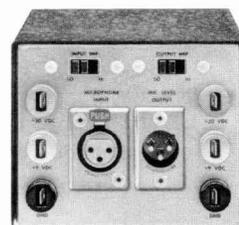




Model M625



Model M625AM



DESCRIPTION

The Models M625 and M625AM Voicegate are designed to reduce the effects of background noise in microphone installations by controlling the gain of each microphone input channel in response to the level of its input. When the input is below an adjustable trigger level, the gain of the microphone channel is reduced; an increase above this trigger level quickly raises the gain to unity. The principal use of the Voicegate is in sound-reinforcement systems and multiple-microphone recording applications, such as conference rooms. In such cases, a Voicegate associated with each microphone will assure that only those microphones intentionally in use will contribute their outputs to the system. The gain of those channels with microphones sensing only background noise (below the Voicegate trigger level) will be reduced, thereby improving the signal-to-noise ratio for the overall system.

The Model M625 Voicegate is designed to operate from a 108-132 volt, 50/60 Hz power source.

One Voicegate is required for each microphone and associated mixer input in the system. One ac-operated M625 Voicegate will provide power for up to three additional M625AM Voicegates, which are identical to the M625 but do not have self-contained power supplies.

Features include:

- Control circuit which is especially sensitive to voice signals.
- Internally selectable attenuation of background noise in steps of 6, 12, and 16 dB.
- Fast attack time for quick response to initial sounds.
- Wide, flat frequency response.
- Front-panel sensitivity control for adjusting input signal trigger level.
- Hold time adjustable from under 1/2 second to over 1/2 minute by front panel control.
- Gate switch to defeat Voicegate action when desired.
- Gate light emitting diode (LED) lamp to indicate when input signal is above trigger level.
- Power "On-Off" switch and pilot light (M625 only).
- Female (input) and male (output) professional three-pin audio connectors with low- or high-impedance selector switches.
- Low hum, noise and RF susceptibility.
- Provisions for rack mounting in groups of one to four on accessory 8.9 cm (3 1/2 in.) rack panel with power for three M625AM Voicegates supplied by one M625 unit.

- Listing by Underwriters' Laboratories, Inc.; and by Canadian Standards Association as certified (M625 only).

SPECIFICATIONS

Test Conditions (unless otherwise stated):

- Power switch ON.
- Lo-Imp. Mic. Input through 150 ohms.
- Hi-Imp. Mic. Input through 33k ohms.
- Lo-Imp. Mic. Level Output terminated with 1k ohms.
- Hi-Imp. Mic. Level Output terminated with 33k ohms.
- Power +30 Vdc and +9 Vdc (M625AM) or 120 Vac, 60 Hz (M625).

Gain (input above trigger level or Gate switch OUT):

Mic. Input	Output	
	Lo-Impedance	Hi-Impedance
Lo-Impedance	- 0.5 ± 2 dB	22.0 ± 2 dB
Hi-Impedance	-23.0 ± 2 dB	-0.5 ± 2 dB

Gain is 16 dB (may be changed internally to 12 or 6 dB) lower when input is below trigger level and Gate switch is set to IN.

Frequency Response:

Flat ± 3 dB, 40 Hz to 20 kHz.

Hum and Noise, Maximum:

Equivalent Input Hum and Noise, Lo-Imp. Mic., 150-ohm source, 20 kHz noise bandwidth, 20 Hz lower cutoff: 124 dB below 1 volt.

Equivalent Input Noise, Lo-Imp. Mic., 150-ohm source, 20 kHz noise bandwidth, 300 Hz lower cutoff: 127 dB below 1 volt.

Input Trigger Level (at 1 kHz):

Lo-Imp. Input adjustable from -62 dBV (790 μV) to -96 dBV (16 μV).

Hi-Imp. Input adjustable from -40 dBV (10 mV) to -74 dBV (200 μV).

Attack Time:

4 msec (typical)

Hold Time:

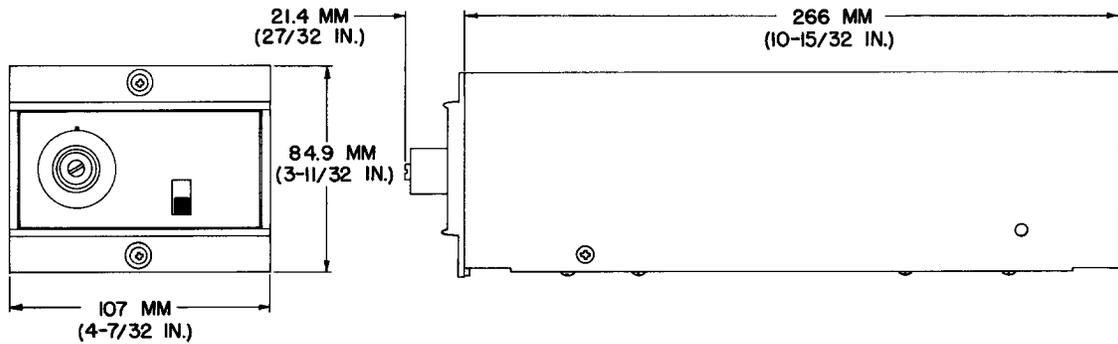
Adjustable from approximately 0.25 sec. to 45 sec.

Total Harmonic Distortion:

0.5% maximum THD at 2 kHz, at -10 dBV (320 mV) Hi-Imp. Mic. Level Output or -32 dBV (25 mV) Lo-Imp. Mic. Level Output.

Input Clipping Levels, Minimum:

Lo-Imp. Mic.: -28 dBV (40 mV)
 Hi-Imp. Mic.: - 6 dBV (500 mV)



**FIGURE 1
OVERALL DIMENSIONS**

Phase:

Corresponding pins of Input and Output connectors are in phase.

Impedances:

Input	Designed for Use With	Actual Impedance
Lo-Impedance	Balanced or unbalanced 25 to 600 ohm microphones	680 ohms $\pm 25\%$ balanced
Hi-Impedance	Unbalanced 10k to 50k ohm microphones	130K ohms $\pm 25\%$ unbalanced

Output	Designed for Use With	Actual Impedance
Lo-Impedance	Balanced or unbalanced 25 to 600 ohm microphone level circuits	150 ohms $\pm 15\%$ unbalanced
Hi-Impedance	Unbalanced 10k to 50k ohm microphone level circuits	2k ohms $\pm 15\%$ unbalanced

Temperature Range:

Operating: -7°C to 57°C (20°F to 135°F)
 Storage: -29°C to 71°C (-20°F to 160°F)

Weight:

M625: 1.93 kg (4 lb, 4 oz)
 M625AM: 1.48 kg (3 lb, 4 oz)

Dimensions:

See Figure 1

Operating Voltage and Power:

Ac Operation:
 M625: 108-132 volts, 50/60 Hz, 3 watts

Dc Operation:

30 volts $\pm 20\%$, 5.5 mA, and 9 volts $\pm 35\%$, 20 mA with Gate lamp illuminated (M625AM and M625).

CONTROLS AND CONNECTORS

Hold Time:

The Hold Time control sets the period of time that the Voicegate maintains unity gain after the input signal drops below the trigger level. At minimum (full counterclockwise) position, it sets the hold period to approximately 1/4 second; at maximum (full clockwise) position the hold time is approximately 45 seconds.

Sensitivity:

The Sensitivity control sets the level at which the input signal triggers the control circuit to increase the Voicegate gain to unity. With a high-impedance input, the trigger level may be varied from approximately -40 dBV (10 mV) with the Sensitivity control at 0 (fully counterclockwise) to -74 dBV (200 μV) with the control set to 10. Corresponding levels for the low-impedance input are -62 dBV (790 μV) at 0 and -96 dBV (16 μV) at 10. The Sensitivity control is adjusted by observing the Gate lamp. The Gate lamp will be illuminated when the input signal is above the control circuit trigger voltage as adjusted by the Sensitivity control, and will turn off quickly when the signal drops below this level. The Sensitivity control should be adjusted so that the lamp is off when only background noise is entering the microphone, and turns on reliably when actual speech is present.

Gate Switch:

With the Gate switch set to the OUT position, the gain of the Voicegate remains constant at unity and the Gate lamp turns on. In the IN position, the Voicegate performs its normal gain control function and the Gate lamp flashes intermittently.

Power Switch and Pilot Light (M625):

The Power On-Off switch controls the ac power applied to the M625 and the dc power supplied to all M625AM units connected to the M625. The pilot light is illuminated when the ac power is connected to the M625 and the Power switch is in the ON position.

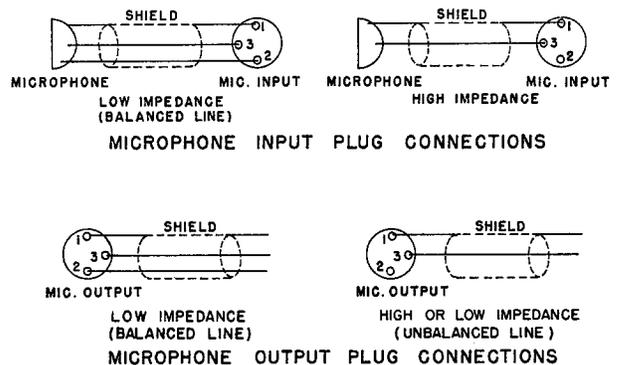
Microphone Input:

The microphone input is designed for low-impedance (balanced or unbalanced) microphones with 25 to 600 ohms impedance or high-impedance (unbalanced) dynamic, ribbon, or condenser microphones. The unit is not recommended for use with crystal or ceramic microphones. The microphone impedance is selected by a slide switch above the Microphone Input receptacle on the rear panel. The input receptacle is a professional three-pin audio connector (female).* See Figure 2 for low- and high-impedance microphone input plug connections.

NOTE: Some condenser microphones produce very high output signals which may overload the input. Use of an attenuator (such as the Shure A15A In-Line Low-Impedance Microphone Attenuator) will improve this situation.

Microphone Level Output:

The microphone-level output is available at the receptacle labeled Mic. Level Output on the rear panel. It is a dual-impedance output, either low-impedance or high-impedance unbalanced, as selected by the switch above the receptacle. The low-impedance output will drive either a balanced or an unbalanced microphone input.



INPUT AND OUTPUT CONNECTIONS — FIGURE 2

* Designed to mate with Cannon XL series, Switchcraft A3 (Q.G.) series or equivalent connector.

NOTE: This output is not intended for connection to the microphone input of an amplifier provided with a phantom or simplex power supply or grounded, center-tapped input transformer. If this power supply or ground cannot be disconnected or turned off then a balancing transformer must be used. A model A95A Line Matching Transformer may be used by connecting its high-impedance primary to the Hi-Imp. Mic. Level Output of the Voicegate.

The output receptacle is a professional three-pin audio-connector (male).* See Figure 2 for low- and high-impedance microphone output plug connections.

30 Vdc, 9 Vdc and Gnd Jacks:

The 30 Vdc, 9 Vdc and Gnd jacks are internally connected in corresponding pairs. The red, white and black leads received in the M625AM Voicegate accessory package are to be used for interconnecting with the power supply of the M625 or additional M625AM units. The two connectors at ends of the red lead should be connected to the 30 Vdc receptacles (red) of two Voicegates being interconnected. In like fashion, the white and black leads should be connected to the 9 Vdc (white) and Gnd (black) jacks respectively. The M625 provides sufficient power to supply as many as three M625AM Voicegates. The 30 Vdc jacks provide 35 Vdc open circuit (26 Vdc at 17 mA max.), and the 9 Vdc jacks provide 10 Vdc open circuit (6 Vdc at 50 mA max.).

INSTALLATION

The Voicegate is connected between the microphone and microphone preamplifier with suitable impedances selected by the Input Impedance and Output Impedance slide switches. Four such channels may be individually connected to the input of a Shure Model M67 or M68 Series Mixer to provide a composite output, with volume controls for each channel located on the mixer.

The M625 and M625AM are shipped with four rubber feet and four No. 6 Phillips-head sheet metal screws in an accessory hardware package. If a Voicegate unit is to be operated on a table top or other flat surface the rubber feet should be attached to the bottom surface of the unit at the four mounting holes provided, using the screws supplied.

If one or more Voicegates are to be rack mounted, the Shure Model A62R Rack Panel Kit should be used. This kit is available in two panel finishes as listed under "Optional Accessories." Detailed mounting instructions are included in each kit.

If more than one microphone channel is to be equipped for Voicegate operation, interconnect the M625 and M625AM Voicegates using the red, white and black cables provided. Connect corresponding 30 Vdc, 9 Vdc and Gnd jacks on the M625 and M625AM units to be powered as indicated in Figure 3. Plug the line cord into a 120V, 50/60 Hz supply (M625 only).

OPERATION

Set controls as follows:

Power switch to ON position.

Input Impedance and Output Impedance switches to proper impedance positions.

Hold Time control to minimum (full counterclockwise) position.

Sensitivity control to 10 (full clockwise) position.

Gate switch to OUT position.

While speaking into the microphone, adjust the preamplifier or mixer volume control to a suitable level. In sound reinforcement systems, all volume controls must be set for operation without feedback squeal or ringing when the Gate switches of all Voicegates are set to the OUT position.

Set Gate switch to IN position. Speak into the microphone while slowly rotating the Sensitivity control in a counterclockwise direction until the Gate lamp goes out during pauses in the voice input. While listening to the system output, speak into the microphone intermittently and rotate the Hold Time control in a clockwise direction until the Voicegate remains in its low gain state for the desired length of time during pauses. When properly adjusted, the Voicegate will "bridge" pauses in speech, yet return to its low gain state when use of the microphone has actually ceased.

Operation of the Voicegate will be most reliable when the signal level entering the microphone is high relative to the background noise level. This can be accomplished by positioning the microphone as close to the sound source as possible, and by using a high-quality unidirectional microphone to reduce pickup of background noise. In addition, false triggering due to mechanical noise transmitted to the microphone through its mounting may be reduced by employing a high-quality, shock-isolating mounting assembly. An electrical high-pass filter such as the Shure A15HP, inserted between the microphone and the Voicegate input, can be helpful in reducing troublesome low-frequency background noise.

SPECIAL CONSIDERATIONS

Attenuation Selection:

The Voicegate as supplied is connected for 16 dB of attenuation when input is below trigger level. Under some circumstances, less attenuation may be desirable in order to provide a more subtle Voicegate action. This may be accomplished by an internal jumper change (to be performed by qualified service personnel only) as outlined below:

1. Unplug the power cord from the ac outlet.
2. Remove two bright-plated No. 8 (large) Phillips head sheet metal screws from the bottom, near rear of unit.
3. Remove one black No. 6-32 Phillips-head machine screw from each side of unit.
4. Remove cover by pulling straight up.
5. Carefully remove the printed-circuit board jumper from the terminal post labeled —16 by grasping the push-on terminal with long-nose pliers and pulling straight away from the board.
6. Push the terminal over the post labeled —12 or —6, as desired.
7. Replace the cover and fasten with the four screws previously removed.

Sensitivity Range Modification:

The level of background noise entering the microphone may in some cases be high enough to cause triggering with the Sensitivity control set to 0. The trigger level may be increased and the sensitivity thus reduced approximately 17 dB by a simple modification. This may be performed by qualified service personnel only, as outlined below:

1. Unplug the power cord from the ac outlet.
2. Remove the cover as previously outlined in steps 2 through 4 of Attenuation Selection above.
3. Locate resistor R133B, 5.6 kilohms, near the center of the lower half of the printed circuit board. See the printed circuit board parts placement diagram, Figure 4.

* Designed to mate with Cannon XL series, Switchcraft A3 (Q.G.) series or equivalent connector.

4. Using diagonal cutting pliers, clip the leads of R133B between the body of the resistor and the solder connections, and remove this resistor.
5. Replace the cover and fasten with the four screws previously removed.

Optional Accessories

Rack Panel Kit—
Dark Gray-Brown Finish Model A62R

Rack Panel Kit—
Black Finish Model A62R-BL

Output Cable—
18" (457 mm) long with professional three-pin male (1) and female (1) audio connectors designed to mate with Cannon XL series, Switchcraft A3 (Q.G.) series or equivalent connectors Model A53C

GUARANTEE

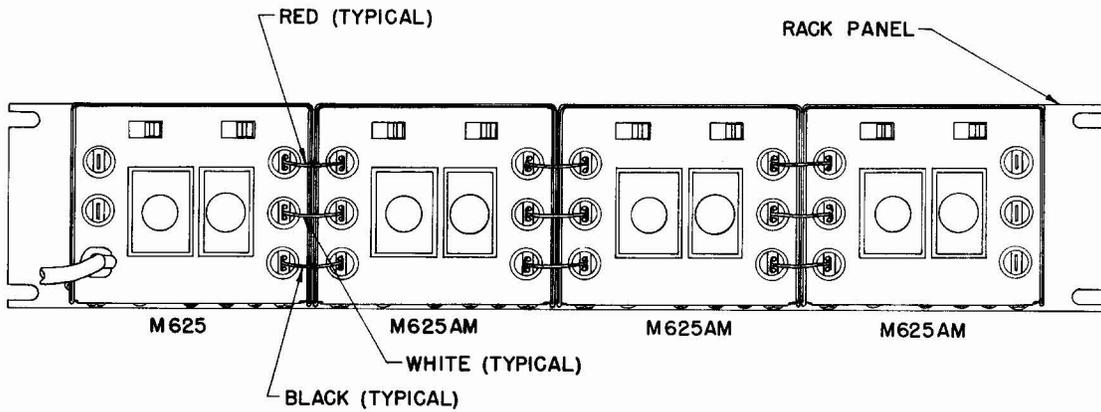
This Shure product is guaranteed in normal use to be free from electrical and mechanical defects for a period of one year from date of purchase. Please retain proof of purchase date. This guarantee includes all parts and labor. This guarantee is in lieu of any and all other guarantees or warranties, express or implied, and there shall be no recovery for any consequential or incidental damages.

SHIPPING INSTRUCTIONS

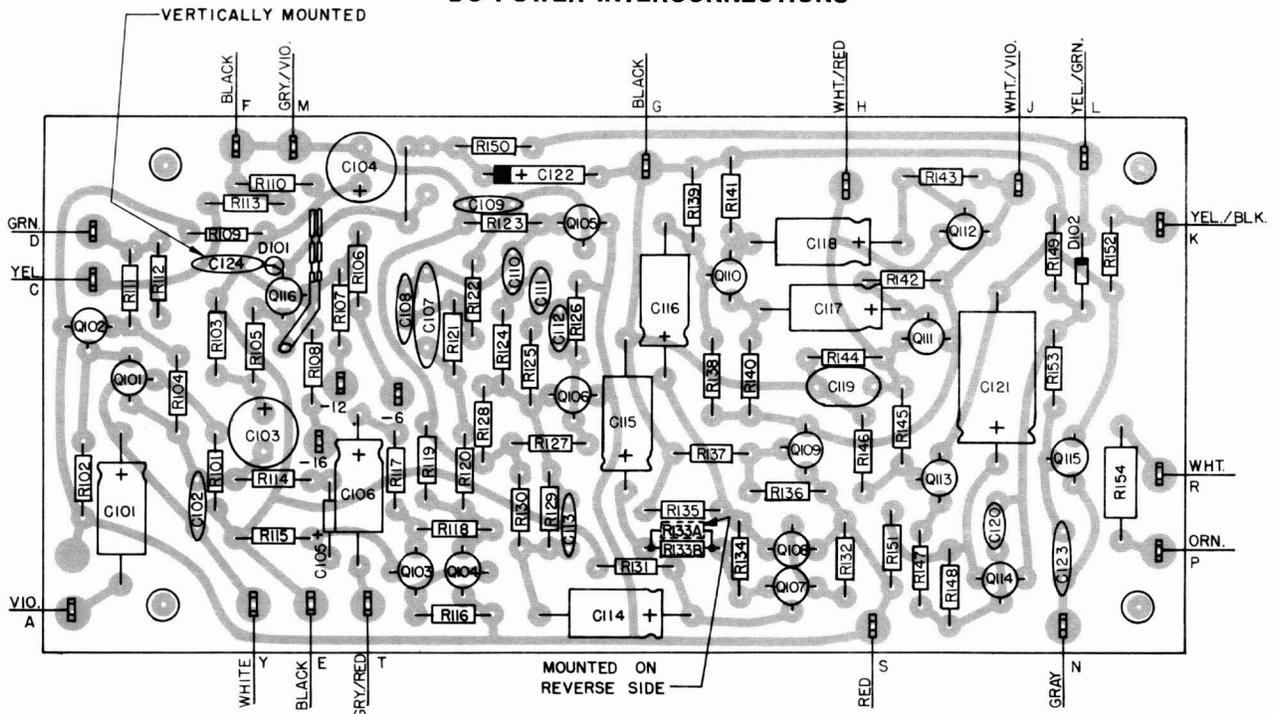
Carefully repack the unit and return it prepaid to:

Shure Brothers Incorporated
Attention: Service Department
1501 West Shure Drive
Arlington Heights, Illinois 60004

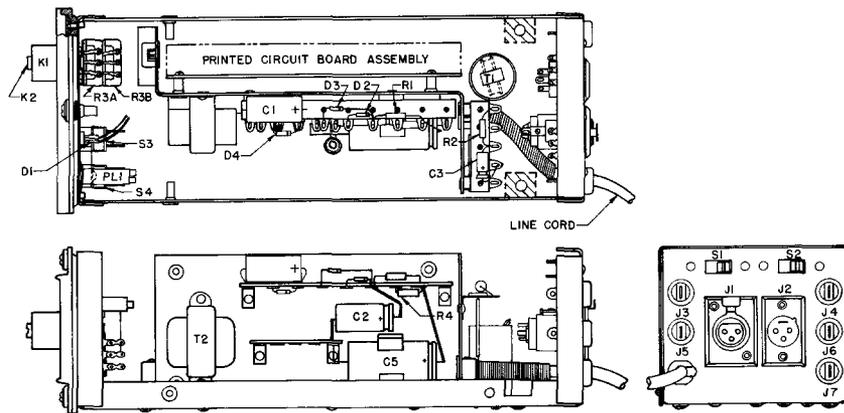
If outside the United States, return the unit to your dealer or Authorized Shure Service Center for repair. The unit will be returned to you prepaid.



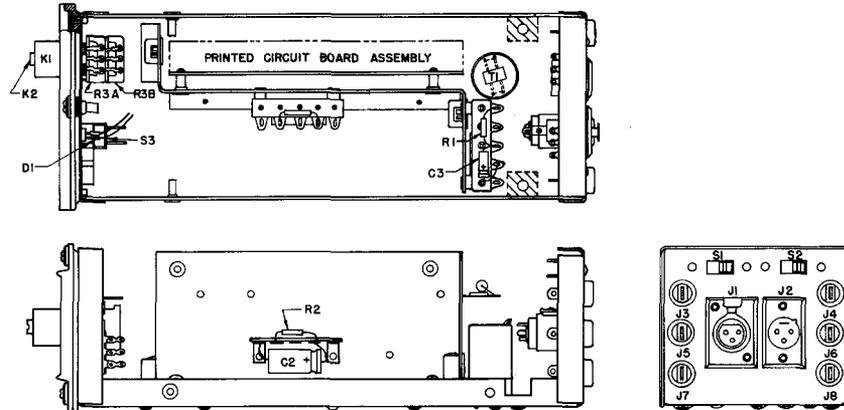
**FIGURE 3
DC POWER INTERCONNECTIONS**



**FIGURE 4
PRINTED CIRCUIT BOARD ASSEMBLY**



MODEL M625 PARTS PLACEMENT



MODEL M625AM PARTS PLACEMENT

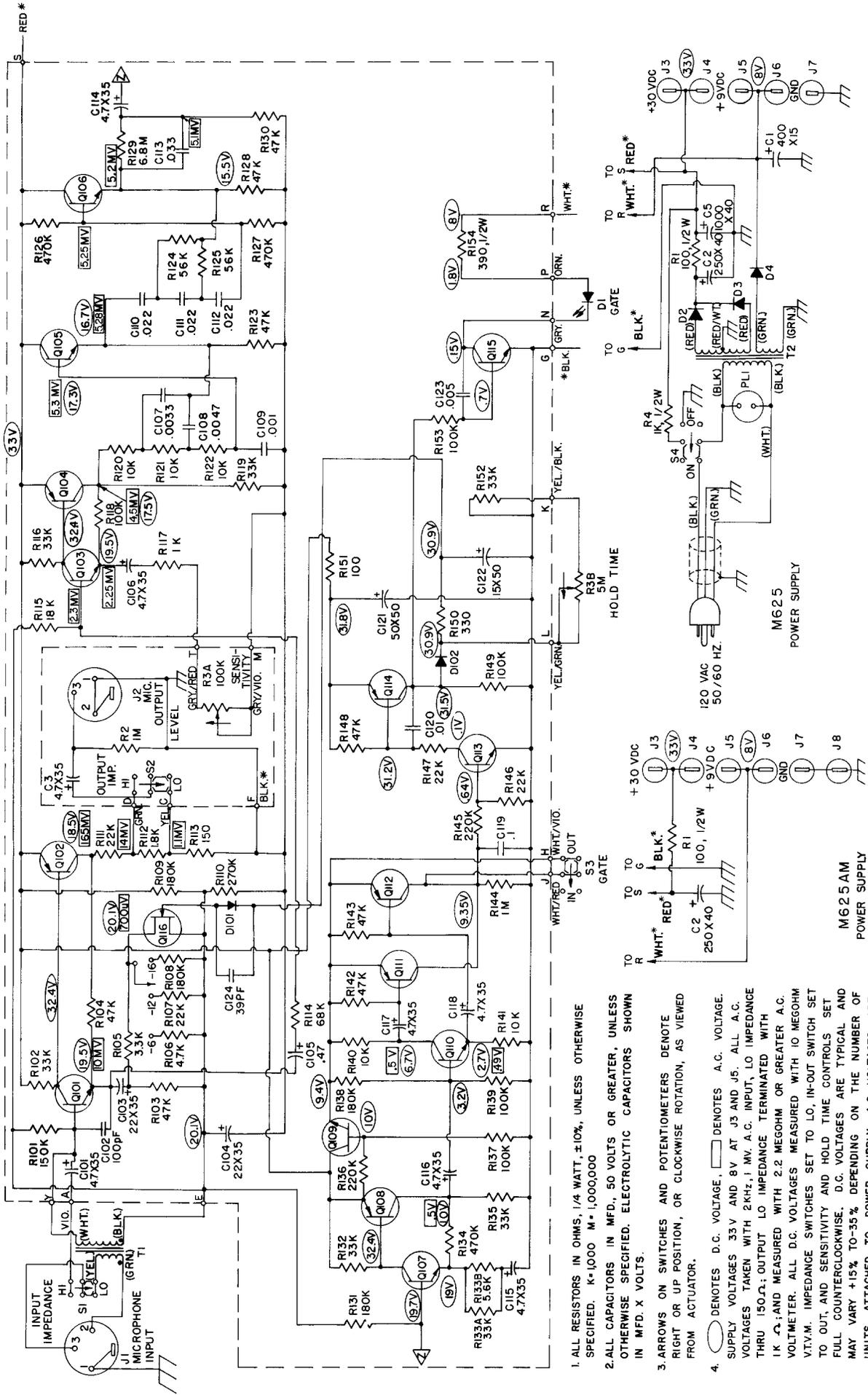
M625 AND M625AM REPLACEMENT PARTS LIST

ITEM	SHURE PART NO.	SHURE KIT NO.*	QTY. IN KIT	DESCRIPTION	COMMERCIAL ALTERNATE
C122	86C636			CAPACITOR, 15 X 50 WET SLUG TANTALUM	NONE
D1	90A1989	RKC133	1 EA.	DIODE LAMP ASS'Y/MTG. CLIP AND RING	MONSANTO MV5023
D2, 3, 4	86A404	RKC21	4	DIODE, SILICON, 500 mA 200 PIV	1N4002
D101, 102	86A415			DIODE, SILICON, LOW LEAKAGE	1N4148
J1	95B246			CONNECTOR, INPUT	SWITCHCRAFT D3F
J2	95B247			CONNECTOR, OUTPUT	SWITCHCRAFT D3M
J3, 4, 7 & 8	95A226, 95B226			D.C. RECEPTACLE RED AND BLACK	NONE
J5, 6	95C226			D.C. RECEPTACLE WHITE	NONE
K1	65B992A			OUTER KNOB (SENSITIVITY)	NONE
K2	90A1985			INNER KNOB (HOLD TIME)	NONE
PCB-1	90A2122			P. C. BOARD ASSEMBLY	NONE
PL1	80A79	RKC45	1	NEON PILOT LIGHT ASS'Y WITH INTERNAL RESISTOR	NONE
Q101	86A350	RKC89	4	TRANSISTOR, SILICON, NPN SELECTED HI GAIN LOW NOISE	2N5210
Q102, 104, 108	86A348			TRANSISTOR, SILICON, PNP SELECTED HI GAIN LOW NOISE	2N5087
Q103, 105, 106, 107, 109, 110, 113 & 115	86A349	RKC9	4	TRANSISTOR, SILICON, NPN SELECTED HI GAIN LOW NOISE	MOTOROLA MPS 6521
Q111, 112, 114	86A335	RKC66	1	TRANSISTOR, SILICON, NPN	T.I. TIS93
Q116	86A329			F.E.T., JUNCTION, N-CHANNEL	MOTOROLA 2N5458
R3A, 3B	46A047			DUAL POTENTIOMETER, 100 K & 5 MEG.	NONE
S1, 2	55A54	RKC10	4	SLIDE SWITCH D.P.D.T. SLOTTED	CONTINENTAL WIRT G-326
S3	55E107			SLIDE SWITCH D.P.D.T.	NONE
S4	55E103			SLIDE SWITCH D.P.D.T. W/SOLDER SHIELD	NONE
T1	90D2150			TRANSFORMER AND SHIELD ASSEMBLY	NONE
T2	51A253	RKC15	1	POWER TRANSFORMER (M625)	NONE
	56A196			FEMALE WIRE TERMINALS	NONE
	90A1986A			COVER ASSEMBLY	NONE
	90GF1371			4 FEET AND 4 SCREWS	NONE
	95A632			LINE CORD, AC, GROUNDED, 9-FT, (21/64" DIA.) (M625)	BELDEN 17408
	95A495			LINE CORD, AC, GROUNDED, 9-FT, (EARLY PRODUCTION: 17/64" DIA.) (M625)	BELDEN 17238

NOTE: The commercial alternates shown above are not necessarily equivalents, but may be used in the event that direct factory replacements are not immediately available. To maintain specifications and reliability, Shure Factory replacement parts should be used.

* Order replacement parts under this number when applicable. If no part number is shown in this column, order under Shure part number.

MODELS M625 AND M625AM VOICEGATE CIRCUIT DIAGRAM



1. ALL RESISTORS IN OHMS, 1/4 WATT, ±10%, UNLESS OTHERWISE SPECIFIED. K=1,000 M=1,000,000
2. ALL CAPACITORS IN MFD, 50 VOLTS OR GREATER, UNLESS OTHERWISE SPECIFIED. ELECTROLYTIC CAPACITORS SHOWN IN MFD. X VOLTS.
3. ARROWS ON SWITCHES AND POTENTIOMETERS DENOTE RIGHT OR UP POSITION, OR CLOCKWISE ROTATION, AS VIEWED FROM ACTUATOR.
4. ○ DENOTES D.C. VOLTAGE, □ DENOTES A.C. VOLTAGE. SUPPLY VOLTAGES 33V AND 8V AT J3 AND J5. ALL A.C. VOLTAGES TAKEN WITH 2KHZ, 1 MV. A.C. INPUT, LO IMPEDANCE THRU 150Ω; OUTPUT LO IMPEDANCE TERMINATED WITH 1K Ω; AND MEASURED WITH 2.2 MEGOHM OR GREATER A.C. VOLTMETER. ALL D.C. VOLTAGES MEASURED WITH 10 MEGOHM V.T.V.M. IMPEDANCE SWITCHES SET TO LO. IN-OUT SWITCH SET TO OUT, AND SENSITIVITY AND HOLD TIME CONTROLS SET FULL COUNTERCLOCKWISE. D.C. VOLTAGES ARE TYPICAL AND MAY VARY +15% TO -35% DEPENDING ON THE NUMBER OF UNITS ATTACHED TO POWER SUPPLY. A.C. VOLTAGES ARE TYPICAL AND MAY VARY ±15%.
5. WIRES ARE NO.24 AWG EXCEPT: *—NO.20 AWG, ()—INTEGRAL COMPONENT LEAD.