



BOGEN[®]
A DIVISION OF LEAR SIEGLER, INC.

STUDIO MIXER-PREAMPLIFIER

MODEL CSM

DESCRIPTION

The Bogen Model CSM Studio Mixer-Preamplifier is a solid state unit providing four balanced, low-impedance microphone channels, each with a gain control and a low-cut speech filter switch. A rear panel switch converts microphone channel 4 to a line input that is switchable for either 600-ohm line or bridging input, and another rear panel switch converts microphone channel 1 into a test tone oscillator. A master gain control sets

the composite output, whose level is shown on an illuminated VU meter. A front panel meter range switch permits the meter zero level to be set at either +4 dBm or +10 dBm.

The mixer-preamplifier has a balanced high-level output that provides up to +18 dBm into a 600-ohm line, and a balanced low-level output to drive a low-impedance microphone input. The Model CSM also has a two-level headphone jack that permits the output to be monitored with headphones having a 600 to 2,000-ohm impedance range.

TECHNICAL SPECIFICATIONS

Rated Output:	Line, +18 dBm maximum; Mic Output, 6.2 mV		
Output Impedance:	Line, 600 ohms; Mic Output, 25 to 600 ohms		
Headphone Output:	With Line output at +4 dBm and 600 to 2,000 ohm load: 1st plug detent, 150 mV Plug fully inserted, 250 mV		
Frequency Response:	± 1½ dB 20 to 20,000 Hz		
Microphone Inputs:	4 Lo-Z (25-600 ohm) balanced or unbalanced, transformer coupled, 1 convertible to Line (600 ohm) or bridging (47k ohm)		
Auxiliary Input:	None		
Equivalent Input Noise:	-129 dBV		
Equivalent Input Hum and Noise:	-125 dBV		
Test Tone:	One MIC channel switchable to provide 700 Hz test tone		
Distortion:	Less than 1% at +18 dBm, 20 to 20,000 Hz		
Gain:	Input	Lo-Z Mic	Output
	Lo-Z MIC	30 dB	Line 90 dB
	600 ohm/Bridging Line	-20 dB	40 dB
Mixing and Control Interaction:	Active Mixing (No Gain Change with Additional Inputs) Control Interaction: less than 0.2 dB		
Indicators:	Illuminated VU Meter with Two-Level Range Switch, +10 dBm and +4 dBm		
Semiconductors:	3 Integrated Circuits, 2 Transistors, 8 Diodes		
Controls:	4 Lo-Filter (Speech Filter, each Channel), Master Gain, 4 Microphone Gain, Meter Range, Power On-Off, MIC/Line, Bridging Line/600-ohm Line, Tone Osc.		
Operating Temperature Range:	-20° to +55°C		
Power Consumption:	120 Vac 60 Hz @ .074 Amps; 24-28 Vdc @ 90 mA, capable of supplying 2 CSM-E extenders		
Dimensions:	11-3/8"W x 2-7/8"H x 7-3/4"D		
Weight:	5 lb.		
Input/Output Connections:	MIC Input: 3-pin female (Cannon XLR); Line Output: 3/4" spaced binding posts; Headphone Output: 2-circuit phone jack		

The CSM may be mounted in a standard 19-inch equipment rack (using Bogen Model RPK-35 Rack Mounting Kit) or flush within a wall (using Bogen Model WMK-1 In-Wall Mounting Kit). It may be powered either from 120 Vac, 60 Hz or 24-28 Vdc sources.

mixer-preamplifier and any extenders powered from it. The CSM is supplied with a pair of push-on lugs for connecting the external dc supply to the EXT. SOURCE power input receptacle.

INSTALLATION

UNPACKING

The unit was carefully checked before leaving the factory. Inspect both the unit and its shipping container carefully for indications of improper handling. Report any equipment damage immediately to the distributor from whom the unit was purchased. If the unit was shipped to you, notify the shipping carrier without delay and place your claim.

POWER AND GROUNDING

PRIMARY AC POWER. The ac line cord has a three-prong plug which should be plugged into a three-wire, grounded 120 volt, 60 Hz outlet. It is important to ground the unit. If a grounded, three-wire outlet is not available, install an adapter (e.g., Leviton No. 5017) and connect the pigtail lead to the grounded wall plate mounting screw. If this screw is not grounded, connect a wire from the GND terminal of the unit to a conduit pipe or other electrical system ground.

AUXILIARY DC POWER. The CSM may be powered from an external 24 to 28 Vdc supply connected to the mixer-preamplifier. The supply may remain connected even when the unit is powered from a 120 Vac source. The power switch disconnects both the dc and ac supplies, turning off both the

CAUTION

Observe polarity on all dc power connections (red to +).

INPUT/OUTPUT CONNECTIONS

Make all input connections and output connections as directed in table 1 and shown in figures 1 and 2.

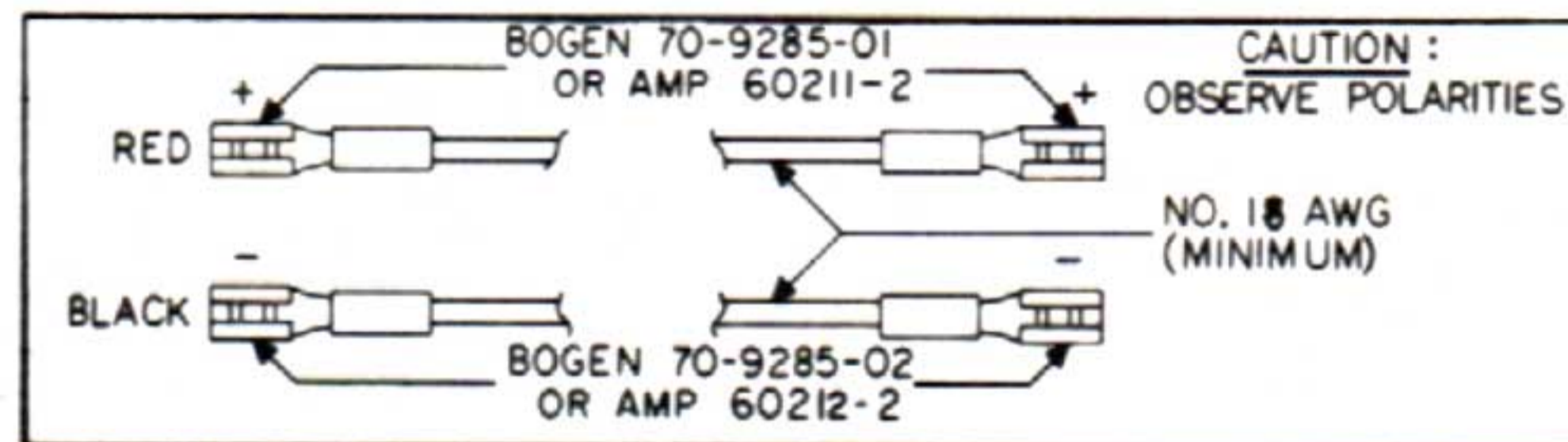
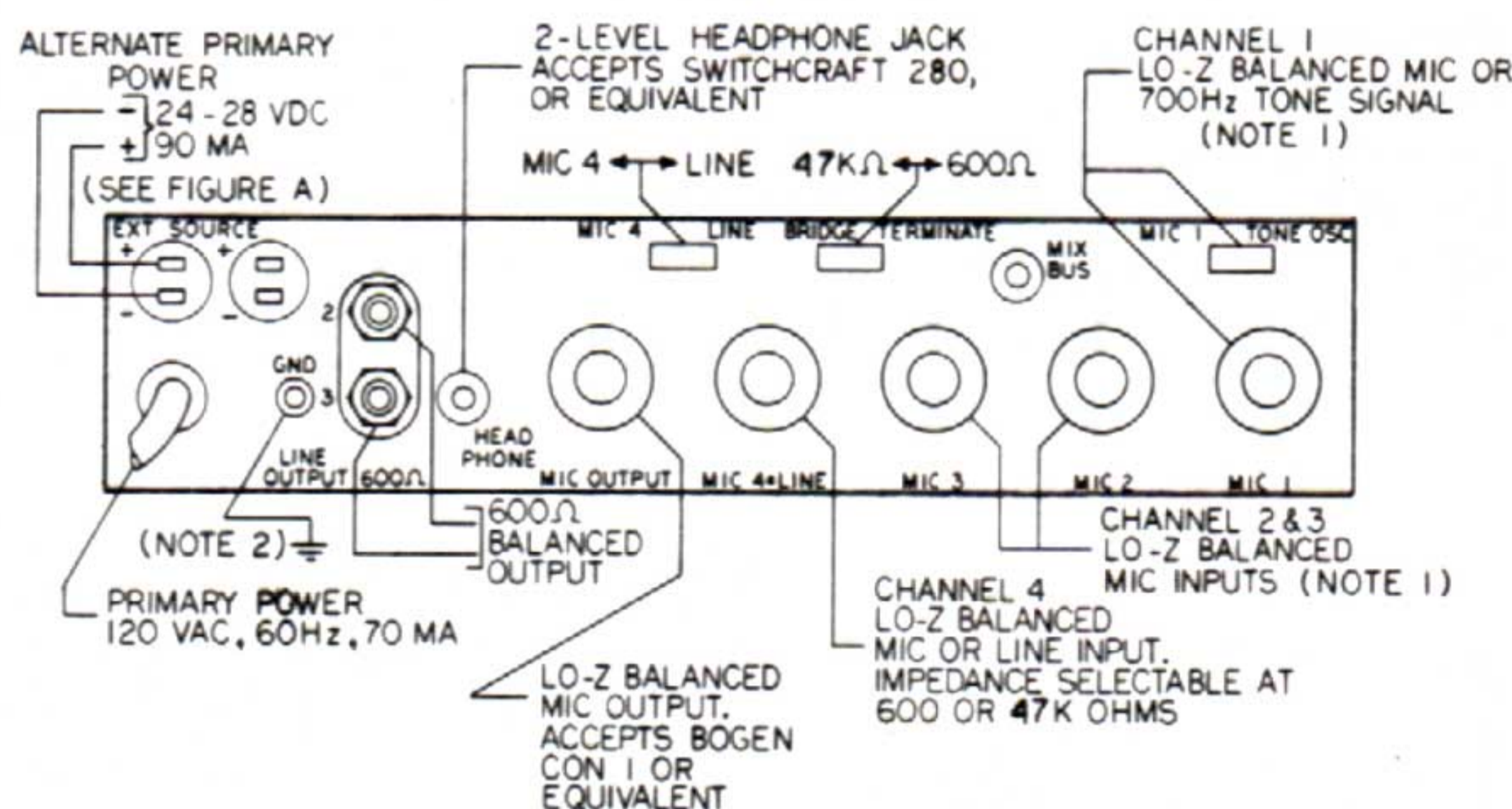


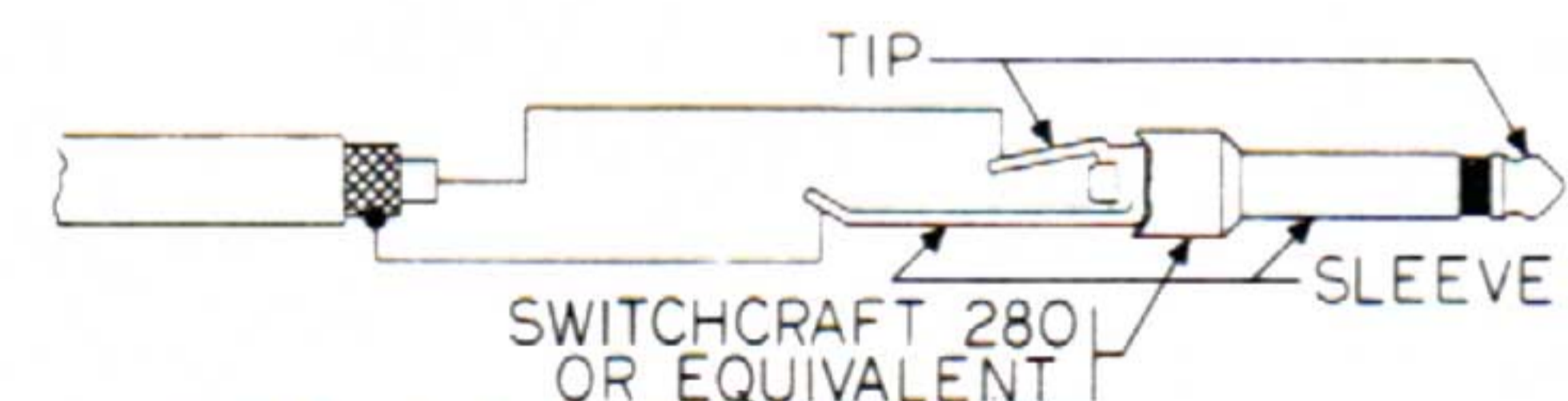
FIGURE A

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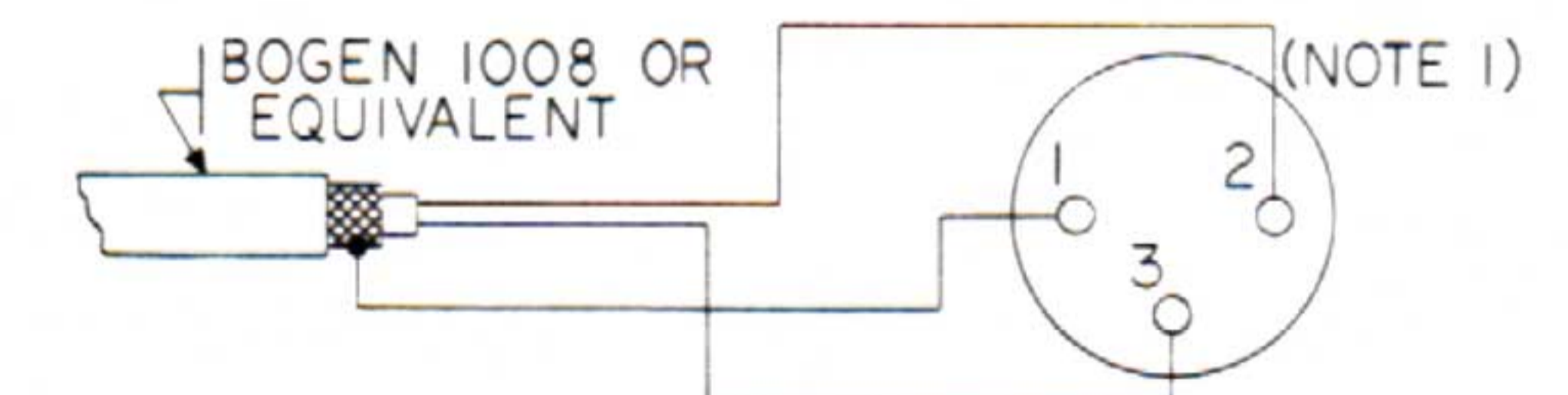
NOTES

1. ACCEPTS CANNON XLR-3-12C, SWITCHCRAFT A3M, OR EQUIVALENT PLUG.
2. IF 3 WIRE GROUNDED AC OUTLET IS NOT AVAILABLE, CONNECT WIRE FROM 'GND' POST TO ELECTRICAL SYSTEM GROUND.

Figure 2 — CSM Connection Diagram



A) HEADPHONE OUTPUT CONNECTION



B) BALANCED MIC INPUT OR OUTPUT CONNECTION*

NOTES

1. FOR MIC INPUT USE CANNON XLR-3-12C, SWITCHCRAFT A3M, OR EQUIVALENT. FOR MIC OUTPUT USE BOGEN CON 1, CANNON XLR-3-11C, OR EQUIVALENT.

- 2* FOR UNBALANCED MICS CONNECT PINS 1 & 3 TOGETHER; CONNECT MIC BETWEEN PINS 2 & 3.

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Figure 1 — Headphone and Microphone Connections

ACCESSORIES

RPK-35 RACK PANEL

The Bogen Model RPK-35 rack panel is designed to mount the CSM in a standard 19-inch sound rack. The rack panel is finished in gray enamel.

WMK-1 IN-WALL MOUNTING KIT

The Bogen Model WMK-1 In-Wall Mounting Kit is designed to mount the CSM flush in a wall. Depth of the mounted unit is 3½ inches.

TABLE 1. INPUT/OUTPUT CONNECTIONS

(See figures 1 and 2)

Input Connections

Microphone	2-conductor shielded cable terminated with Cannon XLR-3-12C, or equiv. Connect balanced or unbalanced (see figure 1).
Mixing Bus	Single conductor shielded cable terminated with Cinch 13A, or equiv.
Auxiliary	Same as above. Provides 50k-ohm input with 150 mV sensitivity.

Output Connections

Line	For balanced output, connect 2-conductor cable to terminals 2 and 3 with shield (if used) to GND post. For unbalanced output, connect high side of load to either terminal 2 or 3 and return side to GND post.
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CAUTION: Do not connect output terminals together or to ground.

Microphone	2-conductor shielded cable terminated with Bogen CON-1, or equiv. Connector pins 2 and 3 are in phase with LINE output 2 and 3.
Headphone	Cable terminated with a standard tip-sleeve, 1/4" phone plug, such as Switchcraft 280, or equiv. Headphone impedance may be 600 to 2000 ohms. Three-wire jack provides two-level output (refer to Technical Specifications).

CONTROL OPERATION

TABLE 2. CONTROLS AND INDICATORS

Control or Indicator	Function
Front Panel	
POWER switch	Controls both ac and dc power.
POWER indicator (on VU meter)	Lights when ac power is applied. Not functional with dc power source.
MASTER volume	Determines overall output level. Set as follows: 1. Rotate clockwise to 6 or 7 on dial. 2. Set individual MIC controls to highest expected level. 3. Return MASTER control to desired output level as indicated on VU meter.
MIC volume	Sets output level of corresponding microphone channel.
MIC 4/LINE volume	Same as MIC volume, above. Sets level of line input, if rear panel switch is in LINE position.
MIC 1/TONE	Same as MIC volume. Sets level of 700 Hz tone signal, if rear panel switch is in TONE OSC position.
LO-CUT FILTER switch	When set to IN, provides corresponding channel with 10 dB cut at 100 Hz for sharper speech reproduction.
VU RANGE switch	Selects meter range for zero indication at either +4 dBm or +10 dBm.
Rear Panel	
MIC 4/LINE switch	Set to MIC 4 for lo-z, balanced microphone input. Set to LINE for line-level inputs.
BRIDGE/ TERMINATE switch	Determines impedance of line-level input. TERMINATE position: Impedance is 600 ohms. BRIDGE position: Impedance greater than 47k ohms.
MIC 1/TONE OSC switch	For use in adjusting system levels. When set to TONE OSC, injects 700 Hz signal into Mic Channel 1.

MAINTENANCE

CAUTION

There are no user replaceable parts within the unit. Have all internal servicing done by qualified service personnel.

BOGEN SERVICE

We are interested in your Bogen equipment for as long as you have it. If trouble ever develops, do not hesitate to ask our advice or assistance. Information can be obtained by writing to Service Department, Bogen Division, P.O. Box 500, Paramus, N.J. 07652.

When communicating with us, give the model and series designation of your unit. Describe the difficulty and include details on the electrical connections to associated equipment, and list such equipment. When we receive this information, we will send you service information if the trouble appears to be simple. If the trouble requires servicing, we shall send you the name and address of the nearest Bogen authorized service agency to which you can send your unit for repairs.

When shipping your unit, pack it well, using the original shipping carton or a similar container and filler material, to prevent damage in transit. Send the unit fully insured and prepaid. The unit will be promptly repaired and returned to you express collect.

REPLACING COMPONENTS

All semiconductor components are soldered in place to ensure maximum reliability. When soldering transistors or diodes, use a heat sink (such as a small alligator clip) between

the component and the source of heat. Unless you are experienced in the removal of IC micromodules, do not attempt to remove them because excessive heat can damage an IC and/or the printed circuit board. If you are certain that an IC is defective, the easiest method of removal is to cut the leads off close to the component and unsolder the leads individually. If you are not certain an IC is defective, the use of a low-wattage, vacuum-type desoldering tool (such as Ungar Type 7800) is advised.

CAUTION

Improper soldering may damage components or the printed circuit board, and such damage can void the warranty.

REPLACEMENT PARTS

Most components used in the unit are standard parts available through reputable parts jobbers. The parts listed here may be obtained from Bogen distributors, service agencies, or directly from the factory. When ordering a part, specify the part number and the model of the unit. Also, give the SERIES designation, which is a letter followed by numbers, usually stamped on the chassis directly under the model designation. For parts on printed circuit boards, include the PC board assembly number, which begins with "45".

Standard components may be obtained from any reputable source if no manufacturer is specified. Where a manufacturer is specified, only that manufacturer's component should be used. Resistors designated "AB" on the schematic diagram must be Allen-Bradley.

REPLACEMENT PARTS LIST

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
A1	45-9949-01	PC board assy.	T1-4	83-058-000	Transformer, mic
C6	79-008-049	Electrolytic, 500 μ F, 35 V			<i>Chassis electrical</i>
C26	79-008-054	Electrolytic, 2 μ F, 50 V			
C27, 30, 36	79-008-051	Electrolytic, 25 μ F, 35 V	DS101-2	94-0197-01	Lamp, 14 V, GE #19
C32-34	79-008-045	Electrolytic, 330 μ F, 25 V	M101	94-1353-01	VU meter
C40, 41	79-008-044	Electrolytic, 1000 μ F, 35 V	SW101, 103, 104-106	81-003-066	Switch, slide, DPDT
C43	79-008-048	Electrolytic, 50 μ F, 25 V	SW102	81-003-059	Switch, slide, DPDT
CR1	96-5344-05	Diode, zener, 20 V	SW107	81-003-065	Switch, slide, DPDT, 3A
CR2-5	96-5118-01	Diode, 30 mA, 15 piv	SW108	81-003-066	Switch, slide, DPDT
CR6-9	96-5333-01	Diode, 1A, 400 piv, IN4004	T101	83-781-000	Transformer, power
IC1, 2	96-5375-01	Dual preamp, LM387N			<i>Miscellaneous</i>
IC3	96-5374-01	Dual amp, LM377	—	03-0592-01	Knob, mic-master-aux vol. control
Q1, 2	96-5213-01	Transistor, 2N5089 or			
	96-5346-01	Transistor, BC239C			
R1-4	77-001-739	Control, mic vol., rev. log, 1M			
R39	77-001-710	Control, master vol., linear, 200k			

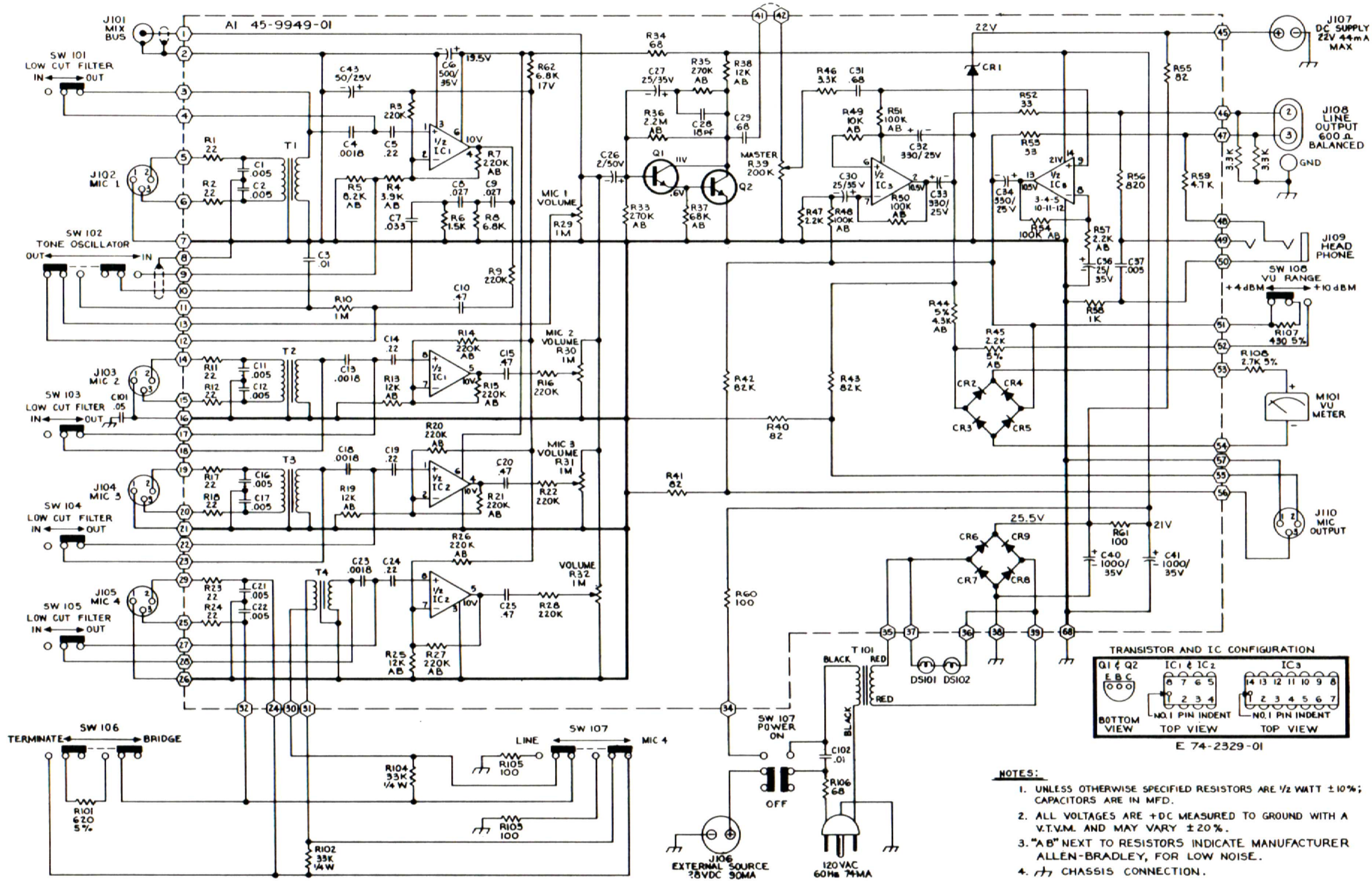


Figure 3 — Model CSM Studio Mixer-Preamplifier, Schematic Diagram.

OWNER'S WARRANTY

Bogen warranties all equipment—except batteries—against defects in material or workmanship for one full year from the date of installation (tubes, cartridges and pilot lights—90 days). Any part of the equipment covered by this warranty which, with normal installation and use, becomes defective will be repaired by Bogen, provided the equipment is insured and delivered or shipped prepaid to an authorized service station or to the Bogen Factory Service Department, Route 4 and Forest Avenue, Paramus, New Jersey 07652. Products under warranty may be picked up by you personally or will be returned to you freight prepaid. This warranty does not extend to any of our products which have been subjected to misuse, improper storage, neglect, accident, improper installation or have been modified or repaired in any manner which Bogen believes may affect the reliability of the product, or where the serial number or date code has been removed or defaced.

Products which are out of warranty will be repaired by any authorized Bogen Service Station or the Bogen Factory Service Department—same address as above. All shipping charges in addition to parts and labor charges will be at the owner's expense.

Defective products or parts (whether in warranty or not) may be returned without prior authorization from the factory. It is necessary, however, that you enclose a memo with the shipment explaining in detail the precise nature of the complaint, date of purchase, equipment model (if only the defective part is returned) and any additional information which will be of assistance to the Service Department.

This warranty is in lieu of all warranties expressed or implied and no representative or person is authorized to assume for us any other liability in connection with the sale of our products. This warranty does not include liability for any indirect or consequential damages.

