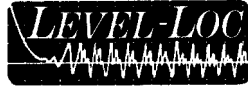


SHURE**MICROPHONES AND ELECTRONIC COMPONENTS**

AREA CODE 312/328-9000 • CABLE SHUREMICRO

DATA SHEET**MODEL M62V
AUDIO LEVEL CONTROLLER****MODEL M62V AUDIO LEVEL CONTROLLER****GENERAL:**

The "Level-Loc" Audio Level Controller is basically a low noise preamplifier with unity gain from microphone level in to microphone level out or 60 db of voltage gain from Hi Imp. microphone level in to Aux. Output. The input and microphone level output contain matching transformers so either high or low impedance may be selected. In addition, a high impedance Aux. Output is provided capable of driving any high impedance amplifier, mixer or tape recorder input requiring 1 volt or less. This preamplifier has the additional capability of reducing its gain as the input signal increases, thereby *holding the output signal constant*. After a predetermined input level is reached (threshold) the output level is "Locked", that is, it remains constant even if the input signal increases by as much as 100 times (40 db). This reduction in gain, which results in a constant output level, is obtained without introducing significant distortion or transients into the program material. The DISTANCE SELECTOR switch determines the input level at which gain reduction (Level-Loc action) begins. An INPUT LEVEL CONTROL is also provided that:

1. Can be used as a vernier control to allow fine adjustment of input threshold between the preset threshold levels selected by the DISTANCE SELECTOR switch.
2. Can act as an input attenuator for signals that are higher than normal microphone levels. Such inputs may be: signals from microphones used very close to the mouth, outputs from preamplifiers, line amplifiers, tuners or tape recorders.

The Audio Level Controller: -

- Reduces blasting or large volume increases when a speaker or entertainer varies his distance and position from the microphone.
- Upgrades tape-recording systems and the Audio portion of Video Tape Recorders, by controlling the maximum signal level being fed to the recorder. This prevents distortion and overloading of the tape recorder which might be caused by "close talking" the microphone, or by very loud vocal or musical passages.

- Permits any number of microphones to be used in a paging system or conference arrangement, without setting the level for each individual microphone. (For paging systems only low impedance microphones with normally open switches should be used.) Any number of these microphones may be operated in parallel across the low impedance input of the M62V, the Audio Level Controller will automatically set a fixed maximum paging level that cannot be exceeded.

SPECIFICATIONS**Input Impedance** (below threshold):

High Impedance: 50 K ohms

Low Impedance: 300 ohms (for 25 to 600 ohm sources)

Input Levels:

High Impedance: microphone level to 10 volts max. (using input level control)

Low Impedance: microphone level to .2 volt max. (using input level control)

Output Impedance:

High Impedance Microphone Level: 3.3 K ohms

Minimum recommended load: 5 K ohms

Low Impedance Microphone Level: Less than 50 ohms

Minimum recommended load: 25 ohms

Aux. Output: 10 K ohms.

Minimum recommended load: 10 K ohms

Gain Characteristics: [Below threshold, Input Level control Maximum (10); measured from input to output] :

INPUT	OUTPUT		
	Hi Imp. Mic.	Lo Imp. Mic.	Aux. Output
Hi Imp. Mic.	Unity	-20 db	+60 db
Lo Imp. Mic.	+20 db	Unity	+80 db

Frequency Response:

± 2 db 40 to 20,000 Hz

Maximum Output Noise (high-impedance microphone output), in db below 1 volt:

	300-20,000 Hz (Noise)	30-20,000 Hz (Hum and Noise)
Lo Imp. input		
150 ohm Termination	-103 db	-95 db
Hi Imp. Input		
33 K ohm Termination	-104 db	-95 db

Distortion (any level of regulation):
3% maximum THD.

Dynamic Characteristics: Fast attack, moderate recovery, fixed.

Attack: For a 20 db step increase above threshold, gain is within 2 db of final value in 500 microseconds.

Recovery: For a 20 db step decrease to threshold, gain is within 2 db of final value in 700 milliseconds.

Battery Life: Approximately 200 hours.

Dimensions: See Figure 5.

Net Weight: 2.2 lbs.

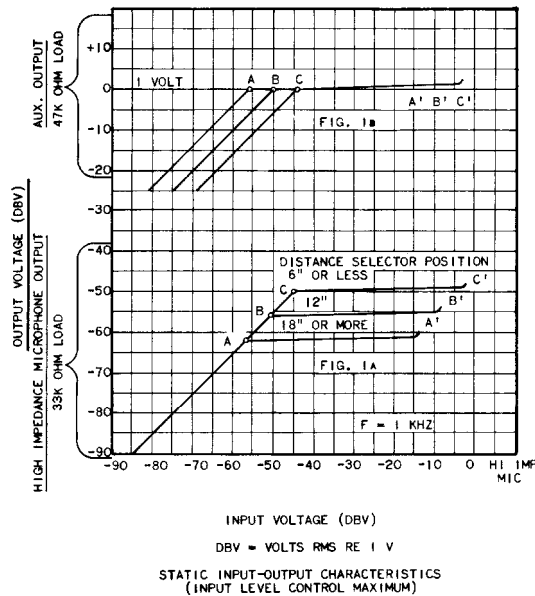


FIGURE 1

Input Connections: The Cannon-type receptacle marked INPUT is designed for either low (25 to 600 ohms) or high impedance (50,000 ohms) inputs. The impedance is selected by a slide switch above the input receptacle. The unit is not recommended for use with crystal or ceramic microphones.

The input receptacle is a female Cannon-type XL-3-13 (uses XL-3-12 mate, Shure Part No. 95A55, or XL-3-12C mate, Shure Part No. 95A227). See Figure 2a for low and high impedance connections to receptacle.

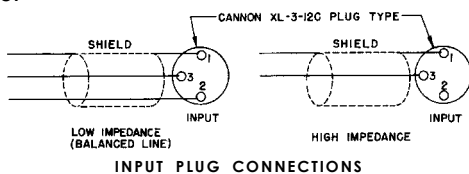


FIGURE 2a

Output Connections: The receptacle marked MIC. OUTPUT is a dual impedance output selected by the

switch above the receptacle. This output is designed to work into a 25 to 600 ohm microphone line or microphone input, or into a high impedance amplifier or tape recorder microphone input. The receptacle is a male three-pin Cannon type XL-3-14 connector (uses XL-3-11 mate, Shure Part No. 95A38, or XL-3-11 C mate, Shure Part No. 95A176). See Figure 2b for microphone level output receptacle connections.

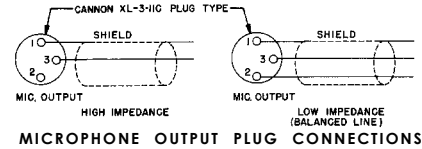


FIGURE 2b

The receptacle marked AUX. OUTPUT is a phono pin jack which accepts a standard phono pin plug. This output is designed to work into a high-impedance (10 K ohm or greater), high level input of a mixer, preamplifier, amplifier, or tape recorder. This output may be connected to the AUX. INPUT of an M68 Series Mixer, the HIGH-LEVEL INPUT of an M63 Audio Master or the line input (bridging) of an M67 Professional Microphone Mixer.

The static characteristics of the high-level AUX. OUTPUT are shown in Figure 1b. This output provides a constant 1 volt level (with a 47 K ohm load) whenever the input level is above threshold. Below threshold it provides approximately 60 db of gain over the Hi-Imp Mic. Level Input.

NOTE: This output is disabled when the MASTER CONTROL switch is set to "Bypass."

Battery and Auxiliary Power Connections:

The battery to power the M62V is shipped with the unit but must be installed. Install as follows:

1. Remove Battery Compartment Cover by removing the lower slotted screw holding cover, loosening the upper screw, and sliding the cover down.
2. Snap battery into clips provided.
3. Replace Battery Compartment Cover and tighten screws securely.

Battery Replacement-Use Eveready type 216 or 222, or equivalent 9 V. Battery.

AUX. INPUT POWER: This jack is used as a power input when using the power supply of a Shure M67 or M68 Series Mixer or M63 Audio Master. In this case, the battery should be disconnected. A special connecting cable is provided to connect the AUX. INPUT POWER jack on the M62V to the Accessory 28 V. D.C. jack on the M68 Mixer or to the Pos. (red) 30 V. D.C. jack on the M67 Mixer or M63 Audio Master.

In order to utilize A.C. current, the use of a 9 volt D.C. Battery Eliminator is suggested. There is a provision in the battery compartment cover that will allow using a 9 V. D.C. Battery Eliminator to power the M62V. The Battery Eliminator cable is to be slipped into the split rubber grommet on the cover of the battery compartment. To secure cable, rotate grommet 1/2 turn. Connection is to be made using the same battery clips that normally connect to the 9 volt battery.

(Note: If a Shure M68, M67 or M63, or a Battery Eliminator is to be used, first remove the battery.)

CONTROLS AND OPERATION

MASTER CONTROL:

With the MASTER CONTROL in the "Bypass" position:

1. The battery is disconnected from the "Level-Loc" circuitry and thus the level-controlling action of the M62V is inoperative.
2. The AUX. OUTPUT is disabled.
3. The input to the M62V is switched directly to the MIC. LEVEL OUTPUT so in this "Bypass" condition the unit can serve as a microphone line matching transformer.

With the MASTER CONTROL switch in the "Level-Loc" position, the unit is energized, its level-controlling capability operates, and the AUX. OUTPUT is available.

DISTANCE SELECTOR:

When the M62V is being fed directly from a microphone source, best results are usually obtained when the DISTANCE SELECTOR is set for the actual distance the performer is located from the microphone. For example: a singer or soloist standing nominally 6 inches from a microphone would require a setting of "6" or Less" on the DISTANCE SELECTOR. A panel discussion where the speaker(s) may be any distance up to 18 inches or more, would require a setting of "18" or More" on the DISTANCE SELECTOR.

When recording in quiet surroundings, the 18" setting of the DISTANCE SELECTOR may be used to obtain maximum control of the recorded level. This is especially advantageous in recording sound sources where the volume is not predictable. If under these conditions, very loud program material or high sensitivity microphones result in distortion, the DISTANCE SELECTOR may be changed from the "18" or More" position to the "12" or "6" or Less" position. (Each position represents a 6 db change in threshold.) In extreme cases of overload the INPUT LEVEL CONTROL can be reduced (See INPUT LEVEL CONTROL)

When using the Audio Level Controller in a public-address system, with the Master Control in the "Level-Loc" position, turn up the volume control on the public-address amplifier to that point where the system is just below the threshold of feedback with no one speaking into the microphone. In this manner, the total system gain is reduced as signal above threshold is applied, and the system is more stable during loud parts of the performance. Should accidental feedback occur, the M62V will prevent it from becoming "ear-splitting" or damaging the loudspeakers.

The Level-Loc action may be demonstrated by switching from the LEVEL-LOC to the BYPASS position of the MASTER CONTROL, *provided the MIC. LEVEL OUTPUT is being used.*

Figure 1 illustrates the static input-output characteristics of the Audio Level Controller, with the INPUT LEVEL CONTROL at maximum and Hi Impedance input and Hi. Imp. microphone level output, (Note: there is a 20 db level difference between Hi Imp. and Lo Imp. A high impedance to low impedance transformer, as used in the Input or Output of the M62V, gives a 20 db reduction of voltage gain.)

As an example, consider the Distance Selector switch set to the "18" or More" position. As the input is increased from a low value, say -80 dbv (-80 dbv means 80 db below 1 volt or .1 millivolt), the output will increase as much as the input until point A, the "threshold," (the input level at which compression takes place), is reached. Above this input level (-56 dbv), the output will remain nearly constant over an input range of 40 db or more, as represented by curve A-A' (on Figure 1a).

The input threshold voltage, and consequently the regulated output level, may be increased by either 6 or 12 db by changing the setting of the DISTANCE SELECTOR. In this case, operation above the input threshold is represented by curves B-B" or C-C', according to the setting. These threshold voltages have been chosen to approximate the output of a typical microphone with an average speaker at the distances labeled on the switch. At greater distances or quieter speech, the output will follow the input, but if the person speaking is louder or closer to the microphone, the Audio Level Controller will prevent its output from increasing, thus eliminating "blasting" or overloading of subsequent electronics.

INPUT LEVEL CONTROL:

The INPUT LEVEL CONTROL is employed when a higher-than-normal signal level is fed into the M62V, such as the output of preamplifiers, line amplifiers, tape recorders or tuners. The INPUT LEVEL CONTROL may also be used as a vernier control to allow fine adjustments of the input threshold that may occur between the 6 db steps of the preset "DISTANCE SELECTOR" switch.

High-impedance, unbalanced signals up to 10 volts can be applied to the high-impedance input; low-impedance, balanced signals no greater than 200 millivolts may be connected directly to the low-impedance input. If the low-impedance signal is greater than this (for example, a 600 ohm line at +4 dbm), a line adapter balanced attenuator such as the Shure A15LA may be connected between the line and the input of the M62V. Alternately, if the line can be unbalanced (one side grounded), it may be connected to the high-impedance input with no attenuator.

With such inputs, the DISTANCE SELECTOR should be set to the "6" or Less" position. To adjust the INPUT LEVEL CONTROL, monitor the output of the M62V and apply an average level input. Starting at 0, advance the INPUT LEVEL control. The signal will begin to appear at the output and will increase in volume until a point is reached at which no further increase is noted. This is the threshold, and if the control is left at this setting, any inputs less than the test input level will pass through the M62V uncontrolled, while those which are louder will be prevented from rising and overloading succeeding equipment. Operation of the Audio Level Controller above the constant output region is not recommended. The curves shown on Figure 1a and b are valid when the INPUT LEVEL CONTROL is used; however, the appropriate attenuation must be added to the Input Voltage (Horizontal) Scale. For example, if the INPUT LEVEL CONTROL is set to "5" approximately 20 db should be added to

the input voltage figures, so the point marked -60 dbv on the input voltage scale (Horizontal) would become -40 dbv. In other words, the entire curve would be shifted 20 db to the right.

TO USE WITH SHURE M68 SERIES MICROPHONE MIXERS:

The two ways of using the M62V with the M68 Series Mixers are:

1. Connect a microphone directly into the Hi or Lo impedance input of the M62V. Connect the microphone level output of the M62V (Hi or Lo impedance) to a microphone input on the M68 mixer (either Hi or Lo Impedance, whichever was selected on the M62V). This method gives audio "Level-Loc" control on the one microphone attached to the M62V **ONLY**. All other inputs to the M68 are unaffected.
2. Connect the M62V to control **ALL** inputs of the M68 mixer, by connecting the microphone level output of the M68 to the input of the M62V, (if the Lo Imp. microphone level output of the M68 is used the M62V input must be set on Low Impedance, if the Hi Impedance microphone level output of the M68 is used, the M62 input must be set on Hi Impedance) or connect the Aux. Hi level output of the M68 to the input (set on Hi Imp.) of the M62V. (The INPUT LEVEL CONTROL may be used to control the threshold level as covered under "INPUT LEVEL CONTROL.") The input for the main amplifier or tape recorder is then connected to the M62V microphone level output (Hi or Lo Imp.) or the AUX. OUTPUT. When used in this manner, the MASTER CONTROL of the M68 Mixer should be set to about "5" and the individual controls used to adjust the proper blend between the channels. If more overall volume is required, **the volume control on the main amplifier should be advanced. This precaution will prevent equipment overload.**

TO USE WITH SHURE M67 MICROPHONE MIXER:

Follow the instructions above for the M68, but only the low-impedance input or output may be used when connected to the M67. The setting of the M67 controls only need be such that the VU meter indicates properly to avoid overload.

TO USE WITH SHURE M63 AUDIO MASTER:

Follow the instructions above but only the AUX OUTPUT of the M62V may be used to feed the Hi Level input of the M63. The setting of the M63 Master Gain control will control the overall system gain *after* the Level-Loc.

OPERATION HINTS:

Remember that the M62V "Level-Loc" is a device that provides a constant output level after a predetermined input level is reached (threshold), therefore, if more system gain is needed in PA applications or a higher record level is desired in tape recording applications, **DO NOT INCREASE THE INPUT LEVEL GOING INTO THE "LEVEL-LOC;"** once input threshold has been reached the output level becomes fixed **IT CAN NOT GO ANY HIGHER.** For more system gain, increase

the gain control of amplifier, preamplifier or tape recorder that is being fed from the M62V.

Note: For best results it is recommended that some time be spent in experimentation with the LEVEL-LOC to enable the user to become accustomed to the advantages which this unit presents.

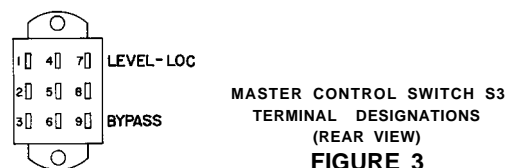
Guarantee: The Shure Model M62V Audio Level Controller is guaranteed to be free from electrical and mechanical defects for a period of one year from date of shipment from the factory, provided all instructions are complied with fully. In case of damage, it is essential that you carefully repack the unit and return it to the factory, or, if outside the United States, to your dealer or authorized Shure Service Center for repairs. Our guarantee is voided if the basic assembly has been opened other than to perform the modification described, or subjected to unreasonably rough handling.

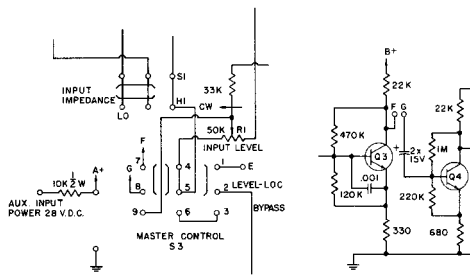
M62V Modification for Non-disabling Aux. Output

The M62V may be rewired internally so that the Aux. Output will operate (without Level-Loc action) when the MASTER CONTROL is set to BYPASS, rather than being disabled. This option is useful when the M62V AUX. OUTPUT is connected to the auxiliary input of the M63 Audio Master or M68 Series Mixers. Note: With this option, the M62V power cannot be turned off by the MASTER CONTROL switch. Power should be supplied to the M62V from an external source such as the Accessory 28 V. D.C. jack on the M68 Mixer or the Pos. (red) 30 V. DC. jack on the M67 Mixer or M63 Audio Master, and the internal battery must be removed.

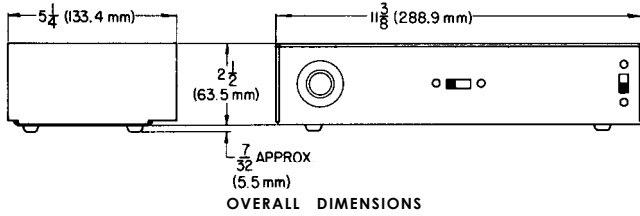
To make this modification (see Figures 3 and 4):

1. Remove battery from unit.
2. Remove cover from unit.
3. Unsolder and remove wire between MASTER CONTROL switch S3, terminal #8, and terminal strip end of 10K ohm, ½ watt resistor.
4. Unsolder wire from S3, terminal #7, and solder it to terminal strip end of 10 K ohm, ½ watt resistor.
5. Unsolder positive end of 2 mfd x 15 volt capacitor from collector of Q3.
6. Connect a wire from positive lead of 2 x 15 capacitor to S3, terminal #8.
7. Connect a wire from collector of Q3 to S3, terminal #7.
8. Connect a wire from center terminal of INPUT LEVEL control R1 to S3, terminal #9.
9. Install a jumper wire between terminals #4 and #5 of S3.
10. Replace cover of unit, but do not install battery if the M62V is to be powered from an external source.





SCHEMATIC CHANGES FOR MODIFICATION
FIGURE 4



OVERALL DIMENSIONS
FIGURE 5

OPTIONAL ACCESSORIES

A68S Stacking Kit

The A68S Kit enables you to conveniently stack together the M62V with the M63, M67 or M68 Series Mixers. An interconnecting cable is provided for connecting the AUX. OUTPUT of the M62V to the M68 Series Mixers or an M63 Audio Master. Additional units can be stacked with the use of additional A68S Kits. The Stacking Kit includes two brackets and an interconnecting cable.

A68SC Interconnecting Cable

Cable only, as supplied in the A68S Stacking Kit, for use in connecting the AUX OUTPUT of the M62V to an M68 Series Mixer (Aux Input) or M63 Audio Controller. The A68SC is a 12" long single conductor shielded cable with a phono plug on each end.

A68C OUTPUT CABLE KIT

The A68C Output Cable Kit provides a convenient and flexible method of connecting the microphone level output of the M62V, M63, M67 or M68 Series Mixers to the great variety of amplifier and input receptacle configurations. Enables you to connect to virtually any PA system. Kit includes:

- One 15' two-conductor shielded cable with three pin Cannon type XL-3-11 and XL-3-12 plugs.
- One 12" two-conductor shielded adapter cable with Cannon XL-3-11 plug on one end and Hubbel twist lock plug on other end.
- One 12" single conductor shielded adapter cable Cannon type XL-3-11 on one end and Amphenol type MC1 on the other end.
- One Phone Plug adapter for use with MC1 Connector.



A68C OUTPUT CABLE KIT

A68L LOCKING PANEL

The A68L Panel fastens over the controls of the M62V, M63, M67 or M68 Series Mixers, locks in place with a padlock (supplied), and prevents tampering with controls once they have been set. The A68L Kit contains locking panel, small padlock and two keys.



A68L LOCKING PANEL

A68R RACK PANEL KIT

Designed to mount M62V Audio Level Controller in standard 19" rack.

Installation and Mounting

1. Assemble brackets to panel using hardware supplied.
2. Remove two cover mounting screws from bottom of M62V.
3. Slide M62V into brackets and re-assemble screws through brackets into bottom of mixer.

NOTE: The A68L Locking Panel may be used simultaneously with the A68R Rack Panel Kit.



A68R RACK PANEL KIT

AC60 ATTACHÉ CARRYING CASE

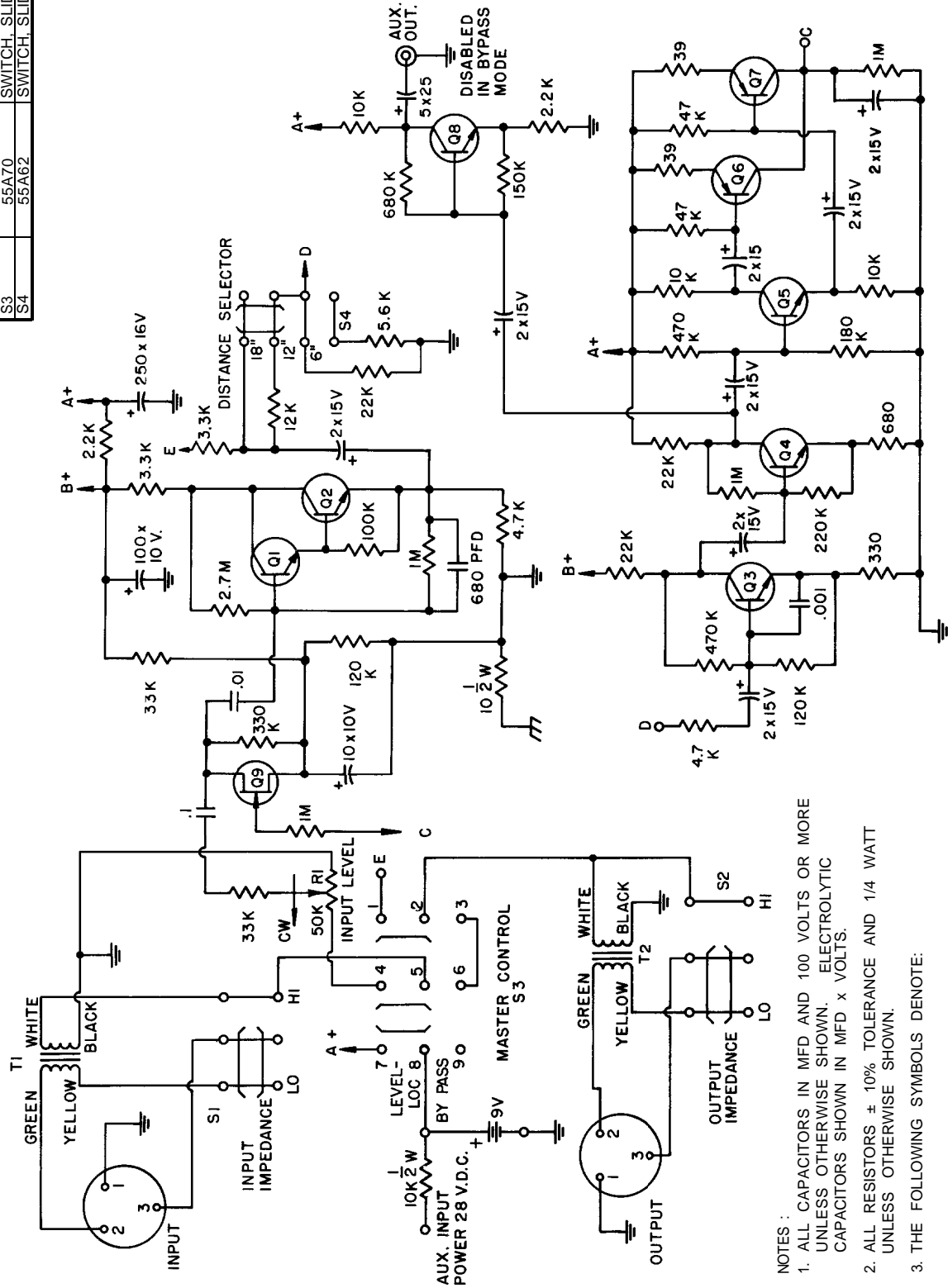
The AC60 is a vinyl-covered attache type carrying case (compartmentalized and foam lined), with space for any of the M62V, M63, M67 or M68 Series Mixers and as many as four microphones, cables, adapters, and other accessories.



AC60 ATTACHÉ CASE

MODEL M62V AUDIO LEVEL CONTROLLER CIRCUIT DIAGRAM

PARTS LIST		
ITEM	SHURE PART NO.	DESCRIPTION
Q1-Q5, Q8	86A327	NPN TRANSISTOR, SILICON, SELECTED HIGH GAIN, LOW NOISE. SIMILAR TO MOTOROLA 2N5088 OR T.I. 2N3711
Q6, Q7	86A335	PNP TRANSISTOR, SILICON, T.I. TIS93
Q9	86A329	N-CHANNEL JUNCTION FIELD EFFECT TRANSISTOR, MOTOROLA 2N4545
R1	46A021	POTENTIOMETER, 50K, AUDIO TAPER
T1, T2	90A1590	AUDIO TRANSFORMER AND SHIELD ASSEMBLY
S1, S2	55A54	SWITCH, SLIDE, D PDT
S3	55A70	SWITCH, SLIDE, TPDT
S4	55A62	SWITCH, SLIDE, DPTT



- NOTES :
1. ALL CAPACITORS IN MFD AND 100 VOLTS OR MORE UNLESS OTHERWISE SHOWN. ELECTROLYTIC CAPACITORS SHOWN IN MFD x VOLTS.
 2. ALL RESISTORS ± 10% TOLERANCE AND 1/4 WATT UNLESS OTHERWISE SHOWN.
 3. THE FOLLOWING SYMBOLS DENOTE:

CHASSIS GROUND CIRCUIT COMMON

FIGURE 6