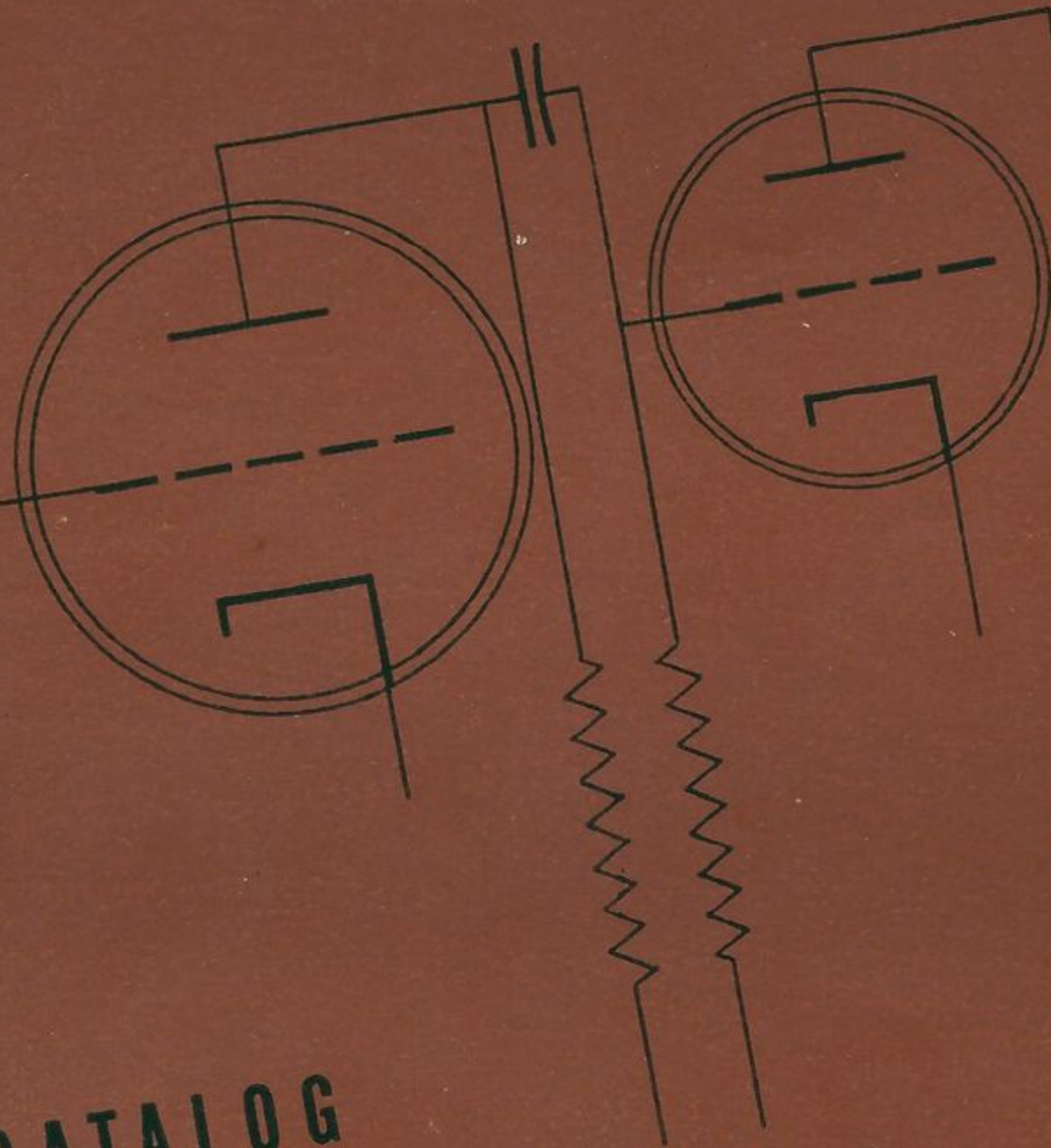
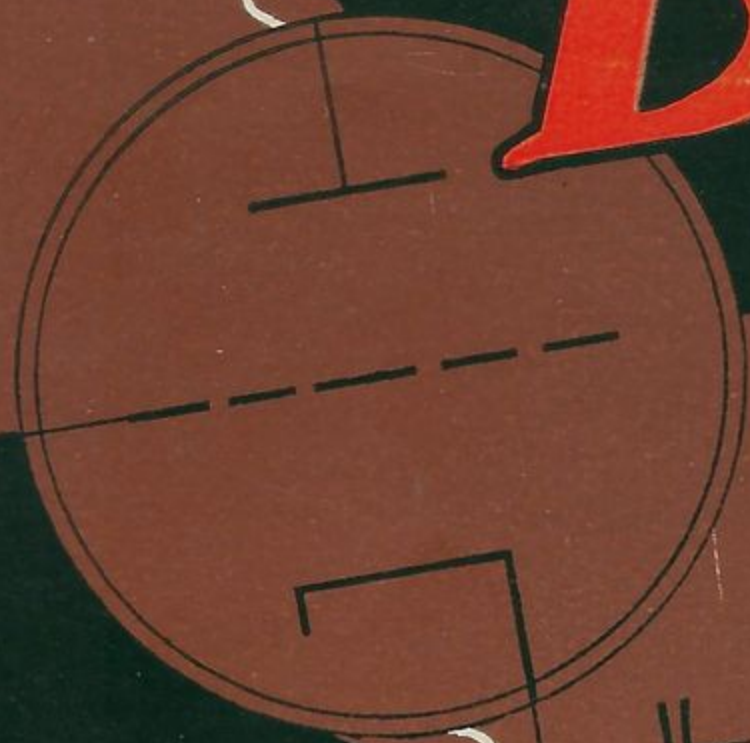


# THE BLUE BOOK OF SOUND EQUIPMENT

AMPLIFIERS • SYSTEMS • PHONOGRAPHS • ACCESSORIES

## Bogen

DAVID BOGEN CO., INC., NEW YORK 12, N. Y.



THE STANDARD OF PERFORMANCE  
Bogen Sound Systems

CATALOG  
P1151A

# The New BOGEN Line

**B**OGEN has been the byword in sound equipment for almost twenty years because the name has proved synonymous with quality performance. Rigorous adherence to specifications, expert workmanship and consistently conservative ratings have enhanced that reputation. It is traditional that Bogen is first with the truly important developments, and the great new amplifiers described in this catalog give meaning and future to that tradition.

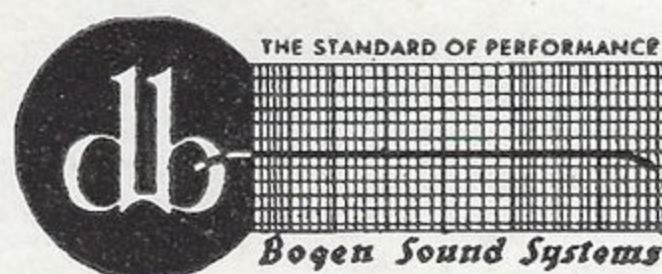
The exclusive ANTI-FEEDBACK control in the HX50 and HX30 Amplifiers has already proved itself a vital contribution to the P.A. art. The consistent use of the RMA recom-

mended Constant Voltage Output method (see page 19), the wide use of the "807" push pull circuits and of cable and harness assemblies and the striking new appearance of all models in the line are but a few of the reasons for continued Bogen leadership. You will find many more throughout the catalog.

Bogen is equally preeminent in other phases of communications. We invite your study of the following additional Bogen catalogs. Your Bogen distributor will be pleased to demonstrate the equipment.

- "MUSIC AS THE MASTERS PLAYED IT" — Bogen High Fidelity Reproduction Equipment
- "FOR THE FINEST OFFICES" — Bogen Deluxe Communo-phones for finest inter-office Communication
- "BOGEN SOUND BROADCASTER" — Industrial Music and Voice Distribution Equipment
- "BOGEN CENTRALIZED SOUND SYSTEMS" — The most complete line of Central Control School and Hospital Equipment

DAVID BOGEN CO., INC.



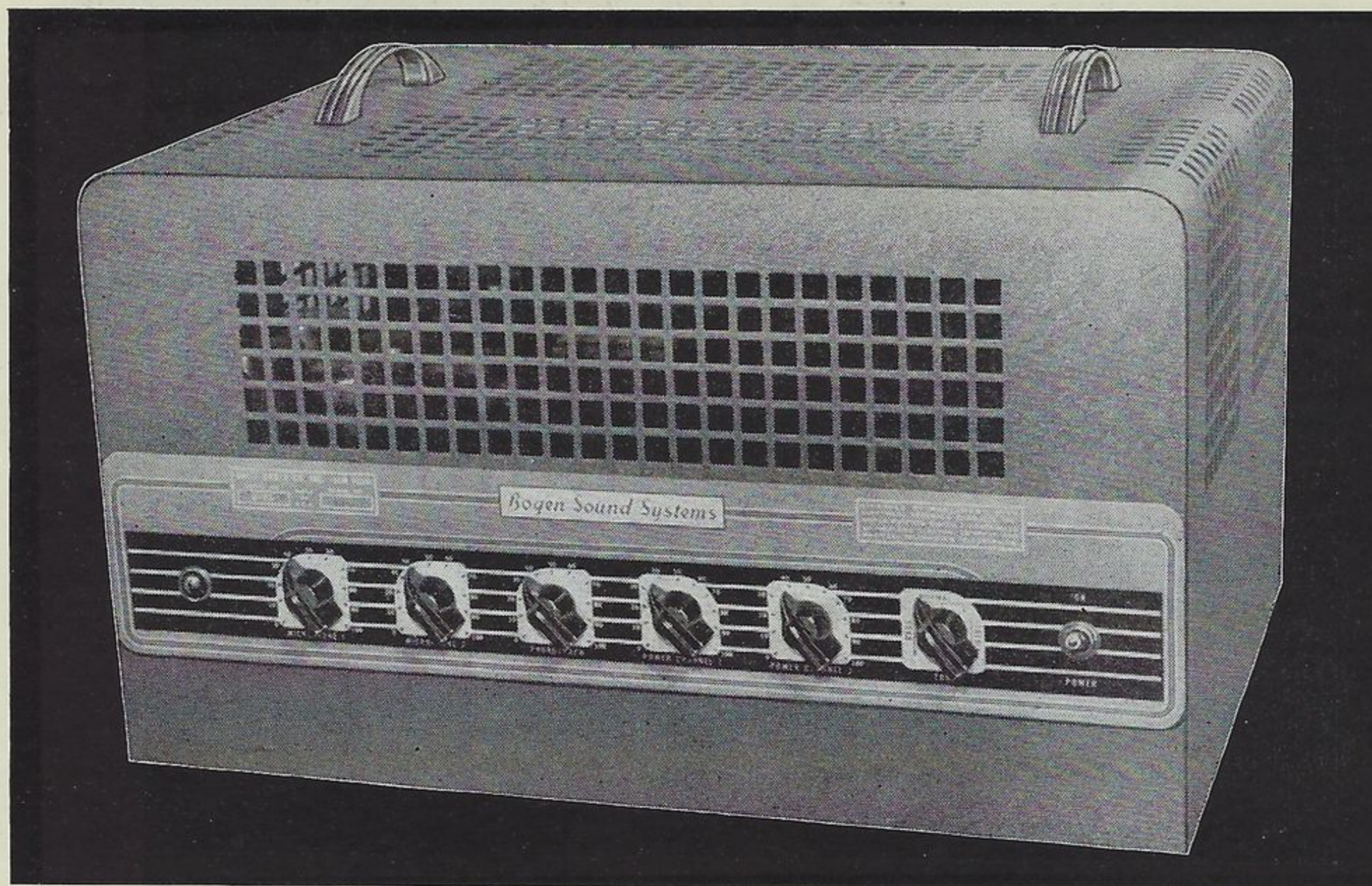
NEW YORK 12, N. Y.

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# BOGEN E75

70 WATT (DUAL 35) AMPLIFIER AND SYSTEMS



- EXCLUSIVE DUAL OUTPUT CONSTRUCTION
- SEPARATE POWER SUPPLY FOR EACH POWER AMPLIFIER
- TWO MICROPHONE INPUTS
- ONE PHONOGRAPH INPUT
- TWO MASTER GAIN CONTROLS
- BASS TREBLE TONE CORRECTOR

The E75 amplifier has two separate power amplifiers, driven by a common preamplifier. Each power amplifier has its own power supply, inverse feedback circuit and master gain control. Either can power the preamplifier. This design — pioneered and perfected by Bogen — eliminates the fear of complete system breakdown. Should component failure occur in one power amplifier, 35 watts is still supplied by the other. In stadia, airport, theatre and factory systems, this guarantee of continuous service is invaluable. The E75 is the only amplifier of this type on the market.

Two microphones, one phonograph, a bass-treble tone compensator and two master gain controls are mounted on a single control panel, finished in attractive red, white, black and grey. Models are available with one or two low impedance microphone inputs.

E75 systems consist of the finest components, carefully matched to solve every high power installation problem at moderate cost.

**E75 HIGH IMPEDANCE AMPLIFIER:** Complete with tubes .....

**PRICE: \$246.13**  
(ZONE 2: \$256.00)

**E75 LOW IMPEDANCE AMPLIFIER:** Same as E75, but first microphone input is low impedance 200 ohms. (50 and 500 ohms available on input transformer.) .....

**PRICE: \$277.48**  
(ZONE 2: \$287.30)

**E2L75 LOW IMPEDANCE AMPLIFIER:** Same as E75, but both microphone inputs low impedance. ....

**PRICE: \$308.83**  
(ZONE 2: \$318.70)

**E75B INDOOR SYSTEM—Includes:** E75 amplifier with tubes; 4—Jensen P12P heavy duty 12" speakers (each with 25' cable and plug) mounted in Bogen heavy duty WA12 baffles; 1—Bogen-Shure 710 crystal microphone with stand adapter and 7 ft. cable and plug. ....

**PRICE: \$454.28**  
(ZONE 2: \$470.00)

**E75TU OUTDOOR SYSTEM—Includes:** E75 amplifier with tubes; 4—Bogen-University PH trumpets and MA25 units; 1—Bogen-Shure 710 crystal microphone with stand adapter and 7 ft. cable and plug. ....

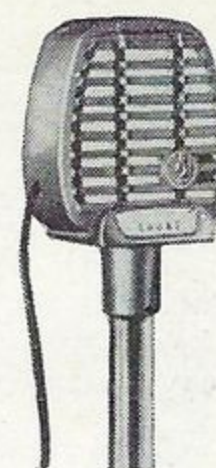
**PRICE: \$473.08**  
(ZONE 2: \$496.00)

**E75TJ OUTDOOR SYSTEM—Same as E75TU, substituting 4—Jensen VH20 trumpets. ....**

**PRICE: \$561.08**  
(ZONE 2: \$585.80)

## SPECIFICATIONS—MODEL E75

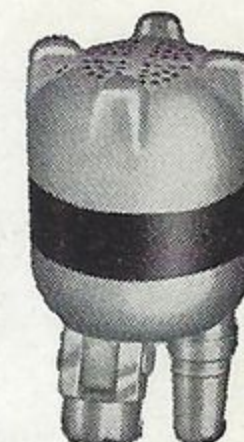
**POWER OUTPUT:** 70 watts (2—35 watt power amplifiers) at less than 4% PEAK POWER: 100 watts.  
**FREQUENCY RESPONSE:** 30-14,000 cycles,  $\pm 1$  db.  
**GAIN:** Microphone: 124 db. Phono: 80 db.  
**HUM:** Fund.: —70 db. Mic.: —59 db. (referred to rated output).  
**INPUT IMPEDANCE:** Microphone channels (2), 500,000 ohms. Phono channel (1), 500,000 ohms. (Low Impedance Input may be 50, 200 or 500 ohms.)  
**OUTPUT IMPEDANCE:** Each power amplifier tapped at 4—8—15—500—1000 ohms.  
**POWER CONSUMPTION:** 290 watts, 117 V. 50-60 cycles AC.  
**TUBES:** Total 14: 2—6SF5, 2—6SL7GT, 2—7Z4, 4—6L6G, 2—5U4G, 2—6F6G.  
**DIMENSIONS:** 17 1/8" long, 10" high, 12 1/2" deep.  
**SHIPPING WEIGHT:** 63 lbs.



710



737A



D4T



WA12



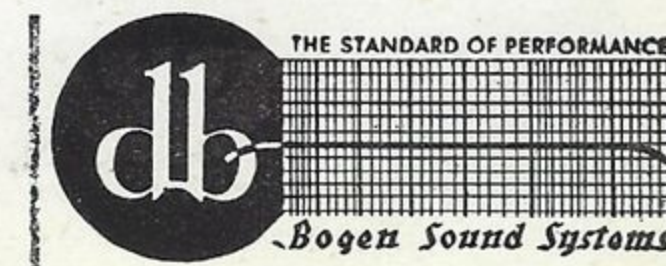
LH



VH24

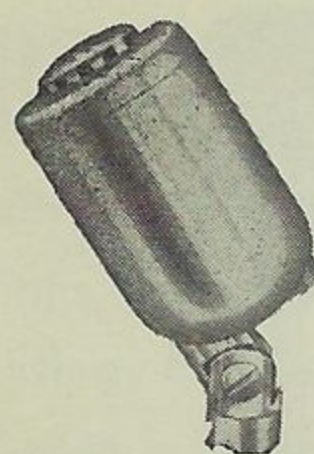
**NOTE:** For optimum performance of E75 systems, we recommend the following deluxe microphones at slight additional cost: Bogen-Shure 737A Unidirectional Crystal Cardioid or American D4T Dynamic.

**NOTE:** Complete Data on P12P Speaker, Pg. 16; on BX12 Baffle, Pg. 15; on PH and VH20 Trumpets, Pg. 16 and 17; on all Microphones, Pg. 18.

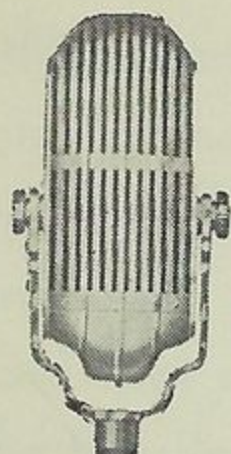


# BOGEN HX50

## HIGH FIDELITY 50 WATT AMPLIFIER AND SYSTEMS With The Exclusive Bogen ANTI-FEEDBACK Control



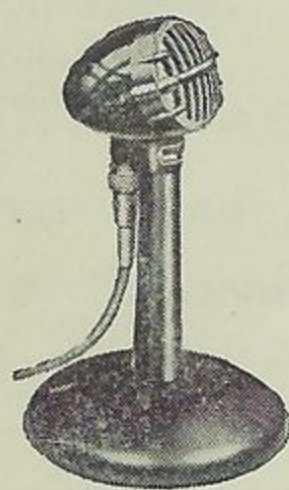
D8T



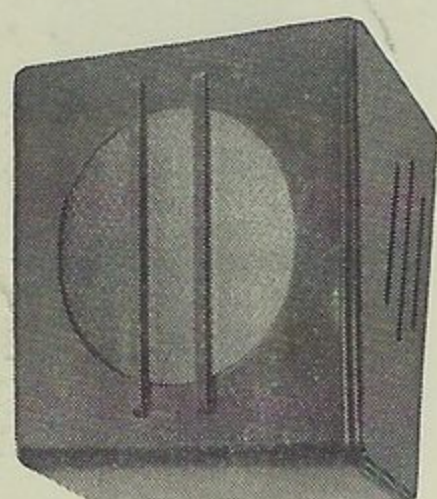
D9T



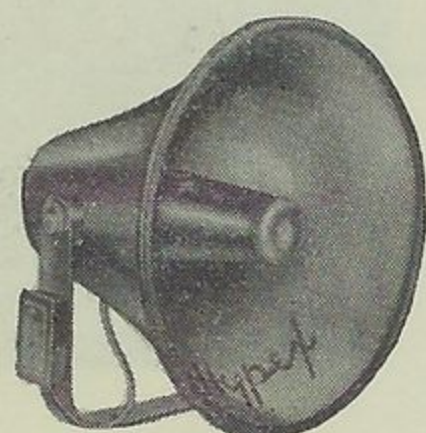
U10X



JT30



BX12



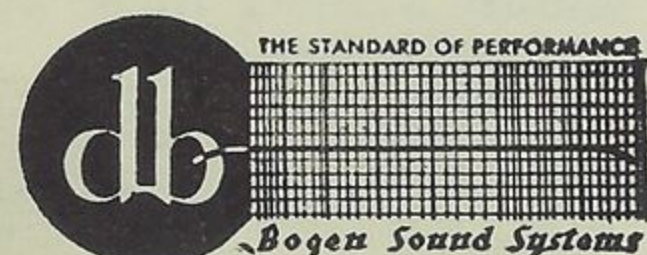
VH24



LH

**NOTE:** Where a dynamic microphone is required, the American D8T is recommended. For unidirectional, cardioid use: the Bogen-Shure U10X or American D9T.

**NOTE:** Complete Data on P12P Speaker, Pg. 16; on BX12 Baffle, Pg. 15; on LH and VH24 Trumpets, Pg. 16 and 17; on all Microphones, Pg. 18.



SEPARATE BASS TONE CONTROL FOR BOOST AND ATTENUATION — SEPARATE TREBLE TONE CONTROL FOR BOOST AND ATTENUATION — THREE MICROPHONE INPUTS — ONE PHONOGRAPH INPUT — CONSTANT VOLTAGE, PUSH PULL "807" OUTPUT — OIL FILLED HIGH VOLTAGE FILTER CAPACITOR — CABLE HARNESS AND TERMINAL BOARD CONSTRUCTION — STABILIZED INPUT STAGES FOR MINIMUM NOISE — UNDERWRITERS' LABORATORIES APPROVED.

The new Bogen HX50, successor to the famous GX50, was deliberately designed to be "the finest commercial 50 watt amplifier that can be manufactured." Bogen is justifiably proud of the results.

The HX50 introduces a revolutionary new development in sound engineering — the new Bogen ANTI-FEEDBACK CONTROL. Without compromise of tone quality or output level, it permits the "tuning-out" of acoustic feedback in the sound system. Effectively, the ANTI-FEEDBACK CONTROL permits the sound level produced by the system to be raised up to 10 db above the usual threshold. Thus more power (limited only by the capacity of the amplifier) may be used, the system is more stable and microphone placement is far less critical.

Stabilized preamplifiers eliminate critical first stage tube selection. Conservatively operated 807 tubes, in push pull output with multi-stage regulation, actually deliver 50 watts from 60 through 10,000 cycles.

Two tone correctors provide separate adjustment (both boost and attenuation) of high and low frequencies. The Bass Tone Corrector provides 50 db of smoothly tapered control at 100 cycles. The Treble Corrector provides 40 db control at 15,000 cycles.

CONSTANT VOLTAGE OUTPUT TAPS eliminate the involved calculations previously required to determine speaker matching transformers. This is particularly helpful in sound systems which require a quantity of speakers operating at different power levels. (See Page 19.)

The Bogen HX50 incorporates a safety interlock switch which automatically disconnects the high voltage supply when the cage is removed. All wiring is of the laced cable type and all components are mounted on terminal boards. The HX50 is UNDERWRITERS' LABORATORIES APPROVED.

**HX50 HIGH IMPEDANCE AMPLIFIER:** Complete with tubes. **PRICE: \$279.40**  
(ZONE 2: \$287.20)

**HXL50 LOW IMPEDANCE AMPLIFIER:** Same as HX50 but first microphone input is low impedance 200 ohms. (50 and 500 ohms available on input transformer.) **PRICE: \$304.15**  
(ZONE 2: \$312.00)

**HX2L50 LOW IMPEDANCE AMPLIFIER:** Same as HX50 but two microphone inputs low impedance. **PRICE: \$328.90**  
(ZONE 2: \$336.70)

**HX3L50 LOW IMPEDANCE AMPLIFIER:** Same as HX50 but three microphone inputs low impedance. **PRICE: \$353.65**  
(ZONE 2: \$361.50)

**HX50B INDOOR SYSTEM—Includes:** HX50 amplifier with tubes; 4—Jensen 12" heavy duty P12P speakers (each with 25' cable and plug mounted in Bogen deluxe BX12 baffles; 1—Astatic JT30 crystal microphone with handle, interlocking base, 15' cable and plug. **PRICE: \$502.95**  
(ZONE 2: \$522.50)

**HX50TU OUTDOOR SYSTEM—Includes:** HX50 amplifier with tubes; 3—Bogen-University LH trumpets with SAHF units; 1—Astatic JT30 crystal microphone with handle, interlocking base, 15' cable and plug. **PRICE: \$540.15**  
(ZONE 2: \$560.50)

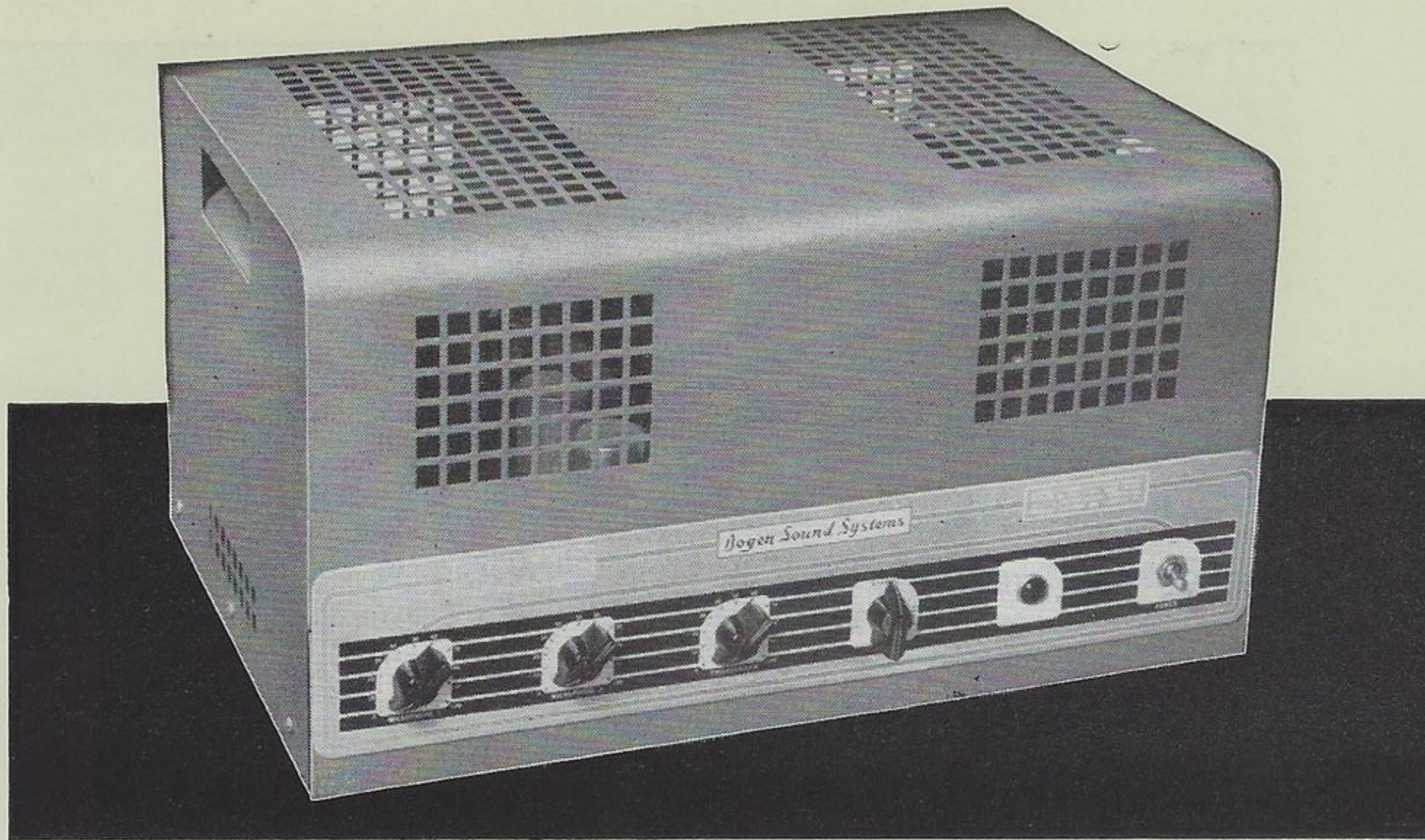
**HX50TJ OUTDOOR SYSTEM:** Same as HX50TU substituting 3—Jensen VH24 trumpets. **PRICE: \$563.15**  
(ZONE 2: \$584.00)

### SPECIFICATIONS — MODEL HX50

**POWER OUTPUT:** 50 watts at 3%.  
**PEAK POWER:** 90 watts.  
**FREQUENCY RESPONSE:** 20-20,000 cycles,  $\pm 2$  db.  
**TONE CORRECTOR RANGE:** Bass Control: +20 to -30 at 100 cycles. Treble Control: +21 to -14 at 10,000 cycles.  
**GAIN:** Microphone channels (3): 121 db. Phono (1): 89 db.  
**HUM:** Fund.: -65 db. Mic.: -58 db. (referred to rated output).  
**INPUT IMPEDANCE:** Microphone channels (3): 470,000 ohms (low impedance inputs may be 50, 200 or 500 ohms). Phono channel (1): 470,000 ohms.  
**OUTPUT IMPEDANCE:** 4-8-15 ohms, 70 and 140 Volts. (Available at terminal strip and 2 speaker sockets.)  
**POWER CONSUMPTION:** 240 watts, 117 V, 50-60 cycles AC.  
**TUBES:** Total 12: 5-6SC7, 2-6SL7, 1-6SN7, 2-807, 1-5Y3, 1-5R4GY.  
**DIMENSIONS:** 17" long, 9" high, 14" deep overall.  
**SHIPPING WEIGHT:** 47 lbs.

# BOGEN H50

## 50 WATT AMPLIFIER AND SYSTEMS



**BASS-TREBLE TONE CONTROL — TWO MICROPHONE INPUTS — ONE PHONOGRAPH INPUT — CONSTANT VOLTAGE PUSH PULL "807" OUTPUT — OIL FILLED HIGH VOLTAGE FILTER CAPACITOR — CABLE HARNESS AND TERMINAL BOARD CONSTRUCTION — EXTREMELY LOW NOISE LEVEL — UNDERWRITERS' LABORATORIES APPROVED.**

The H50 amplifier has 3 individually controlled input channels — 2 for high impedance microphones and one for phonograph. Models are available with one or two low impedance microphone inputs. A treble-bass compensator effects a broad range of tone correction. Inverse feedback provides automatic regulation of output regardless of variations or changes in speaker loads. Output impedances are 4—8—16 ohms plus 2 constant voltage taps. The use of these taps eliminates the involved calculations previously required in determining line matching transformers. (See Page 19.)

807 transmitter type tubes operate in a conservatively rated push pull output circuit. Oil filled condensers are used in the input section of the high voltage filter. A safety interlock switch automatically disconnects high voltage when the cage is removed.

All wiring is of the laced cable type and all components are mounted on terminal boards. Inside and out the H50 is an amplifier which will command the engineer's respect and admiration.

H50 systems use the new Bogen H50 amplifier in combination with laboratory selected speakers and microphones. There are no frills in H50 systems. Emphasis is on durability, power and down to earth usefulness.

**H50 HIGH IMPEDANCE AMPLIFIER:** Complete with tubes ..... **PRICE: \$212.30**  
(ZONE 2: \$218.80)

**H150 LOW IMPEDANCE AMPLIFIER:** Same as H50 but first microphone input is low impedance. 200 ohms (50 and 500 ohms available on input transformer.) ..... **PRICE: \$237.05**  
(ZONE 2: \$243.60)

**H2L50 LOW IMPEDANCE AMPLIFIER:** Same as H50 but both microphone inputs low impedance. .... **PRICE: \$261.80**  
(ZONE 2: \$268.35)

**H50B INDOOR SYSTEM — Includes:** H50 amplifier with tubes; 4—Jensen 12" heavy duty P12P speakers (each with 25' speaker cable and plug) mounted in Bogen heavy duty WA12 baffles; 1—Bogen-Shure 710 crystal microphone with stand adapter and 7 ft. cable and plug. .... **PRICE: \$420.45**  
(ZONE 2: \$440.30)

**H50TJ OUTDOOR SYSTEM—Includes:** H50 amplifier with tubes; 3—Jensen VH20 trumpets; 1—Bogen-Shure 710 crystal microphone with stand adapter and 7 ft. cable and plug. .... **PRICE: \$451.25**  
(ZONE 2: \$468.50)

**H50TU OUTDOOR SYSTEM—Same as H50TJ substituting 3—Bogen-University PH trumpets with MA25 driver units. .... PRICE: \$385.25**  
(ZONE 2: \$399.80)

### SPECIFICATIONS — MODEL H50

**POWER OUTPUT:** 50 watts at less than 5%.

**PEAK POWER:** 90 watts.

**FREQUENCY RESPONSE:** 30-20,000 cycles,  $\pm 2$  db.

**GAIN:** Microphone inputs (2): 120 db. Phono input (1): 80 db.

**HUM:** Fund.: —74 db. Mic.: —59 db. (referred to rated output).

**INPUT IMPEDANCE:** Microphone channels (2): 500,000 ohms. (Low impedance input may be 50, 200 or 500 ohms.) Phono channel (1): 700,000 ohms.

**OUTPUT IMPEDANCE:** 4—8—15 ohms and two constant voltage taps (70 V and 140 V).

**POWER CONSUMPTION:** 210 watts at rated output, 117 V, 50-60 cycles AC.

**TUBES:** Total 9: 3—6SC7, 1—6SL7, 1—6SN7, 2—807, 1—5R4GY, 1—5Y3.

**DIMENSIONS:** 17" wide, 12½" deep, 9¼" high overall.

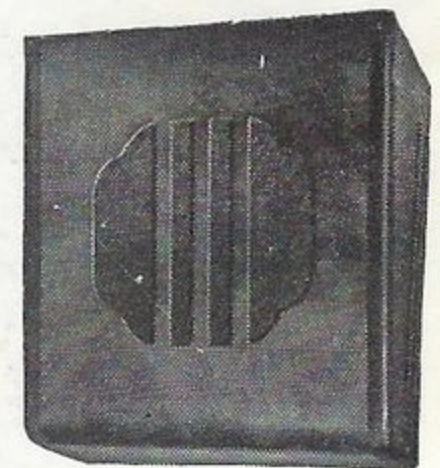
**SHIPPING WEIGHT:** 43 lbs.



710



737A



WA12



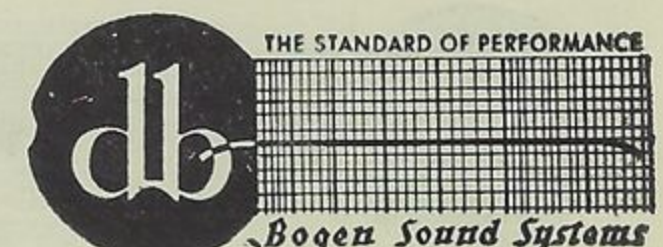
PH



VH20

**NOTE:** For optimum performance of H50 systems we recommend the following deluxe microphones at slight additional cost: Bogen-Shure 737A unidirectional crystal cardioid or American D4T dynamic.

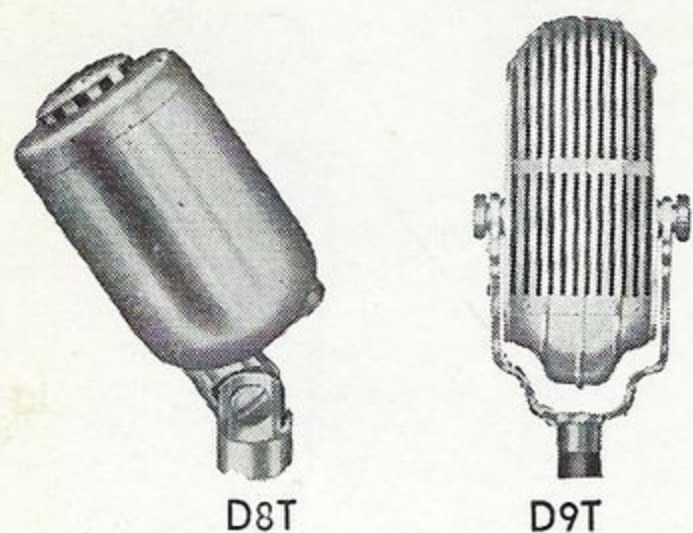
**NOTE:** Complete data on P12P Speaker, Pg. 16; on WA12 Baffle, Pg. 15; on PH and VH20 Trumpets, Pg. 16 and 17; on all Microphones, Pg. 18.



# BOGEN HX30

## DELUXE 30 WATT AMPLIFIER AND SYSTEMS

*With The Exclusive Bogen ANTI-FEEDBACK CONTROL*



D8T

D9T



JT30

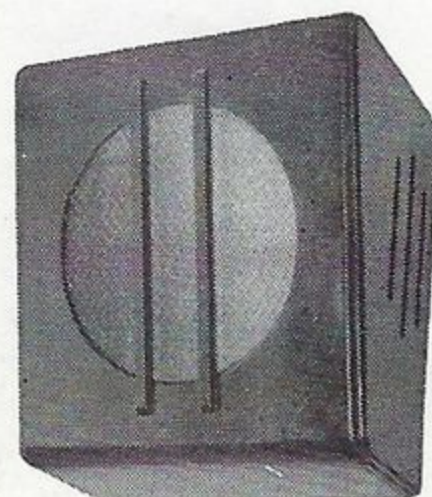
U10X



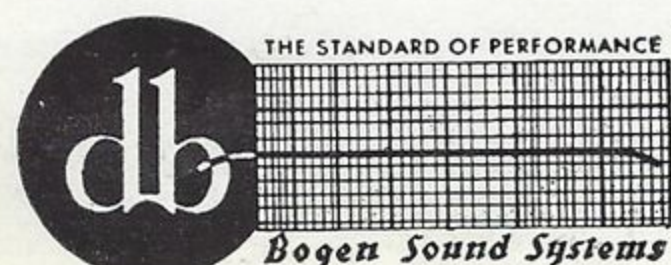
LH



VH24



BX12



SEPARATE BASS TONE CONTROL FOR BOOST AND ATTENUATION — SEPARATE TREBLE TONE CONTROL FOR BOOST AND ATTENUATION — THREE MICROPHONE INPUTS — REMOTE VOLUME CONTROL CIRCUIT BUILT IN — CONSTANT VOLTAGE OUTPUT — CABLE HARNESS AND TERMINAL BOARD CONSTRUCTION — EXTREMELY LOW NOISE LEVEL — UNDERWRITERS' LABORATORIES APPROVED.

The new Bogen HX30 is a deluxe high fidelity P.A. amplifier which richly deserves the description. It delivers 30 watts of audio power at 2% distortion. One phonograph and three microphone inputs are provided. A built-in circuit permits remote control of two microphones or one microphone and the phonograph channel. It is possible to arrange the amplifier for remote control of all four inputs.

The revolutionary Bogen ANTI-FEEDBACK CONTROL, pioneered and proved in the Bogen HX50 is now available in this medium power amplifier. Without compromise of tone quality or output level, it permits the tuning out of acoustic feedback in the sound system. Effectively, the ANTI-FEEDBACK CONTROL permits the sound level produced by the system to be raised up to 10 db above the usual threshold. Thus more power (limited only by the capacity of the amplifier) may be used, the system is more stable and microphone placement is far less critical.

Two tone correctors provide separate adjustment (both boost and attenuation) of high and low frequencies. The Bass Tone Corrector provides 45 db of smoothly tapered control at 100 cycles. The Treble Corrector provides 32 db control at 10,000 cycles.

A CONSTANT VOLTAGE OUTPUT TAP eliminates the involved calculations previously required to determine speaker matching transformers. This is particularly helpful in sound systems which require a quantity of speakers operating at different power levels. (See Page 19.)

Rugged construction and beautiful styling are combined in the new HX30. The end bells are finished in high lustre forest green. Panel and wrap are tan hammertone. Markings are ivory and forest green. New studio type knobs are ivory.

All wiring is of the laced cable type and all components are mounted on terminal boards. The HX30 is UNDERWRITERS' LABORATORIES APPROVED.

### SPECIFICATIONS—MODEL HX30

POWER OUTPUT: 30 watts at 2%.

PEAK POWER: 45 watts.

FREQUENCY RESPONSE:  $\pm 1.5$  db. from 50 to 18,000 cycles.

TONE CORRECTOR RANGE: Bass Control: +20 to -25 db at 100 cycles. Treble Control: +18 to -14 db at 10,000 cycles.

GAIN: Mic.: 121 db. Phono: 85 db.

HUM: Fund.: -67 db. Mic.: -60 db (referred to rated output).

INPUT IMPEDANCE: Microphone Channels (3): 500,000 ohms (Low impedance inputs may be 50, 200 or 500 ohms.) Phono Channel (1): 500,000 ohms.

OUTPUT IMPEDANCE: 4-8-15 and 500 ohms and 70 volts available at two speaker sockets and terminal strip.

TUBES: Total 10: 5-6SC7, 2-6SL7GT, 2-6L6G, 1-5U4G.

DIMENSIONS: 17" wide x 14" deep x 9" high.

SHIPPING WEIGHT: 40 lbs.

**HX30 HIGH IMPEDANCE AMPLIFIER:** Complete with tubes. ....

**PRICE: \$219.45**  
(ZONE 2: \$225.75)

**HXL30 LOW IMPEDANCE AMPLIFIER:** Same as HX30 but first microphone input is low impedance 200 ohms. (50 and 500 ohms available on input transformer.) ....

**PRICE: \$244.20**  
(ZONE 2: \$250.60)

**HX2L30 LOW IMPEDANCE AMPLIFIER:** Same as HX30 but two microphone inputs low impedance. ....

**PRICE: \$268.95**  
(ZONE 2: \$275.30)

**HX3L30 LOW IMPEDANCE AMPLIFIER:** Same as HX30 but three microphone inputs low impedance.

**PRICE: \$293.70**  
(ZONE 2: \$300.30)

**HX30B INDOOR SYSTEM—Includes:** HX30 Amplifier with tubes; 2—Jensen 12" heavy duty P12P speakers (each with 25' speaker cable and plug) mounted in Bogen deluxe BX12 baffles; 1—Astatic JT30 crystal microphone with handle, interlocking base, 15' cable and plug. ....

**PRICE: \$340.10**  
(ZONE 2: \$352.00)

**HX30TU OUTDOOR SYSTEM—Includes:** HX30 Amplifier with tubes; 2—Bogen-University LH trumpets and SAHF units; 1—Astatic JT30 crystal microphone with handle, interlocking base, 15' cable and plug.

**PRICE: \$399.70**  
(ZONE 2: \$415.50)

**HX30TJ OUTDOOR SYSTEM—Same as HX30TU substituting 2—Jensen VH24 trumpets. ....**

**PRICE: \$413.70**  
(ZONE 2: \$429.50)

**NOTE:** Where a dynamic microphone is required, the American D8T is recommended. For unidirectional, cardioid use: the Bogen-Shure U10X or American D9T.

**NOTE:** Complete Data on P12P Speaker, Pg. 16; on BX12 Baffle, Pg. 15; on LH and VH24 Trumpets, Pgs. 16 and 17; on all Microphones, Pg. 18.

# BOGEN F30

## 30 WATT AMPLIFIERS AND SYSTEMS WITH BUILT-IN PHONOGRAPHS

- BUILT IN AUTOMATIC OR MANUAL PHONOGRAPH
- HINGED PROTECTIVE PHONOGRAPH COVER
- TWO MICROPHONE INPUTS
- BASS-TREBLE TONE CORRECTORS
- SEVEN TUBE, HIGH GAIN, PUSH-PULL CIRCUIT
- CONSTANT VOLTAGE OUTPUT



F30 amplifiers are the perfect answer when high quality, easily portable medium power amplifiers with built in phonographs are required.

Each F30 amplifier has three input channels with individual gain controls for noiseless mixing and fading—2 for high impedance microphone—one for the built in phonograph. Models are available with one or two built in low impedance microphone inputs. The treble-bass tone corrector insures complete control of tone. A pair of 6L6 tubes in a feedback regulated push pull circuit, delivers 30 watts of undistorted power—forty watts, peak, when needed. The constant 70 volt output tap, in addition to standard 4, 8, 15 and 500 ohm taps, simplifies previously complicated speaker matching problems. (See Page 19.)

There are two F30 amplifiers.

F30A incorporates a single speed (78 RPM) Webster Automatic Record Changer. (Three Speed Changer Available at Nominal Cost Increase.)

F30M has a built in single speed (78 RPM) manual record player.

F30 systems are ideal for square dances, funeral parlor installations, clubs, rental systems—wherever portable, general duty, medium power sound equipment is required.

### F30 SPECIFICATIONS

**POWER OUTPUT:** 30 watts at less than 5%. **PEAK POWER:** 40 watts.

**FREQUENCY RESPONSE:** 40-12,000 cycles,  $\pm 1.5$  db.

**GAIN:** Microphone: 120 db. Phono: 78 db.

**HUM:** Fund.: -68 db.; Mic.: -59 db. (referred to rated output).

**INPUT IMPEDANCE:** Microphone channels (2), 500,000 ohms. (Low impedance inputs may be 50, 200, or 500 ohms.)

**OUTPUT IMPEDANCE:** 4-18-15-500 ohms and 70 volt constant voltage taps available at terminal strip and 2 speaker sockets.

**POWER CONSUMPTION:** 180 watts, 117 V, 50-60 cycles AC.

**TUBES:** Total 7: 2-6SF5, 1-6SC7, 1-6SN7GT, 2-6L6G, 1-5U4G.

**DIMENSIONS:** R30M: 9 7/8" high, 15" long, 16" deep. F30A: 10 3/16" high, 15" long, 16" deep.

**SHIPPING WEIGHTS:** F30M: 45 lbs. F30A: 46 lbs.

**F30A HIGH IMPEDANCE AMPLIFIER:** Complete with Webster 78 RPM record changer and tubes.

**F30M HIGH IMPEDANCE AMPLIFIER:** Complete with single speed (78 RPM) manual record player and tubes.

**FL30A LOW IMPEDANCE AMPLIFIER:** Same as F30A but first microphone input is low impedance 200 ohms. (50 or 500 ohms available on input transformer.)

**FL30M LOW IMPEDANCE AMPLIFIER:** Same as F30M but first microphone input is low impedance 200 ohms (50 or 500 ohms available on input transformer.)

**F2L30A LOW IMPEDANCE AMPLIFIER:** Same as F30A but two microphone inputs low impedance.

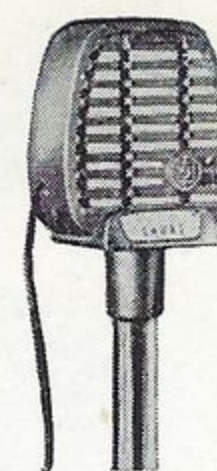
**F2L30M LOW IMPEDANCE AMPLIFIER:** Same as F30M but two microphone inputs low impedance.

**F30MP PORTABLE SYSTEM—Includes:** F30M amplifier complete with tubes, 2—Bogen-Jensen P12S, 12" speakers (each with 25' cable and plug) mounted in deluxe Bogen 240 portable dual speaker case; 1—Bogen-Shure 710 crystal microphone with stand adapter and 7 ft. cable and plug.

**F30MB INDOOR SYSTEM:** Same as F30MP but speakers mounted in Bogen heavy duty WA12 baffles.

**F30MTJ OUTDOOR SYSTEM—Includes:** F30M amplifier with tubes; 2—Jensen VH20 trumpets; 1—Bogen-Shure 710 crystal microphone with stand adapter and 7 ft. cable and plug.

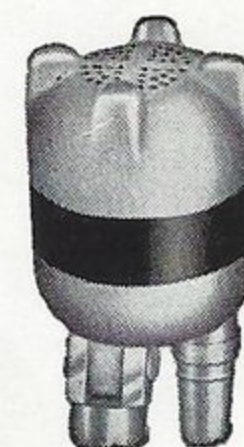
**F30MTU OUTDOOR SYSTEM:** Same as F30MTJ but substituting 2—Bogen-University PH trumpets with MA25 units. TO SUBSTITUTE F30A for F30M amplifier in any system, specify and add



710



737A



D4T



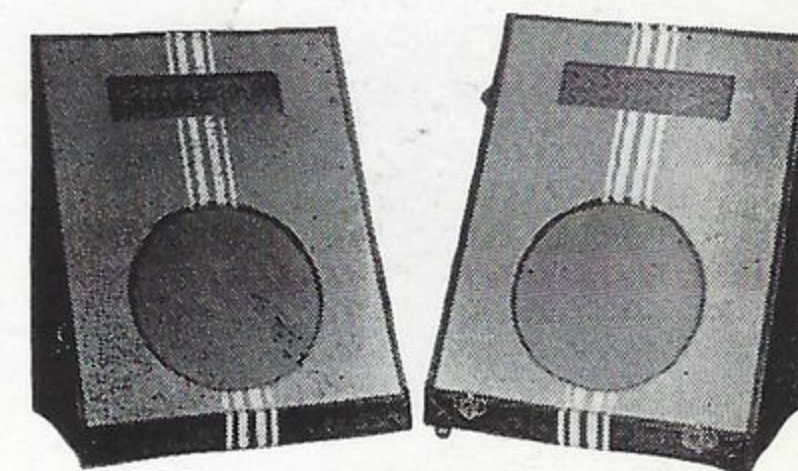
PH



VH20



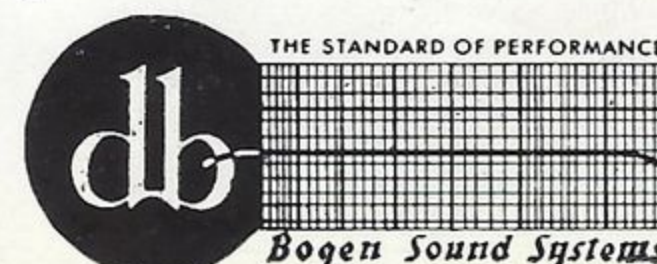
WA12



240

**NOTE:** For optimum performance of F30 systems, we recommend the following deluxe microphones at slight additional cost: Bogen-Shure 737A Unidirectional Crystal Cardioid or American D4T dynamic.

**NOTE:** Complete Data on P12S Speaker on Pg. 16; on WA12 Baffle, Pg. 15; on 240 case, Pg. 14; on PH and VH20 Trumpets, Pgs. 16 and 17; on all Microphones, Pg. 18.



# BOGEN H30

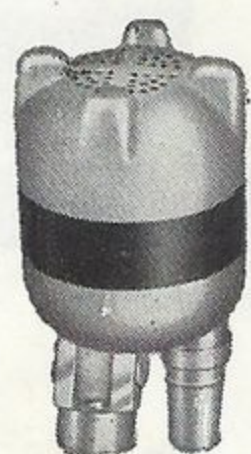
## 30 WATT AMPLIFIER AND SYSTEMS



710



737A



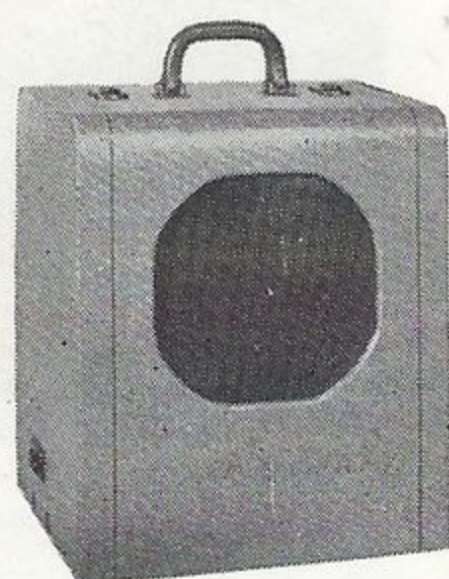
D4T



PH



VH20



KA12



H30Q



- SIX POSITION MULTI-RANGE TONE CORRECTOR
- TWO MICROPHONE INPUTS
- ONE PHONOGRAPH INPUT
- SEVEN TUBE, HIGH GAIN PUSH-PULL CIRCUIT
- EXTREMELY LOW NOISE LEVEL
- CONSTANT VOLTAGE OUTPUT
- UNDERWRITERS' LABORATORIES APPROVED

The all new Bogen H30 is a worthy successor to the famous E30 amplifier. Power output and tone control characteristics have been improved. Hum content has been significantly reduced.

The 6 position MULTI-RANGE TONE CORRECTOR provides a complete selection of frequency responses. Each position selects an entirely different tonal arrangement, the character of which is indicated by the nomenclature. The six positions are marked: (1) Natural, (2) Mellow, (3) Bass, (4) Deep Bass, (5) Brilliant and (6) Crisp. In addition to the crisp quality it effects, the sixth position assures the most effective performance of an outdoor trumpet system by sharply cutting the frequency response below 500 cycles. This permits the trumpets to handle more audio power with less distortion and minimizes the possibility of damage to the diaphragms.

THE CONSTANT VOLTAGE OUTPUT TAP eliminates the involved calculations previously required to determine speaker matching transformers. This is particularly helpful in sound systems which require a quantity of speakers operating at different power levels. (See Page 19.)

Rugged construction and beautiful styling are combined in the H30. The end bells are high lustre forest green. Panel and wrap are tan hammertone. Markings are ivory and forest green. New studio type knobs are ivory.

### H30 AMPLIFIER AND SYSTEMS WITH PHONOGRAPH TOP

Any Model H30 amplifier or system may be obtained with built in phonograph top, as illustrated at small additional cost. Phonograph employs a constant speed (78 RPM) motor and crystal pickup. Specify addition of phono top or add letter "Q" to standard model number when ordering. (Example H30PQ is H30P system plus phonograph top on amplifier.)

#### SPECIFICATIONS—H30

POWER OUTPUT: 30 watts at less than 5%. PEAK POWER: 40 watts.

FREQUENCY RESPONSE: 30-12,000 cycles,  $\pm 2.5$  db.

GAIN: Microphone: 119 db. Phono: 77 db.

HUM: Fund.: -68 db. Mic.: -60 db.

INPUT IMPEDANCES: Mic. (2): 2 megohms. Phono (1): 500,000 ohms.

OUTPUT IMPEDANCES: 4-8-16 ohms, 70 volts. (500 ohm tap is available on output transformer.)

POWER CONSUMPTION: 140 watts, 117 V. 50-60 cycles.

TUBES: Total 7: 3-6SF5, 1-6SL7GT, 2-6L6G, 1-5U4G.

DIMENSIONS: 15 1/2" long x 10 3/4" deep x 7 1/2" high.

SHIPPING WEIGHT: 30 lbs.

NOTE: For optimum performance of H30 systems, we recommend the following deluxe microphones at slight additional cost: Bogen-Shure 737A Unidirectional Crystal Cardioid or American D4T dynamic.

NOTE: To add Phonograph Top to any amplifier or system below specify and add \_\_\_\_\_

PRICE: \$28.60  
(ZONE 2: \$29.35)

H30 HIGH IMPEDANCE AMPLIFIER: Complete with tubes.

PRICE: \$132.83  
(ZONE 2: \$137.35)

HL30 LOW IMPEDANCE AMPLIFIER: Same as H30 but first microphone input is low impedance 200 ohms. (50 and 500 ohm taps available on input transformer.)

PRICE: \$157.58  
(ZONE 2: \$162.10)

H2L30 LOW IMPEDANCE AMPLIFIER: Same as H30 but two microphone inputs low impedance.

PRICE: \$182.33  
(ZONE 2: \$186.85)

H30P PORTABLE SYSTEM—Includes: H30 amplifier with tubes; 2—Bogen-Jensen P12S, 12" speakers (each with 25' speaker cable and plug) mounted in deluxe KA12 portable speaker baffle, which also carries the amplifier; 1—Bogen-Shure 710 crystal microphone with stand adapter and 7 ft. cable and plug.

PRICE: \$215.80  
(ZONE 2: \$225.10)

H30B INDOOR SYSTEM: Same as H30P but speakers mounted in Bogen WA12 baffles.

PRICE: \$206.93  
(ZONE 2: \$216.10)

H30TU OUTDOOR SYSTEM—Includes: H30 amplifier with tubes; 2—Bogen-University PH trumpets with MA25 units; 1—Bogen-Shure 710 crystal microphone with stand adapter and 7 ft. cable and plug.

PRICE: \$251.78  
(ZONE 2: \$262.45)

H30TJ OUTDOOR SYSTEM: Same as H30TU substituting 2—Jensen VH20 trumpets.

PRICE: \$295.78  
(ZONE 2: \$308.10)

NOTE: Complete data on P12S Speaker on Pg. 16; on WA12 Baffle, Pg. 15; on PH and VH20 Trumpets, Pgs. 16 and 17; on KA12 case, Pg. 14; on all Microphones, Pg. 18.

# BOGEN H15

## 15 WATT AMPLIFIER AND SYSTEMS



- SEVEN TUBE, HIGH GAIN PUSH-PULL CIRCUIT
- TWO MICROPHONE INPUTS
- ONE PHONOGRAPH INPUT
- SIX POSITION MULTI-RANGE TONE CORRECTOR
- CONSTANT VOLTAGE OUTPUT
- EXTREMELY LOW NOISE LEVEL
- UNDERWRITERS' LABORATORIES APPROVED

The new Bogen H15 amplifier continues the tradition of better performance, sturdier construction and stylish good looks established by the long famous E14.

Three input channels are provided for two high impedance microphones and one high impedance phono pickup. Both microphone inputs can be low impedance if required. Noiseless electronic mixing of all channels is provided. The 6 position MULTI-RANGE TONE CORRECTOR provides a complete selection of frequency responses. Each position selects an entirely different tonal arrangement, the character of which is indicated by the nomenclature. The six positions are marked: (1) Natural, (2) Mellow, (3) Bass, (4) Deep Bass, (5) Brilliant and (6) Crisp.

THE CONSTANT VOLTAGE OUTPUT TAP eliminates the involved calculations previously required to determine speaker matching transformers. This is particularly helpful in sound systems which require a quantity of speakers operating at different power levels. (See Page 19.)

The H15 amplifier is styled for functional beauty and is built for long life. The tan hammertone control panel is framed by high lustre, forest green end bells with inset carrying handles. Markings are ivory and forest green and new studio type ivory knobs are used.

The greatest number of sound system installations require approximately 15 watts of audio power. Restaurants, small lecture halls, single floor factories—the great bulk of installations can be served by this type of system. H15 systems have been designed with this consideration as the guiding principle.

### H15 AMPLIFIER AND SYSTEMS WITH PHONOGRAPH TOP

Any Model H15 amplifier or system may be obtained with built in phonograph top, as illustrated at small additional cost. Phonograph employs a constant speed (78 RPM) motor and crystal pickup. Specify addition of phono top or add letter "Q" to standard model number when ordering. (Example H15PQ is H15P system plus phonograph top on amplifier.)

#### SPECIFICATIONS—H15

POWER OUTPUT: 15 watts at less than 5%. PEAK POWER: 25 watts.

FREQUENCY RESPONSE: 30-12,000 cycles,  $\pm 1.5$  db.

GAIN: Microphone: 115 db. Phono: 74 db.

HUM: Fund.: -70 db. Mic.: -60 db.

INPUT IMPEDANCES: Mic.: 2 meg-ohms. Phono: 500,000 ohms.

OUTPUT IMPEDANCES: 4-8-16 ohms, 70 volts.

POWER CONSUMPTION: 95 watts, 117 V, 50-60 cycles.

TUBES: Total 7: 3-6SF5, 1-6SL7GT, 2-6L6G, 1-5Y3G.

DIMENSIONS: 15 1/2" long x 10 3/4" deep x 7 1/2" high.

SHIPPING WEIGHT: 26 lbs.

NOTE: To add Phonograph Top to any amplifier or system below specify and add \_\_\_\_\_

**H15 HIGH IMPEDANCE AMPLIFIER:** Complete with tubes.

**H15 LOW IMPEDANCE AMPLIFIER:** Same as H15 but first microphone input is low impedance 200 ohms. (50 and 500 ohm taps available on input transformer.)

**H2L15 LOW IMPEDANCE AMPLIFIER:** Same as H15 but two microphone inputs low impedance.

**H15P PORTABLE SYSTEM—Includes:** H15 amplifier with tubes 2—Bogen-Jensen P12S, 12" speakers (each with 25' speaker cable and plug) in deluxe KA12 portable speaker baffle, which also carries the amplifier; 1—Bogen-Shure 710 crystal microphone with stand adapter and 7 ft. cable and plug.

**H15B INDOOR SYSTEM:** Same as H15P but speakers mounted in Bogen WA12 baffles.

PRICE: \$28.60  
(ZONE 2: \$29.35)

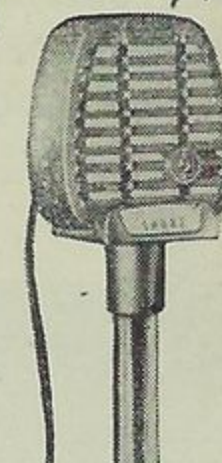
PRICE: \$114.13  
(ZONE 2: \$117.90)

PRICE: \$138.88  
(ZONE 2: \$142.65)

PRICE: \$163.63  
(ZONE 2: \$167.40)

PRICE: \$197.10  
(ZONE 2: \$206.00)

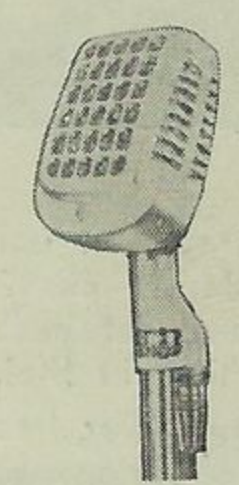
PRICE: \$188.23  
(ZONE 2: \$197.10)



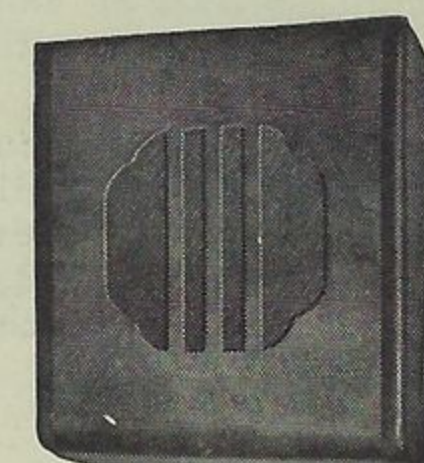
710



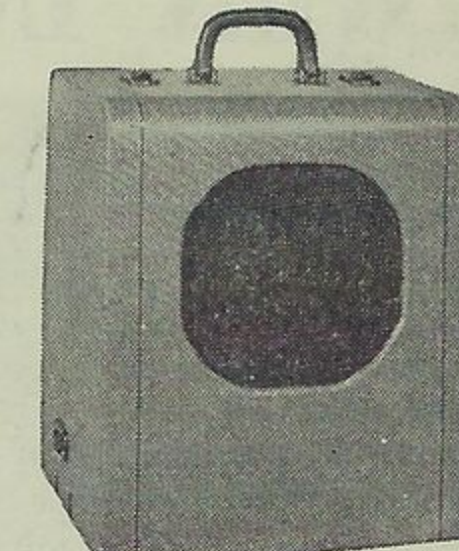
D4T



737A



WA12



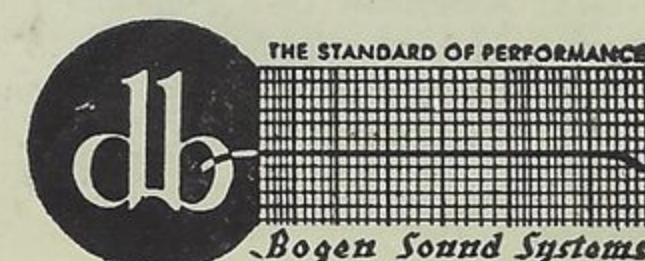
KA12



H15Q

NOTE: For optimum performance of H15 systems, we recommend the following deluxe microphones at slight additional cost: Bogen-Shure 737A Unidirectional Crystal Cardioid or American D4T dynamic.

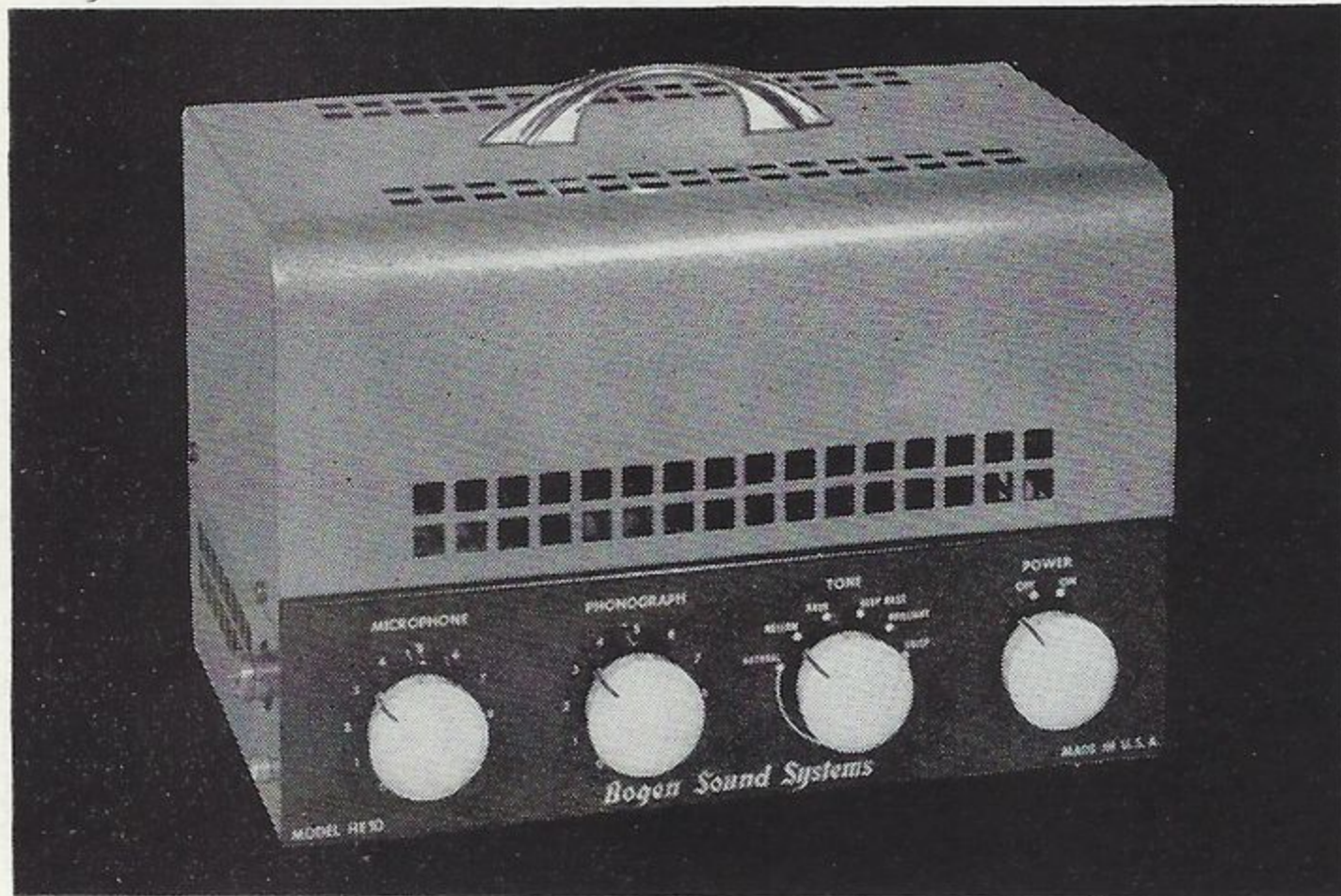
NOTE: Complete data on P12S Speaker, Pg. 16; on KA12 case, Pg. 14; on WA12 baffle, Pg. 15; on all microphones, Pg. 18.



# BOGEN HE10

## 10 WATT AMPLIFIER AND SYSTEMS

- FIVE TUBE, HIGH GAIN PUSH PULL CIRCUIT
- ONE MICROPHONE INPUT
- ONE PHONOGRAPH INPUT
- CONSTANT VOLTAGE OUTPUT
- EXTREMELY LOW NOISE LEVEL
- UNDERWRITERS' LABORATORIES APPROVED
- SIX POSITION MULTI-RANGE TONE CORRECTOR



### HE10 SPECIFICATIONS

POWER OUTPUT: 10 watts at 4%.  
PEAK POWER: 15 watts.

FREQUENCY RESPONSE:  $\pm 1\frac{1}{2}$  db.  
from 60 to 10,000 cycles.

GAIN: Mic. Channel: 117 db.; Phono:  
66 db.

HUM: Fund.: -66 db. Mic.: -59 db.  
(referred to rated output).

INPUT IMPEDANCE: Microphone  
Channel: 2 megohms. Phono Channel:  
470,000 ohms.

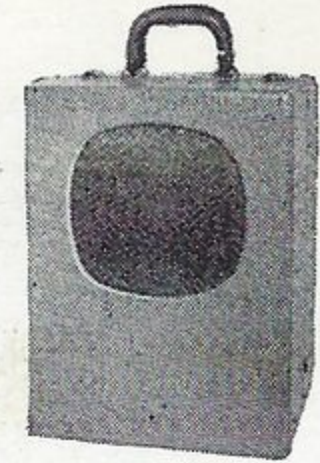
OUTPUT IMPEDANCE: 4-8-15-500  
ohms. (The 500 ohm tap is equivalent  
to a 70 V constant voltage tap.) Two  
sockets with an impedance selector at  
output.

POWER CONSUMPTION: 70 watts,  
117 V, 50-60 cycles AC.

TUBES: Total 5: 1-6SJ7, 1-6SL7, 2-  
6V6, 1-5Y3GT.

DIMENSIONS: 7" deep, 11" wide,  
7 5/16" high overall.

SHIPPING WEIGHT: 15 lbs.



10A

**HE10 HIGH IMPEDANCE AMPLIFIER:**  
Complete with tubes.

PRICE: \$71.23  
(ZONE 2: \$73.00)

**HE10 LOW IMPEDANCE AMPLIFIER:** Same as HE10  
but microphone input is low impedance,  
200 ohms. (50 and 500 ohms available on  
input transformer.)

PRICE: \$95.98  
(ZONE 2: \$97.75)

**HE10P PORTABLE SYSTEM — Includes:**  
HE10 Amplifier with tubes, 2—Bogen Jensen  
Alnico V P10S speakers (each with 25' cable  
and plug), mounted in Bogen 10A portable  
speaker baffle which also carries the  
amplifier; 1—Bogen-Shure 710 crystal  
microphone with stand adapter and 7 ft.  
cable and plug.

PRICE: \$140.00  
(ZONE 2: \$145.85)

**HE10B INDOOR SYSTEM:** Same as  
HE10P but speakers mounted in Bogen  
BA12 baffles.

PRICE: \$136.98  
(ZONE 2: \$142.80)

**NOTE:** Where dynamic microphone is  
required, we recommend American  
D4T at slight additional cost.

**NOTE:** Complete data on P10S Speaker,  
Pg. 16; on BA12 Baffle, Pg. 15;  
on 10A Case, Pg. 14; on all Microphones,  
Pg. 18.

You don't stay first unless you're best! Bogen 10 watt systems have been the leaders in low power, high quality, moderate cost equipment for over ten years. Today the HE10 amplifier and systems continue that leadership and establish a new standard. Reflecting the very best in engineering know-how, they outperform everything in their rated class and invite comparison with competitive 15 watt units.

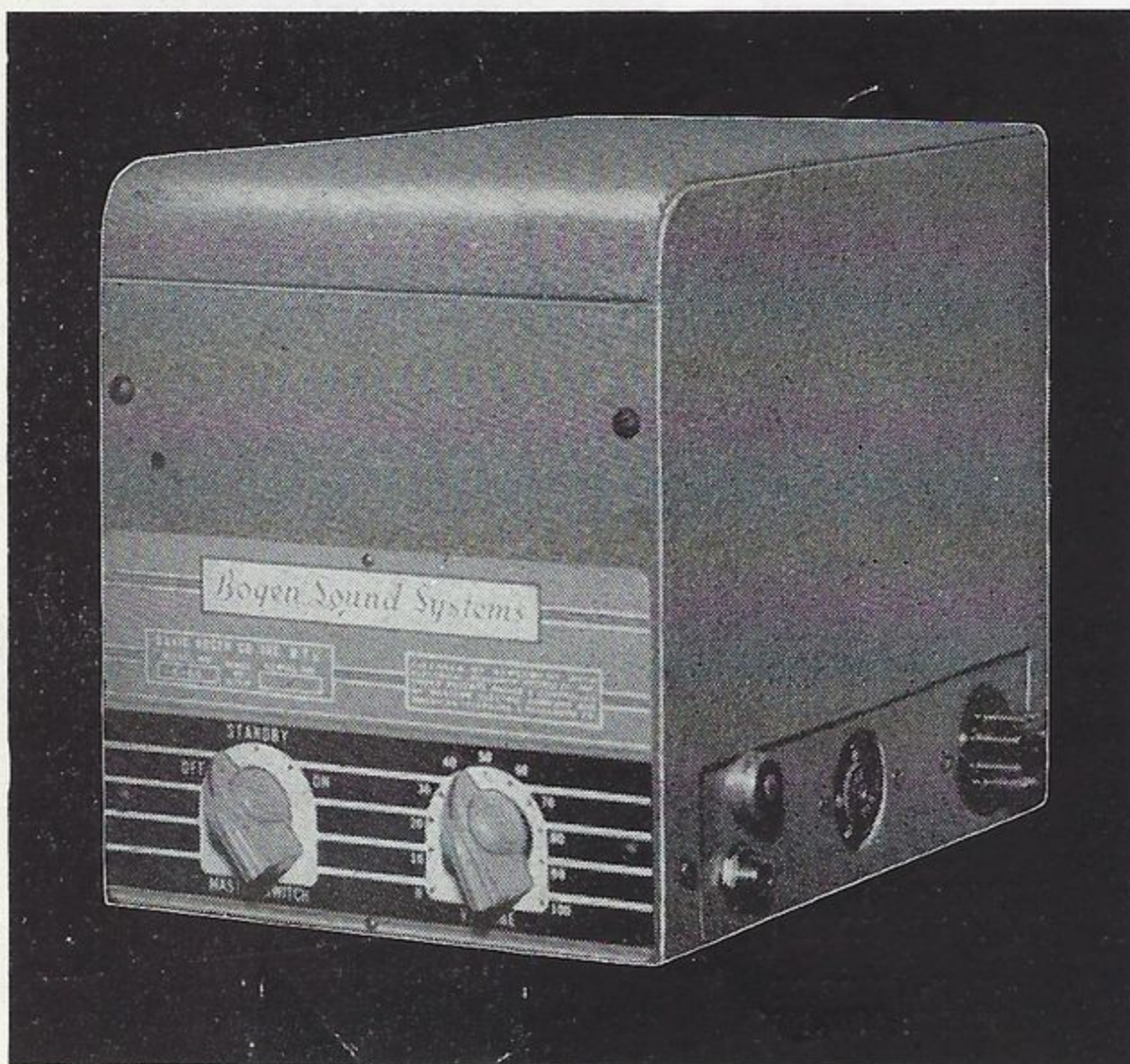
The HE10 amplifier has two separate input channels, one for high impedance microphone—one for high impedance phonograph. Each channel has an individual gain control and they can be mixed and faded.

The 6 position MULTI-RANGE TONE CORRECTOR provides a complete selection of frequency responses. Each position selects an entirely different tonal arrangement, the character of which is indicated by the nomenclature. The six positions are marked: (1) Natural, (2) Mellow, (3) Bass, (4) Deep Bass, (5) Brilliant and (6) Crisp.

A pair of 6V6 tubes in a push pull circuit distinguishes the Bogen HE10 from conventional, unbalanced, single output tube, ten watt amplifiers. They provide ten undistorted watts of power and can deliver up to fifteen watts when needed. Speaker matching and connection is simplified by a built in multiple impedance selector. The constant 70 volt output tap eliminates the involved calculations previously required to determine speaker matching transformers. (See Page 19.) The HE10 is UNDERWRITERS' LABORATORIES APPROVED.

# BOGEN E66

## 6 WATT UNIVERSAL MOBILE AMPLIFIER AND SYSTEM



Compact, rugged and amazingly efficient. A capsule description of a mighty little mobile unit with a multitude of applications. The E66 can be powered by either a 6 volt storage battery or 117 volts A.C. Perfect for emergency cars, mobile P.A. and bus and trolley announcing systems.

The E66 amplifier utilizes beam power output and has a standby switch which reduces current drain, increases tube and component life and keeps the amplifier ready for instant use.

A phonograph jack is provided and the tubes or vibrator can be removed without disturbing the amplifier mounting. The amplifier mounts directly under the dashboard, is simple to install and operate and it takes as little room as a radio or small heater.

### E66 SPECIFICATIONS

POWER OUTPUT: 6 watts at 5%. PEAK POWER:  
8 watts.

FREQUENCY RESPONSE: 60-9,000 cycles,  $\pm 2$  db.  
GAIN: Microphone channel (1): 110 db. Phono  
channel (1): 75 db.

HUM: AC: -50 db, DC: -62 db (referred to  
rated output).

INPUT IMPEDANCE: Microphone channel (1):  
500,000 ohms. Phono channel (1): 500,000 ohms.

OUTPUT IMPEDANCE: 4-8-15 ohms available  
at 5 prong speaker socket.

POWER CONSUMPTION: 50 watts, 117 V AC; 7  
amps, 6 V DC.

TUBES: Total 4: 1-6SJ7, 1-6SL7GT, 1-6L6GA,  
1-6X5GT.

DIMENSIONS: 6 1/8" wide, 9 1/4" deep, 6 7/8" high.  
SHIPPING WEIGHT: 15 lbs.

**E66 AMPLIFIER:** PRICE: \$82.78  
Complete with tubes. (ZONE 2: \$84.75)

**E66J SYSTEM — Includes:** 1—E66 amplifier with tubes, 1  
—Jensen VH91 Trumpet, 1—Bogen-Shure 710 crystal microphone with stand  
adapter and 7 ft. cable and plug. PRICE: \$129.53  
(ZONE 2: \$132.70)

**E66F SYSTEM:** Same as E66J substituting  
1—Bogen-University 1B8. PRICE: \$126.23  
(ZONE 2: \$129.50)

**NOTE:** American D4T dynamic microphone can be substituted for  
Model 710 at slight increase in cost.

**NOTE:** Complete data on 1B8 and VH91 Trumpets on Pages 16  
and 17; on all Microphones, Pg. 18.

# BOGEN HX632

## 32 WATT DELUXE MOBILE AMPLIFIER AND SYSTEMS



- UNIVERSAL OPERATION 6 VOLT DC AND 110 VOLT AC
- CONSTANT VOLTAGE OUTPUT
- BUILT IN REMOTE CONTROL OF PLATE SUPPLY
- EXTREMELY LOW NOISE LEVEL
- TWO MICROPHONE INPUTS
- ONE PHONOGRAPH INPUT
- SEPARATE BASS CONTROL FOR BOOST AND ATTENUATION
- SEPARATE TREBLE CONTROL FOR BOOST AND ATTENUATION
- FUSED ON AC AND DC
- UNDERWRITERS' LABORATORIES APPROVED

For the finest mobile installations—the deluxe amplifier and systems that have everything. Extra Power, Extra Performance, Extra Styling.

The HX632 amplifier has three separate input channels; two for high impedance microphones; one for high impedance phonograph. All can be mixed and faded.

Two Tone Correctors provide separate adjustment (both boost and attenuation) of high and low frequencies. The Bass Tone Corrector provides 45 db of smoothly tapered control at 100 cycles. The Treble Corrector provides 32 db control at 10,000 cycles.

The HX632 is completely self contained. The constant speed phono-motor is protected by a hinged cover. A six volt D.C. and 110 volt A.C. power supply is built in. Changeover is automatic and foolproof.

A standby switch on the illuminated sloping control panel disconnects B supply, but keeps filaments heated. Battery consumption is reduced, component life is increased and the system is ready at all times for instant use. Provision is made for standby operation from a remote point.

In addition to voice coil and 500 ohm output taps, the HX632 has a constant 70 volt output tap. This is particularly helpful in systems requiring a quantity of speakers operating at different power levels, for it eliminates the involved calculations, previously required to determine speaker matching transformers. (See Page 19.)

Nothing has been spared in making HX632 systems the very finest in universal sound systems. Used indoors or out, on 6 V. D.C. or 110 V. A.C. they will provide rugged, faultless—high quality performance.

### SPECIFICATIONS — MODEL HX632

**POWER OUTPUT:** AC: 32 watts at less than 5%. PEAK POWER: 40 watts. DC: 25 watts at 5%.

**FREQUENCY RESPONSE:** 30-12,000 cycles,  $\pm 2$  db.

**TONE CORRECTOR RANGE:** Bass Control: +20 to -25 db at 100 cycles. Treble Control: +18 to -14 db. at 10,000 cycles.

**GAIN:** Microphone: 121 db. Phono: 80 db.

**HUM:** AC: -70 db; 6 volt DC: -60 db.

**OUTPUT IMPEDANCE:** 4-8-15-500 ohms, 70 volt constant voltage available at terminal strip and two built-in speaker sockets.

**POWER CONSUMPTION:** 120 watts, 117 V AC; 23.5 amps, 6 V DC.

**TUBES:** Total 7: 2-6SF5, 2-6SL7GT, 2-6L6G, 1-5U4G.

**DIMENSIONS:** 16" long, 16 $\frac{3}{8}$ " wide, 10 $\frac{5}{8}$ " high.

**SHIPPING WEIGHT:** 60 lbs.

**HX632 AMPLIFIER:** Complete with tubes.

**PRICE:** \$288.75  
(ZONE 2: \$297.25)

**HX632B INDOOR SYSTEM Includes:** HX632 amplifier with tubes; 2—Bogen-Jensen 12" heavy duty P12P speakers (each with 25' cable and plug) mounted in Bogen deluxe BX12 baffles; 1—Astatic JT30 crystal microphone with handle, interlocking base, 15' cable and plug.

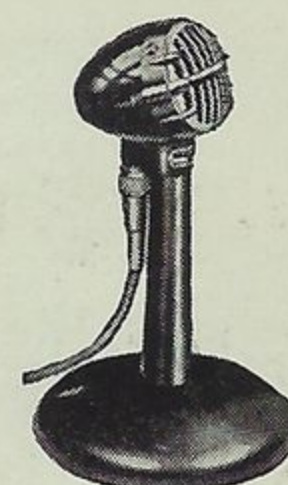
**PRICE:** \$409.35  
(ZONE 2: \$423.20)

**HX632TU OUTDOOR SYSTEM—Includes:** HX632 amplifier with tubes; 2—Bogen-University LH trumpets with MA25 units; 1—Astatic JT30 crystal microphone with handle, interlocking base, 15' cable and plug.

**PRICE:** \$443.00  
(ZONE 2: \$460.30)

**HX632TJ OUTDOOR SYSTEM —** Same as HX632TU substituting 2—Jensen VH24 trumpets.

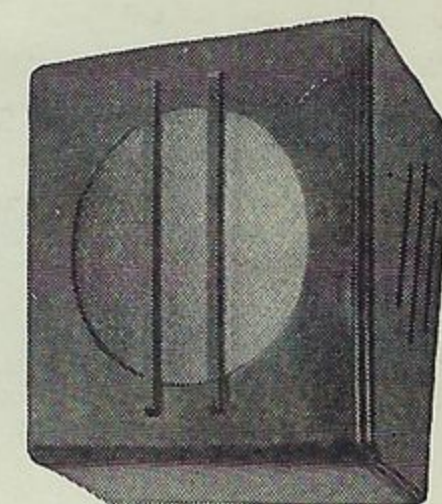
**PRICE:** \$483.00  
(ZONE 2: \$501.80)



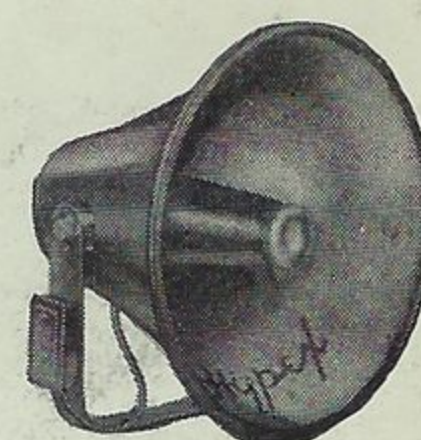
JT30



D8T



BX12



VH24



LH

**NOTE:** Where dynamic microphone is required, we recommend American D8T. Complete data on P12P Speaker, Pg. 16; on LH and VH24 Trumpets, Pgs. 16 and 17; on all Microphones, Pg. 18.

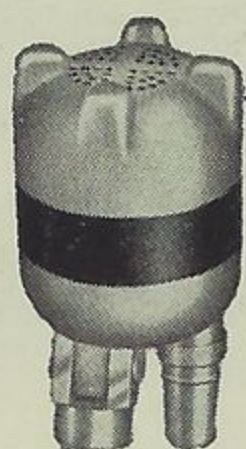


# BOGEN H623

## 23 WATT UNIVERSAL MOBILE AMPLIFIER AND SYSTEMS



710



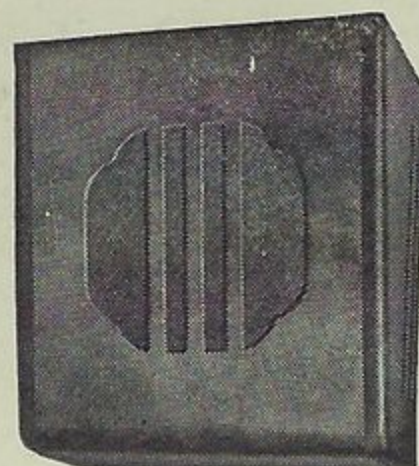
D4T



PH



VH20



WA12



- UNIVERSAL OPERATION 6 VOLT DC OR 110 VOLT AC
- CONSTANT VOLTAGE OUTPUT
- SPECIAL MOBILE PHONOGRAPH PICKUP
- EXTREMELY LOW NOISE LEVEL
- SIX POSITION MULTI-RANGE TONE CORRECTOR
- BUILT IN REMOTE CONTROL OF PLATE SUPPLY
- FUSED ON AC AND DC
- SEPARATE MICROPHONE AND PHONOGRAPH CONTROLS
- UNDERWRITERS' LABORATORIES APPROVED

The all new Bogen H623 amplifier reflects the engineering skill that has kept Bogen the leader in mobile equipment.

Ruggedly constructed throughout to withstand the punishment of mobile use, the H623 also incorporates the new mobile pickup arm. This arm is mechanically counterbalanced to track on recordings under severe vibration and even when the turntable is in a nearly vertical position. The H623 can be operated on either a 6 volt storage battery or on 115 volts A.C. Conversion from one power supply to the other is automatic and foolproof.

Two input channels which can be separately mixed and faded are provided—one for high impedance microphone; one for the built in constant speed phonograph.

The 6 position MULTI-RANGE TONE CORRECTOR provides a complete selection of frequency responses. Each position selects an entirely different tonal arrangement, the character of which is indicated by the nomenclature. The six positions are marked: (1) Natural, (2) Mellow, (3) Bass, (4) Deep Bass, (5) Brilliant and (6) Crisp. In addition to the crisp quality it effects, the sixth position assures the most effective performance of any outdoor trumpet system by sharply cutting the frequency response below 500 cycles. This permits the trumpets to handle more audio power with less distortion and minimizes the possibility of damage to the diaphragms.

The CONSTANT VOLTAGE OUTPUT TAP eliminates the involved calculations previously required to determine speaker matching transformers. This is particularly helpful in sound systems which require a quantity of speakers operating at different power levels.

**H623 AMPLIFIER:** Complete with tubes. .... **PRICE: \$204.88**  
(ZONE 2: \$210.00)

**H623B INDOOR SYSTEM—Includes:** H623 amplifier with tubes; 2—Bogen-Jensen P12S 12" speakers (each with 25' cable and plug) mounted in Bogen heavy duty WA12 baffles; 1—Bogen-Shure 710 crystal microphone with adapter stand and 7 ft. cable and plug. ....

**PRICE: \$278.98**  
(ZONE 2: \$289.00)

**H623TJ OUTDOOR SYSTEM—Includes:** H623 amplifier with tubes; 1—Jensen VH20 trumpet; 1—Bogen-Shure 710 crystal microphone with adapter stand and 7 ft. cable and plug. ....

**PRICE: \$291.83**  
(ZONE 2: \$301.30)

**H623TU OUTDOOR SYSTEM:** Same as H623TJ substituting 1—Bogen-University PH trumpet with MA25 unit. ....

**PRICE: \$269.83**  
(ZONE 2: \$279.10)

### SPECIFICATIONS — H623

**POWER OUTPUT:** AC: 23 watts at 5%; DC: 20 watts at 5%. **PEAK POWER:** 30 watts.

**FREQUENCY RESPONSE:** 30-14,000 cycles,  $\pm 2.5$  db.

**GAIN:** Microphone Channel: 116 db. Phono Channel: 73 db.

**HUM:** AC: Fund.: -74 db; Mic.: -60 db. DC: Fund.: -75 db; Mic.: -62 db.

**INPUT IMPEDANCE:** Microphone Channel (1): 2 megohms. Phono Channel (1): 500,000 ohms.

**OUTPUT IMPEDANCE:** 4-8-15 ohms and 70 volts available at both terminal strip and two speaker sockets.

**POWER CONSUMPTION:** 115 watts, 117 V. AC; 14 amps, 6 V. DC.

**TUBES:** Total 6: 2-6SF5, 1-6SL7GT, 2-6L6G, 1-7Z4.

**tone CONTROL:** 6 Positions: (1) Natural, (2) Mellow, (3) Bass, (4) Deep Bass, (5) Brilliant, (6) Crisp.

**DIMENSIONS:** 15 1/4" wide, 10 7/8" deep, 10 1/8" high (with phono).

**SHIPPING WEIGHT:** 45 lbs.

**NOTE:** Where dynamic microphone is required we recommend American D4T.

**NOTE:** Complete data on P12S Speaker, Pg. 16; on PH and VH20, Pgs. 16 and 17; on WA12 baffle, Pg. 15; on all microphones, Pg. 18.

# BOGEN HO50 AND HO125

## 50 AND 125 WATT BOOSTER AMPLIFIERS

### UNDERWRITERS' LABORATORIES APPROVED

These new booster amplifiers embody the latest developments in design and the most advanced techniques in construction. They are perfect for sound systems in industrial plants, airports, stadia, shipyards—wherever undistorted high power is required.

Note their exceptionally wide-range response characteristics—from 20 to 20,000 cycles within  $\pm 1$  db. An input signal of only 5 volts will drive either booster to rated output, and a number of boosters may be paralleled without increasing the size of the driver. The Bogen HOH, described below, is an ideal preamplifier for both these boosters.

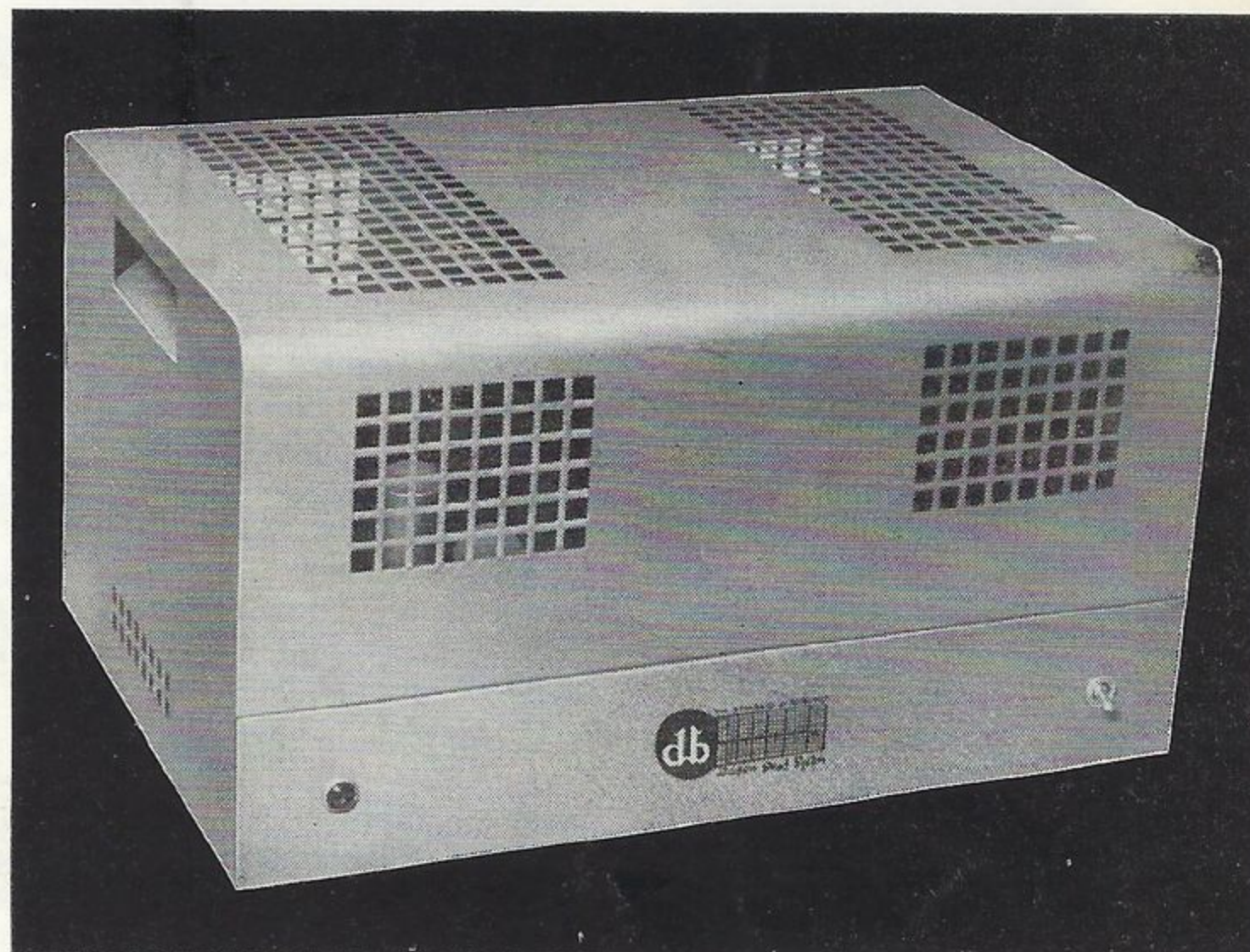
Constant voltage output taps eliminate the usual difficulties encountered in speaker matching when different amounts of power are required for different speakers in the same system. Multi-stage inverse feedback provides excellent regulation, regardless of variations in speaker load.

The input section condenser of the high voltage filter is oil filled, all resistors and condensers are mounted on terminal boards, and all wiring is of the laced cable type. Output tubes are of the transmitter type—all components are conservatively rated and will hold up under the most adverse conditions.

Remote control of high voltage can be achieved instantly, by plugging the new Model R6 self contained standby control unit into the relay outlet. Provision is also made to mount a relay on the booster chassis and the relay socket is universal for (a) internal source 6 V, (b) external source 6 V and (c) external source 24 V. Either booster may be obtained with relay built in at small additional cost. A safety interlock switch automatically disconnects high voltage when the cage is removed.

On special order, either booster may be obtained with a built in low impedance input transformer for balanced line zero level remote operation. Both are available on standard panels for rack mounting.

The HO50 and HO125 are Underwriters' Laboratories approved and also carry U.L. approval for projection booth use.



#### SPECIFICATIONS — MODEL HO50

POWER OUTPUT: 50 watts at less than 5%. PEAK POWER: 90 watts.  
FREQUENCY RESPONSE: 20-20,000 cycles,  $\pm 1$  db.  
GAIN: 48 db.  
HUM: -70 db. (referred to rated output).  
INPUT: High impedance (1): 500,000 ohms.  
OUTPUT IMPEDANCE: 4-8-16 ohms and two constant voltage taps, 70 and 140 volts.  
POWER CONSUMPTION: 210 watts, 117 V, 50-60 cycles AC.  
TUBES: Total 6: 1-6SL7, 1-6SN7, 2-807, 1-5R4GY, 1-5Y3.  
DIMENSIONS: 17 1/16" long, 12 1/2" deep, 9 3/8" high.  
SHIPPING WEIGHT: 45 lbs.

#### SPECIFICATIONS — MODEL HO125

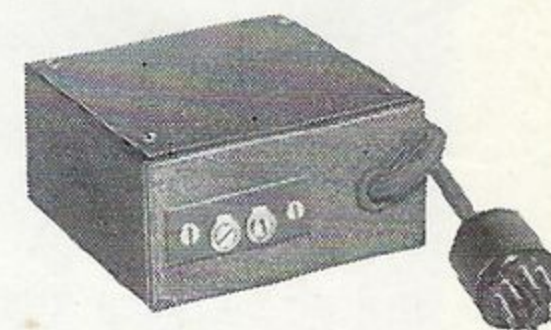
POWER OUTPUT: 125 watts at less than 5%. PEAK POWER: 140 watts.  
FREQUENCY RESPONSE: 20-20,000 cycles,  $\pm 1$  db.  
GAIN: 53 db.  
HUM: -65 db. (referred to rated output).  
INPUT: High impedance (1): 500,000 ohms.  
OUTPUT IMPEDANCE: 90 ohms and two constant voltage taps, 70 and 140 volts.  
POWER CONSUMPTION: 325 watts, 117 V, 50-60 cycles AC.  
TUBES: Total 8: 3-6SN7, 1-6SL7, 2-807, 1-5R4GY, 1-5Y3.  
DIMENSIONS: 17 1/16" long, 11 1/2" deep, 9 3/8" high.  
SHIPPING WEIGHT: 59 lbs.

|                                                                                                                          |                                              |
|--------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|
| <b>HO50 BOOSTER AMPLIFIER:</b> Complete with tubes. ....                                                                 | <b>PRICE: \$174.63</b><br>(ZONE 2: \$181.40) |
| <b>HOL50:</b> Same as HO50 but input is low impedance 500 ohms. (50 and 200 ohms available on input transformer.) ....   | <b>PRICE: \$197.45</b><br>(ZONE 2: \$204.20) |
| <b>HO125 BOOSTER AMPLIFIER:</b> Complete with tubes. ....                                                                | <b>PRICE: \$215.88</b><br>(ZONE 2: \$224.75) |
| <b>HOL125:</b> Same as HO125 but input is low impedance 500 ohms. (50 and 200 ohms available on input transformer.) .... | <b>PRICE: \$233.20</b><br>(ZONE 2: \$242.00) |

### NEW STANDBY CONTROLLER

## BOGEN R6

**New Bogen Model R6 Standby Controller** is a self contained high voltage control unit. Just plug it into the relay socket of the Bogen HO50 or HO125, connect a low resistance pair of wires to the two contact terminal strip and run it to the point from which control is to be exercised. Using No. 14 wire, the Model R6 is effective up to 100 ft.



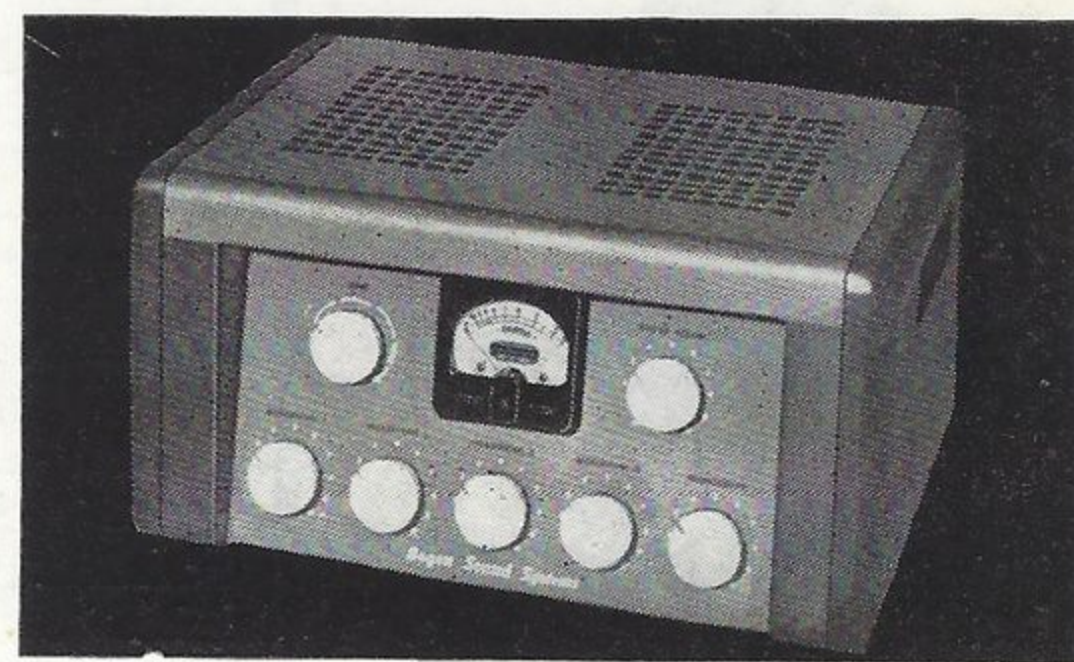
## BOGEN 5 CHANNEL BROADCAST QUALITY PREAMPLIFIERS

### UNDERWRITERS' LABORATORIES APPROVED

This new series of mixer-preamplifiers is designed to serve the requirements of recording companies, theatres, radio stations and large public address systems. The HOL and LOL are ideal for remote program pickup and telephone line applications.

Four microphone and one phonograph controls permit the mixing and fading of five separate inputs. The master gain control provides an overall control of level after the separate input devices have been mixed. A bass-treble tone corrector provides overall control of frequency response. Each model has built in power supply.

Models terminating in high impedance (HOH and LOH) will drive up to ten Bogen HO50 or HO125 booster amplifiers, and the preamplifier may be located as far as 100 feet from the boosters. Models terminating in low impedance (HOL and LOL) will drive the HOL50 and HOL125 boosters over telephone lines.



**MODEL HOH** has 1 high impedance phonograph and 4 high impedance microphone inputs. Terminates in high impedance. (No output level meter.) ....

**PRICE: \$132.83**  
(ZONE 2: \$135.50)

**MODEL LOH:** Same as Model HOH but all microphone inputs low impedance, 200 ohms. (50 and 500 ohm taps available on input transformers.)

**PRICE: \$231.83**  
(ZONE 2: \$234.65)

**MODEL HOL** has 1 high impedance phonograph and 4 high impedance microphone inputs. Output impedance is 500 ohms (50 and 200 ohm taps available on output transformer) and is equipped with an output level meter. ....

**PRICE: \$171.88**  
(ZONE 2: \$174.75)

**MODEL LOL:** Same as Model HOL but all microphone inputs low impedance, 200 ohms. (50 and 500 ohm taps available on input transformers.)

**PRICE: \$270.88**  
(ZONE 2: \$273.85)

**NOTE: Models HOH, LOH, HOL and LOL are available mounted on standard 19 1/2" rack panel for rack mounting.**

#### PREAMPLIFIER SPECIFICATIONS

OUTPUT: HOH and LOH: 8 volts (into 10,000 ohm or high load). HOL and LOL Series: "O" level.  
RESPONSE: 20-15,000 cps,  $\pm 2$  db.  
GAIN: Mic.: High Impedance Inputs: 78 db. Phono: High Impedance: 36 db.  
HUM: -65 db.  
INPUT IMPEDANCE: All High Impedance Inputs: 500,000 ohms. All Low Impedance Inputs: 200 ohms. (50 and 500 ohm taps available on input transformers.)  
POWER CONSUMPTION: 27 watts, 117 V, 60 cycles AC.  
TUBES: Total 7: 5-6SF5, 1-6SN7GT, 1-6X5GT.  
DIMENSIONS: 15 1/4" wide x 11" deep x 8" high.  
SHIPPING WEIGHT: HOH: 17 lbs.; HOL and LOH: 19 lbs.; LOL: 23 lbs.

# BOGEN

## PORTABLE PHONOGRAPHS, CARRYING CASES, TRANSFORMERS



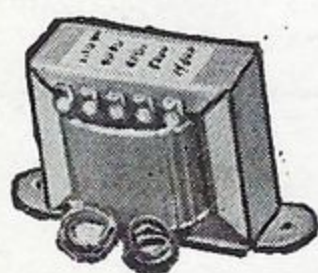
9007



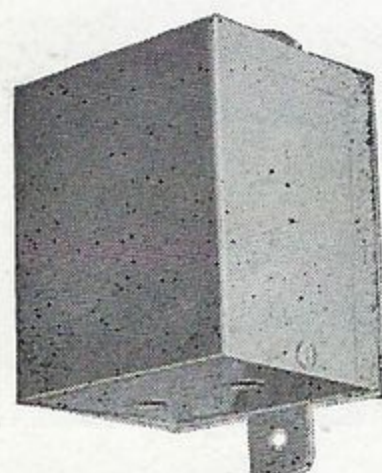
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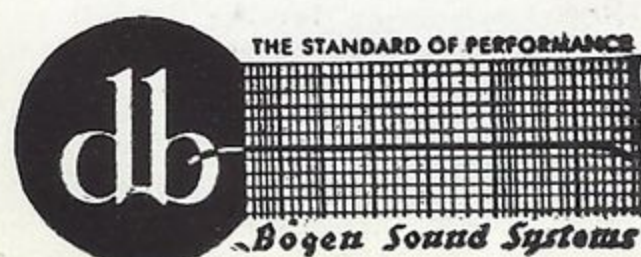
PC501



STANDARD TRANSFORMER



WEATHERPROOF TRANSFORMER



**MODEL 8009.** A low priced portable single speed 78 RPM record player. Constant speed rim drive motor and high output crystal pickup. Plays records up to 12". Plywood case, covered with durable leatherette. For 110 volt, 60 cycle AC. Dimensions: 15 $\frac{3}{4}$ " x 13 $\frac{1}{2}$ " x 7 $\frac{3}{8}$ ". Shipping weight: 20 lbs. **PRICE: \$35.75** (ZONE 2: \$37.85)

**MODEL 9003.** Versatile, low priced portable three speed (78, 45 and 33 $\frac{1}{3}$  RPM) record player. Constant 3 speed rim drive motor and Astatic 6D Turnover Pickup with double needle crystal cartridge. Plays records up to 12". Plywood case covered with durable leatherette. For 110 volts, 60 cycle AC. Dimensions: 15 $\frac{3}{4}$ " x 13 $\frac{1}{2}$ " x 7 $\frac{3}{8}$ ". Shipping weight: 20 lbs. **PRICE: \$46.75** (ZONE 2: \$49.45)

**MODEL 9007.** Deluxe two speed portable record player for 78 and 33 $\frac{1}{3}$  RPM standard and micro-groove records up to 12". "GI" Model D heavy duty dual speed motor with speed regulator built in. Astatic 6D Turnover Pickup with double needle crystal cartridge. Plywood case covered with durable leatherette. For 110 volt, 50-60 cycle AC. Dimensions: 15 $\frac{3}{4}$ " x 13 $\frac{1}{2}$ " x 7 $\frac{3}{8}$ ". Shipping weight: 24 lbs. **PRICE: \$67.10** (ZONE 2: \$70.70)

**MODEL 9016 TRANSCRIPTION PLAYER.** Deluxe two speed portable transcription player for 78 and 33 $\frac{1}{3}$  RPM standard and microgroove records up to 16". "GI" Model D heavy duty dual speed motor with speed regulator built in. Astatic 400-LQD Turnover Pickup with double needle crystal cartridge. Reinforced plywood case covered with durable leatherette. For 110 volt AC, 50-60 cycles. Dimensions: 22" x 17 $\frac{3}{8}$ " x 7 $\frac{5}{8}$ ". Shipping weight: 35 lbs. **PRICE: \$87.45** (ZONE 2: \$92.85)

**MODEL 9020 TRANSCRIPTION PLAYER.** Moderate priced two speed portable transcription player for 78 and 33 $\frac{1}{3}$  RPM standard and microgroove records up to 16". Employs dual synchronous motors driving single table and Astatic 400-LQD Turnover Pickup with double needle crystal cartridge. Reinforced plywood case covered with durable leatherette. For 110 volt AC, 60 cycles. Dimensions: 22" x 17 $\frac{3}{8}$ " x 7 $\frac{5}{8}$ ". Shipping weight: 29 lbs. **PRICE: \$67.65** (ZONE 2: \$73.00)

**MODEL PC501 PORTABLE RECORD CHANGER.** Extremely low priced portable three speed record changer for standard and microgroove records. Employs Webster 100 changer in reinforced plywood case, covered in attractive leatherette. For 110 volt AC, 60 cycles. Dimensions: 15" x 14 $\frac{1}{2}$ " x 9 $\frac{1}{4}$ ". Shipping weight: 30 lbs. **PRICE: \$86.63** (ZONE 2: \$91.15)

**MODEL 10A PORTABLE DUAL 10" SPEAKER-AMPLIFIER CASE** is used with Bogen HE10 portable systems. Constructed of genuine plywood and beautifully finished with durable leatherette. Divides into two baffles for ten inch speakers. The lower section provides space to carry any amplifier 7" deep x 11" wide x 7 $\frac{1}{2}$ " high. Overall dimensions: 9 $\frac{3}{4}$ " x 12 $\frac{1}{2}$ " x 17 $\frac{3}{8}$ ". Shipping weight: 14 lbs. **PRICE: \$22.00** (ZONE 2: \$24.10)

**DELUXE KA12 PORTABLE DUAL 12" SPEAKER-AMPLIFIER CASE.** A deluxe case designed for the Bogen H15 and H30 portable systems. Constructed of finest plywood, heavily reinforced and finished in highest quality brown tweed leatherette with green piping. Excellent hardware used throughout. The case is equipped with straps for carrying accessories. Will house two 12" speakers and provides amplifier space. 15" long x 8" high x 10 $\frac{1}{4}$ " deep. Overall dimensions: Shipping weight: 20 lbs. **PRICE: \$34.40** (ZONE 2: \$37.00)

**MODEL K30 PORTABLE DUAL 12" SPEAKER-AMPLIFIER CASE.** A low priced case constructed of plywood and finished in durable blue leatherette. Will house two 12" speakers and provides amplifier space: 14" long x 8" high x 8" deep. Overall dimensions: 16" wide x 14 $\frac{1}{2}$ " deep x 20" high. Shipping weight: 16 lbs. **PRICE: \$28.00** (ZONE 2: \$30.55)

**DELUXE NEW MODEL 240 PORTABLE DUAL 12" SPEAKER CASE** divides into two completely enclosed heavy duty 12" infinite baffles, each with an auxiliary low frequency radiator for extended bass response without boominess or resonance. Case and speaker panels are constructed of finest plywood, heavily reinforced and finished in highest quality brown tweed leatherette with green piping. Excellent hardware used throughout. Dimensions (closed): 22 $\frac{1}{2}$ " high x 18" wide x 12 $\frac{1}{2}$ " deep. Shipping weight: 28 lbs. **PRICE: \$43.18** (ZONE 2: \$46.20)

### TAPPED SPEAKER LINE MATCHING TRANSFORMERS

#### Constant Voltage Transformers

| MODEL                                            | PRIMARY TAPS (WATTS)                                          | SECONDARY TAPS (OHMS) | CORE SIZE                         | LIST PRICE |
|--------------------------------------------------|---------------------------------------------------------------|-----------------------|-----------------------------------|------------|
| T4                                               | 4, 2, 1, $\frac{1}{2}$<br>2, 1, $\frac{1}{2}$ , $\frac{1}{4}$ | 4<br>8                | $\frac{1}{2}$ " x $\frac{5}{8}$ " | \$3.73     |
| T16                                              | 16, 8, 4<br>16, 8, 4, 2                                       | 4<br>8                | $\frac{7}{8}$ " x $\frac{3}{4}$ " | \$4.68     |
| <b>Weatherproof Constant Voltage Transformer</b> |                                                               |                       |                                   |            |
| T20W                                             | 20, 10, 5                                                     | 16                    | $\frac{7}{8}$ " x $\frac{3}{4}$ " | \$10.18    |

#### Constant Impedance Transformers

| MODEL                                               | WATTS | IMPEDANCE TAPS                                      | CORE SIZE                         | LIST PRICE |
|-----------------------------------------------------|-------|-----------------------------------------------------|-----------------------------------|------------|
| T5A                                                 | 20    | 500, 1000, 1500, 2000 ohms to 8 ohm voice coil      | $\frac{7}{8}$ " x $\frac{7}{8}$ " | \$4.13     |
| T5B                                                 | 12    | 500, 1000, 1500, 2000 ohms to 8 ohm voice coil      | $\frac{7}{8}$ " x $\frac{7}{8}$ " | \$3.85     |
| T5C                                                 | 6     | 500, 1000, 1500, 2000 ohms to 8 ohm voice coil      | $\frac{7}{8}$ " x $\frac{7}{8}$ " | \$3.41     |
| T25A                                                | 20    | 2500, 3000, 3500, 4000 ohms to 8 ohm voice coil     | $\frac{7}{8}$ " x $\frac{7}{8}$ " | \$4.13     |
| T25B                                                | 12    | 2500, 3000, 3500, 4000 ohms to 8 ohm voice coil     | $\frac{7}{8}$ " x $\frac{7}{8}$ " | \$3.85     |
| T25C                                                | 6     | 2500, 3000, 3500, 4000 ohms to 8 ohm voice coil     | $\frac{7}{8}$ " x $\frac{7}{8}$ " | \$3.41     |
| T45A                                                | 20    | 4500, 7000, 10,000, 14,000 ohms to 8 ohm voice coil | $\frac{3}{4}$ " x $\frac{3}{4}$ " | \$4.13     |
| T45B                                                | 12    | 4500, 7000, 10,000, 14,000 ohms to 8 ohm voice coil | $\frac{3}{4}$ " x $\frac{3}{4}$ " | \$3.85     |
| T45C                                                | 6     | 4500, 7000, 10,000, 14,000 ohms to 8 ohm voice coil | $\frac{3}{4}$ " x $\frac{3}{4}$ " | \$3.41     |
| <b>Weatherproof Constant Impedance Transformers</b> |       |                                                     |                                   |            |
| T5W                                                 | 20    | 500, 1000, 1500, 2000 ohms to 8 ohm voice coil      | $\frac{5}{8}$ " x $\frac{3}{4}$ " | \$10.18    |
| T25W                                                | 20    | 2500, 3000, 3500, 4000 ohms to 8 ohm voice coil     | $\frac{5}{8}$ " x $\frac{3}{4}$ " | \$10.18    |
| T45W                                                | 20    | 4500, 7000, 10,000, 14,000 ohms to 8 ohm voice coil | $\frac{5}{8}$ " x $\frac{3}{4}$ " | \$10.18    |

# BOGEN BAFFLES AND REPRODUCERS

Each model in this craft built line of standard and deluxe baffles is built of selected veneers, strongly reinforced, and hand finished. All have been designed to assure maximum performance of the speakers with which they are used. All are supplied with mounting hardware.

**MODEL WA6 STANDARD 6" BAFFLE.** Dimensions: 7 $\frac{1}{4}$ " wide x 8" high x 4 $\frac{3}{4}$ " deep. Standard carton contains 6 baffles. Shipping weight 9 lbs. **PRICE EACH: \$5.50**

**MODEL WA8 STANDARD 8" BAFFLE.** Sides are  $\frac{1}{2}$ " solid wood. Dimensions: 10 $\frac{1}{2}$ " wide x 11" high x 6 $\frac{1}{2}$ " deep. Standard carton contains 4 baffles. Shipping weight 9 lbs. **PRICE EACH: \$6.90**

**MODEL BX8 DELUXE 8" BAFFLE.** The ideal 8" baffle, larger and heavier than the WA8. Finished in dark walnut with two raised grill bars. Dimensions: 10 $\frac{1}{2}$ " wide x 11 $\frac{1}{4}$ " high x 7 $\frac{3}{4}$ " deep. Standard carton contains 4 baffles. Shipping weight 10 lbs.

**MODEL BA12 STANDARD 12" BAFFLE** will accommodate 12" or 10" speakers. Dimensions: 13 $\frac{3}{4}$ " wide x 13 $\frac{3}{4}$ " high x 8 $\frac{1}{2}$ " deep. Standard carton contains 2 baffles. Shipping weight 8 lbs. **PRICE EACH: \$9.40**

**MODEL WA12 HEAVY DUTY 12" BAFFLE.** Sides are  $\frac{3}{4}$ " solid wood. Dimensions: 14 $\frac{7}{8}$ " wide x 16 $\frac{1}{2}$ " high x 8 $\frac{1}{2}$ " deep. Standard carton contains 2 baffles. Shipping weight 12 lbs. **PRICE EACH: \$12.50**

**MODEL BX12 DELUXE 12" BAFFLE** is the perfect enclosure for 12" speakers.  $\frac{3}{4}$ " side panel construction, hand rubbed dark walnut finished, raised grill bars and solid reinforcement throughout. The BX12 will accommodate the heaviest 12" speakers. Dimensions: 15 $\frac{1}{2}$ " wide x 17 $\frac{3}{4}$ " high x 11 $\frac{1}{4}$ " deep. Standard carton contains 1 baffle. Shipping weight 9 lbs. **PRICE EACH: \$16.25**

**MODEL CB12 CORNER BAFFLE.** A new bass reflex corner baffle for 12" speakers. Dimensions: 19 $\frac{1}{2}$ " wide x 20 $\frac{1}{2}$ " high x 11 $\frac{1}{4}$ " deep. Standard carton contains 2 baffles. Shipping weight 7 $\frac{1}{2}$  lbs. **PRICE EACH: \$23.75**

## REPRODUCERS

**MODEL WS6 STANDARD 6" REPRODUCER** incorporates a six inch PM speaker and a T5C transformer mounted in the WA6 baffle. (T25C or T45C available if specified.) Standard carton contains 6 units. Shipping weight 16 lbs. **PRICE EACH: \$16.50**

**MODEL WS6T4.** Same as WS6 but with T4 line matching transformer. **PRICE EACH: \$16.78**

**MODEL WS8 STANDARD 8" REPRODUCER** incorporates a Jensen PM8U Alnico 5 speaker and a T5C transformer mounted in the WA8 baffle. (T25C or T45C available if specified.) Standard carton contains 4 units. Shipping weight 30 lbs. **PRICE EACH: \$23.17**

**MODEL WS8T4.** Same as WS8 but with T4 line matching transformer. **PRICE EACH: \$23.45**

**MODEL BSX8 DELUXE 8" REPRODUCER** incorporates a Jensen P8S Alnico 5 speaker and a T5C transformer mounted in the BX8 baffle. (T25C or T45C available if specified.) Standard carton contains 4 units. Shipping weight 32 lbs. **PRICE EACH: \$24.78**

**MODEL BX8T4.** Same as BSX8 but with T4 line matching transformer. **PRICE EACH: \$25.06**

**MODEL BS12 STANDARD 12" REPRODUCER** incorporates a Jensen P12S Alnico 5 speaker and a T5B transformer mounted in the BA12 baffle. (T25B or T45B available if specified.) Standard carton contains 2 units. Shipping weight 16 lbs. **PRICE EACH: \$34.20**

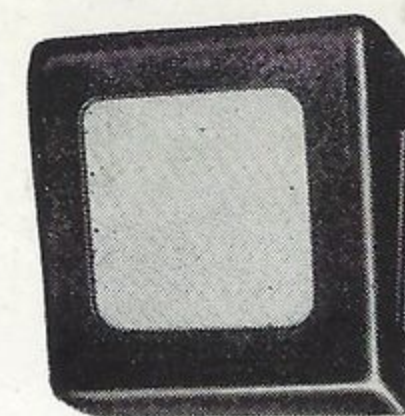
**MODEL B12T6.** Same as BS12 but with T16 line matching transformer. **PRICE EACH: \$35.03**

**MODEL WS12 HEAVY DUTY 12" REPRODUCER** incorporates a Jensen P12S Alnico 5 speaker and a T5B transformer mounted in the WA12 baffle. (T25B or T45B available if specified.) Standard carton contains 1 unit. Shipping weight 12 lbs. **PRICE EACH: \$37.10**

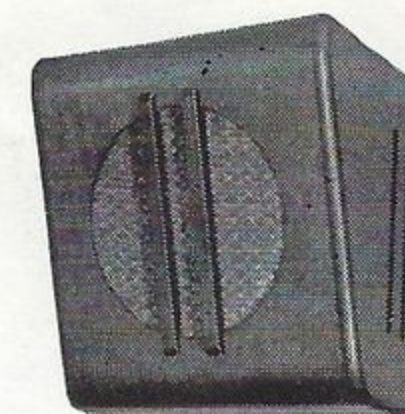
**MODEL W12T6.** Same as WS12 but with T16 line matching transformer. **PRICE EACH: \$37.93**

**MODEL BSX12 DELUXE 12" REPRODUCER** incorporates a Jensen P12P heavy duty 12" speaker and a T5A transformer mounted in the BX12 baffle. (T25A or T45A available if specified.) Standard carton contains 1 unit. Shipping weight 25 lbs. **PRICE EACH: \$61.33**

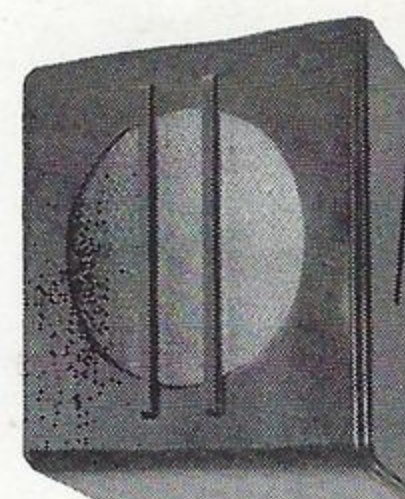
**MODEL BX126.** Same as BSX12 but with T16 line matching transformer. **PRICE EACH: \$61.88**



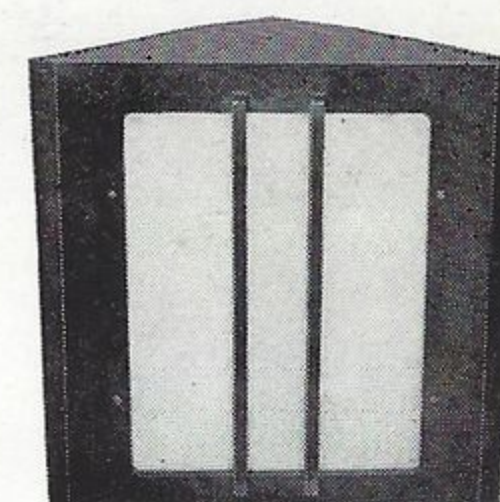
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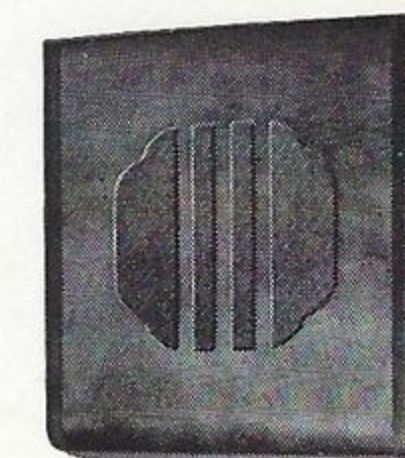
BX8



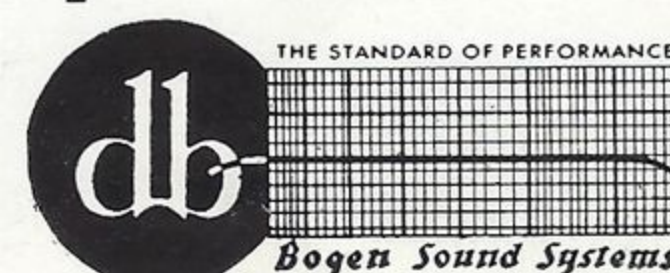
BX12



CB12



WA12

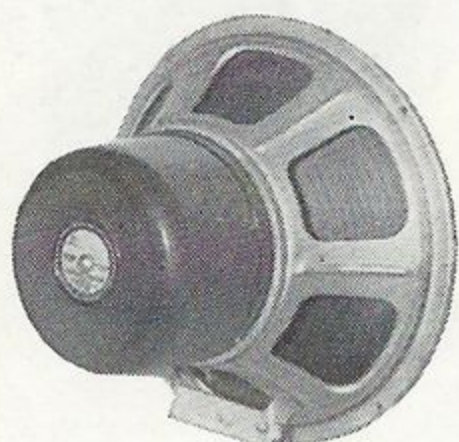




VH24



VH-91



P12N

# JENSEN HYPEX TRUMPETS

A completely new line of projectors, employing the exclusive Hypex flare formula. The new Alnico 5 units are entirely enclosed within one piece rigid horns, yet units may be removed and replaced if necessary without special tools. Weatherproof terminal boxes and heavy trunnion "U" mounts are provided on the larger projectors.

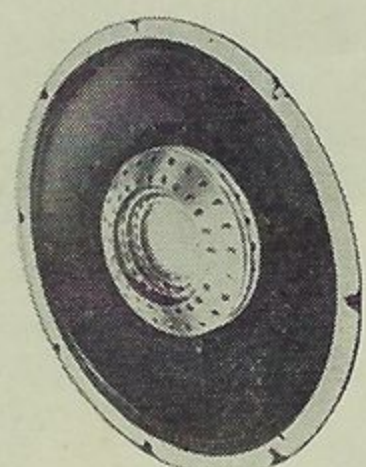
| MODEL | POWER    | IMPED-<br>ANCE | DIA-<br>METER                   | LENGTH                           | AIR<br>COLUMN | RE-<br>SPONSE      | LIST<br>PRICE |
|-------|----------|----------------|---------------------------------|----------------------------------|---------------|--------------------|---------------|
| VH24  | 25 watts | 16 ohms        | 25"                             | 22 <sup>3</sup> / <sub>8</sub> " | 58"           | 110-6000<br>cycles | \$89.50       |
| VH20  | 25 watts | 16 ohms        | 21"                             | 20 <sup>1</sup> / <sub>4</sub> " | 52"           | 140-6000<br>cycles | \$76.00       |
| VH15  | 15 watts | 8 ohms         | 16"                             | 15"                              | 36"           | 180-6000<br>cycles | \$56.50       |
| VH91  | 15 watts | 8 ohms         | 8 <sup>7</sup> / <sub>8</sub> " | 7 <sup>5</sup> / <sub>8</sub> "  | 16"           | 300-6000<br>cycles | \$35.80       |

## JENSEN WIDE RANGE COAXIAL SPEAKERS

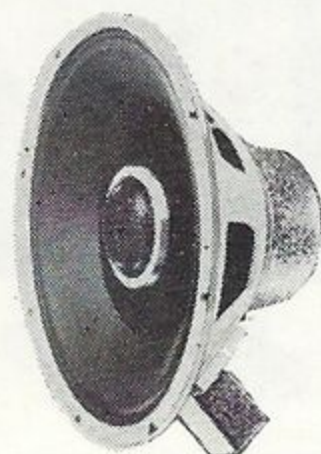
**MODEL H-510** 15" Coaxial employs a scientifically designed wide range acoustic lens in conjunction with the Hypex formula h-f horn for improved special distribution of high frequency radiation. Polar pattern is such that presence and brilliance of reproduction are maintained essentially constant over the room—and to a degree heretofore unrealized. A new annular low-frequency radiator structure contributes increased smoothness of response. Input Impedance: 16 ohms; Power Rating: 30 watts; Baffle Opening: 13<sup>1</sup>/<sub>2</sub>"; O.D.: 15<sup>1</sup>/<sub>8</sub>"; Depth: 9-9/16". **PRICE: \$154.50**

**MODEL K-410** 15" Coaxial. An entirely new order of performance in price class. Exceptionally smooth response due to Diaplane low frequency radiator and new high frequency unit. Input Impedance: 16 ohms; Power Rating: 25 watts; Baffle Opening: 13<sup>1</sup>/<sub>4</sub>"; O.D.: 15<sup>1</sup>/<sub>8</sub>"; Depth: 9".

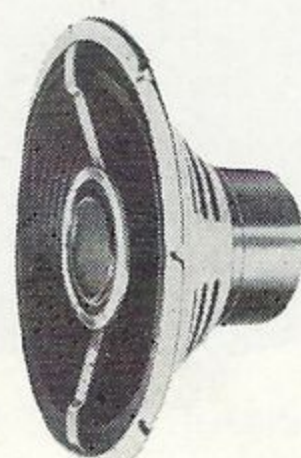
**MODEL K-210** 12" Coaxial. High Fidelity reproduction, characteristic of the Coaxial two way system in a unit of small size and amazingly low cost. Input Impedance: 8 ohms; Power Rating: 12 watts; Baffle Opening: 10<sup>1</sup>/<sub>2</sub>"; O.D.: 12<sup>1</sup>/<sub>8</sub>"; Depth: 6-5/16". **PRICE: \$39.50**



H510



K410



K210

## JENSEN ALNICO FIVE CONE SPEAKERS

A great series of permanent magnet speakers incorporating Alnico V magnets. All are completely dustproof, all are entirely consistent with existing or proposed RMA specifications.

| MODEL | CONE<br>DIA-<br>METER | MAGNET<br>WEIGHT | VOICE COIL                      |                |       | GAP<br>ENERGY* | LIST<br>PRICE |
|-------|-----------------------|------------------|---------------------------------|----------------|-------|----------------|---------------|
|       |                       |                  | DIA-<br>METER                   | IMPED-<br>ANCE | WATTS |                |               |
| P8U   | 8"                    | 2.15 oz.         | 3/4"                            | 8.0 ohms       | 6.0   | .740           | \$10.20       |
| P8T   | 8"                    | 3.16 oz.         | 3/4"                            | 3.2 ohms       | 6.5   | 1.064          | \$11.50       |
| P8S   | 8"                    | 4.64 oz.         | 1"                              | 8.0 ohms       | 8.0   | 1.530          | \$13.70       |
| P10S  | 10"                   | 4.64 oz.         | 1"                              | 8.0 ohms       | 9.0   | 1.530          | \$16.30       |
| P12S  | 12"                   | 4.64 oz.         | 1"                              | 8.0 ohms       | 10.0  | 1.530          | \$18.85       |
| P12P  | 12"                   | 14.7 oz.         | 1 <sup>1</sup> / <sub>2</sub> " | 8.0 ohms       | 16.0  | 4.600          | \$39.20       |
| P12N  | 12"                   | 20 oz.           | 1 <sup>1</sup> / <sub>2</sub> " | 8.0 ohms       | 18.0  | 6.600          | \$56.50       |

\*Gap energy expressed in millions of ergs, indicates relative efficiency of speakers.



**MODELS LH AND PH REFLEX TRUMPETS** incorporate the famous reflex construction in which the air column is folded back on itself twice. This design provides maximum compactness and protection from the weather. The Model LH, only 23" long with its driver unit attached, provides a response equal to a standard 4½ ft. horn. The Model PH, only 20" long complete with unit, has a response equivalent to a 3½ ft. straight horn. Heavy gauge metal construction and corrosion resistant finishes on both horns enable them to withstand the most severe outdoor conditions. Rubber damped rims eliminate mechanical resonance and "U" bracket mountings simplify installation. Both models are excellent for reproducing speech and music, indoors and out.

**MODEL PMA ADAPTER** permits mounting Bogen-University Models LH, PH, RLH and RPH to standard ½" pipe. The adapter mounts quickly and securely to the standard "U" bracket. **PRICE: \$1.50**

**MODELS MA25 and SA-HF DRIVER UNITS** are PM dynamic types using breakdown-proof bakelite diaphragms. "Rim centering" construction increases efficiency, and eliminates the possibility of voice coil misalignment due to shock or vibration. Both assemblies are enclosed in hermetically sealed housings and both have a power handling capacity of 25 watts. SA-HF has higher conversion efficiency and broader frequency response. Voice coil impedances are 16 ohms.

**MODEL PA30 HEAVY DUTY DRIVER UNIT** is a new high power, continuous duty, completely waterproof unit with built in line matching transformer for constant voltage and constant impedance matching. (Translucent cover plate provides ready access to 165, 250, 500, 1,000, 2,000 ohms for constant impedance matching—30, 20, 10, 5, 2½ watts for constant voltage matching.) The PA30 will handle 30 watts audio power without blasting or overloading and has extremely broad frequency response.

**MODEL 2YC CONNECTOR** converts Models PH, LH, RPH, and RLH to 50 watt speakers. Where noise level is extremely high and where space limitations or directional requirements dictate a single horn the Model 2YC with two Bogen-University driver units provides the perfect solution.

**PRICE: \$10.00**

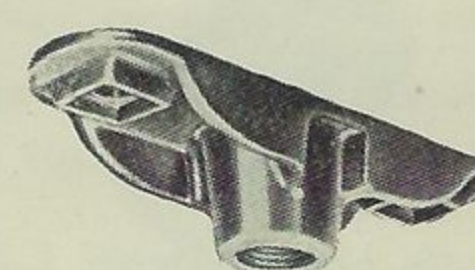
**MODELS CR, IB8 and MIL-8 PAGING SPEAKERS** are smaller, reflex air column horns built to the standards of the LH and PH. Each has its own hermetically sealed driver unit, each is thoroughly weatherproof and all are equipped with heavy duty swivel mounting brackets. The CR is ideal for speech systems requiring maximum punch and intelligibility. The IB8 is excellent for medium power paging systems and the MIL-6 is perfect for lower power paging systems.

**MODEL RLH and RPH RADIAL REFLEX PROJECTORS** are the ideal answers for the great majority of sound distribution systems in high noise level areas. Their 360° dispersion permits uniform sound distribution with maximum efficiency, fewest total speakers and exceptional response. RLH is suggested where maximum low frequency response is required. The RPH has a higher cutoff and is designed for both speech and music.

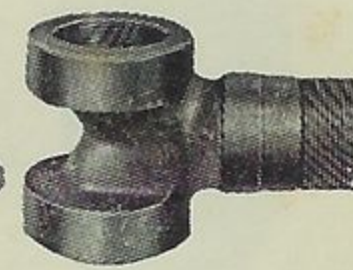
| MODEL         | POWER    | IMPEDANCE              | DIA-METER | LENGTH | WEIGHT | AIR COLUMN | LOW FREQUENCY CUTOFF | LIST PRICE |
|---------------|----------|------------------------|-----------|--------|--------|------------|----------------------|------------|
| MIL           | 3 watts  | 8 ohms                 | 6"        | 7"     | 3½ lb. | 14"        | 400 cycles           | \$25.00    |
| IB8           | 12 watts | 8 ohms                 | 9"        | 9"     | 5 lb.  | 17"        | 300 cycles           | \$32.50    |
| CR            | 18 watts | 16 ohms (4 on request) | 11"       | 9"     | 9 lb.  | 21"        | 250 cycles           | \$42.00    |
| PH with MA25  | 25 watts | 16 ohms                | 20"       | 20"    | 13 lb. | 3½ ft.     | 150 cycles           | \$54.00    |
| PH with SAHF  | 25 watts | 16 ohms                | 20"       | 20"    | 15 lb. | 3½ ft.     | 150 cycles           | \$66.00    |
| LH with SAHF  | 25 watts | 16 ohms                | 25½"      | 23"    | 20 lb. | 4½ ft.     | 120 cycles           | \$81.50    |
| LH with PA30  | 25 watts | 16 ohms                | 25½"      | 23"    | 22 lb. | 4½ ft.     | 120 cycles           | \$94.50    |
| RLH with PA30 | 25 watts | 16 ohms                | 28¼"      | 25¼"   | 26 lb. | 5 ft.      | 120 cycles           | \$109.00   |
| RPH with MA25 | 25 watts | 16 ohms                | 24¾"      | 19½"   | 21 lb. | 4 ft.      | 150 cycles           | \$70.00    |



LH



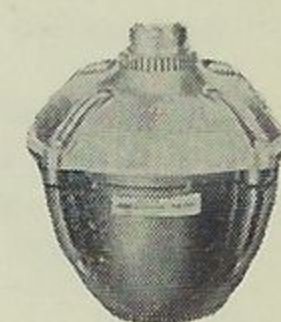
PMA



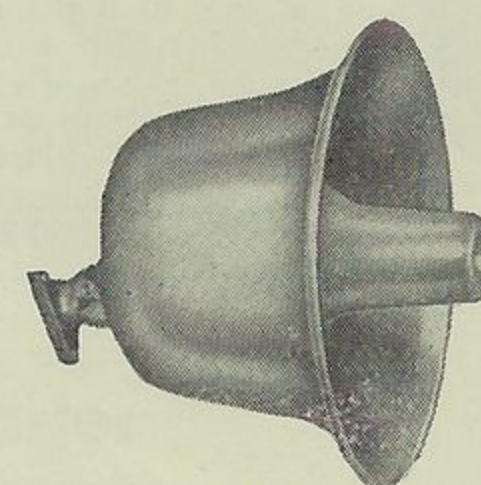
2YC



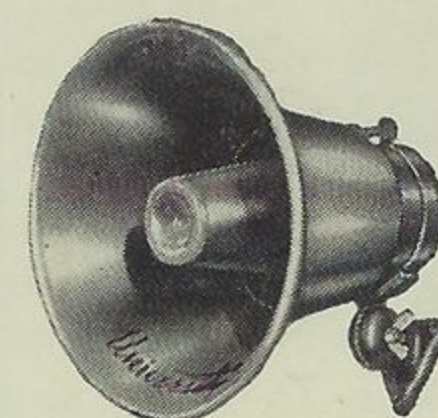
SAH



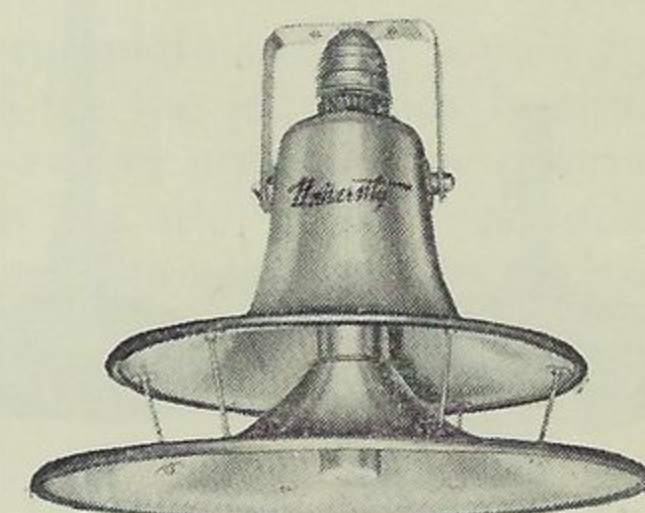
PA30



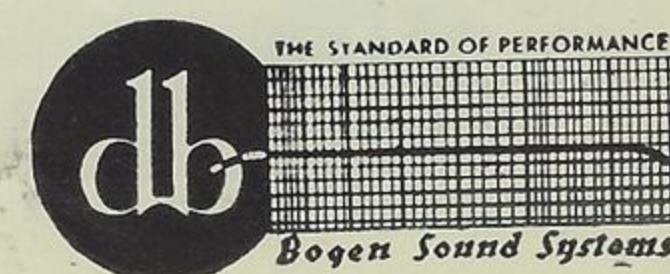
CR



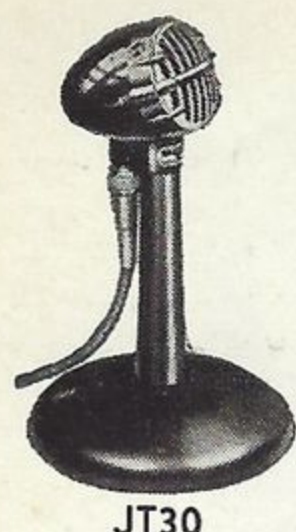
IB8



RLH



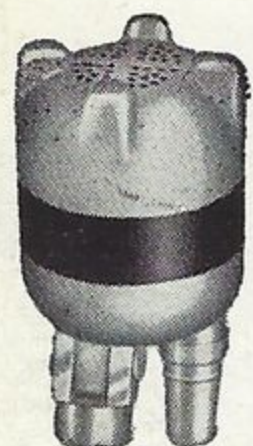
## MICROPHONES — STANDS — MIXERS



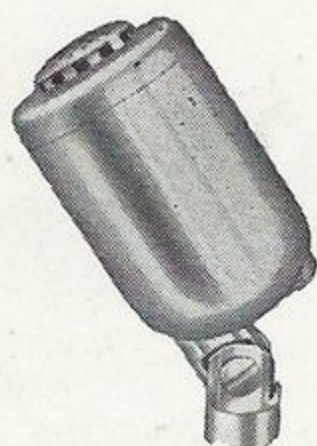
JT30



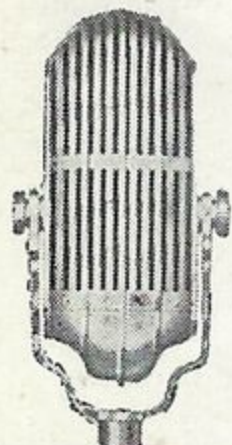
710



D4T



D8T



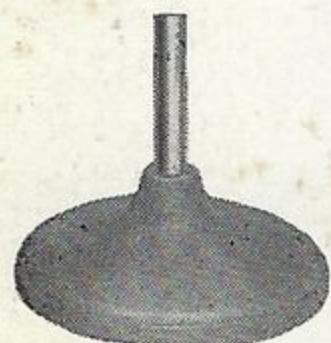
D9T



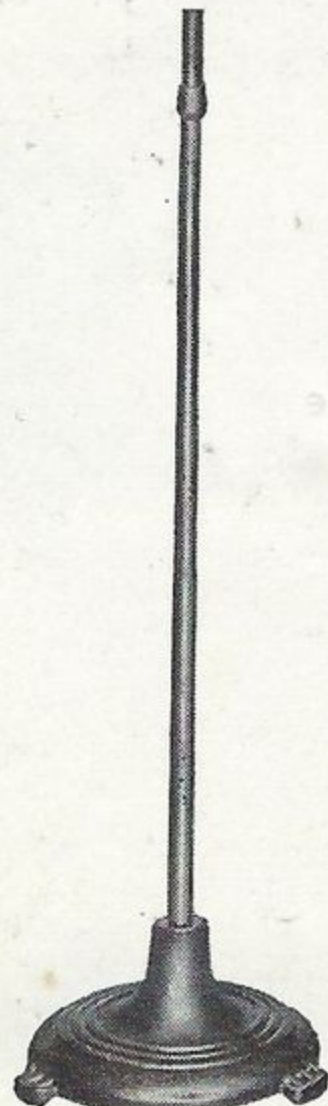
737A



U10X



DS2



H10

**BOGEN-SHURE 710 CRYSTAL.** Extremely versatile, extremely good looking—extremely low priced—and excellent quality in performance. The stand adapter removes quickly, making a convenient hand-held microphone. Complete with 7 ft. cable. Output: —50 db. Response: 60-6,000 cycles.

**PRICE: \$10.95**

**ASTATIC JT30 CRYSTAL.** An inexpensive, highly practical crystal microphone, designed expressly for public address use. Excellent for amateur and recording requirements. Finished in opalescent gray and chrome. Complete with handle, interlocking base, 15' cable. Output: —52 db. Response: 30-6,000 cycles.

**PRICE: \$16.95**

**AMERICAN D4T HIGH IMPEDANCE DYNAMIC** is an excellent microphone for general use where clear speech and natural music reproduction are required. Excellent for outdoor use. Can be swiveled through full 180° vertically and locked into position. Complete with 12½' cable. Output: —56 db. Response: 60-7,500 cycles.

**PRICE: \$24.00**

**AMERICAN D4TL LOW IMPEDANCE DYNAMIC.** Same as D4T but balanced output 200 or 500 ohms. Specify when ordering.

**PRICE: \$24.00**

**AMERICAN D4 LOW IMPEDANCE DYNAMIC.** Same as D4T but balanced output, 50 ohms.

**PRICE: \$21.50**

**AMERICAN D8T HIGH IMPEDANCE DYNAMIC** embodies the latest developments in dynamic microphone design. Exceptionally rugged and compact construction, wide response and sensitivity. Ideal for music and speech reproduction, indoors and out. Swivel mounting permits non-directional or semi-directional pickup. Complete with 12½' cable. Output: —50 db. Response: 40-10,000 cycles.

**PRICE: \$30.00**

**AMERICAN D8TL LOW IMPEDANCE DYNAMIC.** Same as D8T but balanced output 200 or 500 ohms. Specify when ordering.

**PRICE: \$30.00**

**AMERICAN D8 LOW IMPEDANCE DYNAMIC.** Same as D8T but balanced output, 50 ohms.

**PRICE: \$27.00**

**BOGEN-SHURE 737A SUPER-CARDIOID CRYSTAL.** The advantage of higher priced super-cardioid performance at low cost. It is the only super-cardioid crystal microphone and as such ranks far above ordinary crystals. Provides a cancellation of approximately 15 db. for sound approaching from the rear, and reduces random pickup by 73%. Case is pivoted in the rear and can be pointed upwards or turned. Complete with 20' cable. Output: —54 db. Response: 60-10,000 cycles.

**PRICE: \$39.75**

**AMERICAN D9T HIGH IMPEDANCE CARDIOID DYNAMIC** is a pressure-velocity combination microphone with pick-up from front only, broad frequency response and high output, plus the usual dynamic qualities of ruggedness, and immunity to weather. Ideal for orchestra pickup and particularly recommended for minimizing feedback and extraneous noise. Complete with 12½' cable. Output: —52 db. Response: 40-10,000 cycles.

**PRICE: \$45.00**

**AMERICAN D9TL LOW IMPEDANCE CARDIOID DYNAMIC.** Same as D9T but balanced output 200 or 500 ohms. Specify when ordering.

**PRICE: \$45.00**

**AMERICAN D9 LOW IMPEDANCE CARDIOID DYNAMIC.** Same as D9T but balanced output, 50 ohms.

**PRICE: \$42.00**

**BOGEN-SHURE U10X SUPER-CARDIOID UNIDYNE** has a specially designed moving coil and high flux magnet providing high efficiency and smooth peak-free response. Response in the rear is practically cut off due to the "Uniphase" unidirectional network. Head tilts to angle of 90°. Recommended for best music and speech reproduction and for minimizing feedback. Satin chrome streamlined case. Impedance selector at rear of case permits selections of high, medium or low impedance. Complete with 25' cable. Output: —55 db. Response: 40-10,000 cycles.

**PRICE: \$72.50**

**H10 STUDIO MICROPHONE STAND** is sturdy and good looking. Base is finished in grey wrinkle, baked enamel. It is 10" in diameter, excluding the protruding legs. Tubing is heavy brass, finished in polished chrome. Extends from 35" to 63". Weighs 14 lbs.

**PRICE: \$12.38**

**DS2 DESK MICROPHONE STAND** is a heavy duty stand with cast 6" base finished in durable gray shrivel. 4" seamless chrome plated tubing. Overall height 6½'

**PRICE: \$2.48**

**MODEL SR REMOTE CONTROL** is equipped with two gain controls. These permit the operator to control volume and mix two input channels of the Bogen HX30 amplifiers. The SR is extremely compact and can be used up to 2,000 feet of cable without compromising power or quality of the amplifier.

**PRICE: \$10.18**

**MODEL RC50:** 50 ft. cable and plugs for SR.

**PRICE: \$6.60**

**MODEL RC100:** 100 ft. cable and plugs for SR.

**PRICE: \$11.00**

**MODEL AM2 AD-A-MIXER** Adds An Extra Microphone Channel To Any High Impedance Amplifier. It is equipped with two microphone connectors and two gain controls. A short shielded cable and connector is provided to attach the AM2 to the high impedance microphone input of any standard amplifier. Two microphones can be connected to a single input and can be mixed and faded with the individual controls. Dimensions: 5¾" long x 2¾" wide x 1¼" high.

**PRICE: \$13.48**

## MICROPHONE AND SPEAKER CABLES

**MODEL 1048:** Heavy duty single conductor shielded microphone cable for high impedance lines. Stranded copper conductor with solid rubber filler, shield and heavy rubber overall.

**PRICE: \$11.55 per 100'**

**MODEL 1017:** Two conductor S.J.P.O. Zip Cord. Stranded copper, rubber covered overall. For light duty speaker cable.

**PRICE: \$4.40 per 100'**

**MODEL 1008:** Two conductor, shielded microphone cable No. 18 for low impedance lines. Stranded copper conductors with rubber covers, shielded and heavy rubber overall.

**PRICE: \$17.25 per 100'**

**MODEL 1021:** Two conductor rubber covered heavy duty No. 18 speaker cable.

**PRICE: \$8.25 per 100'**

**MODEL 14015:** Two conductor twisted No. 20 stranded speaker cable.

**PRICE: \$5.15 per 100'**

**MODEL 1102P:** Special 2 conductor twisted No. 20, plastic insulation, shielded overall for school system installations.

**PRICE: \$7.43 per 100'**

**MODEL 132PW:** Same as 1102P with weatherproof covering for use where cable is partially exposed to weather (not waterproof).

**PRICE: \$10.13 per 100'**



## THE CONSTANT VOLTAGE METHOD FOR SPEAKER MATCHING

Bogen amplifiers\* are now equipped with one or two Constant Voltage Output Taps. This important technique for selecting the correct speaker-line matching transformers, has been adopted as the standard by the RMA, and a basic understanding of it will help you to use your Bogen amplifier and sound system most effectively.

The old "500 ohm line method" was properly termed The Constant Impedance Method. All amplifiers, regardless of power rating were equipped with "500 ohm lines". Thus the higher the power rating of an amplifier, the higher the voltage on the speaker line, when it was operating at rated output. There were several drawbacks to this technique. In the first place, the mathematical calculations of speaker transformer impedances was rather cumbersome. Secondly, if it became necessary to add speakers to an existing system, and to replace the amplifier with a larger one, it also became necessary to change the impedance taps of the original speaker transformers.

R.M.A. has established the 70.7 volt (labeled 70 volts for simplicity) output tap as the standard. Briefly this means that any amplifier, regardless of its power rating should deliver its rated power at 70 volts. Thus a ten watt, a thirty watt or a fifty watt amplifier should deliver ten watts, thirty watts and fifty watts respectively at 70 volts. When the amplifier delivers less than its rated power, voltage on the line is less than 70 volts. When it delivers more than rated power, voltage on the line exceeds 70 volts.

Referring to the basic relationship of power, voltage and impedance =  $\frac{E^2}{Z}$  or Power =  $\frac{\text{voltage} \times \text{voltage}}{\text{impedance}}$  It can also be expressed:  $Z = \frac{E^2}{P}$  or Required Impedance of the Line Matching Transformer =  $\frac{\text{Output Voltage} \times \text{Output Voltage}}{\text{Desired Power}}$

Since output voltage is now a standard 70.7 volts, this can be restated: Required Impedance of the Line Matching Transformer =  $\frac{5000}{\text{Desired Power}}$

R.M.A. has also recommended a 141.4 volt tap (simplified to 140 volts) and a number of Bogen amplifiers are so equipped.\*\* On long runs of speaker lines, less power will be lost in the line if the 140 volt tap is used. It can be seen that when using the 140 volt tap, the simple formula becomes:

$$Z = \frac{(140)^2}{P} \quad \text{or} \quad \text{Required Impedance of the Line Matching Transformer} = \frac{20,000}{\text{Desired Power}}$$

\*Except Models E75 and E66.

\*\*HX50, H50, HO50, HO125.

Consider a typical example. You are to lay out a system for a factory. You establish the power requirements as follows:

|                          |          |
|--------------------------|----------|
| A—Reception Room         | 1 watt   |
| B—Small Office           | 1 watt   |
| C—Main Office            | 2 watts  |
| D—Assembly Department    | 5 watts  |
| E—Sheet Metal Department | 10 watts |
| F—Machine Shop           | 10 watts |
| G—Loading Platform       | 20 watts |
| Total                    | 49 watts |

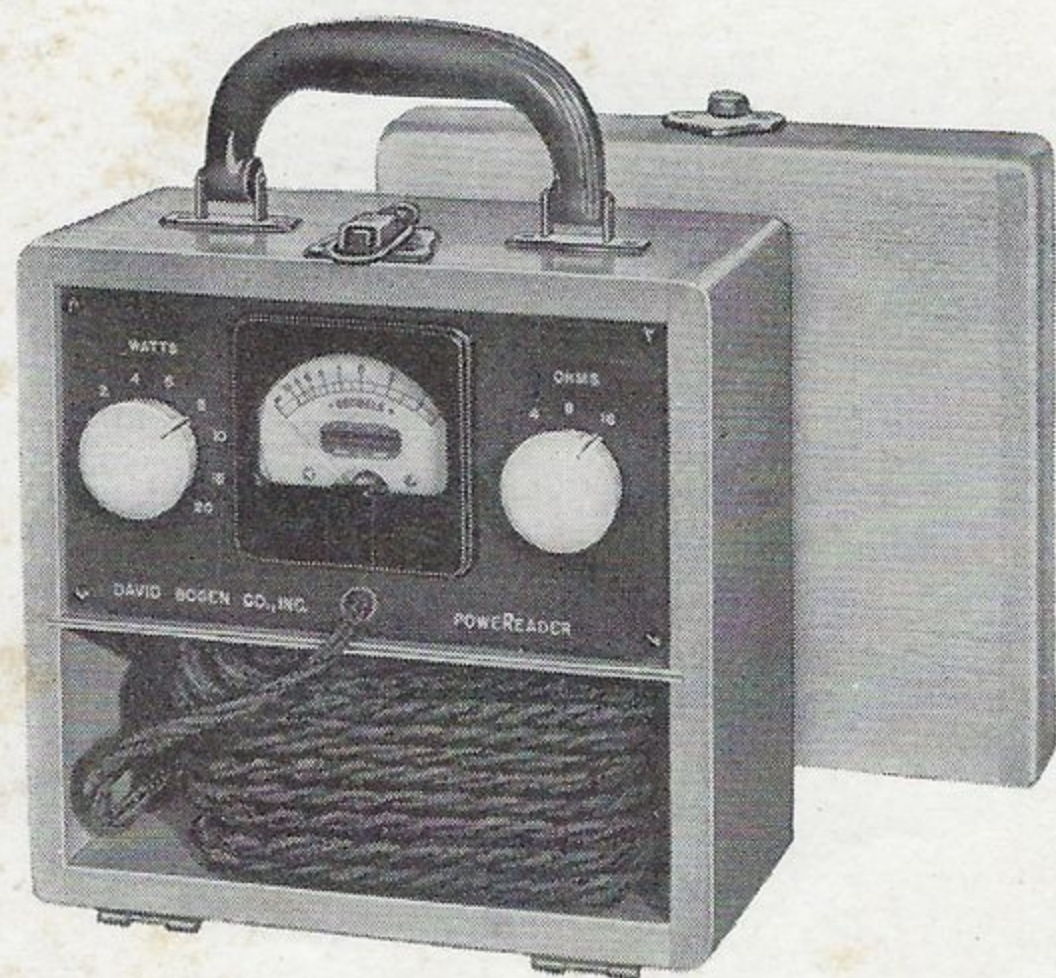
A fifty watt amplifier (Bogen HX50 or H50) is required.

Using the 70 volt tap and the formula  $Z = \frac{5000}{P}$ , it will be seen that for one watt, a 5000 ohm transformer will be required; for two watts, a 2500 ohm transformer; for five, a 1000 ohm transformer; for ten, a 500 ohm and for twenty, a 250 ohm transformer will be used. It requires only moments to calculate the most complicated system. Were the 140 volt tap to be used, the formula  $Z = \frac{20,000}{P}$  would apply and the transformers would be 20,000, 10,000, 4,000, 2,000 and 1,000 ohms respectively.

Keep in mind that if only areas A through D had needed coverage, a ten watt (Bogen HE10) amplifier would have been adequate and recommended. If coverage of areas E through G became necessary later, the ten watt amplifier could be replaced by a fifty and the transformer requirements for the additional speakers would have to be determined. **The original speakers and transformers would be left untouched.**

**The new Bogen series of constant voltage line transformers (see page 14) is, logically, tapped in terms of power. Even the simple calculations of our example are no longer necessary. Once the power requirements are determined, simply select the transformer tapped for that power.** Referring again to our example you will see that the desired power will be obtained for each speaker by using

- A and B: the 1 watt tap of Bogen T4 transformer
- C : the 2 watt tap of Bogen T4 transformer
- D : the 4 watt tap of Bogen T16 transformer  
(A 5 watt tap is not available. 4 watts is so close as to be perfectly acceptable. One could not hear the difference.)
- E and F: the 8 watt tap of Bogen T16 transformer  
(As in D, the 8 watt tap is so close as to be perfectly acceptable. One could not hear the difference.)
- G : the 20 watt tap of Bogen T20 transformer.



### The new Bogen PowerReader

A problem which has long plagued the installer of sound equipment has been the determination of how much power is required in total and for individual speakers for good coverage. Another problem has been the placing and selection of loudspeakers for maximum effectiveness and economy. The large number of charts, tables, and rules of thumb published over the years for estimating these factors have been found by many to be of doubtful value. Conventional sound level meters are costly, and require complex engineering experience for the proper interpretation of their results. Now, however, after extensive field tests, Bogen introduces the PowerReader. A simple, reliable and inexpensive instrument, the PowerReader eliminates the guesswork and provides positive readings in watts of power. By using it you can determine just how much power will be required to drive a given speaker in order to provide easy listening. There are no formulas, no charts, no figuring to do.

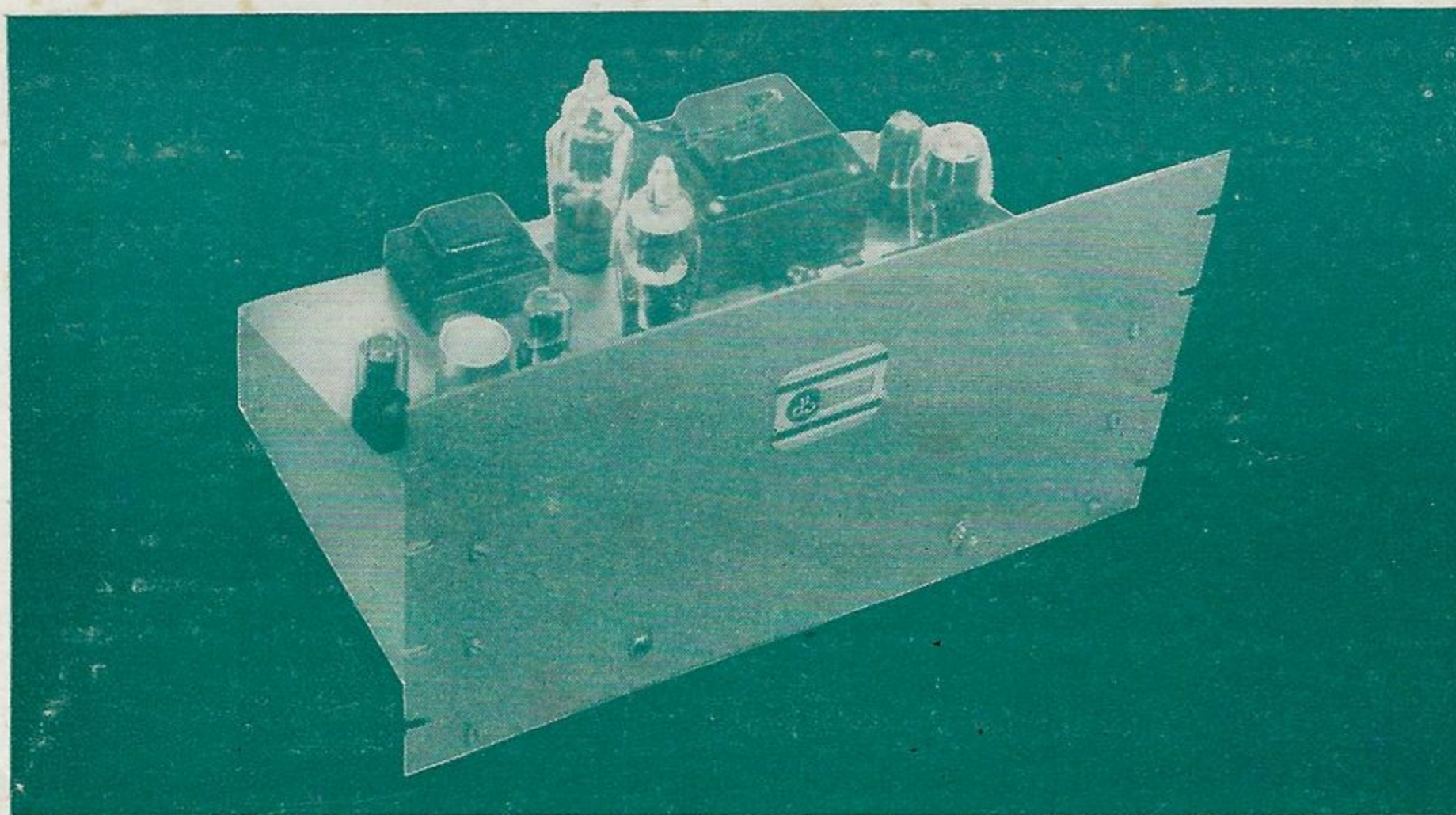
By following a simple ABC technique you can plan a complete speaker layout for any installation. Using the type of speaker you intend for the job (reflex trumpet or cone), and any 70 volt output amplifier\* of power rating equal to, or greater than that of the loudspeaker, you make your tests on the site. The PowerReader

incorporates two selector switches. One selects the voice coil impedance of the speaker to be used. The other selects various powers in watts to be delivered to the speaker. Since the work is done on the ground various speaker types may be compared; locations and directions arranged to conform to the limitations of placement set by the mechanical layout of the building. Most important—the user is afforded a preview of the system in operation.

The PowerReader will specify power requirements in direct readings from 1/4 watt to 20 watts for loudspeakers with voice coil impedance of 4 ohms and 8 ohms. Direct power readings from 5 watts to 20 watts are obtained with loudspeakers having 16 ohm voice coils. In addition, the PowerReader indicates the proper Constant Voltage Matching Transformer to use with each speaker, and the correct tap to connect. The total of the power requirements of all locations determines the size amplifier required for the system. Dealers Price \$39.60\*\*

\*We suggest the use of Bogen models with built-in phono tops. For larger installations where 110 V. A.C. is not readily available throughout the building, the H623 is recommended as the test amplifier.

\*\*Not subject to discount.



**Illustrated: Model H0125 on Panel**

**T**O complement the full line of sound systems described in this catalog, the Bogen Co., offers many optional features and a complete engineering service.

Every Bogen amplifier is available on standard panels for mounting in racks at slight additional cost. All amplifiers can be equipped with low impedance inputs when long microphone lines are required. Remote control of volume is standard equipment in the Models HX30 and HXL30 amplifiers.

Bogen systems have been carefully developed to solve the

great majority of sound distribution problems, and Bogen distributors are ideally qualified to assist in the selection of the correct system in each case.

There are, of course, many situations which require the design of special equipment or the selection and combination of several standard units. The Bogen Custom Division has its own engineering staff and production facilities. It is available at all times for consultation on sound problems, and for the design of special audio equipment. Your inquiries are solicited. Recommendations and quotations will be made without obligation.

## A FEW PROMINENT USERS OF BOGEN EQUIPMENT

### COLLEGES

Indiana University .....Bloomington, Ind.  
University of Nebraska.....Lincoln, Neb.  
University of Tennessee.....Knoxville, Tenn.  
Drexel Institute .....Philadelphia, Pa.  
University of So. California.....Los Angeles, Calif.  
Penn State College.....Penn State, Pa.  
Ohio University .....Athens, Ohio  
University of So. Carolina.....Columbia, S. C.  
North Carolina State College.....Raleigh, N. C.  
University of Pittsburgh.....Pittsburgh, Pa.  
Lehigh University .....Bethlehem, Pa.

### SCHOOLS

St. Augustine High School.....San Diego, Calif.  
Sanford High School .....Sanford, Fla.  
Louisiana High School.....Louisiana, Mo.  
Dallas Technical High School.....Dallas, Texas  
Sands Springs, High School.....Sand Springs, Okla.  
Clifton High School.....Clifton, Texas  
Fort Hamilton High School.....Brooklyn, N. Y.  
Midwood High School.....Brooklyn, N. Y.  
Benjamin Franklin High School.....Brooklyn, N. Y.  
Bronx High School of Science.....Bronx, N. Y.  
Long Beach High School.....Long Beach, N. Y.  
Richardson High School.....Richardson, Texas  
Rye High School.....Rye, New York  
Harrison High School.....Harrison, N. Y.

### AIRPORTS

Knoxville Municipal Airport.....Knoxville, Tenn.  
Kansas City Municipal Airport.....Kansas City, Mo.  
Pan American Airways.....Miami, Fla.  
American Airlines.....N. Y. C., N. Y.

### CHURCHES

St. Mary's Church.....Cleveland, Ohio  
St. Patrick's R. C. Church.....Philadelphia, Pa.  
Murray Hill Baptist Church.....Ft. Worth, Texas  
Mormon Church .....Salt Lake City, Utah  
Church of Christ.....Corsicana, Texas  
Presbyterian Church .....Gainesville, Fla.  
Holy Cross Church.....Rochester, N. Y.  
St. Peter's & Paul's Monastery.....Cumberland, Md.  
St. Peter & Paul's Church.....Saginaw, Mich.

### STATE AND MUNICIPAL

House of Representatives.....Columbus, Ohio  
Bok Singing Tower.....Lake Wales, Fla.  
Orlando Stadium .....Orlando, Fla.  
Museum of City of N. Y.....New York, N. Y.  
Police Dept. ....Springfield, Mass.  
Iowa State Penitentiary .....Ft. Madison, Iowa  
Hilo Police Dept. ....Hilo - Hawaii, T. H.  
Board of Education .....Akron, Ohio  
Syracuse Fire Dept. ....Syracuse, N. Y.  
Park & Playgrounds, Parks Dept.....City of New York  
Civil Service Commission .....City of New York  
City of Baltimore.....Baltimore, Md.

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R. H. Macy Dept. Store.....New York City  
Philadelphia Fire Dept.....Philadelphia, Pa.  
Chase Brass Co. ....Euclid, Ohio  
Detroit Street Railways.....Detroit, Mich.  
Roosevelt Hotel .....New York City  
Elliot-Fisher Underwood Co. ....St. Louis, Mo.  
Universal Pictures .....Universal City, Calif.

Atlantic & Pacific Tea Co.....New York City  
Carnegie Illinois Steel Corp.....Youngstown, Ohio  
Pratt & Whitney Aircraft.....East Hartford, Conn.  
Canada Chemical Works.....Montreal, Can.  
Fairchild Aviation .....Jamaica, L. I.  
Westinghouse Elec. Mfg. Co.....Pittsburgh, Pa.  
Chrysler Motors Corp. ....Detroit, Mich.  
General Motors Corp. ....Detroit, Mich.  
Aluminum Corp. of America.....Pittsburgh, Pa.  
Curtis Wright Prop. ler Div.....Beaver, Pa.  
Jones & Laughlin Research Lab.....Pittsburgh, Pa.  
E. I. duPont De Nemours.....Wilmington, Del.  
Douglas Aircraft Co. ....Santa Monica, Cal.

### BROADCAST STATIONS

National Broadcasting Co.....N. Y. C., N. Y.  
Mutual Broadcasting System.....New York City  
K S L .....Salt Lake City, Utah  
K T S W.....Emporia, Kansas  
W I N S .....New York City  
K M B C .....Kansas City, Mo.

### HOSPITALS

Norwich State Hospital.....Norwich, Conn.  
Westfield State Hospital.....Westfield, Mass.  
St. Francis Hospital.....Trenton, N. J.  
Doctors Hospital .....Washington, D. C.

### GOVERNMENT

U. S. Military Academy.....West Point, N. Y.  
Aberdeen Proving Grounds.....Aberdeen, Md.  
Corpus Christi Naval Air Sta.....Corpus Christi, Texas  
U. S. Army Air Corp.....Kelly Field, Texas  
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