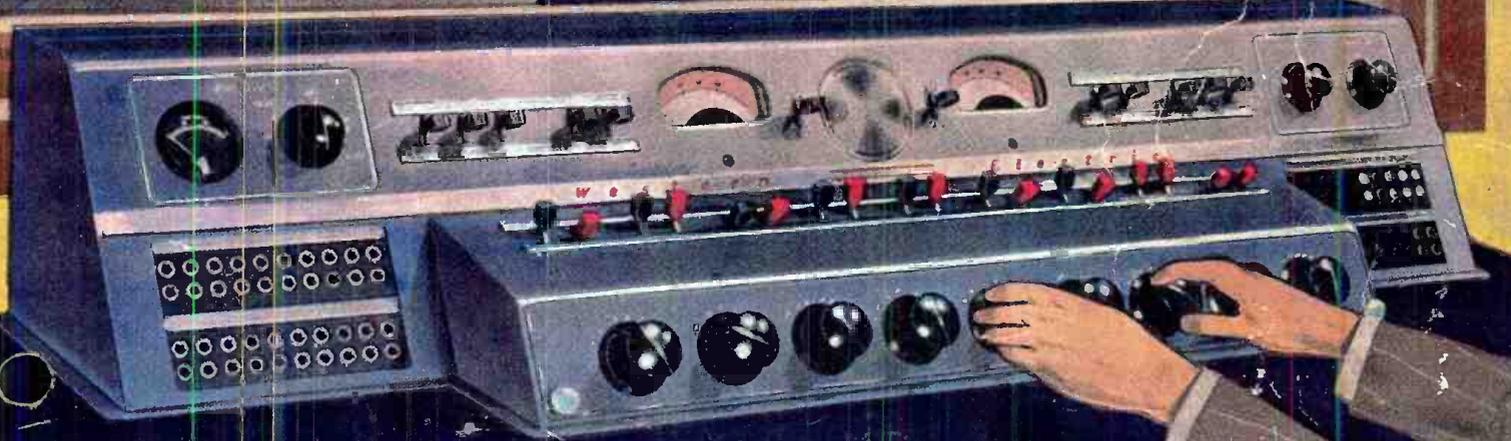
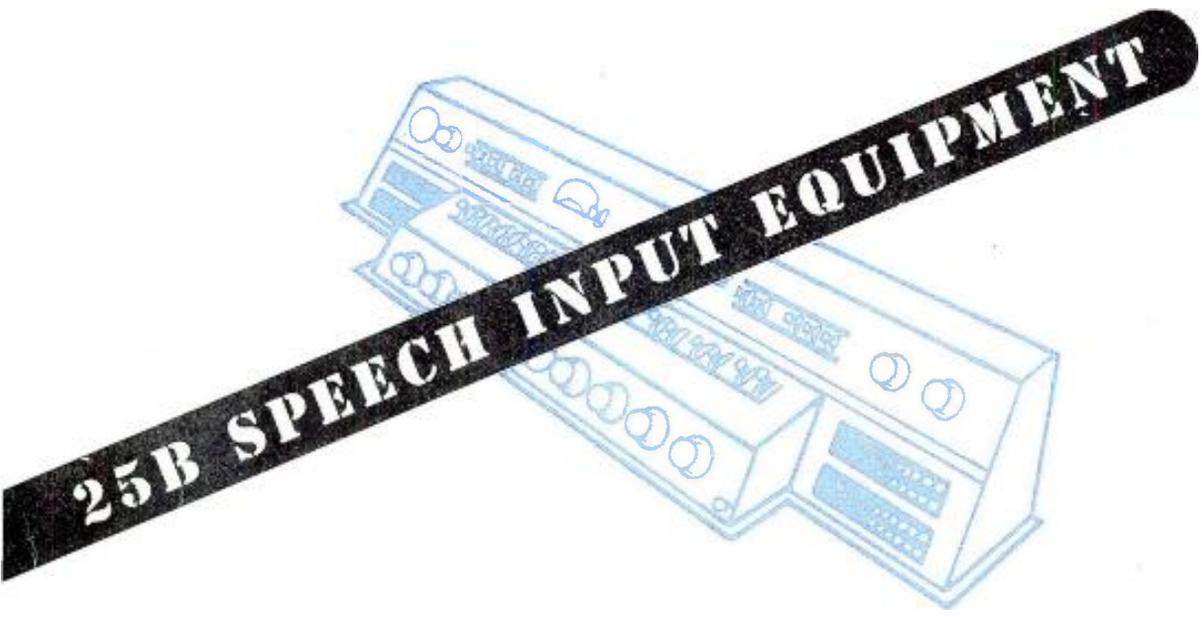


For  
**FM and AM**  
Broadcasting



**25 B SPEECH  
INPUT EQUIPMENT**

*Western Electric*



*The 25B Speech Input Console* designed by Bell Telephone Laboratories and built by Western Electric features many new operating characteristics for use in High Fidelity FM and AM Broadcasting Service. Incorporating the finest in craftsmanship of design and construction it is strikingly modern for application in existing studios or in new studio installations. Beauty of appearance, neat and concealed wiring contribute to make the control room equipped with the 25B Console an attractive show place for the modern broadcasting studio.

This Speech Input Equipment is a complete AC operated console type program production unit for the amplification, control, and monitoring of programs originated by microphones, transcriptions, remote lines or equivalent sources. It has two main program channels, capable of simultaneous operation on separate programs without interference. Such combinations as the following are only a few of the many applications for which these consoles can be adapted.

One program can be fed to the AM Transmitter through one channel and the other channel can be used to feed the FM Transmitter thus permitting separate announcements to be made by each station.

A studio program can be rehearsed while feeding a network program to the transmitter.

A network program can be fed to the AM Transmitter while originating a studio program to the FM Transmitter.

In addition, the equipment has an independent monitoring channel for loudspeaker listening to programs being transmitted through the main channels or direct from incoming lines or cue circuits. The monitor channel may also be used to feed cue program back to the remote line circuits or to provide talkback to either of two studio loudspeakers.

The equipment has a 7 channel mixer. Four of these mixer volume controls are associated with four preliminary amplifiers provided in the equipment for operation from a maximum of eight connected microphones (4 simultaneously) or equivalent low level sources. The other three mixers are associated with the high level inputs which may be either incoming program lines, or three additional microphones or other low level inputs by the use of three externally mounted pre-amplifiers.

Any combination of the seven simultaneous inputs may be connected to either one or both of the two main amplifier channels. Other facilities provided are:

Two Volume Indicator Meters

Headset Monitoring Jacks

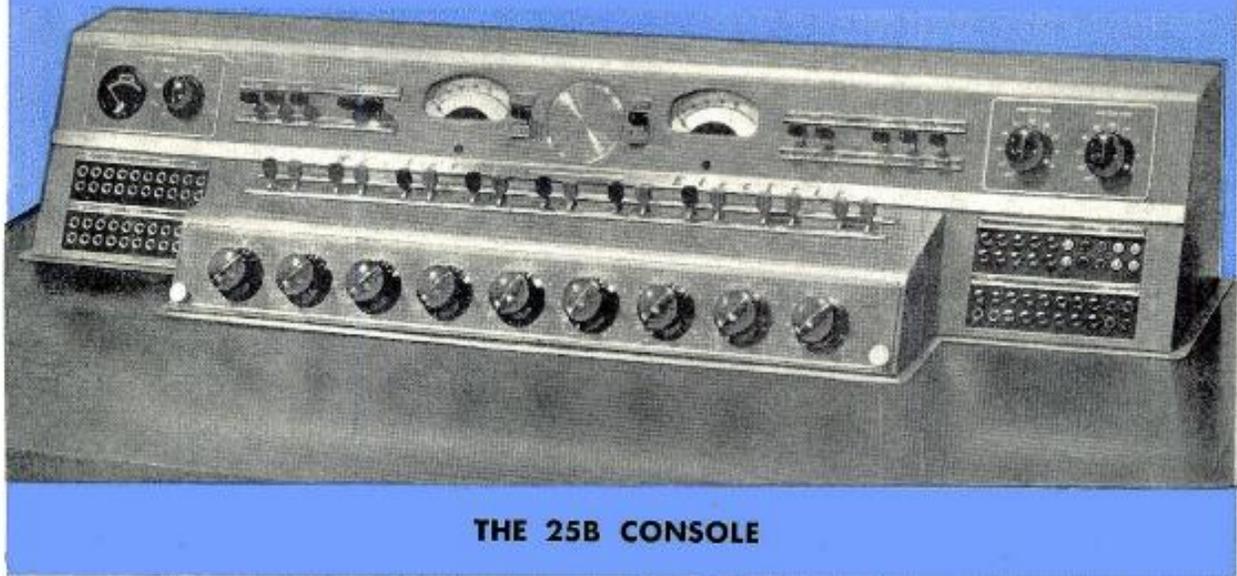
Studio Light and Signaling Circuits

An Audition or Sound Reinforcement Output Control

Jack terminations for 4 other lines in addition to those mentioned above.

In addition to provision for use of an external talkback microphone a mounting is also provided in the console for such a microphone.

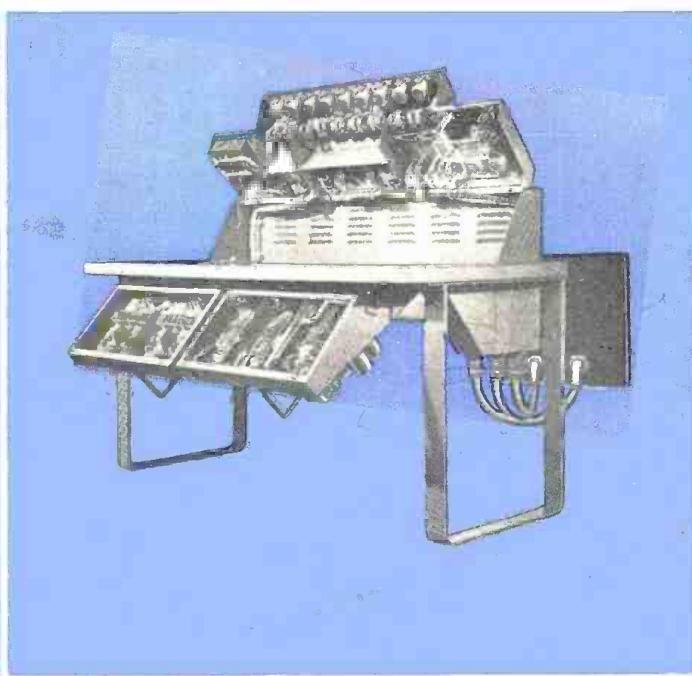
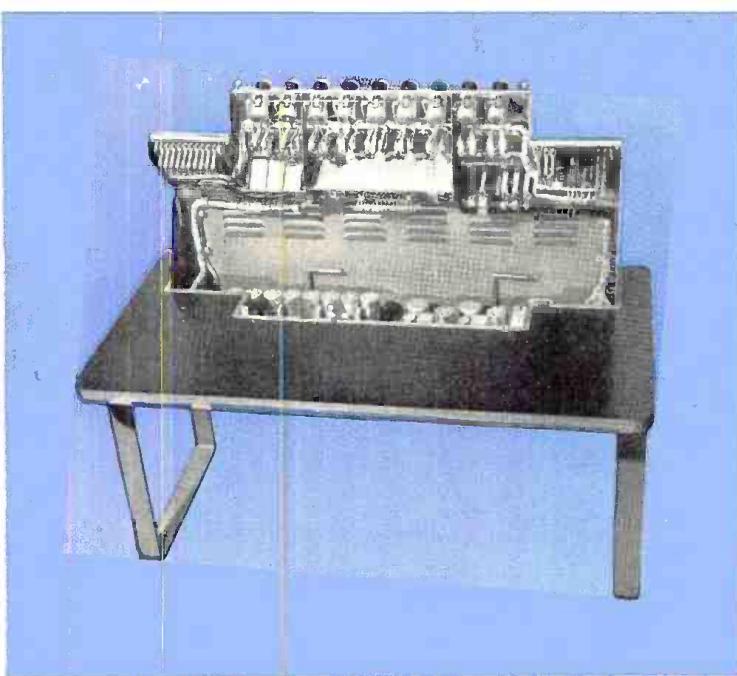
26 features  
see  
pages 6 & 7



Every convenience for ease of operation has been incorporated into this console. The volume control knobs are the mushroom type with wide skirts, raised pointers, and knurled to facilitate fingertip control. Flat type key handles of two colors with concave finger surfaces are used. The arrangement of the equipment permits good visibility to the studio. All controls are functionally located so that the operator may control a program or programs without the need for tiring movements or positions. The design is greatly simplified as to mounting and installation, requiring only a minimum of effort to put the fully assembled and wired console and its associated power units into service. Precision controlled assembly and wiring contribute to assure a high signal to noise ratio and low distortion under studio operating conditions.

The 25B Speech Input Equipment consists of five principal units. The main unit is a desk style 40A Console Control Unit and it contains all the amplifiers and controls. The writing table top of the KS-10284 Table the second unit in which the console is mounted, stands 27½ inches from the floor and is about 55 inches long by 28 inches deep. The overall height is 36 inches and the controls occupy about 13½ inches in depth at the rear of the table top. The amplifiers are housed in hinged tray type enclosures in the console below the table top toward the rear. The control and amplifier enclosures are hinged so that all internal wiring and components are completely accessible.

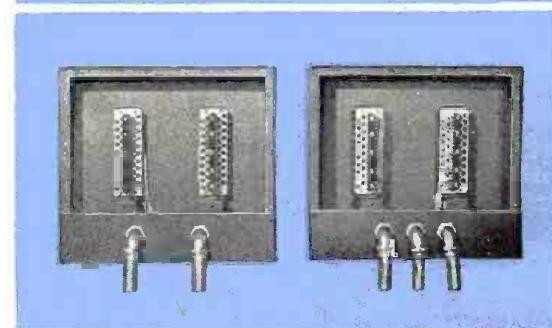
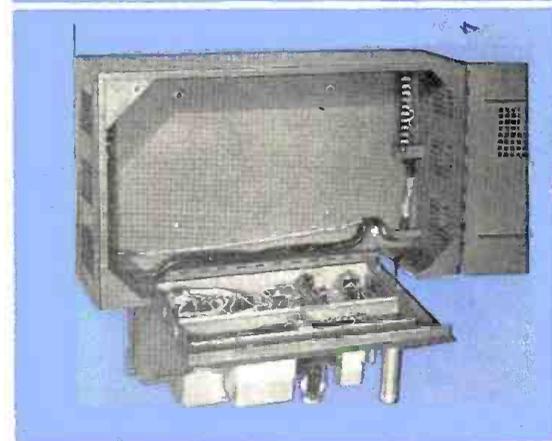
The third unit is a compact 12A Power Supply which is approximately 28 inches wide by 10 inches deep and 16½ inches high. It is arranged for wall mounting and is



generally located in the Control Booth but separately from the console. This unit contains the power supply, rectifiers and transformers, for plate and filament power to all vacuum tubes, and for the loudspeaker cut-off relays. These rectifiers are mounted on a swinging frame for easy inspection and maintenance access. The only need for any other auxiliary power supply is the usual DC signal supply for operation of indicating lights and external relay systems where employed. A supply suitable for this application is the KS-7593 Rectifier.

Two flush type wall mounting connection or junction boxes also form parts of the 25B Equipment. These are furnished with terminal strips to which the permanent external connections are made. Extending from the front of the boxes are flexible cables terminated in plug-in connectors, with which all connections to the control console are made.

The terminal strips and cable assembly can be removed so that the junction boxes may be installed during preliminary construction in new installations, thus permitting connecting conduit to be installed when most convenient. It is not necessary to install the console until after all construction is complete. Connections to the console are plug-in type to provide a maximum of utility.



## THE 25B SPEECH INPUT CONSOLE PROVIDES

- a* Four microphone preamplifiers.
- b* Switching keys, for selecting either of two low level inputs for each preamplifier.
- c* Eleven microphone or low level input circuits, seven of which can be used simultaneously (assuming 3 external preamplifiers are provided).
- d* Three remote line input circuits (each with its individual repeating coil).
- e* Three remote line switching keys, for selecting any one or combination of three lines for monitor, or for cue or program feed.
- f* Three utility keys for selecting any one or all of the three line circuits or utility input circuits from other line level sources or from microphone or transcription inputs (using external amplifiers).
- g* Patching jacks, for substituting four additional remote lines, on a line-for-line basis. Thus a total of seven input lines or trunks are available to the operator.
- h* Seven mixer potentiometers, for individual level adjustment on four microphone input circuits, and three line input circuits or outputs of external preamplifiers.
- i* A seven channel mixer circuit, with individual mixer transfer keys, for switching each of the seven mixer potentiometers between the two main amplifier channels or disconnecting them and substituting terminating resistances.
- j* Two main amplifier channels capable of simultaneous operation on separate programs without interfering cross-talk.
- k* Two master gain controls, one for adjusting the overall level of each main channel.
- l* Two output switching keys, allowing either of the two main channels to be fed to either or both of two outgoing lines.
- m* Line isolation and branching pad for each output line, which provides two channel impedance matching and serves to stabilize the impedance into which the amplifiers work aiding in maintaining high grade transmission.
- n* Two volume indicators, one for each main channel, for visual monitoring of program level on each of the output lines.
- o* Jacks for individual headphone monitoring on each of the two main amplifier channels.

## S A WHOLE ALPHABET OF FEATURES

*p* A monitor amplifier for aural monitoring, with the control room loudspeaker, of programs on either of the two main amplifier channels, on the incoming line circuits, or on an external cue feed circuit from master control; also for feeding cue programs to the studio speakers and to the remote line circuits.

*q* Monitor transfer key, giving the monitor amplifier input access to programs on either of the two main amplifier channels, and to the cue transfer key.

*r* Cue transfer key, for switching between the conditions of monitoring on the remote lines, receiving cue from master control, and feeding cue to the remote lines.

*s* Gain control for monitor amplifier.

*t* Loudspeaker cut-off relays, for the control room and two studio loudspeakers operated from the monitor amplifier plate supply, and with strapping arrangement for interlock with regular microphone input keys to prevent automatically operation of loudspeaker in same room with a live microphone.

*u* Contacts for closing control circuits to relays

outside this equipment for operation of studio warning signs, buzzer cut-offs, master control equipment and other auxiliaries.

*v* A branching circuit, with gain control and channel switching key, for feeding a separate local amplifier system external to this equipment. This is useful for audition purposes or for sound reinforcement in large audience studios and similar applications.

*w* Tube check circuit with meter and rotary tap switch, for quickly checking cathode currents, to determine the operating condition of all amplifier tubes between microphones and broadcast lines.

*x* Power source for operating loudspeaker cut-off relays.

*y* Adequate pre-wired plug-in terminal facilities to accommodate incoming and outgoing line and program circuits and power supply feeds.

*z* Talk-back control key switches talk-back microphone input circuit and the loudspeaker control circuits for talk-back from the control room into the associated studio.

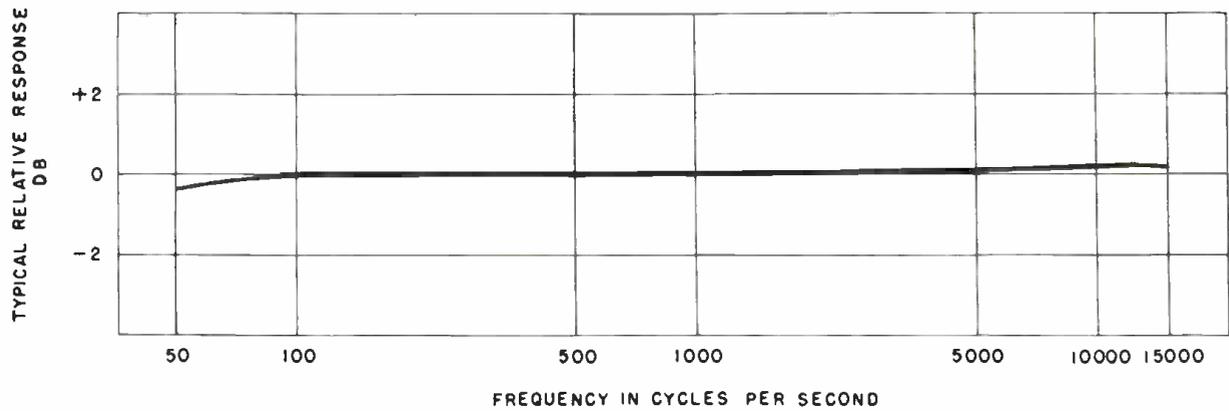


FIG. 1

## SPECIFICATIONS

### FREQUENCY RESPONSE

See Figure 1 above.

### SIGNAL TO NOISE RATIO

70 db unweighted, with 70 db net gain and with +18 dbm peak signal for single frequency output level.

### HARMONIC DISTORTION

See Figure 2 on page 9.

### SOURCE IMPEDANCES

Microphone Inputs	30-50, 250 or 600 ohms
Line Inputs	600 ohms
Utility Inputs	600 ohms
Air Cue Input	600 ohms

### LOAD IMPEDANCES

Line Outputs	600 ohms
Audition Output	600 ohms
Monitor Amplifier Outputs	Furnished adjusted for loudspeaker impedances of 3 to 10 ohms. May be adjusted to a wide range of impedances, between 1 & 1200 ohms. Cue to line circuit is 600 ohms.



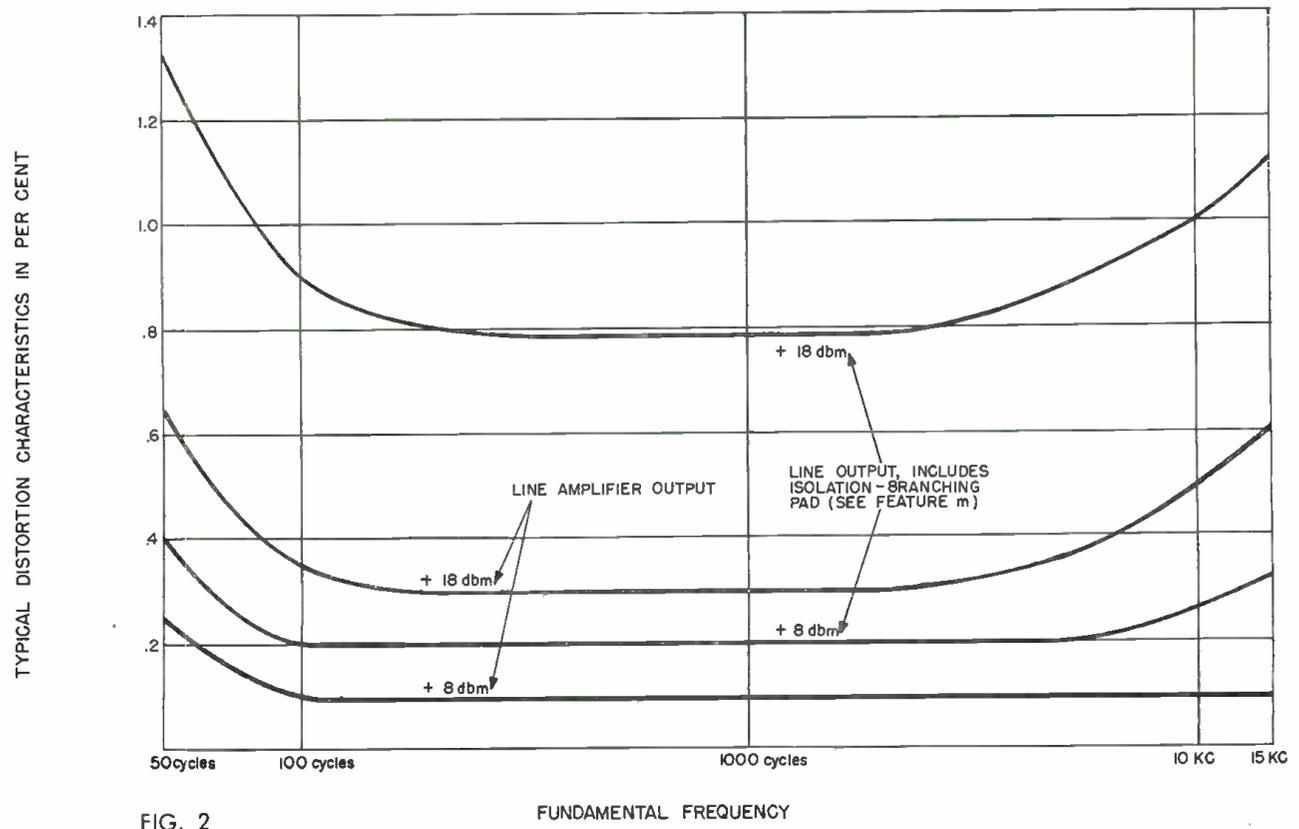
## OVERALL GAINS

	MAX. GAIN	TYPICAL OPERATING GAINS (APPROX.)
Microphone Inputs to line outputs	100 db	70 db
Remote Line Inputs to line outputs	38 db	24 db
Utility Inputs to line outputs	58 db	30 db
Cue Input to Monitor Output Loudspeakers	44 db	38 db
Cue Input to Remote Line	6 db	2 db

## VOLUME CONTROLS

- Mixer Network Loss: Approx. 16 db. (mixer vol. controls on minimum loss)
- Mixer Volume Controls (600 to 600 ohm ladder type attenuator): 20 steps total; 34 db. loss in steps of 2 db., then tapered to "infinity" in 3 steps (one of about 8 db. and one of about 10 db. and "off").
- Master Volume Control (100,000 ohm potentiometer): Has same steps as mixer volume control.
- Audition Volume Control (600 to 600 ohm ladder type attenuator): 6 db. minimum loss: Control has same steps as mixer volume controls.
- Monitor Volume Control (600 to 600 ohm ladder type attenuator): 6 db. minimum loss. Control has same steps as mixer volume control.

TYPICAL HARMONIC DISTORTION  
(INCLUDES HARMONICS TO 30 KC)



## OUTPUT POWER

+ 18 dbm. Allows 10 db. margin for peak factor above + 8 vu which is the normal program output for the equipment.

## POWER SOURCE

### 105-125 VOLTS, 50-60 CYCLES AC. APPROXIMATELY 225 WATTS

Power for signal light and external relay operation must be supplied from external source. Western Electric KS-7593 Rectifier furnishing 1.2 amperes at 12 volts dc is recommended, however, a Western Electric KS-5653 Rectifier furnishing 1 ampere at 24 volts dc may be used by only changing the signal lamps.

<b>DIMENSIONS</b>	<b>HEIGHT</b>	<b>LENGTH</b>	<b>DEPTH</b>
Console	36"	55"	28"
Power Supply	16½"	28"	10"
Junction Boxes	18"	20"	4"

## ESSENTIAL UNITS

40A Console — weight approximately 200 pounds

129A Amplifier

130B Amplifier

131A Amplifier

12A Power Supply — weight approximately 60 pounds

18B Rectifier

20B Rectifier

Junction Boxes, 7A & 7B — weight total both units approximately 70 pounds

Table KS-10284 — weight approximately 75 pounds

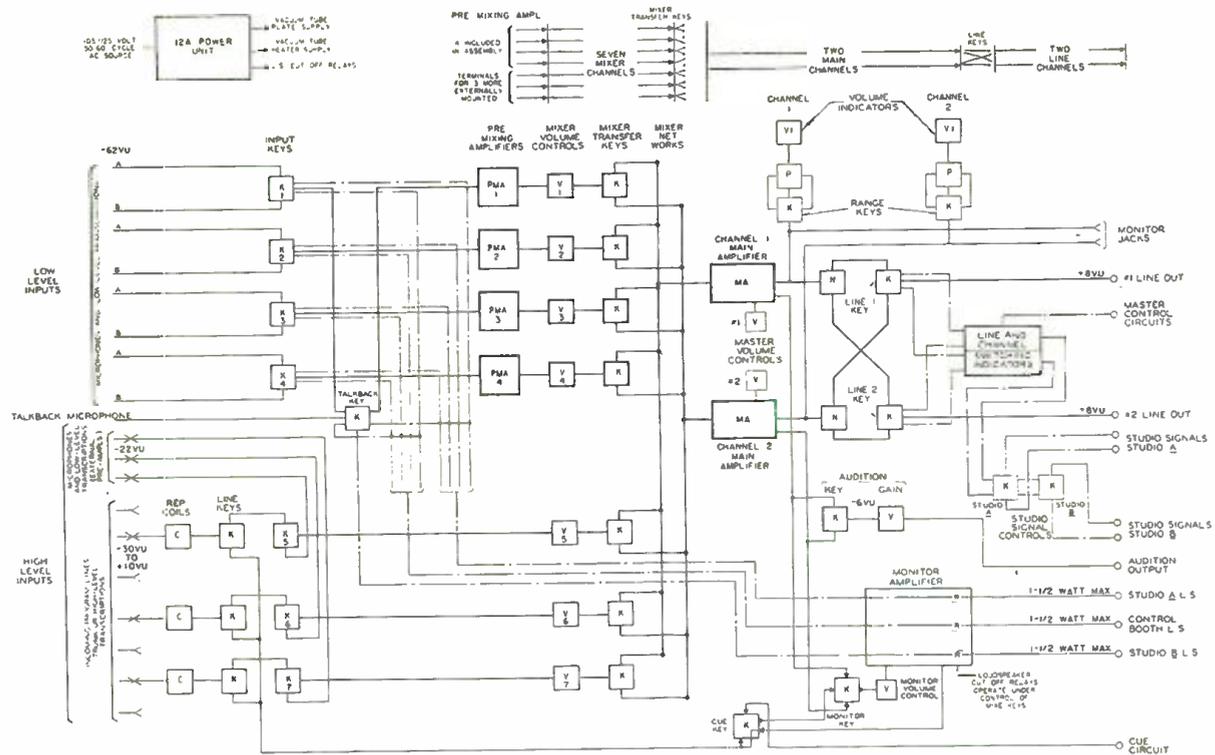


FIG. 3 — FUNCTIONAL SCHEMATIC 25B SPEECH INPUT EQUIPMENT

# VACUUM TUBES

## 40A CONSOLE

QUANTITY REQUIRED	WESTERN ELECTRIC	COMM. RECEIVER TYPE
8	348A	or 1620 (6J7)
4	349A	or 6F6
6		1603
<u>18</u>		

## 12A POWER UNIT

QUANTITY REQUIRED	WESTERN ELECTRIC	COMM. RECEIVER TYPE
2	274A	or 5Z3
1	300B	or 2A3
1	348A	or 6J7
1	315C	or 6X5
1	351A	
<u>6</u>		

## ACCESSORIES

P-2AA Cord 1 foot long equipped with 241A (black) or 241B (red) plugs, for patching purposes.

Monitoring headset 1002F or D-97690 (high quality headset). Repeating coils 177C for changing unbalanced input or output circuits of 40A Console for balanced operation. Brackets and Mounting Plates for mounting up to 8 such coils are provided in the 40A Console. Space is also available in the console to mount brackets for 5 additional coils. 12 Volt signal supply. No supply is provided for the signal and lamp circuits. The KS-7593 (12 Volt) or KS-5653 (24 Volt) is recommended.

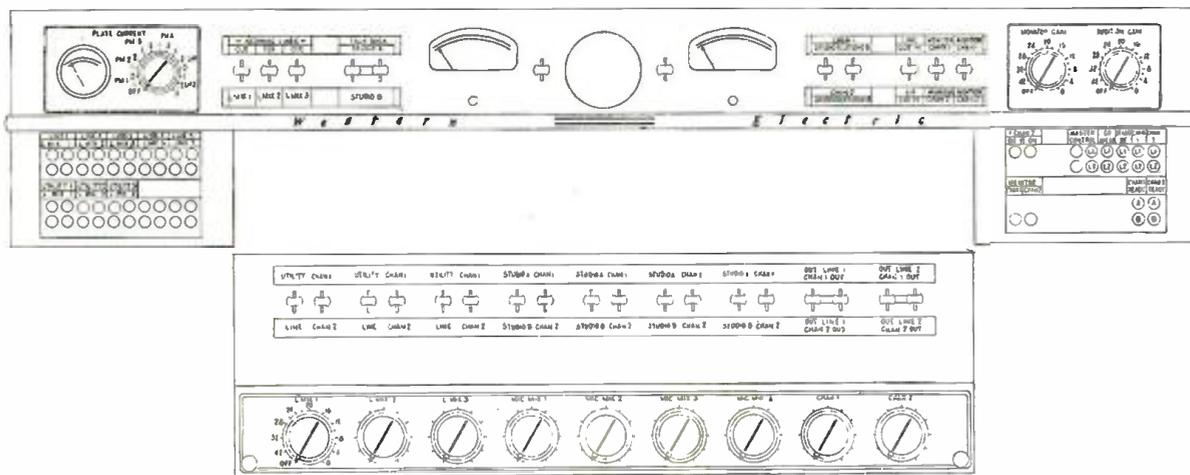


FIG. 4 — FACE PANEL LAYOUT

## ADDITIONAL PREAMPLIFIERS

Preamplifiers mounted externally may be provided for use on the "Utility" inputs for additional microphone or low level transcription sources. The following equipment is available for this purpose.

For 19" Relay Rack or Bay Cabinet Mounting, the following apparatus is recommended.

- |                                |    |                           |
|--------------------------------|----|---------------------------|
| 3 — 120B Amplifiers            |    | 1 — 129A Amplifier        |
| 1 — 177A or B Mounting Plate   | or | 1 — 190B Mounting Plate   |
| 1 — 296A or B Panel (face Mat) |    | 1 — 296B Panel (face Mat) |

For mounting in a 21A Wall Cabinet the following apparatus is recommended.

- 1 — 21A Cabinet
- 1 — Terminal Strip per BA-44609 (has 3 terminals)
- 2 — Terminal Strips per BL-44607 (each has 10 terminals)
- 1 — 190A Mounting Plate
- 3 — 120B Amplifiers, or
- 1 — 129A Amplifier
- 1 — Mounting Plate per BO-74389 (for mounting up to 4 — 177C Repeating Coils in 21A Cabinet)

The three external 120B Amplifiers, or one 129A Amplifier, may be operated from the 20B Rectifier in the 12A Power Supply in addition to the 129A Amplifier and 130B Amplifier in the 40A Console. Under this condition however the 20B Rectifier is approximately ten percent more heavily loaded which may reduce the rectifier tube life. The 40A console may be ordered separately for installation in other types of desks.



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