DESCRIPTION

The Bogen Models CHS-35B, CHS-60B, and CHS-100B solid-state public address amplifiers are rated 35 watts, 60 watts, and 100 watts, respectively.

Two input channels are provided for low-impedance balanced microphone inputs. Both channels may be converted for use with high-impedance microphones by means of rearranging jumpers on the printed circuit board (see schematic diagram, note 4). A phantom supply is provided for the use of condenser microphones. One of these channels is equipped with built-in microphone precedence, activated by an external switch, and remote volume control (with optional RVC-2B).

An optional accessory, PMM-2B, designed to mount on the front panel of the amplifier, provides two additional microphone input channels. These added channels have all the capabilities of the basic channels, such as low-impedance microphones, precedence and/or an additional remote volume controlled channel— with an RVC-2B unit—and the same accessories are applicable to them.

Two auxiliary input channels, with separate controls, are provided on the amplifier for a tuner, tape/cassette player, a turntable with a ceramic cartridge, or a Multiple Tone Generator, Model TG-4B. These channels and one microphone channel can be muted for special announcements over another microphone channel.

IN and OUT receptacles are provided for easy connection of a reverb unit or an acoustic equalizer to the amplifier.

Provision is made for using an accessory transformer to feed a signal from a 500/600-ohm telephone line into the amplifier or to connect the output of the amplifier to a 500/600-ohm telephone line.

The output of the amplifier can also be connected from the Booster jack to a booster amplifier or from the Tape Out jack to a tape/cassette recorder. The tape output jack is independent of the amplifier master volume and tone controls.

INSTALLATION

The amplifier was carefully checked before leaving the factory. Inspect shipping container and unit carefully for indication of improper handling. If the unit has been damaged, make an immediate claim to distributor from whom it was purchased. If the amplifier was shipped to you, notify the carrier without delay and place your claim.

POWER AND GROUNDING

The amplifier is furnished with an ac line cord terminated in a three-prong plug. The line cord should be plugged into a three-wire grounded outlet providing a nominal 120-volt, 60 Hz power source. This will ground the amplifier as well as supply power to it.

It is important to ground the amplifier. Therefore, if a three-wire outlet is not available, an adapter such as Leviton No. 5017 should be used to convert a standard two-wire outlet for use with three-wire plugs. The adapter is provided with a grounding pigtail which should be connected to the screw holding the wall plate to the receptacle.

In some areas, the wall plate screw is not grounded. In this case it will be necessary to connect a grounding wire from the GND terminal on the rear chassis of the amplifier to a water or steam pipe.

AUXILIARY POWER

Caution

Use the ON/OFF switch on a phonograph or other auxiliary unit connected to the auxiliary receptacle, as the power switch on the amplifier does not control this receptacle.

The auxiliary power receptacle on the rear chassis is a three-wire grounded outlet which can supply power to accessory equipment in the sound system. Be sure that the accessory component does not require more than 300 watts. The power switch does not control this receptacle.

Associated equipment connected to the auxiliary receptacle with a three-prong line cord will be grounded, providing the amplifier line cord has been properly grounded.

INPUT CONNECTIONS

LOW-IMPEDANCE BALANCED MICROPHONES: The amplifier is designed for direct connection of low-impedance balanced microphones to the two MIC input receptacles of the amplifier. The microphone lead should be a two-conductor shielded cable terminated in a Cannon XLR-312-C or Bogen CON-2 connector, as shown in Figure 1.

HIGH-IMPEDANCE MICROPHONES: The microphone lead should be a single-conductor shielded cable under 35 feet in length and terminated in a Cannon XLR-312-C or Bogen CON-2 connector, as shown in Figure 1. For information regarding the use of high-impedance microphones, see notes on the schematic diagram.

MICROPHONE PRECEDENCE: A built-in circuit provides microphone precedence at MIC 1, over the MIC 2 and AUX channels. An SPST normally-open switch is required for this function. When the contacts are closed, the MIC 2 and AUX channels are muted.

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TECHNICAL SPECIFICATIONS

POWER OUTPUT (RMS @ 1000Hz)
CHS-100B: 100 watts
CHS-60B: 60 watts
CHS-35B: 35 watts

FREQUENCY RESPONSE
2 Lo-Z balanced Mic inputs (200 ohms), each convertible to Hi-Z or condenser mics
±2dB 70 Hz to 12 kHz

SENSITIVITY
Aux. 0.15V; Hi-Z Mic 3mV; Lo-Z unbalanced 0.3 mV; Lo-Z balanced 0.3 mV

HUM & NOISE
2 Aux. (500k); Reverb (20k)

INPUTS (Impedance)
4, 16 ohms, 25 V. center tapped (6.25 ohms) and 70 V. (49 ohms) bal. lines.

OUTPUTS (Impedance)
8, 16 ohms, 25 V. center tapped (10.4 ohms) and 70 V. (82 ohms) bal. lines.

2 Lo-Z balanced Mic inputs (200 ohms), each convertible to Hi-Z or condenser mics
Tape (650 mV at 1k ohms); Booster (5V at 10k ohms); WMT-1 output 500/600 ohms
Reverb (650 mV at 1k ohms)

2 Lo-Z balanced Mic inputs (200 ohms), each convertible to Hi-Z or condenser mics

CONTROLS
Mic. 1, 2, Volume; Aux. 1, 2, Volume; Master Volume, Bass, Treble, Power Switch (lighted)

13 silicon transistors
1 zener diode
7 silicon diodes
2 integrated circuits

TONE CONTROL ACTION
Bass 50 Hz + 9 dB to –12 dB; Treble 12 kHz + 9 dB to –12 dB

11 silicon transistors
1 zener diode
7 silicon diodes
2 integrated circuits

SEMICONDUCTORS
120 V, 60 Hz, 2.5 A, 300 W.
2.5A Hold

POWER CONSUMPTION
120 V, 60 Hz, 1.6 A, 120 W.
1.65A Hold

LINE FUSING
120 V, 60 Hz, 0.86 A, 96 W.

Resettable Circuit Breaker

DIMENSIONS
16½" W x 12" D x 3¾" H (41.9 x 30.5 x 9.5 cm)

SHIPPING WEIGHT
19½ lbs. (8.85 kg.)
16 lbs. (7.26 kg.)
14 lbs. (6.35 kg.)

AUX 1 & AUX 2 INPUTS: Two auxiliary inputs with separate controls are provided for high-level, high impedance inputs. These may be used to connect a tuner, tape/cassette player, record player utilizing a ceramic cartridge, or WMT-1 telephone line-matching transformer. An input signal of 0.15 volts is required to obtain full output from the amplifier.

Use single-conductor shielded cable terminated in an RCA phono plug for connecting auxiliary component. If hum is experienced after making connections, run a ground wire between the chassis of the auxiliary unit and the GND terminal of the amplifier.

Figure 1 — Microphone Cable Connections

OUTPUT CONNECTIONS

SPEAKERS: The amplifier may be used with most conventional speaker systems. For detailed information on the installation of multiple speaker systems, refer to the Speaker Installation Bulletin (No. 54-5001) included with this unit.

In permanent installations, where speakers will remain connected to the amplifier, connect the speaker system directly to the Speaker Output terminals on the rear of the amplifier. Connect one speaker lead to the COM terminal and the other to the terminal corresponding to the impedance of the speaker system. For balanced output lines, remove the link between COM and GND output terminals. If the line is shielded, connect the shield to GND. For unbalanced speaker lines, close the link between COM and GND output terminals. Class 2 wiring may be used.

TAPE OUTPUT: A tape recorder may be driven from the TAPE OUT jack on the amplifier. In this case, the output is not subject to the volume or tone setting of the amplifier and is controlled at the tape recorder. A patch cord terminated in a standard phono plug is connected between the TAPE OUT jack on the amplifier and the input of the tape recorder.

BOOSTER OUTPUT: The amplifier may be used to drive a booster amplifier. Connect a patch cord with an RCA phono plug from the BOOSTER jack on the rear panel of the amplifier to the input of the booster amplifier. The output at this jack is controlled by the amplifier's volume.
ACCESSORIES

Caution

The installation of internal accessories requires the removal of the cover, which presents an electrical shock hazard. For this reason, these accessories should be installed by qualified technicians only.

PMM-2B MICROPHONE MODULE: The Bogen PMM-2B Microphone Module is a preamplifier designed to provide two additional microphone channels for the amplifier. Each preamplifier channel has its own volume control and will accommodate either low-impedance balanced or high-impedance microphones. These added channels have all the characteristics of the basic channels, and the same accessories are applicable to them. The unit is installed and connected as described in the instruction manual furnished with the PMM-2B accessory. See note 6 on the schematic diagram.

WMT-1 LINE-MATCHING TRANSFORMER: The Bogen WMT-1 line-matching transformer provides an impedance match between the amplifier and a 0 level, 500/600-ohm line. This may be a telephone line connected to the switchboard for internal paging or used with a wired music system. No soldering is required to connect the WMT-1 to the amplifier.

To connect the input from a balanced 500/600-ohm telephone line, remove the amplifier cover and mount the WMT-1 in the mounting holes provided on the chassis (see Figure 3). Connect the input line to the three-screw terminal board on the WMT-1. Connect the phone plug on the WMT-1 cable to the AUX 1 or AUX 2 jack on the rear of the amplifier. If these jacks are being used for other sound inputs, the WMT-1 may be connected to one of the MIC inputs. In order to do this, the WMT-1 wiring must be modified as described in the instruction sheet supplied with the WMT-1.

To connect the amplifier output to a 500/600-ohm telephone line, remove the amplifier cover and mount the WMT-1 in the mounting holes provided in the chassis (see Figure 3). Connect the 500/600-ohm line to the three-screw terminal board on the WMT-1. Connect the phone plug on the WMT1 cable to the WMT-1 (OUTPUT) jack (next to the BOOSTER jack) on the rear of the amplifier.

OPERATION

POWER: The front panel switch applies power to the amplifier and is lit when the amplifier is on. It does not control the accessory receptacle on the rear panel.

VOLUME: Individual volume controls are used to adjust the two MIC input channels, the two AUX input channels and for Master volume control. Turn each control clockwise (to the higher numbers) to increase volume. In adjusting these controls, it is recommended that each MIC and AUX control be set to the highest level likely to be used, and regulate overall volume with the Master control.

BASS AND TREBLE: Individual knobs control these functions. Use the BASS control to adjust the tonal balance of the amplifier output. Rotation in the counterclockwise direction reduces the bass response. It may also be used to remove low-frequency noise such as phono rumble or hum. In situations where acoustic feedback is likely, rotate the Bass control counterclockwise to reduce the feedback and to obtain higher volume levels than would otherwise be possible.

Rotation of the Treble control counterclockwise reduces the high frequency response of the amplifier. It may also be used to remove high-frequency noise, such as record scratch.

Figure 2 — Connecting Amplifiers in Series

Figure 3 — Mounting Holes for WMT-1
NOTES:
1. UNLESS OTHERWISE SPECIFIED: ALL RESISTORS ARE 1/4 WATT ±10%, CAPACITORS ARE IN MFD.
   VOLTAGES ARE DC ±120% AS MEASURED WITH A VTVM.
2. WIRE CONNECTION TO ORANGE LEAD OF OUTPUT TRANSFORMER.
   ON ALL AMPLIFIERS.
3. REMOVE LINK FOR ACOUSTIC EQUALIZER FILTER OR REVERB.
4. THIS EQUIPMENT IS SHIPPED IN THE BALANCED LOW-Z CONDITION.
   TO CONVERT MIC 1 TO HI-Z, REMOVE JUMPER BETWEEN PINS 13 AND 14.
   THEN REMOVE LEAD FROM PIN 14 AND CONNECT TO PIN 13.
   TO CONVERT MIC 2 TO HI-Z, REMOVE JUMPER BETWEEN PINS 15 AND 16.
   THEN REMOVE LEAD FROM PIN 4 AND CONNECT TO PIN 16.
5. * DENOTES CHASSIS CONNECTION, ** DENOTES COMMON CONNECTION.
6. WHEN USING ADD-ON PRE AMP PMM 2B, CONNECT WIRE FROM PIN 10
   ON PMM 2B TO MIC 4 (REMOTE CONTROL PRECEDENCE) ON TS 101 AND
   CONNECT P1 OF PMM 2B TO J1 ON P.C. BD. OF CHS 8 SERIES AMPLIFIERS.

Figure 4 — Schematic Diagram & CHS 8 SERIES AMPLIFIERS

4
RVC-2B REMOTE VOLUME CONTROL: Connect the RVC-2B to the Remote Control/Precedence terminal (TS101) on the rear of the amplifier. Connect one lead from the accessory to the appropriate MIC 2 or AUX terminal and the other lead to GND. Complete installation instructions are supplied with the RVC-2B accessory.

CFC-1 ACOUSTIC FEEDBACK CONTROLLER: The Bogen Model CFC-1 is a 2/3 Octave Equalizer incorporating ten active 2/3-octave band filters. The CFC-1 can be used with CHS-B amplifiers by removing the Reverb/Equal Link from the rear of the amplifier and connecting the CFC-1 AUX Input and output to those jacks.

MODEL TG-4B MULTIPLE TONE GENERATOR: Model TG-4B Multiple Tone Generator is capable of generating four distinct signals: pulsed tone, slow whoop, repeating chime, and steady tone. Each of these four signals may be applied continuously or limited to a double burst (single burst only of the steady tone) for alarm signalling or pre-announcement. Signals are triggered by an external device that provides a contact closure. Both tone level and pitch are adjustable.

MODEL LPC-4A PHONO PLAYER: The Model LPC-4A is a three-speed AC-operated phono player.

RPK-44 RACK MOUNTING KIT: The RPK-44 rack-mounting brackets are designed to mount the amplifier (with or without the PMM-2B pre-amplifier) in a standard 19-inch sound rack. The brackets are finished in gray metal."
When replacing the output transistors, clean all foreign matter from the heat sink, insulator, and transistor. Brush on a light coating of silicon compound such as Dow Corning No. 340 to completely cover both surfaces of the insulator (Part No. 16-9278-01). Place the insulator between the heat sink and the replacement transistor. Use the original transistor mounting hardware to mount the replacement transistor.

The preceding procedure may require some dismantling of the heat sink. It is therefore important to also clean the contact surface of the thermal breaker and to apply the silicon compound to the thermal breaker before reassembling the heat sink. Make certain the thermal breaker makes firm contact with the heat sink.

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 serial 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 the amplifier well, using the original shipping carton or a similar container and filler material to prevent damage in transit. Remove any plug-in transformer from the p.c. board before shipping. Send the unit, fully insured and prepaid, via UPS or any responsible carrier. The unit will be promptly repaired and returned to you collect.

REPLACEMENT PARTS

Most components used in the amplifier 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 a part number, the model of the unit, and give the series designation, which is a letter followed by numbers, printed on the chassis. For parts on circuit boards, also give the component board assembly number, which begins with "45."

When replacingtransistors, use those made by the specified manufacturers. Transistors from other suppliers may not be satisfactory.

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<td>79-008-033</td>
<td>P.C. Board Assembly Cap., Elect., 2.2µF, 16V</td>
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<td>C10, 11, 40</td>
<td>79-008-046</td>
<td>Cap., Elect., 22µF, 35V</td>
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<td>79-119-001</td>
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<td>96-5456-01</td>
<td>IC, H11F3</td>
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<td>96-5298-01</td>
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<td>Transistor, MPS-A55/KSA59Y</td>
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<td>R9, 10, 34, 35</td>
<td>77-001-808</td>
<td>Control, 1 megohm</td>
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<td>R43, 52</td>
<td>77-001-810</td>
<td>Control, 100kΩ</td>
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<td>R51</td>
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<td>R71, 72</td>
<td>76-107-096</td>
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<td>T1, 2</td>
<td>83-058-000</td>
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Chassis Electrical Components

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Mechanical Components

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<td>14-9088-01</td>
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