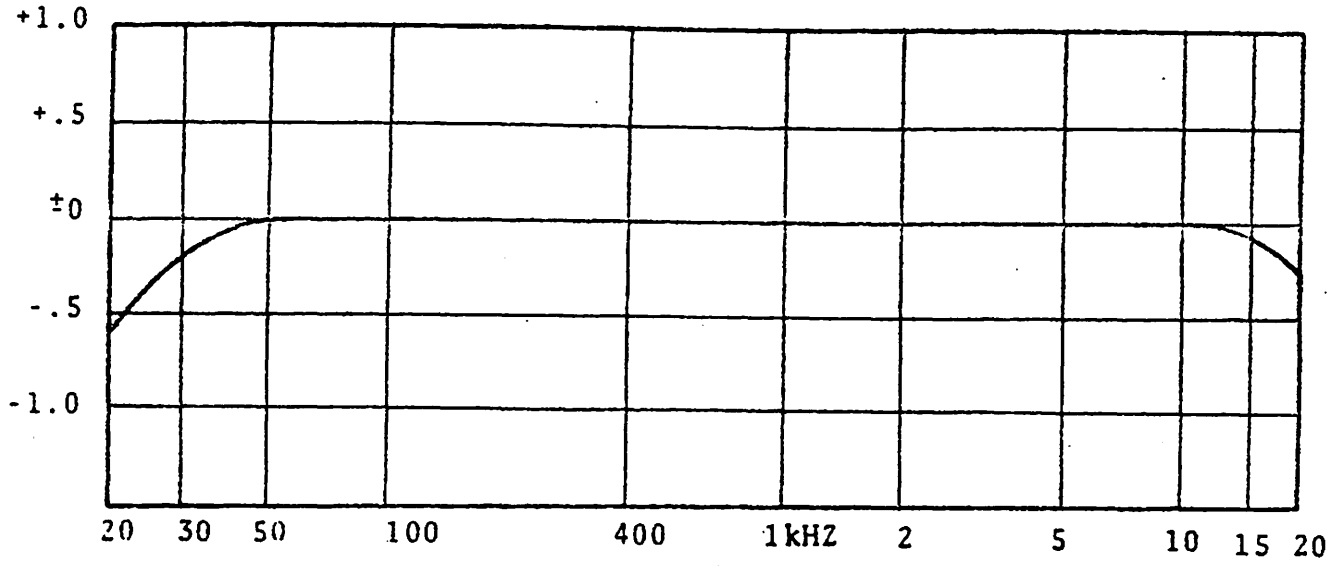
Any AM457A Output Module that is not interconnected with an external Board Master Control should be fitted with a fixed resistive divider at the female connector (part of the AM4A Housing). This divider should total 10,000 and the output tap should be at -10 dB. The following is sufficiently accurate:



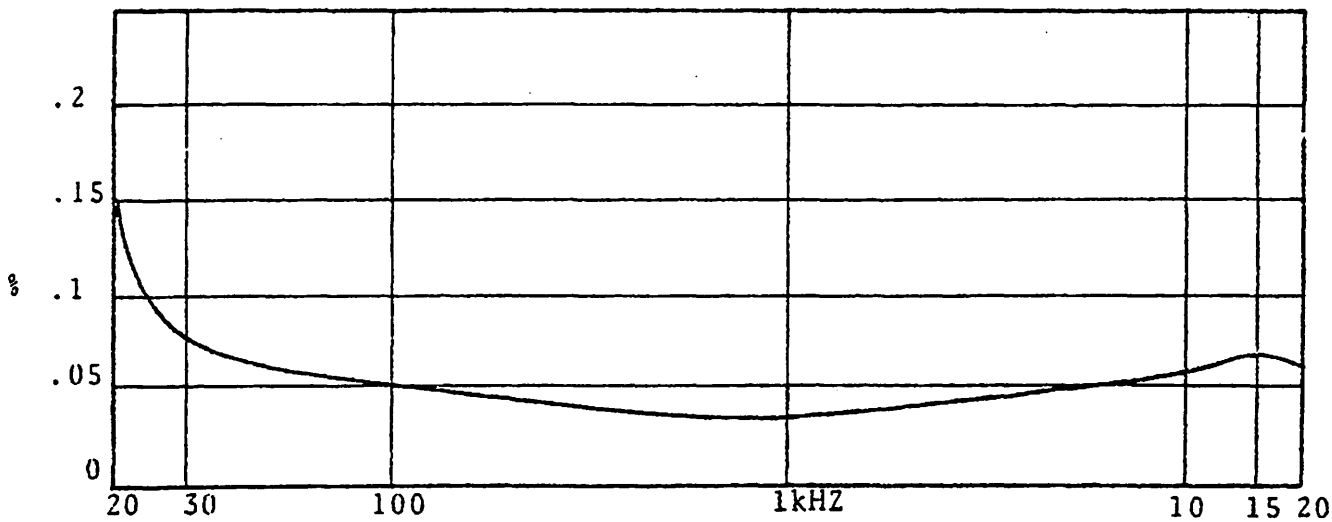
Pins 12/20

Monophonic versions of the AM4A will be equipped with the fixed resistors shown above in lieu of a Board Master Control unless the monophonic assembly is such that there are Sub-Master controls (for groups of microphones) plus a Board Master.

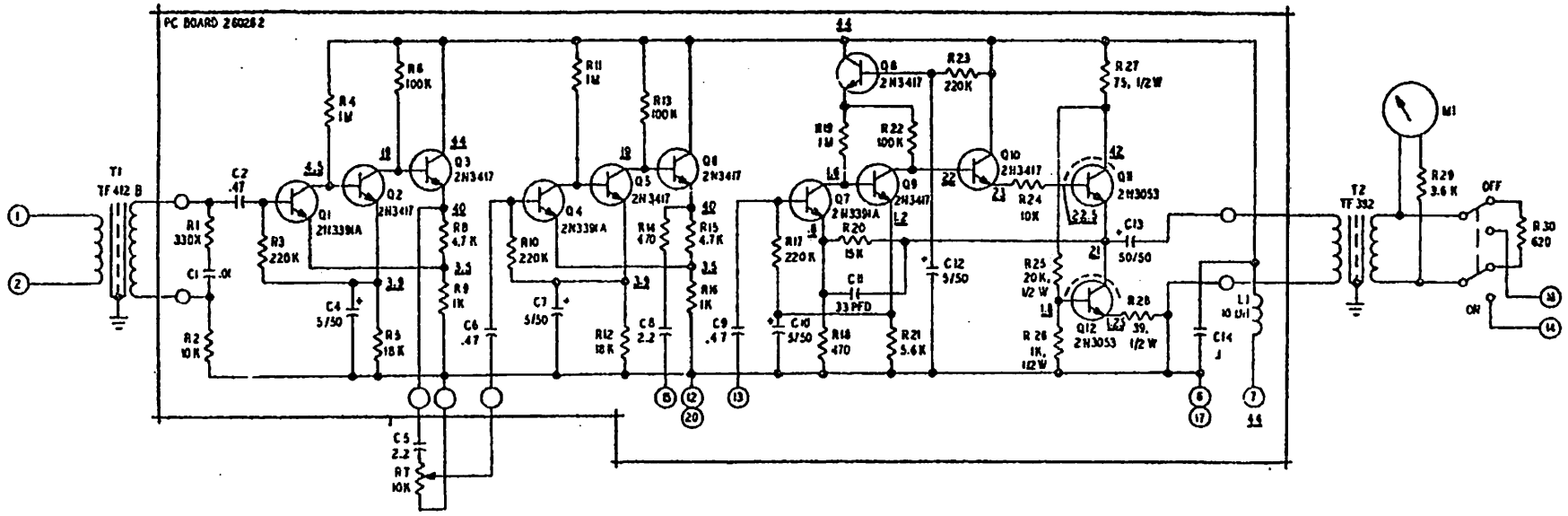
NOTE: All input and output circuits of this module, are transformer-isolated. Neither side of any incoming or outgoing winding is grounded.

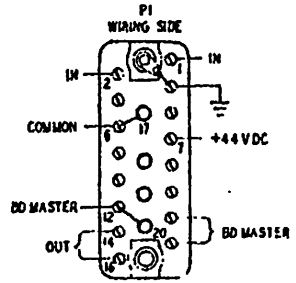


TYPICAL FREQUENCY RESPONSE



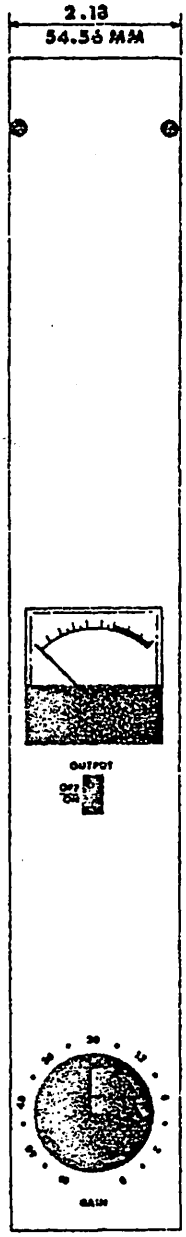
TYPICAL HARMONIC GENERATION

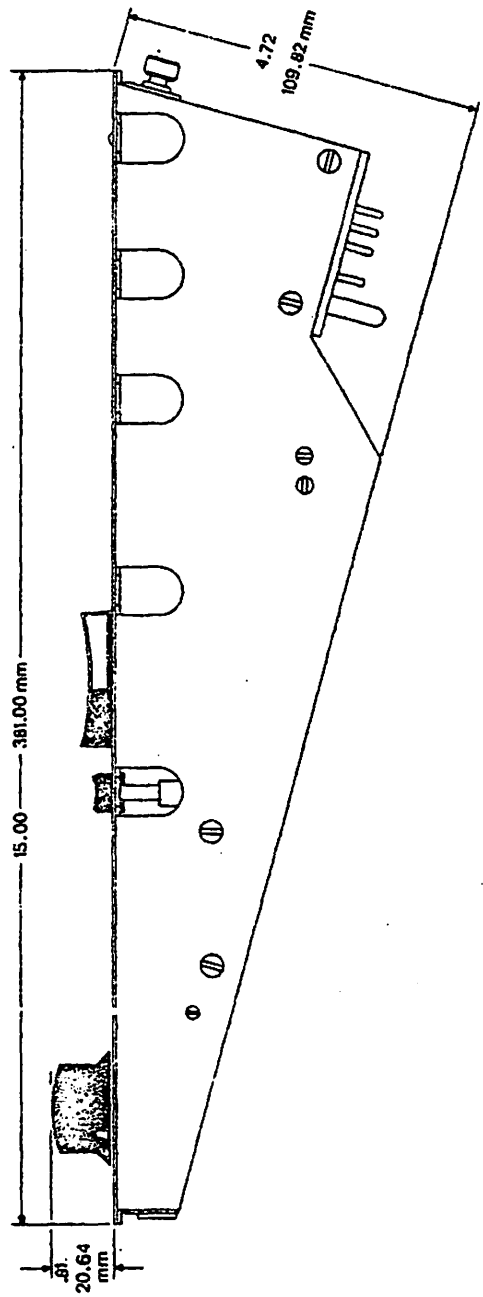




NOTES
1. XX = VOLTAGE POINTS TAKEN W/20K OHM DC VOLT METER REF TO COMMON.
2. CAPACITORS IN MICROFARADS.
3. RESISTORS IN OHMS, 1/4 W, 5%.

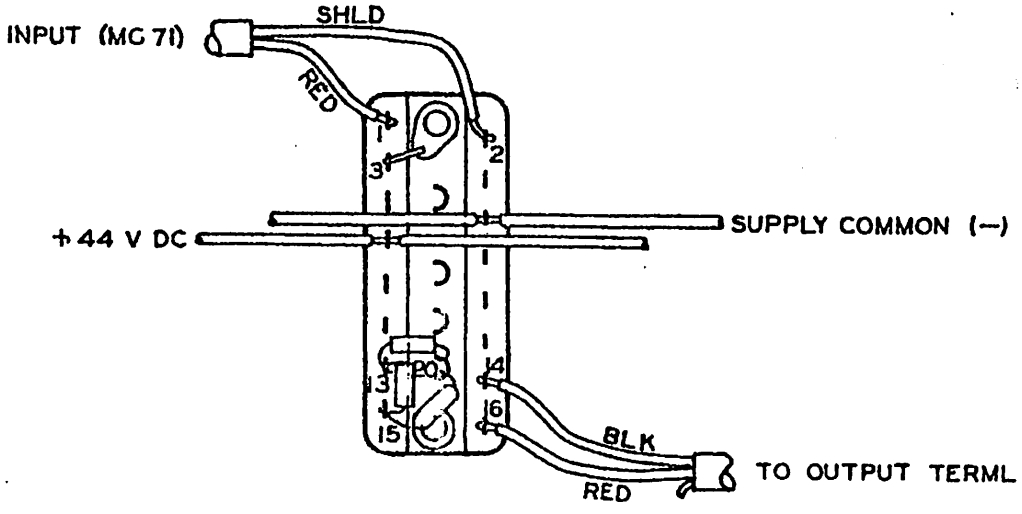
SCHEMATIC AM 457	Langevin SANTA ANA CALIFORNIA
THA	260484

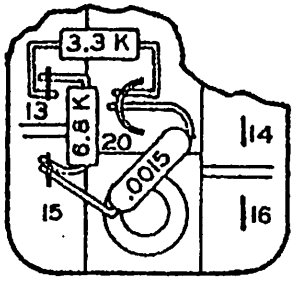

2.13
54.56 MM
OUTPUT
GAIN


4.72
109.82 mm
15.00
381.00 mm
.81
20.64
mm

2 60461

REVISIONS





NEXT ASSEMBLY	USED ON AM 4	TOLERANCES UNLESS OTHERWISE NOTED X ± .XX± .XXX± SURFACE ROUGHNESS ✓ REMOVE ALL BURRS AND SHARP EDGES. CONCENTRICITY WITHIN TIR. HOLD NORMAL AND PARALLEL FACES WITHIN PER INCH TIR.	CONNECTOR RAIL WIRING-AM 457			Langevin SANTA ANA CALIFORNIA
MATERIAL						
FINISH		SCALE	DWN. BY THA	CHK. BY	DATE 13 FEB 68	2 6046 '

LANGEVIN

AM409A/B
DUAL PRE-AMPLIFIER
RIAA-EQUALIZED

2 CHANNEL EQUALIZED PRE-AMPLIFIER FOR STEREO TURN-TABLE USE, NO CONTROLS.

To be installed instead of terminal board in the rear of the AM4A assembly.

This dual amplifier provides the equalization and pre-amplification required to connect any magnetic stereo cartridge to the AM4A mixer assembly input.

A 47 K Ohms load resistor is installed on the AM409 circuit card. This resistor may be changed if the cartridge used requires a different load for optimum performance.

The output of the AM409 is connected to the "IN COMING LINE" terminal board over a resistive network to obtain compatible console input levels.

The standard resistive network is designed to provide a console output level of +4DBM with 5 mV RMS/1 kHz at the AM409 input terminals.

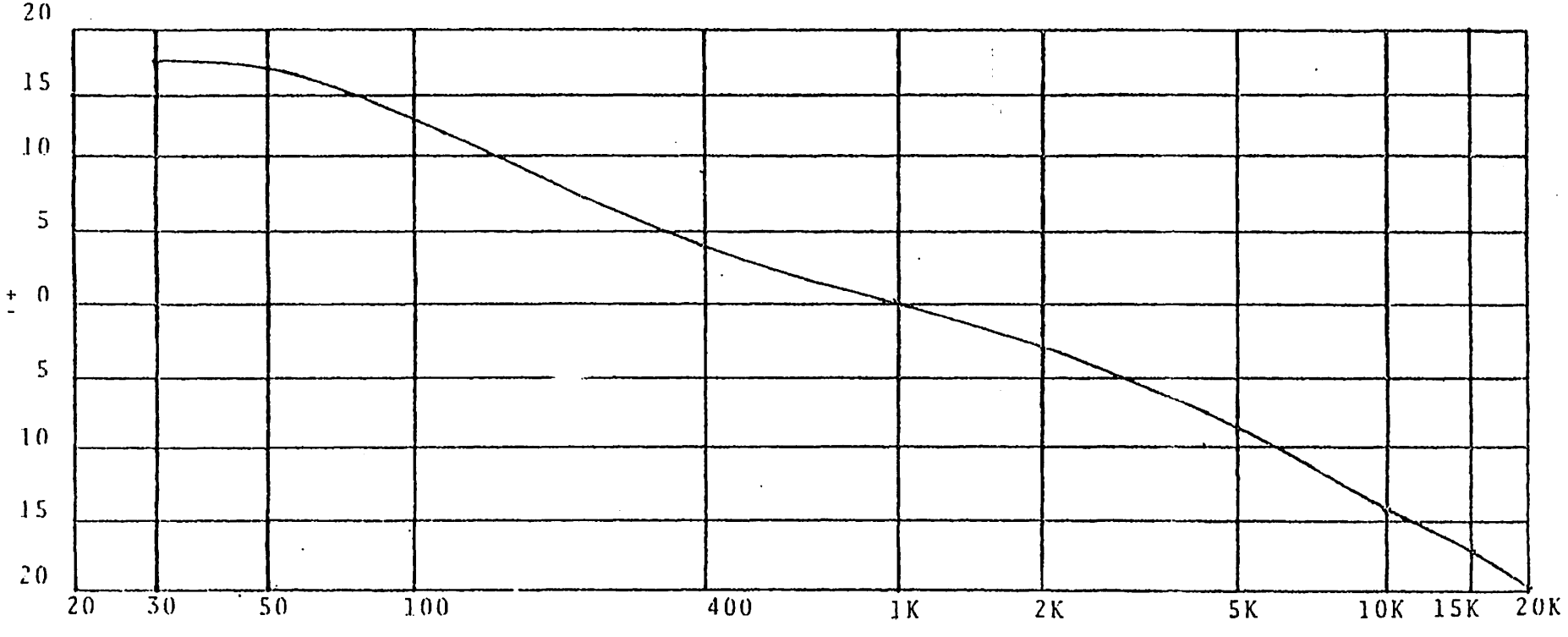
Values in this pad may be changed to accommodate cartridges with different outputs provided the load presented to the AM409A is not less than 100 K Ohms; the AM409B may be loaded with 10 K Ohms.

ELECTRICAL SPECIFICATIONS

Although the amplifier is part of the AM4A, the following data are stated for reference purposes:

	AM409A	AM409B
INPUT IMPEDANCE:	*47K ohms*	*47K ohms*
GAIN:	*5mv/1Khz for 160 mv/ 100K ohms*	*5mv/1Khz for 580 mv/ 10K ohms*
FREQUENCY RESPONSE	*RIAA curve ± 1db*	*RIAA curve ± 1db*
LOAD IMPEDANCE:	*100K ohms*	*10K ohms*
OUTPUT MAX:	*5 volts/100K ohms*	*5 volts/10K ohms*

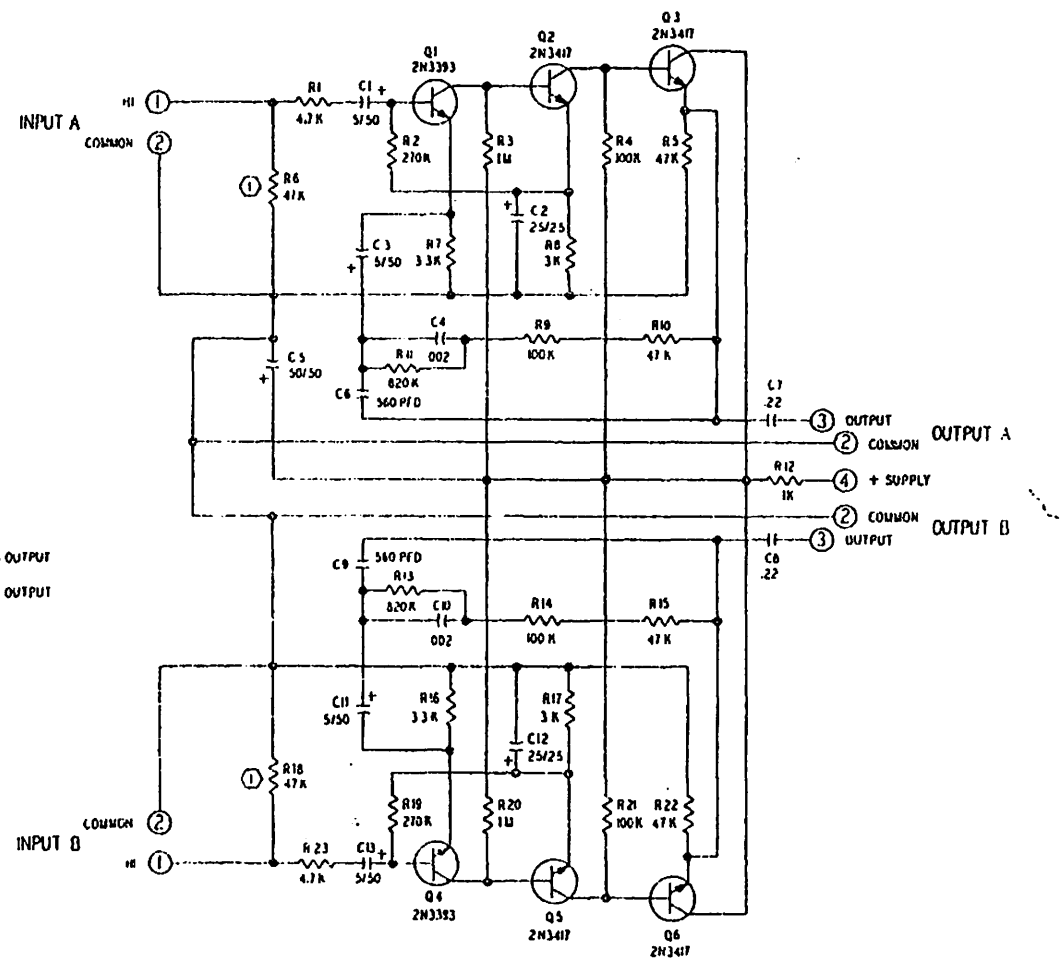
	AM409A	AM409B
HARMONIC GENERATION:	Less than .1% at 5mv/1000 hz	Less than .1% at 5mv/1000 hz
POWER REQUIREMENTS:	45 volts DC/.8 ma	45 volts DC/3 ma
SIZE:	2¼" wide x 2½" long	2¼" wide x 2½" long
MATING CONNECTOR:	Cinch 252-10-30-24D	Cinch 252-10-30-24D
MOUNTING:	The AM4500 series amplifier may be mounted in TRY-4000	

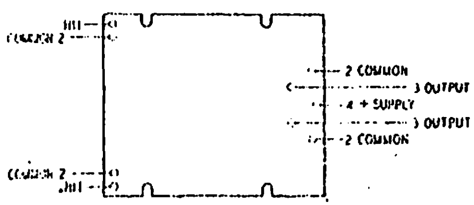


FREQ. RES. AM409A/B

0468

AM409A





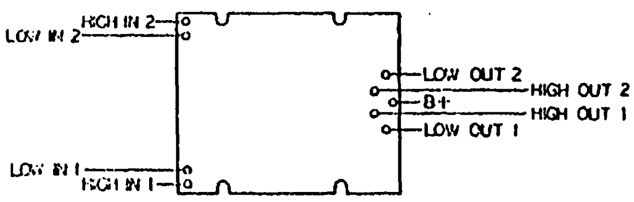
TERMINAL LAYOUT

3. CAPACITORS IN MICROFARADS.
2. RESISTORS IN OHMS, 1/2W, 5%
1. R6, R18 CARTRIDGE LOAD RESISTORS, MAY BE CHANGED
NOTES:

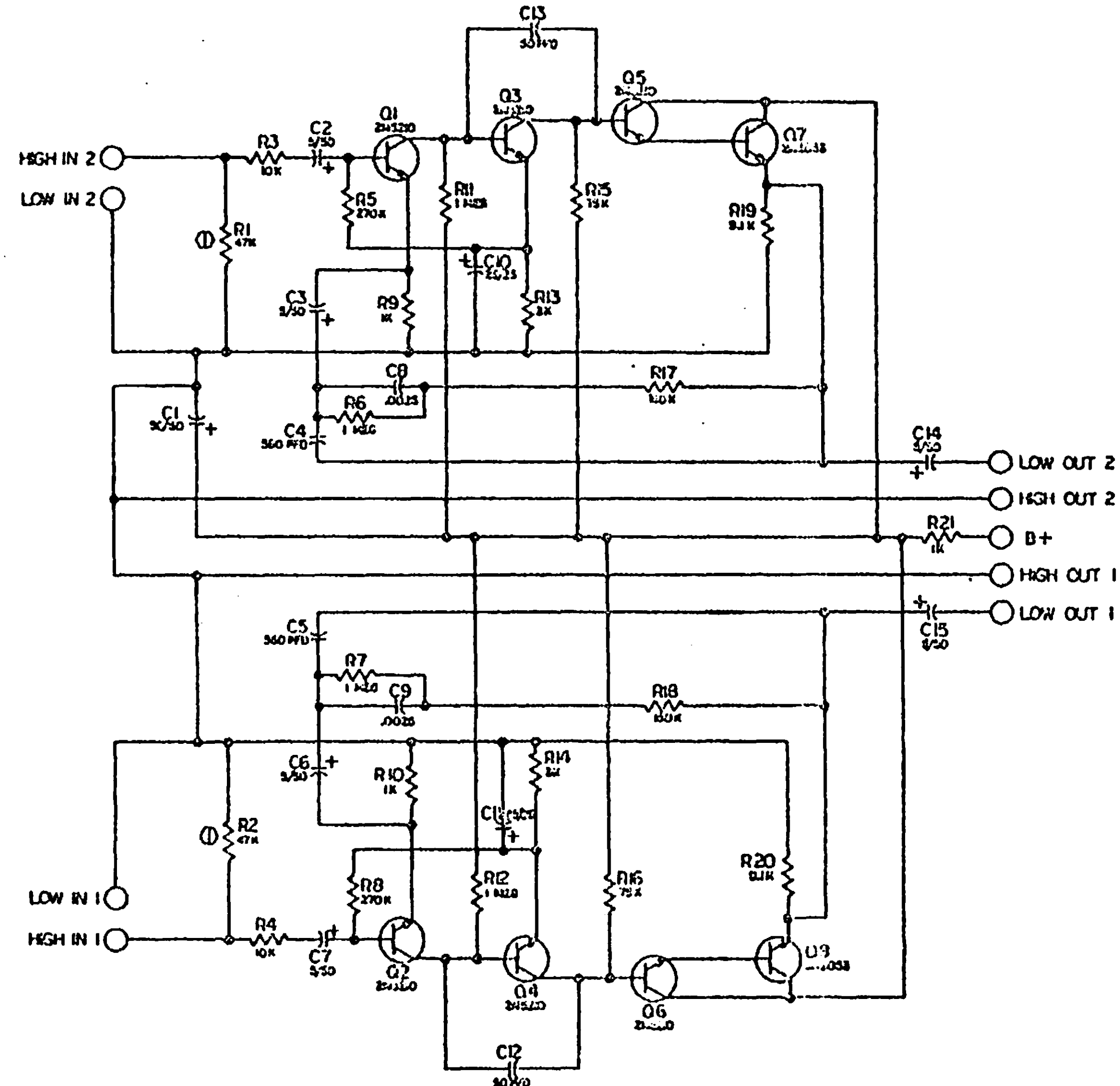
SCHEMATIC
AM 409

Langevin

2 60614



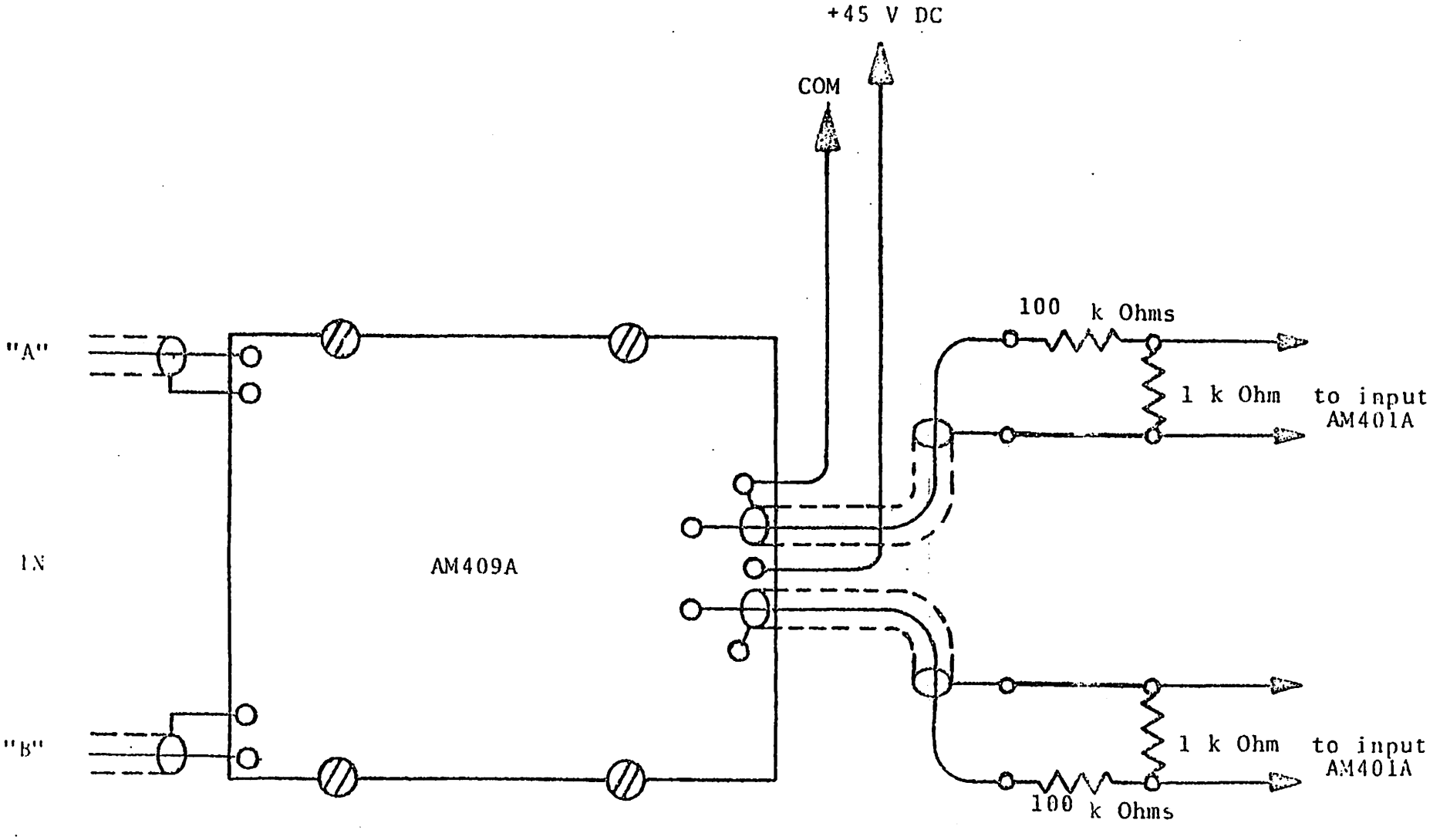
TERMINAL LAYOUT



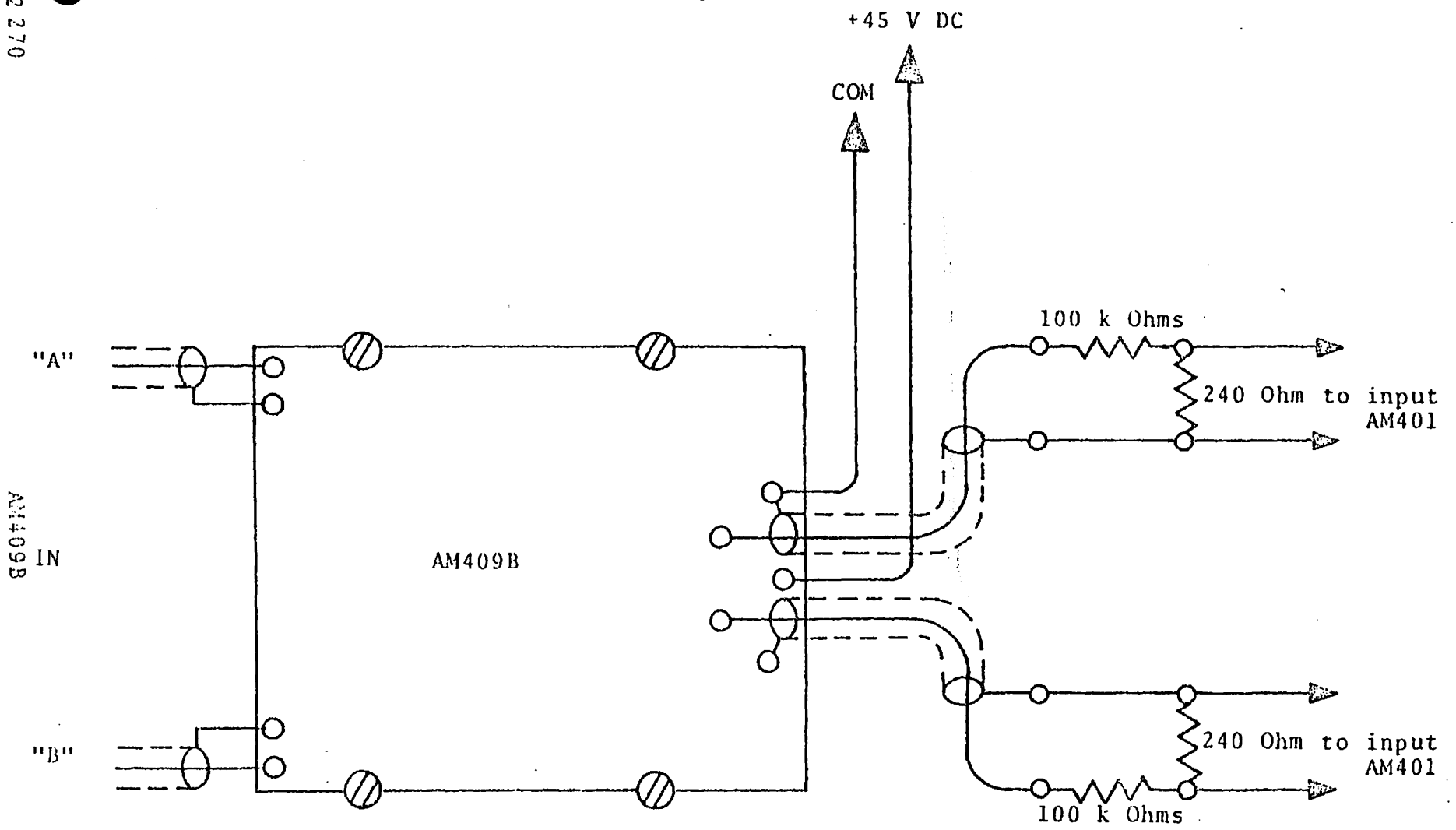
3.CAPACITORS IN MICROFARADS.
2.RESISTORS IN OHMS, 1/2W, 5%.
(1)R1,R2 CARTRIDGE LOAD RESISTORS, MAY BE CHANGED.
NOTES

SCHEMATIC AM409B

26194



TYPICAL CONNECTION FOR AM409A



TYPICAL CONNECTION FOR AM409A

LANGEVIN

AM429B COMBINING MODULE

4:1 ACTIVE MIXER, ROTARY GAIN CONTROL, OUTPUT METER, PROGRAM LINE ON/OFF SWITCH, PUSH-PUSH INPUT SELECTOR WITH INDIVIDUAL LEVEL CONTROLS

Plugs into AM4A housing, and becomes part of the sloping panel area of the composite system.

This amplifier will bridge up to four program lines with an average level of +4 DBM and provide a monophonic output of the composite of all input signals without loss. All inputs and outputs are transformer coupled and balanced.

The input switch will permit the selection of any combination of input sources from four independent program lines.

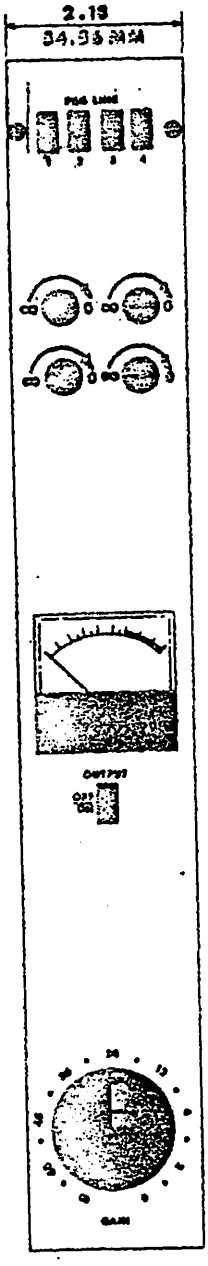
Each input channel is provided with an adj. trimpot to facilitate fine level adjustment for the individual input channels.

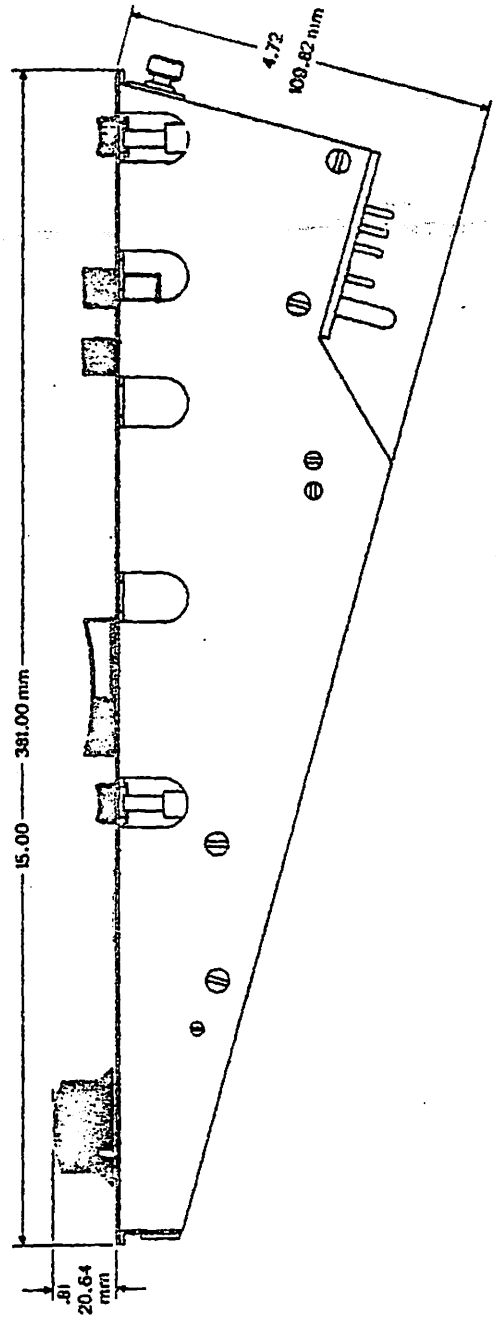
A VU-Meter is provided on the module to monitor to output line of the unit. The Output "ON/OFF" Switch is electrically preceded by the VU-Meter to permit level adjustment.

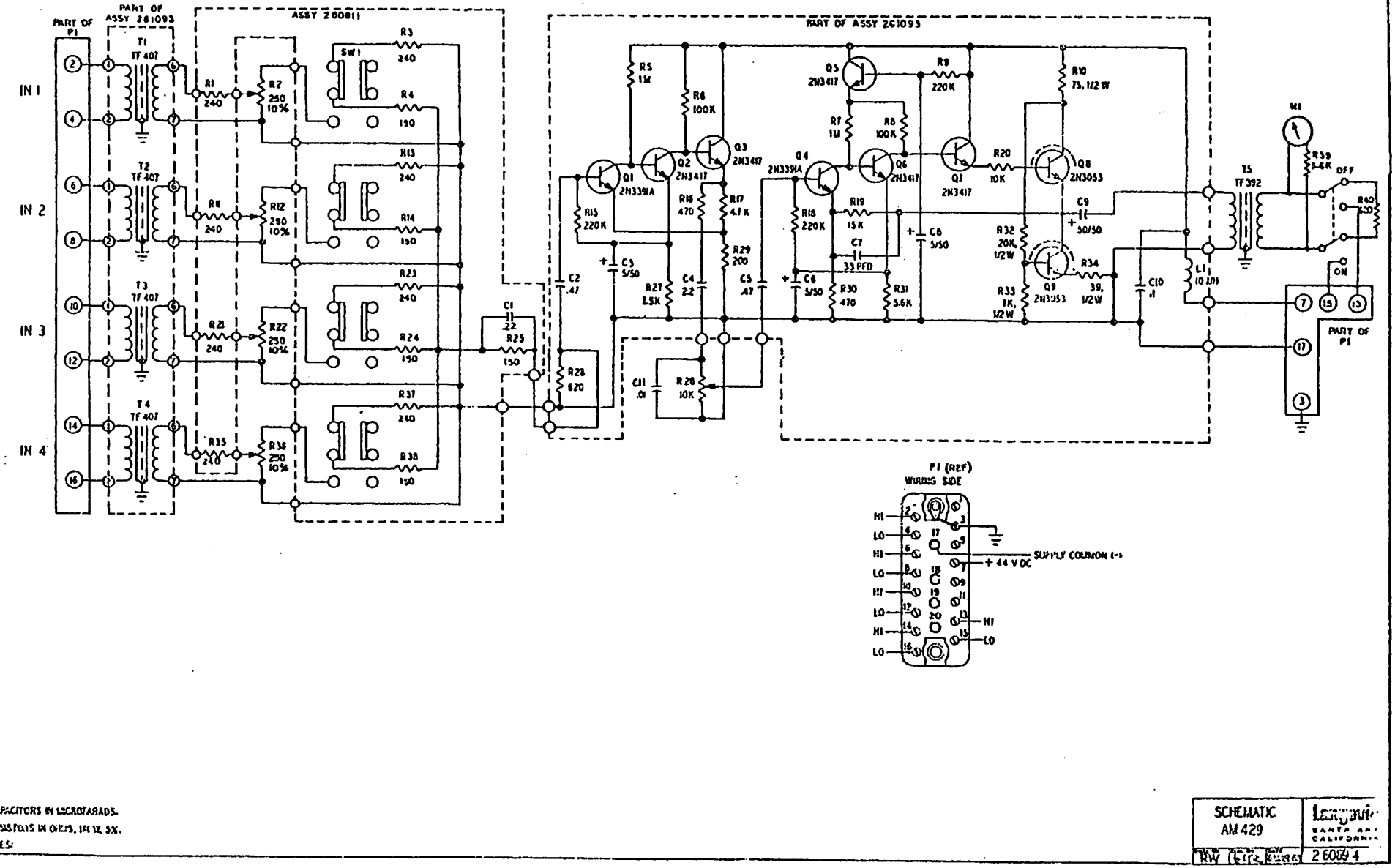
ELECTRICAL SPECIFICATIONS

Although this module is part of the AM4A, the following data are stated for reference purposes:

INPUT IMPEDANCE	*40,000 Ohms, to bridge 600 Ohm line*
MAX. INPUT LEVEL	*+21 DBM*
INSERTION LOSS	*0 DB/Unity gain*
FREQ. RESPONSE	*±.5 DB from 30 Hz to 20 kHz*
HARMONIC DIST.	*Less than .1% (50 Hz/20 kHz)* *Less than .3% (30 Hz)*
OUTPUT LEVEL	*+22 DBM Maximum level into 600 Ohms*
NOISE GENERATION	*70 DB below operating level*
POWER REQUIREMENTS	*Must be powered from external source of 45 V DC (50 V max.)* *Current: 50 mA max.*

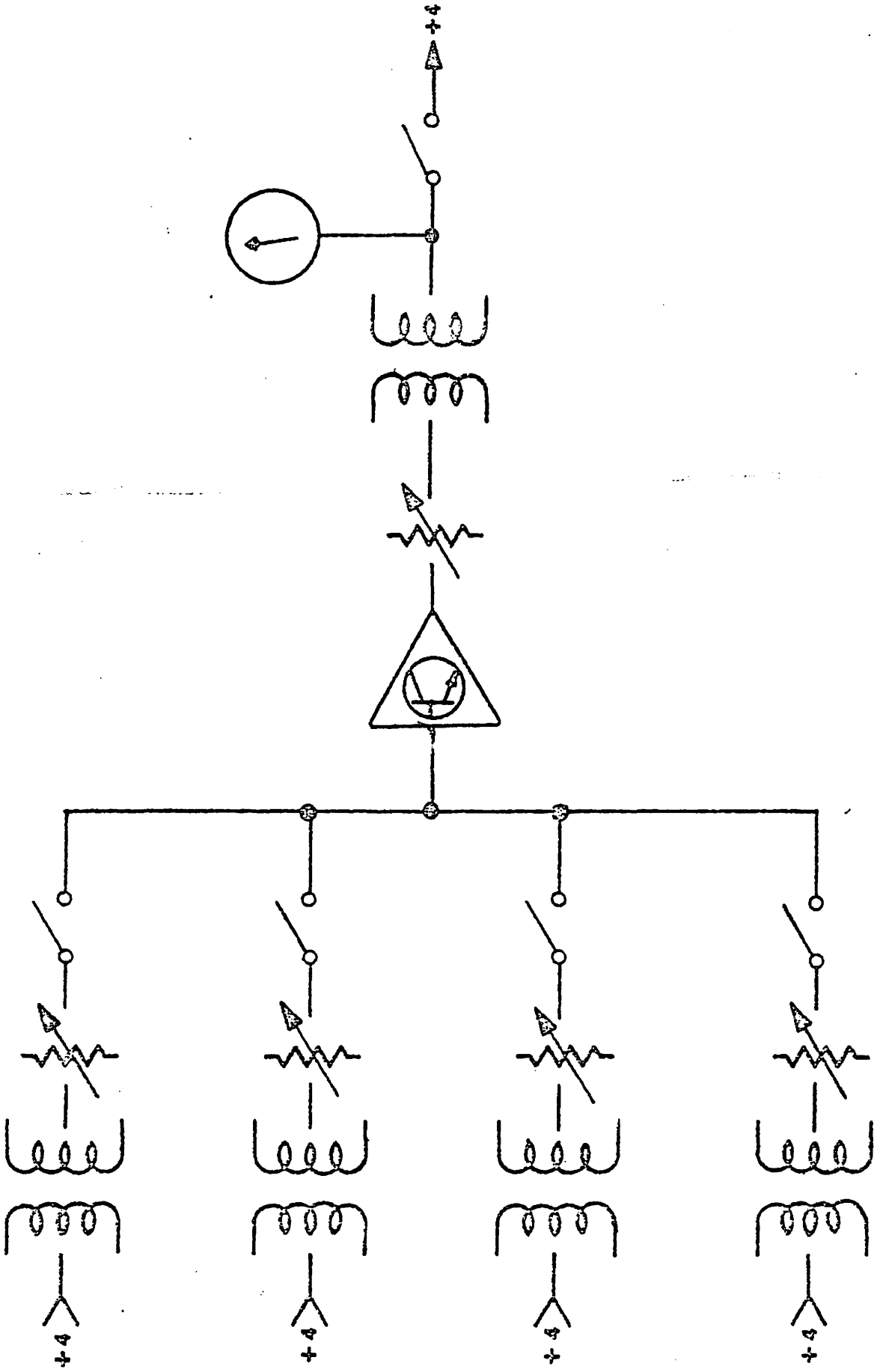

2.13
34.35 MM


4.72
109.82 mm
15.00
381.00 mm
.81
20.64
mm



2. CAPACITORS IN MICROFARADS.
1. RESISTORS IN OHMS, 1/4 W, 5%.
NOTES:

SCHEMATIC AM 429	Lear Siegler SANTA ANA, CALIFORNIA
REV	260094



BLOCK DIAGRAM

A M 4 2 9 B

LANGEVIN

TYPE MG41
SWITCHING MODULE

THE TYPE MG41 SWITCHING MODULE IS A FOUR CHANNEL CROSS-BAR ARRANGEMENT WITH 10K OHM LEVEL CONTROLS IN EACH OF THE FOUR OUTPUT LINES. EACH OUTPUT LINE IS PROVIDED WITH A FOUR POSITION INTERLOCKED PUSH BUTTON SWITCH TO FACILITATE ASSIGNMENT OF THE INDIVIDUAL OUTPUTS TO ANY ONE OF FOUR INPUTS.

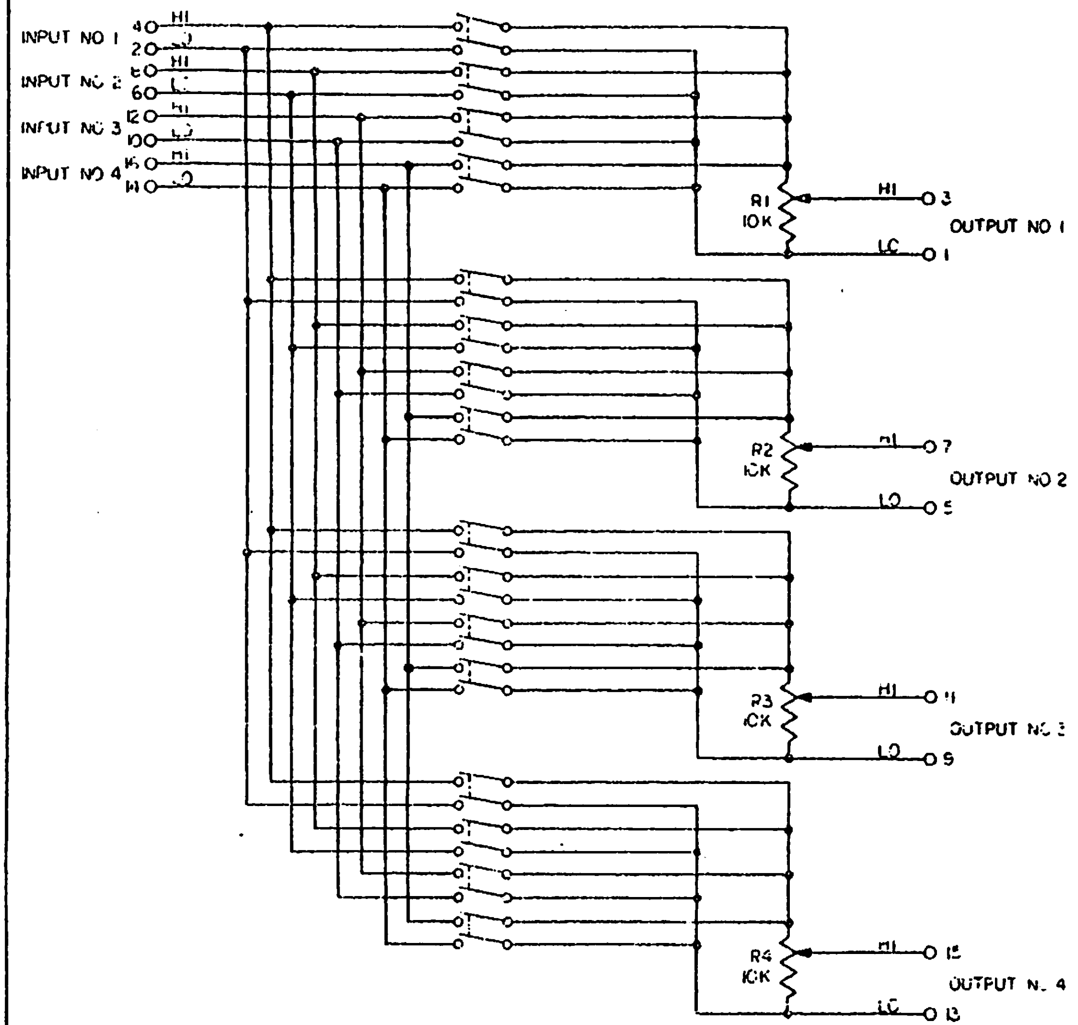
This switching assembly is primarily intended for use in the AM4A and AM8A console. It can be used in any other custom assembly where its performance characteristics and input/output parameters serve the necessary functions. If used with the above mentioned mixer assemblies, the type MG41 switching module becomes part of the sloping panel area of the composite system.

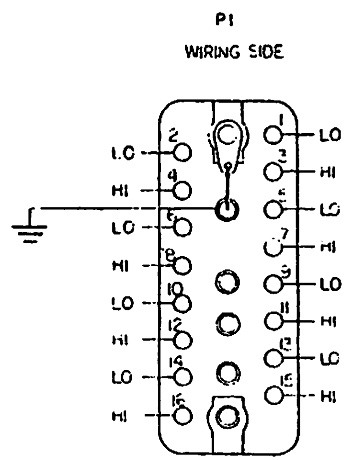
GENERAL DESCRIPTION

Each output channel of the MG41 crossbar switching module may be assigned to any one of the four input channels, however, the individual four groups of push buttons are interlocked, and only one position per output channel may be down at one time. The circuitry of this module is basically balanced and may be used at signal levels of -20 dbm and up. The unit is not intended to be used at lower voltage levels than indicated above since shielded wiring is not used, and extraneous signal pick-up may cause undesired responses if this module is used in direct microphone applications.

The mixer controls are of a high quality carbon variety and are designed to bridge 600 ohm lines.

265503





NOT

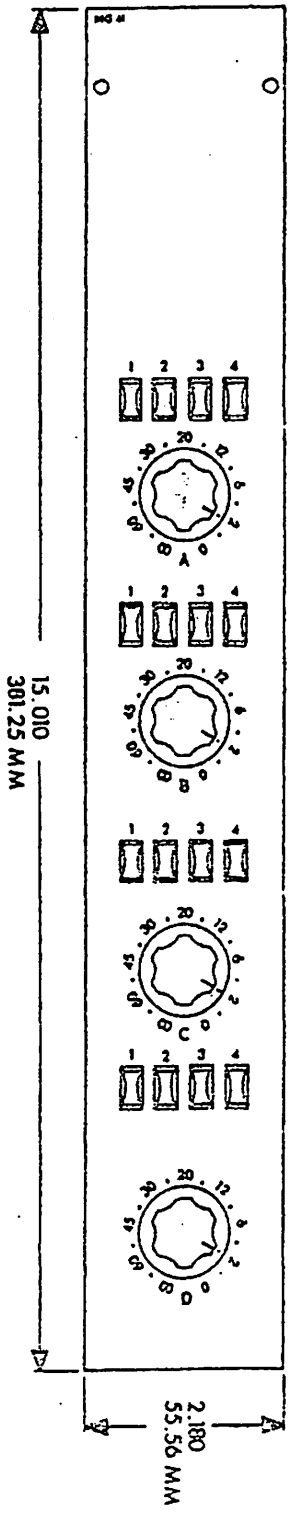
1. ONLY ONE SWITCH AT A TIME SHOULD BE IN THE DOWN POSITION.

NEXT ASSEMBLY	USED ON	TOLERANCES		
	MG41	ANGULAR	SCHEMATIC MG41	Langevin SANTA ANA CALIFORNIA
MATERIAL		REMOVE ALL BURRS AND SHARP EDGES	DWN BY TEM	DATE 11-11-69

1169

MG41

Pg. 2 of 3


15.010
381.25 MM
2.180
55.56 MM

BOARD MASTER GAIN CONTROL

Please refer to the schematic diagram for the AM407A Module. You will see that the Program Section's amplifier is divided into three sections.

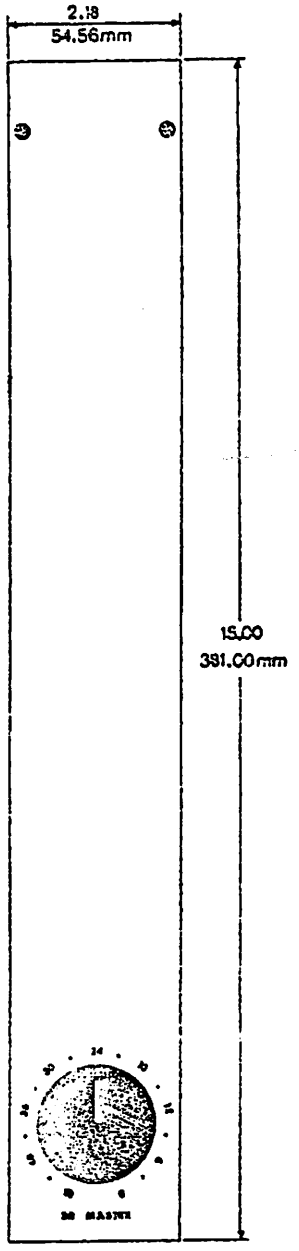
R_{45} (the "Master Gain Control") divides the first two sections.

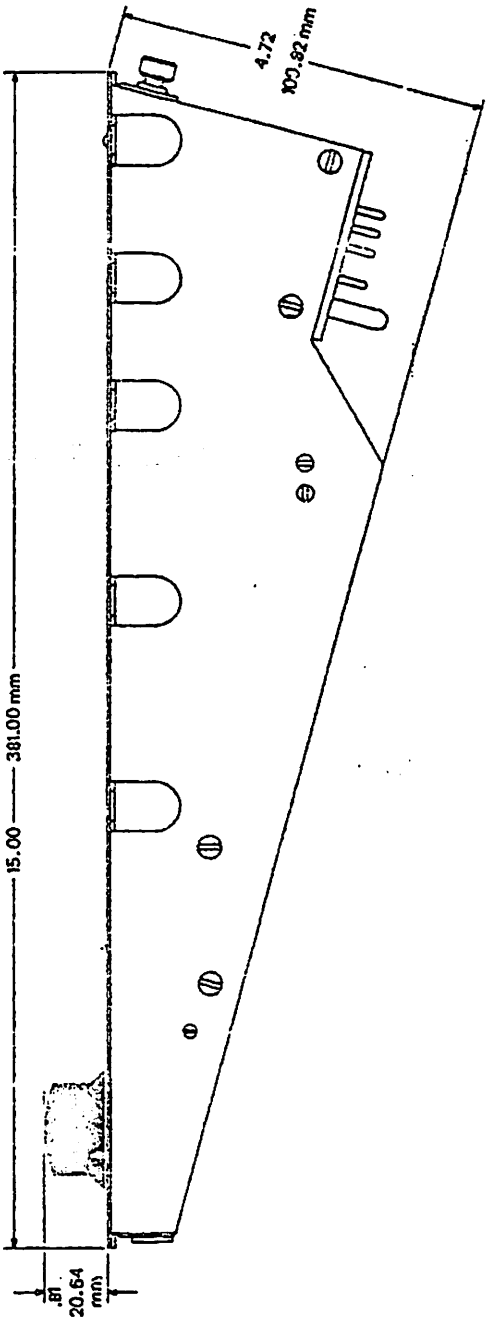
The second and third sections are not interconnected on the diagram. The output of the second section ties to the input of the third only through the plug pins. Pin 15 is the output of the second section, Pin 13 is the input of the third, and Pins 12/20 are common.

In stereo versions of the AM4A, there is usually a Board Master Gain Control ... a ganged multiple potentiometer, 10,000 ohms per section. For each section of this control, the high side ties to Pin 15, the low side (common) to Pins 12/20 and the output arm connects to Pin 13.

Ganged Board Master Modules are available from Langevin under the number: MG61/. (The "/" mark is followed by the number of sections. A four-section gang would be MG61/4.)

All MG61/ "Board Master Gain Controls" are 32 step rotary controls with a gain reduction of 1.5 DB per step for the first 28 steps. Positions 29 thru 32 are tapered to infinity.

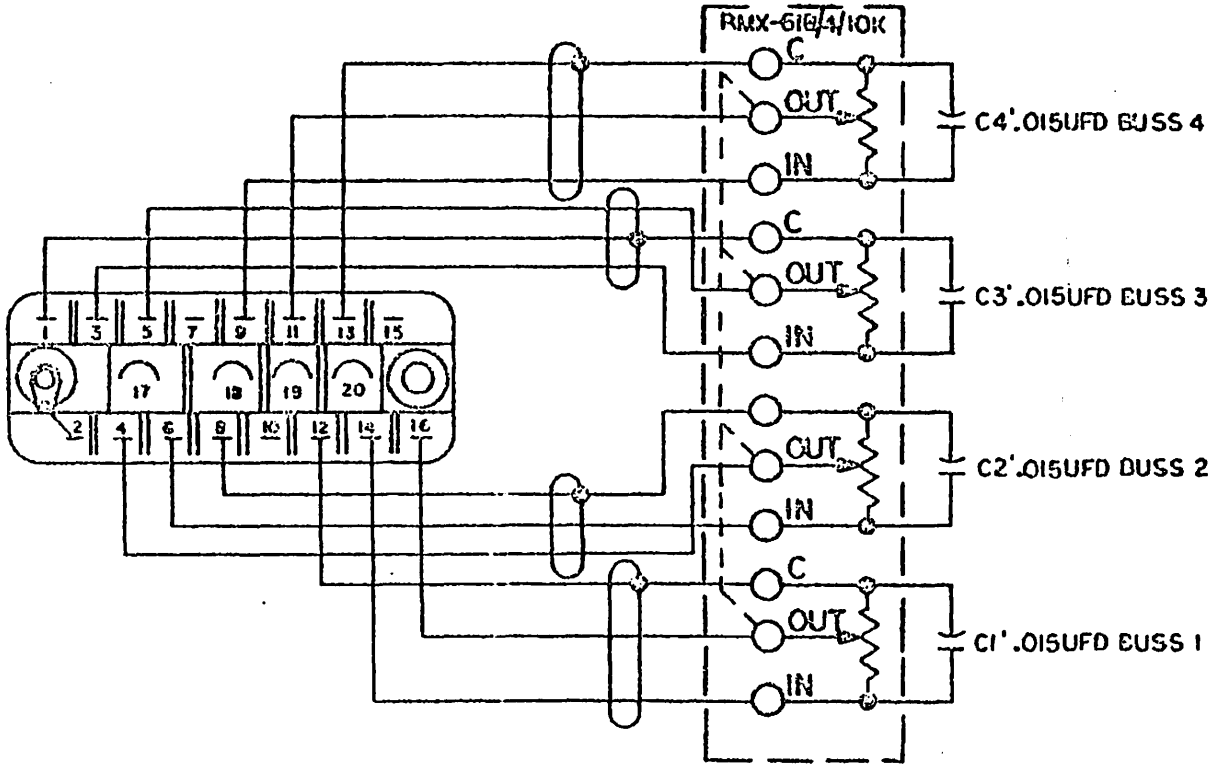

2.18
54.56mm
15.00
381.00mm


4.72
100.82mm
15.00
381.00mm
.81
20.64
mm)

0369

241682

REVISIONS



NEXT ASSEMBLY / USED ON: AM4	TOLERANCES UNLESS OTHERWISE NOTED	SCHEMATIC MG 61/4	Logitron SANTA ANA CALIFORNIA	
MATERIAL				
SCALE: None	DWN BY	CHK BY	DATE: 3-7-9	241682

MG61/

LANGEVIN

MG71 COMBINING MODULE

8:1 PASSIVE MIXER, PUSH-PUSH INPUT SELECTOR WITH INDIVIDUAL LEVEL TRIMMERS.

Plugs into AM4A housing, and becomes part of the sloping panel area of the composite system.

This unit will bridge up to 8 program lines with an average level of +4 DBM and provide a monophonic output of the composite of all input signals. All inputs are transformer coupled and balanced.

The input switch will permit the selection of any combination of input sources from eight independent program lines.

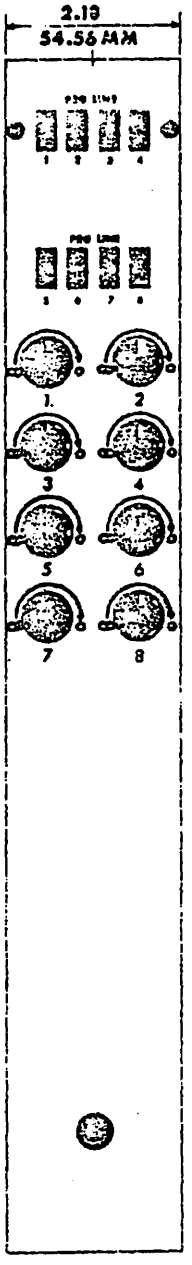
Each input channel is provided with a screwdriver adj. trimpot to facilitate fine level adjustment for the individual input channels.

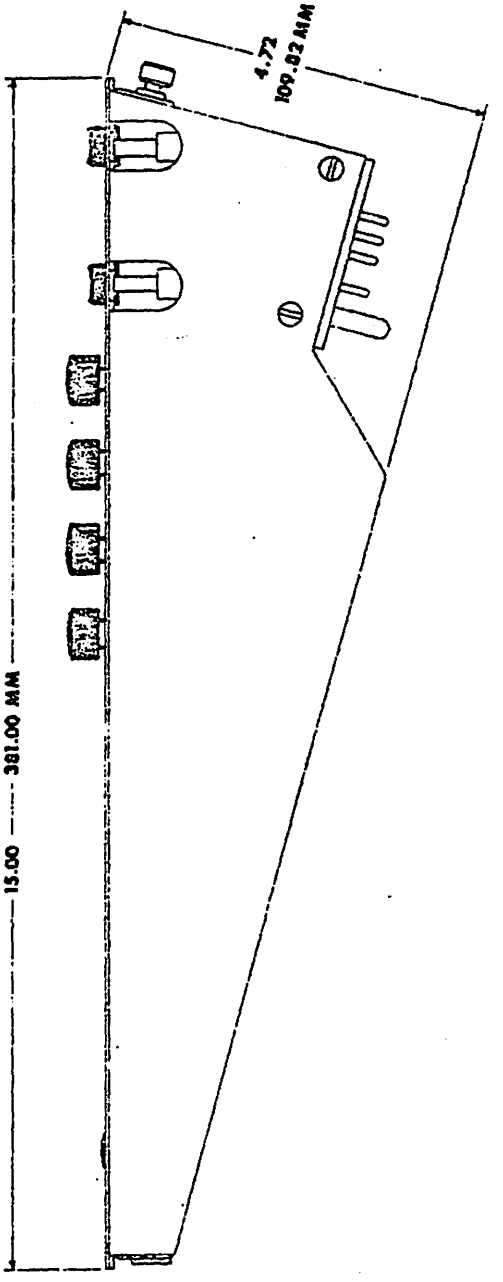
ELECTRICAL SPECIFICATIONS

Although this module is part of the AM4A, the following data are stated for reference purposes:

INPUT IMPEDANCE	*40,000 Ohms, to bridge 600 Ohms line*
MAX. INPUT LEVEL	*+21 DBM*
INSERTION LOSS	*+4 DBM Input will cost 6db/5K Ohms Output.*
FREQ. RESPONSE	*±.5 DB from 30 Hz to 20 kHz*

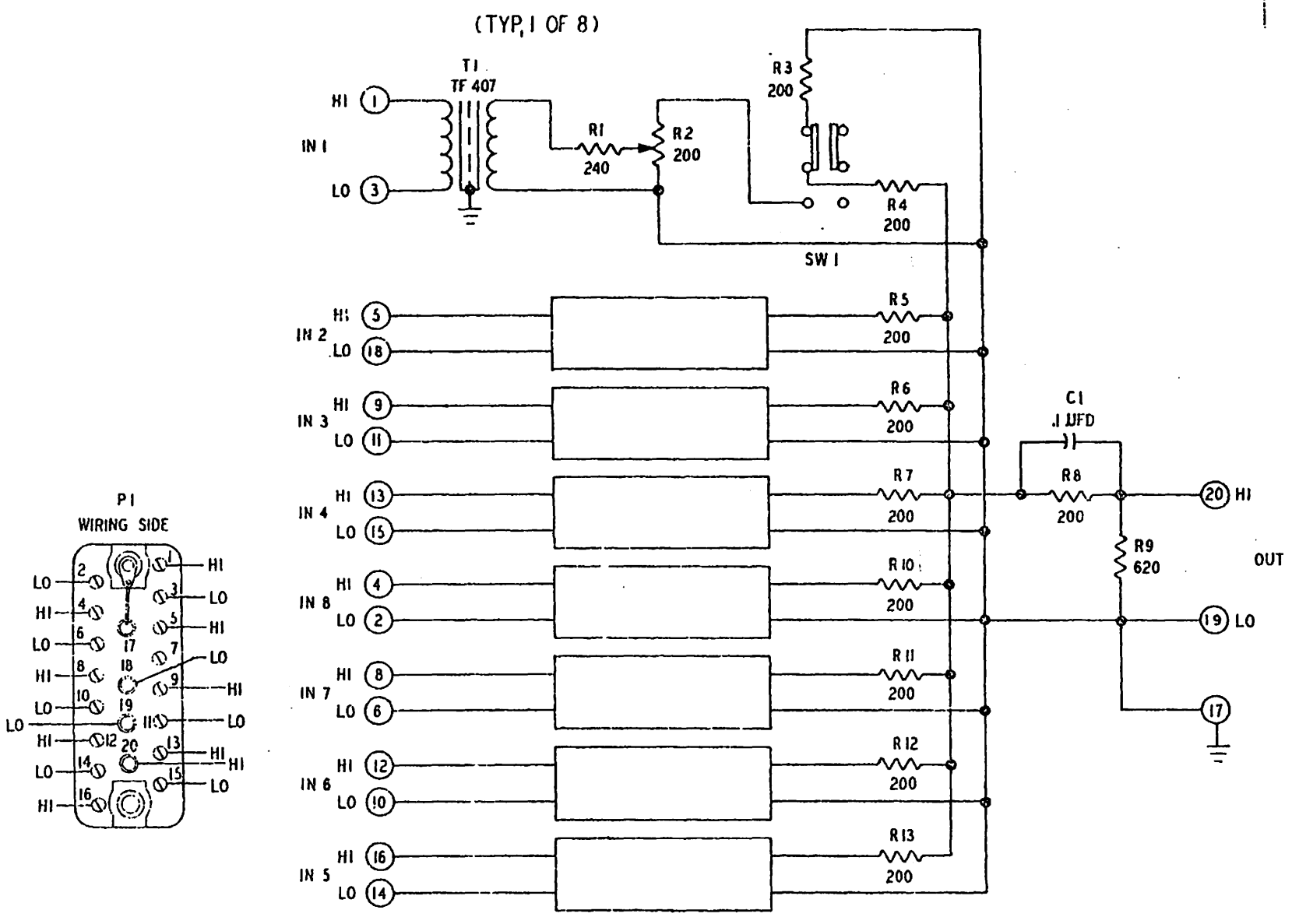
NOTE: The insertion loss of the MG71 may be recovered with the AM457A Amplifier. The combination MG71/AM457A forms a unity gain 8:1 combining network.


2.13
54.56 MM
1
2
3
4
5
6
7
8


4.72
109.02 MM
15.00
381.00 MM

260653

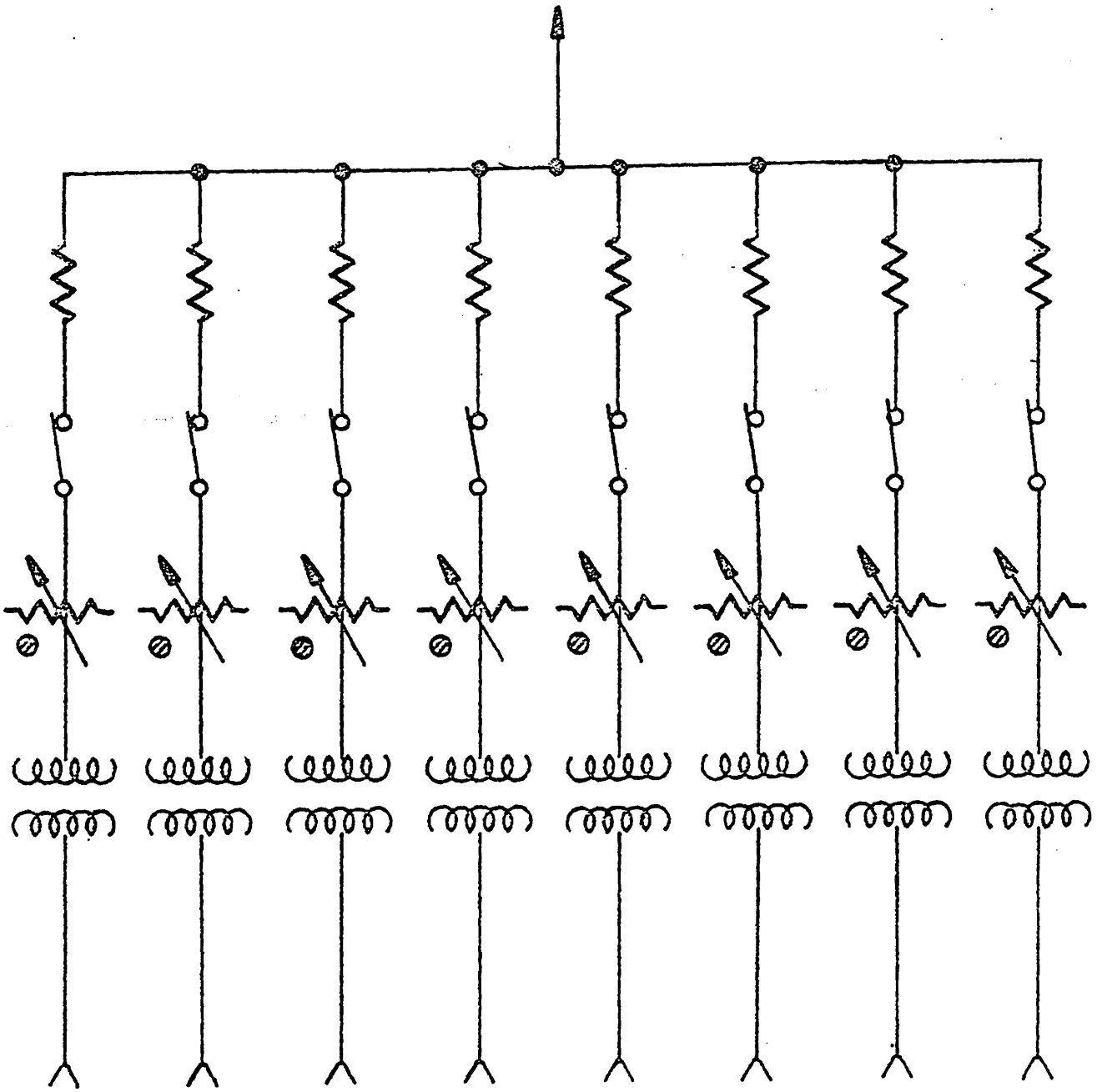
(TYP, 1 OF 8)



NOTES:

1. RESISTORS IN OHMS, 1/4 W, 5%.

NEXT ASSEMBLY / USED ON	TOLERANCES UNLESS OTHERWISE NOTED: X ±, XX ±, XXX ±, ANGULAR ±, REMOVE ALL BURRS AND SHARP EDGES	SCHEMATIC MG 71	Langevin SANTA ANA CALIFORNIA		
MATERIAL					
FINISH	SCALE	DWN BY THA	CHK BY GR	DATE 4MAR68	260653



BLOCK DIAGRAM

LANGEVIN MG81

FOUR CHANNEL LEVEL CONTROL, INDIVIDUAL OUTPUT SELECTOR SWITCHES.

Plugs into AM4A housing, and becomes part of the sloping panel area of the composite system.

This module contains four rotary level controls and four individual output switches. (Push-Push).

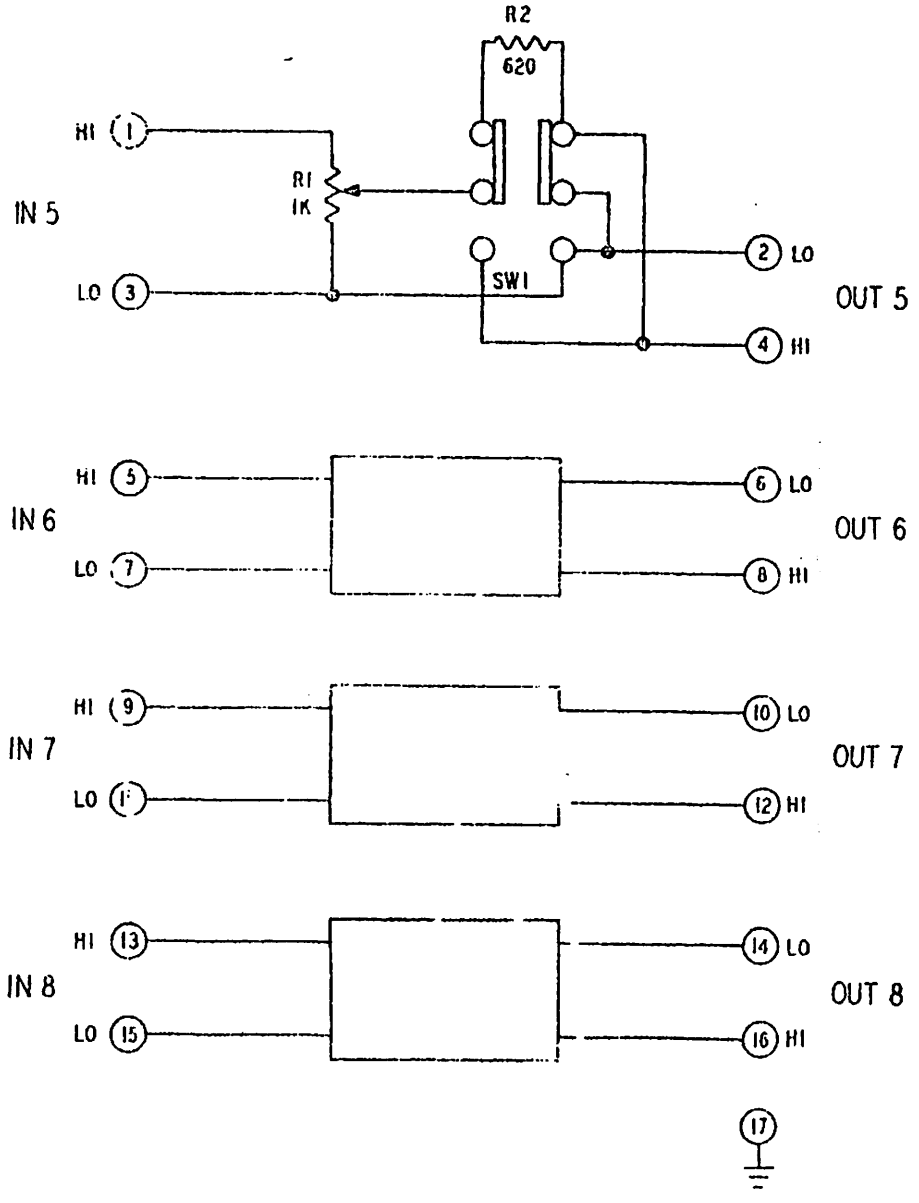
Active circuitry is not provided. The MG81 is intended as a follow-up module for the AM419A amplifier.

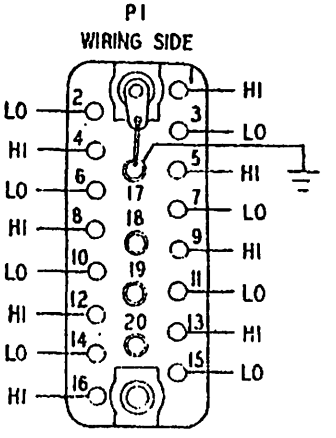
This combination will provide eight independently controlled outputs for special monitor applications.

ELECTRICAL SPECIFICATIONS

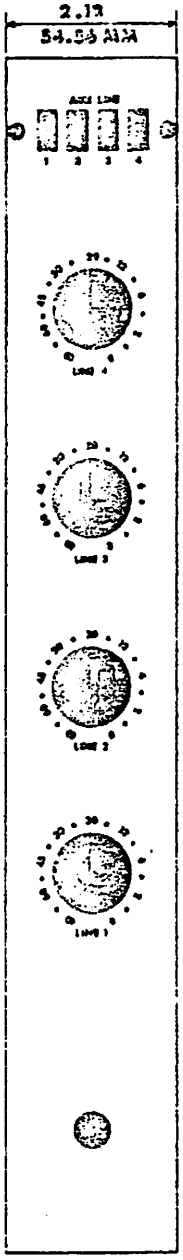
Although this module is part of the AM4A, the following data are stated for reference purposes.

LEVEL CONTROL: *10 K ohms, audio taper.*





NEXT ASY	USED ON	TOLERANCES UNLESS OTHERWISE NOTED	SCHEMATIC MC 81
MATERIAL		XX ±	Langevin SANTA ANA CALIFORNIA
FINISH		ANGULAR	
			THIS SHEET 2 OF 3


2.13
54.05 MM

LANGEVIN

PS4800A/B
POWER SUPPLY

BASIC POWER SUPPLY FOR AM4 AND AM3 SYSTEM

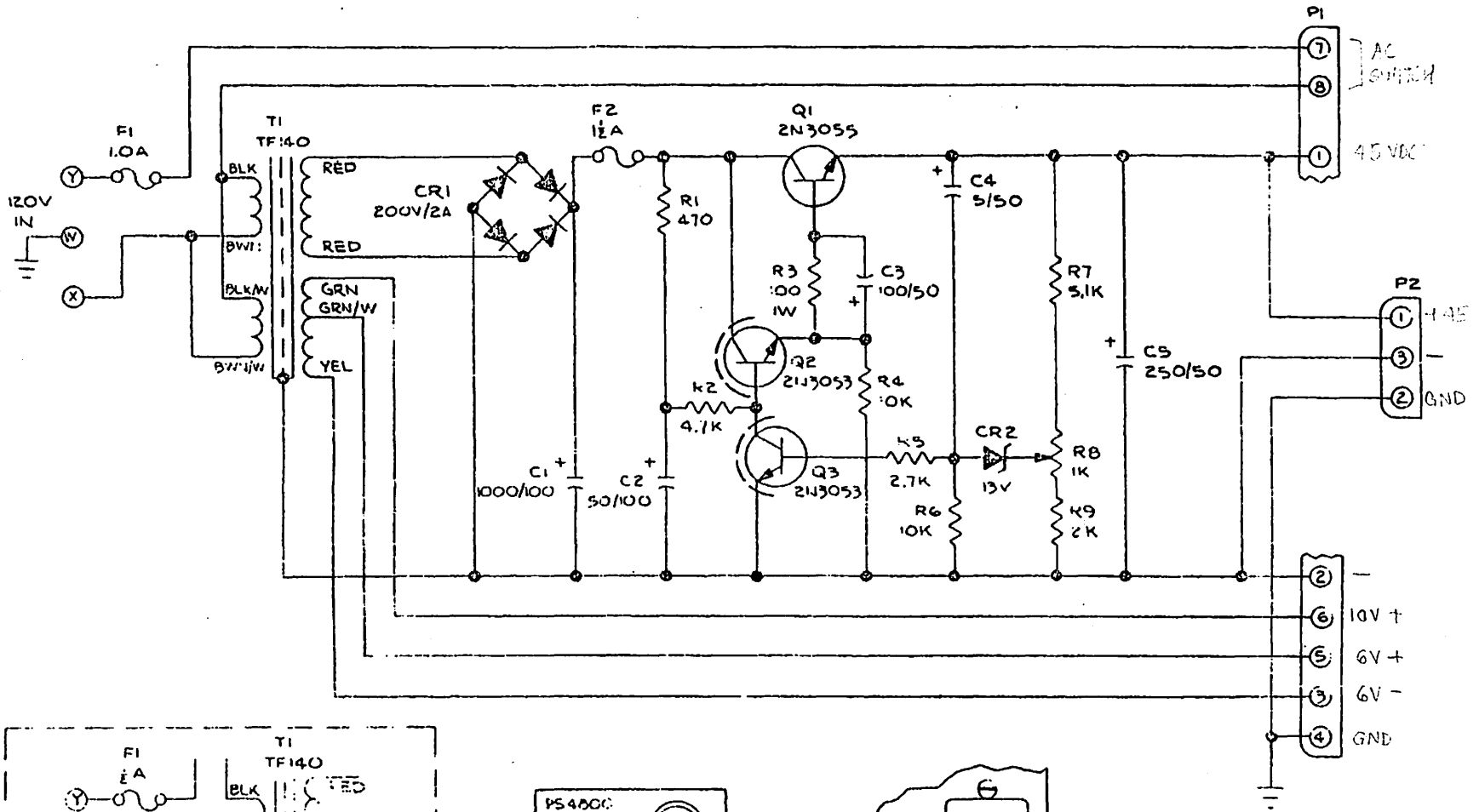
The PS4800 Power Supply is provided in two different package configurations. The "A" version is designed to fit into the AM4A mixer assembly. The "B" version is designed to fit on the rear panel of the AM301 Mixer Assembly or on Rack Panel, MP-83. This panel facilitates power supply mounting in a standard 19" relay rack occupying 3-1/4" of vertical panel space. Cut-outs on the MP-83 provide for custom installation of volt or amp meter.

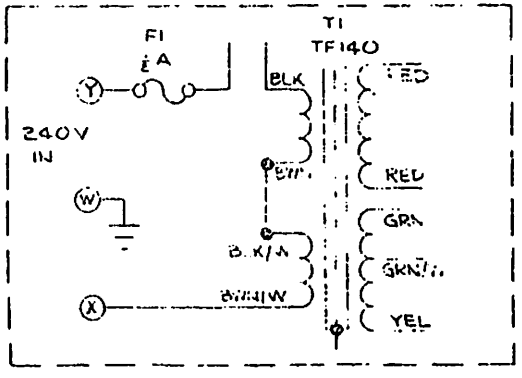
The PS4800 is normally wired for 120 volts VAC 50/60 hz operation. Should it be required to operate the unit from 240 volts VAC 50/60 hz, an internal wiring change is necessary (see schematics attached).

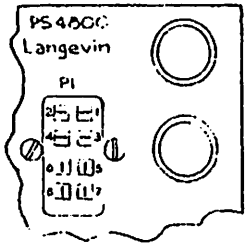
ELECTRICAL SPECIFICATIONS

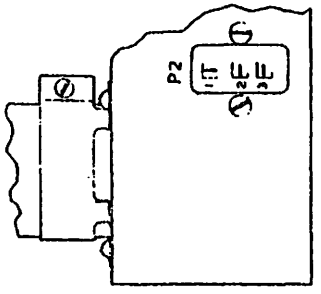
LINE VOLTAGE:	105/130 volts or 210/260 volts 50/60 hz
OUTPUT VOLTAGE:	45 volts DC Reg. 1 Amp. 7 or 10 volts AC 1 Amp.
REGULATION:	1 volt from No Load to Full Load
RIPPLE:	Less than 1 mv
SIZE: (PS4800A)	6" x 4-1/2" x 5"
(PS4800B)	13" x 3" x 3-1/2"

241523









NEXT ASSEMBLY	USED ON
	AM4
MATERIAL	

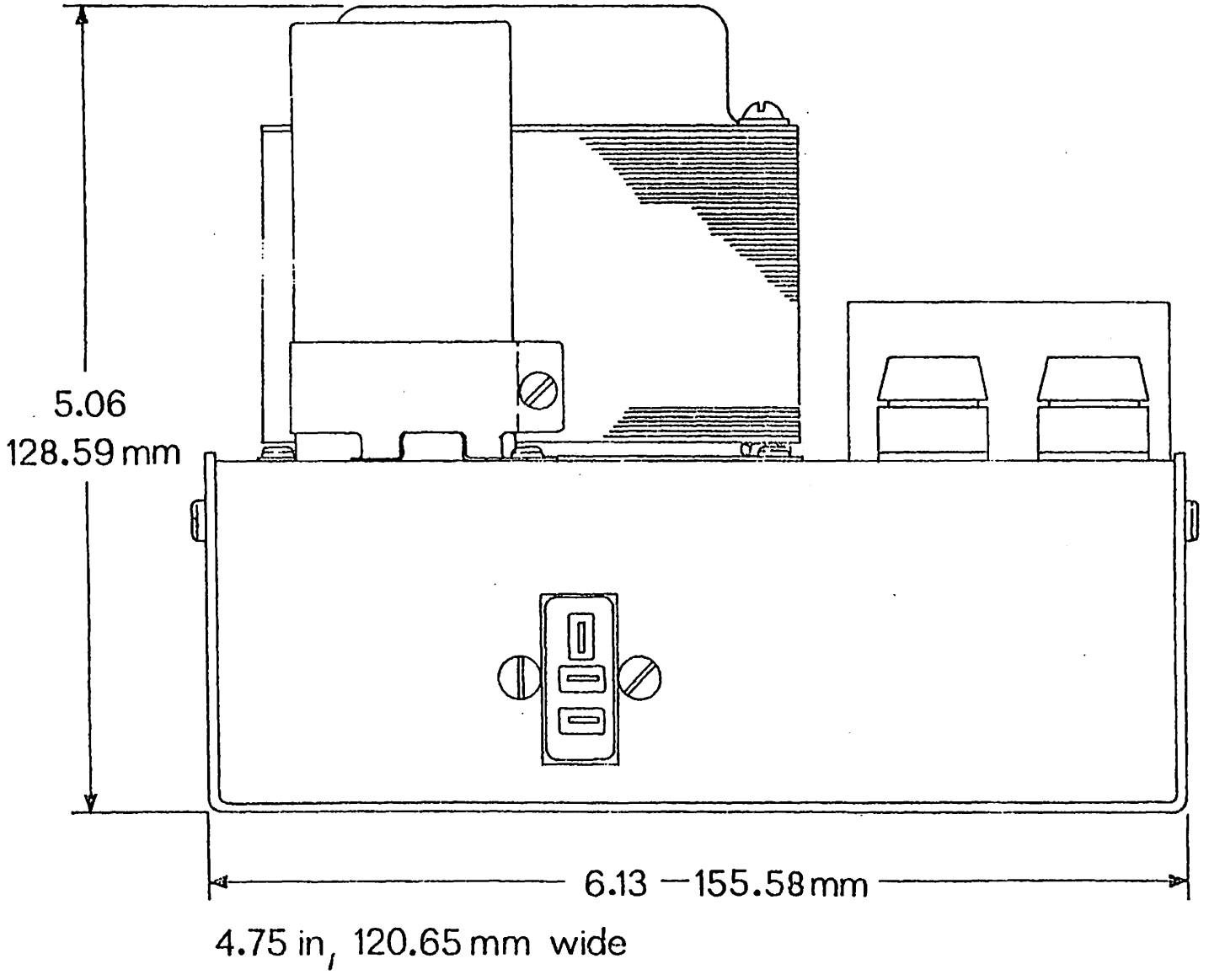
TOLERANCES UNLESS OTHERWISE NOTED
.X ± .XX ±
.XXX ± ANGULAR ±
REMOVE ALL BURRS AND SHARP EDGES
SCALE

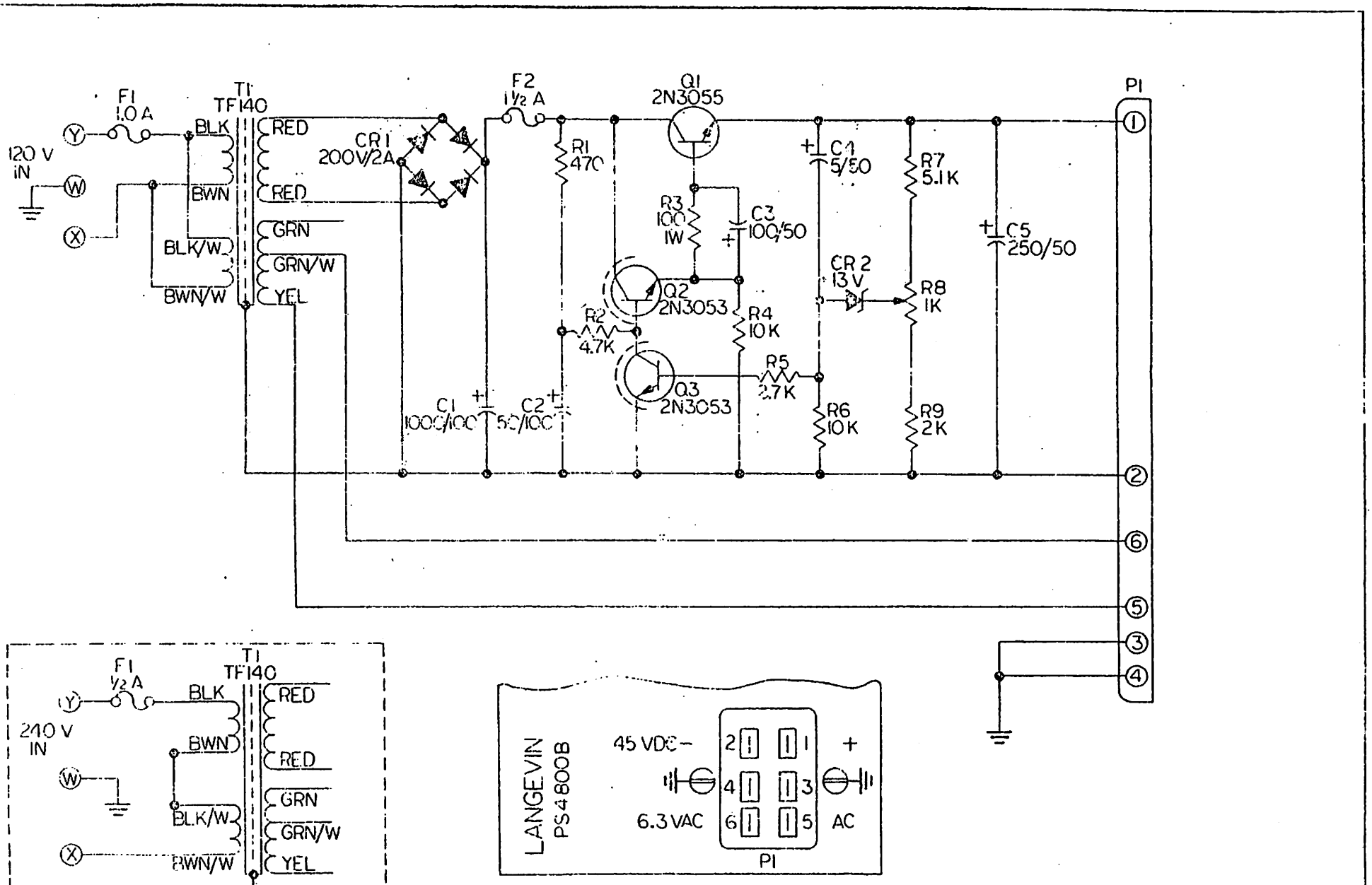
SCHEMATIC, PS 4800

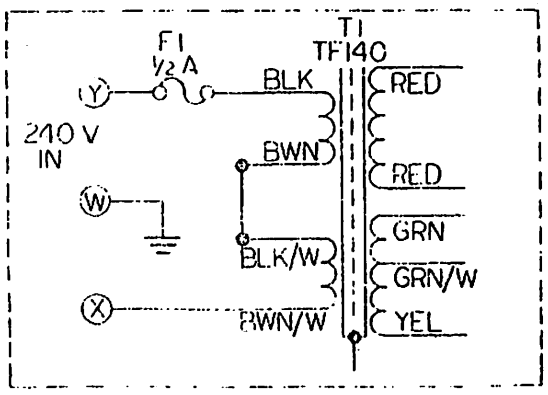
Langevin
SANTA ANA, CALIFORNIA

DWN BY THA | CHK BY | DATE 29NOV 67

2. CAPACITORS IN MFD/VOLTS.
1. RESISTORS OHMS, ½W, 5%.
NOTES:


5.06
128.59 mm
6.13 — 155.58 mm
4.75 in, 120.65 mm wide





2. CAPACITORS IN UFD/VOLTS
RESISTORS IN OHMS, ½W, 5%

NOTES

NEXT ASSEMBLY	USED ON	TOLERANCES UNLESS OTHERWISE NOTED	SCHEMATIC PS4800B	Langevin SANTA ANA CALIFORNIA
MATERIAL		REMOVE ALL BURRS AND SHARP EDGES		
FINISH			SCALE NONE	DWN BY TEM