

BOGEN[®]
COMMUNICATIONS, INC.

SOUND COLUMNS

MODELS SCW20, SCW35



GENERAL DESCRIPTION

Bogen Models SCW20, SCW35, and SCW80 are heavy duty sound columns designed for sound reinforcement in churches, theaters, auditoriums and similar installations where it is necessary to cover a large area with a minimum number of speakers. The sound column consists of a vertical array of speakers in a specially designed rectangular enclosure. This provides a more effective length of throw than from conventional speakers, as well as a highly directional sound dispersion pattern for reduced reflection from the floor and ceiling of the hall. The precisely controlled dispersion pattern of these columns makes possible a maximum of uniformity in coverage of the desired area, with minimum sound projected into undesired areas.

On all models, the rear panel provides a plate for mounting a line-matching transformer, and a polarized screw-terminal strip. The cone speakers are accessible by removing the rear panel.

In addition, the geometric configuration of the speakers in the column produces a sound dispersion pattern which is quite broad in the horizontal plane but much narrower in the vertical plane. In the 20-watt sound column, the horizontal dispersion pattern is 90 degrees. The vertical dispersion is 45 degrees, which is much less than that of an individual speaker. In the 35- and 80-watt columns, the horizontal dispersion is 120 degrees. The vertical dispersion is 25 degrees.

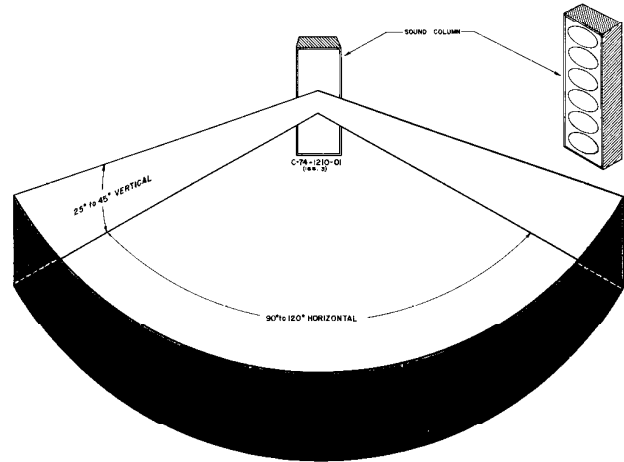


Figure 1 — Horizontal and Vertical Sound Dispersion Pattern of a Sound Column

THEORY OF OPERATION

A sound column consists of a vertical row of speakers enclosed in an acoustically treated rectangular enclosure. The arrangement of the speakers in the column is such that their acoustic output adds up in the forward direction, so that the effective throw of the sound column far exceeds that of the individual cone speakers.

TECHNICAL SPECIFICATIONS

	SCW20	SCW35	SCW80
Wattage Rating (continuous):	20 Watts	35 Watts	80 Watts
Maximum SPL @ 1 watt input, 4' on axis:	100dB	105dB	110dB
Frequency Response:	80-14,000Hz	70-16,000Hz	50-16,000Hz
Speaker Complement:	Four 5-inch	Six 6-inch	Six 8-inch
Impedance:	8 ohms		
Dispersion:	Vertical 45°, Horizontal 90°	Vertical 25°, Horizontal 120°	
Terminals:	2-screw terminal strips, polarized		
Construction:	3/8" particle board, glued and fastened; mounting hardware supplied	1/2" particle board, glued and fastened; mounting hardware supplied	
Finish:	Simulated oiled walnut, black grille		
Dimensions:	20"H x 7-1/2"W x 5"D (50.8 x 19.1 x 12.7cm)	42"H x 9-1/2"W x 6"D (106.7 x 24.1 x 15.2cm)	52"H x 11-1/2"W x 7-1/4"D (132.1 x 29.2 x 18.4cm)
Shipping Weight:	12 lbs. (5.4 kg)	31 lbs. (14.1 kg)	48 lbs. (21.8 kg)

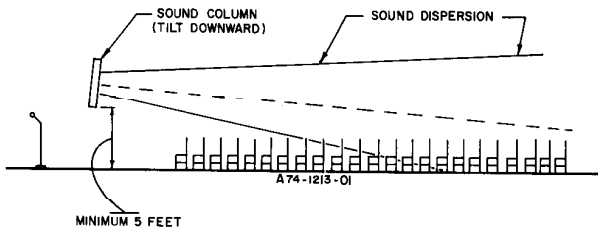


Figure 2 — Typical Sound Column Installation

Because of its configuration, the sound column produces a highly directional “beam” pattern, which permits the sound to be aimed over a well-defined area at the installation site. Since about 90% of the acoustic output of the column is confined to this pattern, there is virtually no random sound available to cause reverberation or reflection. Consequently, a sound column can be properly directed to cover a hall most effectively and to keep reflections away from the floor and ceiling.

with low noise levels, the Model SCW20 is appropriate. Most rooms with average noise levels and up to 100 feet in length will be effectively covered by the SCW35. For even larger rooms, up to 150 feet in length, the SCW80 is the appropriate choice. Larger rooms may require the use of two or more columns, depending upon the overall size and noise levels.

A typical sound column installation is shown in Figure 2. The sound column is placed in the general vicinity of the original sound source (singer, speaker, etc.), as close as practicable to the source. Having the column near the source provides a more natural effect for the audience, and avoids confusing the performer with an echo from a loudspeaker far enough away to cause an appreciable time delay.

The column is placed so that the microphone is below and slightly behind the sound column, to minimize feedback. The sound column is oriented so that its vertical distribution will deliver nearly equal loudness to all listeners, from front to back, except those who are within the effective range of the speaker’s voice. This will usually require that the column be aimed at a point located approximately two-thirds of the way to the rear of the audience.

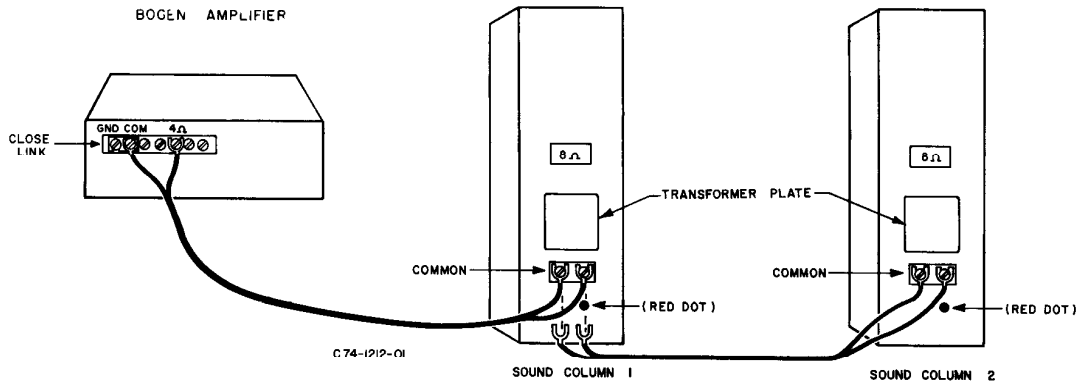


Figure 3 — Connecting One or More Sound Columns to a Bogen Amplifier

LOCATING THE SOUND COLUMN

Proper selection and location of the sound column is critical in any installation. For smaller rooms up to 50 feet in length,

A sound column can be aimed quite accurately at this point by the light reflection method. Attach a small mirror to the face of the column center. Standing at the aiming point with a light directed at the sound column, have the column adjusted for maximum light reflection from the mirror.

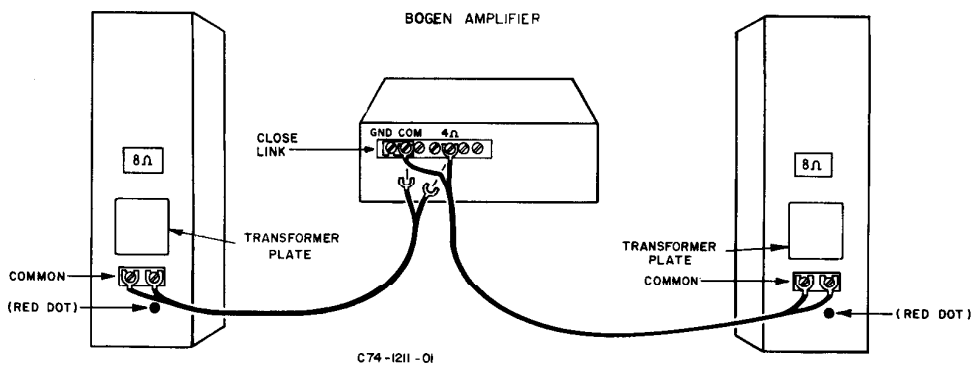


Figure 4 — Connecting Sound Columns from a Centrally Located Bogen Amplifier

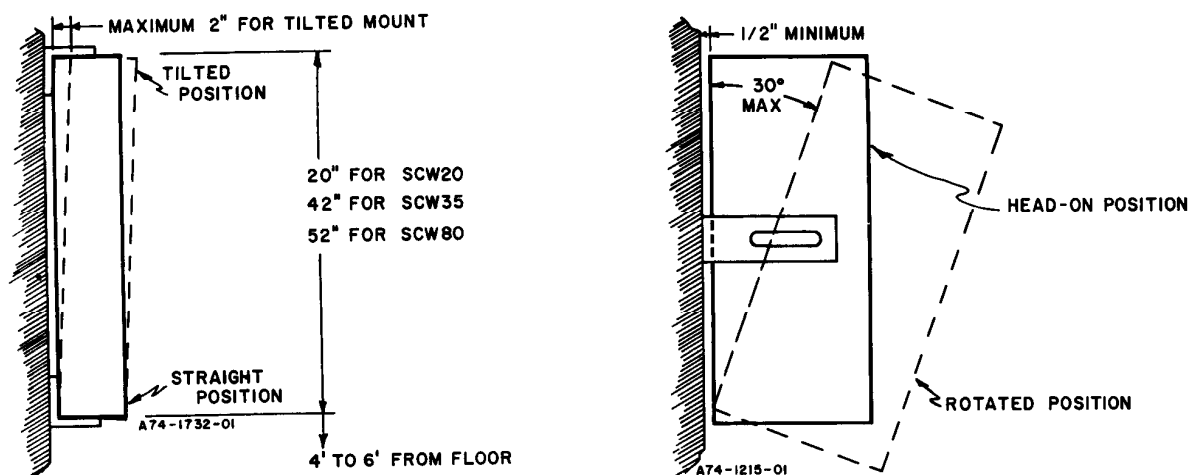


Figure 5 — Mounting Sound Columns in Normal, Tilted, and Rotated Positions

CONNECTIONS TO AN AMPLIFIER

Connect the sound column to a suitable amplifier. Make connections between the speaker terminal strip on the Bogen amplifier and the terminal strip at the rear of the sound column, as shown in Figure 3. Connect the speaker impedance lead to the 8-ohm terminal and the common terminal (or ground terminal).

A second sound column may be connected in parallel with the first column, as shown in Figure 3. When this is done, make terminal connections to the 4-ohm tap on the Bogen amplifier.

If the amplifier can be conveniently located between two sound columns in the installation, connections may be made as shown in Figure 4. Make line connections to the 4-ohm tap on the amplifier.

MOUNTING A TRANSFORMER

A plate is provided on the rear panel for use when mounting a speaker line-matching transformer. Loosen the two holding screws and mount the transformer on the plate.

Locate the red and black wires inside the sound columns. After carefully cutting both wires, strip and identify the wires going to the transformer terminal. Attach the red wire from the terminal strip to the high side of the transformer primary and attach the black wire to the common side of the transformer primary. Connect the other red lead to the 8-ohm winding on the secondary of the transformer. Connect the black lead to the COM terminal on the secondary.

MOUNTING THE SOUND COLUMN

The sound column may be mounted on any flat vertical surface. The bottom of the sound column should be at least five feet off the floor. The exact height will depend on the sound configuration desired and on whether the listeners will be seated or standing when the sound column is in use.

Brackets for mounting the sound column are furnished with the unit. Fasten the mounting brackets to the wall, as shown in Figure 5. The space between the brackets is 20" for the SCW20, 42" for the SCW35 and 52" for the SCW80.

If the sound column is to be mounted in a normal position, without tilting or rotation, connect the brackets to the top and bottom of the sound columns, as shown in Figure 5a. If the sound dispersion pattern requires that the column be rotated from a head-on position, turn the unit to the required angle and fasten the brackets at the top and bottom, as shown in Figure 5b. The sound column should not be rotated more than 30° from a head-on position.

The sound columns may also be tilted, if required, at a particular installation. To aim the sound column downward, the unit is fastened to the brackets as shown in Figure 5a. The extent to which the sound column is tilted should not be so great that the top of the column is more than two inches from the supporting wall.

NOTE

The sound column may be mounted in a horizontal position on the wall or even suspended from the ceiling, if required. If so mounted, the sound dispersion pattern produced will be 90° to 120° in the plane across the sound column and 25° to 45° along the major axis or length of the column.