

**GATES**

... catalog No. 81

**AUDIO  
EQUIPMENT**

**GATES RADIO COMPANY**

**Quincy, Illinois, U. S. A.**

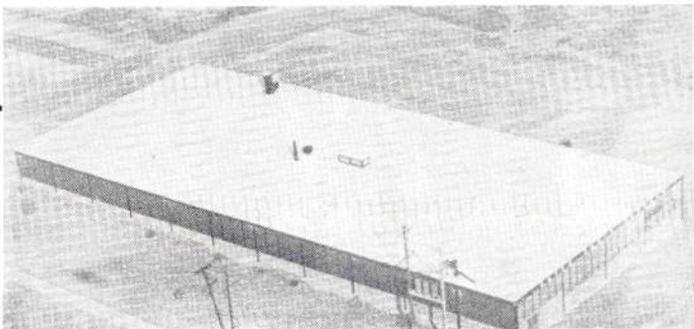
May 1957



## GATES FACTORIES

Located in the near geographic center of the United States, our Hampshire Street plant is on a bluff overlooking the mighty Mississippi River. Here are the offices, development laboratories, engineering, special equipment, cabling and audio construction departments.

**Quincy, Ill.**



Our Broadway factory, built in 1953, is one of the electronic industry's most modern manufacturing plants. Site of over 7 acres allow ample room for field testing and personal recreation. Here heavy transmitters are manufactured—here are the machine shops, cabinet making and painting departments.

**GATES RADIO COMPANY, QUINCY, ILLINOIS, U. S. A.**

Telephone BALdwin 2-8202 — TWX No. Qcy Ill 90

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**GATES RADIO COMPANY — QUINCY, ILLINOIS, U. S. A.**  
MANUFACTURING ENGINEERS SINCE 1922

# for Audio Control

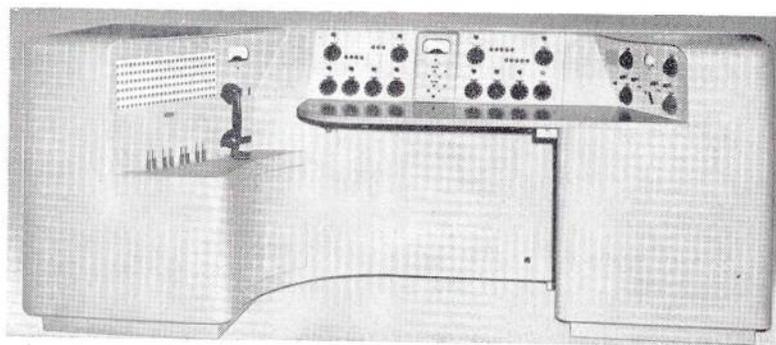
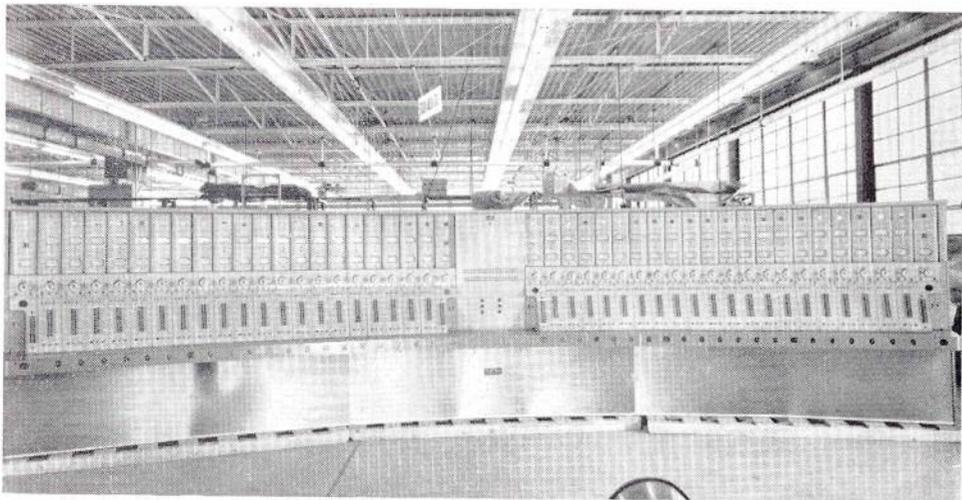
Speech input equipment listed in the following section of this catalog offers the industry a wide selection of modern, up-to-date and progressive equipment.

Gates engineers are recognized around the world as designers of audio equipment that combines the best in performance with a new approach to mechanical construction, providing greater ease in servicing and more value for each dollar invested.

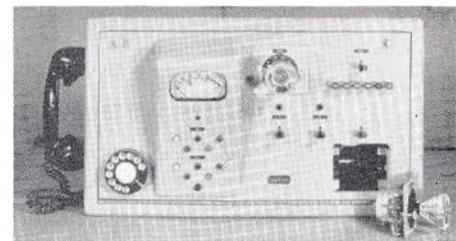
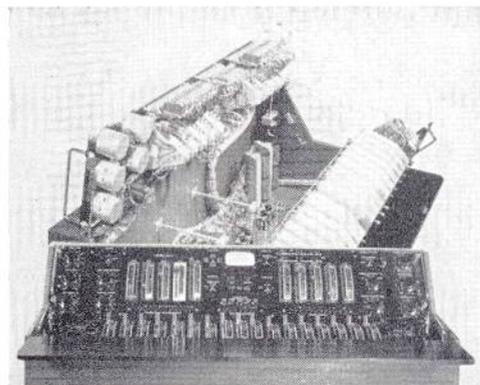
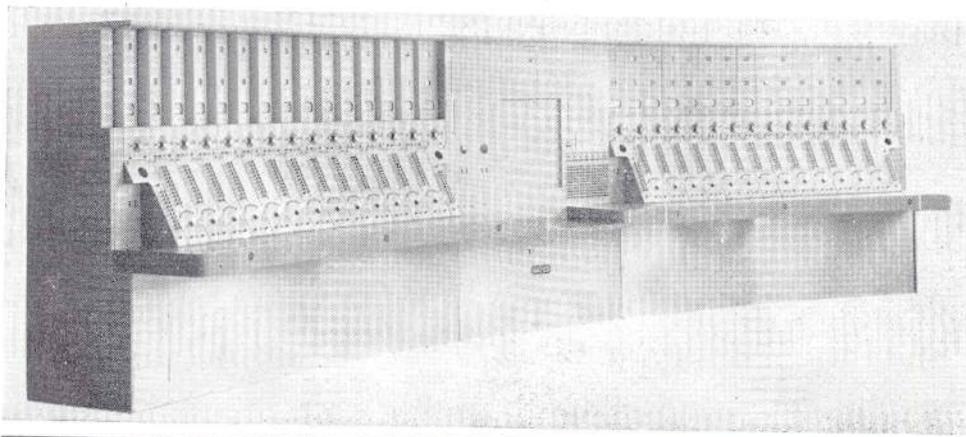
The search for better ways is an unending program. The many new modern speech input equipments listed herein, when examined, will quickly amplify this statement. Whether the needs are for the world's largest radio studios (such as major requirements Gates was privileged to supply for the United States Information Service), or the smallest audio instrument—if it has the Gates name plate, it is a product with thoughtful, accurate and quality design.

(please turn the page)





U. S. I. A. Studios in Washing'on, formerly Voice of America, are often referred to as the world's largest. Top picture may also be the world's largest master control console, 26' wide. 16 sub-master consoles (center) are employed. Bottom illustrates another giant size master control. Major U. S. I. A. equipment was manufactured by Gates, including these units illustrated.

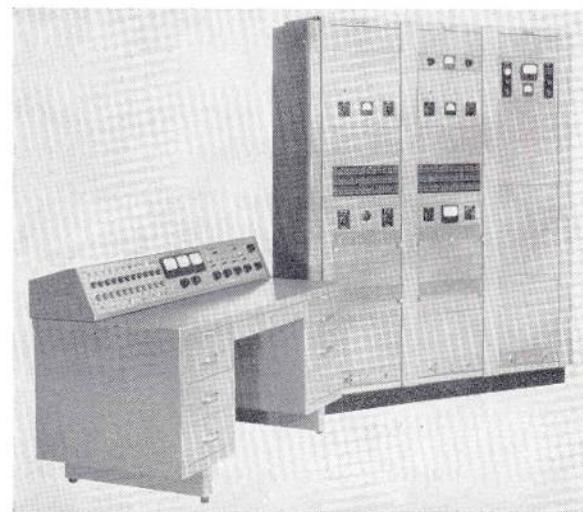
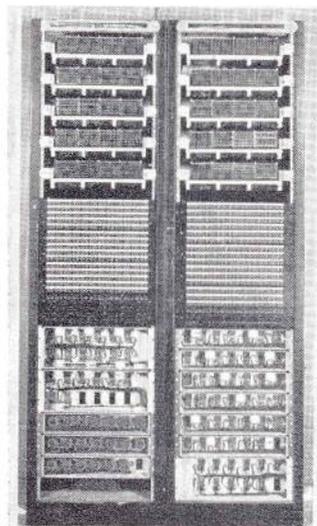


LEFT—Special control console built for DuMont Telecenter, New York City.

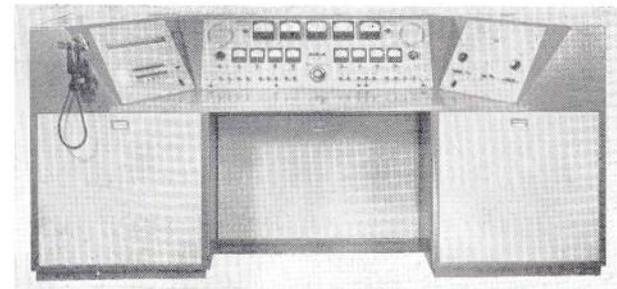
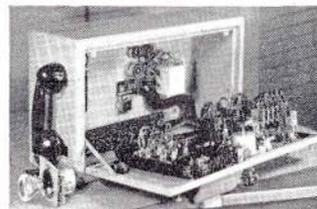
ABOVE—Tape control cabinet for Washington Studios, U. S. Information Agency.

BELOW—Transmitter control and audio, WNYC, New York City.

BELOW—Dual tape room recording racks (rear), part of U. S. I. A.



BELOW—Inside view of special audio control cabinet.



ABOVE—Special control console manufactured for Erie County Police Dept., Buffalo, N. Y.

# M-5236 GATES DUALUX DUAL SPEECH INPUT EQUIPMENT

This very new Gates speech input console provides complete dual channel operation combined with more facilities than ever before offered in dual channel equipment.

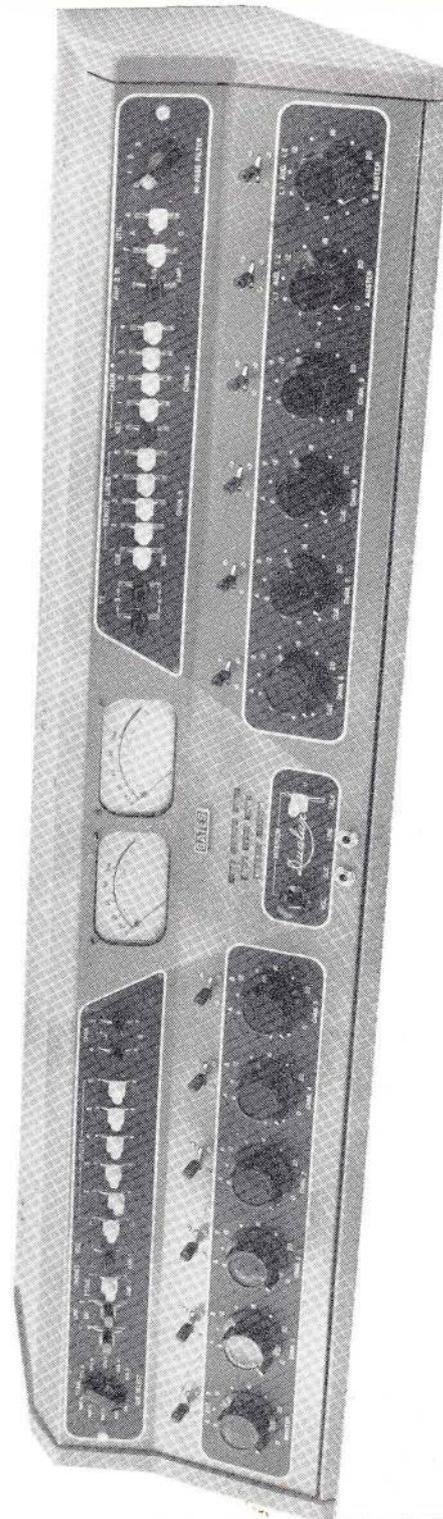
Accommodations include 9 mixing channels, 5 preamplifiers to handle 7 microphones, 4 turntable inputs, 4 tape inputs, 2 high gain program amplifiers, high output plug-in monitoring amplifier, triple speaker muting/warning light relays, dual VU meters, regulated power supply plus key switching of nearly every conceivable circuit used in multi-studio operation today.

Two entirely new and exclusive features are: (1) inbuilt cue intercom and (2) a four-position variable, high-pass equalizer, front panel controlled. — These two features permit the operator greater control than ever before. He may talk and listen on major circuits such as studios and remote lines plus listening on every circuit with the speaker/microphone front panel mounted. — The variable filter permits the operator to instantly correct or improve faulty quality caused by hum on remote lines, booming microphones or other causes.

On the following pages, full detail and large functional diagram tells why the Gates Dualux will fill the most exacting requirements for more complex audio installations.



Dualux Model M-5236. — Modern low  
and wide styling is combined with more  
features than ever before.



# DUALUX DESCRIPTIVE INFORMATION

**MIXING CHANNELS:** Nine key controlled.

**MICROPHONE INPUTS:** Seven—three direct, two switched into channel four, and two into channel five.

**TURNTABLE INPUTS:** Four, switched into channels six and seven.

**CUE POSITION:** On mixing channels six through nine, to allow cueing and program preview of any of these channels by cue-intercom system or panel phones.

**NETWORK INPUT AND FOUR TAPE INPUTS:** Switched into channel eight in the upper position, switched into channel nine in the lower position and terminated in the center, or off-position. With the switching of these inputs into either channel, any sequence may be followed with proper fading instead of dumping the the signals in.

**FIVE REMOTE LINE INPUTS:** Switched into channel nine in the lower position for mixing, receiving program cue in the upper position, and terminated for off/talk-back/over-ride facilities in the center position.

**ISOLATION TRANSFORMERS:** In channels eight and nine to permit 600/150 ohm input lines, balanced or unbalanced.

**HIGH-PASS FILTER:** On front panel for program channel A. Flat position and three selected response curves. Allows immediate elimination of hum and/or rumble on any circuit into channel A. See curve.

**EIGHT UTILITY SWITCHES:** On front panel for expansion of any section of console operation and/or addition of special facilities. Terminal board furnished attached to rear of cabinet.

**FRONT PANEL PHONE JACKS:** One to monitor the output of program amplifier 1, program amplifier 2, or the turntable cue bus. One connected to cue-intercom system.

**HIGH GAIN PROGRAM AMPLIFIERS:** Both use cascaded interstage control for master gain to permit optimum signal to noise ratio for any condition.

**MUTING:** All mixing channel keys provide switch contacts for muting or auxiliary switching. See Muting Relays.

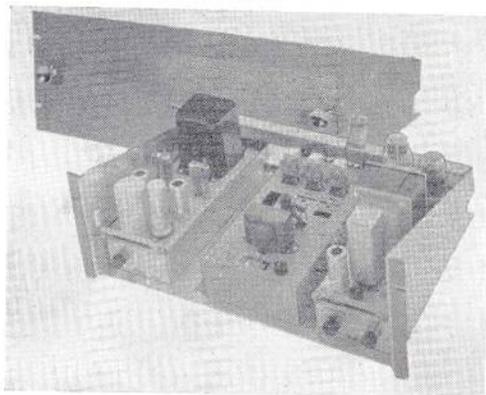
**TWO FULL PROGRAM OUTPUT CHANNELS** and amplifiers to permit high quality operation with emergency failure protection. Levels adjusted to permit rapid changeover without re-adjustment.

**HIGH QUALITY MONITORING AMPLIFIER:** May be switched to pick up output of program amplifier 1 and program amplifier 2, or an external input such as off-the-air monitoring. Bridging transformer and attenuators allow monitoring lines without loading and blasting. Monitor gain control a high quality step type attenuator. Plug-in type. Mounts on panel and shelf assembly.

**PATCH PANEL:** Main circuits brought to terminal board and strapped together so that normalling jacks may be used for patching.

(Continued next page)

Rack or cabinet mount panel and shelf assembly accommodates the plug-in monitoring amplifier, relay unit and plug-in regulated power supply.



# DUALUX GENERAL INFORMATION

**PRINTED WIRING:** On preamplifiers and program amplifiers. Not to be confused with printed circuit.

**POWER SUPPLY:** Fully regulated, mounts on panel and shelf assembly.

**INTERCOM SYSTEM,** combined with cueing facilities, includes following features:

- Interlocked so that it cannot interfere with programming.
- Eight external intercom circuits, selected with front panel switch.
- Eight cueing circuits, selected with front panel switch.
- Automatic gain cue-intercom amplifier to take care of level variations within 20 db.
- All inputs and outputs have pads and isolation networks, where necessary, so that any circuit can be selected and used without adjusting gain control if levels within 20 db. of normal level.
- Front panel volume control for use on signals that are more than 20 db. from normal.
- Cue-intercom speaker, volume control and press-to-talk switch grouped in center of main panel for ease of operation.
- Front panel phone jack will cut off cue-intercom speaker when phone plug inserted.

**MUTING RELAYS:** Three provided with contacts for monitor speaker muting, intercom speaker muting and warning lights, located on relay deck.

**RELAY POWER SUPPLY** located on relay deck and independent of main power supply.

**EXTRA PREAMPLIFIERS:** Provision and power available for two extra preamplifiers for mounting in console cabinet in addition to the five standard ones.

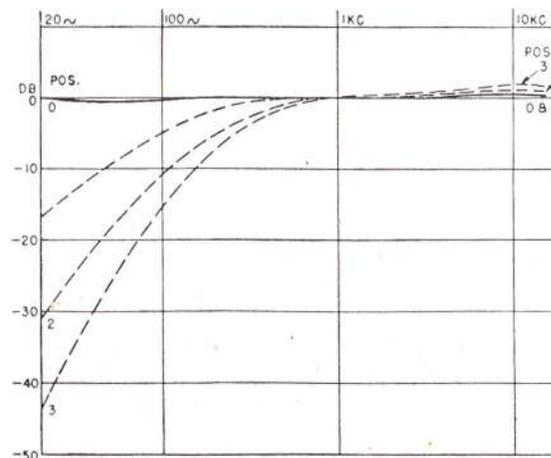
**INPUT IMPEDANCES:** 30/50-150/250 ohms, balanced or unbalanced, into preamplifiers. 150/250 ohms, unbalanced, into turntable inputs. 600/150 ohms, balanced or unbalanced into network, tape and remote lines.

**OUTPUT IMPEDANCES:** 600/150 ohms, balanced, with center-tap grounded if desired, on program line 1 and program line 2. 600 ohms on intercom outputs. 600 ohms on monitor amplifier output, speaker impedance is 1800/2000 ohms for three speakers paralleled on 600 ohm output.

**VU METERS:** Two high quality four-inch VU meters, illuminated. One across program line 1 at all times, the second one may be switched to program line 2 or across program line 1 for emergency use. Both meters calibrated for +8 dbm output on line terminals.

**STYLING:** Fingertip operation of all controls. Only 7½" high for easy, over the top vision. Front panel drops down to service, audio section hinges up (see Gatesway, Page 12). Panel slope correct for easy upper line vision and control. Non-glaring finish in rich two-tone metallic green and beige.

Graph showing 4 curve positions of the Dualux front panel controlled variable high-pass filter.



## 1. Microphone to Program Line Output:

GAIN: 104 db,  $\pm 2$  db at 1000 cycles.  
 RESPONSE:  $\pm 1.5$  db from 30 to 15,000 cycles.  
 DISTORTION: 1% or less from 30 to 15,000 cycles at +8 dbm.  
 1.5% at +18 dbm output.  
 NOISE: 60 to 65 db below +8 dbm output, with -60 dbm input.  
 CROSSTALK: Below noise level with normal levels and control positions.

## 2. Turntable, Net, Tape and Remote Inputs to Program Line Output:

GAIN: 61 db,  $\pm 2$  db at 1000 cycles.  
 RESPONSE:  $\pm 1.5$  db from 30 to 15,000 cycles.  
 DISTORTION: 1% or less from 30 to 15,000 cycles at +8 dbm.  
 1.5% at +18 dbm output.  
 NOISE: 70 to 75 db below +8 dbm output, with -10 dbm input.  
 CROSSTALK: 70 db or lower between channels with normal levels and control positions.

## 3. Monitoring Amplifier:

GAIN: Sufficient to adjust to maximum output with normal levels and control position.  
 RESPONSE:  $\pm 2$  db from 50 to 15,000 cycles.  
 DISTORTION: 1.5% or less from 50 to 15,000 cycles at normal +30 dbm output.  
 3% or less at maximum +38 dbm output.  
 NOISE: 60 db below +30 dbm output, with normal levels and control position.  
 CROSSTALK: The monitoring amplifier introduces no crosstalk in the console.

## 4. Cue-Intercom System:

Amplifier is response corrected for best intelligibility. Has 20 db limiting to prevent blasting. Amplifier self-contained and speaker front panel mounting including level control and operations switch.

## 5. Hi-Pass Filter:

See Graph, Page 91, for full information on typical operation.  
 Response  $\pm 3$  db of typical curves shown on graph.

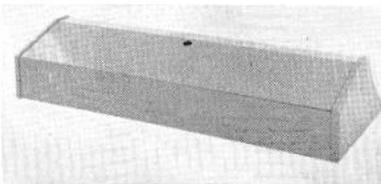
## 6. Mechanical:

SIZE: 46 1/2" wide, 7 1/2" high with lid down, 12 1/2" with lid up, 15" deep.  
 WEIGHT: Console 62 lbs., panel and shelf with equipment 39 lbs., total packed weight 205 lbs. Cubage 9.  
 PRIMARY POWER: 115 volts, 50/60 cycles, approximately 115 watts.  
 FINISH: Cabinet in medium gloss gray, front panel in two-tone metallic deep green and beige with escutcheons in anodized black and aluminum letters. Control knobs supplied with kit of color disc inserts for coding.

## 7. Tubes:

(20) 5879, (3) 12AU7, (2) OA2, 6AQ5, (1) 12AX7, 6AK6, 5146, 6080.

Plain rear view illustrates how console may be set against wall, as all terminations are made on inside for both electrical and mechanical protection.



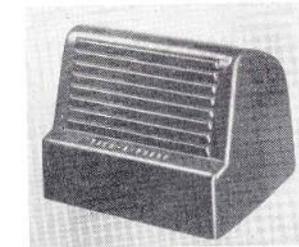
## Dualux Has Printed Wiring:

Printed wiring is a superior method of wiring certain types of audio amplifiers. Not to be confused with printed circuit, the printed wiring method applies a heavy copper conductor to a laminated base. All components are then attached to this base quite the same as if ordinary wire was used. Printed components are never employed. The advantages of printed wiring are exact uniformity, extreme ease in cleaning and more secure soldering. Best of all is the speed in manufacturing which means greater quality for less cost. Gates manufactures its own printed wiring with modern processes recently installed.



Printed wiring program amplifier.

M-5303 sub-station for studio intercom to talk back to control board. Includes matching transformer.



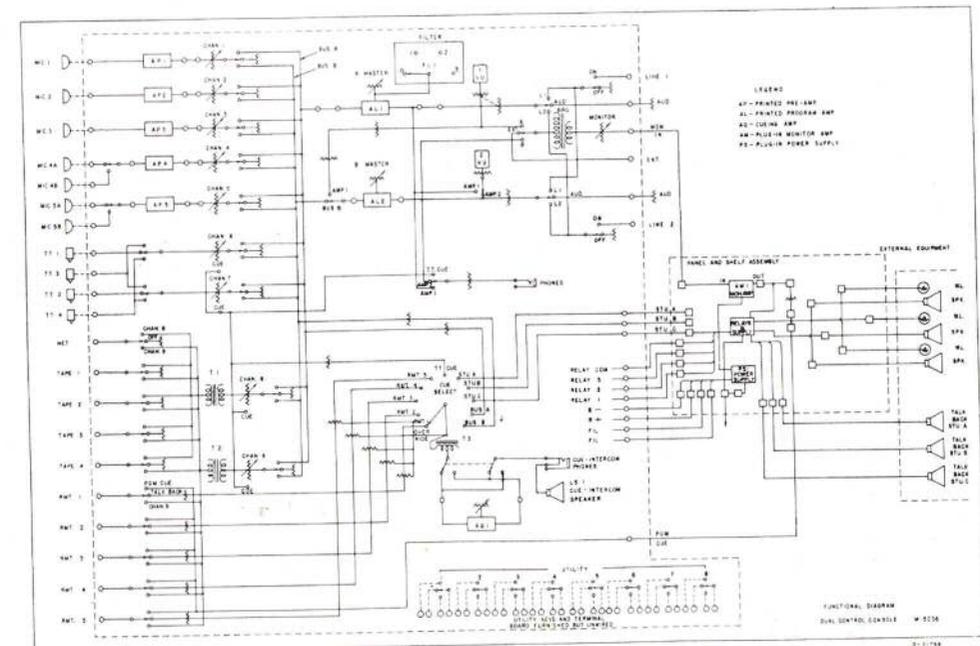
## ORDERING INFORMATION

M-5236 Dualux dual channel speech input console complete with tubes and ready to use .....

TK-244 100% spare tube complement .....

M-5303 Intercom sub-station .....

Functional Diagram M-5236 Dualux Speech Input Console.

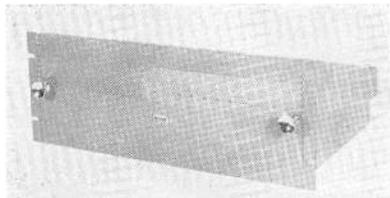




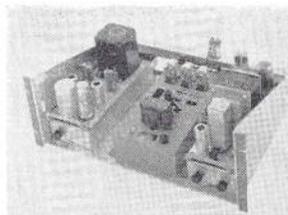
The engineering development of the new Gatesway speech input console is the unified contribution of many Gates engineers, both mechanical and electrical. — The Gatesway is all new. Electrically, you will find many completely new features. For the first time, inbuilt cue-intercom, self-contained variable high-pass filter and many more control functions.

Eight mixing channels through ingenious key control may handle up to 6 microphones, 4 turntables, 4 tape inputs, numerous remote lines, network and many other circuits via auxiliary keys included.

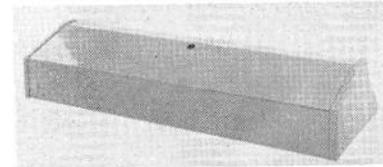
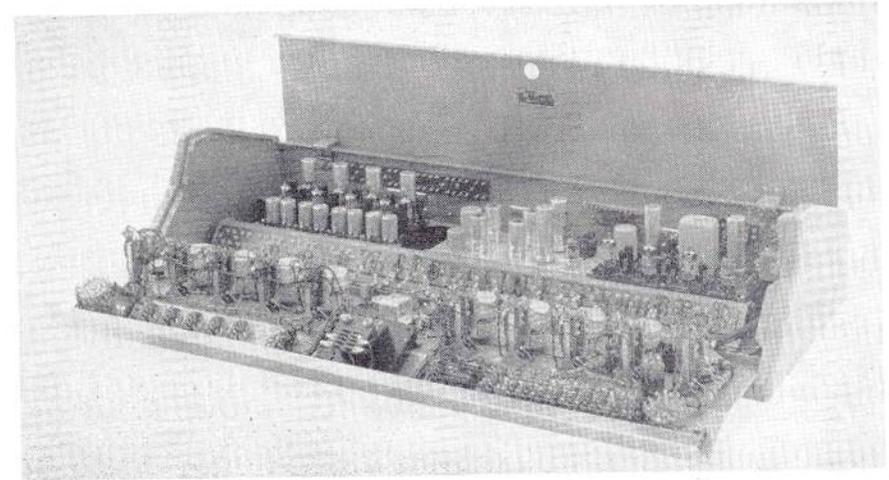
Printed wiring adds to reliability, easy serviceability, and best of all, more value at lower cost. — Nothing has been spared to make this new Gates product the very finest in its field. Checking the specifications, illustrations and functional drawing on succeeding pages will accentuate this statement.



The PAS-1 panel and shelf assembly accommodates the power supply, monitor amplifier and relay chassis. Size: 19"x7".



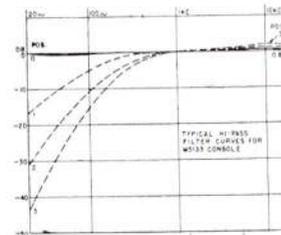
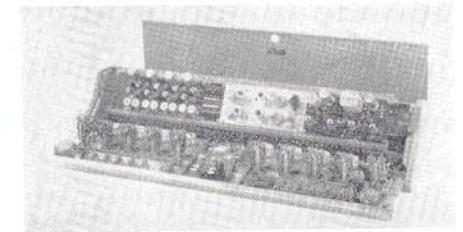
Inner view of panel and shelf assembly. Both power supply and monitoring amplifier are plug-in. Note that relay chassis has knock-outs for 2 more relays for either future expansion or pertinent individual requirements of the user.



Above: The rear view shows no terminations. All connections are made at the inside front of the console. Flip open the lid, swing down the front panel and all terminations are at the finger tips.

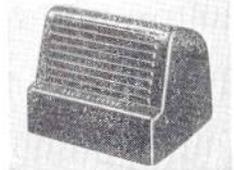
Serviceability is a must in Gates designs. Certainly the above open view indicates that the maintenance engineer has been foremost in mind. Complicated cabling has been minimized through functional location of inner components. This means less opportunity for cross-talk. Major circuits have patch panel take-off—another Gatesway exclusive.

Right: Adding to serviceability, the entire amplifier framework hinges up. In this way, every under chassis connection may be instantly reached. Easily kept clean too.



Above: Curve of hi-pass filter. Three degrees of low frequency cut-off may be inserted without clicks or loss of gain. This feature is indispensable for booming microphones, moving sets or woofing remote lines.

Right: The M5303 sub-station for use with the self-contained Gatesway cue-intercom amplifier. Includes matching transformer. Intercom is automatically muted when live microphones adjoin.



**MIXING CHANNELS:** 8 ladder type. Ninth mixing channel may be added in place of monitor gain control which is moved to chassis of monitor amplifier.

**MIXER KEYS:** Selects each mixing control into: (a) program amplifier, (b) monitor/emergency amplifier, (c) cue amplifier/speaker. Also provides speaker/warning light control through relays included.

**TURNABLE INPUTS:** 4, key selected into mixing channels 5 and 6. Connects turntables, through mixer, to: (a) program amp., (b) monitor amp., (c) cue/speaker amp.

**TAPE INPUTS:** 4, key selected into mixing channels 7 and 8. Connects tapes, through mixer, to: (a) program amp., (b) monitor amp., (c) cue/speaker amp.

**NET INPUT:** 1 key for network or any 600 ohm line into mixing channels 5 or 6, to: (a) program amp., (b) monitor amp., (c) cue/speaker amp.

**REMOTE LINES:** 4, key selected into mixing channels 7 and 8. Key up—feeds program cue to remote line. Key center—feeds cue/speaker amplifier to remote line for both talking and listening. Key down—remote line on air.

**CUE SPEAKER/AMPLIFIER SELECTOR:** Selects cue/speaker amp. for both talk and listen into: all remote lines, 3 studios and utility line. Selects to listen only on turntables, tape recorders, audition buss and program line.

**MICROPHONE INPUTS:** As wired, accommodates 5 into 4 preamplifiers. Additional mic input may be had by using utility key 5 into mixing channel 3.

**UTILITY KEYS:** 5 provided, unwired, located to left upper center of VU meter. Provided for specific requirements of individual installation such as additional remote lines, tape inputs, etc.

**EQUALIZER CONTROL:** Four positions: off and 3 degrees of low frequency cut-off (see curve).

**INTERCOM KEY:** Push down to talk, normal position to listen.

**JACKS:** For phones, 2 supplied, to listen on program line and cue amp. Use of phones on cue amp disconnects speaker.

**OUTPUT EMERGENCY KEY:** Located above master gain. In case of failure of program amplifier, the output of the monitoring amplifier may be instantly connected to the program line. Does not disconnect loudspeakers.

**MONITOR INPUT KEY:** Located above monitor gain control. Allows switching of monitoring amplifier to: (a) padded output of program amplifier, (b) audition buss, and (c) external pair for any other input.

**VU METER:** Standard 4" scale B illuminated. Reads output of program line, peaking to 0 VU when output level is +8 VU.

**PATCH PANEL TAKE-OFF:** Jumpers provided for patch panel interlock at output of all preamplifiers and input and output of both program and monitoring amplifiers.

**IMPEDANCES:**  
 Mic inputs....30/50 and 150/250 ohms.  
 TT inputs....150/250 ohms.  
 Tape inputs....500/600 ohms.  
 Net input....600 ohms.\*  
 Rmt inputs....600 ohms.\*  
 Ex. input (monitor)....600 ohms.  
 Pro. amp. output....600 ohms.  
 Mon. amp. output....600 ohms.  
 Loudspeakers....matching to 500/600 ohms.\*\*  
 Headphones....5000 ohms or higher.  
 Ext. cue speaker....600 ohms.

\* May be adjusted to other NARTB standards such as 50/150/250 by tapped primary on isolation transformer.

\*\* Speakers in parallel circuit. Example: 2 speakers 1000 ohms, 3 speakers 1500 ohms, etc., by use of speaker matching transformer on speaker.

**GAIN:** From mic input to program line output, 104 db. From remote line, net, tape and turntables to program line output, 61 db.

**CUE AMPLIFIER:** Fixed pads at all circuits provide adjusted uniform input level to proper cue speaker level. Also provides proper level to operate directly remote cue intercom speaker at room level.

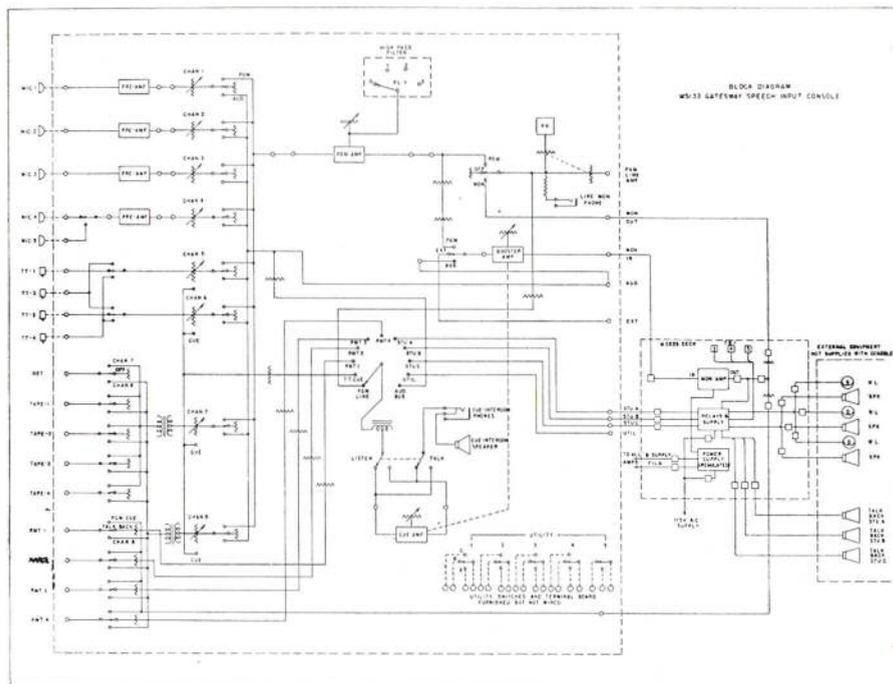
NOTE: All gains stated  $\pm 2$  db.

**RESPONSE:**  $\pm 1.5$  db 30-15,000 cycles (standard mode of operation).  $\pm 2.0$  db 30-15,000 cycles (emergency circuits).

**DISTORTION:** 1% or less 30-15,000 cycles all program circuits measured at +8 dbm output. 3% or less 50-15,000 cycles all monitoring circuits measured at +38 dbm.

**NOISE:** Program circuit...60 db or better below +8 dbm measured at -60 dbm input. Monitoring amplifier....65 db below +38 dbm output.

**CROSS-TALK:** Below microphone channel noise level within normal inputs and control position.



## SPECIFICATIONS (Continued)

**TUBES:** Preamplifiers...two 5879, total 8. Program Amplifier...three 5879, one 12AU7. Booster Amplifier...two 12AX7. Cue Amplifier/Speaker...one 5879, one 12AX7, one 6AK6. Monitor Amplifier...two 5879, two 6AQ5, one 12AU7. Power Supply...two 5V4G, one 6080, one 5879, two OA2.  
 Total tubes: (15) 5879, (3) 12AX7, (2) 6AQ5, OA2, 12AU7, one each 6AK6, 5V4G, 6080.

**RELAYS:** 3 provided, telephone type with contacts for muting loudspeakers and breaks 115 volt circuit for warning lights up to 60 watts per light. Room for 2 added relays on chassis where unusual muting or control requirements exist. Relays operate from console power supply.

**SIZE:** 39" wide, 15" front to back, 7 1/2" high. Height (lid up), 12 1/2".

**WEIGHT:** Net, Console, 52 lbs. Panel and shelf with equipment, 39 lbs. Total packed weight, 175 lbs.

**PRIMARY POWER:** 115 volts, 50/60 cycles, approximately 105 watts.

**FINISH:** Cabinet in medium gloss gray. Front panel two-tone metallic emerald green and beige with escutcheons in etched black and aluminum lettering. Control knobs supplied with kit of color disc inserts for coding.

## ORDERING INFORMATION

M-5133 Gatesway speech input console with tubes, relays, complete ready to install

A94401 Extra relays for additional muting, etc.

M-5303 Sub-station for intercom use only, includes matching transformer

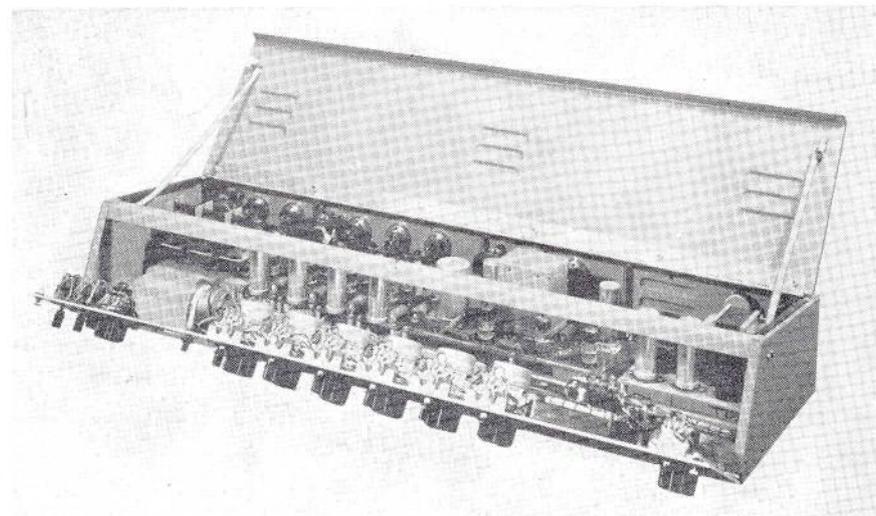
Gates reserves the right to alter specifications stated herein to effect improvements in the product and manufacturing economies.

(Continued next page)



Above: The Gates "Yard" mounted on M4947 micarta top desk.

Only 5 3/4" high and exactly one yard wide, this new and modern speech input console offers both radio and TV broadcasters wide facilities and unusual ease in servicing. — The inbuilt cueing amplifier with front panel speaker provides instant operator checking of all operating circuits without disrupting the house monitoring system. — Complete specifications on succeeding pages.

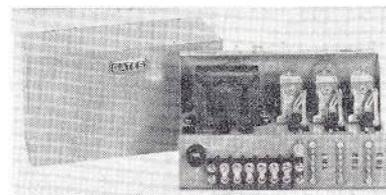


Printed wiring for reliability, triple monitoring amplifiers with grid shunt speaker muting, cueing amplifier and front panel speaker selectable to all usable circuits, six mixing channels, four preamplifiers, new four-stage program amplifier, dual turntable/projector facilities, instantaneous accessibility, self-contained including power supply, mixer buss switchable to second external amplifier, recessed 4" illuminated VU meter — and new performance standards.

Functional design is emphasized. The most used mixing controls in the center. Master gain for the right hand with adjoining VU meter. Cueing speaker and other secondary switching facilities are to the left. Low and wide, vision over the console is unhampered and the massive eye catching appearance makes the "Yard" a show piece of studio equipment.

#### M5050 Relay Unit

An optional desk or cabinet mount unit accommodates three relays and their power supply. Primarily designed where studio warning lights are used. Contacts also provided for loudspeaker muting from each relay in case additional muting of more than 3 speakers, as provided standard in the "Yard," is desired. Relays operate from spare contacts provided on the "Yard" mixer keys.



# "YARD" SPECIFICATIONS

**NUMBER OF MIXING CHANNELS:** Total of six. Key controlled above each control. Mixers ladder type, 20 steps 2 db.

**PREAMPLIFIERS:** Four provided, 2 stage, printed circuit.

**PROGRAM AMPLIFIER:** 4 stages provide high gain but lower noise through gradual amplification. Printed wiring employed.

**MONITOR AMPLIFIERS:** Three separate one-watt amplifiers connect directly to speakers and employ grid shunt muting.

**POWER SUPPLY:** Self-contained full wave transformer type for all filament, bias and plate voltage.

**MIXER KEYS:** Above each mixing control. Connects each channel to either program buss or cue amplifier buss (see cue amplifier below). Also operates grid shunt muting of monitoring amplifiers and provides contacts for operation of M5050 optional relay panel.

**TURNTABLE INPUTS:** 150/250 ohms hi-level selected into mixing channels 5 and 6 via keys. 2 provided.

**PROJECTOR INPUTS:** 150/250 ohms hi-level selected into mixing channels 5 and 6 via keys. 2 provided.

**REMOTE INPUTS:** 4 circuits key selected 500/600 ohms balanced to ground. Includes cueing to remote lines. Operates through mixing channel 6.

**CUEING AMPLIFIER:** Self-contained 3-stage with loudspeaker on front panel. Used with master select switch.

**MASTER SELECT SWITCH:** Selects cueing amplifier or phones across: (a) Remote lines, (b) any mixing channel, (c) individual turntable circuits, (d) individual projector circuits, (e) both program line outputs.

**VU METER:** 4" illuminated directly adjacent to master gain control.

**OUTPUT SWITCH:** Selects program amplifier output to choice of 2 lines.

**MASTER GAIN:** To extreme right, adjacent to VU meter.

**HEADPHONES:** 3 jacks to allow use of phones across either program line or cue amplifier circuit.

**SIZE:** 5 3/4" high, 12 1/2" deep, 36" wide (one yard). Panel slope 20°. Optional M4947 desk: 29 1/2" high, 23" deep, 36" wide.

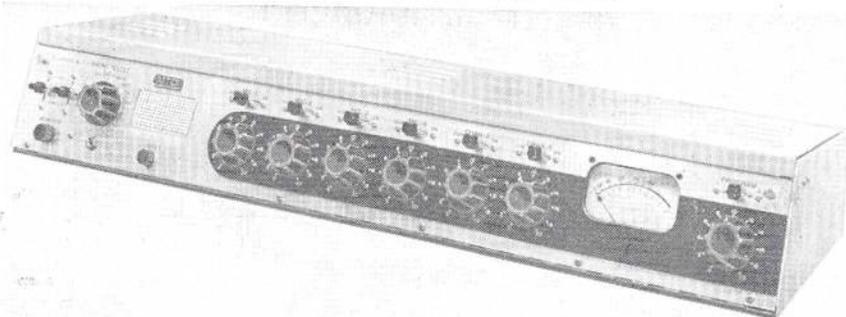
**WEIGHT (packed):** Console 140 lbs. Cubage 9. Desk 88 lbs. Cubage 6.

**FINISH:** Panel anodized black on natural 2 SH aluminum. Knobs black and supplied with kit of decal color inserts. Cabinet medium gloss gray.

**ACCESSIBILITY:** Front panel hinges down, lid of cabinet raises up, exposing all internal equipment for 100% servicing. Individual amplifiers quickly removable if ever need be.

(Continued next page)

Below: The low and wide "Yard" Console



# THE "YARD" SPEECH CONSOLE

## SPECIFICATIONS (Continued)

**GAIN (rated ±3 db):**

- Mic input to program line, 103 db.
- Remote line to program line, 60 db.
- Turntable or projector to program line, 60 db.

**RESPONSE:** 30-15,000 cycles +1 1/2 db.

**DISTORTION:** 1% or less 50-15,000 cycles at +18 dbm to program line.

**NOISE:** Measured at -60 db to preamplifier input and 18 dbm output from program amplifier, the overall noise reduction is 60 db. With -50 db input, overall noise reduction is 70 db.

**MONITOR:** Output per amplifier +30 db (1 watt). Adjusted for proper gain to develop full output under all normal operating requirements.

**IMPEDANCES:** Preamplifier inputs, 30/50 and 150/250 ohms.

Turntable, projector inputs, 150/250 ohms.

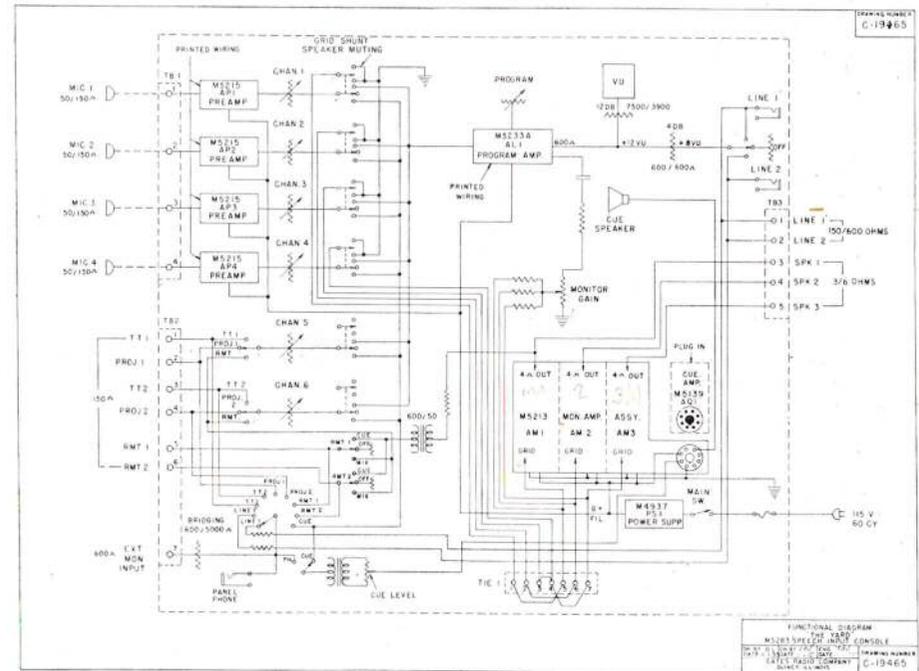
Remote lines input, 500/600 ohms.

Line output, 500/600 ohms.

Monitor amplifier output, 3 outputs of 4 ohms.

**POWER:** 115 volts 50/60 cycles, 90 watts.

**TUBES:** 11 each 5879; 4 each 6AK6, 12AX7; 1 each, 12AU7, 5Y3GT. Total of 21.



## Output Switching Unit

Designed to operate in the output of the Yard, or any speech console. Function is to connect the output of two consoles or a console and one other program source to the program line and spare program line. When switched to A, source A is connected to program line and source B is connected to spare. When switched to B, source A is connected to spare and source B is connected to program line. Pilot lights indicate circuit switching. Frequently used in feeding two circuits to diverse points to provide a simple supervised control point, allowing selective feeding and spare circuit for monitoring or other uses. Size: 9 1/2" wide, 5 3/4" high, 11 3/4" deep. Matches Yard in panel slope, design and finish.

M5069 Output Switching Unit .....



## Patch Panel Cabinet

Contains two rows of single PBX type jacks of the closed circuit type along with indicator strips above each row. Jacks are terminated to numbered terminal block in the back of the cabinet. Has multiple usage. All jacks may be used for extra input circuits such as microphones, remote lines, tape recorders, projectors, etc., or one row may be used for input circuits and the other for output circuits such as recorder feed, network feed, loudspeakers, etc. Size: 9 1/2" wide, 5 3/4" high, 11 3/4" deep. Matches Yard in panel slope, design and finish.

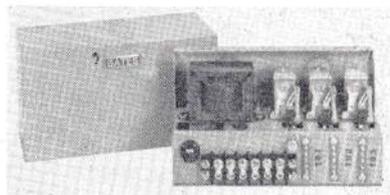
M5070 Patch Panel Cabinet .....  
S32 Two-foot Patch Cord, plugs both ends .....



## Muting/ Warning Light Unit

This desk or wall mount relay unit is an optional accessory for use with the "Yard" console. Allows relay muting of 3 loudspeakers plus contacts for warning lights. Has self-contained DC power supply for operation of relays. Operates directly from any mixer key sequence by slight modification of console wiring. As grid shunt speaker muting is already provided in the "Yard", the main purpose of the M-5050 is to provide warning light facilities. It may also be used with any external monitoring amplifier where the house speaker system demands more wattage than provided in the "Yard".

M5050 Muting/Warning Light Unit .....



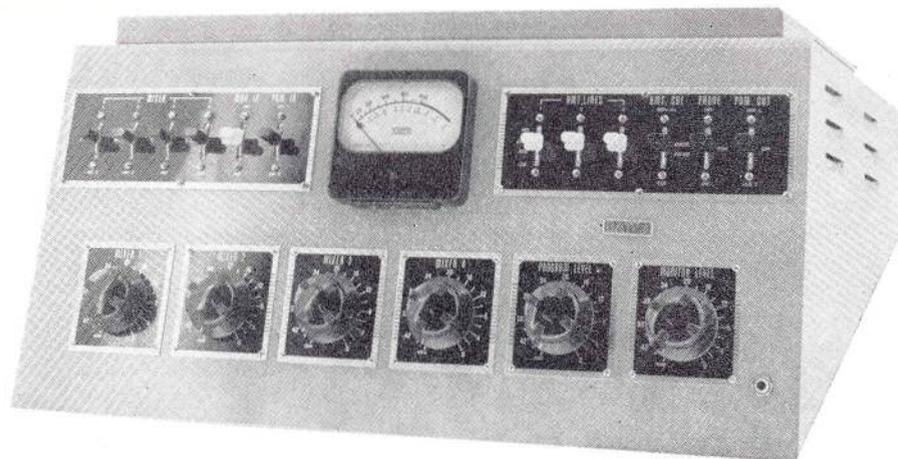
the house speaker system demands more wattage than provided in the "Yard".

## Special Yard Desk

A worthy accessory to the modern Yard console. Back portion of desk tilts back to provide exact panel slope in proportion to viewing level and correct wrist action in operating mixing and level attenuators. Has formed genuine black Micarta top on seasoned 7-ply wood. Sides are of furniture grade stretcher level steel, ribbed for extra strength. Leveling screws provided. Finished in hand-rubbed medium gloss gray. Size with Yard console mounted: 34 1/2" high, 36" wide, 23" deep. Desk disassembles for portability. Shipping weight, 90 lbs. Cubage: 9 1/2". M4947 Desk (chair not supplied) .....

## OTHER YARD ACCESSORIES

Several fixed and variable equalizers for equalizing remote, network, projector lines or overall correction of line between studio and transmitter, will be found listed in this catalog. Loudspeakers, microphones, stands, repeater transformers, and all other items to complete the studio installation are listed in Gates master catalog, on request.



Where a modest size, high quality speech input console is required, the wide facilities of the 52-CS Studioette will meet many requirements for both radio and TV aural control. Completely self-contained including power supply, relay units and monitoring amplifier, the Studioette fits minimum space requirements. The ingenious engineer will also note that two Studioettes operated either side by side, or at separate points will often provide greater facilities and ease of control than the use of one larger control board.

**GENERAL CONSTRUCTION:** In cabinet 24" wide, 10" high and 21 1/2" deep, having a front panel slope of 30°. Top hinges up to expose all under-chassis wiring and relays. Entire cabinet hinges up to expose terminal boards and for tube change.

**BASIC ELECTRICAL DESIGN:** Consists of four mixing channels, master and monitor gain controls, two preamplifiers, program and monitor amplifiers, complete with duplicate speaker/warning light relays and full wave transformer type power supply.

**MIXER:** Four channels each with ladder type controls. Channels 1 and 2 operate from output of preamplifiers. Channels 3 and 4 are combination turntable/projector, remote and network channels, by means of lever key selection.

**MICROPHONES:** Four may be accommodated by switch selection into two preamplifier inputs. Switches may be wired to speaker muting relays for any muting/warning light combination desired.

**TURNTABLES:** Accommodates two turntable channels into mixing channels 3 and 4.

**NETWORK:** Switches into channel 3 when turntable not in use.

**REMOTE LINES:** Switches into channel 4 when turntables not in use. Accommodates three remote lines with complete override and cue facilities.

**OTHER SWITCHING:** Switching circuits are provided for: (a) switching output of entire mixer to choice of two external program amplifiers, (b) handling remote cue from padded output of monitoring amplifier, (c) selection of headphone jack across network, program line and remote lines, and (d) selection of program amplifier output to choice of two lines.

**GAIN CONTROLS:** Two supplied, (a) program amplifier, and (b) monitoring amplifier.

**VU METER:** Standard 4" fully illuminated.

**AMPLIFIERS:** Preamplifiers, two-stage type, transformer coupled input and cathode follower output. Program amplifier, four stages, with abundance of gain at low noise and distortion. Monitoring amplifier, three stages, 4 watts output.

**RELAYS:** Two supplied. Operate from main power supply. May be wired in any sequence in conjunction with microphone switches to mute loudspeakers and supply warning light switch break.

**TURNTABLE CUEING:** Both turntable channels have cue switching at infinity position. These may be connected to any external amplifier for advance listening on network, remote lines, projectors and turntables.

**TERMINATIONS:** Numbered and lettered terminal strips on inside base of cabinet is reached by tipping back cabinet.

(Continued next page)

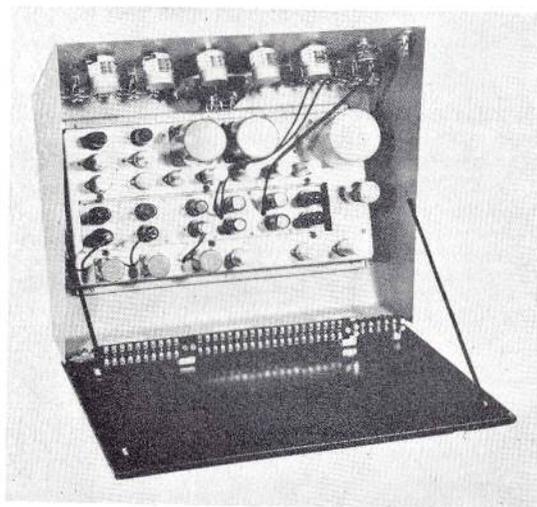
# STUDIOETTE SPEECH INPUT CONSOLE

## SPECIFICATIONS

- MICROPHONE INPUTS:** 4 (two mixed at any one time).
- TURNTABLE/PROJECTOR INPUTS:** 2.
- REMOTE LINES:** 3 at 500/600 ohms.
- ISOLATION TRANSFORMER:** Self-contained.
- NETWORK:** Separate input to mixing channel 3.
- RESPONSE:**  $\pm 1\frac{1}{2}$  db 30-15,000 cycles.
- DISTORTION:** From preamplifier input to program amplifier output, 1% or less, 50-15,000 cycles at +8 dbm output.
- MONITORING AMPLIFIER:** 2% or less at 4 watts output, 50-15,000 cycles.
- NOISE:** 65 db below +8 dbm.
- IMPEDANCES:** Microphone input 50/250 ohms.
- NETWORK AND REMOTE LINES:** 500/600 ohms.
- TURNTABLES OR PROJECTORS:** 250 ohms.
- PROGRAM LINE OUTPUT:** 500/600 ohms.
- MONITORING AMPLIFIER OUTPUT:** 500 ohms.
- EXTERNAL CUEING AMPLIFIER INPUT:** 250 ohms.
- GAIN:** From microphone input to program line output, 105 db  $\pm 3$  db.  
From remote network or turntable/projector input to program line output, 60 db  $\pm 3$  db.
- TUBES:** Six 6C5; three 6J7, 6SN7; two 6V6; one 5U4G.
- POWER:** 115 volts, 50/60 cycles, 125 watts.

(Continued next page)

Below: Studioette cabinet tilts up to reach terminals, tubes and attenuator cleaning.



# STUDIOETTE SPEECH INPUT CONSOLE

## SPECIFICATIONS

(continued)

- SIZE:** 24" wide, 10" high, 21½" deep.
- FINISH:** Hand rubbed rose gray with escutcheons in anodized black and natural aluminum.
- CABINET:** 16 gg cold rolled stretcher level steel resistance welded. Sub-chassis of aluminum.
- SHIPPING WEIGHT:** Packed, 100 lbs. Cubage: 12 cu. ft.

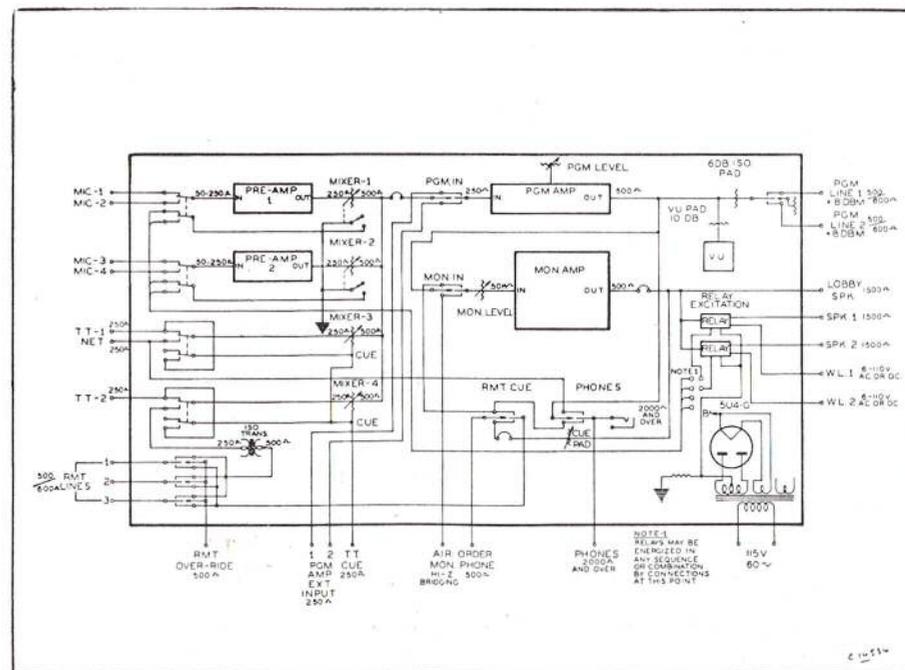
## USAGE

For all speech input requirements, for AM, FM and TV. Also excellent for recording studios, radio workshops, larger public address installations and centralized radio control. Also widely used as sub-console in master control installations.

## ORDERING INFORMATION

- Model 52-CS Studioette complete with tubes and ready to use .....
- TK-106 100% spare tube complement .....

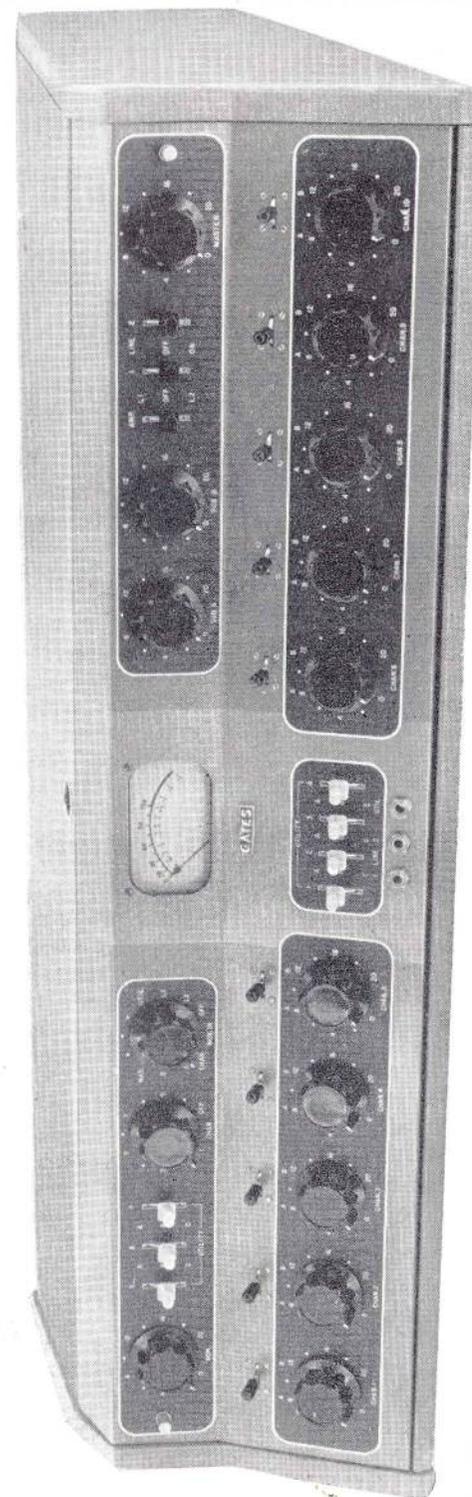
NOTE: For desk, recommend Model CB-63.



This console is designed specifically for the demands of audio control in TV. Standing only 7½" high, the two-step panel has the bottom row mixing section sloping toward the operator and the top row vertical. — Utility keys permit a wide range of circuit control to fit personalized needs.

Ten mixing channels may be used for a very wide variation of input circuits. As many as 24 microphones may be accommodated, or the equivalent combination of microphones, projectors, turntables and tapes. Booster amplifiers are placed between each of the two program busses for improved signal to noise ratio and for the use of dual sub-master and master gain controls. Jacks are provided to monitor both output circuits, plus a third jack for direct connection to the intercom system of the TV plant.

Servicing is near zenith in scope. Identical construction as used in the Gatesway console, see Pages 12-15. Includes drop-down front panel, hinged audio strip chassis and dead back — all terminations are to the inside of the cabinet. — The following pages and functional diagram will supply interesting information about this very new Gates product.



TV audio control console, Model M-5301 — only 7½" high and 39" wide. Finish is in non-glaring two-tone industrial green and beige with cabinet in medium gray.

**TEN CHANNEL MIXER:** Six supplied with microphone preamplifiers, four supplied for medium level input. Space provided for four additional preamplifiers if all low level channels desired.

**PREAMPLIFIERS:** Six supplied as standard. Blank space for 4 more. Input impedances of 30/50 and 150/250 ohms. With use of utility keys, up to 18 microphones may be used with the six preamplifiers.

**MICROPHONE INPUTS:** By wiring three microphones each into the utility switches and connecting them into seven of the channels a total of 24 are available. Thus, 21 switched and 3 unswitched. Can be used in three groups of seven and one group of three, or two groups of seven and one group of ten for large program productions.

**MEDIUM LEVEL INPUTS:** If any of the inputs listed above are not required for microphones, they may be used for medium level inputs such as projectors, turntables, tape recorders and remote lines. The microphone preamplifier is not required on medium level channels. Up to 24 available by use of all 10 channels.

**BOOSTER AMPLIFIERS:** Two connected at output of the two program busses for improved signal to noise ratio in conjunction with sub-master and master controls.

**SUB-MASTER OPERATION:** Any or all input channels may be switched to either sub-master A or sub-master B control and faded in and out as a group. Sub-master A and sub-master B groups may be used simultaneously or individually with no switching required.

**MASTER CONTROL:** A low impedance step-type ladder control used to fade in and out the entire program channel. Connected directly after the

converging pad which connects to the output of the two sub-master controls.

**PROGRAM AMPLIFIER OUTPUT SWITCHING:** Lever key allows output to be switched to program line 1 or program line 2. May also be used to direct the console to one of two master consoles when used for subordinate studio control.

**PHONE JACKS:** Two standard phone monitoring jacks are connected to each of the two program lines. This allows using one of the lines for programming and the other line for an order-phone line.

**INTERCOM PHONE JACK:** A two circuit jack is provided to permit the use of an intercom telephone headset connected to the master intercom system in the station.

**MONITORING AMPLIFIER INPUT SELECTION:** Two eleven-position switches, one feeding into the other, allow monitoring of fifteen of the important circuits in the console. In addition, four utility positions are furnished to bring the total number available up to 19. An off position may be selected on each switch.

(A) Input of each mixing channel may be monitored ahead of the control. This allows sweeping through a number of microphone inputs and finding one that may be introducing unwanted signal. This microphone may then be faded out until the condition is cleared. It is unnecessary to fade each microphone until offending one is found, thus an important part of the program will not be lost.

(B) Input channel selector described in (A) above, is connected into the master selector in the "Channel" position. Other positions on the master selector are: input to sub-

## The New In Preamplifiers

To provide 10 high quality preamplifiers in one modest sized console, Gates engineers designed the M-5215 preamplifier. Requires only 2 5/8" x 4 5/8" mounting space. Use of printed wiring (not printed circuit) requires less space and assures uniform, trouble-free operation. Response:  $\pm 1\frac{1}{2}$  db, 30-15,000 cps. Distortion: Less than 1/2 % at operating levels and noise 90-95 db below +10 dbm output.



master A, sub-master B, output of the master or program amplifier, four utility positions, line 1 and line 2. This complete input selection of the monitoring amplifier allows preview or signal checking of any part of the console at any time.

(C) Bridging Transformer on Monitor Amplifier Input: Since the input of the monitoring amplifier may be switched to any of the circuits during programming, the bridging impedance is 7500 ohms to prevent circuit loading.

(D) Monitor Gain Control: Low impedance step-type ladder control adjusts the levels into the monitoring amplifier. Output impedance of this control is 600 ohms to match amplifier input. This permits a low impedance inter-connecting line between the console and the shelf assembly which holds monitoring amplifier.

(E) Signal Level Compensation: All circuits are padded, where required, to present approximately equal levels into the monitoring amplifier. This allows the input selector to be switched to any and all positions without control changes and fear of speaker blasting.

**MUTING:** Channel keys provide switch contacts for muting or auxiliary switching. Optional M-4572 relay unit available where speaker muting required. See below.

**PATCH PANEL:** Main circuits brought to terminal board and strapped together so that normalling jacks may be used for patching if ever desired.

**UTILITY KEYS:** Seven provided, in a group of three and a group of four. Two circuit, three position keys standard. Permit expansion of any section of console operation and/or addition of special facilities. Terminal board furnished attached to rear of cabinet, allows wiring of any type of circuit by station engineer.

**PANEL AND SHELF UNITS:** Plug-in program amplifier, monitoring amplifier, regulated power supply and optional muting relay unit mount on single panel and shelf assembly for rack or inner desk mounting to segregate high and low level circuits.

**SPEAKER MUTING RELAYS:** M-4572 relay unit optional equipment as some TV operations do not require speaker muting. Space provided on panel and shelf assembly to mount a plug-in relay deck. All channel keys provided with contacts to operate muting relays, thus muting operation easily installed if desired.

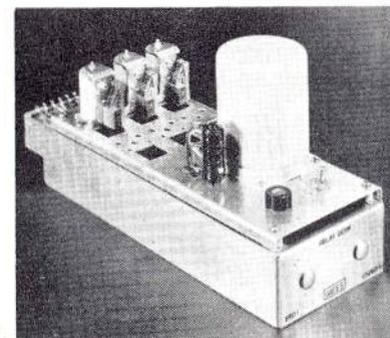
**VU METERS:** High quality illuminated four-inch VU meter, calibrated for +8 dbm level into output line. Other calibrations on special order.

**INPUT IMPEDANCES:** 30/50-150/250 ohms, balanced or unbalanced into the microphone preamplifiers. 150/250 ohms, unbalanced into channels without preamplifiers. 600 ohms, unbalanced into program and monitor amplifiers.

**OUTPUT IMPEDANCES:** 600/150 ohms, balanced or unbalanced out of program amplifier. 600 ohms, balanced out of line terminals. 600/150/16/8/4 ohms, balanced or unbalanced out of monitor amplifier—factory connected for 600 ohms.

## M-4572 Optional Muting Unit

Where speaker muting is required, this unit of the plug-in type, fits in as the fourth unit of the panel and shelf assembly as shown on Page 28. Standard unit includes 3 relays but knockouts provided for 3 added relays if needed. Contacts for both speaker muting and warning light break are provided. Relay power supply, selenium type, is self-contained. Spare contacts are provided on all mixing channel keys and utility keys for any conceivable sequence of relay operation.



## Microphone To Program Line Output:

- GAIN: Adjusted to 106 db (with Program Amplifier gain control).
- RESPONSE:  $\pm 1.5$  db from 30 to 15,000 cycles.
- DISTORTION: 0.5% or less from 50 to 15,000 cycles at +18 dbm output.
- NOISE: 60 to 65 db below +8 dbm output, with -60 dbm input.
- CROSS-TALK: Below noise level with normal levels and control positions.

## Channels Without Microphone Preamplifiers:

- GAIN: 65 db  $\pm 2$  db at 1000 cycles.
- RESPONSE:  $\pm 1.5$  db from 30 to 15,000 cycles.
- DISTORTION: 0.5% or less from 50 to 15,000 cycles at +18 dbm output.
- NOISE: 60 to 65 db below +8 dbm output, with -10 dbm input.
- CROSS-TALK: Below noise level with normal levels and control positions.

## Monitoring Amplifier:

- GAIN: Sufficient to adjust to maximum output with normal levels and control position.
- RESPONSE:  $\pm 2$  db from 50 to 15,000 cycles.
- DISTORTION: 1.5% or less from 50 to 15,000 cycles at normal +30 dbm output, 3% or less at maximum +38 dbm output.
- NOISE: 60 db below +30 dbm output, with normal levels and control positions,  $\pm 3$  db.
- CROSS-TALK: The monitoring amplifier introduces no cross-talk in the console.

**Tubes:** (20) 5879, (4) 12AU7, (2) 6AQ5, OA2, (1) 6080, 5V4G.  
Additional preamplifiers (2) 5879.

Below: Panel and shelf unit to left requires only 7"x19" panel space and accommodates the program amplifier, monitoring amplifier and regulated power supply, Illustrations 2, 3 and 4. Optional M-4572 relay unit, Page 27, also plugs in this panel and shelf unit.

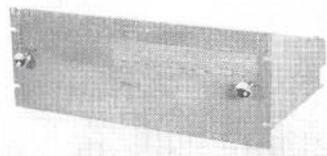


Fig. 1



Fig. 2

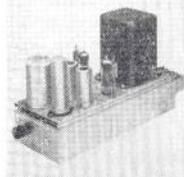


Fig. 3

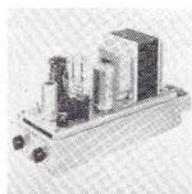


Fig. 4

## M-5301 COMPLETE TV CONSOLE:

Includes six preamplifiers, panel and shelf assembly with program amplifier, monitoring amplifier and regulated power supply mounted, all tubes and ready to use.

## TK-231 100% spare tube complement for M-5301

## M-5304 PREAMPLIFIER KIT:

Includes M-5215 preamplifier, described Page 41, tubes and side shield. Six supplied with M-5301 console as standard. Space provided for four more. Order this kit where additional complete preamplifiers are desired.

## M-5304 Preamplifier Kit

## TK-239 100% spare tube kit

## M-4572 MUTING UNIT:

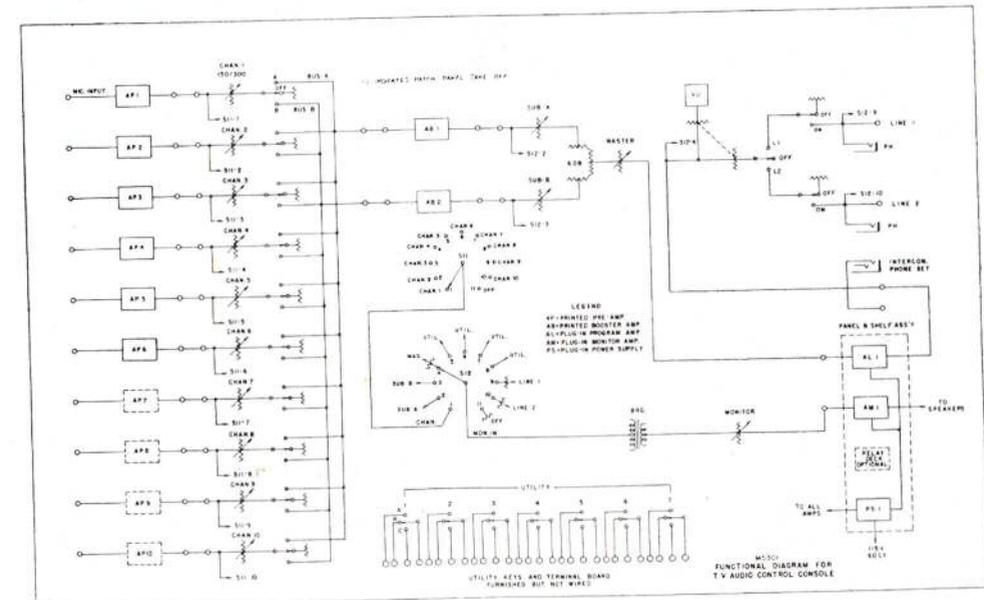
Optional equipment. Described Page 42. The M-5328 plug-in base plate and receptacle are necessary for both plug-in feature and terminations. Three relays are standard equipment and knockouts are provided for three more. Spare relays are listed below.

## M-4572 Muting Unit

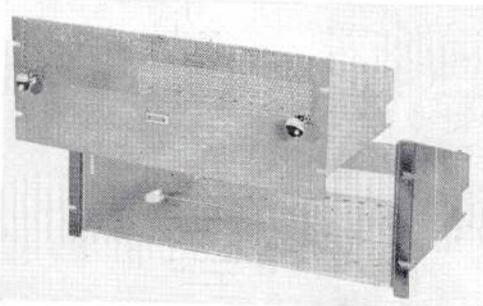
## M-5328 Base plate and receptacle

## A-75679 Spare relay

Functional Diagram M-5301 TV Console



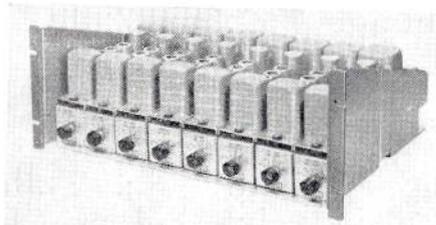
Gates plug-in preamplifiers, program amplifiers and power supplies are used world-wide in the most exacting radio, television and recording service. — Self-aligning plugs and receptacles of the wiping knife blade type are used in place of ordinary plugs and sockets. This makes possible the complete interchange of any similar unit without re-alignment as well as providing the most secure electrical contact known. All chassis are heavy cadmium plated to prevent marring during the plug-in cycle.



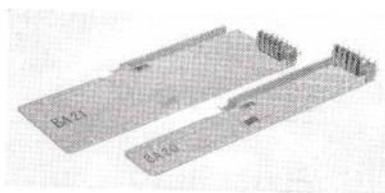
### Panel and Shelf Assembly

Is usually used for rack or multiple mounting of plug-in units. Requires only 7"x19" rack space. Front is ventilated by top half being perforated and is instantly removable to allow removing amplifiers from the front, or making gain adjustments. — The BA-20 or BA-21 bases with receptacle, listed below, fasten to the bottom of the panel and shelf assembly. Depth is 13 3/8". Finish medium gloss gray.

Model PAS-1 Panel and Shelf .....



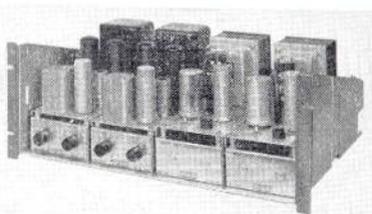
Here are 8 plug-in preamplifiers mounted on one PAS-1 panel and shelf assembly, requiring only 7"x19" of rack space. Self-aligning plugs and receptacles allow unlimited interchange of amplifiers without resetting plugs or receptacles.



### Base and Receptacle

Two bases accommodate all plug-in units. Model BA-20 is for all preamplifiers and the PWR-5 power supply. BA-21 is for program and monitoring amplifiers and PWR-3 regulated power supply. Mounts on bottom of PAS-1 panel and shelf assembly. Where other mounting desired may be secured to any panel, base of desk, or wood cabinet. Supplied with receptacle.

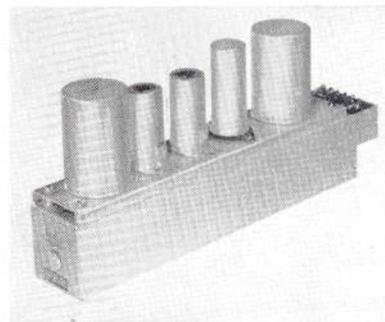
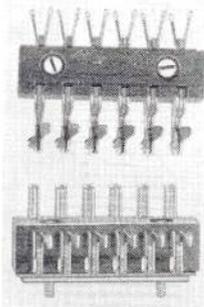
Model BA-20 — Model BA-21



A single PAS-1 panel and shelf assembly will contain a wide variety of combinations. Above are two monitoring amplifiers and two regulated power supplies. This same shelf would hold four preamplifiers, one program amplifier and one power supply, or—two preamplifiers, one program amplifier, one monitoring amplifier and one power supply.

### The Plug Is Important In Plug-In

As reliability is the key word in Radio/TV broadcasting, the plug and receptacle are vitally important in plug-in equipment. Picture to right well demonstrates the rugged design, positive contact, good spacing between conductors and the self-aligning feature. You won't break or bend a plug pin with this type of plug-in design.



PRE-4 Preamplifier with tubes .....

TK-112 100% Spare tube complement .....

BA-20 Base and receptacle .....

### PRE-4 Preamplifier

GAIN: 40 db  $\pm$  1 db.

DISTORTION: 0.5% or less 50-15,000 cycles. 0.75% or less at 30 cycles. Measured at +8 dbm output.

NOISE: 90 db below +10 dbm output (-120 to -124 dbm equivalent input noise).

LEVELS: Maximum input -32 dbm. Maximum output at above rated distortion, +8 dbm.

IMPEDANCES: Input 150 and 250 ohms. Output 150 and 600 ohms. As input transformer is unloaded, the impedance is substantially higher than source impedance over entire range.

POWER: Requires 6.3 volts AC at 0.3 amperes and 275/310 volts DC at 6 MA.

TUBES: Two type 5879.

CIRCUIT: Two-stage shunt fed output. Overall feedback from plate of second stage to cathode of first stage.

MECHANICAL: Size 2 1/16"x11 1/2"x5 3/8" high overall. Mounts eight in one PAS-1 panel and shelf assembly. One PWR-3 power supply will operate up to 26 preamplifiers; or, one PWR-5 power supply will operate two preamplifiers.

### PRE-3 Preamplifier

(with variable equalization)

USE: As preamplifier where input transformer is not required, such as with transcription pickups or Hi-Z microphones. Supplied with two external controls and two fixed resistors. When used as straight preamplifier, fixed resistors wired to terminal board. To provide variable equalization  $\pm$ 20 db at 100 and 10,000 cycles, variable controls wired in, providing roll-off or accentuation as desired.

GAIN: 40 db  $\pm$  1 db.

NOISE: -70 dbm below +8 dbm output.

RESPONSE: Flat 30-15,000 cycles within +1 db as straight amplifier.  $\pm$ 20 db at 100 and 10,000 cycles graduated when used with equalizing controls.

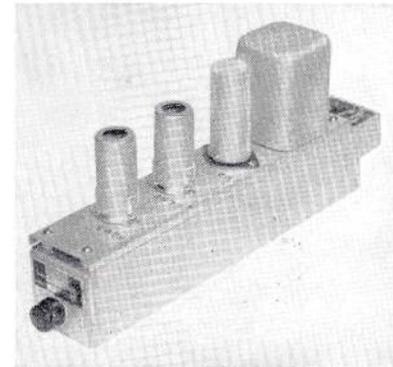
TUBES: Two type 5879.

IMPEDANCES: Input 1/2 meg, output 150 and 600 ohms.

POWER: 6.3 volts at 0.3A and 300 volts at 6 MA.

CIRCUIT: Two-stage shunt fed output with feedback from plate of second stage to cathode of first stage.

MECHANICAL: Same as PRE-4 (above).



PRE-3 Preamplifier with tubes .....

TK-112 100% Spare tube complement .....

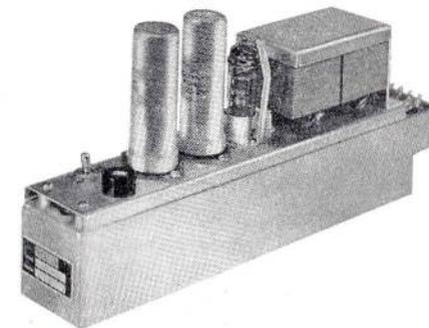
BA-20 Base and receptacle .....

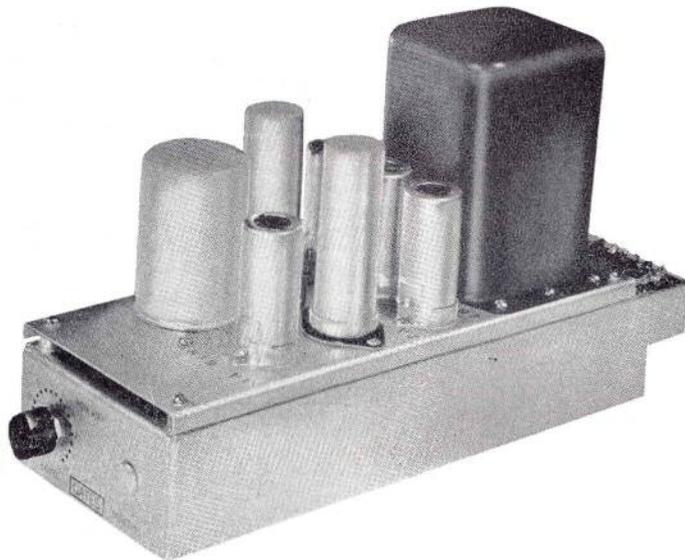
### PWR-5 Preamplifier Power Supply

For operating one or two PRE-3 or PRE-4 preamplifiers. Usually employed where preamplifier is isolated from main rack such as in turntable cabinet, or where only one or two preamplifiers are used. Supplies 6.3 volts AC at 0.9 amperes and 275/310 volts DC at 12 MA. Uses transformer type supply and extremely well filtered for low noise. Ripple content 0.005%. Tube 6X4.

Model PWR-5 Power Supply .....

BA-20 Base and receptacle .....





## SPECIFICATIONS

**USE:** As high quality program or line amplifier where output up to +24 dbm at low distortion is desired. One or two of these amplifiers will operate from a single PWR-3 regulated power supply listed on next page.

**GAIN:** 65 db as a line or program amplifier, direct matching of impedances. Where used as a bridging amplifier with AT2 bridging volume control, the gain is 33 db.

**RESPONSE:**  $\pm 1$  db 30-15,000 cycles.

**DISTORTION:** 0.5% 50-15,000 cycles. 0.75% or less at 30 cycles.

**NOISE:** 79 db or better below +24 dbm output with volume control fully open. (-120 to -124 equivalent input noise).

**LEVELS:** Maximum input +8 dbm. Maximum output +24 dbm.

**IMPEDANCES:** Input 150 and 600 ohms. Output 600, 150 ohms.

**POWER:** 6.3 volts AC at 1.05A and 300/330 volts DC at 37 MA.

**TUBES:** Three 12AU7 and one 5879.

**CIRCUIT:** Three stages with push-pull output. Feedback between second and third stages.

**MECHANICAL:** Cold rolled steel chassis, die formed and heavily plated. Size:  $4\frac{1}{8}$ " x  $11\frac{1}{2}$ " x  $6\frac{3}{8}$ " high overall. Type PWR-3 power supply will operate from one to four of these program amplifiers.

PGM-4 Program Amplifier with tubes .....

BA-21 Base and receptacle .....

TK-122 100% spare tube complement .....

## Bridging Controls

For use with all Gates plug-in amplifiers where bridging input is preferred over direct impedance matching. As all bridging controls insert various degrees of loss in the circuit, this should be taken into consideration. Two high quality carbon controls in tandem, balanced to ground, make up each control. Mounting is external to amplifier.

- AT1 Control, 10,000 ohms to 150 ohms .....
- AT2 Control, 10,000 ohms to 600 ohms .....
- AT3 Control, 20,000 ohms to 150 ohms .....
- AT4 Control, 20,000 ohms to 600 ohms .....
- AT5 Control, 10,000 ohms to 150 ohms .....

## MON-4 Monitoring Amplifier

**USE:** For loudspeaker distribution, recording and auxiliary program amplifiers. High gain allows use with bridging controls or other loss circuits. One PWR-3 power supply and one PWR-10 bias supply, listed below, will operate one or two MON-4 monitoring amplifiers or one monitoring amplifier, one program amplifier and four preamplifiers.

**GAIN:** As straight amplifier, 103 db. When used with AT2 bridging control, 70 db.

**RESPONSE:**  $\pm 2$  db 30-15,000 cycles.

**DISTORTION:** 3% or less at +37 dbm with gain control fully open. (Equivalent input noise -120 to -124 db).

**LEVELS:** Maximum input -27 dbm. Maximum output +37 dbm.

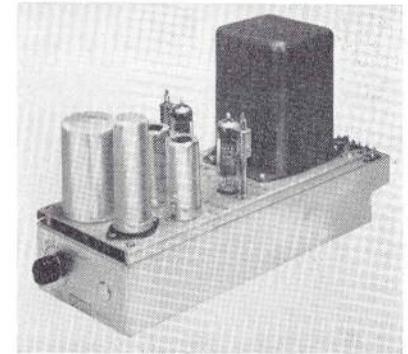
**IMPEDANCES:** Input 150 and 600 ohms. Output 600, 150, 16, 8 and 4 ohms.

**POWER:** 6.3 volts AC at 1.5A and 320-340 volts DC at 85 MA.

**TUBES:** Two each 5879, 6AQ5 and one 12AU7.

**CIRCUIT:** Four-stage with push-pull output. Tertiary winding feedback from secondary of output transformer to cathode of driver stage.

**MECHANICAL:** Cold rolled steel chassis, die formed and heavily plated. Size:  $4\frac{1}{8}$ " x  $11\frac{1}{2}$ " x  $6\frac{3}{8}$ " high overall. One PWR-3 power supply, with one PWR-10 bias supply, will operate one or two of these monitoring amplifiers.



MON-4 Monitoring Amplifier with tubes .....

BA-21 Base and receptacle .....

TK-121 100% spare tube kit .....

## PWR-3 Regulated Power Supply

**USE:** An unusually well regulated power supply with very low ripple content. Where used with MON-4 monitoring amplifier, the PWR-10 bias supply should be ordered. Bias supply not required for preamplifiers or program amplifiers.

**CAPACITY:** Will supply up to 26 PRE-4 preamplifiers, two PGM-1 or four PGM-4 program amplifiers, two MON-4 monitoring amplifiers or any combination of the above.

**POWER:** Supplies 6.3 volts AC at 8A, 310-350 volts DC at 0-160 MA. With PWR-10 bias unit added, supplies 0-90 volts or low current. For 115 volts, 50/60 cycles. 230 volt design available on special order.

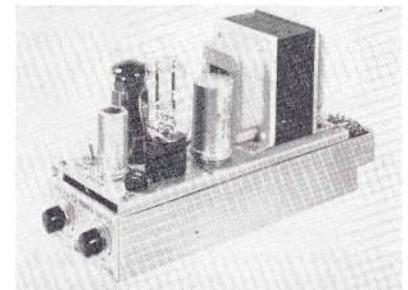
**INTERNAL IMPEDANCE:** Negligible.

**INTERNAL REACTANCE:** Negligible.

**RIPPLE CONTENT:** Less than 0.002 volts or 0.0006% through entire voltage range.

**TUBES:** One each 5V4G, 5879, 6080; and two OAZ.

**MECHANICAL:** Cold rolled steel chassis, die formed and plated. Hum balance control on filament circuit and voltage output control on front. Size:  $4\frac{1}{8}$ " wide,  $11\frac{1}{2}$ " front to back,  $6\frac{3}{8}$ " high. Mounts four in a panel and shelf assembly.



PWR-3 Power Supply with tubes .....

BA-21 Base and receptacle .....

TK-103 100% spare tube kit .....



## PWR-10 Bias Supply

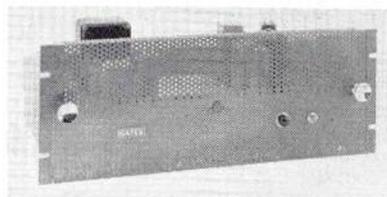
Plugs into socket provided on PWR-3 regulated supply to provide bias voltage to one or two MON-4 monitoring amplifiers. Not required for preamplifiers or program amplifiers. Where bias supply is used this does not restrict power supply for use with monitoring amplifiers only. Amplifiers may be mixed as desired.

PWR-10 Bias Supply .....

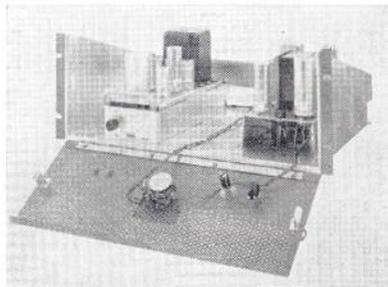
**When Ordering Plug-In Equipment** it is necessary to order the BA-20 or BA-21 base/receptacle unit for each amplifier. It is not necessary to order the base/receptacle unit where amplifiers or power supplies are purchased as spares. — All amplifiers are so well shielded that power supplies may be operated on the same panel and shelf assembly with only normal precautions necessary.

## M-5340 Program Amplifier

This complete program amplifier consists of the PGM-4 plug-in program amplifier listed Page 32, a well filtered permanently mounted power supply, and is completely wired and tested. A modified PAS-1 panel and shelf assembly, listed Page 30, holds the entire equipment and requires only 7" of rack panel space. For performance specifications, see PGM-4, Page 32. — Power supply delivers all necessary filament and plate voltages. Uses a 5V4G rectifier tube. M-5340 illustrated has the gain control on the front of the amplifier, reached by removing the front cover. Models are available, listed below, with gain controls to mount on the front panel identical to the monitoring amplifier shown below.



M-5340 Program Amplifier



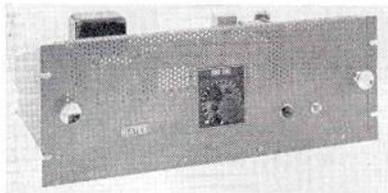
Open view of either Program or Monitoring Amplifier units. Front panel hinges down for quick maintenance. Amplifiers are plug-in type and remove from front.

M-5340 Complete program amplifier with tubes .....

M-5340A Consists of M-5340 program amplifier with 20 step unbalanced 600 ohm ladder attenuator, dial and knob .....

M-5340B Consists of M-5340 program amplifier with 20 step balanced 600 ohm ladder attenuator, dial and knob .....

TK-245 100% spare tube kit .....



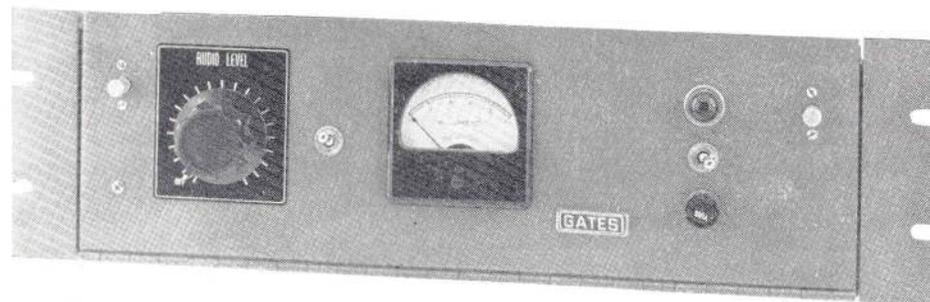
M-5341 Monitoring Amplifier. The M-5340A and M-5340B Program Amplifier appear identical with attenuator front panel mounted.

## M-5341 Monitoring Amplifier

Includes the MON-4 plug-in monitoring amplifier listed Page 33, a well filtered permanently mounted power supply mounted on modified PAS-1 panel and shelf assembly—wired and tested. A 100,000 ohm bridging control, mounted on the front panel, allows direct operation across a 150/250 or 500/600 ohm circuit. Gain overall is 70 db. Rectifier tube is 5V4G. For specifications, see MON-4, Page 33. — This model has a wide variety of uses such as a monitoring amplifier, recording amplifier, standby program amplifier, etc.

M-5341 Complete monitoring amplifier with tubes .....

TK-246 100% spare tube complement .....



For automatically controlling program level, the Gates "Sta-Level" amplifier offers many improvements both in performance and mechanical design. — A completely self-contained unit, requiring only 5 1/4" x 19" rack panel space with drop-down to service front panel. Included in this single rack mount unit are the "Sta-Level" amplifier, its power supply, compression meter, input and output level controls and Off-On switch.

## Outstanding features are:

- Regulated and self-contained power supply.
- 1% or less distortion up to 30 db compression.
- Higher gain, 62 db.
- Special regulator circuit holds threshold of compression constant.
- Compression meter for indicating compression or gain reduction.
- Switch, selects average or dual recovery time to accommodate different modes of operation.

**POWER SUPPLY**  
is standard equipment and not an extra cost accessory in the Gates "Sta-Level".

Though rated at only 1% distortion at 30 db compression, levels of compression as high as 40 db will produce negligible distortion. — Through the ability to raise average program level, the effect is quite the same as increased signal strength at the point of the receiver. The "Sta-Level" should be used with a peak limiting amplifier as it is an average level device and not a peak limiter.

# M-5167 "STA-LEVEL" AMPLIFIER

**TYPICAL USE:** Advantages of the "Sta-Level" are many and varied. As an automatic level device, the "Sta-Level" relieves the operator of most gain riding requirements. — It will automatically adjust for different levels between input channels. Microphones, turntables, projectors, remotes or tapes may be switched in with faders set at normal positions. "Sta-Level" will adjust for sub-normal or at normal gain.

Another common use is where the microphone gain is set higher than turntable gain—the microphone, when switched in will supersede the turntable and automatically fade it. The turntable will return to normal when the microphone is no longer used. — When "Sta-Level" is used with a good limiting amplifier such as the SA-38 or SA-39 on Pages 37-38 it can be said that another generous step forward has been made in automatic programming and better broadcast station performance.

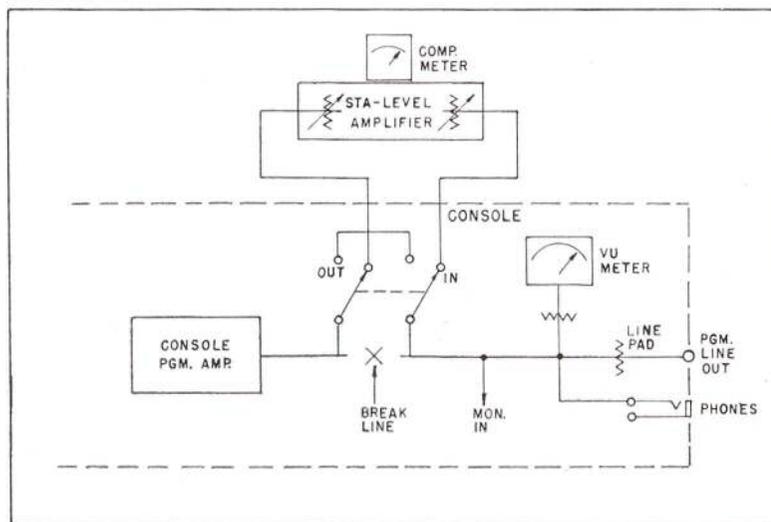
## SPECIFICATIONS

**GAIN:** 62 db at 1000 cycles  $\pm 2$  db.  
**DISTORTION:** 1% or less 50-15,000 cycles, 0-30 db compression when using +20 dbm output threshold level.  
**RESPONSE:**  $\pm 1$  db 30-15,000 cycles, 0-30 db compression.  
**NOISE:** 65 db or better below output, 0-30 db compression at +20 dbm threshold level.  
**ATTACK/RECOVERY TIME:** Factory wired for average programming. Time constants may be varied by station engineer with chart provided with instruction book.  
**IMPEDANCES:** 600 ohms, input and output.  
**TUBES:** (2) 6V6, (1) 6386, 12AT7, 6AL5, OB2, 543GT.  
**DESIGN/SIZE:** Front panel drops down to reach all inner components. Size: 5 1/4" x 19" x 7" deep. Finish, medium gloss gray. Weight packed, 30 lbs. Cubage, 2.  
**POWER:** 105/115 volts, 50/60 cycles, 50 watts.

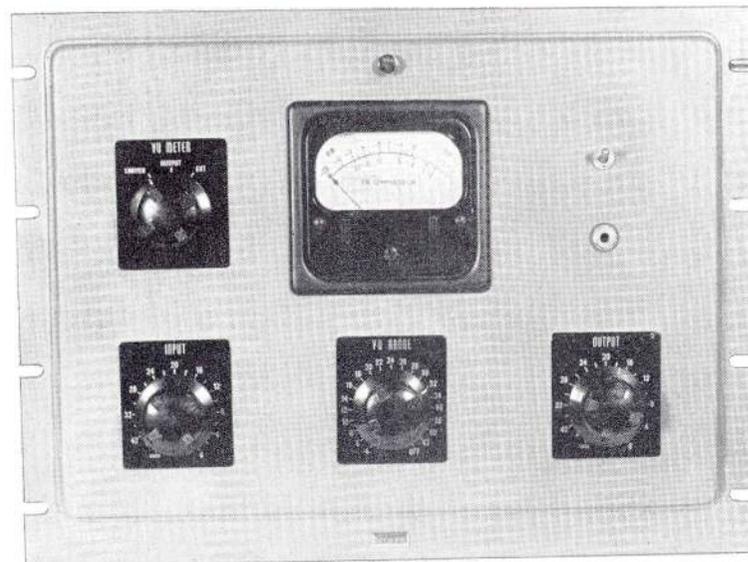
## ORDERING INFORMATION

M-5167 "Sta-Level" amplifier complete with tubes .....  
 TK-243 100% spare tube kit .....

The "Sta-Level" may be inserted in the audio circuit in many ways. This sketch shows connection to output of program amplifier in console and moving console VU meter to output of "Sta-Level". Usually "Sta-Level" is at studio as wide dynamic range controls level into the telephone line.



# Peak Limiting Amplifier Model SA-38



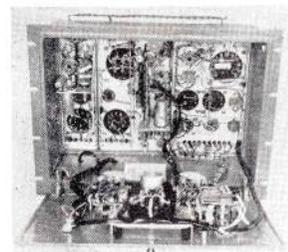
Hundreds of radio and television stations vouch for this fine limiting amplifier. Fast attack time, essentially instantaneous, is completely void of all chirps or thumps. This is because limiting action is obtained by feeding a portion of the output voltage through a full wave rectifier and the negative DC voltage applied to the second control grid of the PP input amplifier tubes. As output voltage increases, the grid becomes more negative, retarding flow of current and lowering the gain of the input stage. The result is unusually high compression with negligible distortion, evidenced by the 1 1/2% distortion rating at 20 db of compression.

Six switch selectable release times, from 0.2 to 1.2 seconds, are available. — The 4" illuminated meter has VU characteristics, has 2 scales reading: (a) decibels compression, and (b) VU. The meter has an associated range control reading in 2 VU steps +4 to +42 VU. Meter may be selected to: (a) compression, (b) limiter output, and (c) external for proof of performance measurements or any external measurement. Input and output stepped controls are provided.

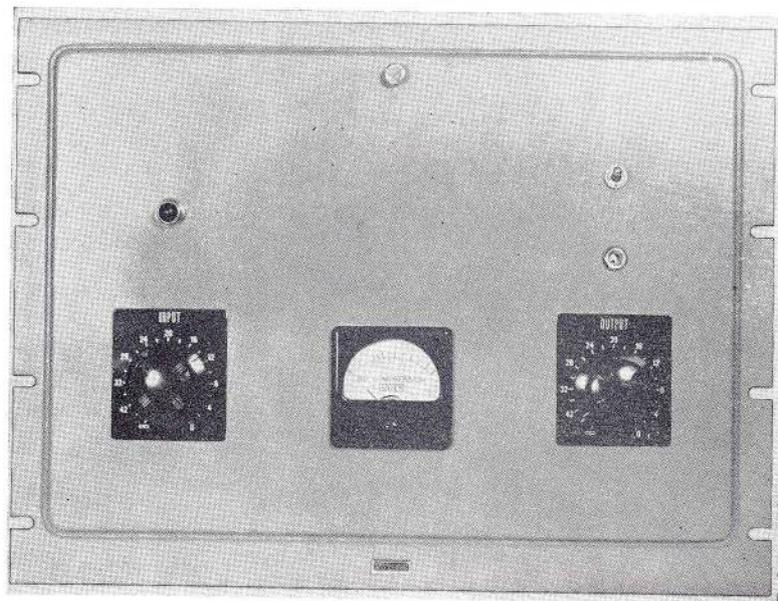
## SPECIFICATIONS

**INPUT IMPEDANCE:** 500/600 ohms.  
**OUTPUT IMPEDANCE:** 500/600 ohms.  
**INPUT LEVEL:** From -20 VU to +20 VU.  
**OUTPUT LEVEL:** +25 VU or less as adjusted by output attenuator.  
**MAXIMUM GAIN:** 60 db.  
**RESPONSE:** 30 to 15,000 cycles within 1 1/2 db.  
**DISTORTION:** 1 1/2% or less at all frequencies and up to 20 db of compression.  
**NOISE:** 70 db below any output level.  
**DIMENSIONS:** 19" wide, 14" high, 9 1/2" deep.  
**FINISH:** Medium gray.  
**POWER SUPPLY:** Regulated to plus or minus 5 volts DC, 115 V, 50/60 cycles.  
**TUBES:** Two each 1612, 6V6GT; three each 6SJ7; one each 6H6, 655GT, 6Y6G, 5V4G.  
**SHIPPING DETAIL:** Net weight, 38 lbs. Domestic packed, 74 lbs. Export packed, 96 lbs. Cubage, 12.

Front panel drops down to reach all internal components. Ease of servicing is always foremost in Gates designs.



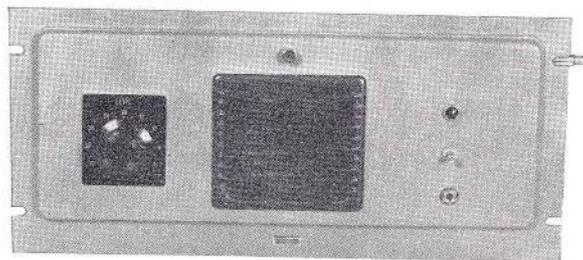
SA-38 Limiting amplifier with tubes .....  
 TK-150 100% spare tube complement .....



Model SA-39 Limiting Amplifier

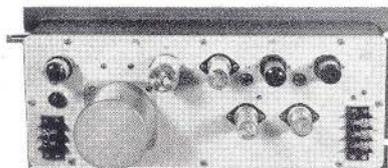
Identical in every respect to the Model SA-38 listed on Page 37, except meter indicates "decibels of compression" only. Meter is 3". Where the purchaser has no need for the VU meter feature and associated range control as on the SA-38, this model provides the same electrical, mechanical and performance specifications, and at lesser cost.

- SA-39 Limiting amplifier with tubes .....
- TK-150 100% spare tube complement .....



SA-22 Cueing Amplifier

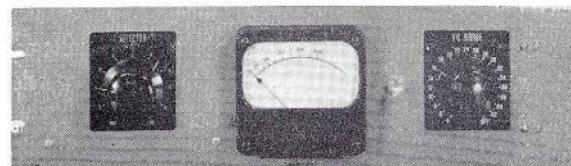
A rack mount amplifier with self-contained loudspeaker for independent cueing of turntables, tapes, remotes or any audio circuit. Phone jack provided disconnects speaker when phones inserted. Features drop-down front panel for servicing.



Specifications

- TUBES USED: One each 6SJ7, 6V6, 6X5GT.
- INPUT IMPEDANCE: 50,000 ohms, bridging unbalanced.
- SPEAKER: 5" PM type.
- INPUT LEVEL: Up to +10 VU.
- OUTPUT WATTAGE: 2 watts.
- GAIN: 50 db.
- RESPONSE: Including speaker capabilities, 150 to 7000 cycles.
- NOISE: 50 db below +30 VU.
- POWER REQUIREMENTS: 50 watts from 115 volts, 50/60 cycle line.
- SIZE: 19" wide, 8 3/4" high, 9" deep.
- FINISH: Medium gray.
- SHIPPING DETAIL: Net weight, 17 lbs. Domestic packed, 34 lbs. Export packed, 52 lbs. Cubage, 2.9.
- SA-22 Cueing amplifier with tubes .....
- TK-151 100% spare tube complement .....

V-22 Volume Indicator



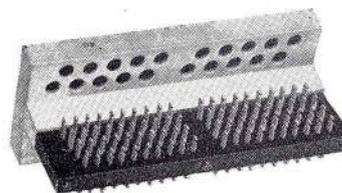
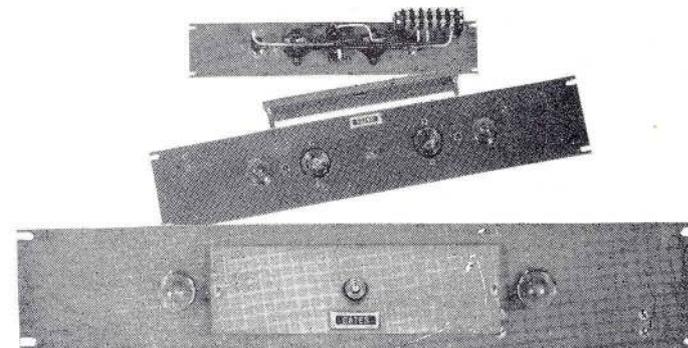
A complete range set with 10 position input selector switch. In this way, all circuits to be measured may be switched in, including proof of performance. Meter is 4" illuminated. Range control in 2 VU steps from +4 to +40 VU. Input impedance 7500 ohms to bridge at 500/600 ohm line. Panel 5 1/4"x19". Finish, medium gloss gray.

V-22 Complete VU range set.

Switch and Fuse Panel

Used for turning On-Off all equipment in one relay rack. Two 30A plug fuses mount behind snap-on front panel. Includes indicator lamps and 15A switch. Size: 3 1/2"x19". Finish, medium gray.

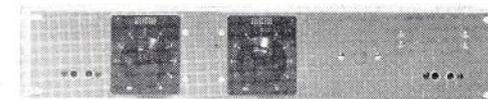
M-4242 Switch Panel



Rack Terminal Board

Provides 80 terminals for inter-rack wiring to base of rack cabinet. A standard PBX item.

Model 46 terminal board .....



Fixed and Variable Equalizers



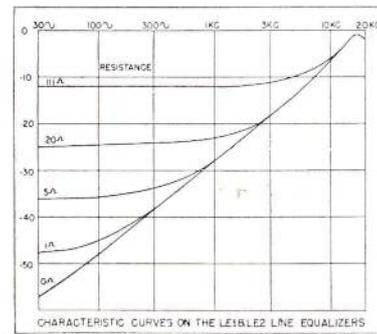
Model LE-1

MODEL LE-1: Shown to left is a fixed equalizer. Curve is to bottom left of page. A parallel resonant circuit operating with either a 150 or 600 ohm line. Equalization is varied by means of self-contained resistors in 1 ohm steps up to 111 ohms. Inductance is tuned by 0.05 mfd and 0.025 capacitors, also self-contained. Size: 2 1/2"x2 1/2"x3". Ideal for equalizing telephone lines or any circuit requiring correction.

LE-1 Fixed equalizer .....

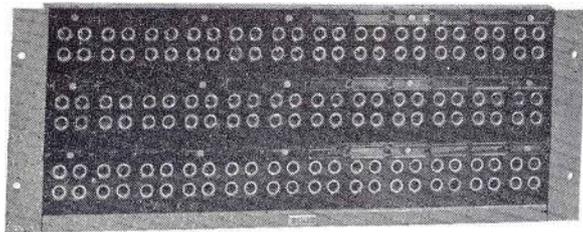
LE-2 VARIABLE EQUALIZER: Illustrated above, consists of the LE-1 equalizer with two variable controls, inserting the resistance in 1 ohm steps up to 111 ohms as required for full equalization. A double jack input is provided for direct parallel patching. Provision is also made for mounting a variable attenuator, sometimes desired in controlling line level. Panel size: 19"x3 1/2". Finish, medium gray. Use curve to left for equalization data.

LE-2 Variable equalizer .....



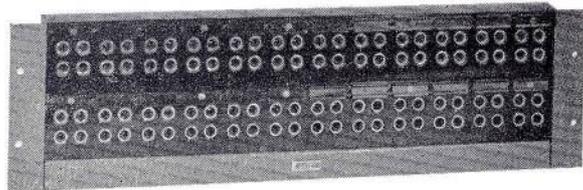
4 STOCK CARRYING POINTS

Atlanta, Georgia; Houston, Texas; Los Angeles, California and the main factory and warehouse in Quincy, Illinois. Consult the front pages of this catalog for phone and TWX numbers.

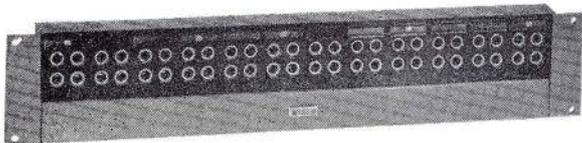


Left, three C-1500 jack panels mounted on PD3 jack mat. Has 144 jacks (72 pairs). Panel size: 7"x19".

Right, two C-1500 jack panels mounted on PD2 jack mat. Has 96 jacks (48 pairs). Panel size: 5 1/4"x19".



Left, one C-1500 jack panel mounted on PD1 jack mat. Has 48 jacks (24 pairs). Panel size: 3 1/2"x19".



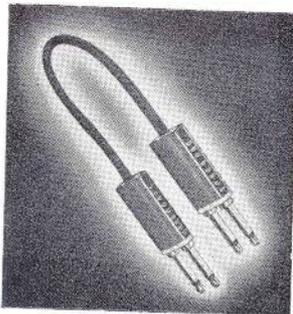
C-150 jack panel has 24 jacks (12 pairs). Size: 1 1/4"x19". Does not require jack mat. End brackets for rack mounting supplied.



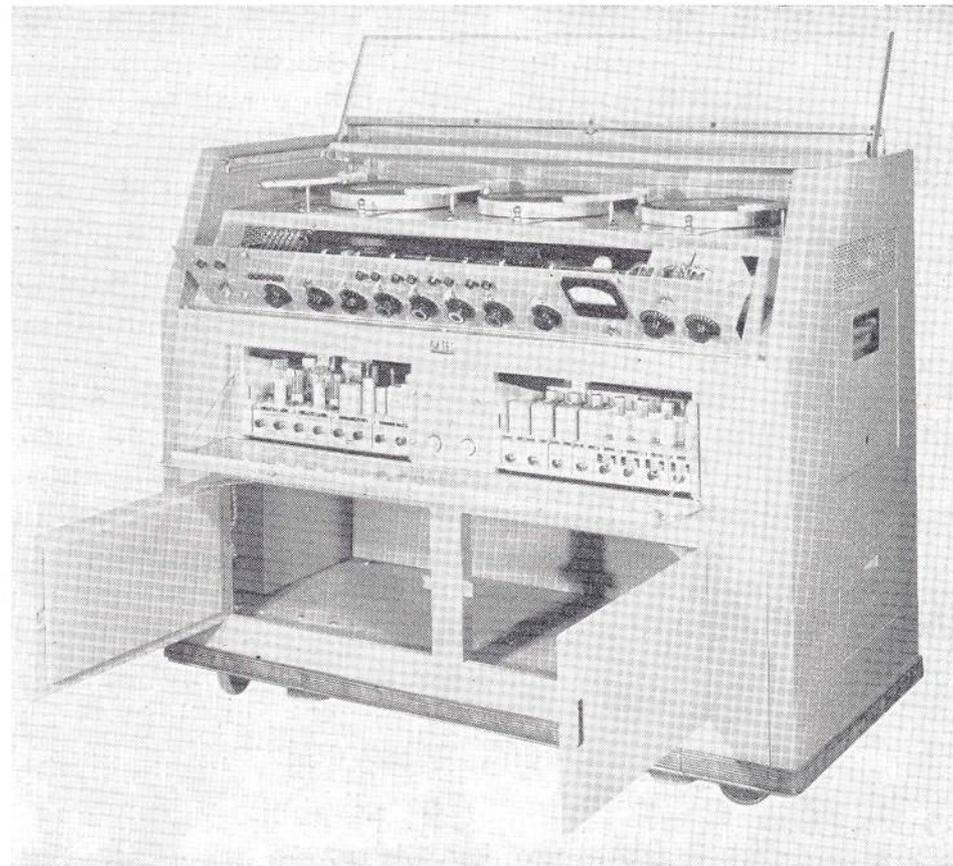
## Patch Panels

Industry standard double patch assemblies. Jack strips listed separately from jack mats for ease in ordering. All jacks closed circuit type for normalizing through audio circuits. Non-aging, non-ferrous metal assures long lasting spring tension. Contacts of silver alloy. Jacks held by molded bakelite, steel reinforced. Individual designation strips with slip-in holders for each pair of jacks.

Patch cords available in four lengths. Double plus each end. Shielded and covered with durable black braid plus extra reinforcement 6" from each end.



- C-150 jack strip (24 jacks) with mounting brackets .....
- C-1500 jack strip (48 jacks) less mat .....
- PD1 jack mat for one C-1500 jack strip .....
- PD2 jack mat for two C-1500 jack strips .....
- PD3 jack mat for three C-1500 jack strips .....
- PJ12 patch cord 2' long .....
- PJ13 patch cord 3' long .....
- PJ14 patch cord 4' long .....
- PJ15 patch cord 5' long .....



In program production, the sound effects wagon plays a very important part. The CSE-9 sound effects console has been designed to provide the sound department with a unit having every modern feature, handling ease, and the same quick serviceability, in case of trouble, that will be found in any modern up-to-date speech input system.

Study of the functional diagram on Page 43 will disclose a great amount of detail. Six input circuits, two for microphones and four for pickups, feed into a program amplifier as well as a power amplifier. Each of these six channels has ladder attenuators with cue position at infinity. This cue output feeds into a split headphone arrangement. Four circuits are handled: (1) program cue, (2) sound effects cue, (3) sound effects out, and (4) director's cue. The two microphone channels are provided with PRE-4 plug-in preamplifiers, and the

(continued next page)

## MOBILE SOUND EFFECTS EQUIPMENT

four pickup channels are provided with PRE-3 preamplifiers with high and low roll-off, described on Page 31. In addition to individual equalization of each pickup, a master sound effects filter is provided, with complete high and low roll-off. — It can be said with accuracy that nearly any type of response curve may be obtained to provide the effect desired.

Turntables are adjustable to any speed from 25 to 100 RPM. Standard speeds of 33 $\frac{1}{3}$ , 45 and 78 RPM are identified. Turntables are rim drive. Each transcription arm is provided with spotting light. Each turntable will accommodate two transcription arms for continuous effects. — All amplifiers and power supplies are of the plug-in type. Knobs for attenuators and key switches are color coded for easy identification. Terminations are made to receptacles located on both sides of the cabinet. Cabinet is rigidly constructed of light metals to assure easy mobility on the silent rubber-tired wheels that may be locked in place for permanence. Bottom section of cabinet is for storage. Front control panel hinges down for servicing. When not in use, the plexiglass copy stand (illustration below) pulls up and over the turntables and control panel.

When closed, the plexiglass copy stand folds down and a metal top slips up from the back and drops over the top for full protection of turntables and pickups. Silent rubber-tired, ball bearing wheels allow quiet mobility during programming.



## SOUND EFFECTS WAGON CSE-9

LSB-2 dual speaker assembly on the mobile dolly along with the high output power amplifier in the CSE-9 sound effects wagon, allows tremendous dynamic range and high volume, if required. At the same time, the fine Hi-Fi characteristics of the entire system assures the best possible background music effect in certain types of productions. The ability to obtain any response curve adds to both mechanical and musical sound effects.



Dual loudspeaker on mobile dolly, type LSB-2

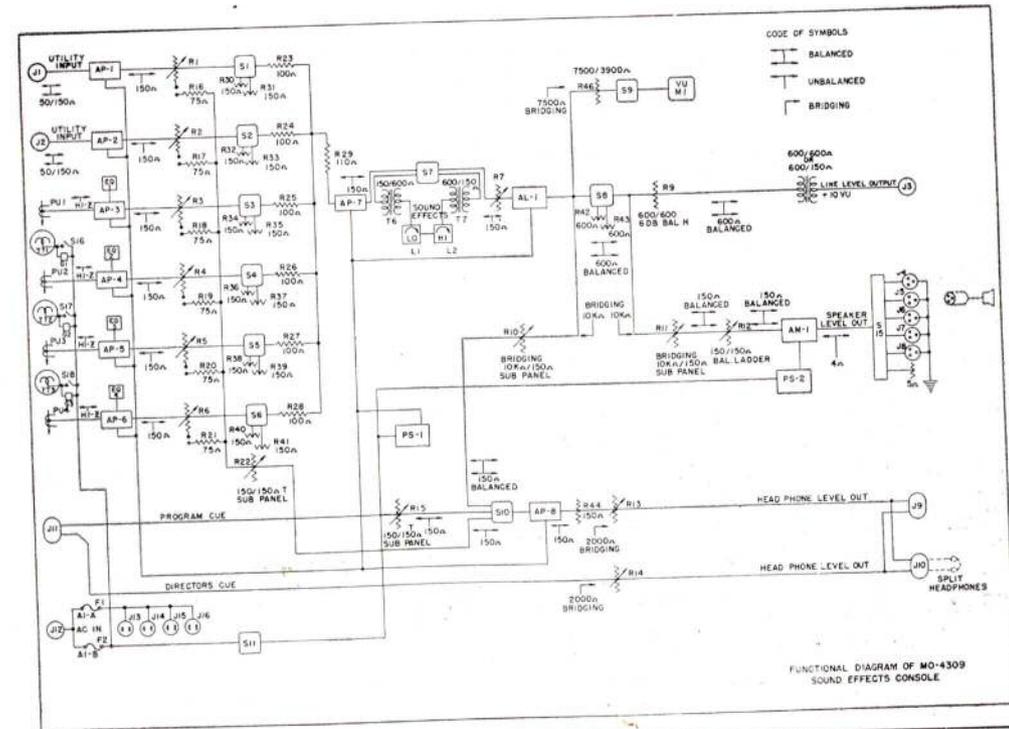
SIZE OF CSE-9 SOUND EFFECTS WAGON: 60" wide, 27 $\frac{1}{2}$ " deep, 48" high overall.  
 SIZE OF LSB-2 SPEAKER DOLLY: 60" wide, 18" deep, 36" high overall.  
 POWER: 115 volts, 50/60 cycles, approximately 400 watts.  
 WEIGHT PACKED: 400 lbs. Cubage, 75.

### ORDERING INFORMATION

Model CSE-9 sound effects wagon complete with tubes, less loudspeakers .....

Model LSB-2 dual loudspeaker assembly .....

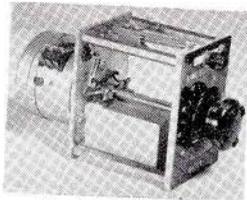
TK-155 100% spare tube complement .....



FUNCTIONAL DIAGRAM OF MO-4309 SOUND EFFECTS CONSOLE



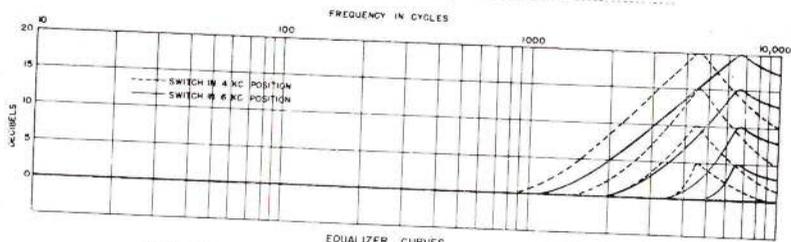
Four SA equalizers on 19" panel



Single SA equalizer

A precision equalizer available in 5 ranges as listed below. Has twenty 1 db steps. Consists of a high Q coil capacity tuned. Dual frequency units have selector key for each frequency. Dial indicates equalization in decibel variance from 1000 cycles. Several equalizers may operate in parallel without affecting the other. For operation across a 500/600 ohm circuit. Dial in black anodized. Easily panel mounted. Curve below is that of SA-118 for 4000 and 6000 cycle equalization.

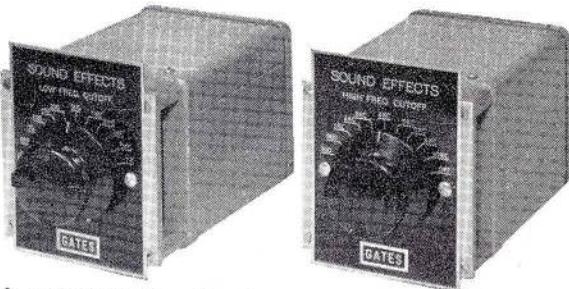
Cat. No.	Equalizer Frequency
SA-116	30 cycles
SA-117	Dual, 50 and 100 cycles
SA-118	Dual, 4000 and 6000 cycles
SA-119	Dual, 8000 and 10,000 cycles
SA-120	15,000 cycles
SA-121	Panel to mount four SA equalizers



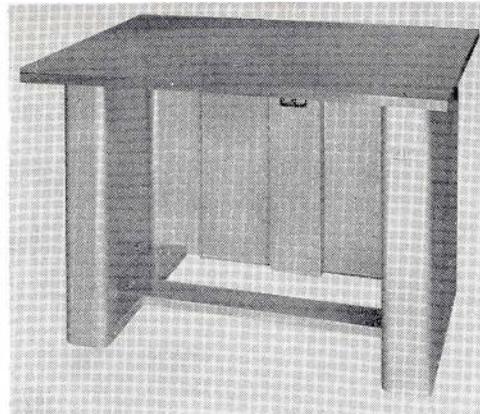
Typical curve of SA-118 equalizer for 4000 and 6000 cycles. Other frequencies are similarly covered.

## Sound Effects Equalizers

Ultimate in sound filters. Features wide frequency spectrum with overlapping cut-off frequencies, zero phase distortion, clickless steps of control, inductances toroidally wound and complete shielding for absence of hum pick-up. Input level -70 to +28 dbm. Insertion loss, zero. Circuit constant, K. Available in two types: (a) low frequency cut-off, 10 positions of 70, 100, 150, 250, 500, 1000, 2000, 3000, 5000 and 7500 cycles, (b) high frequency cut-off, 10 positions of 300, 500, 1000, 2000, 3000, 5000, 6000, 7000, 8000 and 10,000 cycles. Provided with dial. Panel mounting. Size: 3 1/4" x 3 1/4" x 5" deep.



- FSE-1 High frequency cut-off
- FSE-2 Low frequency cut-off



## Desk For Speech Consoles

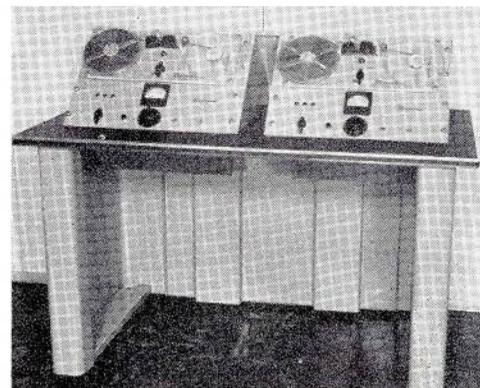
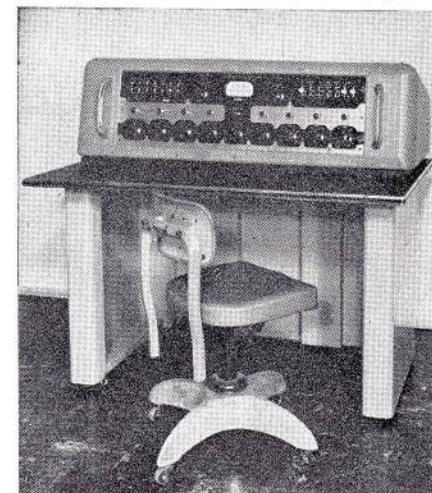
Designed for use with the Gatesway, Dualux and M-5301 TV consoles on Pages 6, 12 and 24, but may be used with other consoles as well. Has non-staining black micarta top molded to 7-ply seasoned birch. Sides and back of 16 gg furniture steel finished in hand rubbed gloss gray. Leveling feet are provided at the four corners. Size: Top 39 3/4" wide, 32" deep. Height 29" ± 1" by leveling screws.

CB-6300B Desk

## Linoleum Top Console Desks

A modest priced, highly attractive desk that may be used with any Gates console and other consoles up to 48" in width. Top 5-ply seasoned birch, covered with black heavy grade linoleum with style strip around edge. Sides and back of 16 gg furniture steel finished in hand rubbed gloss gray. Leveling screws provided on all four corners. Chair and console illustrative only. Two sizes available. Both vary in top (front to back size) only. Height 29" ± 1" for leveling screws. Width 48". CB-62A, front to back, 26". CB-63, front to back, 32".

- CB-62A Desk
- CB-63 Desk

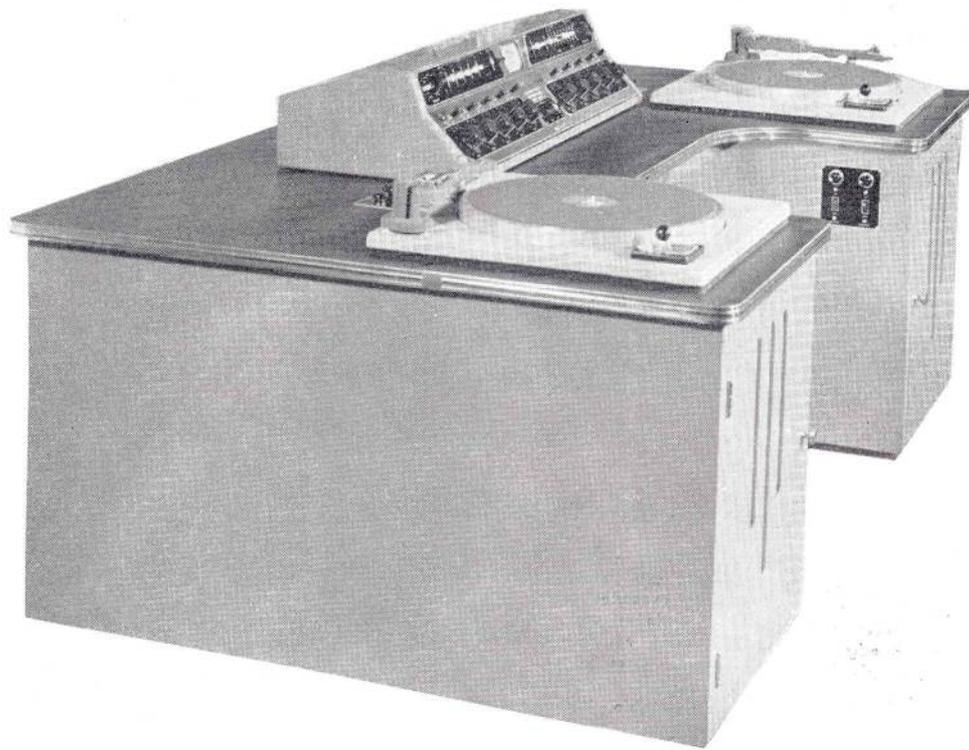


## Desk With Rack Angles

A popular model that permits desk operation of conventional rack mount equipments such as tape recorders, receivers, control equipment for transmitters, mixers, audio amplifiers, etc. Panels slope at 45° angle. Top is provided to cover rack mounted equipment. Provides two 19"x14" spaces. Blank panels may be used where less space required. Desk top is cut out to allow for rear slope of equipment. Top 5-ply seasoned birch with heavy black linoleum covering and style trim around edge. Sides and back of 16 gg furniture steel finished in hand rubbed gloss gray. Leveling feet provided on all four corners. Size: 48" wide, 29" high ± 1" for leveling and 26" front to back. Recorders are illustrative only.

CB-62 Desk with angles and top cover

NOTE: Special rack or dimensional sizes of the CB-62 desk is not economically feasible as price is determined by quantity production.



Often referred to as the most beautiful speech input accessory ever designed for the broadcast industry. — Even though wonderfully attractive, CB-4 is even greater in its functional usefulness. — Here the turntables are on each side of the operator at the correct arm's length for relaxed operation. The speech input console seems to have even control at the very fingertips. Inside of each wing, again at fingertips, are the two silent turntable starting switches.

Right and left wings are big and roomy. Designed with enough width to hold 19" rack panel equipment, but used just as frequently for the day's transcribed programs. Actually, there is more than enough room for both. — Here, indeed, is a show piece both in massive, eye-catching appearance and engineering correctness. Many broadcasters found the slight extra cost paid big dividends in better broadcasting through operator's pride in knowing he has the finest.



**GATES**



## Specifications

**CONSTRUCTION:** Top of seasoned 7-ply selected birch covered with double thick black linoleum. Top edge is banded with a chrome style band fitting flush. Top is secured to two end wings having inside dimension of 22½" wide, 25" high and 45" deep. Each wing has a removable rear door and hinged front door. Wings are of seasoned plywood (selected birch) and will not warp or check. Each wing will accommodate 21" or 19" rack panel space. Wings may be used for disc or tape storage on one or both sides.

**FINISH:** Medium gray smooth lacquer presents metal finish. Use of wood is for best turntable performance as well as appearance. Top is black. Trim is chrome.

**WIRED MODELS:** In wired models the desk is cut out for Gates CB-100 turntables on each side. Mercury type TT motor starting switches are provided on the inside of each wing. An additional master switch is provided on the inner right wing. Wiring is terminated to the rear base, including terminals for preamplifier.

**OTHER ACCOMMODATIONS:** Most types of turntables and nearly all types of speech input consoles may be used with the CB-4 desk. Size is such that consoles of substantial width and depth may be employed without sacrifice of arm room or serviceability of console.

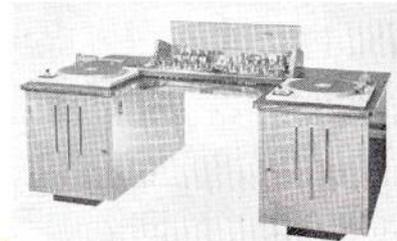
**WEIGHT:** Packed, 390 lbs. Cubage, 120.

## CB-4 Desk Combination

- CB-4 Desk only without cutouts or wiring .....
- CB-4M Desk only with cutouts for CB-100 turntable, switches and wired .....
- CB-4N Desk with two CB-210A turntables listed Page 52, wired, includes preamplifiers .....
- CB-4P Desk with CB-100 turntables, Gray 106-SP arms, Gray 602C equalizer, dual cartridge, 1 mil. and 2½ mil. diamond stylus, wired .....
- CB-4R—Includes CB-4N listed above with Gatesway speech input console (illustrated above) and fully described Page 12 .....
- CB-4S—Includes CB-4P listed above with Gatesway speech input console (illustrated above) and fully described Page 12\*

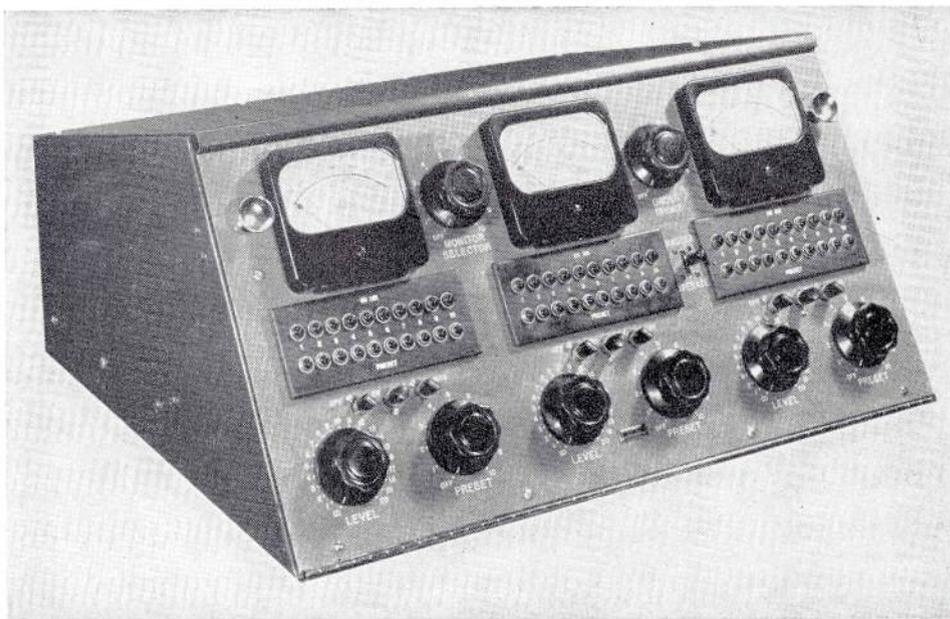
NOTE: CB-4 desks may be used with any Gates console. Select desk combination of your choice and add console price for total selling price.

\* Does not include preamplifier for turntables. Order SA-134 listed Page 53.



**GATES**

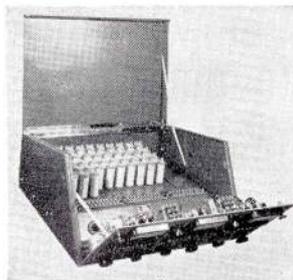
## MASTER PRESET CONTROL CONSOLE



Large studio installations involving many control points and several outgoing circuits are usually best suited to master control. — As technical requirements vary from one installation to another, no particular attempt is made to offer the broadcaster a standardized type of master preset equipment. However, by reason of the generous number of preset installations that have been designed and furnished by Gates, it is relatively simple to adopt standard procedures to the custom requirements of the customer. — Gates engineers will gladly confer at any time with those interested in more complex studio equipment requirements.

The preset unit, illustrated herein, is based around a parallel preset relay system. Divided into three sections, ten relays in each unit are employed for program switching and are preset from the front panel. These relays are then controlled by a master relay. A double light bank indicates the preset circuit. Red is "On Air". Green is "Preset". The lever key locks up to "Master" and is non-locking down to "Operate".

It will be noted that though complete in every detail, the space requirements are held to a minimum as can be observed by comparing the 4" VU meter size to the total width and height. Prices on Preset equipment will be gladly supplied in accordance with station needs.



**GATES**

## COMPLETE TRANSCRIPTION TURNTABLES



Two complete 3-speed turntables offer the radio and television broadcasters the finest. Both incorporate the CB-100 turntable chassis, described on next page. Cabinet only is also available.

Equalizer provides four response positions: (1) flat, (2) intermediate, (3) NARTB-AES curve, and (4) roll off of highs for records with high surface noise. Output impedance 150 ohms. Output level approximately —66 dbm.

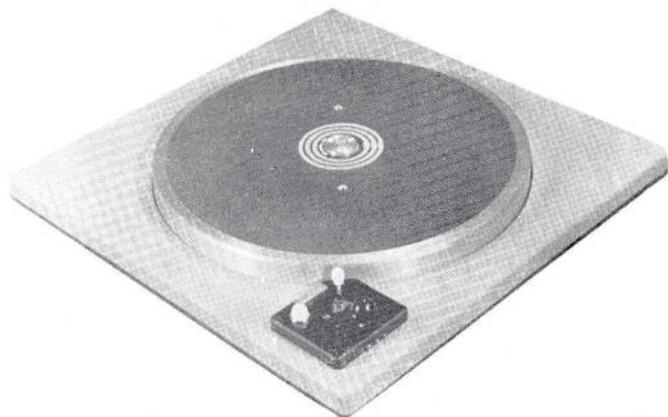
**CB-150 TURNTABLE** includes mechanism with Gray 108B viscous damped arm, 602C variable equalizer, dual slip-on pickup cartridges equipped with 1 mil. and 2½ mil. diamond stylus, wired and ready to use.

**CB-160 TURNTABLE** includes mechanism with Gray 106-SP arm, 602C variable equalizer, single pickup cartridge, 2½ mil. stylus (1 mil. stylus optional), wired and ready to use.

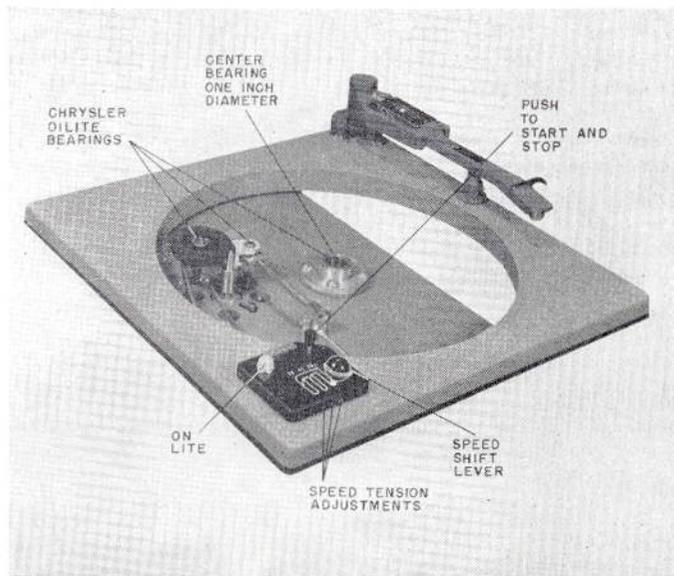
**CAB-6 CABINET** only, made of heavy 5-ply cabinet makers' prime seasoned birch, sealed, finished in medium gloss gray with center trim in black. Four leveling screws and full size back door provided. Size: 29½" high, 21¼" square.

CB-150 turntable complete	.....
CB-160 turntable complete	.....
CAB-6 cabinet only	.....

**GATES**



A new professional 3-speed turntable capable of unusual speed accuracy, low rumble and incorporating fingertip control of both speed change and motor starting. — Direct control of speed shifting, eliminates springs, multiple drive wheels or gravity systems of speed change. Chrysler oilite bearings are used at all rotating points while Monoball self-aligning bearings are employed in the speed changing mechanism.



## SPECIFICATIONS

CHASSIS SIZE: 21 1/4" x 21 1/4" x 3"

MOTOR HANG BELOW BASE: 8"

CONSTRUCTION: Both base and platter of cast machined aluminum.

FINISH: Gray ripple enamel with turntable top cover of green felt.

STROBOSCOPE: Inbuilt on platter.

CENTER HUB: Spring locking type snaps up instantly for larger 45 RPM hub; locks down for standard records and transcriptions.

CENTER BEARING: 1" diameter hardened steel shaft fits into bronze Chrysler oilite bearing.

MOTOR: Synchronous, capacitor start, dynamically balanced, neoprene shock mounted 1/75 H. P.

CUE ALLOWANCE: 1/6 turn at 33 1/3 RPM, 1/3 turn at 45 RPM, 1/2 turn at 78 RPM.

NOISE: 40 db or better below average sound track.

MOTOR START: Single switch, push to start, push again to stop; neon light indicates on cycle.

IDLER WHEEL: Special shear action neoprene self-aligning with Chrysler oilite center bearing.

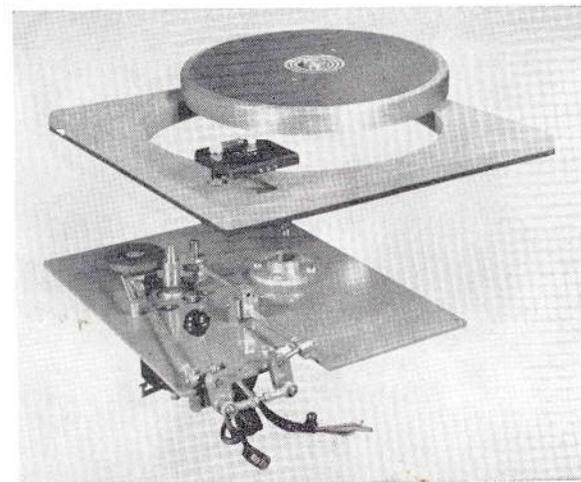
SPEED CHANGE: Direct single control of vertical action of drive wheel with detents.

POWER: 115 volts, 60 cycles, 45 watts. 50 cycle also available.

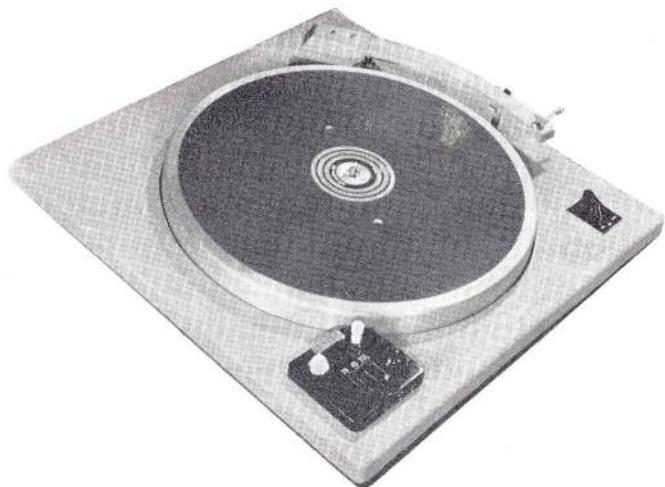
CB-100 Transcription Turntable .....

CB-100A Same as above but for 50 cycles .....

Below: Exploded view of the rugged and accurate construction of the CB-100 turntable.



# TRANSCRIPTION TURNTABLE CB-210



Here is a complete 3-speed commercial turntable including self-contained pre-amplifier, power supply, pickup arm, dual cartridge and dual styli and very modes in price. Will fit in CAB-6, CB-15 cabinets, CB-4 desk, or any suitable desk arrangement.

### SPECIFICATIONS

**TURNTABLE:** Model CB-100, described on preceding page.

**PICKUP ARM:** Livingston Universal for all discs up to 17".

**PICKUP CARTRIDGE:** GE, including dual 1 mil. and 3 mil. styli, diamond or sapphire as ordered.

**PREAMPLIFIER:** Equalized type mounts directly to base of turntable chassis. Selenium type power supply self-contained. Distortion: 1/2 % 50-15,000 cycles at -10 dbm output. Output impedance: 150/600 ohms. Noise: 65 db. below -20 dbm. Gain and hum balancing controls self-contained. Tubes: (2) 12AX7. Equalizer switch provides 3 curves: (1) NARTB, (2) RIAA\* and (3) high frequency roll off for worn records. For 115 volts, 60 cycles.

\*RIAA is very newest standard adopted by Record Industry Association of America.

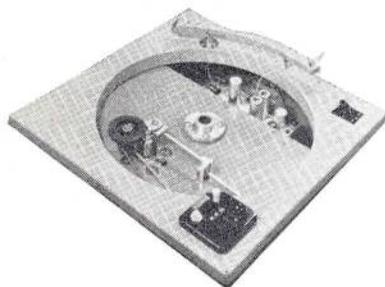
CB-210 (M-5251) with dual sapphire styli .....

CB-210A (M-5251A) with dual diamond styli .....

CB-225 includes CB-210 with CAB-6 cabinet .....

CB-225A includes CB-210A with CAB-6 cabinet .....

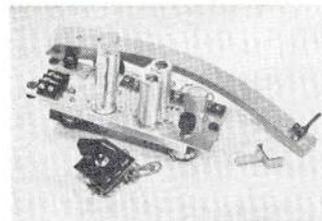
NOTE: CAB-6 cabinet listed on Page 49. For 50 cycles add \$10.00 to all models.



### What is supplied in the CB-210:

- 1 CB-100 turntable chassis.
- 1 Livingston Universal arm.
- 2 GE styli for 1 and 2 1/2 mil.
- 1 GE dual pickup cartridge.
- 1 Equalized preamplifier with tubes and self-contained power supply.
- 1 Arm rest.
- 1 Equalizer switch with plate.

# TURNTABLE ACCESSORIES



### Pickup-Amplifier Kit

Consists of Livingston Universal arm with GE RPX-050 dual cartridge, dual sapphire 1 mil. and 2 1/2 mil. styli, arm rest, equalized preamplifier, equalizer switch and plate and ready to attach to your turntable. Preamplifier has self-contained selenium power supply for 115 volts, 50/60 cycles. See CB-210 turntable for performance specification.

Model M-5266 pickup-amplifier kit .....

### Desk Top Turntable Cabinet

Designed to hold either CB-100 or CB-210 turntable chassis. Made of 16 gg. steel, undercoated, finished in medium gloss gray, and supplied with leveling screws. Has plastic style trim around top. Size: 21 1/4" square and 6 1/2" high.

Model CB-15 cabinet .....



### Turntable Preamplifier

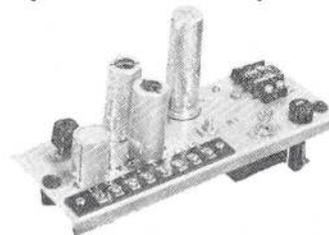
The famous Gates SA-134. Thousands in use. 3 stages with self-contained power supply. Suggested for CB-150 and CB-160 complete turntables. Input 50/250 ohms. Output 600 ohms. Gain 82 db. Response  $\pm 1\frac{1}{2}$  db. 50-15,000 cps. Noise 65 db below -10 dbm. Distortion 1% or less at 0 dbm. Tubes: 6J7, 6SJ7, 6SN7, 6X5. Size: 17 1/4" long, 5 1/8" wide, 5 1/2" high. May be mounted flat or on 5 1/4" x 19" rack panel. For 115 volts 50/60 cycles. Includes locking gain control, fuse, output jack and Off-On switch.



Model SA-134 amplifier with tubes .....

Spare 100% tube kit M-3961 .....

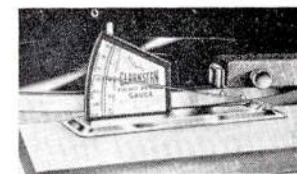
### Equalized Preamplifier



Used in CB-210 and M-5266 kit listed top of page. See specifications listed under CB-210 turntable. Supplied with 3-position filter switch and plate, not illustrated. Approximate input impedance 5000 ohms, depending on filter switch position. Designed for use with GE cartridges RPX-040A through RPX-063A. Power supply self-contained for 115 volts 50/60 cycles.

Model M-5235 amplifier .....

Spare 100% tube kit T-225 .....



### Stylus Force Gauge

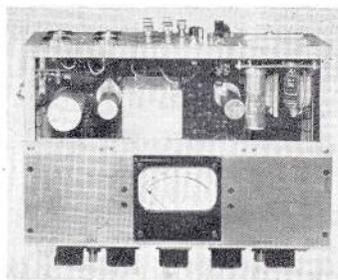
For measuring pressure of stylus on record. An inexpensive unit that should be wherever turntables are used. Assures correct stylus pressure for best quality and minimum record wear.

Model 301 stylus gauge

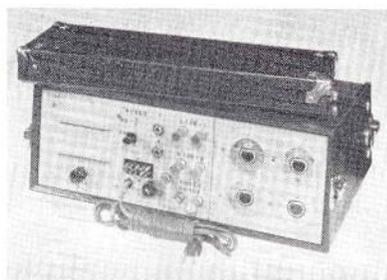


"Dynamote" has been symbolic of remote amplifying equipment for nearly a quarter century. The name originated back when the dynamic microphone was first introduced. Today's "Dynamote" is indeed modern. — Weighs only 22 pounds, measuring 5<sup>7</sup>/<sub>8</sub>" high, 10<sup>1</sup>/<sub>4</sub>" wide and 17<sup>3</sup>/<sub>4</sub>" deep with battery compartment attached. Hinged illuminated 4" VU meter, which folds in when not used, swings to exact eye level for broadcasting.

Four mixing channels handle four or less low impedance microphones of any type. After normal mixer loss there still remains a full 90 db of gain to handle any type of pickup including artists unusual distances from the microphone. — Printed wiring, not to be confused with printed circuit, adds greatly to reliability, smaller size, and has the happy result of faster manufacturing with the savings passed on to the purchaser. — Battery standby, with automatic changeover in case of power failure, is an optional accessory. Nothing has been spared in making the Dynamote the finest multi-channel remote equipment available today.



Looking down on the Dynamote when removed from the case. Entire unit is constructed in rigid, light-weight frame. In this way the carrying case does not become part of the mechanical design.



Back of the Dynamote handles all connections, microphones and even holds the Off-On switch. Receptacle in center is for accommodating the optional M-4933 battery unit.

The Dynamote is constructed around a small, light-weight, welded frame to which attaches the amplifier, power supply, front panel with controls and meter, and the back panels for connectors and terminations. This slips into a rugged carrying case made of durable bass wood, covered with a heavy grade of black leatherette. A large leather handle, and hardware in nickel, add the finishing touch.

Amplifier design has four audio stages and 15 db of feedback is employed. A full output of plus 22 dbm at 1% distortion is obtained. A 4 db output isolation pad provides a final maximum output of plus 18 dbm at no more than 1% distortion, or a 10 db range above the maximum permissible level of plus 8 dbm into a telephone line. — Mixing controls are Daven, ladder type, 20 steps of 2 db. Input is either 50 or 150 ohms.

When batteries are employed for standby, the M-4933 Continumatic adapter is purchased plus the M-4983 kit of batteries. The M-4933 adapter includes relay, metal-hinged battery compartment, cable and plug, all of which fit in the removable rear case compartment. Changeover to batteries is automatic when AC fails. Reverse is true when AC is restored.



The Dynamote is cataloged with the microphone connector plate but less microphone plugs. The entire plate of 4 connectors plugs into the amplifier chassis. No wiring is required on receipt of the equipment.

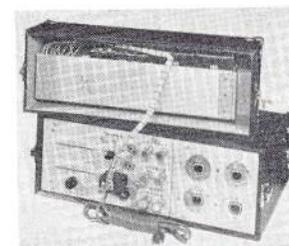
## SPECIFICATIONS

OVERALL GAIN: 90 db  $\pm$ 3 db from microphone input to line output.  
 FREQUENCY RESPONSE:  $\pm$ 1.5 db 30-15,000 cycles.  
 DISTORTION: 1% or less 50-15,000 cycles at +18 dbm output.  
 NOISE REDUCTION: 60 db below +8 dbm at -50 dbm input.  
 MIXING CHANNELS: Four at 50/150 ohms.\*  
 POWER SUPPLY: Full wave transformer type with AC isolated.  
 METER: 4" VU Scale B illuminated, adjusted 0 VU indication at +8 dbm.  
 OUTPUT: 150/600 ohms. Output selected by switch to choice of 2 lines.  
 OUTPUT JACKS: Front jack across line amplifier output.  
 Rear jack No. 1 across line being used.  
 Rear jack No. 2 order phone across line not being used and parallels order phone terminals.  
 POWER: 115 volts, 50/60 cycles, 40 watts.  
 WEIGHT: 22 lbs. less batteries, 29 lbs. with batteries.  
 BATTERIES (if used): 2 type FP4, A batteries.  
 5 type XX30, B batteries.

\* 150 ohm input recommended for 200 or 250 ohm microphones.

## ORDERING INFORMATION

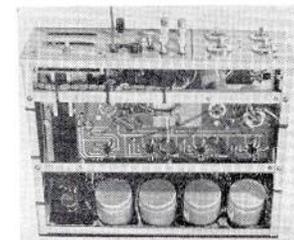
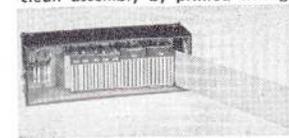
M-4880A Dynamote with tubes, Cannon XL receptacles and carrying case .....  
 M-4880B Dynamote with tubes, Cannon P receptacles and carrying case .....  
 M-4933 Continumatic battery compartment with relay and plug, less batteries .....  
 M-4983 100% set of batteries .....  
 TK-183 100% spare tube complement .....  
 XL3-12 Microphone plug for XL receptacles, each .....  
 P3CG12S Microphone plug for P receptacles, each .....



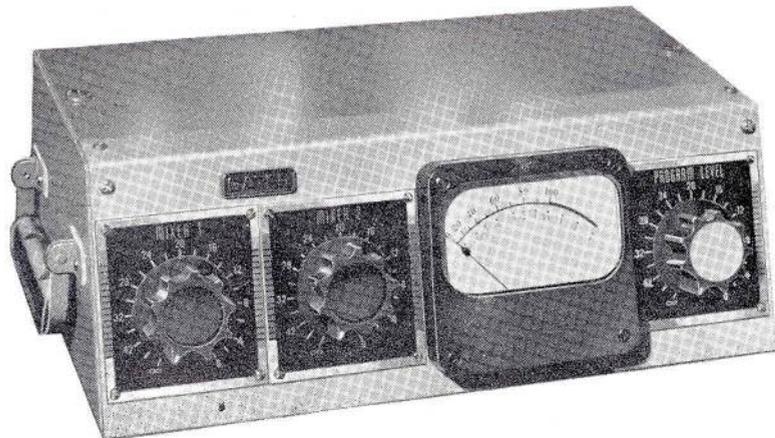
Left: Rear view with M-4933 battery compartment placed on top.

Center: M-4933 battery compartment with M-4983 battery kit.

Right: Under view of Dynamote showing clean assembly by printed wiring.



## "BIAMOTE" --- Two Channel Remote Amplifier



Remote pickups for either radio or TV probably call for more 2-microphone installations than any other combination. The "Biamote" fills this requirement with fine performance, light weight, rugged design, and a full complement of equipment including a 4" illuminated VU meter.

Constructed in a rugged, light-weight steel cabinet finished in gloss gray with dial plates in etched aluminum. Total weight is only 15 1/4 lbs. ready to use. Top removes quickly and is held in place with two snap-on fasteners. Front panel slopes at approximately 12 degrees and height is only 5 inches, permitting unobstructed view of any broadcasting event. —

The full size 4" illuminated VU meter is retained. "Biamote" design is functionally correct with the dual ladder type mixers to the left of the VU meter and the master gain control to the right of the meter.

All terminations are to the rear, including Off-On switch, line connections, headphone jack, microphone receptacles and power cord. Cannon type XL receptacles are standard, but larger knock-outs are provided for such connectors as the Cannon P series. These may be installed in a few minutes, where desired. — A full size hinged handle is provided on one side of the amplifier case.

### SPECIFICATIONS

NUMBER OF MIXING CHANNELS: Two.  
 INPUT IMPEDANCE: 50/150 ohms.\*  
 DISTORTION: 1% or less 50-15,000 cycles +18 dbm output.  
 RESPONSE:  $\pm 2$  db 30-15,000 cycles.  
 GAIN: 90 db  $\pm 3$  db from microphone input to line terminals.

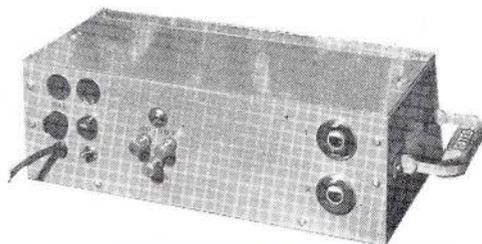
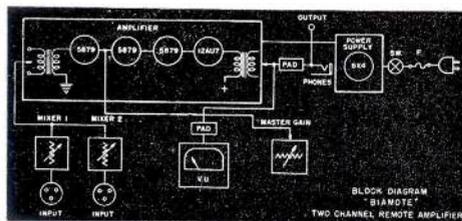
NOISE: 60 db below +8 dbm at -50 dbm input, equivalent to -110 dbm measured with mixer wide open and master gain adjusted.

OUTPUT IMPEDANCE: 500/600 ohms.  
 POWER: 115 volts, 50/60 cycles, 40 watts.  
 WEIGHT: 15 1/4 lbs.  
 SIZE: 14" wide, 8 1/2" deep, 5" high.

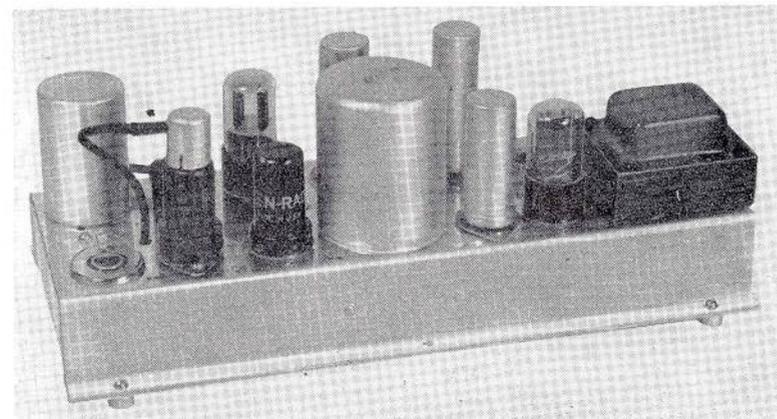
\* 150 ohm input recommended for 200/250 ohm microphones.

### ORDERING INFORMATION

M-5136 "Biamote" with tubes, less male microphone connectors .....  
 XL3-12 Male microphone connector, each .....  
 TK-183 100% spare tube complement .....



## Single Channel---Presidential Remote Amplifiers



### Model SA-134

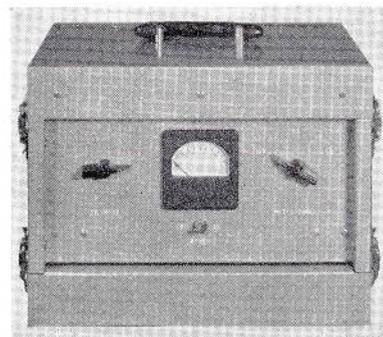
Broadcasting's most used single channel remote amplifier. Thousands in daily use. Also widely used as a turntable preamplifier. — Completely self-contained with power supply. Constructed on aluminum chassis to assure maximum noise reduction. Includes Cannon XL input connector, locking type gain control, fuse and headset jack. Audio transformers of well shielded and balanced type for hum elimination either internal or from external inductive sources such as turntable motor. May be mounted on desk, in base of turntable cabinet or size allows mounting on 7"x19" rack panel.

### Specifications

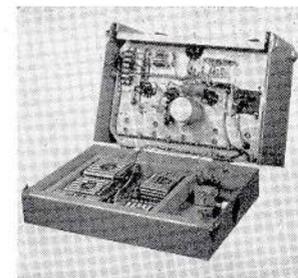
GAIN: 82 db  $\pm 2$  db.  
 DISTORTION: 1% or less +14 dbm output 50-15,000 cycles.  
 RESPONSE:  $\pm 1 1/2$  db 30-15,000 cycles.  
 NOISE: 60 db or better below +8 dbm output with signal input of -60 dbm.  
 IMPEDANCES: Input, 50/250 ohms..  
 Output, 500/600 ohms.  
 POWER: 115 volts, 50/60 cycles, 20 watts.  
 TUBES: 6J7, 6SJ7, 6SN7, 6X5.  
 SIZE: 17 1/4" wide, 5 1/2" high, 5 1/4" deep.  
 SA-134 Amplifier with tubes .....  
 M-3961 100% spare tube kit .....

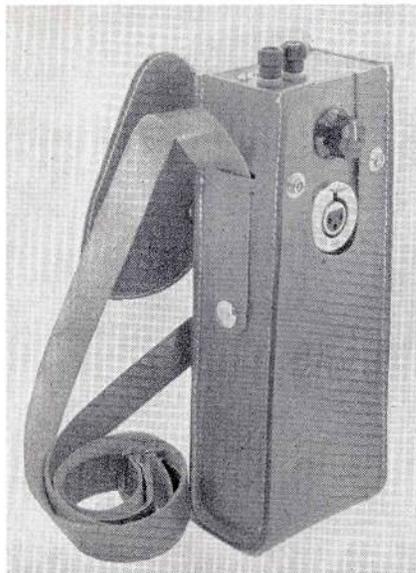
### Presidential Amplifier

This design approved by major networks as a Presidential Amplifier. Used in joint feeding of several circuits such as combined networks, thus releasing the large banks of microphones in front of one individual. May be used for radio, TV and motion picture sound circuits. Battery operated. Constructed in rugged one-piece case with batteries in



bottom of case (see illustration to right). Meters indicate filament and plate voltage plus tube emission. — The Presidential Amplifier is a low gain distribution amplifier and not to be confused with a high gain remote amplifier. — Full detail and price will be supplied on request.





M-5311 Transmote with case



## The "Transmote"

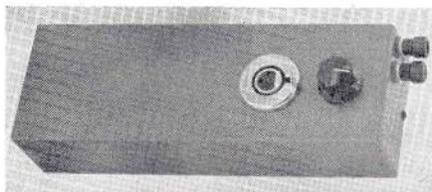
In the wonderful world of transistors, Gates engineers have spent months in checking numerous circuits, components and many types of transistors. Believing that transistor performance should approach tube performance in all respects, final designs were not accepted until this result was obtained.

The "Transmote" does have low noise. Rated 55 to 60 db below +14 dbm output with a -60 dbm input. "Transmote" features include non-microphonic battery operation, very small size, weighs only 3 lbs. with batteries, and a set of batteries averages 80 hours or about 8c per hour.

Five transistors are used in 4 temperature stabilized stages, the output stage being push-pull. Level control, headset jacks, microphone receptacle, gain control and output binding posts are all properly located for both portable or stationary service. Amplifier turns on when phones are inserted in jack. A wood jack plug is provided where phones are not used. Either way, it is impossible to close the carrying case without removing the phone plug and turning off the amplifier voltage.

Leather carrying case has adjustable shoulder strap that is removable. Case will fit suit coat or overcoat pocket. Many combinations are offered and listed on the next page. Here is compact, top-performing equipment, with all the desirable features of transistors, that opens a new era in quality audio equipment.

M-5311A Transmote less case



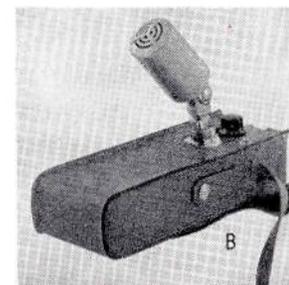
## SPECIFICATIONS

SIZE: (in carrying case) 9 1/2" long, 3 1/2" wide, 2 1/2" deep.  
(less carrying case) 8 5/8" long, 3" wide, 1 7/8" deep.  
WEIGHT: 3 lbs. net with case.  
GAIN: 78 db  $\pm$  2 db.  
DISTORTION: 2% or less 70-10,000 cycles.  
NOISE: 55 to 60 db below +14 dbm measured -60 dbm input.  
INPUT: 150/250 ohms. May be used with 30/50 ohm microphone with 6 db less gain.  
OUTPUT: 600 ohms. 4 db isolation pad in output.  
POWER: Three 8 volt mercury batteries in kit M-5339.  
BATTERY LIFE: Approximately 80 hours.

## ORDERING COMBINATIONS

M-5311 Transmote with carrying case, one set batteries .....  
M-5311A Transmote less carrying case, with batteries .....  
M-5339 Complete spare battery kit\* .....  
XL3-12 Mating microphone connector .....

\* Wired, in container, ready to insert.



### Remote Set M-5344 (above)

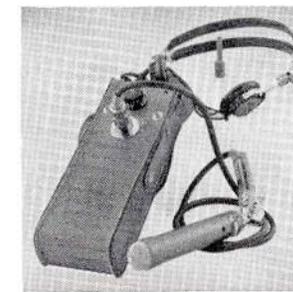
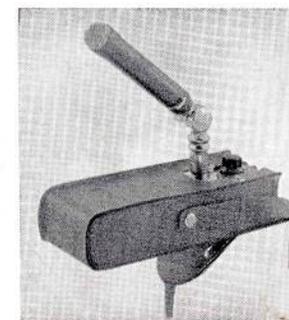
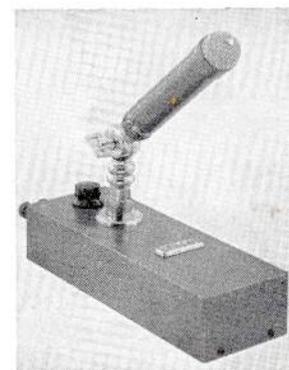
Illustrations above show the many possible combinations from this complete package. Fig. A is Transmote used as desk stand. Fig. B, Transmote in case used as sports microphone. Fig. C is Transmote with four-foot extension cable for interviews, etc. Supplied in this kit are: (a) Transmote, (b) Altec 660B microphone, (c) 4' extension cable, and (d) carrying case. Headphones are illustrative only.

M-5344 Remote Package ..... \$202.75

### Remote Set M-5345 (below)

This set differs from set M-5344 in the type of microphone. Here the slim Electro-Voice 648 microphone especially equipped with swivel is provided. Includes: (a) Transmote, (b) M-5322 microphone assembly, (c) 4' extension cord set, and (d) carrying case. Headphones are illustrative only.

M-5345 Remote Package ..... \$194.00



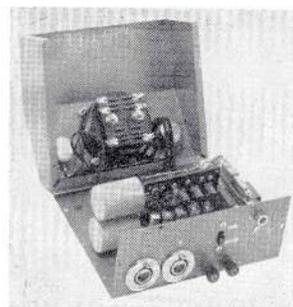


The "Twinsistor"

Two microphone channels, VU meter, generous gain, low current battery operation and total weight with carrying case only 7 pounds. Size of unit: 7 1/2" wide, 7" deep and 3 1/8" high. — The Gates "Twinsistor" is indeed the smallest, lightest weight multi-channel amplifier built yet.

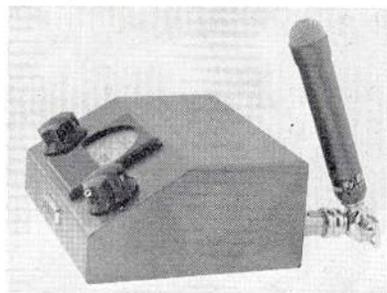
Performance is top flight. Noise is comparable to good tube design. Response exceeds and distortion is far less than most grade A telephones lines. A plastic carrying bag of the camera type is 10 1/2" wide, 8" high, 3 1/2" deep. Has adjustable shoulder strap. Bag

will hold amplifier, headphones and one average microphone with cable. — Six transistors comprise a 4-stage temperature stabilized amplifier with push-pull output. Amplifier holds two battery kits. Changeover switch is on rear of case. Microphone receptacles are Cannon XL. Meter is standard 3" VU with fixed pad for +8 VU output at zero scale. — Master gain is not required in transistor design and attenuators may be operated at any setting without overload or noise increase. Amplifier turns on when headphones are inserted in jack. — Specifications next page.



←  
To change batteries, flip up. If service is ever needed, every part is exposed.

→  
Small "Twinsistor" size allows plugging in microphone without need of desk stand.



## "TWINsISTOR" SPECIFICATIONS

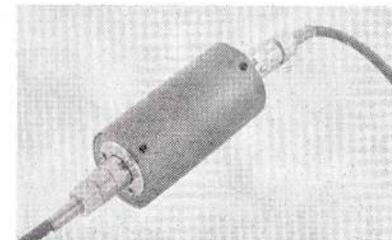
SIZE: (amplifier) 7 1/2" wide, 7" deep, 3 1/8" high, (case) 10 1/2" wide, 8" high, 3 1/2" deep.  
WEIGHT: (in case) 7 lbs., (less case) 5 1/2 lbs.  
GAIN: 78 db ± 2 db from mic input to line output.  
RESPONSE: ± 2 db 70-15,000 cycles.  
DISTORTION: 2% or less 70-10,000 cycles at +14 dbm.  
NOISE: 55 to 60 db below +14 dbm measured at -60 dbm input.  
MIXING CHANNELS: Two at high level (transistor preamplifier for each stage).  
IMPEDANCES: (input) 150/250 ohms, 30/50 ohms with 6 db less gain.  
(output) 600 ohms, 4 db isolation pad in output.  
BATTERIES: Three 8 volt mercury in kit M-5339. Provision for 2 sets with switch changeover.  
BATTERY LIFE: Approximately 80 hours per set.

## ORDERING INFORMATION

M-5168 "Twinsistor" complete with carrying case and one set of batteries .....  
XL3-12 Male microphone connector (2 required), each .....  
M-5339 Battery kit in container and wired .....  
M-5332 Microphone with swivel to plug in back of "Twinsistor" illustrated Page 60 .....

## THE TUBELESS TUBE

This small transistor amplifier has particular adaptation in raising the gain of a microphone circuit. Often in TV production, or longer than normal lines, it is desirable to raise the potential gain of a microphone circuit. Designed to connect at any place into the microphone cable such as on a boom stand; or, as non-microphonic, may even lay on the floor.



Built into an aluminum tube 2 1/2" in diameter and 4 1/2" long. Cannon XL receptacles are on each end. As the battery drain is extremely low, the tubeless tube may be turned on and left on for over a year before changing batteries. Batteries are self-contained. Set screw in case functions as On-Off switch, used only when storing. Design is a single stage transistor, temperature stabilized. Finish is in dull non-gloss green.

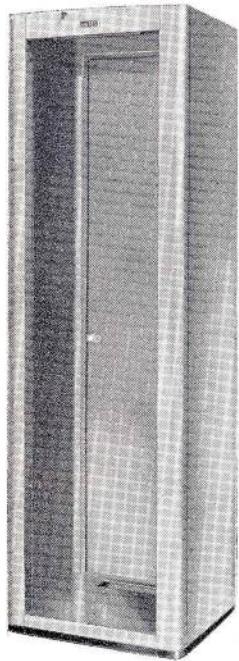
## SPECIFICATIONS

GAIN: 15 db ± 1 db.  
FREQUENCY RESPONSE: ± 3 db 70-15,000 cycles.  
INPUT IMPEDANCE: 150/250 ohms.  
OUTPUT IMPEDANCE: 50/150 ohms.  
CONNECTORS: Cannon XL3-13 input. Cannon XL3-14 output.

## ORDERING INFORMATION

M-5312 Tubeless tube with batteries .....  
XL3-12 Mating input connector .....  
XL3-11 Mating output connector .....  
M-5350 Battery kit .....

# RACK CABINETS DM-1X



A well built, deluxe rack cabinet for all applications. Has solid sides, full size rear door with louvers at top and bottom, and large firm gripping back door handle. Manufactured from 18 gg. stretcher level cold rolled furniture steel, resistance welded. Illustration below shows how two or more DM-1X cabinets may be joined together by use of the TRM-3 trim strip. Finish is in medium gloss gray for both smart appearance and easy cleaning. Removable corner trims to cover mounting screws is standard equipment.

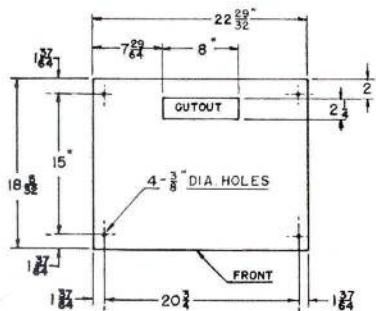
## SPECIFICATIONS

- HEIGHT OVERALL: 78".
- WIDTH OVERALL: 23 1/4".
- DEPTH OVERALL: 20".
- DOOR SWING: 20".
- PANEL SPACE: 19"x71 3/4".
- CLEARANCE BEHIND PANEL: 17".
- PANEL MOUNTING: Standard rack multiples  
12/24 mounting screws provided.
- DISTANCE FROM FRONT OF RACK PANEL TO FRONT OF CABINET (corner trim): 5/8".
- NET WEIGHT: 135 lbs.
- PACKED WEIGHT: 230 lbs.

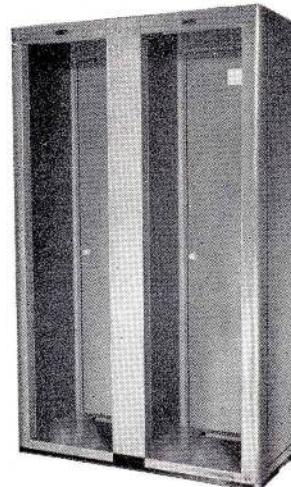
**DM-1X Cabinet**  
complete

**TRM-3 Joiner Trim**

**NOTE:** In quantity purchases this cabinet is available in other heights and colors and at prices proportionate to quantities purchased.



BASE DIMENSIONS, DM1X RACK

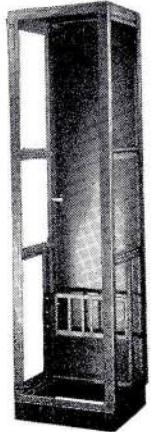


# RACK CABINET RAK-1



A unit system type of rack cabinet of open frame construction, having removable sides along with various shields, joiner trims and end bells. Similar to those found in RCA systems. Rack mounting strips are movable from front to back in 6 steps of 1 1/4". Basic frame includes 2 panel mounting angles, 2 terminal board mounting angles, full size rear door and panel mounting screws. Other accessories are as follows:

- SINGLE CORNER TRIM TRM-1:** Covers the rack mounting bolts on each corner. Two used for single cabinet or any number of cabinets.
- DOUBLE CORNER TRIM TRM-2:** Covers rack mounting bolts and joins two cabinets together. One used to join second cabinet to first, third to second, etc.
- SIDE PANELS SP-1:** Commonly known as end bell. Two used for single cabinet or any number of cabinets joined together.
- LARGE SIDE SHIELD SH-1:** An electrical shield plate 15 1/8"x28" in size.
- SMALL SIDE SHIELD SH-2:** Same as SH-1 above only 15 1/8"x21" in size.
- TERMINAL BOARD MOUNTING BRACKET BRK-1:** Mounts at bottom rear of cabinet for the support of audio and power terminal blocks.



## SPECIFICATIONS:

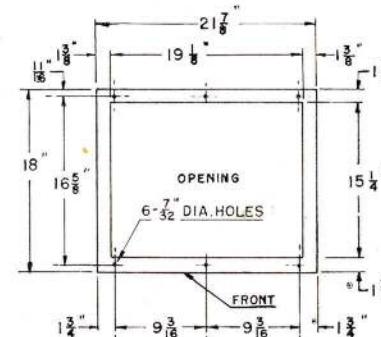
- HEIGHT OVERALL: 84".
- WIDTH (less SP-1 side panel): 22".
- WIDTH OF SP-1 SIDE PANEL: 3".
- DEPTH OVERALL: 21".
- DOOR SWING: 22 1/2".
- PANEL SPACE: 19"x77".
- MAXIMUM CLEARANCE BEHIND FRONT PANEL: 17".
- PANEL MOUNTING: Standard rack multiples,  
12/24 mtg. screws provided.
- FINISH: Medium gloss gray.
- NET WEIGHT RAK-1: 100 lbs.
- SHIPPING WEIGHT: 195 lbs.



## Ventilating Fan

Used with RAK-1 cabinet. Mounts in top to withdraw hot air in case contents of cabinet requires more than convective ventilation. — Quiet operating suction fan, 115 volts, 50/60 cycles.

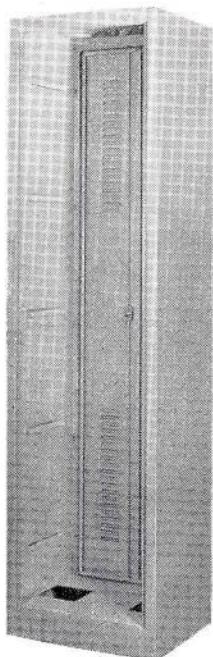
- RAK-1 Basic Cabinet .....
- TRM-1 Single Corner Trim .....
- TRM-2 Double Corner Trim .....
- SP-1 Side Panel .....
- SH-1 Shield .....
- SH-2 Shield .....
- BRK-1 Terminal Board Mtg. Bracket .....
- RAK-F-1 Ventilating Fan .....



BASE DIMENSIONS, RAK1 RACK

**NOTE:** In quantity purchases this equipment available in other colors and proportionately lower prices where single purchase is in excess of 25 cabinets.

# RACK CABINET RAK-2

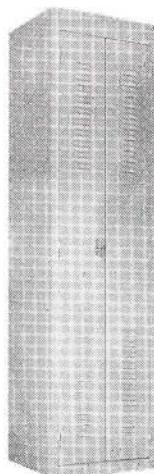


A rugged, well built cabinet similar to that frequently found in the Western Electric type of installation. Manufactured of 16 gg. cold rolled stretcher level furniture steel, resistance welded and beautifully finished in medium gloss gray. — The RAK-2 cabinet has split rear doors with louver ventilation at both top and bottom. Also top of cabinet is perforated. The two inner sides have five horizontal brackets for cable supports. Side knockouts near the bottom are also provided on each side for wiring between cabinets, where more than one cabinet is employed.

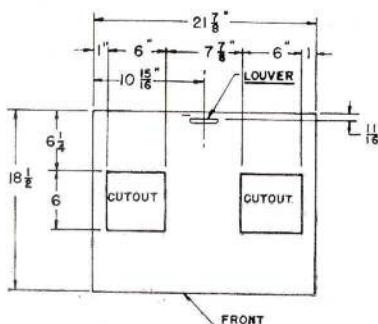
### SPECIFICATIONS

- HEIGHT OVERALL 84".
- WIDTH OVERALL: 22".
- DEPTH OVERALL: 20 1/4".
- DOOR SWING: 9 1/2".
- PANEL SPACE: 19"x77".
- INSIDE CLEARANCE
- BEHIND FRONT PANEL: 17".
- DISTANCE FROM FRONT OF
- PANEL TO FRONT OF CABINET: 7/16".
- PANEL MOUNTING: Standard rack multiples, 12/24 screws provided.
- FINISH: Medium gloss gray.
- NET WEIGHT: 135 lbs.
- WEIGHT PACKED: 230 lbs.

### RAK-2 Cabinet complete



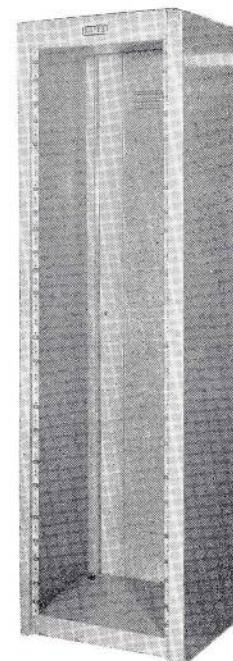
NOTE  
Available on quantity purchase in other colors and proportionately lower prices where quantity exceeds 25.



BASE DIMENSIONS, RAK 2 RACK

# RACK CABINET RAK-6

One of the finest rack cabinets available today in the economy field. Made of 18 gg. cold rolled furniture steel, resistance welded. Has full length rear door, louver ventilated at top and bottom. Finish is medium dark gloss gray for both attractive appearance and easy cleaning.



### SPECIFICATIONS

- HEIGHT OVERALL: 76".
- WIDTH OVERALL: 23 1/4".
- DEPTH OVERALL: 19 1/4".
- DOOR SWING: 20 1/2".
- PANEL SPACE: 19"x71 3/4".
- CLEARANCE BEHIND PANEL: 17".
- PANEL MOUNTING: Standard rack multiples, 12/24 mounting screws provided.
- DISTANCE FROM FRONT OF
- PANEL TO FRONT OF CABINET: 11/16".
- NET WEIGHT: 125 lbs.
- WEIGHT PACKED: 220 lbs.

### For Tape Recorders

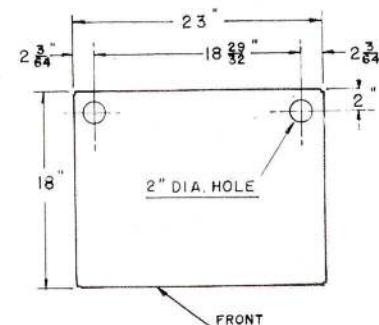
Due to the fact that the majority of rack cabinets manufactured today do not permit extending the reels over the edge of the cabinet, Gates has made available the TRM-4 rack mounting inserts. Consists of a pair of full length adaptors that attach to the panel mounting strip to bring all rack panels flush with the front of the cabinet.



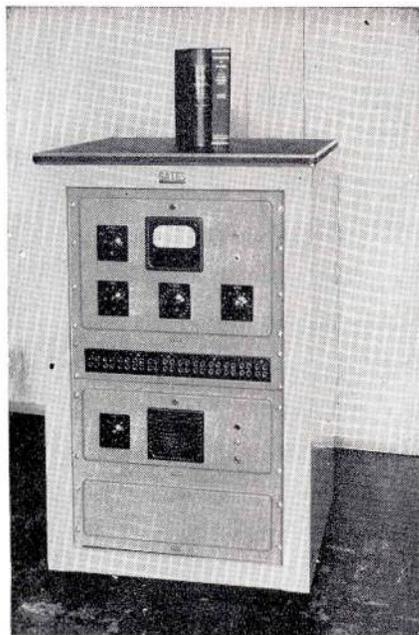
- RAK-6 cabinet complete .....
- TRM-4 (pair) inserts .....



← In the RAK-6 cabinet, Tinnerman speed nuts slip over the hole to be used for panel mounting. This provides self-alignment, retaining full strength. 60 are supplied with mounting screws.



BASE DIMENSION, RAK6 RACK



## Waist High Cabinet

Designed to make full use of wall space by placing under windows or may be used adjacent to desk. Linoleum top over a 5-ply plywood base is available as an accessory and will serve as desk or table top.

**CABINET:** Heavy cold rolled furniture grade steel, resistance welded. Size: 37 3/4" high x 23 7/8" wide x 23" deep. Rack panel space: 19"x33 1/4". Back door is removable solid panel. Finish, gloss gray.

**FOOT BASE:** Accessory, fits under cabinet for styling and as mop board. Size: 23 1/4"x19"x2 1/2" high. Finish, black.

**LINOLEUM TOPS:** Accessory. Available in single, double and triple sizes for one cabinet or two and three cabinets joined together. Battleship dull black top on 5-ply plywood base, trimmed in chrome.

- CR-70 waist-high cabinet .....
- CR-71 base only .....
- TR-80 single linoleum top .....
- TR-81 double linoleum top .....
- TR-82 triple linoleum top .....



## Blank Panels (Aluminum)

Made of 3/16" half hard, flat aluminum stock, punched standard rack slots and finished in Gates gloss gray. Other finishes on special order. Vertical sizes stated below actually 1/32" less to allow for paint and fitting.

Cat. No.	Size
15483-2	19"x1 3/4"
15483-10	19"x3 1/2"
15483-18	19"x5 1/4"
15483-26	19"x7"
15483-34	19"x8 3/4"
15483-42	19"x10 1/2"
15483-50	19"x12 1/4"
15483-58	19"x14"
15483-66	19"x15 3/4"
15483-74	19"x17 1/2"
15483-83	19"x19 1/4"

NOTE: Deduct 10% where unfinished.

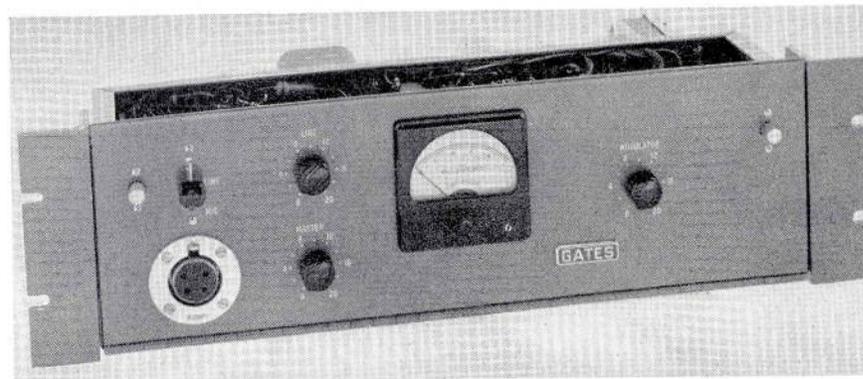
## Important

Due to the rapidly varying industry-wide prices of both ferrous and non-ferrous metals, the prices shown for blank panels are subject to possible increases. Where the increases do not exceed 10% Gates will ship without requesting your authority unless otherwise stated when ordering.

## Blank Panels (Steel)

Made of 1/8" steel flat stock, regular rack slotting, painted black ripple enamel.

Cat. No.	Size
6600	19"x1 3/4"
6601	19"x3 1/2"
6602	19"x5 1/4"
6603	19"x7"
6604	19"x8 3/4"
6605	19"x10 1/2"
6606	19"x12 1/4"
6607	19"x14"
6608	19"x15 3/4"
6609	19"x17 1/2"
6610	19"x19 1/4"
6611	19"x21"



Designed to provide microphone and line input to any communications transmitter. Embodies both limiting amplifier and high frequency cut-off filter to meet present FCC specifications. Ideal for use with new transmitters or existing communications transmitters in modernizing them to meet current FCC requirements by reducing high frequency response above 3000 cycles, and providing a fast acting limiting amplifier to prevent over-modulation of the transmitter.

Provides input circuits for either a high impedance microphone or 600 ohm line —switchable from front panel. Gain controls are provided for adjusting level of: (a) input line, (b) master gain and microphone level, and (c) input level to transmitter. A 3" meter is provided to indicate compression point.

Available in two types. M5263 has a maximum output of +18 dbm at 600 ohms. M-5263A has a maximum output of 75 volts RMS for push-pull 100,000 ohm grids. Both models have self-contained power supply.

## SPECIFICATIONS

**INPUT IMPEDANCES:** Mic. Hi-Z. Line 600 ohms.  
**OUTPUT IMPEDANCES:** M5263, 600 ohms. M5263A, 100,000 ohms.  
**GAIN:** M5263, from line to output 56 db, from mic to output 86 db ±3 db. M5263A, line to output 42.5 db, mic. to output 72 db ±3 db.  
**COMPRESSION:** (Min. threshold) mic. -63 db ±3 db. Line -33 db ±3 db.  
**NOISE:** 45 db or better below +18 dbm output. Measured with input of -55 dbm and 5 db compression.  
**DISTORTION:** At compression levels up to +20 db does not exceed 5%. At compression levels up to 30 db does not exceed 10%.  
**FREQUENCY RESPONSE:** With high frequency filter insert at all times, essentially flat at 200-2500 cycles. Down 10 db at 100 and 3300 cycles. Down 20 db at 60 and 4000 cycles. Down 30 db at 35 and 4000 cycles. Down 40 db at 20 and 4800 cycles.  
**POWER:** 115 volts, 50/60 cycles, approximately 40 watts.  
**TUBES:** One each, 6X4, 6AK6, 5879, OA2; two each, 12AT7.

## ORDERING INFORMATION

- Model M5263 Communications Amplifier, with tubes .....
- Model M5263A Communications Amplifier, with tubes .....
- TK-235 100% spare tube kit .....

# PROOF OF PERFORMANCE EQUIPMENT

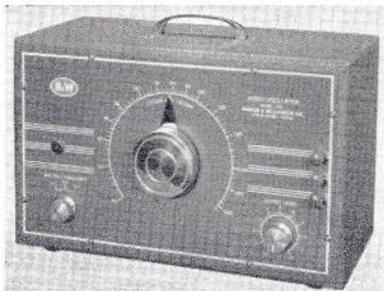
## Calibrated Audio Oscillator

Measures audio frequencies between 30-30,000 cycles. No 0 reset or line calibration required. Self-contained power supply. Housed in attractive steel cabinet with carrying handle. Size: 13 3/4" x 7 1/4" x 9 1/2".

### SPECIFICATIONS

VOLTAGE OUTPUT: 10 volts into 500 ohms.  
WAVE FORM: RMS harmonics at 3 volts on 500 ohm load, less than 1% all frequencies 50-15,000 cps.  
RESPONSE:  $\pm 1$  db or better 30-15,000 cycles.  
STABILITY: 1% or better.  
CALIBRATION:  $\pm 3\%$  of scale reading.  
POWER: 115 volts, 50/60 cycles.

Model 200 B & W Audio Oscillator .....



## Noise and Distortion Meter

For measurements of noise and distortion — both audio equipment and radio transmitters. Variable frequency selective filter provides single frequency suppression circuit of 30-15,000 cycle range. Size: 13 3/4" x 7 1/4" x 9 1/2" In attractive metal cabinet and beautifully styled.

### SPECIFICATIONS

FREQUENCY RANGE: (a) Distortion meter 30-15,000 cycles measuring harmonics to 45,000 cycles.  
(b) Voltmeter and db meter 30-45,000 cycles.  
SENSITIVITY: (a) Noise and distortion, 0.3 volts.  
(b) Voltmeter, full scale readings, 0.3, 0.1, .03, .01 and .003 volts.

CALIBRATION: For distortion  $\pm 0.5$  db. For voltage measurements  $\pm 5\%$  of full scale at 1000 cps.

Model 400 B & W Distortion Meter .....



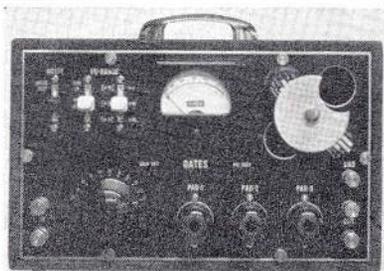
## Gain Measuring Set

Ideal for use with above oscillator and distortion meter but may be used with any similar equipment. Consists of VU meter and associated switches to accommodate all usable ranges for measuring. Attenuation circuit includes a 10 step, 2 db per step, variable attenuator/balanced ladder type, and three fixed plug-in pads. Pads are used for attenuation and impedance matching. Two pads have 40 db attenuation at 600/600 ohms and one has 20 db at 600/250 ohms, all balanced H. Additional pads of any loss or impedance obtainable on special order.

INPUT IMPEDANCE: 600 ohms balanced.  
OUTPUT IMPEDANCE: 30 to 600 ohms balanced.  
OUTPUT LEVEL: Variable from -21 dbm to -36 dbm.

Model M-3625 Gain Measuring Set .....

Extra plug-in pads, any impedance or loss .....



RESPONSE:  $\pm 1/2$  db 30-15,000 cycles.  
DISTORTION AND NOISE: Negligible.

## M-3626 Rectifier/Pickup Coil

Used with AM transmitters in conjunction with Model 400 distortion meter, listed above. Picks up RF from tank circuit for measuring noise and distortion. Includes RF pickup coil, 15-foot section of coaxial cable, and germanium diode. Complete RF filtering guarantees pure audio output which is free from RF disturbances.

FREQUENCY RANGE: 550-20,000 Kc.  
RESPONSE:  $\pm 1$  db 30-15,000 cycles.

OUTPUT IMPEDANCE: 600 ohms.  
OUTPUT LEVEL: +12 dbm.

Model M-3626 Rectifier/Pickup Coil .....

## Complete Proof of Performance Package

Consists of Type 200 Oscillator, Type 400 Noise and Distortion Meter, M-3625 Gain Measuring Set, and M-3626 Rectifier Unit with RF pickup coil and transmission line cable. Complete package provides all facilities for proof of performance of both audio frequency and AM radio transmitters. Provided with this package is a complete instruction book covering not only instructions for operating the equipment but suggested methods in making proof of performance measurements that are accurate and reliable.

Model SA-131 Complete Proof of Performance Package .....

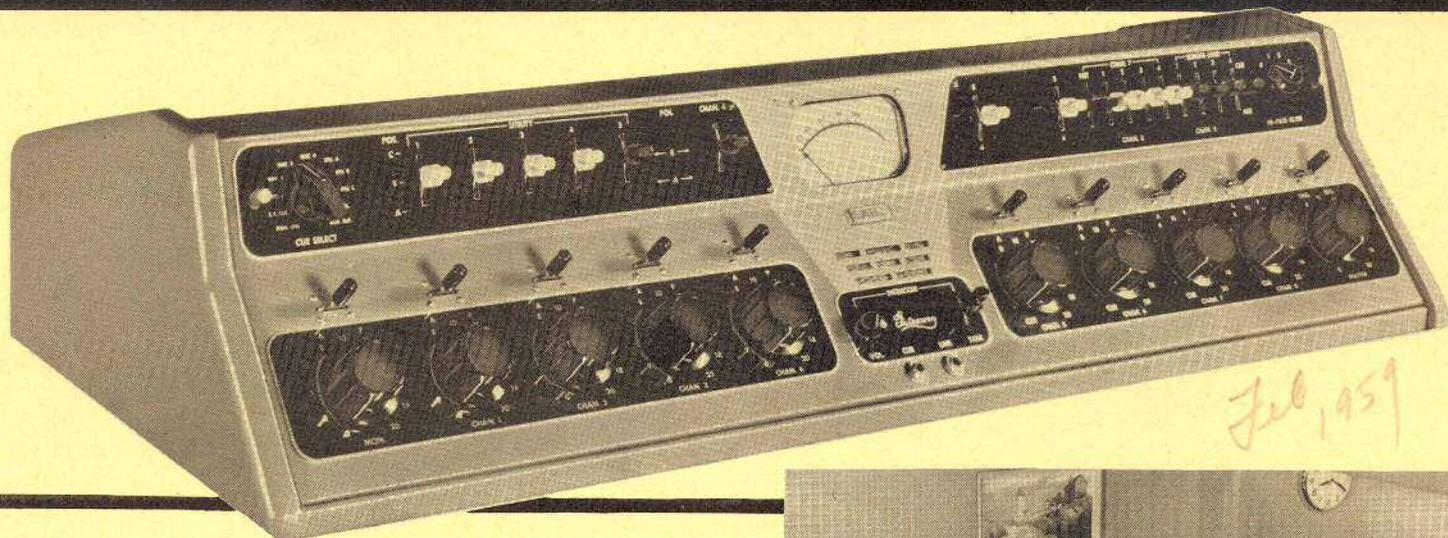
# 407

**OF THE PROUDEST STATIONS  
IN THE BUSINESS!**

**GATES**

**GATES**

# Gateway Speech Input System



What do **you** want in an audio console? Is it serviceability? Hi-pass filter? Inbuilt cue-intercom? Generous control functions? The Gateway has them all . . . **plus** scores of other outstanding features (count them) that make this console one of the most comprehensive audio systems ever manufactured. (Ask any of the 407\* proud owners of the Gateway.)

Eight step type mixing channels accommodate five microphones into four preamplifiers (15 microphones by use of utility keys), four turntables, four tapes, network, and multiple remote lines. Includes 10 watt ultra linear amplifier, variable hi-pass filter, inbuilt cue-intercom, and five unwired utility keys for individual needs. Twenty-seven keys accommodate 52 switching functions for almost any conceivable broadcast use.

In modern day broadcasting, there is no compromise for quality. That's why the Gateway, designed by Gates' creative engineers, has been called the "miracle of precision and dependability."

William T. Arrington, program director and chief engineer of WMRB, Greenville, South Carolina says that the Gateway is **"the most flexible control board I have ever operated."**

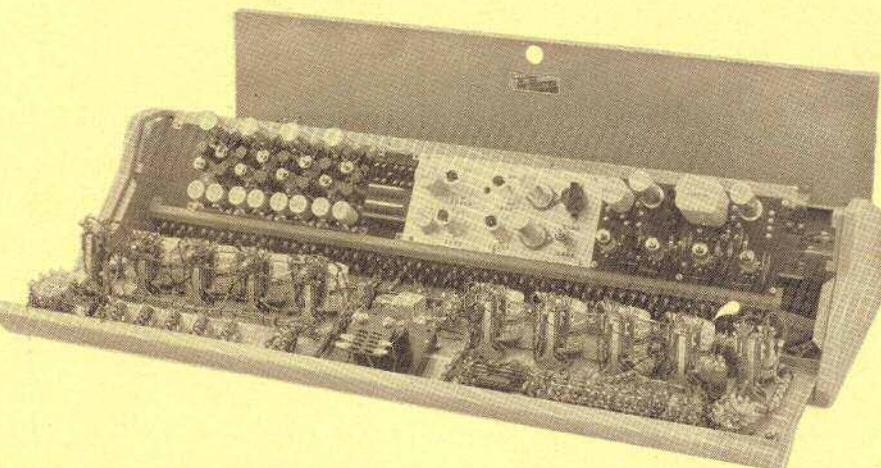
George W. Brock, chief engineer, KRNO, San Bernardino, California says — "Fre-

**Take advantage of the special bonus offered with the Gateway through March 31. See reverse side for details.**

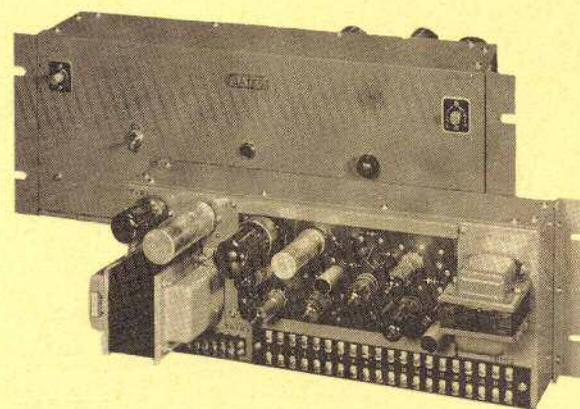
**quency response and distortion will meet even the most exacting requirements."**

Whether you are a manager or engineer, you want the best for your station. With the Gateway, you'll be going one step further.

**\*This figure changes every day as progressive broadcasters across the country add their names to the exclusive list of Gateway users.**



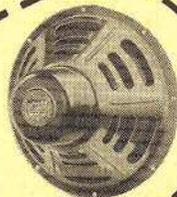
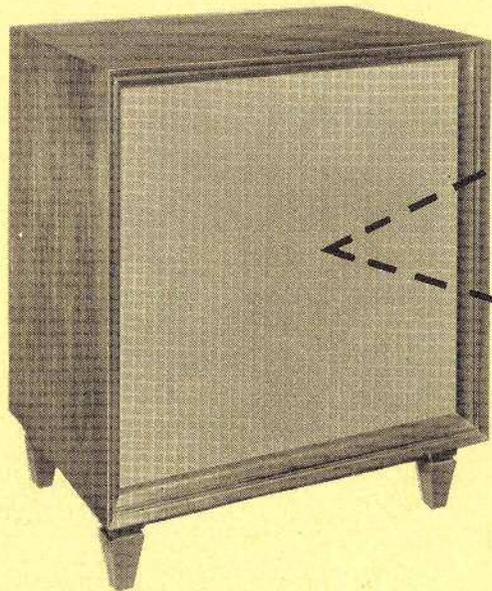
**Adding to the serviceability of the Gateway, the entire amplifier framework hinges up. In this way, every control chassis connection may be instantly reached. Easily kept clean, too.**



**Power supply and monitoring unit; drop-panel housing.**

# SPECIAL GATESWAY BONUS

Gates and Electro-Voice have again teamed together to offer broadcasters a special bonus plan, in effect through March 31, 1959. During this period, the handsome Duchess Electro-Voice phase loaded enclosure, incomparable in styling and reproduction, will be included with the purchase of each Gatesway console. To make the bonus complete, Gates is also providing at no additional cost, a Jensen 12" permanent magnet speaker, Model P12T.



The Duchess is a distinctive approach in contemporary furniture, and provides complete versatility in a modest sized enclosure. Designed specifically for use along the wall, this phase loaded cabinet will give you almost a full added octave of bass range and will completely eliminate the boomy characteristics of bass reflex enclosures. The Duchess accepts phase loaded 4-way systems and all 12, 15-inch full-range speakers, without cabinet modification. Size 29 $\frac{1}{2}$ " high, 25" wide, 19" deep. Shipping weight, 65 lbs.

## *Bonus Plan Pricing Information*

Gatesway complete with tubes, ultra linear monitoring amplifier, power supply and ready to use..... **\$1399.50**

Electro-Voice Duchess Phase Loaded Speaker Enclosure in limed oak (blonde) with Jensen P12T 12" loud speaker, Total list price..... **107.08**

Total Regular Cost..... **\$1506.58**

Your cost through March 31 is cost of console only..... (cash price) **\$1399.50**

Time payments: **\$471.16** with order and **\$83.65** monthly for 12 months, including finance charges.

**HARRIS  
INTERTYPE  
CORPORATION**

## GATES RADIO COMPANY

*Subsidiary of Harris-Intertype Corporation*

QUINCY, ILLINOIS



PRICE LIST

Catalog No. 81

Effective October 22, 1956

All prices are F.O.B. Quincy, Illinois, domestic packed. For overseas packing, add 2 1/4% to all items selling for over \$2000.00 and 4% for each item selling under \$2000.00. Prices are subject to change without notice.

Page	Item	Price
11	M-5236 Dual dual channel speech input console complete with tubes and ready to use .....	\$ 1,650.00
	TK244, 100% spare tube complement .....	52.60
	M-5303 intercom sub-station .....	16.00
15	M-5133 Gateway speech input console with tubes, relays, complete ready to install .....	1,365.00
	A94401 Extra relays for additional muting, etc. ....	10.45
	M-5303 sub-station for intercom use only, includes matching transformer .....	16.00
19	M4885A Yard console complete and with screw type termination strip .....	975.00
	M4885B Yard console complete and with Cannon XL connectors for terminations .....	975.00
	M-5050 optional relay unit .....	75.00
	M-4947 desk (chair not supplied) .....	115.00
	TK188, 100% spare tube kit .....	33.25
20	M-5069 output switching unit .....	75.00
	M-5070 patch panel cabinet .....	125.00
	S-32 two-foot patch cord, plugs both ends .....	8.70
	M-5050 muting/warning light unit .....	69.50
	M-4947 desk (chair not supplied) .....	115.00
23	52-CS Studioette complete with tubes and ready to use .....	750.00
	TK106, 100% spare tube complement .....	18.24
29	M-5301 complete TV console .....	1,595.00
	TK231, 100% spare tube complement for M-5301 .....	51.40
	M-5304 preamplifier kit .....	41.25
	TK239, 100% spare tube kit .....	3.00
	M-4572 muting unit .....	130.00
	M-5328 base plate and receptacle .....	12.00
	A-75679 spare relay .....	10.45
30	PAS-1 panel and shelf .....	23.75
31	PRE-4 preamplifier with tubes .....	66.25
	TK112, 100% spare tube complement .....	3.50
	BA-20 base and receptacle .....	5.95
	PRE-3 preamplifier with tubes .....	70.00
	PWR-5 power supply .....	42.50
32	PGM-4 program amplifier with tubes .....	97.75
	BA-21 base and receptacle .....	6.25
	TK122, 100% spare tube complement .....	5.35
	AT1 control, 10,000 ohms to 150 ohms .....	6.50
	AT2 control, 10,000 ohms to 600 ohms .....	6.50
	AT3 control, 20,000 ohms to 150 ohms .....	6.50
	AT4 control, 20,000 ohms to 600 ohms .....	6.50
	AT5 control, 10,000 ohms to 150 ohms .....	6.50
33	MON-4 monitoring amplifier with tubes .....	104.50
	TK121, 100% spare tube kit .....	6.50
	BA-21 base and receptacle .....	6.25
	PWR-3 power supply with tubes .....	77.75
	TK103, 100% spare tube kit .....	11.93
	PWR-10 bias supply .....	9.25
34	M-5340 complete program amplifier with tubes .....	186.50
	M-5340A consists of M-5340 program amplifier with 20 step unbalanced 600 ohm ladder attenuator, dial and knob .....	193.50
	M-5340B consists of M-5340 program amplifier with 20 step balanced 600 ohm ladder attenuator, dial and knob .....	214.00
	TK245, 100% spare tube kit .....	6.35
	M-5341 complete monitoring amplifier with tubes .....	209.00
	TK246, 100% spare tube complement .....	7.85
36	M-5167 Sta-Level amplifier complete with tubes .....	235.00
	TK243, 100% spare tube kit .....	15.25
37	SA-38 limiting amplifier with tubes .....	425.00
	TK150, 100% spare tube complement .....	16.34
38	SA-39 limiting amplifier with tubes .....	375.00
	TK150, 100% spare tube complement .....	16.34
	SA-22 cueing amplifier with tubes .....	110.00
	TK151, 100% spare tube complement .....	4.70
39	V-22 complete VU range set .....	108.25
	M-4242 switch panel .....	29.50
	Model 46 terminal board .....	11.85
	LE-1 fixed equalizer .....	25.00
	LE-2 variable equalizer .....	91.00
40	C-150 jack strip (24 jacks) with mounting brackets .....	30.50
	C-1500 jack strip (48 jacks) less mat .....	48.50
	PD1 jack mat for one C-1500 jack strip .....	7.75
	PD2 jack mat for two C-1500 jack strips .....	7.75
	PD3 jack mat for three C-1500 jack strips .....	7.75
	PJ12 patch cord 2' long .....	7.80
	PJ13 patch cord 3' long .....	7.98
	PJ14 patch cord 4' long .....	8.28
	PJ15 patch cord 5' long .....	8.52
43	Model CSE-9 sound effects wagon complete with tubes, less loudspeakers .....	4,995.00
	Model LSB-2 dual loudspeaker assembly .....	358.00
	TK155, 100% spare tube complement .....	66.40
44	SA-116 equalizer .....	75.00
	SA-117 equalizer .....	80.00
	SA-118 equalizer .....	77.00
	SA-119 equalizer .....	70.00
	SA-120 equalizer .....	60.00
	SA-121 panel to mount four SA equalizers .....	12.00
	FSE-1 high frequency cut-off .....	145.00
	FSE-2 low frequency cut-off .....	145.00

	Item	Price
45	CB-6300B desk .....	discontinued
	CB-62A desk .....	93.50
	CB-63 desk .....	92.00
	CB-62 desk with angles and top cover .....	discontinued
47	CB-4 desk only without cutouts or wiring .....	350.00
	CB-4M desk only with cutouts for CB-100 turntable, switches and wired .....	415.00
	CB-4N desk with two CB-210A turntables, wired, includes preamplifiers .....	1,035.00
	CB-4P desk with CB-100 turntables, Gray 106-SP arms, Gray 602C equalizer, dual cartridge, 1 mil. and 2 1/2 mil. diamond stylus, wired .....	1,053.78
	CB-4R, includes CB-4N listed above with Gatesway speech input console .....	2,407.00
	CB-4S, includes CB-4P listed above with Gatesway speech input console .....	2,448.00
49	CB-150 turntable complete .....	472.00
	CB-160 turntable complete .....	438.00
	CAB-6 cabinet only .....	80.00
51	CB-100 transcription turntable .....	210.00
	CB-100A same as above but for 50 cycles .....	220.00
52	CB-210 (M-5251) with dual sapphire styli .....	303.00
	CB-210A (M-5251A) with dual diamond styli .....	329.50
	CB-225 includes CB-210 with CAB-6 cabinet .....	383.50
	CB-225A includes CB-210A with CAB-6 cabinet .....	410.00
53	M-5266 pickup-amplifier kit .....	98.50
	CB-15 cabinet .....	30.00
	SA-134 amplifier with tubes .....	82.50
	Spare 100% tube kit, M-3961 .....	3.68
	M-5235 amplifier .....	65.00
	Spare 100% tube kit, T-225 .....	2.30
	Model 301 stylus gauge .....	1.50
55	M-4880A Dynamote with tubes, Cannon XL receptacles and carrying case .....	333.95
	M-4880B Dynamote with tubes, Cannon P receptacles and carrying case .....	343.30
	M-4933 Continumatic battery compartment with relay and plug, less batteries .....	34.00
	M-4983, 100% set of batteries .....	8.85
	TK183, 100% spare tube complement .....	7.20
	XL3-12 microphone plug for XL receptacles, each .....	.90
	P3CG12S microphone plug for P receptacles, each .....	3.09
56	M-5136 Biomote with tubes, less male microphone connectors .....	195.00
	XL3-12 male microphone connector, each .....	.90
	TK183, 100% spare tube complement .....	7.20
57	SA-134 amplifier with tubes .....	82.50
	M-3961, 100% spare tube kit .....	3.68
59	M-5311 Transmote with carrying case, one set batteries .....	145.00
	M-5311A Transmote less carrying case, with batteries .....	136.75
	M-5339 complete spare battery kit .....	9.95
	XL3-12 mating microphone connector .....	.90
	M-5344 remote package .....	202.75
	M-5345 remote package .....	194.00
61	M-5168 Twinsistor complete with carrying case and one set of batteries .....	199.50
	XL3-12 male microphone connector (2 required), each .....	.90
	M-5339 battery kit in container and wired .....	9.95
	M-5332 microphone with swivel to plug in back of Twinsistor .....	44.65
	M-5312 tubeless tube with batteries .....	39.75
	XL3-12 mating input connector .....	.90
	XL3-11 mating output connector .....	.93
	M-5350 battery kit .....	2.25
62	DM-1X rack cabinet .....	98.00
	TRM-3 joiner trim .....	12.50
63	PAK-1 basic cabinet .....	120.00
	TRM-1 single corner trim .....	10.00
	TRM-2 double corner trim .....	11.00
	SP-1 side panel .....	19.00
	SH-1 shield .....	6.25
	SH-2 shield .....	6.25
	BRK-1 terminal board mounting bracket .....	3.40
	RAK-F-1 ventilating fan .....	39.50
64	RAK-2 rack cabinet .....	170.00
65	RAK-6 rack cabinet .....	75.00
	TRM-4 (pair) inserts .....	12.00
66	CR-70 waist-high cabinet .....	52.00
	CR-71 base only .....	13.50
	TR-80 single linoleum top .....	19.00
	TR-81 double linoleum top .....	27.00
	TR-82 triple linoleum top .....	39.00
	6600 blank panel (steel) .....	.76
	6601 blank panel (steel) .....	.89
	6602 blank panel (steel) .....	1.12
	6603 blank panel (steel) .....	1.32
	6604 blank panel (steel) .....	1.52
	6605 blank panel (steel) .....	1.85
	6606 blank panel (steel) .....	2.18
	6607 blank panel (steel) .....	2.48
	6608 blank panel (steel) .....	2.77
	6609 blank panel (steel) .....	3.10
	6610 blank panel (steel) .....	3.47
	6611 blank panel (steel) .....	3.83
	15483-2 blank panel (aluminum) .....	1.16
	15483-10 blank panel (aluminum) .....	2.31
	15483-18 blank panel (aluminum) .....	3.47
	15483-26 blank panel (aluminum) .....	4.62
	15483-34 blank panel (aluminum) .....	5.78
	15483-42 blank panel (aluminum) .....	6.93
	15483-50 blank panel (aluminum) .....	8.09
	15483-58 blank panel (aluminum) .....	9.24
	15483-66 blank panel (aluminum) .....	10.40
	15483-74 blank panel (aluminum) .....	11.55
	15483-83 blank panel (aluminum) .....	12.71
67	M-5263 communications amplifier, with tubes .....	250.00
	M-5263A communications amplifier, with tubes .....	250.00
	TK235, 100% spare tube kit .....	7.60
68	Model 200 B & W Audio Oscillator .....	138.00
	Model 400 B & W Distortion Meter .....	168.00
	M-3625 gain measuring set .....	150.00
	Extra plug-in pads, any impedance or loss .....	6.50
	M-3626 rectifier/pickup coil .....	42.00
	SA-131 complete proof of performance package .....	498.00