



The Shure Models M68 and M68FC are five-channel, portable microphone mixers for use with sound reinforcement, tape recording and audio-visual systems.

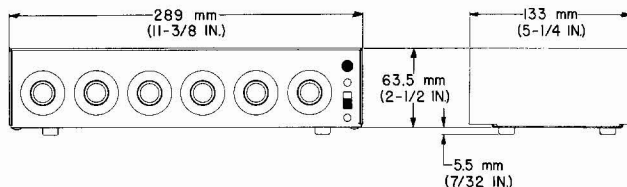
#### Features:

- Four microphone inputs with individual slide switches for selection of low impedance (balanced or unbalanced) or high impedance (unbalanced)
- High-level auxiliary input suitable for tape, tuner, and accessories
- Individual volume control to balance each input
- Master volume control to simultaneously control level of all inputs
- High- (unbalanced) or low-impedance (balanced or unbalanced) microphone level output. Impedance selected to match microphone input of associated amplifier
- High-impedance auxiliary output
- DC power supply jack supplies 28 volts dc for use with accessories or may be used as power input in connection with Model A67B Battery Power Supply
- Facility for connecting two or more mixers together to obtain additional microphone inputs (two mixers connected together give a total of eight microphone inputs and one auxiliary input)
- Listed by Underwriters' Laboratories, Inc., and by Canadian Standards Association as Certified

#### SPECIFICATIONS

Gain (at 1,000 Hz)

INPUT	OUTPUTS		
	Low Imp. Mic.	High Imp. Mic.	High Imp. Aux.
Low Imp. Mic.	+6 dB	+30 dB	+57 dB
.5 mV produces	1.0 mV	15.5 mV	355 mV
High Imp. Mic.	-16 dB	+8 dB	+35 dB
5 mV produces	.78 mV	12.7 mV	285 mV
Aux.	-38 dB	-14 dB	+13 dB
50 mV produces	.64 mV	10 mV	227 mV



OVERALL DIMENSIONS  
FIGURE 1

#### Frequency Response

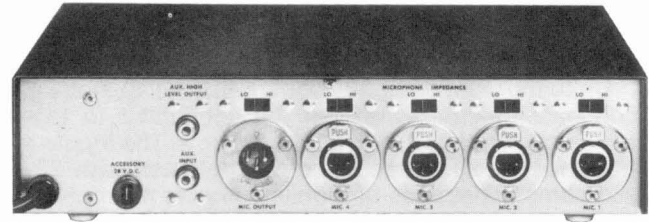
Flat  $\pm 3$  dB, 40 Hz to 20,000 Hz

#### Hum-Noise

70 dB below rated output (Aux. Output)

#### Equivalent Input Noise

150 ohm source, 123 dB below 1 volt



#### Impedance

INPUT	DESIGNED FOR USE WITH	ACTUAL IMPEDANCE
Low Imp. Mic.	Balanced or unbalanced 25 to 600 ohm microphones	300 ohms
High Imp. Mic.	Unbalanced 10 to 50 kilohm microphones	60 kilohms
Auxiliary	100 ohm to 10 kilohm unbalanced high-level sources	40-70 kilohms*
OUTPUT	DESIGNED FOR USE WITH	ACTUAL IMPEDANCE
Low Imp. Mic.	Balanced or unbalanced 25 to 600 ohm microphone-level circuits	150-300 ohms*
High Imp. Mic.	Unbalanced 10 to 50 kilohm microphone-level circuits	30-40 kilohms*
Auxiliary	Unbalanced high-impedance (10 kilohms or greater) auxiliary circuits	2.5-3 kilohms*

\*Depending upon control settings

#### Clipping Levels (minimum)

INPUT	CLIPPING LEVEL
Low Imp. Mic.	30 mV
High Imp. Mic.	450 mV
OUTPUT	CLIPPING LEVEL
Low Imp. Mic.	60 mV
High Imp. Mic.	850 mV
Auxiliary	4 volts

#### Distortion

Less than 1% total harmonic distortion when low-impedance microphone output is at 20 mV level, high-impedance microphone output is at 200 mV level, and auxiliary output is at 2.0 volt level

#### Phase

All microphone inputs and outputs are in phase. Auxiliary input and output are in phase with each other but out of phase with pin 3 of microphone connectors

#### Operating Voltage

AC Operation: 108-132 volts, 50/60 Hz, 3W  
 DC Operation: 28 volts dc  $\pm 20\%$ , 5 mA

#### Dimensions

See Figure 1

#### Net Weight

1.8 kg (4 lb)

#### INSTALLATION

#### WARNING

To reduce the risk of fire or electric shock, do not expose this appliance to rain or extreme moisture.

#### Connection Between Components

For balanced-line connection use two-conductor, shielded, low-capacity cable. For unbalanced (high-impedance) connection, use single-conductor, shielded, low-capacity cable.

## Grounding

If there should be objectionable hum, connect the metal chassis of the mixer to a good ground such as the metal frame of a wall outlet, or a water or steam pipe. This is normally accomplished automatically through the ground wire of the power cord.

## INPUT CONNECTIONS

### Microphones

Up to four low- or high-impedance dynamic, ribbon, or condenser microphones can be connected to receptacles marked Mic 1, Mic 2, Mic 3, Mic 4. The inputs are designed for low-impedance microphones with 25 to 250 ohms impedance or high-impedance microphones. Both low-impedance or high-impedance microphones can be used simultaneously. The unit is not recommended for use with crystal or ceramic microphones. The impedance is selected by a slide switch above the input receptacle. The input receptacles are professional audio connectors (three-pin on the M68 and three-socket on the M68FC)\*. See Figure 2 for low- and high-impedance connections to receptacle.

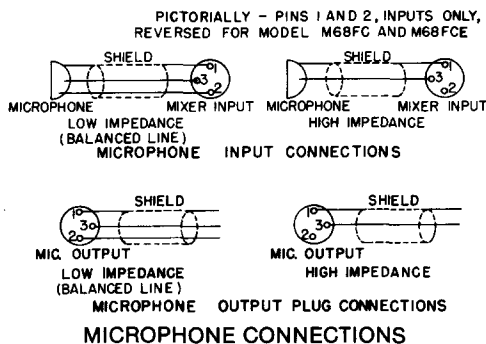


FIGURE 2

**NOTE:** Some condenser microphones produce very high output signals which may overload the mixer input. A Shure Model A15AS Microphone Attenuator placed between the microphone and the mixer input will eliminate this problem.

### Auxiliary

The phono jack on the rear of the panel marked Aux Input will accept output from a high-impedance, high-level source such as a tape recorder, am-fm tuner, or phono cartridge preamplifier. The Model A68M Microphone Preamplifier can be connected to this jack to provide a fifth microphone input.

## OUTPUT CONNECTIONS

### Microphone

The receptacle marked Mic Output is a dual-impedance output selected by the switch above the receptacle. This output is the "mixed" output of all the input sources and is designed to work into a 25 to 600-ohm microphone line or into a high-impedance amplifier or tape recorder microphone input. The receptacle is a professional three-pin audio connector\*. See Figure 2 for output receptacle connections.

### Auxiliary

The phono jack marked Aux High Level Output is a high-impedance high-level output designed primarily to feed a power amplifier requiring 0.5 to 2 volts, or the auxiliary or tuner input to an amplifier or tape recorder.

### Accessory 28-volt DC

The rear panel jack, marked Accessory 28 V.D.C. provides 28 Vdc open circuit (20 Vdc at 5 mA max.) for accessories such as the Model A68M Microphone Preamplifier. The jack is also used as a power input when using the Model A67B Battery Supply.

**CAUTION:** The 28 Vdc input circuit of the M68 is not fused. An external 28 Vdc source should be provided with a 0.125A, 250V in-line fuse as a safety precaution.

## OPERATION

### Power

Connect the mixer power cord to the proper ac power outlet (see Operating Voltage under Specifications).

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

### Volume Controls

The Master gain control and individual gain controls for each of the five channels are identified on the front panel. The individual gain controls should generally be set near maximum (fully clockwise) and the Master gain control adjusted to required output. Individual channel gain controls not being used should be kept at minimum gain (fully counterclockwise).

## CONNECTING TWO UNITS

Two M68 mixers may be combined to give a total of eight microphone channels plus an auxiliary input as follows.

1. Connect Aux High Level Output of Unit 1 to Aux Input of Unit 2.
2. Connect microphones to mixers and set each microphone input control to "0".
3. Take output signal for recorder or PA amplifier from appropriate output jack on Unit 2.
4. Set Master control on Unit 1 to 4.
5. Set Aux control on Unit 2 to 10.
6. Master control on Unit 2 is now Master for all inputs.
7. Advance Master control (Unit 2) to about 5 and adjust individual microphone controls for proper level. If overall gain is too low or too high, Master control (Unit 2) can be adjusted.
8. If input to auxiliary channel is needed, such as for tape recorder or tuner, use Aux Input on Unit 1. Use Aux control on Unit 1 for level adjustment of Aux source. Master gain control for entire system is Master control on Unit 2.

## 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.

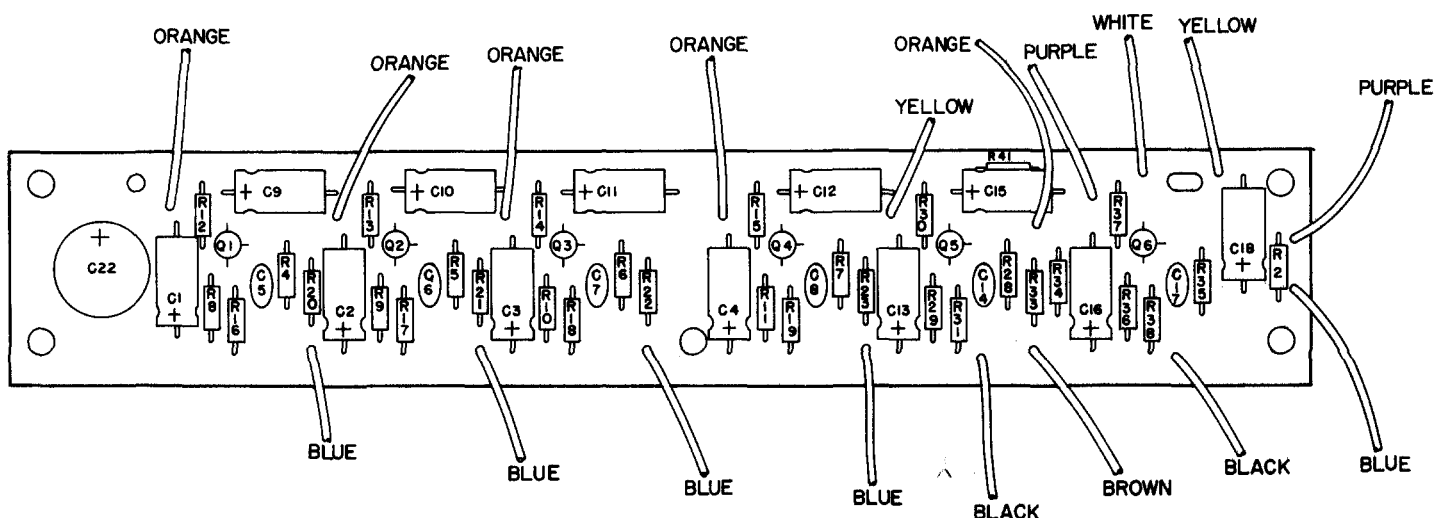
## SHIPPING INSTRUCTIONS

Carefully repack the unit, have it insured, and return it prepaid to: Shure Brothers Incorporated  
Attention: Service Department  
222 Hartrey Avenue  
Evanston, Illinois 60204

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.

## OPTIONAL ACCESSORIES

Battery Power Supply ..... Model A67B  
Locking Panel ..... Model A68L  
Rack Panel Kit ..... Models A68R, -BL  
Microphone Preamplifier ..... Model A68M  
Microphone Attenuator ..... Model A15AS



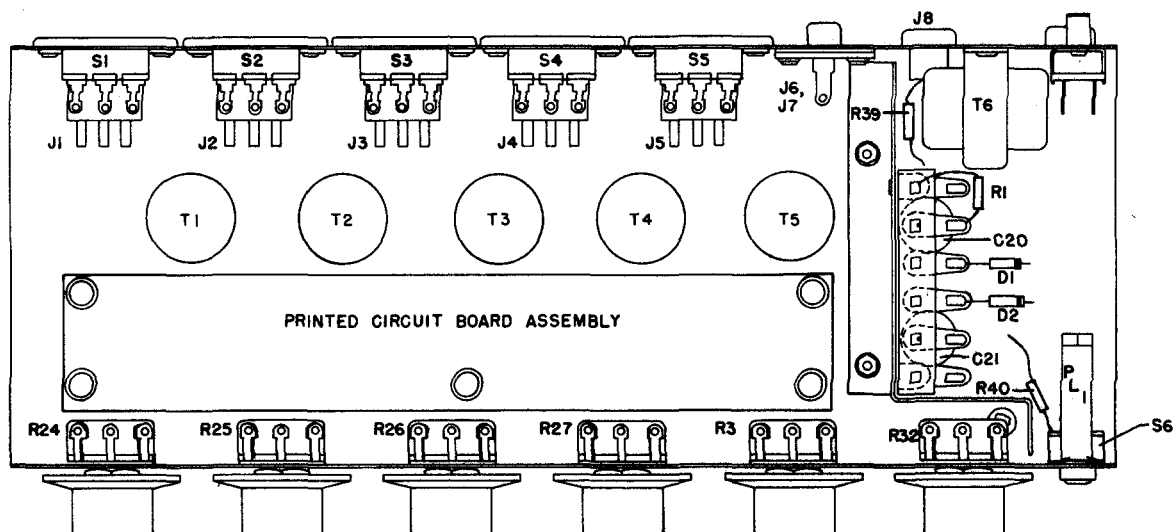
## PRINTED CIRCUIT BOARD ASSEMBLY

### WARNING

Voltages in this equipment are hazardous to life.  
Refer servicing to qualified service personnel.

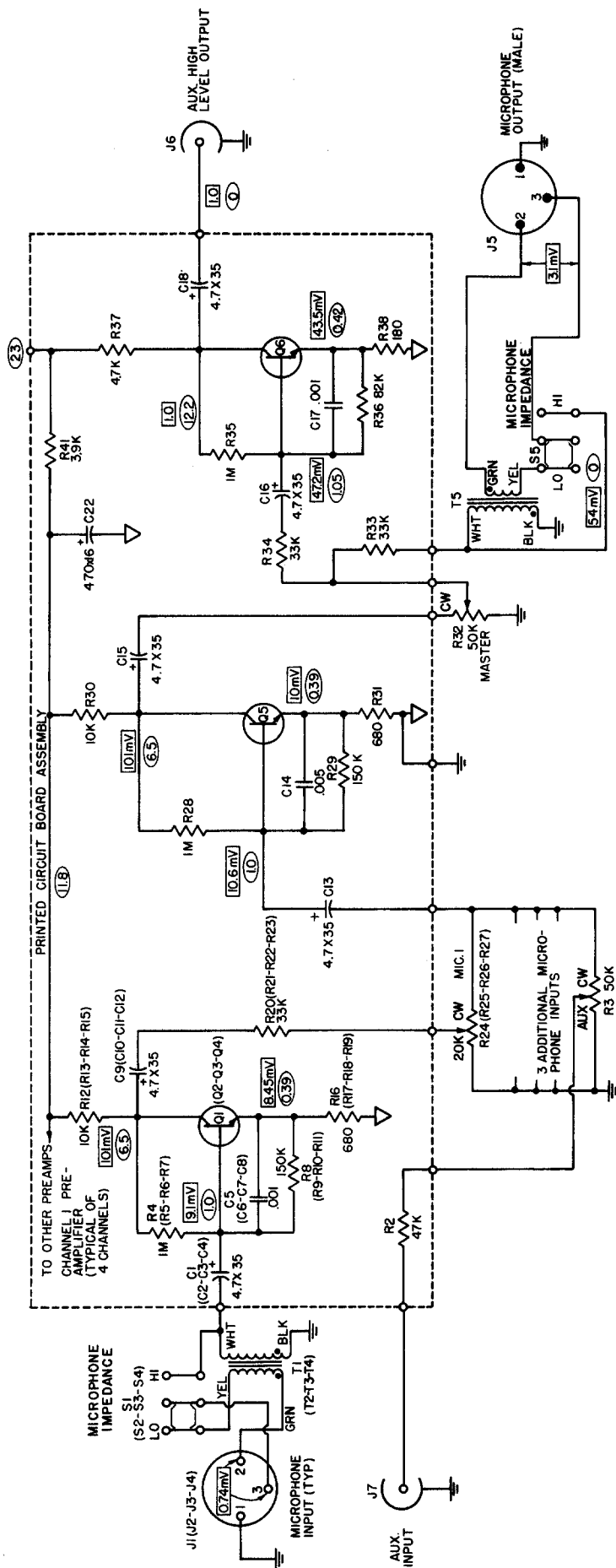
### PARTS LIST

PART	PART NUMBER	QTY.	DESCRIPTION
D1, D2	RKC21	4	DIODE, SILICON (1N4002 OR EQUIVALENT)
PL1	RKC45	1	NEON PILOT LIGHT ASSEM. (RESISTOR INTERNAL)
Q1-Q6	RKC9	4	NPN TRANSISTOR, SILICON, SELECTED HIGH GAIN, LOW NOISE (SIMILAR TO MOTOROLA 2N5088)
R3, R32	46A011	1	POTENTIOMETER, 50K
R24, R27	46A010	1	POTENTIOMETER, 20K
S1-S5	RKC10	4	SWITCH, SLIDE, DPDT
S6	55B103	1	SWITCH, SLIDE, DPDT, 3A
S7	55A66	1	SWITCH, SLIDE, DPDT, 3A
T1-T5	90M2150	1	TRANSFORMER-SHIELD ASSEMBLY
T6	51A252	1	POWER TRANSFORMER
	RKC6	1	KNOB (BLACK)
	RKC67	1	KNOB (GRAY)



### PARTS PLACEMENT

# MODELS M68 AND M68FC MICROPHONE MIXERS CIRCUIT DIAGRAM



NOTES:  
1. ALL CAPACITORS IN  $\mu$ F AND 100 VOLTS OR MORE UNLESS OTHERWISE SHOWN. ELECTROLYTIC CAPACITORS SHOWN IN  $\mu$ F X VOLTS.

2. ALL RESISTORS 10%, 1/4 WATT UNLESS OTHERWISE SHOWN.

3. THE FOLLOWING SYMBOLS DENOTE:

CHASSIS GROUND  $\downarrow$  WIRING  $\nabla$  PC BOARD  
COMMON GROUND BUSES

4. DENOTES AC VOLTAGES

DENOTES DC VOLTAGES

ALL VOLTAGES MEASURED WITH A C LINE 120V, ALL IMPEDANCE

SWITCHES SET TO LO, MIC. I AND MASTER CONTROLS MAX, ALL

OTHERS MIN. MIC. I INPUT 1 KHZ SUCH THAT AUX. OUTPUT IS 1 VOLT

AUX. OUTPUT LOADED WITH 47K OHMS AND MIC. OUTPUT LOADED

WITH 150 OHMS. DC VOLTAGES MEASURED WITH II MEGOHM VTVM

AC VOLTAGES MEASURED WITH I MEGOHM AC VTVM VALUES

ARE TYPICAL AND MAY VARY  $\pm 15\%$ .

5. ALL COMPONENTS AND CONNECTIONS ENCLOSED BY DASHED LINES ARE PARTS OF PRINTED CIRCUIT BOARD ASSEMBLY.

