

# GATES RADIO COMPANY

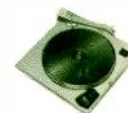
## BROADCAST EQUIPMENT

F M RADIO

AUDIO

A M RADIO

*YOUR  
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FOR ALL  
BROADCAST  
NEEDS*

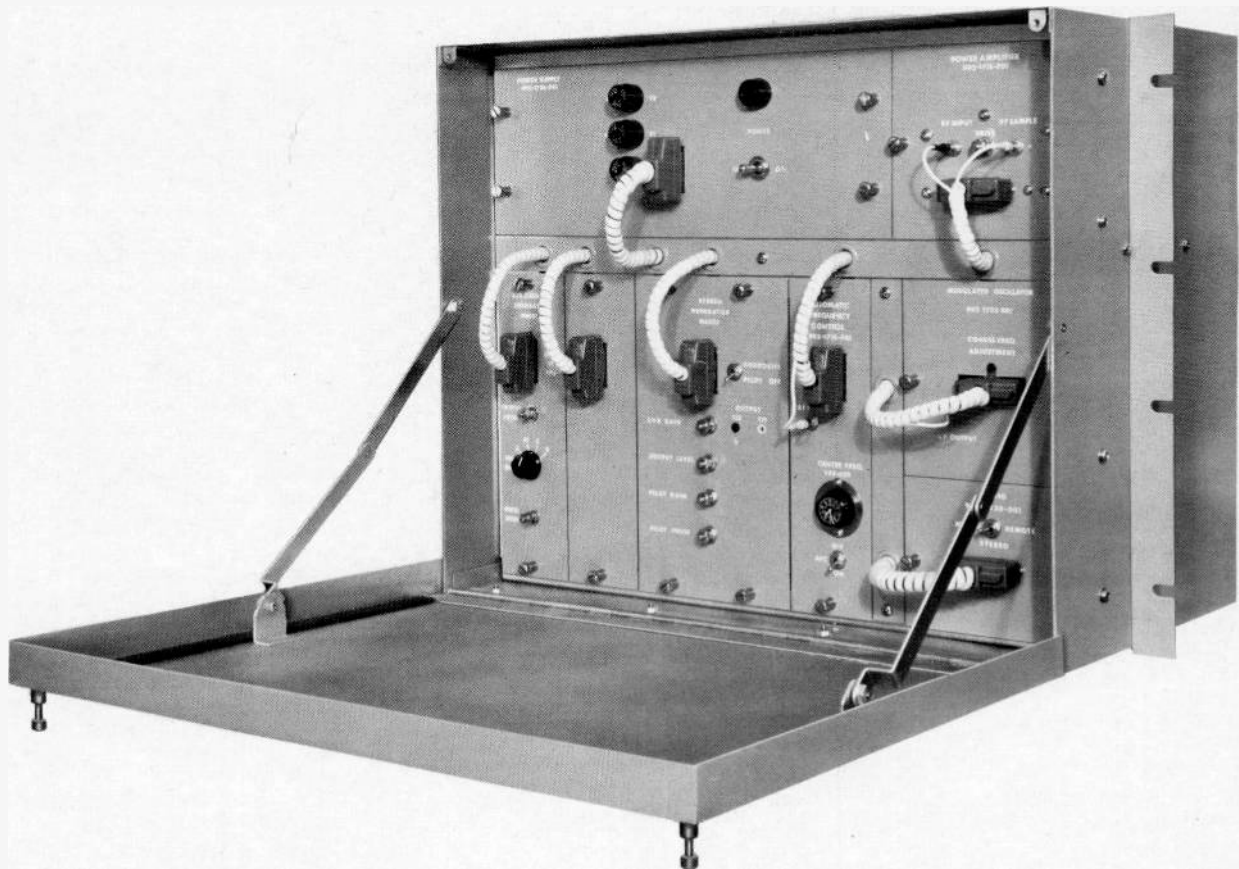




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# MODEL TE-1 SOLID STATE DIRECT CARRIER FREQUENCY MODULATION EXCITER



An FM BROADCASTING BREAK-THROUGH by Gates, Direct Carrier Frequency Modulation (DCFM) in a new 100% solid state 10 watt exciter. This new Gates self-contained "DCFM" exciter is the heart of every one of the seven new Gates "H" series FM transmitters—the most complete line in the industry.

Only from Gates can you get:

- A one tube 250 watt FM transmitter
- A one tube 1000 watt FM transmitter
- A two tube 3000 watt FM transmitter
- A two tube 5000 watt FM transmitter
- A two tube 7500 watt FM transmitter
- A two tube 10,000 watt FM transmitter
- A three tube 20,000 watt FM transmitter

**Full 10 Watts of RF Solid State Power**  
Brand new, the Model TE-1 Exciter was designed to upgrade the reliability and dependability of an FM transmitter by using solid state devices to reduce the greatest danger to electronic equipment—heat. Only performance proven solid state devices and precision temperature compensated components are used to assure the meeting of design parameters

in continuous duty service. A full 10 watts of composite RF signal at carrier frequency is produced easily by this 100% transistorized exciter employing "DCFM."

The Model TE-1 exciter, standard in all Gates "H" series transmitters, can be used to drive most modern FM transmitters requiring 10 watts carrier frequency input.

#### Advanced Design

The oscillator in the Model TE-1 Exciter operates at the carrier output frequency, eliminating frequency multipliers. This means highly improved carrier stability and excellent frequency response. With this new exciter, phase shift and distortion resulting from frequency multiplier tuned circuits is now a thing of the past. There is no longer a need to retune critical stages, which means more stable and efficient operation resulting in reduced maintenance time.

#### Stereo Separation 35 dB Minimum

Optimum 35 dB separation is the result of Direct Carrier Frequency Modulation of the oscillator at the output frequency.

As carrier generation and modulation takes place "on" frequency, the wide bandwidth needed for high fidelity reproduction is easily attained. The result is better FM stereo separation and better crosstalk between main channel and sub channels used for SCA and FM stereo.

#### Modular Construction

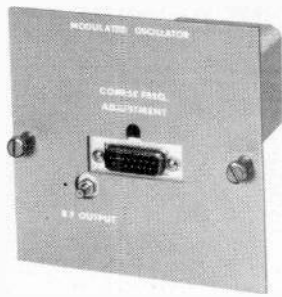
The Model TE-1 is composed of seven modules, each individually shielded, and connected within the exciter by an advanced intercabling technique. Connections are made at the front of each module with premium quality quick-disconnect plugs. Test voltage measurements and adjustments can be made easily by this unique modular mechanical design. Modular construction allows the addition of stereo or SCA at a later date by simply plugging in the factory adjusted module.

#### Superb SCA Operation

In the solid state Model TE-1 Exciter crosstalk from the main channel to the SCA channel is virtually eliminated through new filtering techniques and cancellation of the second harmonic of the composite stereo signal.

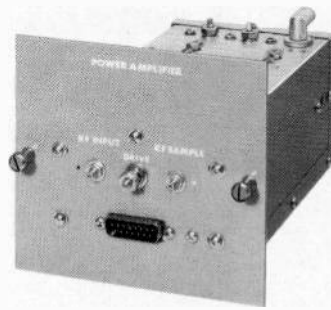
# MODEL TE-1 DIRECT CARRIER FREQUENCY MODULATION EXCITER MODULES

## Modulated Oscillator Module



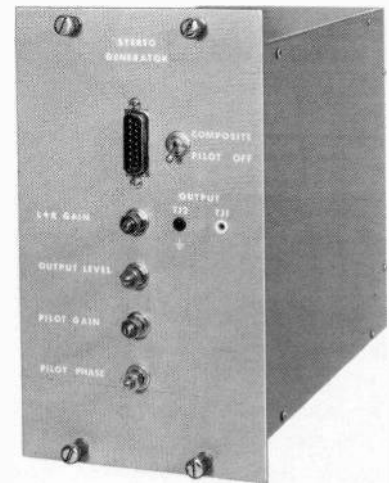
Operating at carrier frequency, the ultra stable emitter coupled oscillator is modulated by the direct application of mono, stereo and SCA input signals. For the most precise stability, the oscillator circuit is constructed with temperature compensated components and housed in a 70° C oven. Gates "DCFM" is generated in this module, and feeds the solid state 10 watt amplifier module.

## Exciter Power Amplifier Module



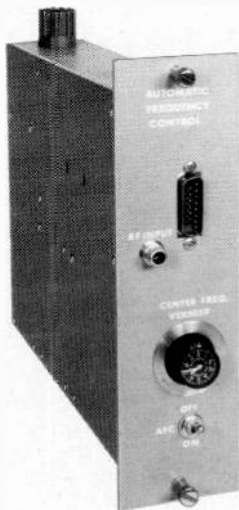
The power amplifier of the Model TE-1 FM Exciter is all solid state and provides a 10 watt composite signal at carrier frequency to the driver or final amplifier of the new Gates "H" series transmitters. Amplifier bandwidth is approximately 3 MHz which assures optimum stereo separation.

## Stereo Generator Module (Optional)



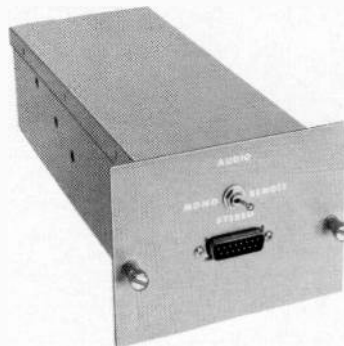
With this new Gates solid state stereo generator, stereo separation left to right and right to left is always better than 35 dB from 30 Hz to 15 kHz. This performance is assured by the Gates "DCFM" exciter design. The modular construction allows ordering a Gates FM transmitter for monophonic operation and later adding the factory aligned stereo generator.

## Automatic Frequency Control Module



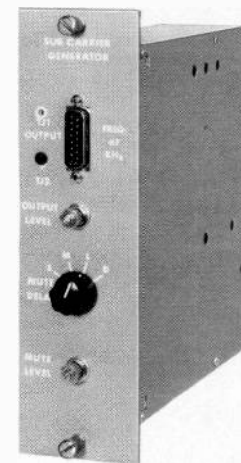
Continuous carrier stability which is well within  $\pm 1$  kHz ( $\pm .001\%$ ) of the assigned center frequency is provided by a precision oven controlled oscillator. A linear pulse device compares the output frequency of the exciter with the reference oscillator to provide correction voltage for the modulated oscillator of the Model TE-1 Exciter.

## Audio Input Control Module



Control, processing and input switching of mono, stereo and 41 kHz SCA inputs to the modulated oscillator are provided in this unit, part of the Model TE-1 Exciter. During monophonic operation the right channel is automatically switched to the 41 kHz SCA input which allows use of this program line for SCA operation.

## S.C.A. Modules (Optional)



Stable, self-excited oscillators are used to provide 41 kHz or 67 kHz SCA operation of excellent quality with very low distortion. Automatic muting is included with provision for control of both mute level and mute time constant. Factory pre-aligned SCA modules can be installed in the Model TE-1 Exciter by simply plugging into the space provided.

## Power Supply Module

The solid state regulated DC power supply provides 24 volts DC or 150 volts DC to all modules in the Model TE-1 Exciter. Temperature compensated zener diodes are used to provide constant voltages over a temperature range of  $-20^{\circ}$  C to  $+70^{\circ}$  C and power line variations of  $\pm 15\%$  from the 117 volt single phase AC power line. Ample power is available for the stereo and SCA modules should they be added later.

# MODEL FM-20H THREE TUBE 20,000 WATT FM BROADCAST TRANSMITTER

Only three tubes produce a full 20,000 watts of power, and true stereophonic/monaural performance is achieved with *direct carrier frequency modulation* (DCFM). This new transmitter is type accepted by the FCC for stereophonic and monaural FM broadcasting.

## THREE TUBES FOR 20 KW

True solid state reliability is achieved in the FM-20H transmitter, which employs only three tubes for 20,000 watts of output. The brand new transistorized Model TE-1 exciter is incorporated in the transmitter. This is followed by the only tubes used; two parallel 4CX250B in the driver and the rugged 4CX15000A single ended power amplifier.

## SOLID STATE "DCFM" EXCITER

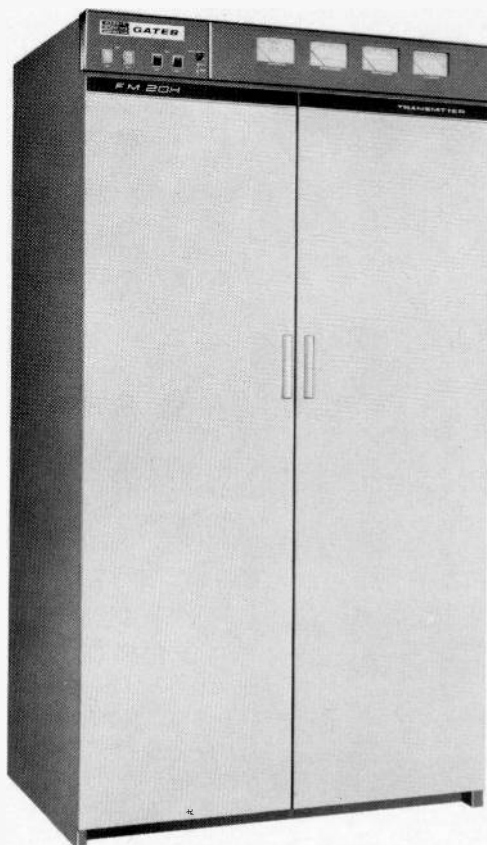
Years ahead of its time, the brand new 100% solid state Model TE-1 exciter is the heart of the FM-20H transmitter. This exciter employs an advanced Gates design wherein the oscillator is modulated at the carrier frequency (DCFM). The result is improved carrier stability and unsurpassed frequency response. Modular construction of the TE-1 exciter allows plug in of the solid state individually shielded stereo and SCA modules at any time.

## 35 dB STEREO SEPARATION

Optimum stereo separation of 35 dB minimum from 30 Hz to 15,000 kHz is a feature of the Model FM-20H transmitter. Superb stereophonic sound is achieved with Gates exclusive "DCFM" solid state mono/stereo design. As carrier generation and modulation takes place "on" frequency, the wide bandwidth needed for high fidelity reproduction is easily attained. Better FM stereo separation and better crosstalk between main channel and sub-channels used for SCA and FM stereo is thus attained.

## COMPACT DESIGN

With the FM-20H transmitter, Gates offers a compact power packed 20 KW model which simplifies installation and saves valuable floor space. This was achieved by housing the high voltage power supply in a separate interlocked enclosure, 49" high, 30" wide, and 30" deep. Only the high voltage plate transformer, filter capacitor, filter reactor and the conservatively rated silicon rectifier stacks are in this unit.



## OPERATING ADVANTAGES

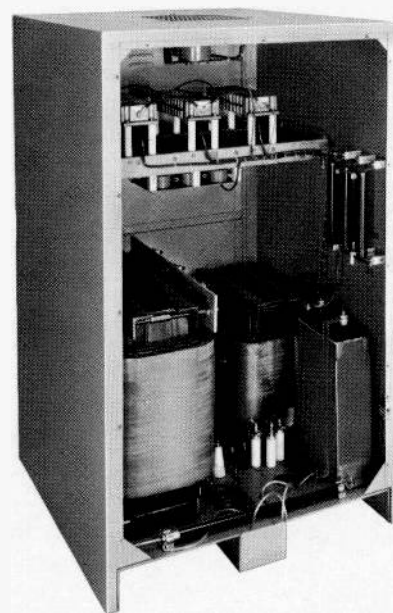
**OPERATIONAL ECONOMY AND SERVICEABILITY**—The FM-20H transmitter provides top power at the lowest per hour operating cost in a compact space saving cabinet arrangement. Convenience in routine maintenance is offered by the separate HV enclosure and serviceability from both front and rear in the main transmitter cabinet.

**REMOTE CONTROL**—As supplied, the transmitter is ready to attach Gates remote control equipment for unattended operation.

**HARMONIC FILTERS**—Included as standard equipment is a "tee-type" notch filter for second harmonic reduction, a micromatch VSWR section for direct meter reading of both power output and standing wave ratio, and a low pass filter which substantially eliminates third and higher order harmonics.

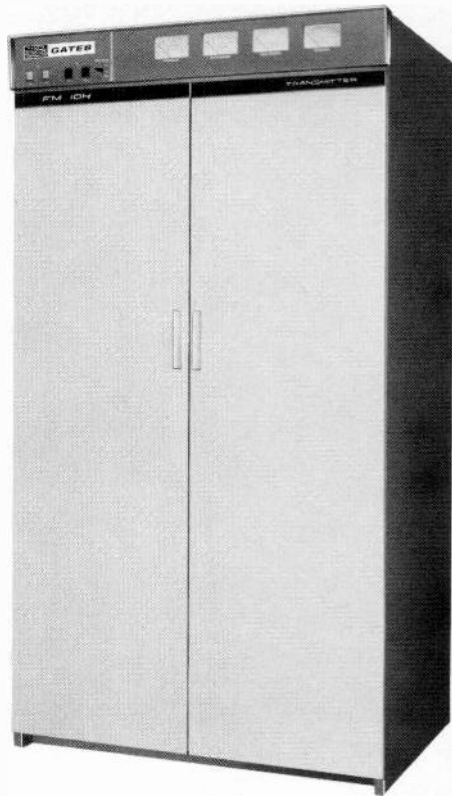
**AUTOMATIC RECYCLING**—In case of momentary overload, the transmitter recycles and is again turned on. Where the overload occurs three or four consecutive times, the FM-20H will then re-

main off until it is reset, either locally or by remote control.



The external power supply for the FM-20H is compact and can be placed virtually anywhere, adding to the installation flexibility of the FM-20H.

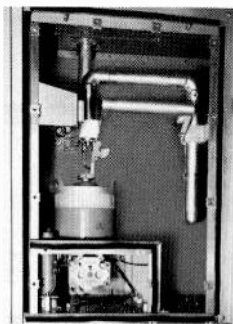
# MODEL FM-10H TWO-TUBE 10,000 WATT FM TRANSMITTER



## OPERATING ADVANTAGES

**SELF-CONTAINED:** The FM-10H Transmitter is completely self-contained. Plate transformer blowers, the transistorized TE-1 Exciter, and optional solid state stereo generating/SCA equipment are all in one cabinet.

**SERVICEABILITY:** The FM-10H Transmitter allows maintenance and service from both the front and rear. All components are within easy reach of the maintenance engineer.



A rugged performance proven 4CX10000D is used as a single ended final amplifier in the FM-10H. With a 10KW plate dissipation rating long and useful tube life is assured.

**PUSHBUTTON OPERATION:** Daily operation of the FM-10H is simple, with control by the two lighted pushbuttons at the top of the transmitter.

**BUILT-IN REMOTE CONTROL:** All functions are designed for easy, reliable remote control. No additional equipment is required in the FM-10H when used with Gates Remote Control.

**VARI-LINE TUNING:** Vari-Line is a Gates advance engineering method of tuning a single ended FM amplifier for optimum output efficiency. In the Model FM-10H Gates again uses the performance proven Vari-Line tuning to assure "on-air" dependability. A VSWR section for direct reading of both power output and standing wave ratio is included with the FM-10H transmitter.

**AUTOMATIC RECYCLING:** In case of momentary overload, the FM-10H transmitter recycles and is again turned on. Where the overload continues to occur, the FM-10H will then remain off until it is reset, either locally or by remote control.

It takes just two tubes to produce a full 10,000 watts output in the new Gates FM-10H Transmitter. The new solid state *direct carrier frequency modulation* exciter is an important and integral part of this 10 KW FM transmitter. Only recently introduced, the FM-10H Transmitter is FCC type accepted for stereophonic and monaural FM broadcasting.

## TWO-TUBE TRANSMITTER

The FM-10H is almost totally solid state, as there are only two tubes in the entire transmitter. An easy 10 watts is delivered from the TE-1 transistorized exciter to the 4CX300A driver, which supplies a nominal 250 watts to drive the 4CX10,000D power amplifier. This power tetrode operates at a leisurely pace, providing ample power to deliver a high fidelity signal with the economy of operation you desire.

## SOLID STATE "DCFM" EXCITER

As in other "H" series transmitters, the heart of the FM-10H is the brand new 100% solid state Model TE-1 Exciter. This exciter employs an advanced Gates design—*direct carrier frequency modulation (DCFM)*—whereby the oscillator is modulated at the carrier frequency. The result is improved carrier stability and unsurpassed frequency response.

Completely self-contained, the Model TE-1 Exciter is an integral part of the FM-10H Transmitter. Its unique modular design allows easy plug-in of the solid state stereo and SCA modules at any time.

## STEREO SEPARATION

Stereo separation in the FM-10H Transmitter is 35 dB from 30 Hz to 15 kHz. This is assured by Gates "DCFM" design. As carrier generation and modulation takes place "on" frequency, the wide bandwidth needed for high fidelity reproduction is easily attained. The result is better FM stereo separation and better crosstalk between main channel and subchannels used for SCA and FM stereo.

## SILICON POWER SUPPLIES

Solid state silicon rectifiers are standard for all power supplies. Increased dependability is further assured by the reliability of the solid state devices in the Model TE-1 Exciter.

# MODEL FM-5H TWO TUBE 5000 WATT FM BROADCAST TRANSMITTER (MODEL FM-7.5H FOR 7500 WATTS)

The Gates FM-5H Transmitter provides 5000 watts output with just two tubes, and features the brand new Gates solid state exciter employing *direct carrier frequency modulation* (DCFM). Quality all the way, both the FM-5H and the FM-7.5H transmitters combine the reliability of solid state circuitry and the superb performance of "DCFM" for outstanding stereo and monaural transmission. Each transmitter is FCC type accepted for stereophonic and monaural FM broadcasting.

## TWO-TUBE TRANSMITTER

With the transistorized 10 watt Model TE-1 Exciter incorporated in these new transmitters, only two tubes are needed to produce a full 5000 watts of power in the Model FM-5H and a full 7500 watts in the FM-7.5H. A type 4CX250B amplifies the solid state exciter output and supplies a nominal 250 watts to drive the ceramic 4CX5000A final tube. This proven power tetrode operates as a single ended amplifier to produce a loafing 5 to 7.5 kilowatts of power.

## SOLID STATE "DCFM" EXCITER

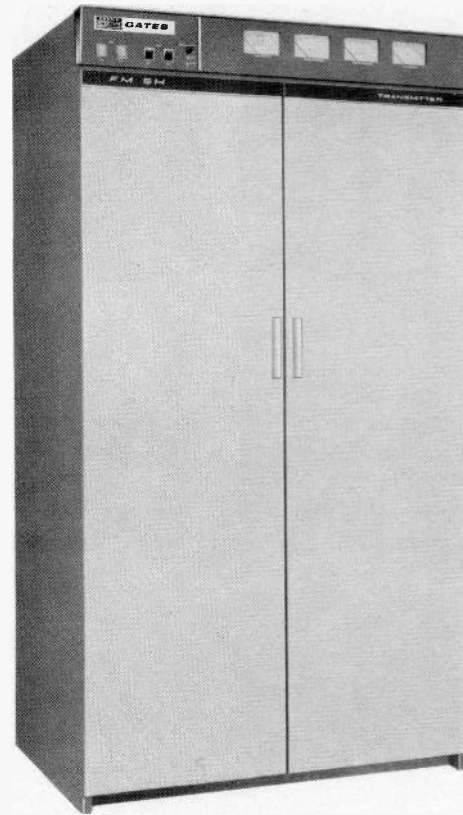
The Model TE-1 solid state *direct carrier frequency modulation* exciter is the heart of the FM-5H and FM-7.5H transmitters. This brand new exciter employs an advanced Gates design whereby modulation occurs at the carrier frequency resulting in improved carrier stability and unsurpassed frequency response. Self-contained within these transmitters, the new "DCFM" exciter is of modular construction so that the solid state stereo and SCA modules can be plugged in at any time.

## 35 dB STEREO SEPARATION

In both the FM-5H and the FM-7.5H transmitters stereo separation is 35 dB minimum from 30 Hz to 15 kHz. This is the achievement of *direct carrier frequency modulation* of the oscillator at the output frequency. Better FM stereo separation and better crosstalk between main channel and subchannels used for SCA and FM stereo is assured.

## SILICON POWER SUPPLIES

For increased dependability, solid state rectifiers are standard in these new transmitters. Silicon power supplies and the all solid state Model TE-1 Exciter contribute to over-all greater reliability.



## OPERATING ADVANTAGES

**VARI-LINE TUNING:** Field proven as most dependable in the popular FM-5G transmitter, Gates Vari-Line tuning is again used in the Models FM-5H and FM-7.5H. This advanced method of tuning a single ended FM amplifier for optimum output efficiency is a performance feature.

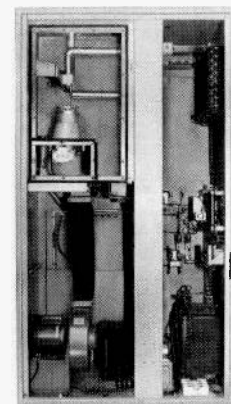
**HARMONIC FILTERS:** Included as standard equipment in the FM-5H and FM-7.5H transmitters is a "tee-type" notch filter for second harmonic reduction, a micro-match VSWR section for direct meter reading of both power output and standing wave ratio, and a low pass filter which substantially eliminates third and higher order harmonics.

**PUSHBUTTON OPERATION:** Daily operation of these two transmitters is simple, with control by the two lighted push-buttons at the top left of the transmitter. These are filament "on-off" and plate "on-off." No need to open the front doors to turn the unit on or off.

**AUTOMATIC RECYCLING:** In case of momentary overload, the transmitter recycles and is again turned on.

**POWER GUARD:** Both Model FM-5H and FM-7.5H transmitters are protected by Power Guard, a Gates developed power supply protective circuit, to provide maximum protection from transient voltages.

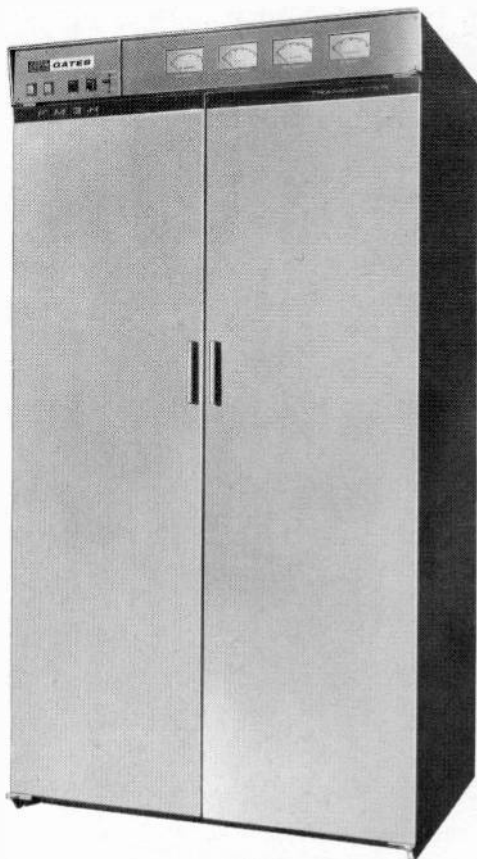
**BUILT-IN REMOTE CONTROL:** No additional equipment is required in the FM-5H and FM-7.5H transmitters for Gates remote control.



Complete component accessibility, logical design and excellent workmanship are all evident with the back door and power amplifier panel removed.



# MODEL FM-3H TWO TUBE 3000 WATT FM TRANSMITTER



## OPERATING ADVANTAGES

**VARI-LINE TUNING:** Vari-Line is an advanced method of tuning a single ended VHF amplifier for optimum output efficiency. Proven as dependable in previous Gates FM transmitters, this performance feature is built into the Model FM-3H.

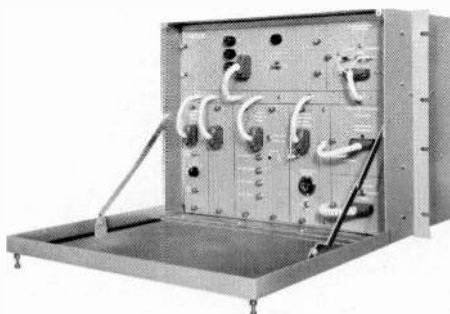
**PUSHBUTTON OPERATION:** Daily operation of this transmitter is simple, with

control by the two lighted pushbuttons at the top left of the transmitter. These are filament "on-off" and plate "on-off." No need to open the front doors to turn the unit on or off.

**BUILT-IN REMOTE CONTROL:** All functions can be remotely controlled. Simply connect the FM-3H to a transmitter control unit, tie in the telephone line to the studio, and you are ready for complete remote control operation.

**FILTERS ARE STANDARD EQUIPMENT:** Included as standard equipment on the FM-3H is a "tee-type" notch filter for second harmonic reduction, a micro-match VSWR section for direct meter reading of power output and standing wave ratio, and a low pass filter which substantially eliminates third and higher order harmonics.

**AUTOMATIC RECYCLING:** In case of momentary overload, the transmitter recycles and is again turned on. Where the overload continues to occur, the FM-3H will then remain off until it is manually reset, either locally or by remote control.



Key to the high performance of the FM-3H is the new Gates Model TE-1 exciter with "DCFM." Self-contained, and all solid state, this major engineering breakthrough results in a two tube transmitter which produces 3000 watts.

This modern two-tube 3000 watt FM transmitter incorporates the brand new solid state exciter employing *direct carrier frequency modulation* (DCFM) for superb stereo and monaural sound. The FM-3H Transmitter is the ideal choice for broadcasters desiring to transmit the maximum 3 KW in both the horizontal and vertical planes as permitted by the FCC for Class A Stations.

## ONLY TWO TUBES

From the new Gates Model TE-1 Exciter to the transmission line only two tubes are used in the Gates 3000 watt Model FM-3H Transmitter. A type 4CX250B takes the 10 watts from the transistorized exciter and amplifies it to 250 watts. This drives the 4CX5000A tetrode power amplifier, which just coasts along for ultra-dependable service at 3000 watts output. Long tube life assures operating economy.

## SOLID STATE "DCFM" EXCITER

As in all Gates "H" series transmitters, the new 100% solid state *direct carrier frequency modulation* Model TE-1 Exciter is the heart of the Model FM-3H. Self-contained within the FM-3H transmitter, the Model TE-1 exciter produces a full 10 watts output. Its unique modular construction permits plug-in of the solid state stereo and SCA modules at any time.

## OPTIMUM STEREO SEPARATION

Stereo separation in the FM-3H transmitter is 35 dB minimum from 30 Hz to 15 kHz. This is the result of *direct carrier frequency modulation* where modulation occurs at the carrier frequency. Effective filtering reduces crosstalk to a new low level. Superb stereo and true, rich, extended response for monophonic service is assured.

## SOLID STATE POWER SUPPLY

Solid state silicon rectifiers in all power supplies are standard equipment in the FM-3H. The all solid state exciter adds further to overall greater transmitter dependability.

## ANOTHER GATES FIRST

With its exclusive two-tube design and "DCFM" performance, the FM-3H Transmitter sets a new high in FM transmission standards.



# MODEL FM-1H ONE TUBE 1000 WATT FM TRANSMITTER

Superb for stereo, multiplex or monaural sound, the one tube 1 KW model FM-1H transmitter incorporates a brand new solid state exciter employing *direct carrier frequency modulation* (DCFM). The FM-1H is FCC type accepted for 1000 watt output for both monaural and stereophonic transmission in the 88 to 108 MHz band.

## ONE TUBE DESIGN

Just one tube beyond the exciter is all that is needed to supply 1000 watts output in this totally new FM broadcast transmitter by Gates. The modern type 4CX1000A ceramic tetrode is the only tube used in the entire transmitter. Driven directly by the 10 watt solid state Model TE-1 exciter, the 4CX1000A serves as the power amplifier and is operated well within its ratings for longer useful tube life and greater on air reliability.

## SOLID STATE "DCFM" EXCITER

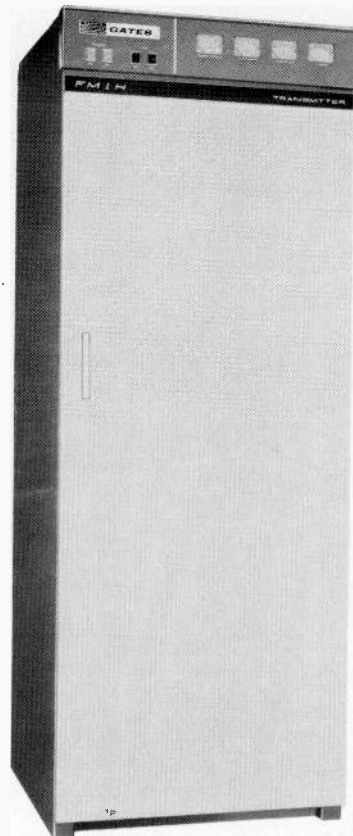
Heart of the FM-1H transmitter is a brand new 100% solid state *direct carrier frequency modulation* (DCFM) exciter. Producing a full 10 watts output, the complete model TE-1 exciter is self-contained within the FM-1H transmitter. The exciter employs an advanced Gates design whereby modulation occurs at the carrier frequency. This eliminates all frequency multipliers and results in highly improved carrier stability and unsurpassed frequency response. Unique modular construction allows plug-in of the solid state stereo and SCA modules at any time.

## STEREO SEPARATION

In the FM-1H transmitter stereo separation is 35 dB minimum from 30 Hz to 15 kHz. With its exclusive "DCFM" design, Gates sets a new high in FM transmitter performance.

## SILICON POWER SUPPLIES

Solid state rectifiers are standard equipment in this modern slimline FM-1H transmitter. Dependable silicon rectifiers, providing generous voltage and current safety factors are used throughout. The transistorized TE-1 exciter further adds to greater transmitter dependability.



## OPERATING ADVANTAGES

**HARMONIC FILTERS TO REDUCE UNWANTED RADIATION:** A field proven Gates designed harmonic filter is supplied as standard equipment to keep spurious emissions to a minimum and well within FCC requirements.

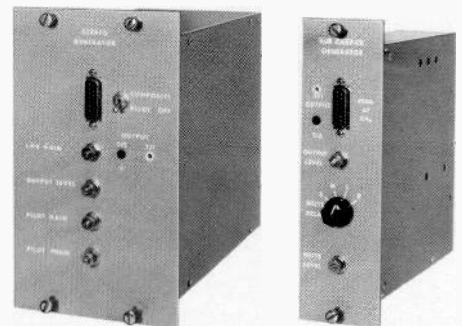
**EASE OF MAINTENANCE:** Quick accessibility to all components for routine maintenance is through the full length rear door. A built-in reflectometer with VSWR power meter permits direct reading of both power output and standing wave ratio.

**CONVENIENT OPERATION:** On/Off functions are controlled by the two push switches at the top left of the transmitter. These are plainly marked "filament ON/OFF," "plate ON/OFF." No need to open the front door to turn the transmitter on or off.

**AUTOMATIC RECYCLING:** The FM-1H recycles and is again turned on in case of momentary overload. If, after three or four consecutive overloads, it fails to

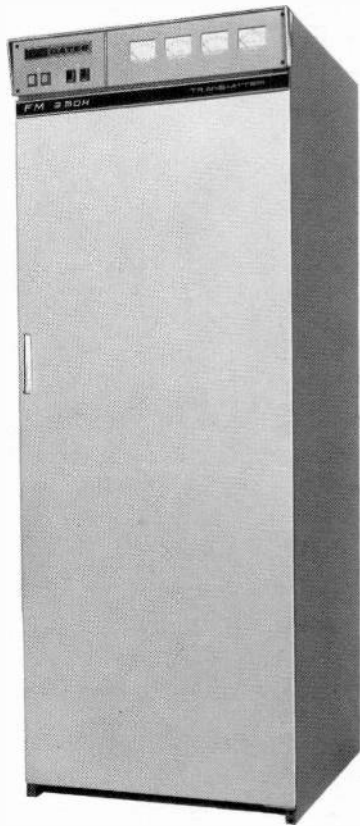
turn itself on, the transmitter remains off until the "Plate On" button is activated locally or by remote control.

**BUILT-IN REMOTE CONTROL:** Remote control capabilities are built in including a motor driven screen voltage control to vary power output from the remote point.



Operating flexibility is assured by the all solid state stereo and SCA modules. Plugging directly into the Model TE-1 exciter, these units provide new performance standards for modern FM broadcasting.

# MODEL FM-250H ONE-TUBE 250 WATT FM TRANSMITTER



## OPERATING ADVANTAGES

**HARMONIC OUTPUT FILTER:** Provided as standard equipment the low pass filter is contained within the FM-250H Transmitter cabinet. Harmonics are attenuated well within FCC requirements.

**AUTOMATIC RECYCLING:** Seldom standard in 250 watt FM transmitters, the Gates FM-250H incorporates automatic recycling in case of momentary overload.

**REMOTE CONTROL:** Wiring for remote control is built in, including a motor driven control to vary power output. No outboard components are needed in the FM-250H Transmitter when used with Gates remote control systems.

**OPERATING CONVENIENCE:** Metering in the FM-250H Transmitter is complete. "ON-OFF" functions are controlled by two lighted pushbuttons at the top left of the transmitter. The switch for control of the multimeter is located just to the right of the pushbutton switches.

**INBUILT VSWR:** A built-in VSWR power meter permits direct reading of both power output and standing wave ratio. This is standard with the Gates FM-250H Transmitter.

**EXCITER MODULAR CONSTRUCTION:** Each module in the TE-1 solid state exciter used in the FM-250H is individually shielded and connected within the exciter by an advanced intercabling technique. Test voltage measurements and adjustments can be made easily by this unique modular construction.

Only one tube is used in the Model FM-250H FM transmitter for 250 watts power output. This modern 250 watt transmitter also incorporates the brand new Gates solid state exciter employing *direct carrier frequency modulation* (DCFM) for unsurpassed audio fidelity in FM broadcasting. The FM-250H Transmitter is fully FCC type accepted for stereophonic and monaural transmission in the 88 to 108 MHz FM broadcast band.

## ONE TUBE TRANSMITTER

From the solid state exciter to transmission line there is only one tube in the FM-250H Transmitter. The brand new Model TE-1 transistorized exciter drives the 4CX250B tetrode power amplifier tube directly. Transmitter operation is simple, stable, and within conservative ratings. The 4CX250B power tube easily delivers a full 250 watts output.

## SOLID STATE "DCFM" EXCITER

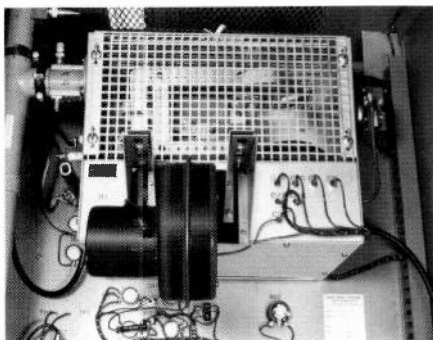
Even with this 250 watt transmitter Gates supplies the brand new 100% solid state *direct carrier frequency modulation* exciter. Producing a full 10 watts output, the Model TE-1 Exciter is self-contained within the FM-250H Transmitter. This exciter employs an advanced Gates design whereby modulation occurs at the carrier frequency. As no frequency multipliers are used, the result is improved carrier stability and unsurpassed frequency response. Modular construction of the TE-1 Exciter permits plug-in of the solid state stereo and SCA modules at any time.

## STEREO SEPARATION

Stereo separation in the FM-250H is 35 dB minimum from 30 Hz to 15,000 kHz for true high fidelity performance. A whole new world of stereophonic sound is achieved with Gates' exclusive "DCFM" solid state mono/stereo design.

## SOLID STATE RECTIFIERS

Transmitter reliability is greatly enhanced as Gates uses silicon diodes in all power supplies in the FM-250H equipment. The all solid state TE-1 Exciter adds further to over-all dependability.



Only one tube is used in the FM-250H. Conservatively operated it provides long and dependable service at 250 watts.

# SPECIFICATIONS FOR "H" SERIES TRANSMITTERS

	FM-250H 250 watts	FM-1H 1 KW	FM-3H 1-3 KW	FM-5/7.5H 5 & 7.5 KW	FM-10H 10KW	FM-20H 10-20 KW
POWER OUTPUT:	250 watts	1 KW	1-3 KW	5 & 7.5 KW	10KW	10-20 KW
OVERALL CABINET SIZE:	24" W x 78" H x 36½" D.	29" W x 78" H x 32¾" D.	42" W x 78" H x 32¾" D.*	42" W x 78" H x 32¾" D.*	42" W x 78" H x 32¾" D.*	Transmitter cabinet 42" W x 78" H x 32¾" D HV power supply cabinet 30" W x 30" D x 49" H.
AC INPUT POWER:	230 or 115 volts, 60 Hz. (Specify) 950 watts (approximate)	208/240 V, 50/60 Hz, single phase, 3 wire. 115V, 50/60 Hz, single phase.	208/240 V, 3-phase, 50/60 Hz. Crystal oven requires 115 V, 50/60 Hz, single phase.	208/240 V, 3 phase. 115V single phase, 60 Hz 50 Hz available on special order	208/240 V, 3-phase, 60 Hz 115 V, single phase, 60 Hz, (50 Hz available on special order).	208/240 V, 3-phase 60 Hz, 115 V single phase, 60 Hz (50 Hz available on special order).
WEIGHT & CUBAGE:	Packed 1140 lbs. Net 510 lbs. 70 cu. ft.	Export 900 lbs. Domestic 840 lbs. 72 cu. ft.	Export 1550 lbs. Domestic 1325 lbs. 117 cu. ft.	FM-5H/7.5H 1430 lbs. 1450 lbs. 117 cu. ft.	FM-10H 1880 lbs. 1500 lbs. 120 cu. ft.	Export 3200 lbs. Domestic 2850 lbs. 130 cu. ft.

## GENERAL

**FREQUENCY RANGE:** 87.5 to 108 MHz., tuned to specified operating frequency.

**RF OUTPUT IMPEDANCE:** 50 ohms.

**FREQUENCY STABILITY:** .001% or better.

**TYPE OF MODULATION:** Direct Carrier Frequency Modulation.

**MODULATION CAPABILITY:** ±100kHz.

**POWER SUPPLY RECTIFIERS:** Silicon.

**ALTITUDE:** 7500 feet.

**AMBIENT TEMPERATURE RANGE:** -20°C to +45°C.

**MAXIMUM VSWR:** 1.7 to 1.

**FINISH:** Two-tone, beige gray.

**RF HARMONICS:** Suppression meets or exceeds all FCC requirements.

## MONAURAL OPERATION

**AUDIO INPUT IMPEDANCE:** 600 ohms balanced.

**AUDIO INPUT LEVEL:** +10 dBm ±2 dB for 100% modulation at 400 Hz.

**AUDIO FREQUENCY RESPONSE:** Standard 75 microsecond, FCC pre-emphasis curve ±1 dB, 30-15,000 Hz.

**DISTORTION:** 0.5% or less, 30-15,000 Hz.

**FM NOISE:** 65 dB below 100% modulation (ref. 400Hz.)

**AM NOISE:** 50 dB below reference carrier AM modulated 100%.

## STEREOPHONIC OPERATION

**PILOT OSCILLATOR:** Crystal controlled.

**PILOT STABILITY:** 19 kHz ±1 Hz.

**AUDIO INPUT IMPEDANCE:** (left and right) 600 ohms balanced.

**AUDIO INPUT LEVEL:** (left and right) +10 dBm ±1 dB for 100% modulation at 400 Hz.

**AUDIO FREQUENCY RESPONSE:** (left and right) Standard 75 microsecond, FCC pre-emphasis curve ±1 dB, 30-15,000 Hz.

**DISTORTION:** (left or right) 1% or less, 30-15,000 Hz.

**FM NOISE:** (left or right) 60 dB minimum below 100% modulation, reference 400 Hz.

**STEREO SEPARATION:** 35 dB min. 30-15,000 Hz.

**SUB-CARRIER SUPPRESSION:** 42 dB below 90% modulation.

**CROSSTALK:** (main to sub-channel or sub-to main channel) 42 dB below 90% modulation.

## SCA OPERATION

**FREQUENCY STABILITY:** ±500 Hz.

**FREQUENCY:** Between 25 and 75 kHz.

**OSCILLATOR TYPE:** Two colpitts heterodyned to produce desired output frequency.

**MODULATION:** Direct FM.

**MODULATION CAPABILITY:** ±7.5 kHz.

**AUDIO INPUT IMPEDANCE:** 600 ohms balanced.

**AUDIO INPUT LEVEL:** +8 dBm, ±3 dB for 100% modulation at 400 Hz.

**AUDIO FREQUENCY RESPONSE:** 41 kHz and 67 kHz, 50 microsecond, modified pre-emphasis. 67 kHz response modified for proper operation when used with stereo to conform to FCC specs.

**DISTORTION:** Less than 1.5% 30-15,000 Hz.

**FM NOISE:** (main channel not modulated) 55 dB min. (ref. 100% modulation 400 Hz.).

**CROSSTALK—sub-channel to main channel:** -60 dB or better.

**CROSSTALK—main channel to sub-channel:** 50 dB below 100% modulation (ref. 400 Hz.).

**AUTOMATIC MUTE LEVEL:** Variable from -10 to -40 dB below 100% modulation.

## ORDERING INFORMATION

FM-250H, 250 Watt FM Broadcast transmitter with TE-1 exciter and power tube ..... 994-6572-001

Spare tube 4CX250B ..... 374-0081-000

FM-1H, 1000 Watt FM Broadcast transmitter with TE-1 exciter and power tube ..... 990-6573-001

Spare tube 4CX1000A ..... 374-0015-000

FM-3H, 3000 Watt FM Broadcast transmitter with TE-1 exciter and power tubes ..... 994-6574-001

Spare tube kit ..... 990-0549-001

FM-5H, 5000 Watt and FM-7.5H Watt FM Broadcast transmitter with TE-1 Exciter and power tubes ..... 994-6576-001

Spare tube kit ..... 990-0549-001

FM-10H 10,000 Watt Broadcast Transmitter with TE-1 exciter and power tubes ..... 994-6577-001

Spare tube kit ..... 990-0551-001

FM-20H, 20,000 Watt Broadcast Transmitter with TE-1 exciter and power tubes ..... 994-6578-001

Spare tube kit ..... 990-0552-001

Add for Stereo operation Stereo Generator ..... M-6533

Add for SCA operation SCA Sub-carrier Generator ..... M-6507



# EDUCATIONAL BROADCAST SYSTEMS FOR 10 WATT AND 50 WATT FM

Gates has consistently offered the most complete line of low powered wide band FM broadcast transmitters in the industry. Especially designed for educational FM broadcasting and for studio transmitter link service. Included are the 10 watt BFE-10C and 50 watt BFE-50C versions for the standard FM broadcast band of 88 to 108 MHz and the 50 watt Model BFR-50C which operates in the 40 to 220 MHz FM band.

Metering consists of an audio level meter to indicate proper modulation level and individual meters for RF output, plate current and plate voltage. MODEL BFE-10C: The BFE-10C ten watt FM transmitter is FCC type approved for educational FM broadcasting. A compact self-contained unit designed specifically for desk mounting, this 10 watt model incorporates the M-6095 exciter. If stereo is desired, the M-6146 stereo generator is added. This complete 10 watt FM transmitter is used by many schools, colleges, universities and overseas broadcasters in conjunction with the Gates FM-11 single ring or the FM-22 double ring educational model FM antenna.

MODEL BFE-50C: For 88 to 108 MHz FM service, the BFE-50C is similar in design to the BFE-10C transmitter but



delivers 5 times as much power or 50 watts. A 50 watt power amplifier is added to the 10 watt section to provide the higher powered output. The amplifier consists of two M-6146 tubes and a 600 volt power supply. Identical in appearance to the standard BFE-10C transmitter, the cabinet easily houses the 50 watt amplifier and power supply.

MODEL BFR-50C: This compact 50 watt transmitter is probably the world's most widely used FM relay transmitter. Designed to relay broadcast programs

from studio to transmitter or between special program originating points, the Model BFR-50C operates on any one specific frequency (as ordered) within the 40 MHz to 220 MHz band. When operating below 80 MHz the maximum swing is  $\pm 40$  kHz or less. Above 80 MHz, the frequency swing is  $\pm 75$  kHz. A relay link up to nearly 100 miles is possible depending on the antenna directional pattern and height of both transmitter and receiving antenna, as well as terrain.

## SPECIFICATIONS

**POWER OUTPUT:** BFE-10C, 10 watts; BFE-50C, 50 watts; BFR-50C, 50 watts.

**FREQUENCY RANGE:** Models BFE-10C and BFE-50C, 88-108 MHz as ordered. Model BFR-50C, 40 to 220 MHz as ordered.

**STABILITY:** 0.001% or better.

**MODULATION:** Direct crystal controlled cascade modulation.

**RESPONSE:** Within 1 dB of standard 75 microsecond pre-emphasis curve or flat  $\pm 1$  dB, 50-15,000 Hz.

**NOTE:** Will supply with 75 microsecond pre-emphasis curve unless ordered for flat curve.

**FREQUENCY SWING:**  $\pm 100$  kHz; ( $\pm 75$  kHz = 100% modulation in FM broadcasting). Model BFR-50C. Models below 80 MHz have maximum swing of  $\pm 40$  kHz or less, as desired. Above 80 MHz may be  $\pm 75$  MHz or less, as desired.

**DISTORTION:** 1% or less 30-15,000 Hz.  $\frac{1}{2}\%$  100-10,000 Hz.

**RF HARMONICS:** Suppression meets or exceeds all FCC requirements.

**INPUT:** +10 dBm  $\pm 2$  dB at 600 ohms impedance.

**POWER:** 117 volts, 50/60 Hz. BFE-10C, 120 watts; BFE-50C, 230 watts; BFR-50C, 230 watts.

**RF OUTPUT:** 50 ohms (Type N connector).

**OSCILLATOR:** Direct Crystal Controlled.

**NOISE:** 65 dB below 100% modulation (FM).

**TEMPERATURE:**  $-20^{\circ}$  to  $+50^{\circ}$  C.

**TUBES:** BFE-10C: (6) 6AU6, (3) 6J6, (3) 6201, (3) 7025, (2) 0A2, and (1 each) 12AX7, 6A05, GZ34/5AR4, 6080, 6360.

BFE-50C: Same as above, with (2) 6146 and (1) 5R4GYA tube added.

BFR-50C: Same as BFE-10C with (1) 5894, (1) 6AQ5, and (1) 5R4GYA tube added.

**ALTITUDE:** 7500 feet.

**FINISH:** Medium gloss gray with trim in brushed aluminum and black.

**SIZE:** 26 $\frac{1}{2}$ " high, 28" wide, 14" deep.

**WEIGHT (packed):** BFE-10C (domestic) 100 lbs.; (export) 205 lbs. 15 cu. ft.

BFE-50C (domestic) 125 lbs.; (export) 230 lbs. 16 cu. ft.

BFR-50C (domestic) 125 lbs.; (export) 230 lbs. 16 cu. ft.

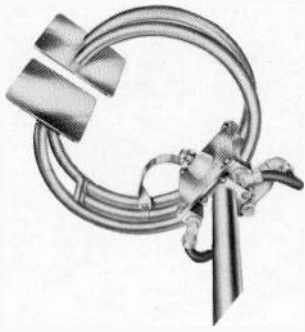
## ORDERING INFORMATION

BFE-10C, 10 watt FM Transmitter, 88-108 MHz, with tubes and crystal ..... M-5594B  
Spare 100% tube kit for BFE-10C ..... TK-391  
Manufacturer's recommended minimum tube kit for BFE-10C ..... TK-488  
BFE-50C, 50 Watt FM Transmitter, 88-108 MHz, with tubes and crystal ..... M-5595B  
Spare 100% tube kit for BFE-50C ..... TK-489  
Manufacturer's recommended minimum tube kit for BFE-50C ..... TK-490  
BFR-50C, 50 Watt Relay Transmitter for 40-220 MHz, with tubes, crystal and oven ..... M-5599B  
Spare 100% tube kit for BFR-50C ..... TK-310  
Manufacturer's recommended minimum tube kit for BFR-50C ..... TK-458  
FM-11 Single Ring Educational (88-108MHz) FM Antenna ..... M-5765  
FM-22 Double Ring Educational (88-108 MHz) FM Antenna ..... M-5766  
State carrier frequency when ordering all models and antennas and frequency swing desired when ordering Model BFR-50C transmitter.



# FM ANTENNAS

## CYCLOID HORIZONTAL ELEMENT



The famous Gates Cycloid is today the leading antenna specified by broadcasters and consultants alike. The exclusive binary tuning adjustment was the first major technological advance in FM

antenna design since the initial development of the ring type antenna. With this patented product exclusive, the Gates Cycloid antenna is adjusted for capacitive tuning while the same adjustment changes the inductance of the ring. It is not necessary to buy costly extras such as transformers or field tuning kits to achieve the optimum low standing wave ratio.

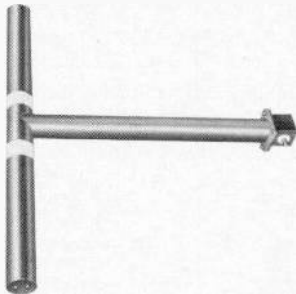
Gates offers a choice of heating elements to satisfy varying weather extremes. The two hundred watt heaters may be used for limited icing. To accommodate extreme weather variations, four hundred watt elements are available. Care has been taken in the design of Gates Cycloid FM antenna to provide for simple, yet stable and durable in-

stallation. Mounting brackets are tailored to each installation and are furnished for top or side mounting. The mechanical simplicity of the feed system allows for easy installation, for either type mounting. A single, interconnecting feed line consisting of standard EIA rigid coaxial line is used to feed the antenna. The rings are supported by this sturdy Teflon insulated line which is available in either 1 $\frac{1}{8}$ " or 3 $\frac{1}{8}$ " size. A standard EIA 50 ohm flange couples the transmission line directly to the antenna feed point.

### SPECIFICATIONS

**FREQUENCY RANGE:** Factory tuned to specified frequency in 88-108 mcs. band.  
**POLARIZATION:** Horizontal.  
**HORIZONTAL PATTERN:** Circular,  $\pm 1.0$  dB in free space.

## 300G VERTICAL ELEMENT



The Type 300-G Vertical FM Antenna is a dipole with a free space circular radiation pattern within plus or minus one dB. Each dipole is approximately forty-five inches high with a thirty-six inch horizontal choke and matching section between the coaxial feed point and

the vertical element. All sections are constructed of 3 $\frac{1}{8}$ " coax.

The matching section provides low VSWR and proper impedance when more than one bay is installed and separated by one wavelength section of feed line. The choke provides electrical balance without openings which could be subject to ice and moisture. Deicing the Type 300-G vertical element is unnecessary, due to the very broad band-width of the simple dipole and broad cross section and completely enclosed balancing choke section.

The connecting block at the end of the horizontal choke and matching section may be provided to accommodate 1 $\frac{1}{8}$ " or 3 $\frac{1}{8}$ " rigid line.

Antenna comes complete with custom mounting brackets. However, tower man-

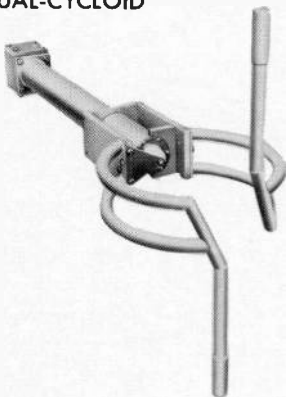
ufacturer, type, and whether corner or face mounting is desired must be specified when ordering.

Electrically, the Gates Type 300-G antenna covers a frequency range of 88-108 megacycles and has a feed point impedance of 50 ohms. The standing wave ratio is less than 1.1 to 1 at the plant and less than 1.5 to 1 as mounted on the customer's tower. Each element has a power rating of three kilowatts.

### SPECIFICATIONS

**FREQUENCY RANGE:** Factory tuned to specified frequency in 88-108 mc band.  
**POLARIZATION:** Vertical.  
**POWER GAIN:** Approximately equal to number of dipoles (see table).  
**HORIZONTAL LINEARITY:** Dipole circular  $\pm 1$  dB in free space.  
**INPUT IMPEDANCE:** 50 ohms on 1 $\frac{1}{8}$ " or 3 $\frac{1}{8}$ " coax.

## DUAL-CYCLOID



The new Dual-Cycloid FM antenna with circular polarization is an outstanding example of Gates continuing FM research and development program.

The Gates Dual-Cycloid has circular polarization with a radiation pattern intended to deliver an improved signal to FM receivers. A primary advantage of the Dual-Cycloid antenna is the reduction of antenna transmitting bays required for circular polarization. Previously dual elements, horizontal and vertical, and in most cases a power di-

vider had to be installed. Now, the new Gates Dual-Cycloid provides a radiating system with a power gain sufficient to reduce to one half the number of elements required from previous dual polarized antenna systems.

### SPECIFICATIONS

**FREQUENCY RANGE:** Factory tuned to one frequency in the 88-108 MHz band.  
**POLARIZATION:** Circular, clockwise.  
**POWER GAIN:** Horizontal Polarization: See Table.  
Vertical Polarization: See Table.

# FM ANTENNAS

**INPUT IMPEDANCE:** 50 ohms, on 1½" or 3/8" coax.

**FEED POINT:** 1 to 8 bays inclusive—end fed. 9 to 16 bays inclusive—center feed.

**POWER RATING:** 3 KW per section on 1½" line. **VSWR** (with field tuning): Top mounting—1.1 to 1. Side mounting—1.1 to 1. (factory tuned) Top mounting—1.2-1. Side mounting—1.5 to 1.

**WINDLOAD:** 20 lbs. per square foot.

**DIMENSIONS (1 bay):** Height (over-all) 6 inches. Ring diameter—approximately 18 inches (depends on frequency).

**WEIGHT:** Antenna—25 lbs. per ring; 1½" line—12½ lbs. per 10 ft. section, 3/8" line—27½ lbs. per 10 ft. section.

**EQUIPMENT FURNISHED:** Antenna mounting hardware—(Specify tower make, height and type number when ordering.) Correct number of antenna elements as ordered. Interconnecting rigid coax (1½" or 3/8") as ordered. Standard EIA (1½" or 3/8") flanges as ordered.

**ACCESSORY EQUIPMENT—optional:** Deicers: 200 watts—FMH-200. Deicers: 400 watts—FMH-400. Thermostat for control of deicers.

## CYCLOID FM ANTENNA . . . SIDE MOUNTED

TYPE <sup>1</sup>	NO. OF BAYS	POWER GAIN <sup>2</sup>	DB GAIN <sup>3</sup>	APPROX. LENGTH IN FT. 98 MC <sup>4</sup>	WEIGHT <sup>5</sup>		WINDLOAD	
					1½"	3/8"	1½"	3/8"
FMA-1	1	.87	-.61	0	25	25	40	79
FMA-2	2	1.88	2.74	10	62	77	122	231
FMA-3	3	2.94	4.69	20	100	130	206	383
FMA-4	4	4.03	6.05	30	137	182	285	536
FMA-5	5	5.13	7.10	40	175	235	367	688
FMA-6	6	6.25	7.96	50	212	287	448	840
FMA-7	7	7.36	8.67	60	250	340	530	993
FMA-8	8	8.49	9.29	70	287	392	611	1145
FMA-9	9	9.62	9.83	80	325	445	693	1297
FMA-10	10	10.75	10.31	90	362	495	775	1450
FMA-11	11	11.89	10.75	100	400	548	806	1603
FMA-12	12	13.02	11.15	110	437	600	941	1755

1. Applies to both A and B models unless otherwise indicated (A—1½" interconnecting line; B—3/8" interconnecting line).
2. To obtain field gain, take the square root of the power gain.
3. To obtain the effective free space field intensity at one mile in mv/m for one kilowatt antenna input power, multiply field gain by 138.
4. Feed point 1 to 8 bays end fed; 9 to 16 bays centerfed.
5. Includes interconnecting feedline weight.

**FEED POINT:** For 9 bays or less, the antenna is end fed. For 10 bays or more, the antenna is center fed where number of bays is even, and for odd number of bays feed point is ½ bay length below center.

**POWER RATING:** 3 kw per dipole.

**VSWR:** Tuned to 1.1:1 or less; less than 1.5:1 when mounted on side of tower.

**NOTE:** Where transmitter power is 7500 watts or less, 1½" coax line is suggested. For transmitter powers above 7500 watts, 3/8" coax line recommended.

**WINDLOAD:** 60 psf. on flat surfaces, 40 psf on cylindrical surfaces (123 mph actual wind velocity).

**DIMENSIONS:** Length of dipole—3.75 ft. From center of transmission line to center of dipole—2.83 ft.

**WEIGHT:** 1½" dipole—26.5 lbs. 3/8" dipole—34.0 lbs. Typical mounting bracket—22.0 lbs. per bay.

**EQUIPMENT FURNISHED:** Antenna dipoles. Custom mounting brackets. Interconnecting rigid coax 1½" or 3/8" as specified. Standard EIA flange. 1½" or 3/8".

**DEICERS:** Not required.

## GATES TYPE 300G VERTICAL ANTENNA . . . SIDE MOUNTED

TYPE	NO. OF DIPOLES	POWER <sup>2</sup> GAIN	DB <sup>3</sup> GAIN	LENGTH <sup>4</sup> @ 98.0 mcs. (ft.)	WEIGHT		WINDLOAD <sup>5</sup>	
					1½"	3/8"	1½"	3/8"
300G-1	1	.95	-.22	0 0	49	57	107	107
300G-2	2	1.97	2.94	10 +6'	119	161	299	378
300G-3	3	3.12	4.94	20 +6'	180	246	458	586
300G-4	4	4.20	6.23	30 +6'	242	331	617	794
300G-5	5	5.31	7.25	40 +6'	303	416	776	1002
300G-6	6	6.39	8.06	50 +6'	365	501	953	1210
300G-7	7	7.50	8.75	60 +6'	427	586	1095	1417
300G-8	8	8.57	9.33	70 +6'	488	671	1254	1625
300G-9	9	9.76	9.89	80 +6'	550	756	1413	1833
300G-10 <sup>1</sup>	10	10.96	10.40	90	636	897	1574	2046
300G-11 <sup>1</sup>	11	11.87	10.74	100	697	982	1733	2254
300G-12 <sup>1</sup>	12	13.20	11.20	110	759	1067	1892	2462

1. Antennas of 10 bays and over are center fed with even numbers of bays or at a point ½ bay below center with odd number of bays.
2. To obtain the field gain, take the square root of the power gain.
3. To obtain the effective free space field intensity at one mile mv/m for one kilowatt antenna input power, multiply field gain by 138.
4. Length shown is for antenna (top to bottom bay), add 6' to each end fed antenna when determining coax lengths. On center feed antenna, input is 6' below center point (see diagram).
5. 60PSF wind pressure on flat surfaces, 40 psf on cylindrical surfaces (123 MPH actual wind velocity).

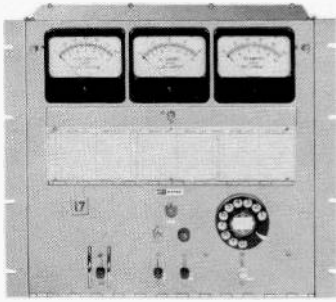
## GATES DUAL-CYCLOID CIRCULARLY POLARIZED FM ANTENNA

AZIMUTHAL PATTERN:	GATES TYPE	POWER GAIN <sup>2</sup>		DB GAIN <sup>3</sup>		APPROX. LENGTH @ 98 MC (ft.)	WEIGHT <sup>6</sup>	POWER RATING
		HOR.	VERT.	HOR.	VERT.			
Horizontal Polarization: Circularity ±2.0 dB in free space. Vertical Polarization: Circularity ±2.0 dB in free space.	FMC-1	0.46	0.46	-3.37	-3.37	0 <sup>4</sup>	41	10
	FMC-2	1.0	1.0	0	0	10 <sup>4</sup>	110	20
<b>VSWR AT INPUT:</b> (without field trimming) Top mounting: 1.1:1 or better on utility pole tuned and tested at factory on pole. Side mounting: 1.5:1 or better.	FMC-3	1.5	1.5	1.76	1.76	20 <sup>4</sup>	179	30
	FMC-4	2.1	2.1	3.22	3.22	30 <sup>4</sup>	248	40
<b>VSWR AT INPUT:</b> (with field trimming) Top or side mounting 1.1:1 or better can be achieved over ±100 kHz at slight additional charge.	FMC-5	3.2	3.2	5.25	5.25	50 <sup>4</sup>	386	40
	FMC-6	4.3	4.3	6.34	6.34	70 <sup>4</sup>	524	40
<b>INPUT CONNECTION:</b> 3/8", 50 ohm EIA flange. <b>POWER INPUT RATING:</b> Approximately 10 kw per section (see table).	<sup>1</sup> FMC-10	5.5	5.5	7.40	7.40	90 <sup>5</sup>	662	40
	<sup>1</sup> FMC-12	6.6	6.6	8.20	8.20	110 <sup>5</sup>	800	40
<b>WINDLOAD:</b> 50 psf for flat surfaces; 33 psf for cylindrical surfaces. <b>DIMENSIONS:</b> Height—30". Length—45½". <b>WEIGHT:</b> 41 lbs. plus weight of bracket and transmission line.	<sup>1</sup> FMC-14	7.8	7.8	8.92	8.92	130 <sup>5</sup>	937	40
	<sup>1</sup> FMC-16	8.9	8.9	9.49	9.49	150 <sup>5</sup>	1074	40

1. Antennas of 10 bays and over are center fed with even numbers of bays or at a point ½ bay below center with odd number of bays.
2. To obtain the field gain, take the square root of the power gain.
3. To obtain the effective free space field intensity at one mile in mv/m for one kilowatt antenna input power, multiply field gain by 139.
4. When determining coax line lengths add 6' to antenna lengths to allow for matching stub.
5. When determining coax line lengths termination will be 6' below center due to matching stub.
6. A typical mounting bracket weighs approximately 22 lbs.



# REMOTE CONTROL SYSTEMS



## RDC-200A REMOTE CONTROL SYSTEM

Designed for the most complex unattended operation, the Gates RDC-200A system will handle as many as 39 metering functions and 78 switching operations. Remote functions are dialed on the studio unit. A handy function reference chart is mounted on the front of both the transmitter and studio units. All powers of transmitters from 250 watts to 50,000 watts and the more complicated multi-tower directional arrays may be easily handled with facilities left to accommodate the FM or stand by transmitter. Only two metallic telephone pairs are required for system control.

There are no tubes or transistors as the system operates on direct current. The greatest current used is only 6 MA, which permits very positive results over lines up to 60 miles in length or 5000 ohms loop resistance, whichever is less.

Power supplies for both units are self-contained. Each occupy 19" x 15 3/4" of rack space. No simplex, phantom or ground return circuits are used. All switching functions including pulse and reset may be controlled from the transmitter unit for local operation during maintenance and servicing periods.

Complete remote control system (see note 1) ..... RDC-200A  
 Extra tower light indicators (see note 2) ..... M-5145  
 A.C. Rectifier to indicate A.C. voltages ..... M-4825  
**NOTES:** (1) Standard equipment includes: plate voltage metering unit, plate current metering units, plate start-stop relays for one transmitter and tower light indicator. (2) For more than 1 tower, order M-5145 units for each additional tower.

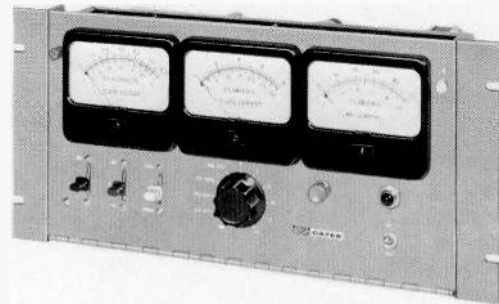
## FREQUENCY MONITOR EXTENSION METERS

Used for extending Gates M-2890 monitors. Has 4" frequency indicating meter reading 30-0-30 cycles. Includes resistor pad for sampling voltage. Tubes: 6AW6, 6AQ6, 6AL5, 6X4 and OA2. For 115 volts. 50/60 cycles. Size: 7" x 19" x 7" deep.

Frequency monitor extension unit ..... M-5270  
 FOR M-4990 FREQUENCY MONITOR  
 Meter is exact duplicate of the M-4990 monitor for extending frequency indication to studios.  
 Extension Meter ..... M-5631

## MONITOR EXTENSION METERS

Several types available as listed below for extending both frequency and modulation monitors. Mounted on standard 19" rack panel 5 1/4" high.  
 Remote meter for extending Gates M-5693 modulation monitor ... M-5837  
 For extending Gates M-2639 modulation monitors ..... M-5210  
 For GR1931A or RCA WM43A modulation monitors ..... M-5206  
 For GR1181A or RCA WF48A frequency monitors ..... M-5208  
 For RCA 311A monitor ..... M-5209



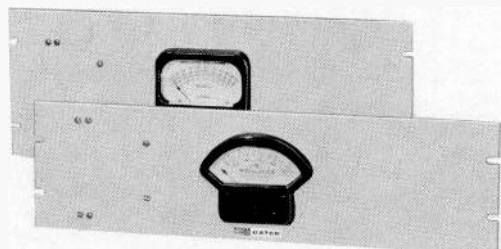
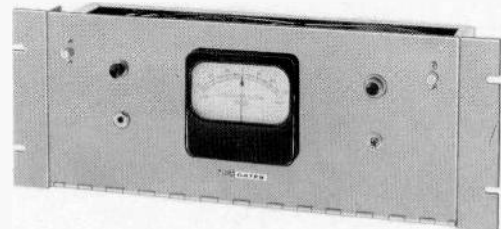
## RDC-10AC REMOTE CONTROL UNIT

Used in hundreds of AM and FM stations, this Gates remote control equipment is a direct current system without tubes or transistors and has only one major moving part which is the rugged gold contact stepper. Facilities are provided for as many as ten metering positions and 23 control functions. Standard equipment includes: (a) the studio control unit, and (b) the transmitter control unit.

Control capacity of the RDC-10AC equipment ranges from the one transmitter, one tower installation to a multi-tower directional system, or combination AM-FM separate transmitters.

- (a) RDC-10AC system, includes studio and transmitter units only .. M-5862A
- (b) Antenna diode to remote read antenna meter ..... M-6112
- (c) Motor driven rheostat for power control of 250 watt transmitter ..... M-4703A
- (d) Motor driven rheostat for power control of 500 watt transmitter ..... M-4703B
- (e) Motor driven rheostat for power control of 1000 watt transmitter ..... M-4703C
- (f) Motor assembly to drive variable coil or capacitor for load power adjustment such as for 5 KW, or 10 KW transmitters (relay below) necessary ..... M-5066
- (g) Relay assembly to operate M-5066 motor ..... M-4806
- (h) Plate current unit to extend plate current readings ..... M-4720A
- (i) Plate voltage unit to extend plate voltage readings ..... M-4719A
- (j) Tower light indicator ..... M-5145

**NOTE:** Many other accessories for remote control are in stock. Your inquiry is invited.  
**IMPORTANT:** When ordering, give as much transmitter detail as possible such as: (a) Make and type number, (b) plate rheostat in ohms and watts. If not a Gates transmitter, state method of power output control such as rheostat, variable loading, etc. Gates will gladly assist. If you are in doubt, please contact us.





# DUALUX II—Dual Channel Transistor Console with Stereo



For the very first time in a standard production console, the Gates Dualux II, provides extensive mixing and switching facilities for the AM-FM-Stereo-SCA broadcaster. This newest Gates Solid Statesman product follows in the fine tradition of the famous Gates Dualux. The versatile Dualux II provides monophonic and stereophonic mixing facilities separately or together. Control circuitry is inbuilt to route programming to AM and FM transmitter lines, while controlling their mode of operation. No complicated external switching or jackfields are required . . . the Dualux II even provides status lamps and control for the stereo generator and SCA channel of the FM transmitter.

This unique new console is designed for the broadcaster who wishes to control AM and FM, FM Stereo and SCA from

one control point during part or all of his broadcast day.

**INPUT FACILITIES**—The Dualux II has provisions for twenty-two audio inputs: thirteen mono sources, six stereo sources, plus inputs for automatic programming equipment and an SCA audio signal. Four unwired utility keys are also provided.

The mixing system is an eight channel, low impedance type, using ladder attenuators in a minimum loss arrangement. Cueing positions are provided on all medium-level channels.

**PROGRAM OUTPUT SELECTOR**—This exclusive feature establishes Dualux II as a very different console, indeed. Functions are logically presented and color-coded to channel keys and VU meter illumination for simplicity. Briefly, control pro-

visions are:

Two separate transmitter inputs are controlled, marked "AM Line" and "FM Line."

The AM transmitter may be programmed independently through any mixing channel, when corresponding keys are operated to the left. Illuminated channel key, AM VU meter, and tab key #1 of the selector assembly are color-coded Green.

Similarly, the FM transmitter may be programmed from the FM bus when Red tab key #4 is selected. In this mode, FM may be stereo or mono, depending on the position of tab key #7. During non-stereo periods, an SCA channel may be turned on and programmed from an external source by tab key #8. All keys are cleverly interlocked against any unacceptable combinations.

## SPECIFICATIONS

**MIXING CHANNELS:** Total 8. Two microphone—mono. One microphone—stereo. Two turntable/tape—stereo. Two turntable/tape—mono. One remote/network—mono.

**INPUT CIRCUITS:** Total 22. Four microphones—mono. Two microphones—stereo pair. Four turntable/tape—stereo pair, four turntable/tape—mono. Four remote lines, one network, one SCA source—mono, two automation sources—stereo pair.

**AMPLIFIERS AND POWER SUPPLIES PROVIDED:** Four preamplifiers, six output modules—program/monitor/cue (all interchangeable as supplied). Two muting modules, four power supply modules, and M-6556B transformer panel.

**OPERATING MODE:** Tri-channel—mono/stereo simultaneously.

**OUTPUT CIRCUITS:** Three program outputs @ +8 VU, three record outputs @ -16 VU, (bridged program line), two monitor speakers un-muted (left and right for lobby), six monitor speakers muted (left and right for studios A & B & Control Room), two studio intercom outputs (Studio A, Studio B).

**AUXILIARY INPUT/OUTPUT CIRCUITS SWITCHED THROUGH CONSOLE:** Inputs: AM-Automation, FM-Left automation (mono), FM-right automation (stereo), programming for SCA-41 kHz. Output: Programming for SCA-41 kHz.

**IMPEDANCES:** Microphones: 30/50 or 150/250 ohms balanced. Turntable/Tape: 150/250 ohms unbalanced. Network/Remote: 500/600 ohms balanced. Audition Output: 600 ohms balanced. Monitor Output: 8 ohms nominal unbalanced. Program Output: 600/150 ohms balanced.

**GAIN:** Microphone to Line: 102 dB,  $\pm 2$  dB. Medium Level to Line: 60 dB,  $\pm 2$  dB.

**RESPONSE:** Program and Monitor:  $\pm 1.0$  dB, 20 Hz to 20 kHz.

**DISTORTION:** Program Circuits: 0.5% maximum, 20 Hz to 20 kHz @ +18 dBm. Monitor Circuits: 1.0% maximum, 20 Hz to 20 kHz @ +40 dBm (10 watts).

**NOISE:** Program Circuits: 74 dB below +18 dBm with -50 dBm input (-124 dBm equivalent input noise measured 20 Hz to 20 kHz). Monitor Circuits: 74 dB below +40 dBm with -50 dBm input (-124 dBm equivalent input noise measured 20 Hz to 20 kHz), Medium Level inputs: (program) 80 dB below +18 dBm.

**FINISH:** Satin anodized aluminum panels with lettering in black. Cabinet color two-tone beige-gray.

**POWER:** 117 volts, 50/60 Hz, 1-phase.

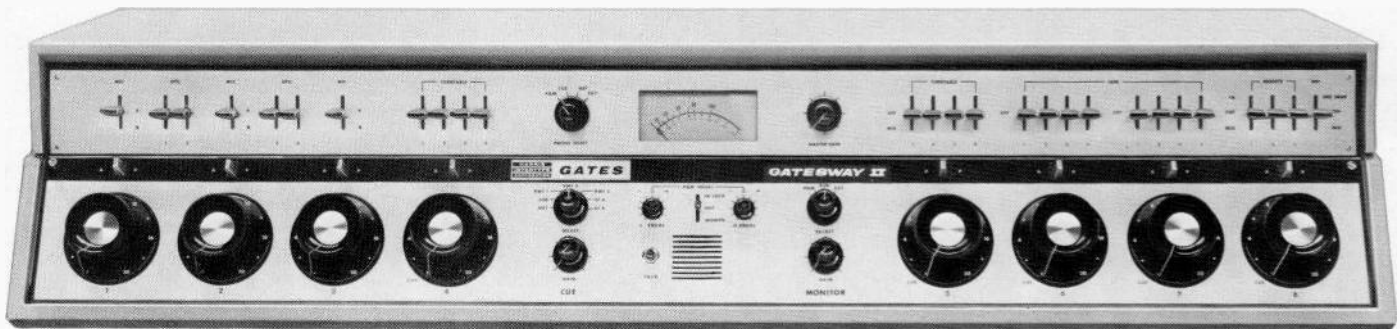
**SHIPPING DATA:** Packed weight: Domestic 140 lbs. Export 220 lbs. Cubage 16 cu. ft.

**MECHANICAL SIZE:** 51 $\frac{3}{4}$ " wide, 17" deep, 11 $\frac{1}{2}$ " high.

## ORDERING INFORMATION

Dualux II, eight channel mono/stereo console for tri-channel operation. Complete with four M-6549A preamplifiers, six M-6550A program/monitor/cue output modules (interchangeable), two M-6553 and M-6553A solid state muting modules, and M-6551 and M-6552 power supply modules, and M-6556B transformer panel . . . . . M-6542

# GATESWAY II—Eight Channel Transistor Monophonic Console



The all-new Gatesway II combines Solid Statesman technology with creative engineering skills to achieve an audio console of unusual flexibility—with new functional styling—that blends comprehensive facilities into operating control simplicity.

**FEATURES:** Eighteen inputs into eight mixing channels; inbuilt cue/intercom system; provision for remote announcer operation of studio microphone channel, and a novel variable program equalizer which may be instantly switched into the circuit for special effects or line correction.

The newest "Second Generation" Solid

Statesman consoles are beautifully styled with anodized front panels, exclusive Gates "VA" control knobs, and cabinets richly finished in new beige-gray tones to complement any control room decor. Illuminated program keys complete the Leader Look of the all new Gatesway II. **PROGRAM EQUALIZER**—An exclusive feature on the Solid Statesman Gatesway II is an inbuilt equalizer for correcting response deficiencies of tapes, remotes, etc. and also for special effects. Both low and high frequency correction may be made with separate controls which tailor the over-all console response  $\pm 10$  dB, at 100 Hz, and 10,000 Hz. A

three position lever key instantly switches in equalization either continuously or momentarily. In the "out" position the Gatesway II has a superb flat response from 20 to 20,000 Hz.

**AMPLIFIERS**—Fully modular, and plug-in type, the new silicon-transistor amplifiers and power supplies are responsible for the outstanding audio performance of the Gatesway II. All amplifiers and electronic components are self-contained, except for a small external panel which contains power transformers to isolate AC fields from the console wiring.

## SPECIFICATIONS

**OPERATING MODE:** Single channel mono with audition positions.

**MIXING CHANNELS:** Total—8. Three microphone, two turntables, two tapes and one remote/network.

**INPUT CIRCUITS:** Total—18. Six microphone, four turntables, four tapes, three remote lines, one network.

**AMPLIFIERS AND POWER SUPPLIES PROVIDED:** Three preamplifiers, three output modules—program, monitor and cue, (interchangeable as supplied). Two muting modules (solid state speaker muting), three power supply modules.

**OUTPUT CIRCUITS:** One program output @ +8 VU, one audition output @ -15 VU, one monitor speaker output unmuted for lobby, three monitor speakers muted, two studio intercom outputs, (Studio A, Studio B), one headphone output.

**IMPEDANCES:** Microphones: 30/50 or 150/250 ohms balanced. Turntable/Tape: 150/250 ohms unbalanced. Network/Remote: 500/600 ohms balanced. Audition Output: 600 ohms unbalanced. Monitor Output: 8 ohms nominal unbalanced. Program Output: 600/150 ohms balanced.

**GAIN:** Microphone to Line: 102 dB +2 dB. Medium Level to Line: 60 dB,  $\pm 2$  dB.

**RESPONSE:** Program and Monitor:  $\pm 1.0$  dB, 20 Hz to 20 kHz.

**DISTORTION:** Program Circuits: 0.5% maximum, 20 Hz to 20 kHz @ +18 dBm.

Monitor Circuits: 1.0% maximum, 20 Hz to 20 kHz @ +40 dBm (10 watts).

**NOISE:** Program Circuits: 74 dB below +18 dBm with -50 dBm input (-124 dBm equivalent input noise, measured 20 Hz to 20 kHz).

Monitor Circuits: 74 dB below +40 dBm with -50 dBm input (-124 dBm equivalent input noise, measured 20 Hz to 20 kHz).

Medium Level Inputs: (Program) -80 dB below +18 dBm.

**FINISH:** Sotin anodized aluminum panels with lettering in black. Cabinet color—two-tone beige gray.

**POWER:** 117 volts, 50/60 Hz, 1-phase.

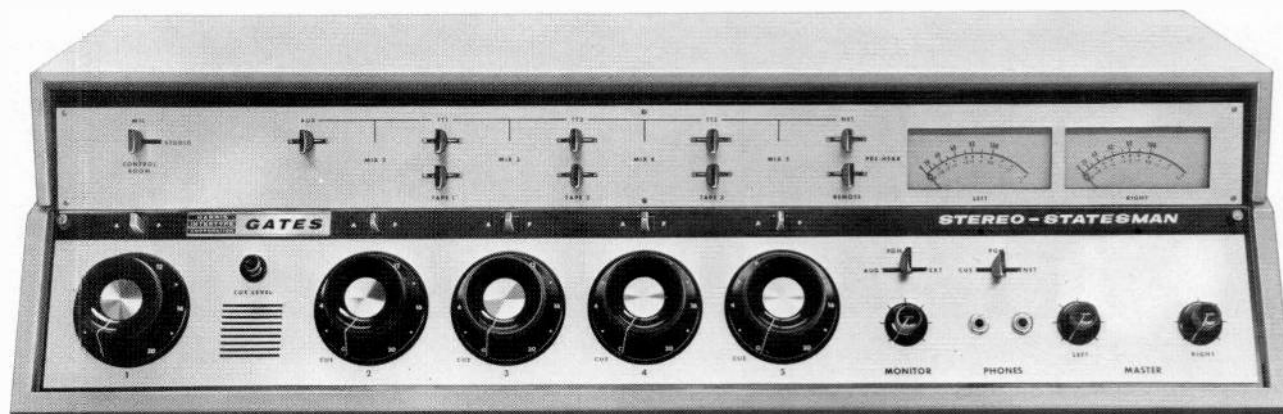
**MECHANICAL SIZE:** 48 $\frac{1}{4}$ " wide, 17" deep, 8 $\frac{3}{4}$ " high.

**SHIPPING DATA:** Packed Weight: Domestic 210 lbs. Export 250 lbs. Cubage 17.5.

## ORDERING INFORMATION

Gatesway II, eight channel console, complete with three M6549A preamplifiers, three M6550A program/monitor/cue output modules (interchangeable), two M6553A solid state muting module, one M6551, two M6552 power supply modules, and M6556A transformer panel ..... M-6541A

# STEREO STATESMAN—Five Channel Stereophonic Transistor Console



**FIVE FULL STEREO MIXING CHANNELS:** Gates Stereo Statesman has been engineered to offer an economical and versatile professional stereophonic console for broadcasting. It incorporates a multitude of new features in a standard console, and is equally suited for the broadcaster beginning stereo programming, or metropolitan stations as a production or secondary stereophonic control board.

**SPECIAL FEATURES INCLUDE:** Full logic audio switching for simple input selection. New illuminated program keys; and an exciting new packaging concept for console and components.

**INPUT FACILITIES—**The Gates Stereo Statesman has provisions for eleven inputs, switchable to five mixing channels in a most versatile manner. Input circuits may include: two stereo pairs of microphones; three stereo turntables; three stereo tape recorders, one remote, one network, and one stereo auxiliary source. The mixing system uses low-impedance ladder attenuators in minimum loss mixing circuits. Bus wiring is on printed boards, which helps achieve excellent noise and crosstalk specifications. The key above each attenuator selects the mixer to stereo audition or program amplifiers with center "off." This key

is illuminated and indicates red in the "Program" position, green in "Audition" position, and white in "Off" position.

**AMPLIFIERS—**Silicon-transistor Solid Statesman amplifiers used throughout establish a new achievement in state-of-the-art amplifier design. Preamplifiers will provide a full +25 dBm output, and will handle input levels of -17 dBm. Program amplifiers are capable of +32 dBm output and monitor amplifiers deliver +40 dBm. Packaging of modular amplifiers is unique, using new extrusion techniques.

## SPECIFICATIONS

**OPERATING MODE:** Stereophonic.

**MIXING CHANNELS:** Total—5. One microphone. Four tape, turntable, remote or network.

**INPUT CIRCUITS:** Total—11. Two pairs of stereo microphones, three turntables, three tape, one remote, one network, one auxiliary.

**AMPLIFIERS AND POWER SUPPLIES PROVIDED:** Two preamplifiers, five program/monitor/cue amplifiers (interchangeable as supplied), three power supply modules.

**OUTPUT CIRCUITS:** Two program outputs at +8 VU, two audition outputs at -12 VU, two stereo pair muted speakers (control room, studio), one stereo pair unmuted speakers (lobby), headphone.

**IMPEDANCES:** Microphones: 30/50 or 150/250 ohms balanced. Turntable/tape: 150/250 ohms. Network/remote: 150/250 ohms, (478-0009 line matching transformer optional). Audition output: 600 ohms. Monitor output: 8 ohms nominal. Program Output: 600/150 ohms balanced.

**GAIN:** Microphone to Line: 102 dB,  $\pm 2$  dB. Medium level to line: 60 dB,  $\pm 2$  dB.

**RESPONSE:** Program and monitor:  $\pm 1.0$  dB, 20 Hz to 20 kHz @ +18 dBm. Monitor Circuits: 1.0% maximum, 20 Hz to 20 kHz @ +40 dBm.

**MICROPHONE CHANNEL NOISE:** Program Circuits: 74 dB below +18 dBm with -70 dBm input (-124 dBm equivalent input noise measured 20 Hz to 20 kHz). Monitor Circuits: 74 dB below +40 dBm with -50 dBm input. (-124 dBm equivalent input noise measured 20 Hz to 20 kHz). Medium Level Inputs: (Program) 80 dB below +18 dBm.

**FINISH:** Satin anodized aluminum panels with lettering in black. Cabinet color—two-tone beige gray.

**POWER:** 117 volts, 50/60 Hz, 1 phase.

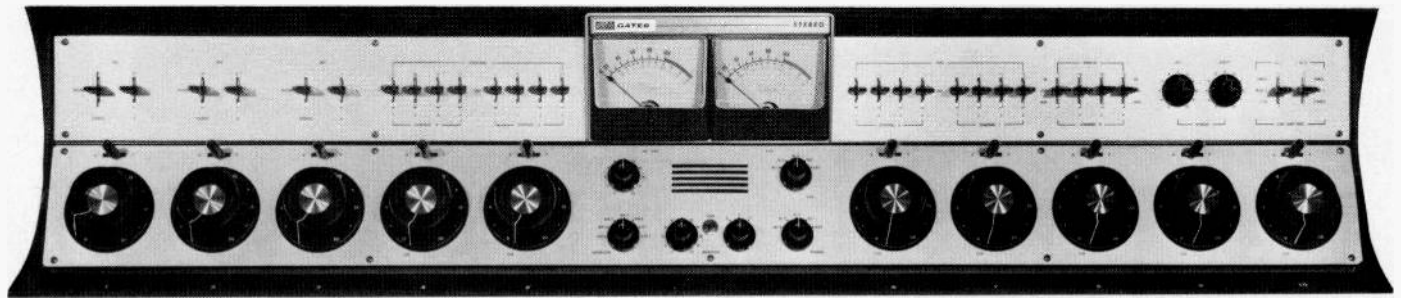
**MECHANICAL SIZE:** 36 $\frac{3}{4}$ " wide, 17" deep, 8 $\frac{3}{4}$ " high.

**SHIPPING DATA:** Packed Weight: Domestic: 170 lbs. Export: 210 lbs. Cubage: 13.

## ORDERING INFORMATION

Stereo Statesman, five channel stereophonic audio console, complete with two M6549A preamplifiers, five M6550A program/monitor/cue modules (interchangeable), one M6551 and two M6552 power supply modules, and M6556 transformer panel. .... M-6540A

# THE EXECUTIVE—Ten Channel, Stereophonic Transistor Audio Control Console



## TEN CHANNEL STEREO

Containing ten full stereo mixers, the dual channel Executive is one of the most complete transistorized speech input consoles for stereo or monaural programming. Complete transistorization, beautiful styling, and amazing versatility qualify this premium quality Gates product for the Solid Statesman family name that is earned only by meeting superior engineering and manufacturing requirements for Gates-made transistorized equipment.

**MIXING SYSTEM:** The mixing system contains 10 channels with all dual (stereo) controls. Channels 1, 2, and 3 are for microphones. Channels 4 and 5 will accept four stereo turntables in any combination, while channels 6 and 7 accommodate four stereo tape inputs, channel 8 handles four remote lines, and

channels 9 and 10 are network and auxiliary channels, respectively. The separate fader for incoming network programming is especially convenient for taping delayed-broadcast material without tying up other high-level inputs to the console. Faders 4 through 10 are all cueing attenuators which feed the inbuilt cue/intercom system.

**MICROPHONE INPUTS:** Six preamplifiers in three stereo pairs are terminated to dual-position input selector keys, permitting 12 microphones (6 stereo pairs) to be selected without patching. (Space is provided for two added optional M-6034 preamplifiers, if desired.)

**TURNTABLE-TAPE INPUTS:** Four turntables may be switched to mixers 4 and 5, and four tape sources may be switched into channels 6 and 7 in any sequence. All faders are stereo, and cue

positions are provided on each of these attenuators.

**REMOTE/NETWORK INPUTS:** Four remote lines may be switched into channel 8 through a line isolation transformer. Channel 9 is for network input. Both channels are stereo control equipped but have splitting pads attached (removable) for present monophonic sources. Cue positions are provided on these attenuators.

**AUXILIARY CHANNEL:** This 10th channel has dual line isolation transformers and is equipped to accommodate extra stereo or monaural functions either in the studio or from an external source. A cue position is also provided on this fader. Write for a functional block diagram showing the many facilities found only in the Gates Executive stereophonic console.

## SPECIFICATIONS

**MIXING CHANNELS:** Total—10. All stereo. (3) microphone, (2) turntables, (2) tape or projectors. (1) remote, (1) network, (1) all purpose.

**AMPLIFIERS PROVIDED:** 2 program, 2 booster, 2 monitor, 6 preamplifiers (3 pairs) 1 cue amplifier. Space provided for two optional plug-in preamplifiers and one optional plug-in amplifier.

**OPERATING MODE:** Stereo and monaural.

**INPUT CIRCUITS:** 12 for microphones, 4 turntables, 4 tape/projectors, 4 remote lines, 1 network line, 1 all purpose utility. All inputs stereo with mixers 8 and 9 with quickly removable monaural splitting pads for stereo operation.

**OUTPUT LINES:** 2 program, 6 muted speakers (3 pairs), 2 non-muted speakers, 2 intercom, 2 headphones, 2 record. NOTE: Add one more program output if optional program amplifier is purchased.

**IMPEDANCES:** Microphones balanced 30/50 or 150/250 ohms, turntable/tape unbalanced 150/250 ohms, balanced remote lines 500/600 ohms, network 500/600 ohms. Utility balanced 500/600 ohms. Programming output 500/600 ohms. Recording output 500/600 ohms. Intercom output 48 ohms. Monitor speaker output 8 ohms.

**GAIN:** Turntable, tape, network (high level) input to program line output 55 dB,  $\pm 2$  dB. To monitor amplifier output 55 dB minimum. From microphone input to program line output 102 dB,  $\pm 2$  dB. To monitor amplifier output 102 dB minimum.

**RESPONSE:** All segments of program circuit  $\pm 1$  dB, 30-15,000 Hz. Monitoring circuit  $\pm 1\frac{1}{2}$  dB, 30-15,000 Hz. NOTE: Typical response all circuits: 20-20,000 Hz,  $\pm 2$  dB.

**DISTORTION:** Any segment of program circuit 0.5% or less between 30-15,000 Hz at +8 dBm output level or 0.5% at +18 dBm between 50-15,000 Hz. Monitor amplifier 1% at +39 dBm (8 watts) between 50-15,000 Hz.

**NOISE:** Program circuits, 70 dB or better below +18 dBm output, with -50 dB input (equivalent noise input is -120 dBm). Monitor circuits, 70 dB below +39 dBm output. Crosstalk: All circuits below noise level with normal gain settings for proper programming.

**STEREO ISOLATION:** Below noise level all channels.

**POWER:** 115 volts, 50/60 Hz, 1 phase. Power consumption 50 watts.

**CABINET DATA:** Size, 53 $\frac{1}{2}$ " wide, 11 $\frac{1}{2}$ " high, 17 $\frac{1}{2}$ " deep. Finish: Cabinet, beige-grey. Panel, natural anodized aluminum lettered in black. Knobs with decal color inserts.

**SHIPPING DATA:** Packed weight: Domestic 220 lbs. Export 270 lbs. Cubage 27.

**OPTIONAL ACCESSORIES:** Space is provided to add, when desired, 2 Model M-6034 preamplifiers, 1 Model M-5700B program amplifier.

## ORDERING INFORMATION

Executive Audio Console complete, including four speaker matching transformers .....	M-6158A
Optional preamplifier .....	M-6034
Optional program amplifier .....	M-5700B
Optional 3rd VU meter .....	M-6208
Intercom sub-station .....	M-6424

# THE DIPLOMAT— Ten Channel Dual Programming Transistor Console



## TEN SOLID STATE CHANNELS

The Diplomat is the senior partner in the fully transistorized Gates line of Solid Statesman monophonic consoles. It is completely dual channel, has 10 mixing channels, cue-intercom, 28 upper level tab keys for nearly every conceivable input and output circuit function, and features the VA mixing knob and shadow-mold styling designed exclusively for Gates by one of the country's leading industrial stylists. The Diplomat may be described as an unusually wide facility audio console of network or large station caliber. The Diplomat is a Solid Statesman premium product.

**FEATURES:** Headphone jacks are pro-

vided on a separate mounting plate for attachment to a desk, eliminating cords over the desk top. The power supply is fully regulated and self-contained except for a small transformer, which is external to assure extremely low noise. The Diplomat front panel hinges down and cabinet lid hinges up to expose all components for easy maintenance. The built-in cue/intercom system provides flawless network monitoring, remote override, remote talk-back, studio intercom, turntable cueing, tape cueing and general previewing. Control room and studio speakers are muted by channel keys and muting relays when there is a live microphone in any of these locations.

**PROGRAM SWITCHING FUNCTIONS:** A single key changes the operation of the console from simultaneous to separate dual channel operation as desired by the operator. Dual program amplifiers are standard equipment. Space is provided for an optional third program amplifier. Two 4" illuminated VU meters are supplied. The left meter is connected to program channel 1 at all times. The right meter may be switch selected to (a) program channel 1 for calibration, (b) program channel 2, (c) output of optional third program amplifier, (d) network input, and (e) external. Write for a functional block diagram of the Gates Diplomat Console.

## SPECIFICATIONS

**OPERATING MODE:** Dual channel monaural.

**MIXING CHANNELS:** Total—10. Three microphone, two turntable, two tape/projector, one remote, one network and one auxiliary.

**INPUT CIRCUITS:** 6 for microphones, 4 turntables, 4 tape/projectors, 4 remote lines, 1 network line, 1 auxiliary line.

**OUTPUT CIRCUITS:** 2 program, 1 audition, 3 muted speakers, 1 non-muted speaker, 2 intercom, 2 headphones.

**AMPLIFIERS PROVIDED:** 2 program, 1 monitor, 3 preamplifiers, 1 cue amplifier. Room provided for 1 additional program amplifier and 2 additional preamplifiers.

**IMPEDANCES:** Microphones: 30/50 or 150/250 ohms balanced. Turntable: 600 ohms. Tape/projector: 600 ohms. Remote lines: 600 ohms balanced. Network: 600 ohms. Auxiliary: 600 ohms. Programming output: 600 ohms balanced. Audition output: 600 ohms balanced. Intercom output: 48 ohms. Monitor speakers: 8 ohms. Recording outputs: 600 ohms.

**GAIN:** Turntable, tape, network (medium level) input to program line output 55 dB,  $\pm 2$  dB. From microphone input to program line output 102 dB,  $\pm 2$  dB.

**RESPONSE:** All segments of program circuits  $\pm 1$  dB, 30-15,000 Hz. Monitoring circuit  $\pm 1\frac{1}{2}$  dB, 30-15,000 Hz.

**DISTORTION:** Any segment of program circuit 0.5% or less between 30-15,000 Hz at +8 dBm output level, or at +18 dBm output 0.5% be-

tween 50-15,000 Hz. Monitor amplifier 1% at +39 dBm (8 watts) between 50-15,000 Hz. Intermodulation distortion: 0.5% program and 1.0% monitor circuits.

**NOISE:** Program circuits: 70 dB or better below +18 dBm output, with -50 dB input (equivalent noise input -120 dBm). Monitor circuits: 70 dB below +39 dBm output. Crosstalk: All circuits below noise level with normal gain settings for proper programming.

**POWER:** 117 volts, 50/60 Hz, 1 phase. Power consumption 34 watts at 60 Hz.

**CABINET DATA:** Size: 53 $\frac{1}{2}$ " wide, 11 $\frac{3}{4}$ " high, 17 $\frac{3}{4}$ " deep. Finish: Satin anodized aluminum panel with lettering in black. Cabinet in beige-gray with shadow mold in black. Knob color insert decal kit included.

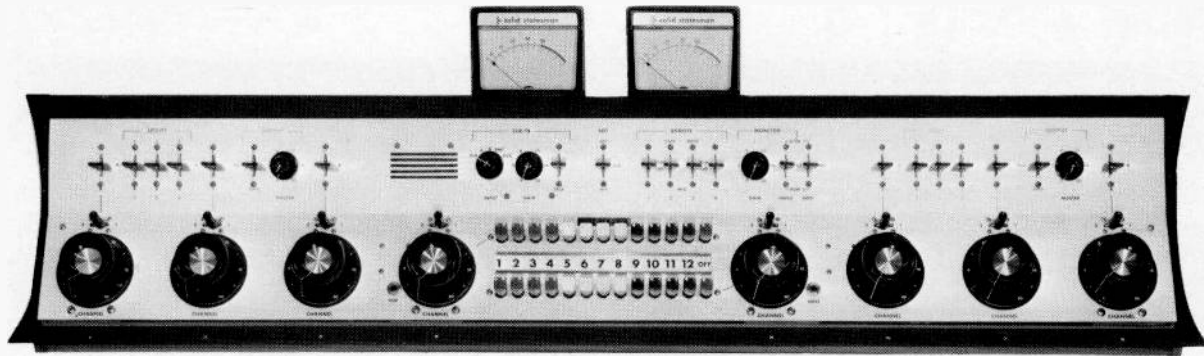
**SHIPPING DATA:** Packed weight: Domestic 220 lbs. Export 242 lbs. Cubage 26.

## ORDERING INFORMATION

Diplomat audio console complete with four speaker matching transformers ..... M-6377A  
 Optional program amplifier ..... M-5700B  
 Optional preamplifier ..... M-6034  
 Studio cue/intercom speaker ..... M-6424



# PRESIDENT—Dual Channel Transistorized Audio Control Console



Featuring the exclusive "Control Center," President is a completely transistorized dual channel, 8 mixer audio control console that is a distinctively different audio console. Modern styling and performance versatility firmly establish this unit in the Solid Statesman family of fine consoles. The most outstanding feature of the President is the Gates unique "Control Center" with its extreme versatility, yet marvelous simplicity. Control Center is engineered to easily and speedily accommodate the programming complexities for fast paced radio or television operations. Control Center frees operating engineers from the mechanics of patching, yet all program inputs are available instantly. In addition, Control Center's extra switch contacts may be used to start equipment such as turntables, film projectors, cartridge

tapes, etc.

**AMPLIFIER COMPLEMENT:** The President is completely transistorized, incorporating Gates Solid Statesman transistor amplifiers. The standard amplifier complement consists of four plug-in microphone amplifiers, two plug-in program amplifiers, one cue-intercom amplifier, and transistorized monitoring amplifier. Space is provided for two optional additional preamplifiers. The power supply is self-contained and fully regulated. Everything is solid state. No tubes are used.

**VERSATILITY:** Versatility of the President dual channel console is unequalled. Control Center—activated by an array of 24 illuminated touch control keys into two channels, plus six more medium level or microphone mixing inputs together with

their respective input switching provides a total of 28 input sources. When all three positions of the six utility tab keys are used, a total of 45 inputs is available. With a full amplifier complement, the President console is particularly suited for television operation. Six of twelve microphones can be mixed simultaneously, while still providing mixing facilities for the extensive medium level signals in television such as: film projectors, video tape recorders, auxiliary mixers, and the usual turntable, cartridge and reel-to-reel equipment. Also, cue-intercom talk-back facilities are vitally important in television for microphone boom operator communication, preview and program direction. Write for our six-page illustrated brochure on this product.

## SPECIFICATIONS

**MIXING CHANNELS:** Total—8, monophonic.

**AMPLIFIERS PROVIDED:** 2 program\*, 1 monitor, 4 preamplifiers\*, 1 cue-intercom amplifier\*. (2 additional preamplifiers\* optional). \*Plug-in.

**OPERATING MODE:** Dual channel monophonic.

**INPUT CIRCUITS:** 8 microphones into 4 preamplifiers, standard. 12 microphones into 6 preamplifiers, by use of two optional preamplifiers. 11 turntables, tape, projector or external inputs into 2 mixers. 4 remote lines. 1 network line into 12th "Control Center" push key.

**OUTPUT LINES:** 2 program lines, 3 muted speaker outputs, 1 unmuted speaker output, 2 interlocked studio intercom speakers, 1 intercom, 2 headphone outputs.

**IMPEDANCES:** (INPUT) Mics: 30/50 or 150/250 ohms balanced. Mixing channels 3 and 8: 600 ohms unbalanced if optional preamplifiers not used. 24 push keys: Push key No. 1 (either bank) accommodates, by switching, 4 remote and 1 network line, 600 ohms balanced. Eleven other push keys (either bank) are for turntables, tapes, projectors, and any input local or external, all 600 ohms balanced. No. 13 is OFF (either bank). (OUTPUT) 2 program lines each 500/600 ohms balanced. Monitor amplifier: 8 ohms unbalanced. Intercom speakers: 45 ohms unbalanced.

**GAIN:** Microphone input to line output: 104 dB,  $\pm 2$  dB. Turntable input to line output: 56 dB,  $\pm 2$  dB. Microphone input to speaker output: 104 dB minimum. Turntable input to speaker output: 56 dB minimum.

**FREQUENCY RESPONSE:** Rated  $\pm 1.0$  dB from 30-15,000 Hz in all regular program circuits. Capable: 20-20,000 Hz. Rate  $\pm 1.5$  dB from 30-15,000 Hz in all monitoring speaker circuits. Capable: 20-20,000 Hz.

**HARMONIC DISTORTION:** Rated 0.5% maximum, 30-15,000 Hz at +8 dBm output in all regular program circuits. Capable: 20-20,000 Hz. Rated 0.5% maximum, 50-15,000 Hz +18 dBm output in all regular program circuits. Rated 1.0% maximum, 50-15,000 Hz at +39 dBm (8 watts) in speaker outputs. Capable: 1% or less 20-20,000 Hz at +38 dBm.

**CROSSTALK:** Below noise level in all channels.

**POWER:** 115 volts, 50/60 Hz, 44 watts.

**CABINET DATA:** 52½" wide, 11½" high, 17½" deep. Finish, cabinet beige gray. Panel, natural aluminum with knobs and lettering in black. Mixer knobs supplied with decal color insert kit. Control Center knobs illuminated in four colors.

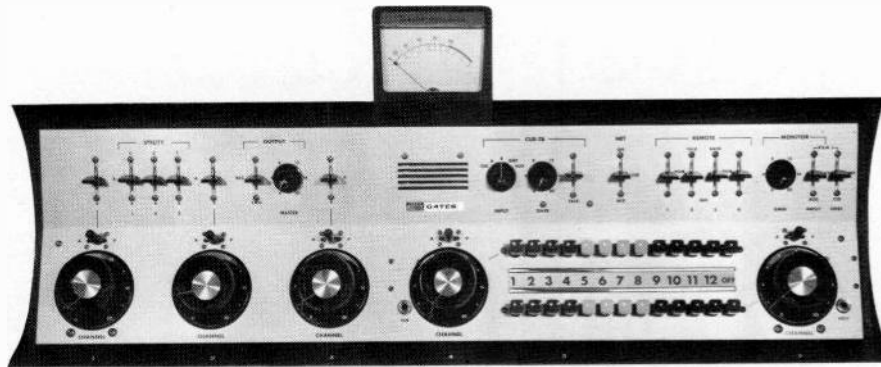
**SHIPPING DATA:** Packed: Domestic 220 lbs. Export 290 lbs. Cubage 27.

**OPTIONAL ACCESSORIES:** Space provided for 2 added M-6034 plug-in preamplifiers.

## ORDERING INFORMATION

The President, dual channel audio control console, complete, includes two external VU meters and 4 speaker matching transformers ..... M-6209B  
 Optional plug-in microphone preamplifiers ..... M-6034  
 Intercom Sub-station ..... M-6424  
 Spare 100% semi-conductor kit ..... TK-503  
 Relay kit, (one required for each device) to start-stop  
 external equipment ..... M-6482

# AMBASSADOR—Single Channel Transistor Control Console



## "CONTROL CENTER" VERSATILITY

A premium quality Solid Statesman console, the Ambassador features "Control Center" and superb electrical performance to provide an extremely flexible audio control console.

"Control Center," exclusive from Gates, has two mixing channels doing the work of twelve. This, combined with multiple microphone facilities, cue-intercom and many other features, results in a superb console with a host of facilities yet retaining simplicity of control.

**AMPLIFIER COMPLEMENT:** The Ambassador is completely transistorized, incorporating Solid Statesman plug-in transistor amplifiers to meet superior performance and reliability standards. It includes: two plug-in microphone preamplifiers (space provided for optional third preamplifier), plug-in program amplifier, plug-in audition booster amplifier, plug-in cue/intercom amplifier and an eight-watt monitoring amplifier.

**MIXING SYSTEM:** Five monophonic input channels are provided, utilizing low impedance, ladder type controls. The Ambassador accommodates 22 inputs with expansion facilities to 31 by using the three unwired utility switches. Key selection allows any mixer to feed program amplifier or audition output through an audition booster amplifier. The heart of the Ambassador is Control Center, operating into mixers 4 and 5. Consisting of two rows of 12 push keys, plus OFF, the upper bank of 12 push keys feeds the left mixer (#4). The lower bank of 12 push keys feeds the right mixer, (#5). Any push-key, when depressed, automatically releases other keys in the same row. All push-keys not depressed are connected to the cue amplifier/speaker which is part of the Ambassador. Push keys are color coded for convenience in identifying inputs such as turntables, tapes, etc.

To further expand the facilities in the Ambassador, push key #1 selects from any one of four remote lines or network as switched by the upper row tab keys above Control Center. Any of 12 circuits may be switched into either mixing channel. From each illuminated key, a 30 volt circuit is also brought to a pair of terminals. In this manner, the push keys may start an electro-mechanical device such as a Cartritape, projector or turntable when audio is engaged. A relay kit (M-6482) for this service is listed below. Mixing channels one through three provide six more inputs for either microphone or medium level signals.

The Ambassador console with Control Center is described in detail on a separate 6-page brochure, available upon request.

## SPECIFICATIONS

**OPERATION MODE:** Single channel monaural.

**MIXING CHANNELS:** Total—5 Four microphones into 2 preamplifiers, as supplied; six microphones into 3 preamplifiers, 3rd preamplifier optional; 12 turntables, tape, projector, or any medium level input into two mixers; 4 remote lines; 1 network line.

**AMPLIFIERS PROVIDED:** 1 plug-in program, 1 plug-in booster, 1 eight watt monitor, two plug-in preamplifiers, 1 plug-in cue amplifier.

**OUTPUT LINES:** 1 program, 1 audition, 3 muted speaker, 1 non-muted speaker, 2 studio intercom, 1 spare intercom.

**IMPEDANCES:** Microphones 30/50 or 150/250 ohms balanced; turntable/tape 600 ohms unbalanced; remote lines, network, and programming output 600 ohms balanced; audition output 600 ohms, intercom output 45 ohms, and monitor output 8 ohms unbalanced.

**GAIN:** Turntable, tape, network (high level) input to program line output 56 dB,  $\pm 2$  dB. To monitor amplifier output 56 dB minimum. From microphone input to program line output 104 dB,  $\pm 2$  dB. To monitor amplifier output 104 dB minimum.

**RESPONSE:** All segments of program circuit:  $\pm 1.0$  dB, 30-15,000 Hz. Capable: 20-20,000 Hz. Monitoring circuit +1.5 dB, 30-15,000 Hz. Capable: 20-20,000 Hz.

**DISTORTION:** Any segment of program circuit 0.5% or less between 30-15,000 Hz at +8 dBm output level. Capable: 20-20,000 Hz. Monitor amplifier: 1.0% between 50-15,000 Hz, at +39 dBm. Capable: 20-20,000 Hz at +38 dBm.

**NOISE:** Program circuits:  $-70$  dB or better below +18 dBm output, with  $-50$  dB input, (equivalent noise input is  $-120$  dBm). Monitor circuits: 70 dB below +39 dBm output. Crosstalk: all circuits below noise level with normal programming gain settings.

**POWER:** 117 volts, 50/60 Hz, single phase. Power consumption 40 watts.

**CABINET DATA:** Size: 37½" long, 11¾" high, 17¾" deep. Finish: Panel natural satin anodized aluminum with black nomenclature. Decal color insert kit supplied for mixer knobs. Cabinet: Beige-gray with black trim.

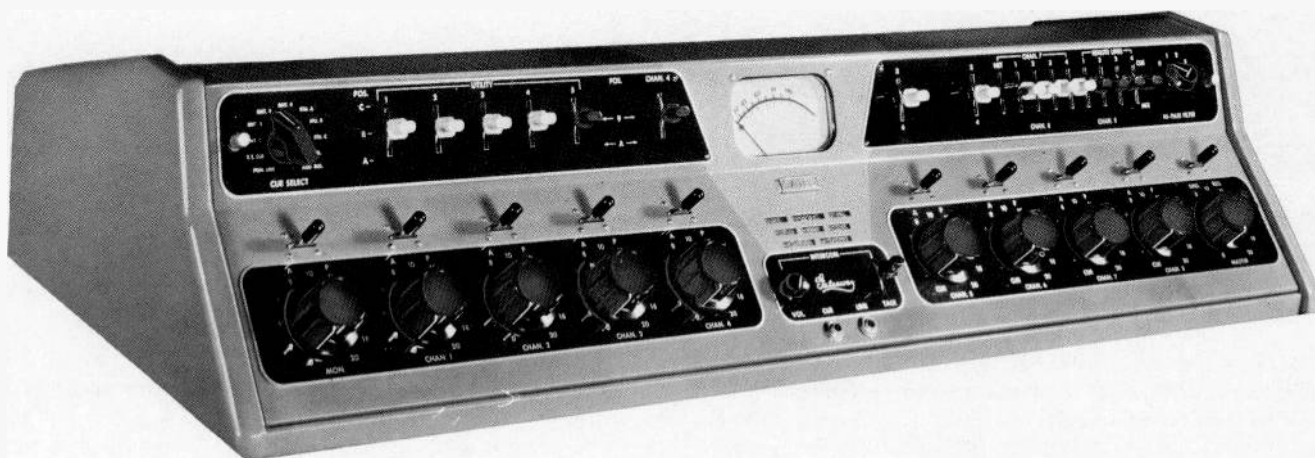
**SHIPPING DATA:** Packed weight: Domestic 245 lbs. Export 265 lbs. Cubage 20.5.

**OPTIONAL ACCESSORIES:** Space is provided to add, when desired, 1 Model M-6034 preamplifier.

## ORDERING INFORMATION

Ambassador, single channel console, complete with 2 preamplifiers and 4 speaker matching transformers ..... M-5564B  
 Extra plug-in microphone preamplifier ..... M-6034  
 Intercom sub-station, deluxe ..... M-6424  
 Relay kit for use with Control Center to start mechanical device .. M-6482  
 Plug-in jumper board ..... 913-6060

# THE GATESWAY— Eight Channel Monophonic Audio Console



One of broadcasting's most widely used audio control consoles, the Gatesway is in daily use in thousands of AM, FM, and TV stations the world over. A complete high fidelity speech input system, the Gatesway provides easy audio control facilities for multiple studios, and control rooms, with generous inputs for turntables, tape, cartridge tape, network and remote program sources. Eight mixing channels handle 5 microphones, 4 turntables, 4 tape/projectors, 4 remote lines and network. A total of 18 inputs are provided. Four preamplifiers, program amplifier, a 10 watt ultra-linear

monitoring amplifier, cue-intercom amplifier, and a fully regulated power supply are all standard. Designed for maximum flexibility, 27 keys accommodate 52 switching functions.

**AMPLIFIERS:** Preamplifiers, program and monitor amplifiers are all wide response, low noise units with an abundance of gain. The monitor amplifier is of the ultra-linear type, with 1% maximum distortion at full output of 10 watts.

**CUE SELECTOR:** Rotary switch selects cue speaker/amplifier for talk or listen to three studios, remote lines, and utility line. This selector switch also provides

monitoring from turntables, tapes, audition bus and an external source.

**UTILITY KEYS:** Five DPDT unwired upper level tab keys are provided for special customer applications.

**POWER SUPPLY:** Power supply is fully regulated and mounted on a separate 19" x 7" rack panel. This panel also houses the 10-watt ultra-linear monitor amplifier and muting relays.

A block diagram of the full facilities found in the Gatesway console is available on request.

## SPECIFICATIONS

**MIXING CHANNELS:** Total 8. Four microphone, two turntable, one tape/network, and one remote. Cue position provided on all but microphone fading.

**OUTPUT LINES:** 1 program, 1 audition, 3 muted speaker, 1 non-muted speaker and 3 intercom.

**INPUT CIRCUITS:** 5 microphones, 4 turntables, 4 remote lines, 1 network line, 4 tape/projectors, 1 external monitor input.

**AMPLIFIERS PROVIDED:** 1 program, 1 monitor, 4 preamplifiers, 1 cue amplifier.

**OPERATING MODE:** Single channel monaural.

**IMPEDANCES:** Microphones 30/50 150/250 ohms balanced. Turntable 150/250 ohms unbalanced. Tape, network and remote lines 600 ohms, balanced. External monitor input 150 ohms. Programming output 600 ohms balanced. Audition output 150 ohms. Intercom output 600 ohms. Monitor speaker 8/16 ohms. **NOTE:** Where more than two loudspeakers are used 478-0275-000 speaker matching transformers should be used.

**TUBES:** Total 24, 8 types.

**GAIN:** Turntable, tape network (high level) input to program line output 60 dB. From microphone input to program line output 104 dB. All measurements  $\pm 2$  dB.

**RESPONSE:** All segments of program circuit  $\pm 1\frac{1}{2}$  dB, 30-15,000 Hz. Monitoring circuit  $\pm 2$  dB, 30-15,000 Hz.

**DISTORTION:** Any segment of program circuit 1% or less between 30-

15,000 Hz at +8 dBm output level or  $1\frac{1}{2}\%$  at +18 dBm output. Monitor amplifier 1% at +40 dBm (10 watts).

**NOISE:** Program circuits: 70 dB or better below +18 dBm output, with -50 dB input (equivalent noise input is -120 dBm). Monitor circuits: 70 dBm below +40 dBm output.

**POWER:** 117 volts, 50/60 Hz, 1 phase. Power consumption 105 watts at 60 Hz.

**CABINET DATA:** Size: (console) 39" wide, 7 $\frac{1}{2}$ " high, 15" deep. (power/monitor unit) 19" wide, 7" high, 8" deep.

Finish: Panel beige-gray with escutcheons in anodized black. Cabinet 2-tone beige-gray.

**SHIPPING DATA:** Packed weight: Domestic 175 lbs. Export 265 lbs. Cubage 12.

**OPTIONAL ACCESSORIES:** Space is provided to add, when desired 1 Model M5304A preamplifier.

## ORDERING INFORMATION

Gatesway Audio Console complete .....	M-5133C
100% spare tube kit .....	TK-451
Optional preamplifier .....	M-5304A
Speaker matching transformer .....	478-0275-000
Studio cue/intercom speaker .....	M-6424
Extra muting relay .....	572-0038-000



# STEREO YARD— 8 Channel Stereophonic Console



## THE STEREO YARD

Eight stereo inputs are fed to eight mixing channels including three stereo microphone pairs on channels 1, 2, and 3. Two turntables, two tape machines and one utility input can be mixed on channels 4-8. Cue positions on all faders are provided.

### SPECIFICATIONS

**MIXING CHANNELS:** Total 8 stereo or monaural; 3 for dual microphones, 2 for turntables, 2 for tape, and 1 for general service such as network, remote or utility. Channels 4, 5, 6, 7, and 8 have cue position on faders.

**AMPLIFIERS PROVIDED:** 2 program, 2 monitor, 6 preamplifiers, 1 cue amplifier, plus 2 booster amplifiers.

**OPERATING MODE:** Stereo and monaural single channel.

**INPUT CIRCUITS:** 6 for microphones (2 pairs stereo), 4 turntables/tape, 1 remote line, 1 network line or general high level service. All inputs either stereo or monaural.

**OUTPUT LINES:** 2 program (left to right), 6 muted speakers, 2 non-muted speakers, left and right.

**IMPEDANCES:** Microphones: 30/50 or 150/250 ohms. Turntables: 150/250 ohms. Tapes: 150/250 ohms or 500/600 ohms, balanced or unbalanced. Utility lines: 600 ohms balanced. Programming output: 600 ohms, left and right. Monitor output: 8 or 16 ohms.

**NOTE:** Where more than two loudspeakers are employed, the 478-0275-000 matching transformer speaker should be purchased for each loudspeaker. With a 48 ohms primary and voice coil secondary, many speakers may be connected to the 8/16 ohm monitor output excellent impedance match and performance. The transformer is mounted at the speaker location.

**GAIN:** Turntable, tape, network (medium level) input to program line output: 60 dB. To monitor amplifier output: 87 dB. From microphone input to program line output: 103 dB; to monitor amplifier output: 130 dB. All measurements  $\pm 2$  dB.

**RESPONSE:** All segments of program circuit  $\pm 1\frac{1}{2}$  dB, 30-15,000 Hz, or  $\pm 3$  dB, 20-20,000 Hz. Monitoring circuit  $\pm 2$  dB, 30-15,000 Hz.

**DISTORTION:** Any segment of program circuit 1% or less between 30-15,000 Hz. at +8 dBm output level, or 1½% at +18 dBm output. Monitor amplifier 1% at +40 dBm, (10 watts).

**NOISE:** Program circuits; 70 dB or better below +8 dBm output, with -50 dBm input (equivalent noise input is -120 dBm). Monitor circuits; 70 dB below +40 dBm output. Crosstalk—all circuits below noise level with normal gain settings.

**POWER:** 117 volts, 50/60 Hz 1 phase. Power consumption 250 watts at 60 Hz.

**CHANNEL SEPARATION:** 50 dB or better.

**TUBES:** Total 41.

**CABINET DATA:** Size: (console), 36" wide, 6½" high, 14" deep. (external units), rack space of 19" x 26¼".  
Finish: Medium beige-gray with panel in natural and black anodized aluminum. Decal color insert kit supplied for mixer knobs.

**SHIPPING DATA:** Packaged weight: Domestic 200 lbs. Export 280 lbs. Cubage: 13 cu. ft.

### ORDERING INFORMATION

Stereo Yard Audio Console complete ..... M-6188  
100% spare tube kit ..... TK-417  
Speaker matching transformer ..... 478-0275-000

# THE YARD— 8 Channel Monophonic Console



## THE YARD

One yard wide and only 5¾" high, the Gates Yard is one of the industry's most popular consoles, having 13 inputs and eight mixing positions. Six microphones can be switched into three preamplifiers. Two remote and one network line key select to mixer number eight. Cue attenuators on channels 6 and 7 feed the inbuilt cue speaker/amplifier.

### SPECIFICATIONS

**MIXING CHANNELS:** A total of 8. Three microphones, two tape/projectors, two turntables and one remote network. Faders have cue on mixers 6 and 7 for turntables.

**AMPLIFIERS PROVIDED:** 1 program, 1 monitor, 3 preamplifiers, 1 cue amplifier.

**OPERATING MODE:** Single channel monaural.

**INPUT CIRCUITS:** 6 for mics., 2 turntables, 2 tape/projectors, 2 remote lines, 1 network line.

**OUTPUT LINES:** 2 program (by key selection), 1 audition, 2 muted speaker, 1 non-muted speaker line.

**IMPEDANCES:** Microphones—30/50, 150/250 ohms; turntable/tape/projector—unbalanced 150/250 ohms; remote lines—600 ohms, network—600 ohms. Programming output—600 ohms. Audition output—20,000 ohms. Monitor speaker output—8/16 ohms.

**TUBES:** Total 21.

**GAIN:** Turntable, tape, network (high level) input to program line output 60 dB. To monitor amplifier output 87 dB. From microphone input to program line output 103 dB. To monitor amplifier output 130 dB.

**NOTE:** All measurements  $\pm 2$  dB.

**RESPONSE:** All segments of program circuit  $\pm 1\frac{1}{2}$  dB, 30-15,000 Hz. Monitoring circuit  $\pm 2$  dB, 30-15,000 Hz.

**DISTORTION:** Any segment of program circuit 1% or less between 30-15,000 Hz. at +8 dBm output. Distortion at +18 dBm output is 1½%. Monitor amplifier 1% at +40 dBm, (10 watts).

**NOISE:** Program circuits; 70 dB or better below +8 dBm output, with -50 dB input (equivalent noise input is -120 dBm). Monitor circuits; 70 dB below +40 dBm output. Crosstalk; all circuits below noise level with normal gain settings.

**POWER:** 105/125 volts, 50/60 Hz, 1 phase. Power consumption 130 watts at 60 Hz.

**NOTE:** External power supply/monitor unit ordered separately.

**CABINET DATA:** Size: (console) 36" wide, 5¾" high, 12½" deep. (Power supply/monitor amp.) 19" wide, 7" high, 8" deep.  
Finish: Cabinet beige-gray. Panel natural anodized aluminum and black. Knobs have color insert kit supplied.

**SHIPPING DATA:** Packed weight: Domestic 110 lbs. Export 170 lbs. Cubage: 8 cu. ft.

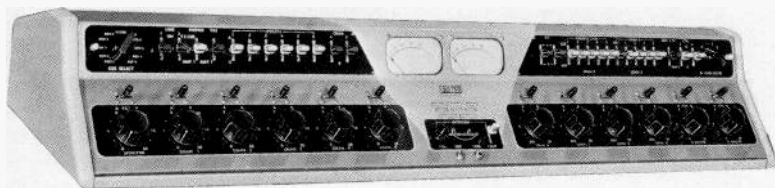
**OPTIONAL ACCESSORIES:** Space is provided to add, when desired, 4 Model M-5304A preamplifiers and 3 Model AK-12626 muting relays.

### ORDERING INFORMATION

Yard Audio Console complete ..... M-5526C  
100% spare tube kit ..... TK-446  
Optional preamplifier ..... M-5304A  
Speaker matching transformer ..... 478-0275-000  
Optional muting relay ..... 572-0038-000

# THE DUALUX— Nine Mixer, Dual Channel Console

# STUDIOETTE— Four Channel All Purpose Console



One of the truly fine consoles for broadcasting, the Dualux offers unusually broad facilities, classic commercial appearance, unique functional design and proven performance. The Dualux accommodates 21 inputs into 9 mixing channels for dual programming use. Write for a complete functional diagram.

## SPECIFICATIONS

**MIXING CHANNELS:** Total 9. 5 microphone, 2 turntable, 1 remote and 1 net/tape. Turntable, remote and net/tape have cue position on faders.  
**AMPLIFIERS PROVIDED:** 2 program, 1 monitor, 5 preamplifiers, 1 cue amplifier. Space provided for 2 additional preamplifiers.  
**OPERATING MODE:** Dual channel monaural.  
**INPUT CIRCUITS:** 7 for microphones, 4 turntables, 5 remote lines, 1 network line, 4 tape/projector.  
**OUTPUT LINES:** 2 program, 2 audition, 3 muted speaker, 1 non-muted speaker, 3 intercom.  
**IMPEDANCES:** Microphone 30/50, 150/250 ohms balanced. Turntable/tape 150/250 ohms. unbalanced. Remote lines 600 ohms balanced, network 600 ohms balanced. Programming output 600 ohms balanced. Audition output 600 ohms. Intercom output 600 ohms. Monitor speakers 8/16 ohms.  
**TUBES:** Total 29, 8 types.  
**GAIN:** Turntable, tape, network (high level) input to program line output 61 dB. From microphone input to program line output 104 dB. Monitor amplifier bridges either program amplifier with gain in excess of output capability. **NOTE:** all measurements  $\pm 2$  dB.  
**RESPONSE:** All segments of program circuits  $\pm 1\frac{1}{2}$  dB, 30-15,000 Hz. Monitoring circuit  $\pm 2$  dB, 30-15,000 Hz.  
**DISTORTION:** Any segment of program circuit 1% or less between 30-15,000 Hz at +8 dBm output level or  $1\frac{1}{2}\%$  at +8 dBm output level. Monitor amplifier 1% at 40 dBm (10 watts).  
**NOISE:** Program circuits: 70 dB or better below +18 dBm output, with -50 dBm input (equivalent input noise is -120 dBm). Monitor circuits: 70 dB below +40 dBm output. Crosstalk: all circuits below noise level with normal gain settings.  
**POWER:** 105/125 volts, 50/60 Hz, 1 phase. Power consumption 155 watts at 60 Hz.  
**CABINET DATA:** Size: (console) 46 $\frac{1}{2}$ " wide, 7 $\frac{1}{2}$ " high, 15" deep. (power/monitor unit) 19" wide, 7" high, 8" deep.  
 Finish: Panel, beige-gray with escutcheons in black anodized aluminum.  
 Cabinet: Beige gray. Mixer knobs supplied with color variety disc insert kit.  
**SHIPPING DATA:** Packed weight: Domestic 205 lbs. Export 290 lbs. Cubage: 12.  
**OPTIONAL ACCESSORIES:** Space is provided to add, when desired, 2 Model M-5304A preamplifiers.

## ORDERING INFORMATION

Dualux Audio Console complete ..... M-5236D  
 100% spare tube kit ..... TK-449  
 Optional preamplifier ..... M-5304A  
 Speaker matching transformer ..... 478-0275-000  
 Studio cue/intercom speaker ..... M-6424



The Studioette is a single channel monophonic console with 13 inputs into four mixing channels. It has found wide application as a main console in modest sized stations, as a sub-console for large installations and for independent programming or recording.

Mixing channels 1 and 2 accommodate up to four microphone inputs. Two studio or control room microphones may be switched into channel one, two others into mixing channel two. Mixing channel three may select from any of three medium level turntable sources, as can channel four in any combination. Channel four also has input selector keys for network, two tape or projector inputs and three remote lines. Three unwired utility keys are provided on the front panel, adding to the flexibility of the Studioette.

Write for copy of block diagram of the Studioette.

## SPECIFICATIONS

**MIXING CHANNELS:** Total 4. Key selected to program or audition bus. Channels 1 and 2 for microphones, 3 and 4 for multi-input use such as turntables, tapes, etc. Cue position on faders 3 and 4.  
**AMPLIFIERS PROVIDED:** 1 program, 1 monitor, 2 preamplifiers.  
**OPERATING MODE:** Single channel monaural.  
**INPUT CIRCUITS:** 4 microphones, 3 turntables, 2 tapes or projectors, 3 remote lines, 1 network line. (1 external monitor amplifier input).  
**OUTPUT LINES:** 1 program, 1 audition, 2 muted speaker, 1 non-muted speaker, 1 turntable cue, 1 remote/tape cue.  
**IMPEDANCES:** Microphones 30/50 or 150/250 ohms. Turntable/tape 150/250 ohms unbalanced, remote lines 600 ohms, network 600 ohms. Programming output 600 ohms. Audition output 20,000 ohms. Monitor speakers 8/16 ohms.  
**NOTE:** Where more than two loudspeakers are used, the 478-0275-000 speaker matching transformer should be used.  
**TUBES:** Total 18, 6 types.  
**GAIN:** Turntable, tape, network (medium level) input to program line output 63 dB, to monitor amplifier output 100 dB. From microphone input to program line output 103 dB. All measurements  $\pm 2$  dB.  
**RESPONSE:** Program circuit  $\pm 1\frac{1}{2}$  dB, 30-15,000 Hz. Monitoring circuit  $\pm 2$  dB, 30 to 15,000 Hz.  
**DISTORTION:** Program circuit 1% or less between 30-15,000 Hz at +8 dBm output. Monitor amplifier 2% at +40 dBm (10 watts).  
**NOISE:** Program circuits: 70 dB or better below +18 dBm output, with -50 dBm input, (equivalent noise input is -120 dBm). Monitor circuits: 65 dB below +40 dBm output. Crosstalk: all circuits below noise level with normal gain settings.  
**POWER:** 117 volts, 50/60 Hz, 1 phase. Power consumption 120 watts at 60 Hz.  
**CABINET DATA:** Size: 24" wide, 8 $\frac{1}{4}$ " high, 17" deep.  
 Finish: Panels, anodized black and gray. Cabinet beige-gray.  
**SHIPPING DATA:** Packed weight: Domestic 70 lbs. Export 110 lbs. Cubage 12.  
**OPTIONAL ACCESSORIES:** Space is provided to add 1 Model M-5304A preamplifier and two AK-12626 muting relays.

## ORDERING INFORMATION

Studioette Audio Console ..... M-5381B  
 100% spare tube kit ..... TK-444  
 Optional preamplifier ..... M-5304A  
 Speaker matching transformer ..... 478-0275-000  
 Extra muting relay ..... 572-0072-000

# THE PRODUCER— Four Channel Mixer



The rapid growth of cartridge tape recorders and increased use of reel-to-reel recorders in broadcasting, created the need for an economical audio control system specifications designed for production mixing. Completely transistorized, the Gates Producer provides facilities for direct recording, dubbing, sound-on-sound techniques, editing and monitoring. Also, the use of the VA mixing control knob, the same as used on larger Gates Solid Statesman consoles, adds to the "Big Board" feel and comfortable operation of the Gates Producer.

## ADAPTABILITY

Though designed primarily for recording, the engineer will quickly note the Producer's adaptability to other services not requiring a complete speech input console. For instance, the Producer has ample facilities for such services as news rooms, mobile units and small sub-studios, and is ideal for use in specialized production centers incorporating transcription and tape cartridge equipment.

## MIXING

Twelve inputs are available to four mixing channels. Channels 1 and 2 each accommodate three low level microphone inputs, total six. Similarly, channels 3 and 4 each select from three medium-level sources such as turntable, tape, or cartridge equipment. Cueing is possible for inputs to channels 3 and 4 through a switched input to the inbuilt monitor amplifier. A small monitoring loudspeaker is housed in the Producer cabinet and is automatically muted when a microphone is "live." Write for circuit details.

## SOUND-ON-SOUND

A special feature of the Producer is the ability to make "sound-on-sound" recordings with ease. The monitoring amplifier normally bridges the program amplifier output. Voice can be added over a pre-recorded voice or music track by switching this amplifier to monitor a high level input ahead of the mixers, without fear of feedback.

## SPECIFICATION

**MIXING CHANNELS:** Total 4. 2 microphone channels, 2 turntable/tape projector channels. Cue provision on high level channels.

**AMPLIFIERS PROVIDED:** 1 program, 2 preamplifiers, 1 monitor amplifier and power supply.

**OPERATING MODE:** Single channel monophonic.

**INPUT CIRCUITS:** 6 microphone or low level, 6 turntables/tape or high level.

**OUTPUT LINES:** Program 600 ohms balanced. Loudspeaker, 45/48 ohm internal or external. High impedance headphone monitor.

**IMPEDANCES:** Microphones, 30/50 or 150/250 ohms balanced. Turntable, tape, or cartridge, 150 or 600 ohms balanced. Programming output, 600 ohms balanced. Loudspeaker, 45/48 ohm.

**GAIN:** Microphone input to line output, 100 dB  $\pm$  3 dB.

Turntable input to line output, 55 dB  $\pm$  3 dB.

Microphone input to speaker output, 125 dB  $\pm$  3 dB.

Turntable input to speaker output, 80 dB  $\pm$  3 dB.

**FREQUENCY RESPONSE:** +1.0 dB from 30-15,000 Hz in program circuits.  $\pm$  1.5 dB from 30-15,000 Hz in monitoring circuits.

**HARMONIC DISTORTION:** 0.5% maximum, 30-15,000 Hz at +8 dBm output in program circuit.

**NOISE:** -120 dBm relative input noise on microphone channels. -75 dBm relative input noise on turntable channels.

**POWER:** 117 volts, 50/60 Hz, power consumption 30 watts.

**CABINET DATA:** Size: 24" long, 10½" high, 15" deep.

Finish: Medium Pebbletex beige-gray with black trim.

**SHIPPING DATA:** Packed weight: Domestic 50 lbs. Export 80 lbs. Cubage 4.6.

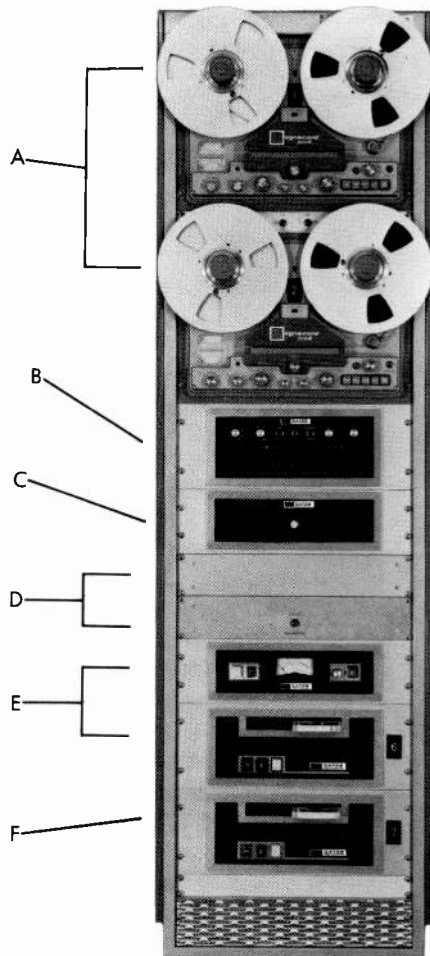
## ORDERING INFORMATION

The Producer recording mixer ..... M-6407

Speaker matching transformer ..... 478-0275-000

**NOTE:** When using external monitoring loudspeakers, the 478-0275-000 matching transformer must be used to match the 45/48 ohm monitor output to the voice coil impedance of a loudspeaker.

# AUTOMATE 244 Automation System



## CONSISTS OF:

- A. Two record/playback tape decks, Magnecord 1028.
- B. STC-9 Programmer—executes the program schedule.
- C. Timer—provides time information to the Programmer for automatic correction of programming to "real" time.
- D. 25 Hz (cycles) filtering and generating equipment for production of automation system tapes.
- E. Criterion professional cartridge record/playback unit for recording and broadcasting of spots, news, weather and ID's.
- F. Criterion cartridge playback unit.

A basic low cost automation system with excellent programming flexibility designed for the AM or FM broadcaster serving the small to medium market. It consists of four audio sources including two Criterion tape cartridge units and two Magnecord reel-to-reel tape units. The system also provides complete facilities for recording both reel-to-reel tapes and tape cartridges for broadcast purposes. One of the outstanding features of the

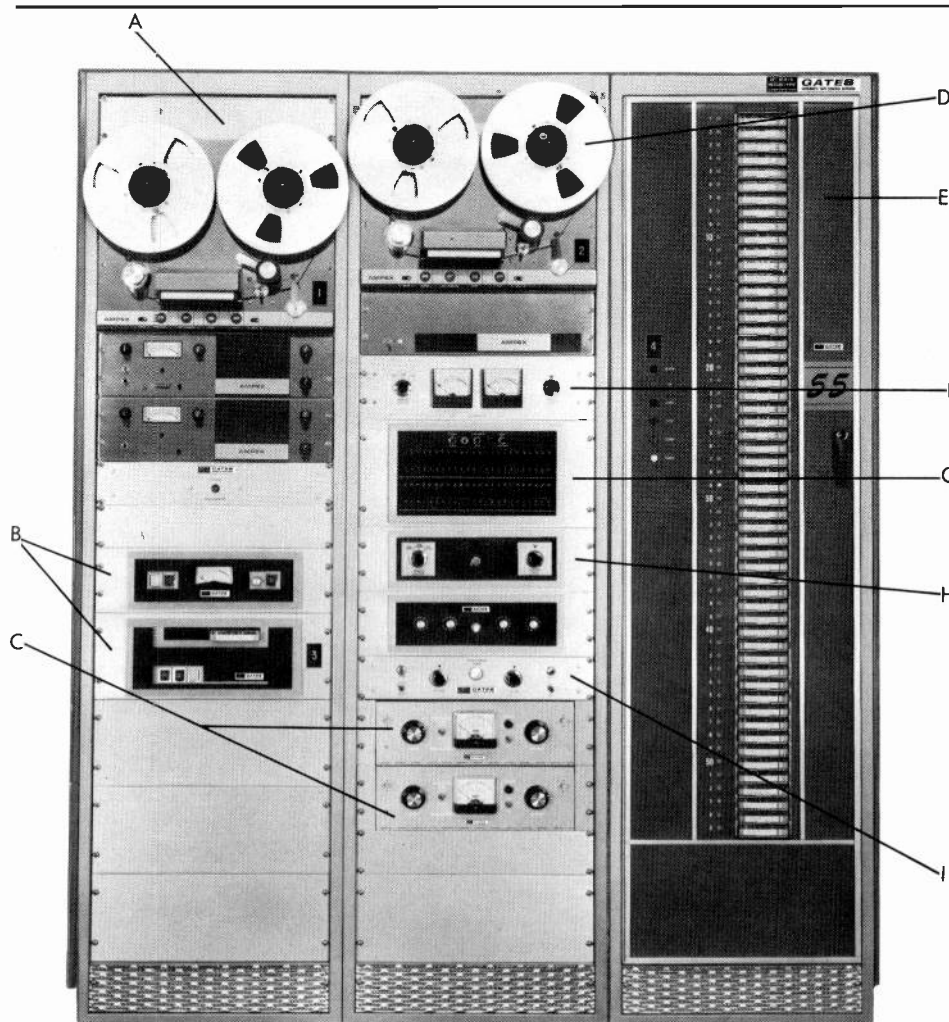
Automate 244 is its simplicity of operation. It can be operated by virtually anyone after only brief instructions. The two reel-to-reel tapes can be programmed in any sequence you desire. The cartridge units are used to insert ID's and spots automatically as many as 24 times every hour. Spots, news, weather, and ID's can all be produced while the system is on the air and inserted as desired. This flexibility gives you that live, up-to-the-

minute sound you demand in modern broadcasting. The reel-to-reel tapes use sub-audible tones at the end of each selection for switching to the next programmed event. Music service tapes already have the sub-audible tones prerecorded. If you record your own music, a 25 Hz Tone Generator is provided to record this tone. Tape cartridges use the standard NAB cue tones on a separate control track for event switching.

## ORDERING INFORMATION

Time insertion Automation system. 24 events each hour from four audio sources ..... Automate 244

# AUTOMATE 484 Automation System



## CONSISTS OF:

- A. One record/playback tape unit.
- B. One Criterion professional cartridge record/playback unit for recording and broadcasting of spots, news, weather and ID's.
- C. Two AGC line amplifiers, enable direct feed to transmitter.
- D. One Ampex playback tape unit.
- E. One 55 spot capacity multiple cartridge reproducer.
- F. One Audio control unit with VU meters.
- G. One SC-48 Programmer and timer for schedule execution and time correction.
- H. One Monitor amplifier and cue selector.
- I. One silence sensor alarm for monitoring of audio output system.

The Automate 484 is designed to give maximum schedule flexibility and a fast-paced live sound for the medium to large FM or AM market.

It consists of four audio sources: Criterion tape cartridge units, a cartridge reproducer unit that allows 55 spot insertions without changing cartridges, and two reel-to-reel tape units.

Events occur in sequence with the timer automatically correcting the programming at desired intervals. Spots, news, and ID's can be inserted in sequence on an approximate time basis which assures a well produced broadcast sound. Although the Automate 484 provides excellent flexibility in programming, it is extremely easy to operate. Any member of your staff can learn to set up a

broadcast schedule with only brief instructions.

Each event is programmed by setting a thumbwheel selector switch. Music from the two reel-to-reel tapes can be programmed in any "mix" of music as desired. Spots, ID's, news, weather, and bulletins are scheduled in the same manner, allowing you to vary the broadcast schedule as you desire to assure the "sound" you want for your station.

The automatic timer can be set to correct length of program on the hour, half hour, quarter hour or whenever desired. Normally, the broadcaster will schedule fill instrumental music toward the end of a time segment. As determined by the timer, the SC-48 Programmer will skip the unused selections of fill music

and begin a new broadcast period on schedule.

The cartridge reproducer generally provides about six hours of spots without the necessity of changing cartridges, requiring a minimum of attention. The staff needs only to change news, weather and bulletins to maintain that all important sound of "immediacy."

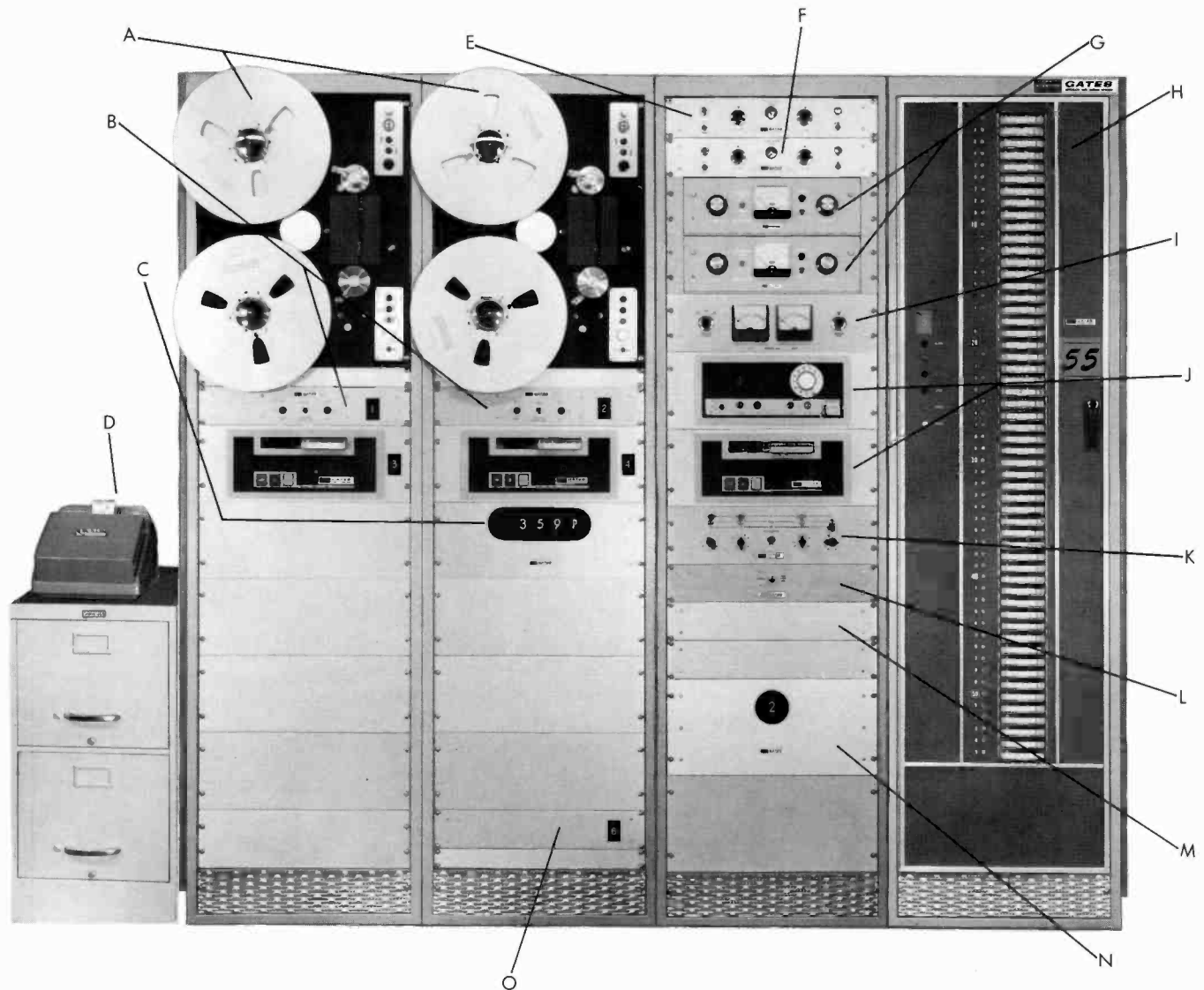
Program content may be prepared while the automation system is on the air and scheduled as required.

The Ampex music sources are cued by means of a 25 Hz sub-audible tone. Program service tapes are already pre-recorded with this tone. The tape cartridge units use the standard NAB cue tones on a separate control track for switching events.

## ORDERING INFORMATION

Sequence automation system. 48 events each hour from four audio sources ..... Automate 484

# AUTOMATE 1007 Automation System



## CONSISTS OF:

- A. Two Scully reel-to-reel tape units with 14" reels, which provide a total of six hours of unattended music operation.
- B. Two 25 Hz detectors provide individual cueing and switching for related Scully units.
- C. Digital clock furnishes time to logging system, alerts fade-start unit when it is time for exact time correction, and reads out real time.
- D. Logging Printer provides printed record of program by indicating time of broadcast and code number of tape cartridges.
- E. Silence Sensor #1 monitors output of system and automatically switches to next programmed source, in event of failure.
- F. Silence Sensor #2 monitors transmitter output and automatically causes red entries on printer to show "off air."
- G. AGC Line Amplifiers, enable direct feed to transmitter.
- H. Cartridge reproducer unit provides storage for 55 commercials which are aired as required in sequence.
- I. VU and control panel provide indication of output level control of audio monitoring level and 25 Hz filtering.
- J. SP-10 dial tape memory programmer (and associated cartridge deck) controls event sequence and executes program format. 1000 events can be dialed on tape unit before sequence repeat.
- K. Time selector unit, automatically scans clock and activates fade-start unit for program time correction. As many as four fades can be made each hour. System may also operate on straight sequence.
- L. Fade-Start unit—When activated, automatically fades selection on air to start program event required at an "exact" time.
- M. Logging decoder decodes pulsed signals from cartridge tape units and transforms them to digital information for printing on the logging printer.

- N. Audio switcher provides all audio, control and logging switching functions necessary for operation of Automate 1007.
- O. External audio adapter provides input for two external audio sources such as network and studio.

### DESCRIPTION

Capable of programming as many as 1000 events without repetition, the system event keeps an official log for you—automatically.

Averaged out, the Automate 1007 can program 16 hours of broadcast material with over 60 events occurring in each hour without repeating the pattern.

There are seven audio sources—five internal and two external. The internal sources are the two reel-to-reel tape units for music, two Criterion tape cartridge units which may be used for news, weather, ID's musical intros and back announcements or specially feature musical numbers, and the ATC-55 for commercial content. The two external inputs may be utilized for network and studio origination.

As with the other systems, events from all sources can be mixed in any sequence desired. Program time corrections can be made as often as four times each hour, if required. Unused programming (music fill) is skipped automatically at these times eliminating the need for exact timing of program content. You can go live at any time. At completion of the live material, the system goes back to automation with the mere push of a button.

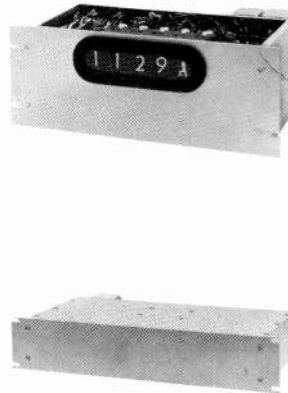
A logging printer prints out a record of time of broadcast and the code for each event aired. This verification tape attached to your previously prepared program schedule satisfies all FCC logging requirements.

The reel-to-reel tape units utilize a 25 Hz sub-audible tone to provide switching information. Program service tapes are already pre-recorded with this tone. The tape cartridge units and the ATC-55 use the standard NAB cue tones on a separate control track for event switching and automatic program logging pulses. External sources are controlled by the timing mechanisms in the system.

### ORDERING INFORMATION

Exact time automation system. 1000 events from 7 audio sources ..... Automate 1007

### AUTOMATIC PROGRAM LOGGING



Standard equipment as part of the Automate 1007 system, this equipment can be added to any Gates Automation System.

This method of Automatic Program Logging is a widely recognized means of maintaining a visual record of broadcast program content. It meets FCC requirements for program log verification, and has been the basis at many automated stations for the program log portion of license renewal applications. The visual record is maintained on standard adding machine paper which indicates the broadcast time and a five digit code for those program elements which must be logged.

Gates Automatic Program Logging equipment consists of a Logging Encoder for recording the five digit logging code on magnetic tape; a Logging Decoder for reading the five digit code during playback; a Digital Clock to furnish time of broadcast; and a Logging Printer to print the broadcast time and the logging code.

A five digit code number is selected by a station's traffic department for assignment to an individual commercial. Blocks of five digit codes may be reserved for station identifications, news, public service announcements and special programs. During the normal recording of a tape cartridge the Logging Encoder automatically pulses onto the control track of the tape cartridge the five digit code. Selection of the correct digits for encoding is made by rotary switch on the face of the Logging Encoder prior to recording. This does not affect

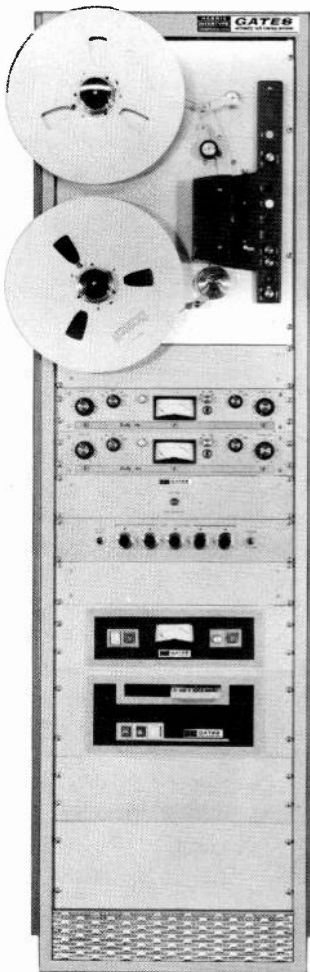
the recording of the program content on the program track of the cartridge. When the encoded cartridge is reproduced, the Logging Decoder reads the five digit code from the control track as the program content is being broadcast from the program track. The decoded information together with the start time furnished by the Digital Clock is recorded by the Logging Printer. Complete accuracy in logging is thus provided as the five digit code printed by the logging printer must be exactly the same as the code called for by the broadcast schedule. If all codes from the logging printer match the codes called for by the broadcast schedule, the operator signs both the schedule and the printer tape for a verified log.

The logging tone is the NAB tertiary cue of 8 kHz. The 8 kHz oscillator in a standard Criterion cartridge recorder is automatically keyed by the Logging Encoder to record tone clusters representing the five digit logging code. Material to which a code has been assigned must be a minimum of ten seconds in length to allow time for decoding.

Only the "start" time is logged from audio sources other than tape cartridge machines. This is because of the lack of a separate control track for recording the logging code on a separate track on reel-to-reel recorders. A special Code Generator, however, is available from which as many as eight different five digit codes to identify material such as network, studio inputs and music can be provided.

# AUTOMATION SYSTEMS EQUIPMENT

## AUTOMATION PRODUCTION EQUIPMENT



Consisting of:

- 1 Scully 7½-15 ips. stereo record/playback unit.
- 1 25 Hz Tone Generator for application of subaudible tone on music tapes.
- 1 Set 25 Hz Tone Filters for removal of sub-audible tones from program content.
- 1 25 Hz Tone generator for application of sub-audible tone on music tapes.
- 1 Logging encoder control for encoding five digit code number on cartridges.
- 1 Logging encoder, impulses logging code.
- 1 Criterion professional cartridge record/playback unit for recording of spots, news, weather and ID's.
- 1 Equipment rack.

Designed for use with the Automate 1007 system, this selection of independent production equipment greatly enhances the value of Automation operation to the modern broadcaster by providing greater quality control over program content, while preserving the "live" sound.

Reel-to-reel recordings can be produced on the Scully unit for broadcast by the automation system. Spots, news, and

weather can be recorded in the cartridge units and loaded in the automation equipment as needed. Complete programs with specialized content can be produced and auditioned well ahead of their scheduled air time. As a result, you get more efficient production control, more uniformity in quality, a greater capability in format variation, and more efficient use of your talent.

### CRITERION — 55 Multiple Cartridge Reproducer

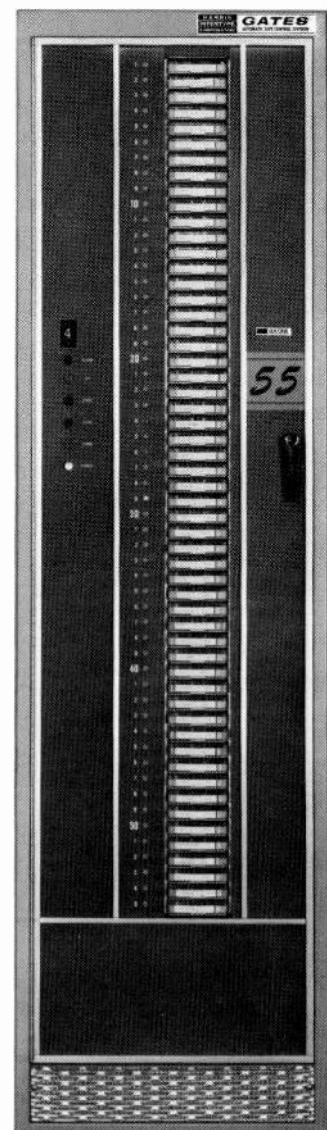
With ample capacity for broadcast and storage of 55 NAB type A tape cartridges, and using the famous performance-proven Criterion playback unit, the Criterion 55 provides increased flexibility for automation systems while assuring excellent audio broadcast quality.

Up to 55 cartridges are placed in the rack in the exact order they appear on the broadcast schedule. The deck moves from top to bottom and stops only at the slots which have a cartridge. It pulls the cartridge into position on the deck, and positively locks it against the microset head assembly, assuring unsurpassed quality.

After each cartridge has played, recorded, and has been returned to storage, the Criterion deck moves down and searches for the next cartridge. When the deck has completed its vertical cycle, it returns to the top, ready to automatically repeat the sequence.

In addition to its commercial and program material handling capacity, the Criterion 55 has all the superb reproduction qualities of the Gates Criterion tape cartridge system, making it perfect for music operation as well as announcements.

The excellent construction and conservative design along with its large load capacity make the Criterion 55 an ideal unit for heavy schedules with a minimum of attention. The unit is designed for continuous operation.



See Specifications Page 31



# CRITERION TRANSISTOR CARTRIDGE TAPE SYSTEM

## DIRECT DRIVE DESIGN

The Criterion is available in playback and record/playback combination models for either rack or desk top mounting. The basic Criterion playback unit is a solid state machine available with slide-out rack panel mounting or trimline desk console in either monophonic or stereophonic versions. The primary 1 kHz cue tone is standard. Second and third cue tone operation is optional at additional cost on both monophonic and stereophonic models. All versions of the Criterion series playback meet all National Association of Broadcasters specifications and offer features such as 24 volt dc external function switching for safety in remote controlled applications. (show models and types).

## PRECISION MECHANICAL CONSTRUCTION

Major reasons for the excellence of the Criterion unit are its outstanding engineering and quality of the tape deck, motor mechanism head assembly, and control solenoid. The entire assembly is built upon a heavy duty precision machined aluminum casting, which assists in providing proper cartridge alignment

on the exclusive Micro-Set head assembly and is the rugged integral mounting base for the other tape transport components.

## PRECISION MICRO SET HEAD ASSEMBLY

The Micro-Set is a precision assembly consisting of five major elements:

- 1) Machined cast aluminum mounting base.
- (2) Two spring loaded

- machined cast aluminum adjustable head mounting assemblies.
- (3) Triple tape guide assembly.
- (4) Cartridge hold-down spring.
- (5) Head cover and assembly shield.

The assembly serves two purposes: (1) To provide convenient and positive positioning of any rear mount head used on Criterion Equipment by screwdriver adjustment and (2) To positively guide the tape as it passes the heads.

## SPECIFICATIONS

### CRITERION 55

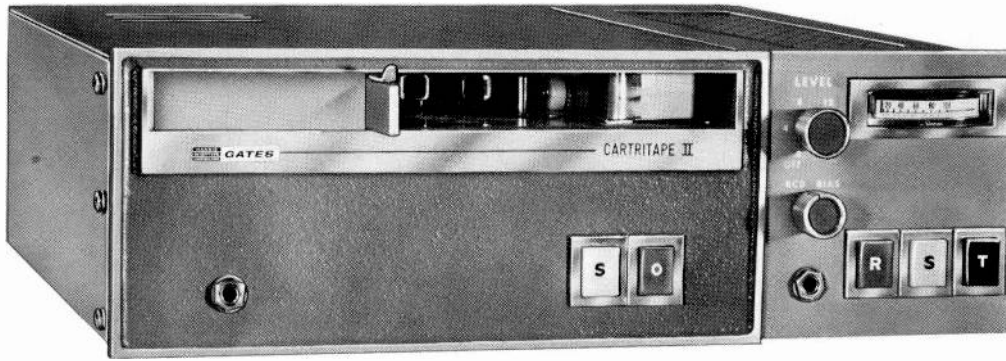
**CAPACITY:** 55 NAB—A Cartridge (10½ min., maximum each).  
**MODE OF OPERATION:** Sequential, from top to bottom with auto re-cycle after passing bottom shelf.  
**CHANGE TIME:** Cartridge run out plus 5 seconds.  
**RECYCLE TIME:** Maximum 62 sec. from rejection of bottom cartridge until top cartridge is ready.  
**FRONT PANEL CONTROLS:** START, STOP, UP, DOWN, POWER OFF/ON.  
**EXTERNAL CONNECTIONS:** Audio—600 ohms, balanced (150 ohms optional). Remote Start, Remote Stop, Secondary Cue Pulse Relay Contacts (normally open), Tertiary Cue Pulse Relay Contacts (normally open), Automation Switch Pulse (momentary closed circuit as cartridge starts to play).  
**DECK VERTICAL ELEVATOR MOTOR:** ¼ HP split phase industrial motor.  
**ELEVATOR MOTOR BRAKING:** DC impedance braking (DC pulse applied to motor to stop rotation).  
**ACCESS:** Front and Rear Doors.  
**POWER REQUIREMENTS:** 105-125 VAC 60 Hz (50 Hz available on special order), 60 W Ready/Play, 675W Indexing.  
**DIMENSIONS:** Height: 77½", Depth: 22", Width: 23¾".  
**SHIPPING DATA:** Net: 405 lbs., Shipping: 480 lbs., Cubage  
**TAPE DECK:** Adapted Criterion Playback.  
**AUDIO OUTPUT:** 600 ohms 0 dB. (150 ohms optional) balanced.  
**CUE SIGNALS:** NAB Standard Cue Pulses (Other on special order).  
**EQUALIZATION:** NAB Standard Playback Response.  
**FREQUENCY RESPONSE:** ±2 dB 70 to 12,000 Hz ±4 dB 50 to 15,000 Hz.  
**DISTORTION:** Record to Playback, 2% at 0 VU record level, 40 Hz.  
**NOISE:** 55 dB below tape signal reference of 400 Hz with 3% THD.  
**ELECTRONICS:** Solid State modules interchangeable with standard Criterion modules.  
**TRANSISTOR AND DIODE COMPLEMENT** (3) Type 2N1183, (10) Type 2N508, (13) Type 1N3255, (1) Type 1N759.  
**TAPE SPEED:** 7.5 ips.  
**TAPE DRIVE SYSTEM:** Direct Capstan Drive Motor, sealed ball bearings.  
**WOW AND FLUTTER:** 0.2% maximum.  
**TIMING ACCURACY:** 0.4% maximum error.  
**TAPE START AND STOP TIME:** Less than 0.1 sec.  
**MEETS OR EXCEEDS ALL APPLICABLE NAB TAPE CARTRIDGE STANDARDS**

### CRITERION SYSTEM

**POWER SOURCE:** 105-125 volts, 60 Hz, 50 Hz on special order.  
**POWER REQUIREMENTS:** 60 watts maximum.  
**SYSTEM FREQUENCY RESPONSE:** ±2 dB 50 to 12,000 Hz. ±4 dB 50 to 15,000 Hz.  
**NOISE:** 55 dB below tape signal reference of 400 Hz, 3% THD.  
**DISTORTION:** Record to playback, less than 2% at 0 VU record level, 400 Hz.  
**EQUALIZATION:** NAB Standard Response.  
**AMBIENT TEMPERATURE:** 55°C, maximum.  
**AUDIO OUTPUT:** 600 ohms, balanced, 0 dBm. 150 ohms optional.  
**CUE SIGNALS:** NAB Standard Cue Signals.  
**REMOTE CONTROL:** All Control Functions.  
**HEAD ASSEMBLY:** Laminated Hyperbolic heads in Micro-Set assembly.  
**TRANSISTOR AND DIODE COMPLEMENT:** (3) type 2N1183  
(10) type 2N508 (13) type 1N3255 (1) type 1N759  
**TAPE SPEED:** 7½ inches per second.  
**TAPE DRIVE SYSTEM:** Direct Capstan Drive, sealed ball bearings.  
**FLUTTER AND WOW:** .2% or less.  
**TIMING ACCURACY:** .4% or better.  
**TAPE START AND STOP TIME:** Less than .1 second.  
**TAPE PULLING FORCE:** Four pounds.  
**DIMENSIONS AND WEIGHT:** Rack mount 7" high, 19" wide, 13½" deep. Desk top cabinet 5" high, 13½" wide, 14" deep. Weight 30 lbs.  
**RECORDING AMPLIFIER**  
**POWER SOURCE:** From playback unit.  
**AMBIENT TEMPERATURE:** 55°C maximum.  
**AUDIO INPUT:** 600 ohms balanced line, input levels from -15 to +18 dBm.  
**REMOTE CONTROL:** All functions.  
**BIAS OSCILLATOR:** Push-pull, 70 kHz.  
**TRANSISTOR AND DIODE COMPLEMENT:** Recording amplifier with 1000 Hz primary cue tone, 150 Hz, secondary cue tone and 8000 Hz tertiary cue tones:  
(7) type 2N508 (2) type 2N1414 (1) type 1N462 (1) type 1N3255  
**DIMENSIONS AND WEIGHT:** Rack mount: 5¼" high, 19" wide, 11¾" deep. Desk top Cabinet: 4" high, 13¼" wide, 12¾" deep. Weight: 12 lbs.



# CARTRITAPE II TRANSISTOR CARTRIDGE TAPE SYSTEM



Cartritape is a professional tape system designed to conform fully with all NAB standards, and with many new improvements for convenience, quality, and dependability. Models are available for recording and playback in both stereo or monaural with one, two, or three cue tone automated programming. The outstanding feature of this equipment is its compactness.

All components are Solid State and modular, and a complete recorder, or playback only unit occupies just 5¼" of standard rack space. Any model will desk mount, also, and all are supplied with rack brackets and rubber feet. All mechanical adjustments, head azimuth alignment, etc., have been simplified for easy and accurate adjustment.

## SPECIFICATIONS

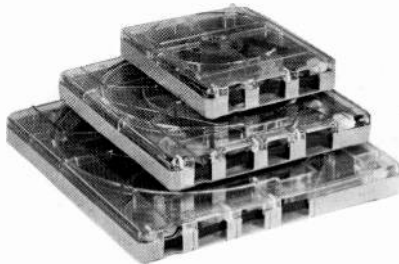
**FREQUENCY RESPONSE:** ±2 dB 50-12,000 Hz, @ 7½ IPS.  
±4 dB 50-15,000 Hz, @ 7½ IPS  
**DISTORTION:** Less than 1% at normal record level (limited by tape).  
**SIGNAL TO NOISE RATIO:** 50 dB.  
**CROSS TALK BETWEEN CHANNELS:** 55 dB at 1 kHz.  
**WOW AND FLUTTER:** Less than 0.2% RMS.  
**TAPE SPEED:** 7.5 IPS ±0.4%.  
**EQUALIZATION:** NAB.  
**PLAYBACK TIME:** 1 second to 31 minutes in 3 basic cartridge sizes.  
**CUEING ACCURACY:** Within 0.1 second.  
**STARTING TIME:** Instantaneous.  
**RECORDING INPUT:** 150/600 ohms balanced @ -20 dBm.  
10,000 ohm bridging @ +4 to +18 dBm.  
**OUTPUT:** -15 dBm @ 150/600 ohms balanced or unbalanced.  
**CUE SIGNALS:** 1,000 Hz primary tone, standard.  
150 Hz secondary—optional "end of message" cue tone.  
8 kHz tertiary—optional "random" cue tone.  
**POWER:** 117 AC volts nominal, 60 Hz and 50 Hz units available.  
**POWER CONSUMPTION:** Playback, 35 watts maximum.  
Record/play, 40 watts maximum.  
**SIZE:** (All models supplied with 19" rack adaptors and rubber feet for desk mounting.)  
Playback unit: 5¼" x 12" x 16½" deep.  
Record unit: 5¼" x 5" x 16½" deep.  
Note: Record unit mounts to side of playback unit.  
**WEIGHT:** Record unit 12 lbs. Playback unit 21 lbs.  
**CUBAGE:** Record/Playback unit, 2 cu. ft.  
**AUTOMATIC AUDIO SWITCHER:** Input capacity—For 4 playback units,

monaural or stereo. Size 17½" x 15" with 19" rack adaptors.  
**REMOTE UNIT:** 2¾" high, 5¾" wide, 5¾" deep. 2 lbs.  
**CONNECTIONS:** Quick disconnect plugs in 3 groups Remote-Audio out-Control.  
**FINISH:** Two-tone beige gray with brushed aluminum trim.

## ORDERING INFORMATION

Cartritape II Playback Unit for Monaural, 1 Tone .....	M-6211F
Cartritape II Playback Unit for Monaural, 2 Tone .....	M-6211G
Cartritape II Playback Unit for Monaural, 3 Tone .....	M-6211H
Cartritape II Playback Unit for Stereo, 1 Tone .....	M-6212C
Cartritape II Playback Unit for Stereo, 2 Tone .....	M-6212D
Cartritape II Playback Unit for Stereo, 3 Tone .....	M-6212E
Cartritape II Record/Play Unit for Monaural, 1 Tone .....	M-6213I
Cartritape II Record/Play Unit for Monaural, 2 Tone .....	M-6213J
Cartritape II Record/Play Unit for Monaural, 3 Tone .....	M-6213K
Cartritape II Record/Play Unit for Stereo, 1 Tone .....	M-6214F
Cartritape II Record/Play Unit for Stereo, 2 Tone .....	M-6214G
Cartritape II Record/Play Unit for Stereo, 3 Tone .....	M-6214H
Cartritape II 150 Hz Cue Amplifier .....	M-6216A
Cartritape II 8000 Hz Cue Amplifier .....	M-6216B
Cartritape II Switcher, Monaural .....	M-6219
Cartritape II Switcher, Stereo .....	M-6220
Cartritape II Remote Unit, Playback .....	M-6221
Cartritape II Remote Control, Record/Playback .....	M-6234
Cartritape II Cartridge Storage Rack .....	M-5986

## TAPE CARTRIDGES



Gates cartridges comply fully with all applicable standards adopted by the National Association of Broadcasters and may be used with all professional cartridge machines. Automatic tape cartridges are recommended for use with Gates Cartritape II, Criterion and other professional cartridge tape equipment. Continuous, self-contained, single reel type, operating on an endless loop principle. Tape is pulled from the center and, after passing the recording or playback head, is automatically rewound on the outside of the reel contained in the cartridge.

Special lubricated tape is completely contained in the plastic magazine and is never touched by the operator.

NAB-A Series	Catalog No.
TIME @ 7½ IPS	
Empty .....	A-300
40 Seconds .....	A-300A
70 Seconds .....	A-300B
100 Seconds .....	A-300C
3½ Minutes .....	A-300D
5½ Minutes .....	A-300E
10½ Minutes .....	A-300G
NAB-B Series	
Empty .....	B-600
16 Minutes .....	B-600H
NAB-C Series	
Empty .....	C-1200
31 Minutes .....	C-1200J

# SOLID STATESMAN REMOTE AMPLIFIERS

## DYNAMOTE "70"



Broadcasting's newest and most deluxe remote amplifier with unsurpassed quality and features. This Solid Statesman unit provides four mixing channels, plus master gain, and nine switchable inputs, including: 4 microphones, 2 magnetic phono, 2 auxiliary high level, and inbuilt test oscillator. Outputs included for program line, P.A. feed with separate level control, dual headphone jacks for engineer and announcer, plus a special provision to parallel numerous Dynamotes for complex originations.

### SPECIFICATIONS

**MIXING CHANNELS:** Total four; three switchable for other functions.  
**INPUT CIRCUITS:** Channel 1, microphone input; Channel 2, microphone and tone oscillator; Channel 3, microphone, turntable and high level input; Channel 4, microphone, turntable and high level input. Input levels: Microphones —60 dBm. High level 600 ohm circuits rated —15 dBm to +8 dBm. Turntable inputs have RIAA equalization and accept standard VR-type phono cartridges without further preamplification.  
**OUTPUT CIRCUITS:** 1 program line, 1 isolated P.A. feed, 1 mixer multiple output, 2 headphone monitoring jacks.  
**SOURCE IMPEDANCES:** Microphones 30/50 and 150/250 ohms, balanced or unbalanced, with input transformers all channels. High level 600 ohms, unbalanced. (—15 dBm to +8 dBm input level).  
 Turntables 6200 ohms for VR type pickup cartridge equalization.  
 Mixer Multiple Input 600,000 ohms.  
**INPUT IMPEDANCE:** Preamplifiers, 1500 ohms or higher 30-15,000 Hz.  
**LOAD IMPEDANCES:** Program Output 600/150 ohms, balanced or unbalanced, (factory connected for 600 ohms).  
 P.A. Feed 100,000 ohms unbalanced.  
 Amplifier Paralleling 600,000 ohms bridging.  
**OUTPUT PARALLANCE:** Program Amplifier, 490 ohms nominal.  
**GAIN:** Microphone input to line output, 97 dB, ±2 dB.  
**RESPONSE:** ±1½ dB, 25 to 16,000 Hz.  
**DISTORTION:** 1.0% maximum, 30-15,000 Hz @ +18 dBm output (after 6 dB isolation pad).  
**NOISE:** 62 dB or better below +8 dBm output with —60 dBm input. (Relative input noise —122 dBm).  
**BATTERY COMPLEMENT:** 12 Size "C" 1½ volt cells for amplifier.  
 2 Size "D" 1½ volt cells for VU light.  
**BATTERY LIFE:** Approximately 200 hours for amplifier pack, and 60 hours for meter light.  
**EXTERNAL POWER:** Four terminal plug on rear accepts optional M-6435 in-line power pack for 117 volt AC operation.  
**CABINET DATA:** Size: 12¾" wide, 4¾" high, 12½" deep. Finish: Charcoal gray vinyl with satin chrome trim accents. Weight: 12¼ pounds, including batteries.  
**SHIPPING DATA:** Packed weight: Domestic, 16 lbs. Export, 35 lbs. Cubage 2.

### ORDERING INFORMATION

Dynamote "70" 4-channel remote amplifier, complete but less male microphone connectors and batteries ..... M-6434  
 Microphone plugs, male (four required) ..... XLR-3-12C  
 Battery complement for Dynamote "70" ..... M-6441  
 Vinyl cover with accessory pocket ..... M-6445

## ATTACHE "70"



Unexcelled remote pickup performance is provided by this stylish new three channel, fully transistorized audio remote amplifier. An honor member of the Gates Solid Statesman product line, the Attache "70" brings new convenience, ease, and status to remote broadcast origination. Attache "70" provides: Three microphone channels with one magnetic phono and one high level input; long 200 hour battery life; optional in-line AC power supply; slide-rule VU meter; and superior performance with wider response and lower distortion.

### SPECIFICATIONS

**MIXING CHANNELS:** 3 with channels 2 and 3 switchable to other functions.  
**INPUT CIRCUITS:** Channel 1, microphone only, includes input transformer; Channel 2, microphone or 400 Hz tone oscillator or high level input; Channel 3, microphone or turntable.  
**OUTPUT CIRCUITS:** Program line for 600/150 ohms, P.A. feed, and headphone monitoring jack.  
**SOURCE IMPEDANCES:** Microphones, 30/50 ohms or 150/250 ohms. Turntable, 6200 ohms for VR pickup cartridges and RIAA equalized. High level, 600 ohms unbalanced —15 dBm to +8 dBm. (see Note 1).  
**GAIN:** Microphone input to program line output is 94 dB ±2 dB.  
**RESPONSE:** ±1.5 dB, 25-16,000 Hz.  
**DISTORTION:** 1% or less at +18 dBm into the program line. (6 dB isolation pad incorporated).  
**NOISE:** 62 dB below +8 dBm output with —60 dBm input. (relative noise —122 dBm).  
**BATTERIES:** 12 standard 1½ volt type "C" cells for amplifier and 2 standard 1½ volt type "D" cells for meter light. Battery life 200 hours or more, 60 hours on meter.  
**A.S. POWER:** Gates in-line M-6435 power pack for 117 volt, 50/60 Hz.  
**SIZE & WEIGHT:** 10" wide, 4¾" high, 12½" deep. Finish: Charcoal gray, black and satin chrome trim. Net weight with batteries, 10 lbs. Packed weight: Domestic 20 lbs. Export 35 lbs. Cubage 1½.

### ORDERING INFORMATION

Attache 3-channel remote amplifiers, less batteries ..... M-6433  
 Microphone connector, 3 required ..... XLR3-12C  
 Battery Kit complete ..... M-6441  
 Optional mic. input transformer ..... 478-0221  
 Power Supply, in-line type ..... M-6435  
 Pliable vinyl cover ..... M-6444



Rear view, Dynamote "70"

# SOLID STATESMAN REMOTE AMPLIFIERS

COURIER "70"



UNIMOTE "70"



Two mixing channels fill the basic needs of many remote pickups, and the Gates Courier "70" provides a Solid Statesman quality amplifier for such situations. Premium features include: separate preamplifier for each mixing channel, slide rule illuminated VU meter, very long battery life, optional in-line A.C. power supply, 1% or less distortion at high output levels, studio quality frequency response, and total weight of less than 9 pounds with batteries.

## SPECIFICATIONS

**MIXING CHANNELS:** 2 for microphones.  
**OUTPUT CIRCUITS:** 1 program line, 1 headphone monitor.  
**SOURCE IMPEDANCE:** Microphone 30/50 to 150/250 ohms, unbalanced. Input transformers optional  
**LOAD IMPEDANCE:** 600/150 ohms, balanced or unbalanced Factory connected for 600 ohms.  
**MAXIMUM INPUT LEVEL:** -35 dBm into either microphone channel.  
**MAXIMUM OUTPUT LEVEL:** +18 dBm to program line, after 6 dB line isolation pad.  
**GAIN:** Microphone input to line output, 94 dB  $\pm$  2 dB.  
**RESPONSE:**  $\pm$  1 1/2 dB, 25 to 16,000 Hz.  
**DISTORTION:** 1.0% maximum, 30-15,000 Hz @ +18 dBm output.  
**NOISE:** 72 dB or better below +18 dBm output with -50 dBm input. (Relative input noise, -122 dBm.)  
**BATTERY COMPLEMENT:** 12, Size "C" cells for amplifier. 2, Size "D" cells for VU light.  
**BATTERY LIFE:** Approximately 200 hours for amplifier pack, 60 hours for meter light.  
**EXTERNAL POWER:** Four terminal plug on rear accepts external M-6435 in-line power pack for 117 volt A.C. operation.  
**CABINET DATA:** Packed weight: Domestic 14 lbs. Export 32 lbs. Cubage 1 1/2 cu. ft.

## ORDERING INFORMATION

Courier "70" 2 channel transistorized remote amplifier, complete with transistors, less batteries ..... M-6432A  
 100% battery kit for Courier "70" ..... M-6441  
 Microphone input transformer ..... 478-0221  
 Vinyl cover, with accessory pocket ..... M-6444  
 "In-Line" power supply for 117 volt operation ..... M-6435  
 Microphone connectors, male (2 required) ..... XLR3-12C

Imagination in engineering and styling distinguish the new Unimote "70" transistorized single channel remote amplifier. Gates engineers have combined the latest electronic circuitry techniques in a compact, functional and attractive unit. At least 300 hours of battery life with this new all transistor single channel unit can be expected. If A.C. operation is desired, the in-line power unit is available. Performance is studio quality while weight is only five pounds, complete with batteries.

## SPECIFICATIONS

**INPUT CIRCUIT:** One 30/50 or 150/250 ohm microphone.  
**OUTPUT CIRCUIT:** One program line, one headphone monitor.  
**LOAD IMPEDANCE:** 600/150 ohms, balanced or unbalanced, (factory connected for 600 ohms). 6 dB isolation pad self-contained  
**GAIN:** Microphone input to line output, 82 dB  $\pm$  2 dB.  
**OUTPUT LEVEL:** Adjustable +18 dBm to program line, maximum.  
**RESPONSE:**  $\pm$  1 1/2 dB, 30-15,000 Hz.  
**DISTORTION:** 1.0% maximum, 30-15,000 Hz @ +18 dBm output.  
**NOISE:** -122 dBm relative input noise.  
**BATTERY COMPLEMENT:** 12, Size "C" cells.  
**BATTERY LIFE:** Approximately 300-400 hours, average duty cycle.  
**EXTERNAL POWER:** External M-6435 in-line power pack for 117 volt AC operation, (optional). (Instantaneous automatic changeover to battery in event of power failure.)  
**CABINET DATA:** Size: 10" W x 5 1/4" H x 4 1/4" D.  
**FINISH:** Anodized aluminum front panel with beige-gray Royalite case.  
**WEIGHT:** 5 lbs., including batteries.  
**SHIPPING DATA:** Packed weight: 6.5 lbs.

## ORDERING INFORMATION

Unimote "70" single channel remote amplifier, less batteries .... M-6431A  
 Battery complement for above ..... 660-0020  
 Input transformer ..... 478-0221  
 In-Line power supply ..... M-6435  
 Microphone connector, male (1 required) ..... XLR3-12C

## IN-LINE POWER SUPPLY

Compact accessory power unit for any Gates Solid Statesman remote amplifier: "IN LINE" Type, with 48" output cable, terminating in mating plug for all units. 72" line cord. Designed primarily for 117 volt, 50/60 Hz operation of Gates Remote Amplifiers in permanent installations, it will also operate from 220 volt, 50/60 Hz by simple modification.

Dual supply design provides power for amplifiers and VU meter illumination. Easily carried in accessory pocket of Vinyl remote amplifier covers.

## SPECIFICATIONS

**POWER INPUT:** 117 volts, 50/60 Hz (220 volt available).  
**POWER OUTPUT:** 4 prong plug, mates with remote amplifier.  
**SIZE:** 5 1/2" x 4" x 1 3/4" case. DC Supply Cable, 48" long. AC Power Cord, 82" long.  
**FINISH:** Charcoal gray vinyl-clad steel.  
**WEIGHT:** 2 lbs. net.

## ORDERING INFORMATION

In-Line DC Power Supply, Complete ..... M-6435

# PROFESSIONAL TRANSCRIPTION TURNTABLE — 16 INCH

Modern broadcast formats place heavy reliance on transcribed music, commercials and prepared programs. Recent advances in recording techniques, as well as stereo requirements, have made new demands on reproducing equipment. Consequently, Gates designed new turntables in 12" and 16" sizes with a unique drive principle. The result is low rumble content without

sacrifice of quick cueing, and a greatly improved reliability factor. As Gates turntables are a precision machined device, they may not be the lowest in initial cost but are far less expensive on the basis of per-hour operating cost. Heart of Gates turntable design is the hub drive which is an integral part of the machine's turntable platter and about one-half the radius of a 45 RPM disc.

A single neoprene idler wheel for all speeds is floating and self-aligning. A 600 RPM hysteresis synchronous motor with 3-speed pulley engages the idler wheel to the inner hub. This combination of lower motor speed (one third that of other models) and a drive system located inside the playing surface, results in remarkably low rumble, without sacrificing fast starts.

The Gates CB-500 is the most widely used 16 inch turntable in the broadcasting industry. Designed for continuous 24 hour ruggedly constructed, this turntable is commedly service to meet the strain of any control room operation.

Time proven features include heavy machined aluminum platter, rubber shock mounted cast aluminum chassis, "oilite" hub bearing, self-centering neoprene idler wheel, "monoball" self-aligning speed shift bearing, and a functional speed selector mechanism. (Order pick-up arm separately)



CB-500  
16" CHASSIS

## SPECIFICATIONS

**CHASSIS SIZE:** 21¼" x 21¼" x 1 5/16".

**MOTOR HANG BELOW BOTTOM OF CHASSIS:** 4¾".

**CONSTRUCTION:** Both platter and base of machined aluminum.

**FINISH:** Beige gray with escutcheon in black and turntable platter cover in heavy gray felt.

**PLATTER SIZE:** 17".

**STROBOSCOPE:** Inbuilt on platter for all 3 speeds.

**CENTER SPINDLE:** Spring locking type, snaps up for 45 RPM hub, locks down for smaller spindle records.

**CENTER BEARING:** 1" diameter hardened steel rotates in Chrysler oilite bearing.

**MOTOR:** Hysteresis synchronous, single phase, 600 RPM with 2 mfd. running capacitor and 40°C temperature rise.

**CUEING:** At 33½ RPM, ¼ turn. At 45 RPM, ½ turn.

**NOISE OR RUMBLE:** At 33½ RPM, rated —45 dB. At 45 RPM, rated —40 dB. At 78 RPM, rated —35 dB.

**WOW:** Rated 0.1% at 33½ RPM, capable .08%.  
**FLUTTER:** Rated 0.07% at 33½ RPM, capable .05%.

**MOTOR START:** Rocker type illuminated mercury switch.

**IDLER WHEEL:** Special shear action neoprene, self-aligning.

**SPEED CHANGE:** To 33½, 45, or 78 RPM by single indexed level control.

**POWER:** 117 volts, 60 Hz, 35 watts (50 Hz available, see below).

**SHIPPING WEIGHTS:** 45 lbs. (net weight 34 lbs.)  
Export 70 lbs. 6 cu. ft.

## ORDERING INFORMATION

16" CB-500 Transcription turntable chassis only, for 60 Hz ..... M-5739B  
16" CB-500A Transcription turntable chassis only, for 50 Hz ..... M-5739C

## READY TO OPERATE 16" ASSEMBLY



M-6053

Model M-6053 is a complete ready to operate 16" turntable assembly. Includes 16" low noise chassis, viscous damped pickup arm, turn-around 1 mil and 3 mil variable reluctance cartridge, 2 position variable equalizer to RIAA/NAB and high frequency roll off curves and M-6244 transistorized preamplifier with self-contained power supply.

## ORDERING INFORMATION

Complete 16" transcription turntable package, including self-contained transistorized preamplifier, power supply, CB-500 chassis, 2 position equalizer, pickup arm and dual sapphire stylus for 115 V, 60 Hz ..... M-6053D  
Complete transcription turntable, same as above but with dual diamond stylus ..... M-6053E (50 Hz models also stocked)



# PROFESSIONAL TRANSCRIPTION TURNTABLE — 12 INCH

**MODEL CB-77**  
33 1/3-45-78 RPM

Here are professional 12 inch transcription turntables with the same unique design principle as their companion 16 inch models. In the 12" CB-77 chassis, will be found the same inner hub drive system, the same convenient speed change system, the same illuminated rocker arm off-on switch—the only difference being reduced size, affording broadcasters a more compact turntable arrangement for today's busy control room.

(Order pickup arm separately)



CB-77  
12" CHASSIS

**CHASSIS SIZE:** 16" x 16" x 1 5/16".  
**MOTOR HANG BELOW BOTTOM OF CHASSIS:** 5 3/4".  
**CONSTRUCTION:** Platter and base of machined aluminum.  
**FINISH:** Beige gray with escutcheon in black and turntable platter cover in heavy gray felt.  
**PLATTER SIZE:** 13 3/4".  
**STROBOSCOPE:** Inbuilt for all 3 speeds.  
**CENTER SPINDLE:** Spring locking type, snaps up for 45 RPM hub, locks down for smaller spindle records.  
**CENTER BEARING:** 1" diameter hardened steel rotates in Chrysler oilite bearing.  
**MOTOR:** Hysteresis synchronous, single phase,

600 RPM with 2 mfd. running capacitor and 40°C temperature rise.  
**CUEING:** At 33 1/3 RPM, 1/4 turn. At 45 RPM, 1/2 turn.  
**NOISE OR RUMBLE:** At 33 1/3 RPM, rated —45 dB; at 45 RPM, rated —40 dB; at 78 RPM, rated —35 dB. (Meets or exceeds NAB specifications for stereophonic reproduction).  
**WOW:** 0.1% maximum, capable .08%.  
**FLUTTER:** .07% maximum, capable .05%.  
**MOTOR START:** Rocker type illuminated mercury switch.  
**IDLER WHEEL:** Special sheer action neoprene, self-aligning.  
**SPEED CHANGE:** To 33 1/3, 45 or 78 RPM by sin-

gle indexed lever control.  
**POWER:** 117 V, 60 Hz, 35 watts, (50 Hz model available, see below).  
**SHIPPING DATA:** 40 lbs. (net weight, 30 lbs.)  
Export 65 lbs. Cubage 3.6 cu. ft.

## ORDERING INFORMATION

CB-77 12 inch transcription turntable chassis only, 60 Hz ..... M-5798D  
CB-77A 12 inch transcription turntable chassis only, 50 Hz ..... M-5798E

## READY TO OPERATE 12" ASSEMBLY



M-6584

The M-6584 is a complete ready to operate 12" turntable assembly. Includes CB-77 12" low noise chassis, M-6244 transistor preamplifier, dual viscous damped 206-S/G pickup arm, turn-around 1 mil and 3 mil, variable reluctance cartridge with your choice of sapphire or diamond styli, 2 position equalizer to RIAA/NAB and high frequency roll off curves and self-contained power supply.

## ORDERING INFORMATION

Complete 12 inch transcription turntable package, including self-contained transistorized preamplifier, power supply, CB-77 chassis, 2-position equalizer, pick-up arm and dual sapphire stylus for 117 volts, 60 Hz ..... M-6584  
Complete 12 inch transcription turntable package, same as above, but with diamond stylus ..... M-6584A  
(50 Hz models also stocked)

# PROFESSIONAL TRANSCRIPTION TURNTABLES

## COMPLETE 16" SYSTEM

A complete transcription system, including M-6053 turntable package with an attractive M-6448A floor cabinet. Beautiful walnut formica styling and 28" over-all height meets NAB standard for reproduction equipment. M-6448A cabinet has adjustable leveling screws, removable grill for record storage or rack-mounting control room equipment. Size 24" x 24" x 26", (plus 2" to platter surface). Shipping weight, 124 lbs.

### ORDERING INFORMATION

Complete 16" transcription equipment in floor cabinet, consisting of M-6053 equipment and M-6448A cabinet ..... M-6463  
 Complete 16" transcription equipment in cabinet, consisting of M-6053E (diamond styli) and M-6448A cabinet ..... M-6463E  
 Floor cabinet only with cutout for 16-inch chassis ..... M-6448A  
 (60 Hz models listed, 50 Hz also available)



## COMPLETE 12" SYSTEM

This complete 12" transcription unit consists of M-6584 equipment housed in the functionally attractive M-6448A floor cabinet. Beautifully styled in walnut and neutral tone formica. Accents in satin black, including expanded metal grill which is removable to reveal 19" standard rack mounting angles. Size: 24" x 24" x 26", (plus 2" to platter surface). Shipping weight 110 lbs.

### ORDERING INFORMATION

Complete 12" transcription equipment in floor cabinet, consisting of M-6584 equipment and M-6448A cabinet ..... M-6587  
 Complete 12" transcription equipment in cabinet, consisting of M-6584A (diamond styli) and M-6448B cabinet ..... M-6587A  
 Floor cabinet only with cutout for 12-inch chassis ..... M-6448B

## STEREO TURNTABLE EQUIPMENT

Many broadcasters will desire this compatible stereophonic transcription turntable system which superbly reproduces stereo or monaural recordings. Includes CB-77 low rumble, 12" chassis with 206-S/G viscous damped transcription arm, M-44-7 stereo dynetic cartridge with diamond stylus and the Gates M-6442 compatible stereo-monaural preamplifier with self-contained power supply. Switching from monaural to stereo is by one switch. RIAA/NAB, flat and roll off curves are rotary switch selected.

### ORDERING INFORMATION

Complete Stereo Turntable equipment with diamond stylus and M-6448B cabinet ..... M-6590  
 (60 Hz models listed, 50 Hz also available)



## DOUBLE TURNTABLE CABINET

Beautifully styled, and dimensioned to accommodate either twelve or sixteen-inch Gates Turntables. Total of 64 inches of 19-inch rack mount space available front and back both sections. 2½ inch steel base and floor levelers. Over-all dimensions 24" x 46" x 26".

### ORDERING INFORMATION

Dual turntable cabinet, with cutouts for two CB-77, twelve inch Gates turntable or systems ..... M-6449B  
 Dual turntable cabinet, with cutouts for two CB-500, sixteen-inch Gates turntables or systems ..... M-6449A

# TRANSCRIPTION ACCESSORIES



M-6442

## M-6442 STEREOPHONIC TRANSISTOR TURNTABLE PREAMPLIFIER

Designed for superior performance in stereo transcription systems, the M-6442 offers these new features: Three position response selector switch for flat, RIAA/NAB, and roll off equalization; plus a two-position switch to provide a monophonic output from stereo discs, important in many AM/FM and special library situations. Fully shielded, and completely self-contained, including power supply.

## SPECIFICATIONS

**INPUT:** 47,000 ohms.  
**OUTPUT LEVEL:** Adjustable from -22 dBm to -12 dBm from 8 Mv input.  
**RESPONSE:** With  $\pm 1$  dB of RIAA/NAB standard curve. Additional high frequency roll off and flat response switch position provided.  
**DISTORTION:** Less than 0.5% at normal level (-22 dBm to -12 out) Less than 1.0% at 10 dB overload (above 8 Mv input).  
**NOISE:** 60 dB or lower, with -63 dBm input. (-123 dBm relative input noise).  
**LOAD IMPEDANCE:** 600 ohms or 150 ohms, balanced or unbalanced.  
**MAXIMUM OPERATING AMBIENT TEMP:** +60°C (+140°F).  
**POWER:** 117 volts, 50/60 Hz, 1 watt.  
**MOUNTING:** Two holes for mounting with Gates turntable.  
**SIZE:** 3" wide, 9½" long, 5" high.  
**WEIGHT:** Net 2 lbs. Packed 8 lbs. Cubage 1 Cu. ft.

## ORDERING INFORMATION

Stereophonic Transistor Equalizer Turntable Preamplifier ..... M-6442



## M-6244 MONOPHONIC TRANSISTOR TURNTABLE PREAMPLIFIER

Single channel monophonic preamplifier designed for use in broadcasting, recording, and general sound requirements where low distortion and exacting frequency response characteristics are demanded. Features self-contained power supply and transformer output. Includes two-position equalizer with escutcheon and knob for RIAA/NAB or roll off equalization.

## SPECIFICATIONS

**INPUT:** 6200 ohms, use with VR-II high impedance cartridge only.  
**OUTPUT:** Adjustable from -22 dBm to -12 dBm with 12 Mv input.  
**RESPONSE:** Within  $\pm 1$  dB of RIAA/NAB standard curve. Additional high frequency roll off filter position provided.  
**DISTORTION:** Less than 0.5% at normal levels (-22 dBm to -12 dBm out). Less than 1.0% at 10 dB overload (above 12 Mv input).  
**NOISE:** 58 dB or lower, below -12 dBm output (with 12 Mv input).  
**LOAD IMPEDANCE:** 600 ohms or 150 ohms, balanced or unbalanced.  
**MAXIMUM OPERATING AMBIENT TEMP:** +60°C (+140°F).  
**POWER:** 115 volts, 50/60 Hz, 1 watt.  
**MOUNTING:** Two holes for mounting to Gates turntable.  
**SIZE:** 2 9/16" wide, 8 5/8" long, 2 7/8" high.

## ORDERING INFORMATION

Monophonic Equalized Turntable Preamplifier ..... M-6244

Pickup Arm



212-TN

## 212-TN

Designed for records up to 12" in diameter. Stylus force adjustable from zero to 15 grams, eliminating cartridge weights. Can be used with all popular stereo or monaural cartridges. Use with 12" turntables only.

## ORDERING INFORMATION

Gray viscous damped arm ..... 212-TN

Pickup Arm



208-S/G

## PICKUP ARMS—208—208-S/G—208-S

A fine 16" professional tone arm available in two models. The model 208-S comes with a slide and modular weights for mounting single play stereo or monophonic cartridges.

The model 208-S/G has a special slot cut into the front of the arm to clear the stem of a G.E. Turn-around cartridge allowing plug-in operation, and comes with specific hardware for this application. For 16" turntables only.

## ORDERING INFORMATION

16" Viscous-damped arm ..... Model 208-S  
 16" Viscous-damped arm for turn-around cartridge ..... Model 208-S/G

Pickup Arm



206-S/G

## PICKUP ARM—206-S/G

This new viscous-damped tone arm is the twelve-inch version of the famous 208. Designed for records up to 12 inches in diameter. Stylus force adjustable. Use with 12" turntables only.

## ORDERING INFORMATION

12" Viscous-damped arm ..... Model 206-S/G



# PROFESSIONAL BROADCAST MICROPHONES

**DESIGNED FOR BROADCASTERS:** The microphones on this page are manufactured to very exacting specifications with



## MODEL G-100 MICROPHONE

The Gates G-100 microphone is a dynamic, omnidirectional type designed for high quality pickup of music and speech. Recommended for News, Sports and general applications. Excellent as an announce microphone and for remote pickups.

### SPECIFICATIONS

**FREQUENCY RESPONSE:** Uniform from 60-12,000 Hz.  
**IMPEDANCE:** 150 ohms.  
**OUTPUT LEVEL:** —55 dB.  
**POLAR PATTERN:** Omnidirectional.  
**DIAPHRAGM:** Acoustalloy.  
**FINISH:** Non-reflecting medium gray.  
**CABLE:** 18 ft. two-conductor, shielded, synthetic rubber jacketed.  
**STAND COUPLER:** 5/8"-27 thread.  
**DIMENSIONS:** Diameter: 2 in., Length: 6 1/4".  
**NET WEIGHT:** 1 lb., microphone only.

### ORDERING INFORMATION

Gates Dynamic, Omnidirectional Microphone ..... G-100  
 Matching Desk Stand ..... 418

the commercial broadcaster foremost in mind. These are professional microphones with quality approved by Gates



## MODEL G-200 MICROPHONE

A dynamic type, omnidirectional microphone, the Gates G-200 combines slim-trim styling with outstanding performance characteristics. Ideal for Control Room work or floor-stand use as in television studios. This is a fine microphone in the modest price range for any broadcast pickup.

### SPECIFICATIONS

**FREQUENCY RESPONSE:** Uniform from 60 to 13,000 Hz.  
**IMPEDANCE:** 150 ohms.  
**OUTPUT LEVEL:** —55 dB.  
**POLAR PATTERN:** Non-directional.  
**DIAPHRAGM:** Acoustalloy.  
**FINISH:** Non-reflecting medium gray.  
**CABLE:** 18 ft. two conductor, shielded, synthetic rubber jacketed, broadcast type.  
**STAND COUPLER:** 5/8"-27 thread.  
**DIMENSIONS:** Diameter: 1 1/8", length 10 1/4".  
**NET WEIGHT:** 15 oz. microphone only.

### ORDERING INFORMATION

Gates Dynamic, Omnidirectional Microphone ..... G-200  
 Matching Desk Stand ..... 418

to meet the particular type of service required in broadcast studios and remote pickups.



## MODEL G-300 MICROPHONE

The G-300 is a cardioid microphone of the dynamic type. Provides discrimination against unwanted sound from the back. Excellent for music, live studio work and where a directional pickup is required. As a sports, rostrum or church microphone, this model is highly favored.

### SPECIFICATIONS

**FREQUENCY RESPONSE:** Uniform from 40-15,000 Hz.  
**IMPEDANCE:** 150 ohms.  
**OUTPUT LEVEL:** —55 dB.  
**POLAR PATTERN:** Cardioid.  
**DIAPHRAGM:** Acoustalloy.  
**FINISH:** Non-reflecting medium gray.  
**CABLE:** 18 ft., two conductor, shielded, synthetic rubber jacketed, broadcast type.  
**STAND COUPLER:** 5/8"-27 thread on stud.  
**DIMENSIONS:** Diameter: 1 7/8" maximum. Length: 7 3/16" not including stud.  
**NET WEIGHT:** 1 lb. 10 oz., microphone only.

### ORDERING INFORMATION

Gates Dynamic, Cardioid Microphone ... G-300  
 Matching Desk Stand ..... 419



## MODEL G-500 DYNAMIC LAVALIER MICROPHONE

Newest in Gates line. A studio quality unit designed in size and performance for TV and similar applications where a miniature, tailored response, microphone is required. For news, weather and television interview shows.

### SPECIFICATIONS

**RESPONSE:** 50 to 12,000 Hz, rising to 6 kHz.  
**IMPEDANCE:** 50-250 ohms.  
**OUTPUT LEVEL:** —59 dB.  
**POLAR PATTERN:** Omnidirectional.  
**FINISH:** Non-reflecting gray with stainless steel grill.  
**CABLE:** 30 foot, 2 conductor shielded.  
**DIMENSIONS:** 25/32 inches diameter, 2 5/8" length.  
**NET WEIGHT:** 2 ounces (less cable).

### ORDERING INFORMATION

Gates Dynamic Lavalier Microphone, with Lavalier cord and clip ..... G-500

### STUDIO AND MICROPHONE CABLE

MIC-100 Microphone cable. 2 conductor, 20 AWG standard. Braided shield. Heavy rubber jacket. .... 250-0036  
 SH-2-20 General purpose audio cable. 2 conductor, 20 AWG standard. Push-back braided shield.  
 Not insulated. .... 253-0018  
 8450 Belden miniature audio cable. 2 conductor, 22 AWG standard. Drain wire, foil shield, vinyl jacket. . 253-0054  
 8451 Belden miniature audio cable. As above, except solid conductor. 253-0059

# PROFESSIONAL BROADCAST MICROPHONES

Gradient bidirectional microphone. For the many broadcasters who prefer the "warm" sound which is characteristic of ribbon microphones. The 300 is a wide-range, quality ribbon microphone with bidirectional pickup pattern making it ideal for dialogs, interviews and other applications where front and back pickup is desirable. Equipped with live rubber shock mount. Made by Shure.

## RIBBON MICROPHONE MODEL 300



### SPECIFICATIONS

**TYPE:** Moving ribbon, bidirectional.  
**RESPONSE:** 40 to 15,000 Hz.  
**IMPEDANCE:** 30/50, 150/250 and high impedance.  
**OUTPUT LEVEL:** -59 dB.  
**FINISH:** Bronze-tone enamel.  
**SIZE:** 6" high, 1 7/16" wide, 2 1/16" deep.  
**WEIGHT:** 1 lb., net.

### ORDERING INFORMATION

Microphone, complete with connector and 20 ft. cable ..... SH-300

A truly professional cardioid microphone widely used by network broadcasters and recording studios. Variable-D principle for high discrimination against sounds from back. Permits close talking without bass accentuation. Working distance increased 1.7:1 over pressure microphones, supplied with clamp on stand mount, or use optional Model 420 desk stand.

## DYNAMIC CARDIOID MODEL 666



### SPECIFICATIONS

**TYPE:** Cardioid Dynamic.  
**RESPONSE:** 30 to 16,000 Hz.  
**IMPEDANCE:** 50, 150 or 250 ohms.  
**OUTPUT LEVEL:** -58 dB.  
**FINISH:** Cast aluminum with non-reflecting gray finish.  
**SIZE:** 7 3/4" long; 1 3/4" diameter.  
**WEIGHT:** 11 oz., net.

### ORDERING INFORMATION

Microphone, complete with 20' cable and connector ..... 666  
 Desk Stand ..... 420

## CARDIOID MODEL 642



Perfect for television, film, sports, or wherever a highly directional top quality microphone is required. Combines the best characteristics of cardioid and distributed front opening designs. Essentially cardioid unidirectional up to 500 Hz. Highly directional over balance of range. Working distance several times greater than conventional microphones. Excellent for boom use. Must be used with the model 356 shock mount. Made by Electro-Voice.

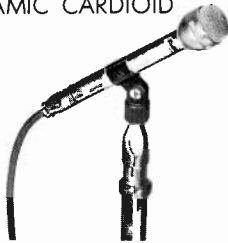
### ORDERING INFORMATION

Microphone, complete with connector and 20' cable ..... 642  
 Shock mount (required) ..... 356

### SPECIFICATIONS

**TYPE:** Dynamic, modified cardioid.  
**RESPONSE:** Flat 30 to 10,000 Hz or choice of 5 to 10 dB low frequency reduction steps by screwdriver adjustment.  
**IMPEDANCE:** 50, 150 or 250 ohms.  
**OUTPUT LEVEL:** -48 dB.  
**FINISH:** Cast aluminum with non-reflecting gray finish.  
**SIZE:** 17 1/2" long; 3 3/16 max. diameter.  
**WEIGHT:** 3 lbs. 4 oz., net.

## RE-15 DYNAMIC CARDIOID



### ORDERING INFORMATION

Microphone, complete with 18 ft. cable XR3-11 connector metal carrying case, and model 310 clamp ..... RE-15

The RE-15 is a dynamic cardioid microphone created especially for the most exacting professional applications. The new RE-15 features a degree of directional control so effective that response is independent of angular location of sound source. A super cardioid, the result is a microphone that provides the greatest possible rejection of unwanted sounds. An easily operated "brass tilt" switch corrects spectrum balance for boom use and other longer reach situations.

### SPECIFICATIONS

**FREQUENCY RESPONSE:** 60-15,000 Hz.  
**POLAR PATTERN:** Super Cardioid.  
**IMPEDANCE:** 150 ohms.  
**OUTPUT LEVEL:** -55 dB.  
**DIAPHRAGM:** Acoustalloy.  
**DIMENSIONS:** 6 7/16" long, 1 3/8" diam. (3/4" shank dia.).  
**FINISH:** Non-reflecting matte satin nickel.  
**NET WEIGHT:** 8 oz. (not including cable).  
**CABLE:** 18 feet, 2-conductor, shielded, broadcast type cable, synthetic rubber jacketed with Cannon XLR3-11 connector.  
**ACCESSORIES FURNISHED:** Protective metal carrying case, Model 310 clamp.

The E-V model 635A is a dynamic, omnidirectional microphone designed for exacting professional applications, and is ideally suited for recording, FM, AM, and TV broadcasting.

The model 635A is supplied with a model 310 stand clamp adapter. High output level and extremely low sensitivity to mechanical shock make it excellent for interview, for pass around use in audience participation, and for hand-held use by vocalists.

## DYNAMIC, OMNIDIRECTIONAL MODEL 635A



### ORDERING INFORMATION

Microphone, complete with 18 ft. cable XR3-11 connector lavalier neck cord and model 310 clamp ..... 635A

### SPECIFICATIONS

**FREQUENCY RESPONSE:** 100-13,000 Hz.  
**IMPEDANCE:** 150 ohms.  
**POLAR PATTERN:** Omnidirectional.  
**OUTPUT LEVEL:** -55 dB.  
**DIAPHRAGM:** Acoustalloy.  
**CASE MATERIAL:** Steel.  
**DIMENSIONS:** 5 15/16" x 1 13/32" dia.  
**FINISH:** Non-reflecting matte satin nickel.  
**NET WEIGHT:** 6 ounces, without cable.  
**CABLE:** 18' 2-conductor shielded broadcast type, synthetic rubber jacketed.  
**CABLE CONNECTOR:** Cannon XLR-3-11.  
**ACCESSORIES:** Lavalier neck cord assembly and 310 clamp furnished.

# SPEAKERS AND Baffles

## SOLID STATESMAN M-6500 MONITOR SPEAKER/AMPLIFIER SYSTEM

The Gates Solid Statesman speaker/amplifier was designed specifically for hi-quality monitoring in broadcasting stations and recording studios. Input impedances and levels are compatible with standard monitor or audition circuits. A completely integrated combination consists of the solid state built-in amplifier, either monaural or stereo, perfectly matched to three speakers in a two-way system, self-contained in a walnut cabinet. The thinline cabinet is ideal for wall mounting in a flush or tilted position. Hardware for mounting is included with each speaker. The unit may also stand on the floor against the wall without obstructing traffic.



### SPECIFICATIONS

**CAPACITY:** 15 watts RMS.  
**RESPONSE:** 40-16,000 Hz.  
**DISTORTION:** Less than 1% at any frequency at 15 watts.  
**TONE CONTROLS:** Bass at 50 Hz,  $\pm 12$  dB from center position. Treble at 15,000 Hz,  $\pm 10$  dB from center position.  
**HUM LEVEL:** 70 dB below 15 W.

**INPUT IMPEDANCES:** 600 ohms (150 ohms available).  
 6000 ohms bridge.  
 7000 ohms bridge.  
 8 ohms only in M-6530.  
**INPUT LEVELS:** 600 ohm: -10 to -2 dBm.  
 6 K bridge: +3 to +11 dBm.  
 7 K bridge: +11 to +19 dBm.  
**SPEAKERS:** One ten inch woofer and two four inch for mid-range and tweeter.  
**AMPLIFIER:** Solid state, all silicon-transistor.  
**CABINET SIZE:** 28½" x 20" x 6".  
**FINISH:** Hand rubbed oiled walnut.  
**AC POWER INPUT:** 117 volts, 60 Hz. (50 Hz available special order).

### ORDERING INFORMATION

Monaural speaker with solid state amplifier tone and volume controls ..... M-6529  
 Speaker only, no amplifier, tone or volume controls ..... M-6530  
 Stereo speaker system consisting of two speakers, one with stereo amplifier. With stereo volume and tone control. .... M-6531

GATESPEAKERS have been developed for the broadcasting industry by the world's leading manufacturer of broadcast equipment. The Gatespeaker is designed primarily for use in offices, reception rooms and other points where a high quality wide-range speaker is desired.

### GATESPEAKER 8

The Gatespeaker 8 offers wide range, sturdy construction and minimum cost to make this one of the finest utility monitor speakers available. The 4.64 oz. magnet and 11 watt power handling capability will reproduce lows to 50 Hz and highs out to 12,000 Hz.

### SPECIFICATIONS

**SIZE:** 8".  
**MAGNET WEIGHT:** 4.64 oz.  
**VOICE COIL:** 8 ohms.  
**POWER:** 11 watts.  
 GATESPEAKER 8 ..... GRS-800

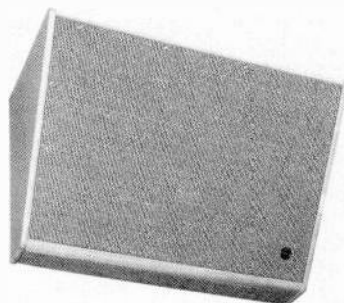
### GATESPEAKER 12

High quality, big performance and heavy duty construction identify the Gatespeaker 12. It is an ideal monitor speaker for the broadcaster. Thirteen watts power handling capability and response from 35 to 17,000 Hz. Voice coil impedance of 8 ohms and 5½" overall depth. An excellent replacement speaker.

### SPECIFICATIONS

**SIZE:** 12".  
**MAGNET WEIGHT:** 4.64 oz.  
**VOICE COIL:** 8 ohms.  
**POWER:** 13 watts.  
 GATESPEAKER 12 ..... GRS-1200

## "SENTRY I" STUDIO MONITOR SYSTEM



Attractive wall or ceiling mount integrated loudspeaker system designed for critical monitoring in recording and broadcast studios. Permits precise audio monitoring and equalization uncolored by monitor speaker. Extremely wide, flat response allows use as studio reference standard. Precision driver components include 12" Radax loudspeaker, diffraction horn high frequency driver and special crossover. Quality hardwood cabinet smooth sanded and sealed. Neutral cane grille cloth.

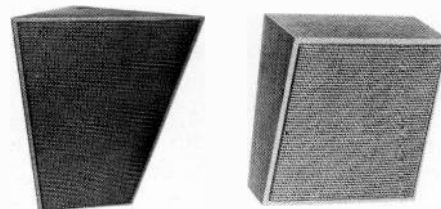
### SPECIFICATIONS

**FREQUENCY RESPONSE:** 30-20,000 Hz.  
**EIA SENSITIVITY RATING:** 49 dB.  
**POWER CAPACITY:** 20 watts.  
**IMPEDANCE:** Tapped transformer accommodates 16, 150, or 600 ohms.  
**FINISH:** Sanded and sealed with neutral cane grill.  
**SIZE:** 17" x 37" x 21¼".  
**WEIGHT:** 82 lbs., net.

### ORDERING INFORMATION

Studio Quality Loudspeaker System .. 722-0044

## WALL Baffles



Modern looking, space saving baffles for easy mounting. Entire front covered with attractive grill cloth. Constructed of plywood and hardboard for deep rich bass and clean highs. Available in Blond or Walnut finish. Use with GRS-800 or GRS-1200 speaker.

### SLANTING CORNER Baffles

8" fabric covered. Walnut ... SCB-8D  
 12" fabric covered. Walnut or blond. (Specify) ..... SCB-12D

### WALL Baffles

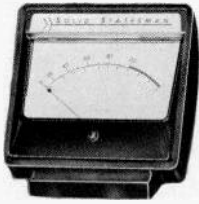
8" Deluxe wood. Walnut. ... DWB-8A  
 12" Deluxe wood. Walnut. .. DWB-12A  
 8" Fabric covered. Walnut ... WB-8D  
 12" Fabric covered. Walnut .. WB-12D

**SPEAKER TRANSFORMERS AND PADS**  
 TR-15 Matching Transformer. 15 watt capacity  $\pm 2$  dB., 35-20,000 Hz. Pri 333/500/1000/2000 ohms: Sec 4/8/16 ohms.

Matching transformer TR-15 . 478-0250  
 Transformer, Primary 45/48 ohms Sec. 8 ohms ..... 478-0275  
 Volume Control, 8 ohm T-Pad 554-0227  
 Volume Control, 4 ohm T-Pad 554-0180

\*Use with Gates Audio Consoles.

## DESK OR CONSOLE TOP V.U. METER



Standard scale B illuminated 4" V.U. meter in case aluminum housing 5 1/8" wide, 6 1/2" high and 4" deep, and sets on desk at a 30° slope.

Desk or console top V.U. meter M-6208

## VARIABLE EQUALIZER



Consists of 2 Type LE-1 equalizers described above with two variable control to insert resistance in 1 ohm steps to 111 ohms. A double jack input is provided for each of the two equalizers for parallel patching. Panel drilling and space is also provided to add a variable attenuator, often desirable in controlling line level. Size: 19" wide and 3 1/2" high. Finish: Medium Gray.

Variable Equalizer ..... LE-2  
Fixed Equalizer ..... LE-1

## VU METER AND RANGE PANEL



This accurate VU panel is a necessity for the completely equipped audio installation. An accuracy of 5% or better is maintained throughout the 2 VU per step, +4 to +42 VU range. A 10-position input selector switch permits permanent wiring to frequently checked circuits. For proof of performance measurements, equipment calibration, input level measurements from remote circuits and output levels (up to 10 watts), the V-22 meter panel offers complete versatility. Input: 7500 ohms to bridge a 500/600 ohm circuits. Frequency response: Flat 20-20,000 Hz. Size: 19" x 5 1/4" x 3" deep. Finish: Natural beige-gray and black. Shipping weight packed: 12 lbs. Cubage: 1.

VU meter and Range Panel V-22

## M-6314-A TRANSISTOR PROGRAM AUTOMATIC GAIN CONTROL AMPLIFIER



### SPECIFICATIONS

**GAIN:** 62 dB,  $\pm 0.3$  dB, or 80 dB,  $\pm 0.5$  dB, (by receptacle strapping).  
**FREQUENCY RESPONSE:**  $\pm 0.5$  dB from 20 to 20,000 Hz or  $\pm 0.25$  dB from 30 to 15,000 Hz (62 dB gain)  $\pm 0.5$  dB from 30 to 15,000 Hz, (80 dB gain).  
**DISTORTION:** 0.25% maximum from 30 to 15,000 Hz, (62 dB gain @ +32 dBm output level). 0.5% maximum from 30 to 15,000 Hz, (80 dB gain @ +32 dBm output level).  
**NOISE:** -116 dBm relative input noise (62 dB gain mode) from 30 to 15,000 Hz. -118 dBm relative input noise (80 dB gain mode) from 30 to 15,000 Hz.  
**GAIN REDUCTION (AGC):** Amplifier input/output characteristics linear below threshold of AGC @ +20 dBm output level. 6 dB gain reduction maximum in 62 dB gain mode. After maximum of 6 dB AGC, amplifier input/output characteristics become linear again. An input level of -24 dBm will result in 6 dB gain reduction and an output level of +32 dBm. Approximately 21 dB AGC in the 80 dB gain mode. Amplifier characteristics linear below the threshold of AGC @ +20 dBm output level. An input level of -27 dBm will result in 21 dB gain reduction and an output level of +32 dBm. An external switch permits disabling the AGC action, without thumps or clicks in the program circuit.  
**ATTACK TIME:** AGC attack time = 25,  $\pm 3$  milliseconds.  
**RECOVERY TIME:** AGC recovery time = 0.5,  $\pm 0.1$  second.  
**SOURCE IMPEDANCE:** 150/600 ohms, balanced or unbalanced, center tapped.\*  
**LOAD IMPEDANCE:** 150/600 ohms, balanced or unbalanced, center tapped.\*  
**POWER:** 48 volts D.C. @ 140 ma.  
**CONNECTORS:** 16 terminal (2) self-aligning, connectors recessed to prevent damage.  
**MONITORING:** Indicator lamp provides warning of short-circuit condition.  
**TEST POINT:** Pin jacks provide audio output monitoring.  
**MOUNTING TRAY:** M-6342 tray and receptacle. Six PGM/AGC amplifiers mount in 3 1/2" of vertical rack space.  
**SIZE:** 2 3/4" W x 3 1/8" H x 14 3/4" L.

A TOTALLY NEW SOLID STATESMAN AMPLIFIER FAMILY was developed for use in audio systems where nothing but the very finest will suffice.

These premium quality Gates products are in wide use at two leading U.S.

## M-6315-A TRANSISTOR MONITOR AMPLIFIER (POWER SUPPLY SELF-CONTAINED)



### SPECIFICATIONS

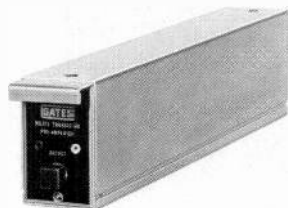
**GAIN:** 80 dB,  $\pm 1.0$  dB (may be reduced with gain control).  
**LEVELS:** Input, -26 dBm maximum, with gain adjusted for +39 dBm output or less. Output rated at +39 dBm (8 watts).  
**FREQUENCY RESPONSE:**  $\pm 1$  dB from 20 to 20,000 Hz or  $\pm 0.5$  dB from 30-15,000 Hz.  
**DISTORTION:** 0.5% maximum from 50 to 15,000 Hz at +39 dBm output. 1% maximum from 30 to 15,000 Hz at +39 dBm output.  
**NOISE:** -121 dBm relative input noise, 30 to 15,000 Hz.  
**SOURCE IMPEDANCE:** 150/600 ohms balanced or unbalanced, center tapped.\*  
**LOAD IMPEDANCE:** 150 ohms only, balanced or unbalanced, center tapped.\*  
**POWER:** Self-contained power supply, 117 volts nominal 50/60 Hz, 60 watts maximum.  
**GAIN CONTROL:** Two lamp operated photo-cells controlled by a remote actuator (maximum control current of 30 ma, at 30 volts D.C.—supplied from Monitor Amplifier) with line distance of up to one thousand feet. A 10,000 ohm Log Taper potentiometer will provide control of the lamp operated photo-cells. Potentiometer is optional equipment.  
**CONNECTOR:** 16 terminal, self-aligning. Connector recessed to prevent damage.  
**SWITCH AND FUSE:** Switch and illuminated indicating fuse holder located on the front escutcheon for A.C. control of the amplifier.  
**TEST POINT:** Pin jacks provide audio output monitoring.  
**MOUNTING TRAY:** M-6343 tray and receptacle. Four M-6315 Monitor Amplifiers mount in 3 1/2" of vertical rack space.  
**SIZE:** 4 1/8" W x 3 1/4" H x 14 3/4" L.

# STATESMAN PLUG-IN AMPLIFIERS

television networks, government agencies and leading independent broadcast groups. This fully transistorized audio amplifier line incorporates the latest state-of-the-art engineering advances, resulting in performance standards that

in many instances exceed previous industry achievements. Exhaustive laboratory testing, over a period of several man-years, has established each amplifier as absolutely the finest in its field.

## M-6313-A TRANSISTOR PREAMPLIFIER



### SPECIFICATIONS

**GAIN:** 40 dB or 46 dB (by receptacle strapping),  
**LEVELS:** Input, -20 dBm maximum (40 dB gain mode); -26 dBm maximum (40 dB gain mode). Output, +20 dBm maximum. ±0.3 dB.  
**FREQUENCY RESPONSE:** ±0.5 dB from 20 to 20,000 Hz, or ±0.25 dB from 30 to 15,000 Hz.  
**DISTORTION:** 0.25% maximum from 30 to 15,000 Hz, @ +20 dBm output.  
**NOISE:** -123 dBm relative input noise, 30-15,000 Hz.  
**SOURCE IMPEDANCE:** 150/600 ohms, balanced or unbalanced, center tapped.\*  
**LOAD IMPEDANCE:** 150/600 ohms, balanced or unbalanced.\*  
**POWER:** 48 volts D.C. @ 30 ma.  
**CONNECTORS:** 16 terminal, self-aligning, recessed to prevent damage.  
**MONITORING:** Indicator lamp provides warning of short-circuit condition.  
**TEST POINT:** Pin jacks provide audio output monitoring.  
**MOUNTING TRAY:** M-6341 tray and receptacle. Tray attaches to M-6345 panel and shelf assembly for mounting up to eight preamplifiers in 3½" of vertical rack space.  
**SIZE:** 2" W x 3⅞" H x 14¾" L.

## M-6421 TRANSISTOR POWER SUPPLY 300MA



### SPECIFICATIONS

**CAPACITY:** Up to ten M-6313 Preamplifiers, or two M-6314 Program/AGC amplifiers, or any system combination with a maximum rated current not exceeding 300 ma for use in smaller systems.  
**OUTPUT:** 48 volts D.C. at 0 to 300 ma. continuous.  
**RIPPLE:** Less than 1.0 mV from 0 to full load.  
**INTERNAL IMPEDANCE:** 0.05 ohms.  
**REGULATION:** 0.3%.  
**POWER:** 117 volts nominal, 50/60 Hz, 30 watts.  
**SHORT CIRCUIT PROTECTION:** Resistive for momentary short circuits on output. Primary fuse prevents damage from sustained short circuits.  
**CONNECTORS:** 16 terminal, self-aligning, recessed to prevent damage.  
**SWITCH AND FUSE:** Located on front escutcheon.  
**MOUNTING TRAY:** M-6422 tray and receptacle. Six M-6421 power supplies mount in 3½" of vertical rack space.  
**SIZE:** 2¾" W x 3⅞" H x 14¾" L.

## M-6338 TRANSISTOR POWER SUPPLY, 1½ AMPERES



### SPECIFICATIONS

**CAPACITY:** Up to 50 M-6313 Transistor Preamplifiers or up to 10 M-6314 Program/AGC Amplifiers or any combination with a maximum rated current of 1.5 amps. Use for large systems or where growth is anticipated.  
**OUTPUT:** 48 volts D.C. at 0-1.5 amps. continuous.  
**RIPPLE:** Less than 1.0 mv from 0 to full load.  
**INTERNAL IMPEDANCE:** 0.05 ohms.  
**REGULATION:** 0.3%.  
**POWER:** 117 volts nominal, 50/60 Hz, 130 watts.  
**SHORT CIRCUIT PROTECTION:** Resistive short circuit protection allows full operation to resume after momentary short circuits on the output. Primary fuse prevents component damage with sustained short circuits.  
**UNDERVOLTAGE ALARM:** Self contained relay actuates with approximately 10% undervoltage. Contacts are connected to the output plug to permit the operation of an external alarm.  
**CONNECTORS:** 16 terminal, self-aligning, recessed to prevent damage.  
**SWITCH AND FUSE:** Switch and illuminated indicating fuse holder located on the front escutcheon for A.C. control of the Power Supply.  
**MONITORING:** Neon lamp (to indicate presence of AC supply voltage), and load lamp (to indicate output voltage). Output sampling jack located on the front escutcheon.  
**MOUNTING TRAY:** M-6344 tray and receptacle. Four M-6338 Power Supplies mount in 3½" of vertical rack space.  
**SIZE:** 4⅞" W x 3⅞" H x 14¾" L.

## M-6321-A PROGRAM AMPLIFIER



### SPECIFICATIONS

**GAIN:** 62 dB ±0.3 dB, unterminated input.  
**LEVELS:** Input -30 dBm maximum. Output +32 dBm maximum.  
**FREQUENCY RESPONSE:** ±0.5 dB from 20 to 20,000 Hz or ±0.25 dB, 30-15,000 Hz.  
**DISTORTION:** 0.25% maximum from 30-15,000 Hz @ +32 dBm output.  
**NOISE:** -116 dBm relative input noise, 30-15,000 Hz.  
**SOURCE IMPEDANCE:** 150/600 ohms, balanced or unbalanced, center tapped.\*  
**LOAD IMPEDANCE:** 150/600 ohms, balanced or unbalanced, center tapped.\*  
**POWER:** 48 volts D.C. @ 140 ma.  
**CONNECTORS:** 16 terminal (2) self-aligning, recessed to prevent damage.  
**MONITORING:** Indicator lamp provides warning of short-circuit condition.  
**TEST POINT:** Pin jacks provide audio output monitoring.  
**MOUNTING TRAY:** M-6426 tray and receptacle for up to six program amplifiers in 3½" of vertical rack space.  
**SIZE:** 2¾" W x 3⅞" H x 14¾" L.

### ORDERING INFORMATION

PREAMPLIFIER ..... M-6313A  
 PROGRAM AMPLIFIER ..... M-6321A  
 PROGRAM/AGC AMPLIFIER ..... M-6314A  
 MONITOR AMPLIFIER ..... M-6315A  
 300 ma 48 volt power supply ..... M-6421  
 1.5 amp. 48 volt power supply ..... M-6338  
 Mtg. Tray for Preamplifier ..... M-6341  
 Mtg. Tray for Program Amplifier ..... M-6426  
 Mtg. Tray for PGM/AGC Amplifier ..... M-6342  
 Mtg. Tray for Monitor Amplifier ..... M-6343  
 Mtg. Tray for M-6338 Power Supply ..... M-6344  
 Mtg. Tray for M-6421 Power Supply ..... M-6422  
 Panel and Shelf Assembly ..... M-6345

\*The source of load impedance of the amplifiers as listed in the specification is the recommended impedance of the connecting device (such as a microphone, attenuator, or line). However, the input impedance of all amplifiers is approximately ten times higher than the source impedance. The output impedance is approximately 1/10 load impedance, which permits multiple bridging without any degradation of the output signal.

# ACCESSORIES

## PROOF OF PERFORMANCE SET

FCC regulations require that official measurements of station performance be recorded for inspection at least once a year. To know that your equipment is performing properly, obtain this complete SA-131 Package with all facilities for proof of performance for both audio frequency and AM radio transmitters. Package includes a detailed instruction book with helpful information for making measurements that are accurate and reliable.

## DISTORTION METER

The Model 410 Distortion Meter measures audio distortion, noise level, audio gain or loss in dB and AC voltages. In measuring distortion, the instrument suppresses the fundamental frequency and measures the amplitude of all unwanted frequencies, including noise, as a percentage of the fundamental.

Distortion Meter ..... Model 410

## AUDIO OSCILLATOR

The Model 210 Audio Oscillator is a source for low distortion signals from 10 to 100,000 Hz. The circuit consists of an RC audio circuit followed by an amplifier of extremely low distortion.

Audio Oscillator ..... Model 210

## GAIN AND 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 useable 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.

Gain Set ..... M-3625

## DIODE AND PICKUP COIL

A desirable accessory used with AM Transmitters in conjunction with Model 410 Distortion Meter to pick 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.

Diode and Pickup Coil ..... M-3626

## MICROPHONE STANDS

### BOOM STANDS

Provide convenient microphone placement where correction position cannot be reached with conventional stands. Boom length 62 inches, height adjustable from 4 ft. to 6 ft. Base diameter 17 inches, tubular sections superchrome plated. "Snap-On" hangers provided for microphone cable. Shipping weight 33 lbs.

Boom Stand without casters .... BS-36

Boom Stand with silent casters ..... BS-36W

### ADJUSTABLE MICROPHONE ARM

Flexo Mikester Mike Support Arm clamps or screws to any position. Swings to 36 inches fully extended. Mounts any microphone up to 4 lbs. Shipping weight 7 lbs.

Flexo Mikester ..... FM-1

### DESK STANDS

Model 418. Heavy cast iron stand finished in medium gray. Specifically designed for Gates G-100 and G-200 microphones. Net weight 3 lbs.

Desk Stand ..... 418



Model 419. Heavy weight desk stand similar to the Model 418, but for use with the Gates G-300 or similar microphones.

Desk Stand ..... 419

DS-7. Adjustable desk stand for most popular microphones. Tubular section adjusts from 8 to 13 inches. Heavy chromeplated stem and gray cast base with felt feet. Shipping weight 3 lbs.

Desk Stand ..... DS-7

DS-5. Non-adjustable desk stand. Chrome-plated tube 4" high, 6" diameter cast iron base with rubber feet. Weight 2 lbs.

Desk Stand ..... DS-5

TS-8. Banquet Stand. Adjustable 14½" to 26". Chrome stem sections with velvet-action clutch adjustment. 8" diameter base. Weight 5 lbs.

Banquet Stand ..... TS-8

### FLOOR STANDS

MS-25. Professional microphone floor stand. "Air-Lock" cushion controls drop, prevents slippage and microphone damage. Adjusts from 37 to 66 inches. Heavy, triangular base 17 inches in diameter. Full chrome with medium gray base. For any microphone listed in this catalog. Weight, 25 lbs.

Professional Floor Stand ..... MS-25

MS-10C. Excellent for average weight microphones. Has 10" diameter base, chrome 2-section tube. Adjusts 35 to 64 inches. Weight 13 lbs.

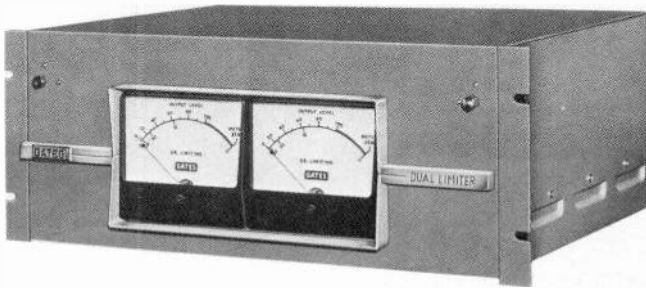
Utility Floor Stand ..... MS-10C

BB-1. "Baby Boom" stand attachment. Converts any floor stand with ⅝"-27 thread to boom-type stand. 32" boom, adjustable counter balance. Weight 6 lbs.

Baby Boom attachment ..... BB-1

## DUAL PEAK LIMITING AMPLIFIER

## SA-39B—PEAK LIMITING AMPLIFIER



Designed with special features for proper stereo balance, the M-6144A dual limiter may also be used as two totally separate monaural limiters for AM and FM operation. The complete dual limiter requires only seven inches of rack space.

### STEREOPHONIC OPERATION

For stereophonic operation, program balance is always retained. The stereo channel that is limiting the highest determines the amount of peak limiting applied to both stereo channels. Therefore, the stereo signal balance is not altered, and yet all the functions of a peak limiter are fully realized.

### MONOPHONIC OPERATION

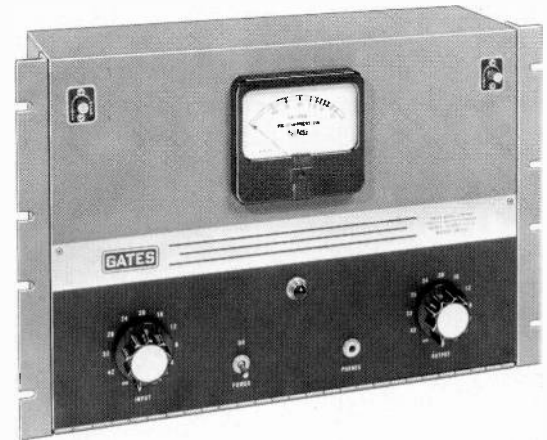
For dual monophonic operation, each limiter channel may be independent in all functions. A switch instantly changes the mode from stereo to dual separate limiters. Operating controls include input and output level controls for each limiter. Each meter, by switch selection reads (a) dB of limiting, (b) output level, and (c) balance. The limiter may be inserted either at the studio, or the transmitter end of the program circuit.

### SPECIFICATIONS

**MODE:** Stereophonic or dual channel monophonic.  
**CONTROLS:** Input and output both limiters. Input balance both limiters. Meter mode selector both limiters. Meter zeroing both limiters. Stereo-dual separate limiters switch. Power switch.  
**IMPEDANCES:** 500/600 ohms input and output both limiters.  
**AUDIO LEVELS:** Input, -45 dBm at full open gain adjustment. Output, +24 dBm into 6 dB self contained isolation pad, may be reduced with output level control. Maximum gain 63 dBm  $\pm$  2 dB.  
**RESPONSE:**  $\pm$  1 dB 30-15,000 Hz.  
**DISTORTION:** 1% or less at 10 dB limiting. 1½% or less at 25 dB limiting 30-15,000 Hz.  
**NOISE:** 70 dB below +18 dBm at output.  
**LIMITER ACTION:** Attack time 600 microseconds. Signal to thump ratio typical -35 dB up to 25 dB limiting. Rated -20 dB. Crosstalk where used as stereo or separate limiters is -70 dB or better.  
**POWER:** 117 volts, 50/60 Hz, 60 watts.  
**MECHANICAL:** 19" x 7" x 16" deep, weight packed: 50 lbs domestic. 65 lbs. export. Cubage 3. Finish: Medium beige-gray, trimmed in brushed aluminum and black.  
**TUBE & TRANSISTOR COMPLEMENT:** Ten transistors, five types—plus ten tubes, of four types.

### ORDERING INFORMATION

Dual Peak Limiting Amplifier with tubes ..... M-6144A  
 100% spare tube kit ..... TK-420



The SA-39B Limiting Amplifier is the trusted guardian of the audio signal in thousands of broadcast stations around the world. The unique circuitry developed by Gates engineers years ago and continually upgraded has been accepted as the world standard. By positive and smooth prevention of overmodulation with consistently louder audio signals, the SA-39B provides better station coverage, (a 3 decibel increase in over-all average audio signal is equivalent to doubling power). Usually installed near the transmitter it is an ideal replacement for older, slow acting limiters. The very fast attack time, essentially instantaneous, is associated with six switch selectable release times. In this manner the engineer may adopt the mode of operation best suited for him.

Although action is extremely fast, distortion remains low at compression levels as high as 25 dB.

The SA-39B design provides separate input and output level controls and wide scale 4" meter, calibrated in decibels of compression, for direct reading.

### SPECIFICATIONS

**MODE:** Monaural.  
**CONTROLS:** Input and output level controls on front panel.  
**METER:** Reads directly in decibels of limiting.  
**IMPEDANCES AND LEVELS:** Input: 500/600, 150/250, 30/50 ohms.  
 Input Level: -20 dBm to +20 dBm, (adjustable).  
 Output: 500/600 ohms.  
 Output Level: +18 dBm, maximum (adjustable).  
**GAIN:** Maximum 50 dB.  
**RESPONSE:**  $\pm$  1½% or less 30-15,000 Hz up to 15 dB compression. Only slightly higher up to 25 dB of compression.  
**NOISE:** 65 dB or better below any adjustable output level.  
**LIMITER ACTION:** Attack time, essentially instantaneous. Release time: six positions from 0.2 to 1.2 seconds.  
**SERVICING:** Front panel drops down. Tubes in rear.  
**POWER:** 117 volts, 50/60 Hz, 90 watts.  
**MECHANICAL:** Size, 19" x 14" x 9½" deep. Weight packed: 74 lbs. Domestic. 96 lbs., Export. Cubage 9 cu. ft. Finish: Two-tone beige gray with escutcheons in black.  
**TUBES:** Total eleven, seven types.

### ORDERING INFORMATION

SA-39B Peak Limiting Amplifier with tubes ..... M-3529B  
 Spare 100% tube kit ..... TK-150



# FM TOP LEVEL, AUDIO ACCESSORIES

## TOP LEVEL FOR FM

### PREVENTS OVERMODULATION

With the advent of better recording equipment, reproducing systems, and special equalization effects used by recording artists and studios, the high frequencies fed into today's FM broadcast transmitters are often of sufficient amplitude (after pre-emphasis) to cause overmodulation. The increasing number of incidents of FM overmodulation indicate the real need for this important instrument. Designed for use between the station limiting amplifier and transmitter, Gates Top Level is a fully transistorized, frequency sensitive audio processor for FM, utilizing a precise 75 microsecond pre-emphasis curve for sampling. For broadcasters with SCA for background music, Top Level greatly reduces crosstalk and signal degradation due to pre-emphasis splatter from the main channel.

### MONOPHONIC OR STEREOHONIC

With dual channel capability, Gates Top Level is suitable for monaural or stereo operation as supplied. With Top Level, FM listeners enjoy full range reproduction at an audio level pleasing to the audience and broadcaster. Of course, this equipment is not intended for AM service.

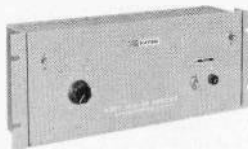


### SPECIFICATIONS

**MODE:** Dual Channel, stereophonic or monophonic.  
**INPUTS:** Two 600 ohms balanced or unbalanced.  
**GAIN:** 28 dB maximum.  
**RESPONSE:**  $\pm 1$  dB 30-15,000 Hz.  
**DISTORTION:** 0.5% maximum, 30-15,000 Hz.  
**NOISE:** 75 dB below normal output level.  
**ATTACH & RELEASE TIMES:** Instantaneous.  
**INPUT LEVEL:** -10 to +24 dBm. Adjustable.  
**OUTPUT:** 2 channels at +18 dBm, (adjustable), 600 ohms balanced or unbalanced.  
**POWER:** 117 volts, 50/60 Hz, 30 watts.  
**MECHANICAL DATA:** 19" wide, 5 1/4" high, 12" deep. Finish: medium beige-gray and black. Weight: 24 lbs. Cubage 12.

Gates FM Top Level, complete ..... M-6467

### MONITORING AMPLIFIER



### SPECIFICATIONS

**GAIN:** 100 dB or bridging 50 dB.  
**RESPONSE:** +1 1/2 dB 30-15,000 Hz.  
**DISTORTION:** 1% or less 50-15,000 Hz at +40 dB (10 watts).  
**NOISE:** 60 dB or better below -40 dBm measured at -50 dBm input.  
**IMPEDANCES:** (input) 30/50 or 150/250 ohms at 100 dB gain. 30,000 ohms bridging at 50 dB gain. (output) 2 and 16 ohms.  
**POWER:** 117 volts, 50/60 Hz, 85 watts.  
**TUBES:** Total 8, 5 types.  
**MECHANICAL:** 19" x 7" x 8" deep. Weight packed—Domestic: 34 lbs. Export: 59 lbs. Cubage: 3 cu. ft. Finish—Medium beige gray and black.

### ORDERING INFORMATION

Ultra Linear Monitoring Amplifier, with tubes ..... M-5575  
 Spare 100% tube kit ..... TK-303

### PROGRAM OR LINE AMPLIFIER



### SPECIFICATIONS

**GAIN:** 75 dB  $\pm 2$  dB.  
**RESPONSE:**  $\pm 1 1/2$  dB 30-15,000 Hz.  
**DISTORTION:** 0.75% at  $\pm 12$  dBm output 30-15,000 Hz. 1% at +22 dBm output 50-15,000 Hz.  
**NOISE:** 60 dB below  $\pm 12$  dBm output or equal to -120 dBm relative input noise.  
**IMPEDANCES:** Input and output: 150/250 or 500/600 ohms.  
**POWER:** 117 volts, 50/60 Hz, 45 watts.  
**TUBES:** Total 5, 3 types.  
**MECHANICAL:** 19" x 5 1/4" x 7 1/2" deep. Weight packed: Domestic 27 lbs., Export 50 lbs. Cubage 2 cu. ft. Finish: Medium beige gray and black.

### ORDERING INFORMATION

Program Amplifier with tubes ..... M-5576B  
 Spare 100% tube kit ..... TK-450

### M-6108 EIGHT WATT TRANSISTOR MONITOR AMPLIFIER



### SPECIFICATIONS

**INPUT IMPEDANCE:** 600 ohms matching, 6000 ohms bridging, transformer input.  
**OUTPUT IMPEDANCE:** 4 to 16 ohms.  
**GAIN:** 53 dB using 600 ohm input. 39 dB using 6000 ohm bridging input.  
**AUDIO RESPONSE:** 20-20,000 Hz  $\pm 1.0$  dB.  
**AUDIO DISTORTION:** 1% or less 8 watts output 50-15,000 Hz. 1% or less 6 watts output 30-15,000 Hz.  
**NOISE:** 85 dBm below +39 dBm output (8 watts).  
**POWER:** 117 volts, 50/60 Hz at 18 watts.  
**SIZE:** 4 1/2" wide, 8 1/2" long, 3 1/2" high.

### ORDERING INFORMATION

Eight watt transistorized monitor amplifier, complete ..... M-6108

### CUEING AMPLIFIER



### SPECIFICATIONS

**GAIN:** 70 dB low impedance matching, 35 dB bridging,  $\pm 2$  dB.  
**INPUT LEVEL:** -20 dBm matching or +22 dBm bridging.  
**RESPONSE:** Peaked for high intelligibility.  
**IMPEDANCES:** (input) 30/50, 150/250 or 10,000 ohms bridging. (output) to self-contained speaker with muting terminals external.  
**NOISE:** 50 dB or better below speaker level of about +30 dBm.  
**POWER:** 105/125 volts, 50/60 Hz, 25 watts.

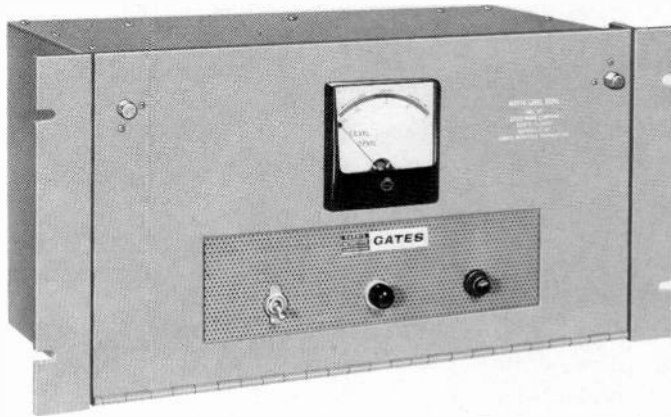
**POWER SUPPLY:** Solid state, transformer input (not AC/DC).  
**TUBES:** Total, 2.  
**MECHANICAL:** 19" x 3 1/2" x 6 1/2" deep. Weight packed: Domestic 16 lbs. Export 30 lbs. Cubage 2 cu. ft. Finish: Medium beige-gray and black.

### ORDERING INFORMATION

Cueing Amplifier with tubes ..... M-5377



## LEVEL DEVIL



### PROGRAM GATED AMPLIFIER

Level Devil accepts input signals over a 30 dB range and holds the output constant with  $\pm 3$  dB. The expander threshold is  $-10$  dB relative and below this the amplifier operates as a linear amplifier. At  $-10$  dB or above, the amplifier will expand to 0 dB. Above 0 dB (relative) it will limit up to 25 dB. With average program content at normal input level, the Level Devil operates as a linear amplifier. With above normal audio input level it operates as a limiting amplifier, and maintains the desired output level. If the average input level should drop below normal by as much as 10 dB, the Level Devil functions as a volume expander. But, when there is no signal for a period of 1 to 4 seconds, the Level Devil returns to the linear amplifier mode of operation, and does not emphasize or increase background noise. Gates Level Devil is recommended for any situation where sudden amplification of background noise would be objectionable, such as television films, telephone "talk" shows and sports broadcasts.

### SPECIFICATIONS

**MODE:** Monaural.  
**CONTROLS:** Input and output levels. Switches to select operating modes.  
**METER:** Reads direct in (a) limiting, (b) normal, and (c) expansion.  
**IMPEDANCES:** 500/600 ohms input and output.  
**INPUT LEVEL:**  $-35$  VU to  $+27$  VU (10 dB and 20 dB input pads incorporated).  
**OUTPUT LEVEL:**  $+8$  VU after 6 dB line isolation pad.  
**GAIN:** 50 dB without limiting or expansion.  
**RESPONSE:**  $\pm 1$  dB 30-15,000 Hz.  
**DISTORTION:** 1% or less 50-10,000 Hz to 10 dB limiting. 2% or less to 25 dB limiting.  
**MAXIMUM VOLUME EXPANSION:** 10 dB. Note that Level Devil can release 5 dB of compression and expand 10 dB giving effective signal increase of 15 dB.  
**EXPANSION RISE TIME:** 2 seconds.  
**EXPANDER RECOVERY TIME:** 4 seconds.  
**MAXIMUM LIMITING:** 25 dB.  
**LIMITER ATTACK TIME:** 10 milliseconds.  
**LIMITER RELEASE TIME:** 1.5 to 2.0 seconds.  
**NOISE:** 60 dB or better below 10 dB limiting.  
**POWER:** 117 volts, 50/60 Hz, 55 watts.  
**SIZE:** 19" x 8 $\frac{3}{4}$ " x 8 $\frac{1}{2}$ " deep.  
**WEIGHT:** Domestic packed 35 lbs. Export packed 45 lbs. Cubage 2.  
**FINISH:** Two-tone beige-gray and black.  
**TUBES:** Total 12, 7 types.

### ORDERING INFORMATION

Level Devil with tubes ..... 5546A  
 Spare 100% tube kit ..... TK-331

## THE STA-LEVEL



### CONSTANT PROGRAM LEVEL AMPLIFIER

Perhaps no single equipment in all of broadcasting has done so much for so little cost as the Gates Sta-Level. The basic function is to provide constant level output. Sta-Level might be likened to a gentle electronic hand on the master gain control. When the volume is too low, Sta-Level will raise it. If volume is too high, Sta-Level will automatically reduce it. This automatic adjustment for different input levels allows average output levels to be higher (for there is automatic protection)—while the low soft passages are automatically raised in level—resulting in a uniformly higher level of transmission and the equivalent of greater signal output. As supplied, Sta-Level recovers  $\frac{2}{3}$  level recovery in 7 seconds and 90% level in about 28 seconds. This is considered typical. However, a kit of small fixed resistors is supplied. If the operator feels this is too slow or too fast, he may, by changing just two resistors, increase recovery to as fast as  $2\frac{1}{4}$  seconds for  $\frac{2}{3}$  level, and 10 seconds for 90% level; or as slow as  $11\frac{1}{4}$  seconds for  $\frac{2}{3}$  level, and 45 seconds for 90% level.

### SPECIFICATIONS

**MODE:** Single channel monaural.  
**CONTROLS:** Input and output level controls.  
**METER:** Reads decibels of compression.  
**IMPEDANCES:** 500/600 ohms input and output.  
**RESPONSE:**  $\pm 1$  dB 30-15,000 Hz.  
**DISTORTION:** 1% or less 50-15,000 Hz at 30 dB compression or less and at  $+20$  dBm output threshold level.  
**NOISE:** 65 dB below 0-30 dB compression at  $+20$  dBm threshold level.  
**MAXIMUM VOLUME EXPANSION:** Variable as set by input control.  
**EXPANSION RISE TIME:** Factory set at 7 seconds. Kit provided for faster or slower action as desired.  
**EXPANSION RECOVERY TIME:** Approximately 25 milliseconds.  
**MAXIMUM COMPRESSION:** 30 dB at 1% distortion. 40 dB at slightly greater distortion.  
**COMPRESSION ATTACK TIME:** Approximately 25 milliseconds.  
**COMPRESSION RECOVERY TIME:** Normal 7 seconds for 63% recovery. Faster as compression becomes greater.  
**SERVICING:** Drop down front panel. Tubes on rear.  
**POWER:** 117 volts, 50/60 Hz, 45 watts.  
**MECHANICAL:** Size 19" x 5 $\frac{1}{4}$ " x 7" deep. Weight packed: 40 lbs. domestic. 50 lbs. export. Cubage 2 cu. ft. Finish: Two-tone beige-gray and black.

### ORDERING INFORMATION

Sta-Level with tubes ..... M-5167  
 Spare 100% tube kit ..... TK-243



# AUDIO ACCESSORIES

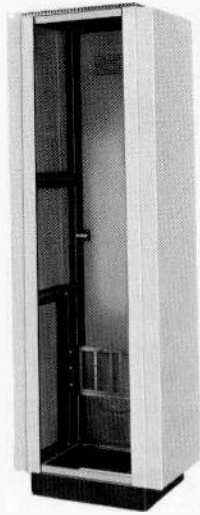
## RAK-1

Utilizing welded open frame construction, with removable side panels, each basic rack of the RAK-1 may be mounted singly or bolted to others to form a uniform multirack installation. This design permits mounting of equipment within the rack cabinet or flush with the front. Front and rear doors may be hinged left or right as specified. Vertical panel mounting angles have tapped holes at RMA standard locations to provide 77 inches of standard 19 inch panel mounting. The basic RAK-1 cabinet includes 2 panel mounting angles, 2 terminal board mounting angles, full size rear door and panel mounting screws. Other accessories are available:

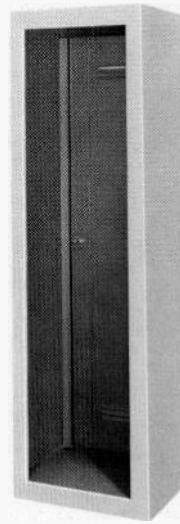
### SPECIFICATIONS

**HEIGHT OVERALL:** 84".  
**WIDTH:** (less SP-1 side panel): 22".  
**WIDTH OF SP-1 SIDE PANEL:** 3".  
**DEPTH OVER-ALL:** 21".  
**DOOR SWING:** 22½".  
**PANEL SPACE:** 19" x 77".  
**MAXIMUM CLEARANCE BEHIND FRONT PANEL:** 17".  
**PANEL MOUNTING:** Standard rack multiples 12/24 mounting screws provided.  
**FINISH:** Beige Gray.  
**WEIGHT:** Net 100 lbs. Domestic packed 110 lbs. Export packed 190 lbs. Cubage 18 cu. ft.

## RACK CABINETS



RAK-1



RAK-7

**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.  
**LARGE SIDE SHIELD SH-1:** An electronic shield plate 15½" x 28" in size.  
**TERMINAL BOARD MOUNTING BRACKET BRK-1:** Mounts at bottom rear of cabinet for the support of audio and power terminal blocks.

**SIDE PANELS SP-1:** Commonly known as end bell. Two used for single cabinet or any number of cabinets joined together.

### ORDERING INFORMATION

Basic Cabinet assembly less side panels but including rear door .. RAK-1  
 Single Corner Trim ..... TRM-1  
 Double Corner Trim ..... TRM-2  
 Side Panel ..... SP-1  
 Shield ..... SH-1  
 Terminal Board Mounting Bracket ..... BRK-1  
 Ventilating Fan ..... RAK-F-1  
 Rack Cabinet ..... RAK-7  
 Joiner Trim ..... M-5577

## RAK-7

The RAK-7 is one of the finest solid side rack type cabinets designed specifically to accommodate all types of broadcast equipment. Built of lightweight steel construction, this well built value packed cabinet has solid sides, a solid base, full size rear door with louvers at top and bottom for efficient ventilation. Finish is medium gray for both smart appearance and easy cleaning. The 78" height matches almost all Gates AM, FM & TV transmitters. Standard cabinet is supplied with corner trim strips to cover panel mounting hardware. M-5577 joiner trim is used when joining two cabinets together.

### SPECIFICATIONS

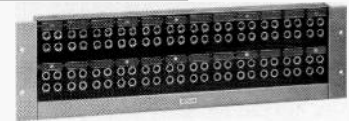
**HEIGHT OVERALL:** 78".  
**WIDTH OVERALL:** 23½".  
**DEPTH OVERALL:** 19½".  
**DOOR SWING:** 20½".  
**PANEL SPACE:** 19" x 71¾".  
**CLEARANCE BEHIND PANEL:** 17".  
**PANEL MOUNTING:** Standard rack multiples 12/24 mounting screws provided.  
**FINISH:** Beige-gray.  
**WEIGHT:** Net 100 lbs. Domestic packed 115 lbs. Export packed 200 lbs. Cubage 18 cu. ft.

## SWITCH AND FUSE PANEL

Every audio and radio frequency equipment rack should have a master switch and fuse panel. Usually mounted at the bottom of the rack, the Gates M-4242 Switch and Fuse Panel includes dual pilot lamps to indicate input and output voltage, dual fuses and D.P.D.T. primary switch. Rating 15 amperes at 115 volts, A.C. Size: 19" x 3½" x 3" deep. Finish: beige-gray. Weight packed: 10 lbs. Cubage: 1 cu. ft.  
 Switch and Fuse Panel ..... M-4242

## JACK PANELS

Industry standard double jack panels. Jack strips and jack mats listed separately for ease in ordering. Jacks are closed circuit type to normal through audio circuits when patch cord plugs are not inserted. Contacts are silver alloy with springs, non-aging, non-ferrous metal to assure lasting tension. Molded bakelite form, steel reinforced. Individual designation strips with slip-in holders for each jack pair. Patch cords have double plug each end with cords in 4 lengths.



Jack strip only, 24 jacks or 12 pairs ... PJ-343  
 Jack strip only, 48 jacks or 24 pairs ... PJ-341  
 Jack mat for one PJ-341 jack strip ..... PD-1  
 Jack mat for two PJ-341 jack strips ..... PD-2  
 Jack mat for three PJ-341 jack strips ..... PD-3  
 Double patch cord with 2' cord ..... PJ-12  
 Double patch cord with 3' cord ..... PJ-13  
 Double patch cord with 4' cord ..... PJ-14  
 Double patch cord with 5' cord ..... PJ-15

### AUDIO TERMINAL BLOCKS.

For inter-rack or jack field wiring. Molded one-piece black phenolic with base 3½" x 6½". Height 3½". Plated brass terminals. Polished phenolic finish makes removal of solder splash easy. Mounts in Gates RAK-1 rack cabinet with BRK-1 bracket. Has 120 terminals in six rows.

Audio Terminal Block ..... PJ-106

## WIRING CABLE

A very small 2-conductor shielded cable frequently used in rack wiring. Outside diameter .125". Has 2-conductor 16/36 stranded plastic insulation of

each conductor with tinned copper shield over-all.  
 Packaged 250', 500', and 1000' spools ..... type 1261

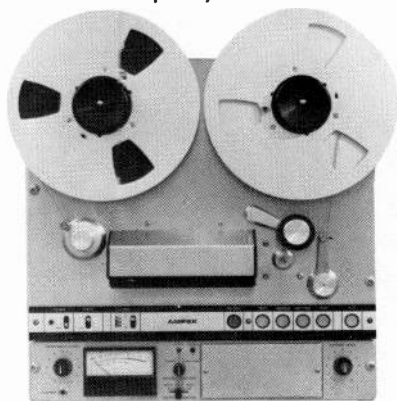
# PROFESSIONAL TAPE RECORDERS

Gates is an authorized distributor of the finest professional audio tape recorders for broadcast studio use, portable units for location recording, and equipment

for automatic programming applications. Popular models are stocked in quantity for prompt deliveries. The most widely used models are shown below and on

the adjacent page. Write for complete information on all professional recorders and accessories.

## AMPEX 440 Tape System

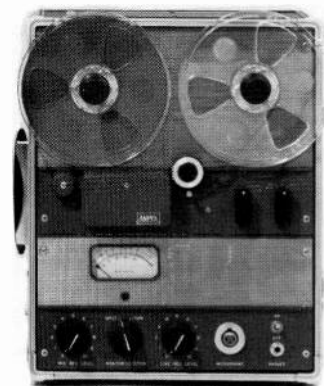


One of the finest commercial tape recorders available anywhere. The all-transistor AMPEX 440 series sets the highest standards in professional recording performance. Uncompromising quality characteristics, both electronic and mechanical, result in superiority of performance and long, trouble-free operation. Transport control buttons are recessed so that they cannot be accidentally pressed; all can be remote controlled. The 440 is the professional Broadcast version of Ampex recorders used by leading Hollywood recording companies. Rack, Portable, or Console mount, monophonic or stereophonic versions, dual speed: 7½-15, or 3¾-7½ ips. Full specifications on request. The AG-445 reproducer for playback only is used in Automate 484 systems.

## ORDERING INFORMATION

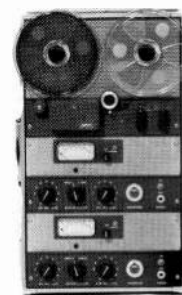
AG-440-U Recorder, full track, unmounted, 7.5/15 ips, 60 Hz ..... 730-0933  
 AG-440-C, as above except console mounted ..... 730-0934  
 AG-440-2U Recorder two track stereo, unmounted, 7.5-15 ips, 60 Hz ..... 730-0939  
 AG-440-2C as above, except console mounted ..... 730-0940  
 AG-440-2U +¼ Recorder two track stereo plus qtr. track playback, unmounted, 7.5/15 ips. .... 730-0941  
**MODEL AG-445 REPRODUCERS**  
 AG-445-U reproducer, full track, unmounted, 7.5/15 ips, 60 Hz ..... 730-0947  
 AG-445-½U reproducer, half track, unmounted, 7.5/15 ips ..... 730-0948  
 AG-445-2U stereo reproducer two track and qtr. track stereo, unmounted, 7.5/15 ips .. 730-0951  
 AG-445-2U as above, except 3.75/7.5 ips 730-0952  
 Accessory remote control. Desk type for AG-440 or AG-445, with 30 ft. cable ..... 730-0953  
 Portable transport case—for AG-440 or AG-445 ..... 730-0960  
 Portable electronics case. Accommodates monophonic or two track stereo electronics . 730-0961

## AMPEX 602-1 Professional Field Recorder



Monophonic portable tape recorder. This is the recorder that will fit your field recording needs precisely. It offers "studio quality" performance with outstanding features such as: separate record and playback amplifiers; large VU meter; dual inputs; 600 ohm output to feed broadcast lines; precision synchronous motor drive; and program monitoring of either recording signal or playback. Housed in attractive, rugged Samsonite carrying case.

## AMPEX 602-2 Portable Stereophonic Recorder



Two-channel stereophonic recorder for professional stereo recording in the studio or field. Famous Ampex quality, with the same professional features as the monophonic version. Consists of two separate electronics channels and a standard 602 model tape transport with in-line stereophonic head assembly. Selective erase and record gives the 602-2 the versatility of 2-track stereo or half-track monaural in one unit. Complete with sturdy Samsonite luggage-type case.

## SPECIFICATIONS

**FREQUENCY RESPONSE:** 40 to 15,000 Hz ±4 dB.  
**SIGNAL-TO-NOISE RATIO:** Model 602-1 with full track head over 57 dB. Model 602-2 stereo 52 dB.  
**TIMING ACCURACY:** ±0.2% at 7½ ips.  
**SPEEDS:** 7½ ips.  
**INPUTS:** (each channel) Two inputs, individual gain controls on each. Low impedance microphone input. Line input may be used as input for second microphone by use of optional accessory plug-in preamplifier (allowing 2 microphones to be mixed on one channel) and line bridging.  
**OUTPUTS:** (each channel) ±4 dBm into 600 ohms. Balanced or unbalanced load.  
**DIMENSIONS:** Transport panel size: 9 5/16" x 12½". Electronic panel size: 6½" x 12½". Over all size (including carrying case): Model 602-01 8" x 13¾" x 16½". Weight: 28 lbs.

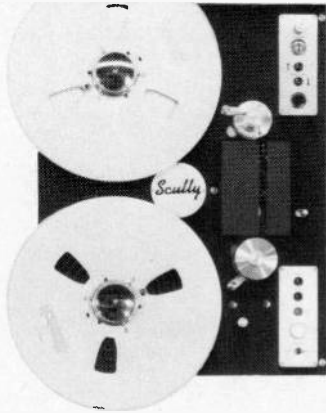
Model 602-02 8" x 13¾" x 23". Weight: 28 lbs. Model 602-01 with #864 Adapter Panel takes only 17½" of 19" vertical rack space. Model 602-02 with #865 Adapter Panel takes only 23¾" of 19" vertical rack space.

## ORDERING INFORMATION

Type 602-01 Portable half track monaural, 60 Hz 7½ ips, w/case ..... 730-0397  
 Type 602-02 Portable full track monaural, 60 Hz 7½ ips, w/case ..... 730-0398  
 Type 864 Rack mount adapter for 602-01 monaural recorders ..... 730-0408  
 Type 6022-01 Portable two track stereo, 60 Hz, 7½ ips, w/case, weight 42 lbs. .... 730-0402  
 Type 865 Rack mount adapter for 602-02 stereo recorder ..... 730-0409

# PROFESSIONAL TAPE RECORDERS

## SCULLY PRECISION TAPE DECK



### SPECIFICATIONS

**TAPE SPEEDS:** 3¾ ips-7½ ips or 7½-15 ips.  
**TAPE SIZE:** ¼" or ½".  
**HEAD CONFIGURATION:** Monophonic half or full track; stereo 2, 3, or 4 channel.  
**REEL SIZE:** Up to 14".  
**REEL HUBS:** NAB, CCR1.  
**STARTING TIME:** 1/10th second.  
**STOPPING TIME:** ½th second.  
**FAST WIND TIME:** 4800 foot reel—105 seconds.  
**PLAYING TIME:** 14" reel, 4800 feet 1½ mil tape @ 3¾ ips—8 hrs. 7½ ips—4 hours; 14" reel, 9600 feet ½ mil tape @ 3¾ ips—16 hours; @ 7½ ips—8 hours.  
**FREQUENCY RESPONSE:** ±2 dB 50-7500 Hz @ 3¾ ips. ±2 dB 50-15,000 Hz @ 7½ ips. ±1½ dB 50-15,000 Hz @ 15 ips.  
**FLUTTER AND WOW:** 0.2% RMS @ 3¾ ips. 0.1% RMS @ 7½ ips. .08% RMS @ 15 ips.  
**SIGNAL-TO-NOISE RATIO (Full Track):** -60 dB @ 7½ and 15 ips.  
**TIMING ACCURACY:** Better than 99.8% (30 minute reel).  
**AMPLIFIER:** Solid State, plug-in.  
**AMPLIFIER EQUALIZATION:** Front panel switch.  
**AMPLIFIER OUTPUT:** +18 dBm 600 ohm balanced line.  
**AMPLIFIER DISTORTION:** Less than .5% total HD at +18 dBm.  
**OPERATING CONTROLS:** Play, Fast, Direction Change, Stop, Speed Selector, Equalization.  
**REMOTE FEATURES:** All controls except motor speed change.

**MAGNECORD MODEL 1021—**Transistorized Monophonic Recorder/Reproducer  
 Fully transistorized, the Magnecord Model 1021 is as smooth a machine as you'll ever see, even with the thinnest tapes. It has a cueing speaker with separate volume control and the amplifier will drive an external speaker. There is a provision for phones and a mixing input with a separate gain con-

With 14" reels, these units provide up to 6 hours of continuous music. Scully Recording Equipment has been a standard of precision and quality throughout the world for 45 years. The Scully 270 introduces a new line of professional tape equipment with many engineering innovations. The Scully 270 Reproducer is intended for broadcasters, background music operators or any application where long life, reliability and exacting performance specifications in tape handling equipment are essential. The companion model 280 complete record/reproduce system has the same fine features plus quality all-transistor recording amplifier.

**REVERSING:** Foil using low current transistor switching, with mechanical memory.  
**MOTORS:** Two torque and one hysteresis synchronous speed reversible capstan motor.  
**POWER REQUIREMENTS:** 117 vac, 50/60 Hz, 275 watts.  
**CONTROL SYSTEM:** All relays and solenoids 24 volts DC; plug-in relays.  
**CHASSIS FRAME:** ¾" cast aluminum 2" depth.  
**MAIN PANEL:** Precision aluminum plate.  
**FACE PLATE:** Easily removable, permitting continuous operation.  
**BRAKING SYSTEM:** Disc Type.  
**TAPE TENSION:** Continuous adjustable electrical control system.  
**WEIGHT:** 79 lbs.  
**SHIPPING WEIGHT:** 90 lbs.  
**SIZE:** 19" x 24½" x 8¾".

### ORDERING INFORMATION

Model 270-1 Rack mount reproducer, ½ track monophonic, 14" reel capacity.  
 7.5/15 ips ..... 730-0927  
 Model 270-2 As above, except for stereophonic reproduction. .... 730-0928  
 Model 280-1 Rack mount record/reproduce. ½ track monophonic, 10½ reel capacity.  
 7½-15 ips. .... 730-0923  
 Model 280-2 As above, except for stereophonic. .... 730-0924  
 Model 280-1/14 Rack mount model 280 monophonic recorder with 14" reel capacity. 730-0925  
 Model 280-2/14 As above, except for stereo. .... 730-0926

trol to mix or make echoes. This model has all the standard features you expect in a top notch recorder, plus a host of others that will please and surprise the most discriminating engineer.

### ORDERING INFORMATION

1021 Monaural, 3¾-7½ ips., full track record full track erase, half track playback less case ..... 730-0418

## MAGNECORD MODEL 1028—Stereo- phonic Recorder/Reproducer



This popular stereophonic recorder with 10½" reel capacity, features advanced circuit design, utilizing the latest tube types, and complete pushbutton control of all functions. Dual speed 7.5 and 15 ips. Excellent quality for studio or field use. Complete recorder is only 12¾" high. As used in Automate 244 system.

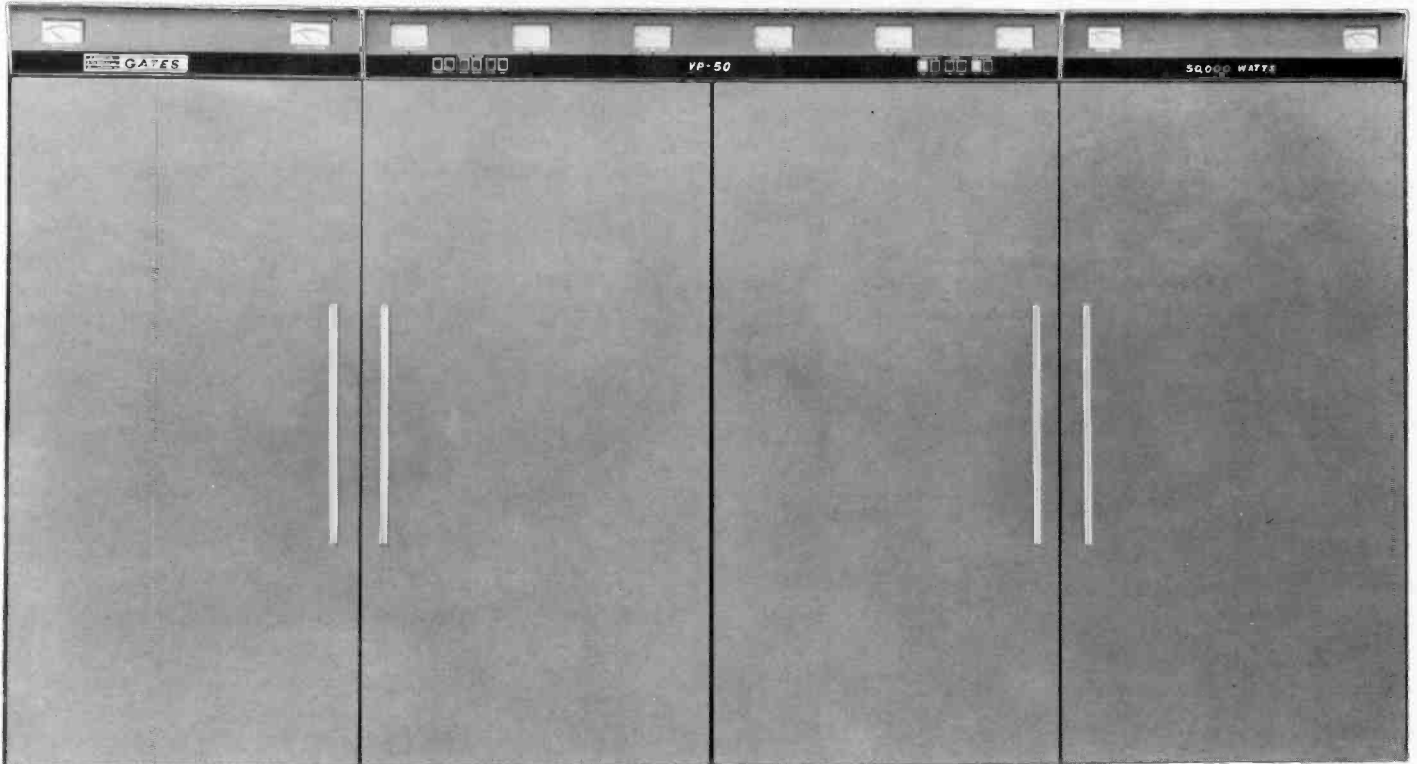
### SPECIFICATIONS

**TAPE SPEEDS:** 7.5 and 15 inches per second.  
**FLUTTER AND WOW:** 0.15% at 7.5 inches per second; 0.1% at 15 inches per second.  
**TIMING ACCURACY:** ±0.2%.  
**REEL SIZE:** 5, 7 and 10½ inch.  
**REWIND TIME:** 2400 ft., less than 60 sec.  
**FREQUENCY RESPONSE OVERALL RECORD/REPRODUCE:** 35 to 16,000 Hz ±2 dB at 7.5 inches per second.  
**SIGNAL-TO-NOISE RATIO:** 55 dB per channel.  
**INPUTS:** Hi-Z microphone and Hi-Z unbalanced bridge; Lo-Z microphone and Hi-Z balanced bridge with input transformers.  
**INPUT SENSITIVITY:** -90 dBm to -35 dBm.  
**OUTPUTS:** Cathode follower, 2.5 volts ±.5 volt. 150/600 ohm balanced, +3 dBm with output transformers.  
**HEADS:** Selectable erase 2-channel record and 2-channel play.  
**WEIGHT:** 47 lbs. (55 lbs. encased).  
**DIMENSIONS:** 17¾" wide, 12¾" high, 12" deep (17¾" wide, 14¾" high, 12" deep encased). Rack adapter panel available.

### ORDERING INFORMATION

1028-2 Stereo, 7½-15 inches per second, half track stereo, less case ..... 730-0421  
 1028-4 As above, ¼ track version ... 730-0428  
 91X3168 Carrying case for 1028 .... 730-0372  
 32X33 Input transformer, plug-in. 5-/250 ohm (2 required for stereo) ..... 730-0007  
 32B90 Output transformer, plug-in. 600 ohm (2 required for stereo) ..... 730-0336  
 66X152 Transformer hold-down clip (1 required per transformer) ..... 730-0337  
 91C2959 Rack adapter panel ..... 730-0338

# VP-50 50,000 Watt Medium Wave AM Transmitter



Employing extensive transistor circuitry combined with Eimac triode power and modulator tubes, this totally new transmitter is the world's most modern for 50,000 watt medium wave service.

All new, the Gates VP-50 transmitter also features vapor-phase cooling of the power amplifier and modulator tubes and high level plate modulation. The result is a cool and quiet 50,000-watt transmitter with excellent overall efficiency. Vapor phase cooling has the highest heat-transfer efficiency of any tube cooling method in use today. It is proven to be capable of removing ten to 20 times more heat than conventional methods of transmitter cooling.

One type 7480 triode which operates in a high efficiency Class C circuit is used in the power amplifier. New ceramic type 3CV30,000A<sub>3</sub> triodes operating as Class B modulators

have more than ample power to high level modulate the power amplifier.

The VP-50 transmitter consists of three cabinets; the high voltage power supply cabinet which provides 10 KV DC for the power and modulator tubes; the amplifier cabinet which contains the audio driver, modulators, transistorized RF chain, and the power amplifier tube; and the RF cabinet with PA tank tuning, Pi-Tee network and second harmonic filter. The RF output circuits, contained within a heavily shielded enclosure, are designed to provide harmonic attenuation greater than FCC requirements.

Power reduction to 25,000 watts or 10,000 watts, automatic re-cycling and a VSWR overload unit are standard in the VP-50 transmitter, as are a generous number of eye level meters and status lights.

## SPECIFICATIONS

**POWER OUTPUT:** (rated) 50,000 watts (capable) 55,000 watts. Power reduction to 25,000 watts or 10,000 watts included.

**RF FREQUENCY RANGE:** 535 kHz to 1620 kHz, supplied to frequency as ordered.

**RF OUTPUT IMPEDANCE:** Supplied for 50 ohms, 230 ohms or as specified.

**RF FREQUENCY STABILITY:**  $\pm 2$  Hz.

**CARRIER SHIFT:** Less than 3% at 100% modulation.

**AUDIO FREQUENCY RESPONSE:**  $\pm 1$  dB, 50-7,500 Hz.  $\pm 1\frac{1}{2}$  dB, 30-12,000 Hz.

**AUDIO FREQUENCY DISTORTION:** Less than 3%, 50-7,500 Hz at 95% modulation.

**NOISE:** (unweighted) -60 dB or better below 100% modulation.

**AUDIO INPUT:** 600/150 ohms at +10 dBm for 100% modulation.

**POWER INPUT:** 380 V or 460 V, 3 phase, 50 or 60 Hz as ordered. (other voltages and frequency available on special order).

**POWER CONSUMPTION:**  
 85 KW (approx.) at 0% modulation.  
 95 KW (approx.) at 30% modulation.  
 125 KW (approx.) at 100% modulation.

**POWER FACTOR:** 90% or better.  
**AMBIENT TEMPERATURE RANGE:** -20°C to +50°C.  
**ALTITUDE:** To 7,500 ft. standard (higher altitudes on special order).  
**RF HARMONICS:** Meets or exceeds FCC specifications.  
**SIZE:** 78" high, 144" wide, 48" deep. External components include: Modulation transformer, modulation reactor and power transformer.  
**WEIGHT:** 12,000 lbs. unpacked (approx.)  
 13,000 lbs. domestic packed (approx.)  
 13,500 lbs. export packed (approx.)  
**FINISH:** Beige-gray.

## ORDERING INFORMATION

Model VP-50 with one set of tubes and two crystals ..... M-6523  
 100% set spare tubes for VP-50 transmitter ..... TK-537  
 Recommended minimum spare tubes for VP-50 transmitter ..... TK-538



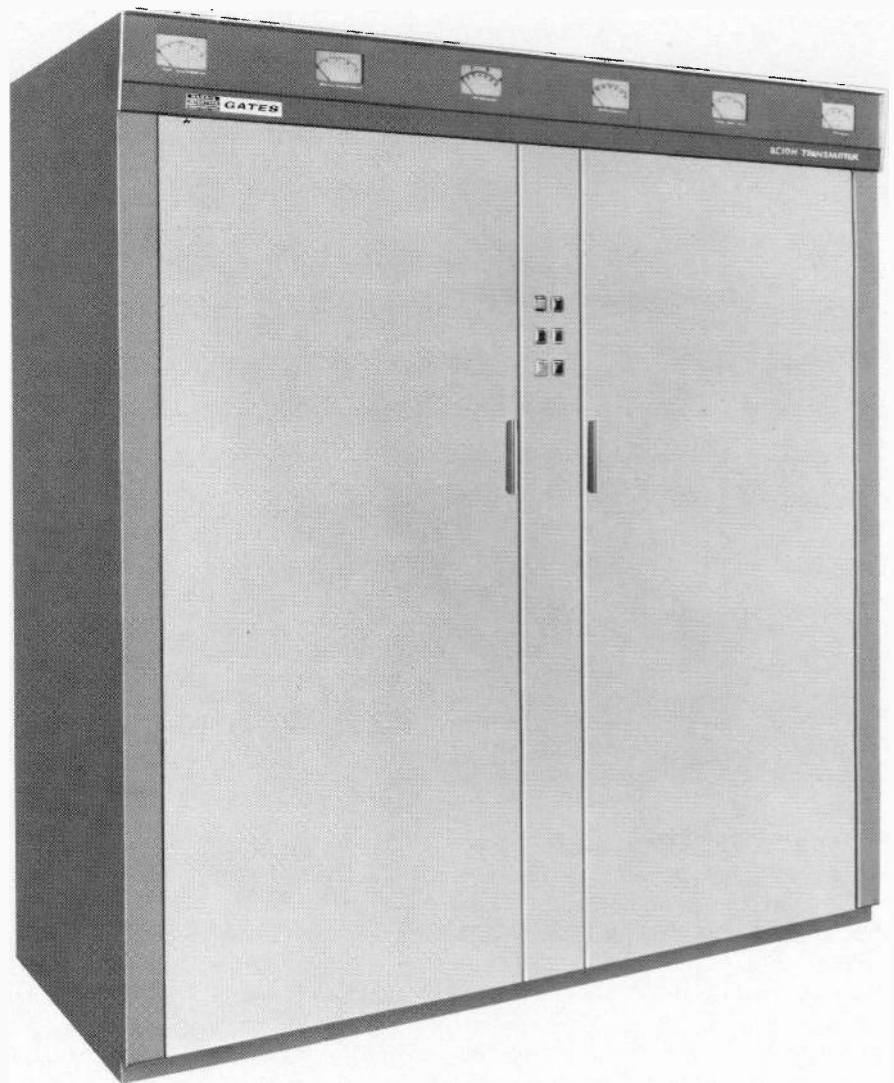
# MODEL BC-10H 10,000 WATT MEDIUM WAVE AM TRANSMITTER

Only 5 tubes in the new Gates solid State BC-10H, 10,000 watt AM transmitter! This all new Gates BC-10H uses transistors in all circuits except the RF driver, power amplifier and modulator to give the benefits of richer, fuller sound for the listener and increased reliability for the broadcaster. New ceramic type 3CX2500F3 triode tubes are used in the power amplifier and modulators and a low cost type 4-400A tetrode tube is used as the RF driver. This combination provides the lowest cost tube complement of any 10 KW AM broadcast transmitter on the market.

All RF circuitry up to the driver is solid state. The dual transistor oscillator is instantly switchable, and its output is amplified to provide the proper signal level for the driver, a 4-400A, which is modulated to improve the over-all transmitter performance. The 4-400A drives two parallel 3CX2500F3 power amplifiers which are high level plate modulated. High efficiency RF circuits are used which bring the power amplifier efficiency to 90%.

The transistorized audio amplifier drives two type 3CX2500F3 tubes operating Class B which provides more than ample power to high level modulate the power amplifier and the RF driver.

The Gates BC-10H is complete in one compact modern steel cabinet which is finished in two-tone beige-gray with charcoal trim and has brushed stainless steel hardware. Single cabinet construction requires less floor space and makes installation easier and less costly. This new BC-10H is built to set the standard for 10,000 watt AM broadcast transmitters because Gates advanced engineering has incorporated the very latest state of the art solid state technology.



## SPECIFICATIONS

**POWER OUTPUT:** (Rated) 10,000 watts, (capable) 10,800 watts. Power reduction to approximately 2500 watts included.  
**RF FREQUENCY RANGE:** 535 kHz to 1620 kHz supplied to one frequency as ordered.  
**RF OUTPUT IMPEDANCE:** Supplied for 50 ohms, or other as specified.  
**RF FREQUENCY STABILITY:**  $\pm 2$  Hz.  
**CARRIER SHIFT:** Less than 3% at 100% modulation.  
**AUDIO FREQUENCY RESPONSE:**  $\pm 1$  dB, 50-10,000 Hz.  $\pm 1\frac{1}{2}$  dB, 30-12,000 Hz.  
**NOISE:** (unweighted) 60 dB or better below 100% modulation.  
**AUDIO INPUT:** 600/150 ohms at +10 dBm  $\pm 2$  dBm.  
**POWER UNIT:** 208/230 volts, 3 phase, 50 or 60 Hz. 18.5 KW zero modulation. 21.0 KW average modulation. 27.5 100% modulation. Power factor is 90% or better.  
**AMBIENT TEMPERATURE RANGE:**  $-20^{\circ}\text{C}$  to  $+50^{\circ}\text{C}$ .  
**ALTITUDE:** To 7500 ft. standard (higher altitudes on special order).

**RF HARMONICS:** Meets or exceeds FCC specifications.  
**SIZE:** 78" high, 72" wide, 32" deep. (Completely self-contained).  
**WEIGHT:** 2500 lbs. unpacked (approximate). 3050 lbs. domestic packed (approximate). 3250 lbs. export packed (approximate).  
**CUBAGE:** 184 cubic ft. packed.  
**FINISH:** Beige gray.  
**TUBES USED:** (4) 3CX2500F3, (1) 4-400A.  
**GENERAL INFORMATION:** Monitors: 10 RF volts output at 50/70 ohms for frequency monitor. 10 RF volts output at 50/70 ohms for modulation monitor.

## ORDERING INFORMATION

Model BC-10H with one set of tubes and two crystals ..... M-6522  
Kit for remote control of power output .. M-6548

# MODEL BC-5H 5,000 Watt Medium Wave Transmitter

## ONLY FOUR TUBES

This is the most advanced 5,000 watt AM broadcast transmitter the industry has ever seen. All new Gates BC-5H uses transistors in all circuits except the RF driver, power amplifier and modulator to give the benefits of richer, fuller sound for the listener and increased reliability for the broadcaster. New ceramic type 3CX2500F3 triode tubes are used in the power amplifier and modulators and a low cost type 4-400A tetrode tube is used as the RF driver. This combination provides the lowest cost tube complement of any 5 KW AM broadcast transmitter. It also allows sensible tube rotation practices and minimum investment in spares.

In the RF section the instantaneously switchable dual transistor oscillator drives a transistorized amplifier which provides drive for the type 4-400A RF driver which is also modulated to improve the over-all transmitter performance. One type 3CX2500F3 power amplifier tube is high level plate modulated and uses high efficiency RF circuits improving the power amplifier efficiency to 90%.

The transistorized audio amplifier drives the two type 3CX2500F3 tubes operating Class B which provides generous to high level modulate the power amplifier and modulates the RF driver. This model is complete with inbuilt plate voltage and current sampling facilities which are wired and ready to connect to, for remote control. An output power/VSWR meter and protective device is standard equipment.

The Gates BC-5H is complete in one compact modern steel cabinet which is finished in two-tone beige gray with charcoal trim and has brushed stainless steel hardware. Single cabinet construction requires less floor space and makes installation easier and less costly. This new BC-5H is built to set the standard for 5,000 watt AM broadcast transmitters because Gates advanced engineering has incorporated the very latest state-of-the-art solid state technology. The BC-5H is FCC type accepted under Section 73 of the, for operation at 5.0/1.0/0.5 KW, output power.



## SPECIFICATIONS

**POWER OUTPUT:** (Rated) 5000 watts. (capable) 5600 watts. Power reduction to approximately 1000 watts included.

**RF FREQUENCY RANGE:** 535 kHz to 1620 kHz supplied to one frequency as ordered.

**RF OUTPUT IMPEDANCE:** Supplied for 50 ohms, or other as specified.

**RF FREQUENCY STABILITY:**  $\pm 2$  Hz.

**CARRIER SHIFT:** Less than 3% at 100% modulation.

**AUDIO FREQUENCY RESPONSE:**  $\pm 1$  dB 50 to 10,000 Hz.  $\pm 1\frac{1}{2}$  dB 30 to 12,000 Hz.

**AUDIO FREQUENCY DISTORTION:** 2.5% or less 50 to 10,000 Hz at 95% modulation.

**NOISE:** (unweighted) 60 dB or better below 100% modulation.

**AUDIO INPUT:** 600/150 ohms at +10 dBm  $\pm 2$  dBm.

**POWER INPUT:** 208/230 volts, 3 phase, 50 or 60 Hz. 10.7 KW zero modulation. 11.9 KW average modulation. 15.6 KW 100% modulation (specify desired power input).

**AMBIENT TEMPERATURE RANGE:**  $-20^{\circ}\text{C}$  to  $+50^{\circ}\text{C}$ .

**ALTITUDE:** To 7500 ft. standard (higher altitudes on special order).

**RF HARMONICS:** Meets or exceeds FCC specifications.

**SIZE:** 78" high, 72" wide, 32" deep. (Completely self-contained).

**WEIGHT:** 1850 lbs. unpacked (approximate).  
2200 lbs. domestic packed (approximate).  
2450 lbs. export packed (approximate).

**CUBAGE:** 120 cubic ft. packed.

**FINISH:** Two-tone beige gray.

**TUBES USED:** (3) 3CX2500F3, (1) 4-400A. Total: 4 only.

**GENERAL INFORMATION:** Monitors: 10 RF volts output at 50/70 ohms for frequency monitor. 10 RF volts output at 50/70 ohms for modulation monitor.

## ORDERING INFORMATION

\*Model BC-5H with one set of tubes and two crystals ..... M-6521  
Kit for remote control of power output ..... M-6548

\*FCC Type accepted.

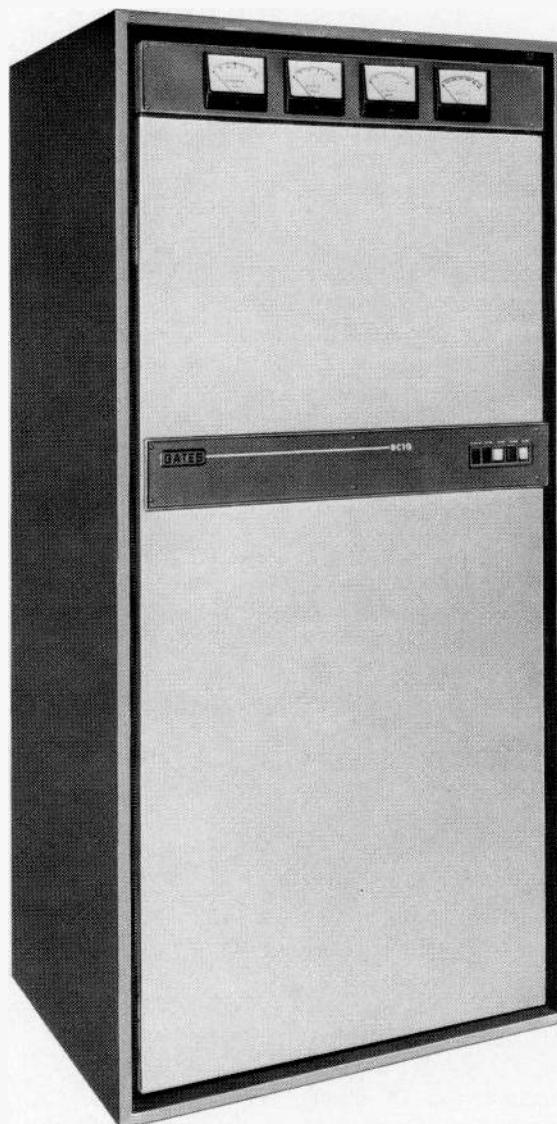
# MODEL BC-1G 1000 Watt AM Transmitter

Nearly 2,000,000 Watts—With the BC-1G 1000/250 watt AM broadcast transmitter, Gates approaches the 2000 mark in the number of 1 KW AM transmitters manufactured and sold since the end of World War II.

Gates engineers have paid particular attention to controlling intermodulation distortion. Low intermodulation distortion, not measurable on standard distortion measuring equipment, is vital in obtaining that extra quality sound. Here, a full Tee network output system easily meets FCC harmonic reduction figures without the assistance of the antenna coupling unit or other attachments. The inbuilt dummy antenna, an original idea from Gates, is capable of handling 100% modulation for use as a valuable test device. Front and rear doors and new swing-out construction provide a new dimension in transmitter accessibility.

The BC-1G 1 KW broadcast transmitter is completely self-contained in one sturdy steel cabinet 78" high, 37" wide and 29" deep. An attractive front door is hinged on the left and opens to expose all tuning controls. Color coded switches for Start-Stop and Power Change functions are accessible from the front when the door is closed.

A special new feature of the "Big G" is a swing-out vertical panel/shelf assembly which provides a fresh approach to accessibility design. It gives complete access to the low power audio and R.F. stages, control circuitry, bias supply, filament transformer and relays for the power amplifier and modulator.



## SPECIFICATIONS

**POWER:** FCC rated 1000/500/250 watts. Maximum capacity to accommodate phasor loss, 1100 watts. Power reduction 1000/250 watts standard equipment.

**AUDIO INPUT:** 150 or 600 ohms at  $\pm 16$  dB,  $\pm 2$  dB.

**AUDIO RESPONSE:** Under practical programming conditions,  $\pm 1.5$  dB 30-16,000 Hz. Rated  $\pm 1.5$  dB, 30-12,000 Hz.

**AUDIO DISTORTION:** Under practical programming conditions, 2% 50-16,000 Hz. Rated 3% or less 50-10,000 Hz.

**NOISE:** At 1000 watts, 60 dB or better below 100% modulation. (unweighted) at 250 watts, 55 dB or better below 100% modulation.

**FREQUENCY RANGE:** 540-2000 kHz as ordered.

**R.F. OUTPUT IMPEDANCE:** 50/70 ohms.

**FREQUENCY STABILITY:**  $\pm 5$  Hz or better.

**MONITORS:** Will accommodate all current models. Gates FCC approved M-4990 frequency monitor and M-5693 modulation monitor recommended.

**MODULATION:** High Level Class B.

**POWER INPUT:** 230 volts, 3 wire 50/60 Hz single phase. (208 volts also available where specified).

**\*POWER CONSUMPTION:** 100% modulation, 3850 watts.

250 watts; no modulation, 1650 watts; average modulation, 1825 watts; 100% modulation, 2050 watts.

**CARRIER SHIFT:** Rated 3% or less. Typical with adequate power mains is 2%.

**DUMMY ANTENNA:** 51½ ohms for full 100% modulation.

**SIZE:** 78" high, 37" wide, 29" deep. Front door swing 32"

**FINISH:** Two tone beige-gray with trim in brushed aluminum and black.

**\*WEIGHT:** Net 100 lbs. Domestic packed, 1140 lbs. Export packed, 1490 lbs. Cubage 110.

**TUBES:** Model M-6245 solid state rectifier model. (2) 12BY7A, (6) 807, (4) 833A. Total tube types, 3. Total Tubes, 12.

Power consumption for the BC-1G transmitter with rectifier tubes is slightly higher than stated in the specifications due to the addition of filament transformers. Likewise, packed weight is increased by approximately 25 lbs. Tube rectifier model M-6245B includes 2 type 8008 and 2 type 866A tubes. All other specifications are the same for both models.

## ORDERING INFORMATION

BC-1G transmitter for 1000/250 watts complete with tubes, one crystal, dummy antenna and silicon rectifiers. .... M-6245

BC-1G transmitter for 1000/250 watts complete with tubes, one crystal, dummy antenna and tube rectifiers. .... M-6245B

Extra crystal and vacuum holder ..... A35177-1

100% spare tube complement for BC-1G (silicon rectifiers) ..... TK-471

100% spare tube complement for BC-1G (tube rectifiers) ..... TK-472

**NOTE:** 208 volt model. Where 208 volts is required instead of 230 volts, be sure and specify when ordering. Otherwise, 230 volt model will be supplied.



# VANGUARD II 1 KW 1 Tube AM Transmitter

## SINGLE TUBE TRANSMITTER

The Vanguard II uses just one tube! All remaining circuitry is solid state, with a single small unit, containing the two complete temperature controlled crystals, oscillators and first buffers. Crystal trimmers are adjustable from the front panel. A Zener controlled voltage supply to the oscillators assures stable operation even with line voltage changes. A front panel switch permits instant on-the-air change from one oscillator to the other.

The final R.F. amplifier, a 4CX3000A, was selected for long tube life to complement the transistor circuitry and it operates well below rated capacity to assure longer life and better all around performance. The tube is in a Class AB-1 circuit which significantly reduces intermodulation distortion and substantially contributes to the high fidelity performance of the Vanguard II.

## BUILT IN DUMMY ANTENNA

The transmitter may be tested at a full 1 kilowatt output with 100% modulation using the built in dummy antenna. This permits simulation of on-the-air conditions for thorough testing of all transmitter functions. No external load is required.

## COMPACT—SAVES FLOOR SPACE

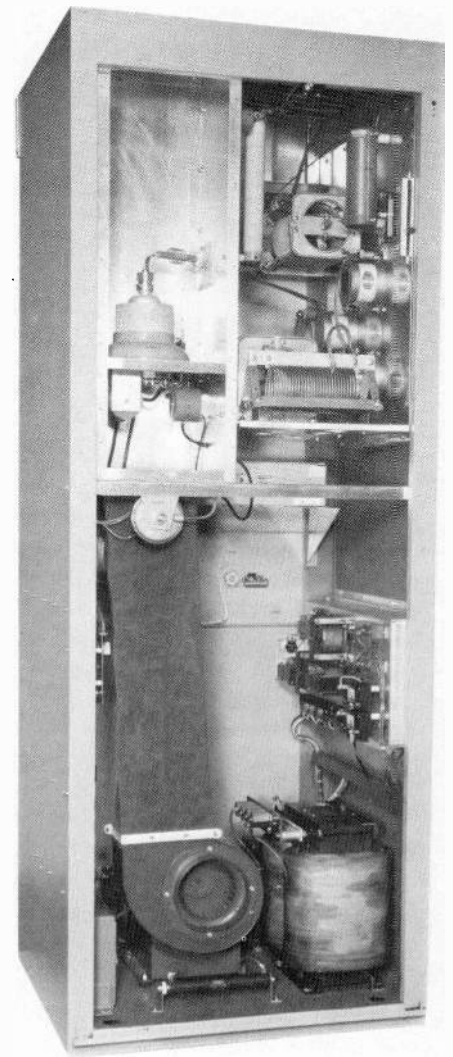
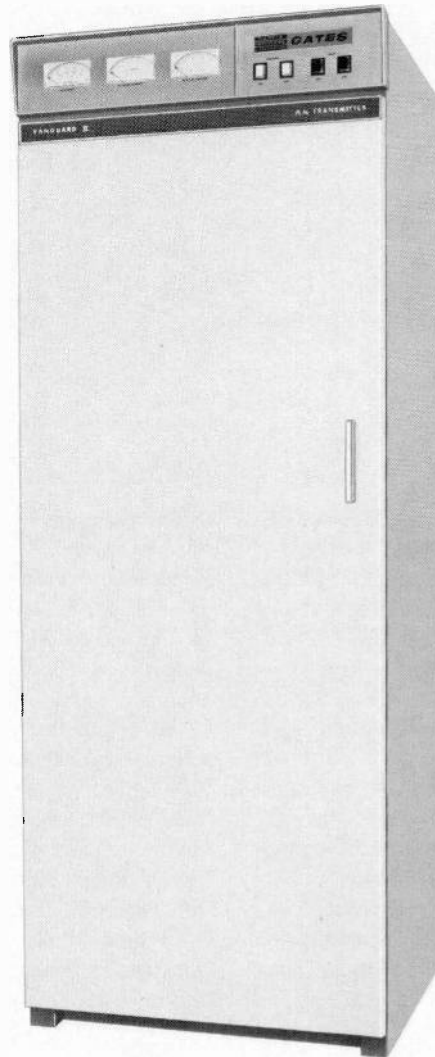
The Vanguard II is completely self-contained and takes less than six square feet of floor space—20% less than 1 KW "transmitter C" in the illustration.

## BUILT IN TEE NETWORK

The complete built-in and adjustable Tee network permits exact matching of transmitter to its load with greatest harmonic attenuation. The capacitors are large mica insulated units of the highest quality.

## EXTREMELY COOL RUNNING

The combination of cool operating solid state components with large capacity blower for the power tube results in highly efficient internal cooling. Air movement is so efficient, you can place your hand on the power tube 30 seconds after the transmitter is shut down. The blower has a 100% air flow safety factor. This extra air required for high altitude operation is an attractive extra feature at normal altitudes.



## SPECIFICATIONS

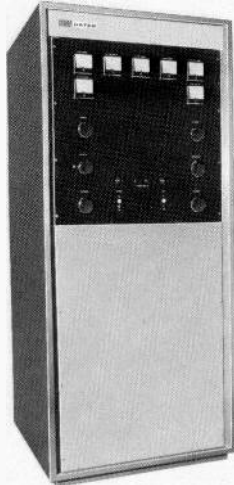
**POWER OUTPUT:** 1150 watts, maximum (power reduction to 500 or 250 watts).  
**AUDIO INPUT:** 600 ohms at +5 db.  
**AUDIO RESPONSE:**  $\pm 1$  dB., 20-16,000 Hz.  
**AUDIO DISTORTION:** 1.5% or less, 20-15,000 Hz.  
**NOISE:** 55 dB. or better below 100% modulation.  
**FREQUENCY RANGE:** 540-1700 kHz.  
**TUBE COMPLEMENT:** 1—Type 4CX3000A.  
**RF OUTPUT IMPEDANCE:** 50/70 ohms.  
**FREQUENCY STABILITY:**  $\pm 2$  Hz or better.  
**DUMMY ANTENNA:** 50 ohms for 1 KW output.  
**CARRIER SHIFT:** Rated 3% or less. Typical less than 2%.  
**POWER INPUT:** 230 volts, 3 wire 60 Hz single phase (208 volts also available where specified).  
**POWER DEMAND:** 100% modulation, 4500 watts, 90% P.F.  
**SIZE:** 29" wide, 78" high, 30" deep.  
**WEIGHT:** Net 700 lbs. Domestic packed, 800 lbs., Export packed, 935 lbs.  
**CUBAGE:** 72.

## ORDERING INFORMATION

Vanguard II 1,000 watt AM broadcast transmitter, complete with two crystals, dummy antenna, and silicon rectifiers ..... M-6519  
 100% spare set of transistors ..... TK-515

# Model BC-250GY, 250 Watt AM Broadcast Transmitter

# Model BC-500G, 500 Watt AM Broadcast Transmitter



Gates BC-250GY AM Broadcast Transmitter is a modern 250 watt high fidelity broadcast transmitter with attractive shadow mold styling, vacuum crystal, full size back door for 100% accessibility and complete in every detail for today's modern broadcasting. Fully FCC type approved, this BC-250GY transmitter has a world-wide reputation for long trouble-free service. From Greenland to the Marianas, broadcasters world-wide acclaim the excellence and simplicity of this most widely used 250 watt medium wave transmitter.

The emphasis is on roomy, easy to service and well ventilated design. Convection cooling is employed. As a result, the BC-250GY transmitter is silent in operation, and may be operated adjacent to a microphone. Vertical construction permits "walk-in" access. The audio section is a hinged sub-section to complete, reach every part in seconds, method of construction. Seven meters allow direct simultaneous reading of all important circuitry.

## SPECIFICATIONS

**POWER OUTPUT:** Rated 250 watts, capable 280 watts.  
**FREQUENCY RANGE:** 540-1620 kHz, as ordered.  
**RF OUTPUT IMPEDANCE:** 30-300 ohms unbalanced, as ordered.  
**FREQUENCY STABILITY:**  $\pm 5$  Hz.  
**CARRIER SHIFT:** 3% or less, 95% modulation.  
**MODULATION:** High-level plate.  
**AUDIO RESPONSE:**  $\pm 1.5$  dB, 30-10,000 Hz.  
**AUDIO DISTORTION:** 3% or less, 50-7500 Hz at 90% modulation.  
**NOISE:** 55 dB, below 100% modulation.  
**AUDIO INPUT:** 500/600 ohms at +8 dB for 100% modulation.  
**MONITORS:** Will accommodate all modern frequency and modulation monitors.  
**POWER INPUT:** 230 volts AC, 2 wire, single phase, 50/60 Hz.  
**POWER CONSUMPTION:** 1.6 KW at 90% tone modulation.  
**POWER FACTOR:** Better than 90%.  
**SIZE:** 78" high, 34" wide, 33" deep.  
**WEIGHT:** (Packed) & Cubage: Domestic—770 lbs; Export—900 lbs.  
 Cubage: 112 cu. ft.  
**FINISH:** Two-tone beige lacquer with trim in brushed aluminum.  
**TUBES:** (4) 810, (2) 6L6, (2) 12BY7, (1) 813, (2) 8008, (1) 5V4.

## ORDERING INFORMATION

BC-250 GY, Broadcast transmitter, 250 watts, complete with one set of tubes and one vacuum crystal ..... BC-250GY-1  
 Spare 100% set of tubes ..... TK-507  
 Recommended minimum set of spare tubes ..... TK-508  
 Spare vacuum crystal ..... A-35177-1



Standardization in manufacturing always assures higher quality, improved workmanship and lower cost. The BC-500G broadcast transmitter is essentially the same transmitter as the BC-1G, 1000 watt model. Utilizing a single type 833A RF power amplifier, standardization is so complete that power increase to 1000 watts is easily accomplished. As the basic design is around 1000 watt construction, a bonus of conservation is built into this 500 watt model.

Standard features include: a built-in dummy antenna for easy time saver maintenance, solid state power supplies throughout, total accessibility from the front, dual modulation of the RF driver and power amplifier, inverse feedback and a new audio specification for lower distortion and intermodulation. RF harmonic reduction meets FCC regulations within the transmitter itself as the Pi-Tee output network does not assume that the outside antenna coupler will perform this function.

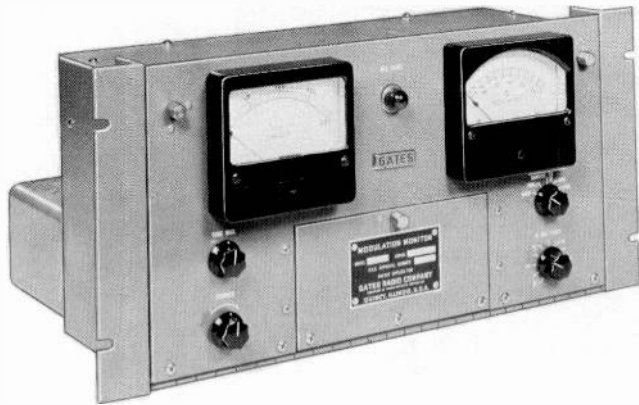
## SPECIFICATIONS

**POWER OUTPUT:** FCC rated 500 watts. Capability 550 watts.  
**FREQUENCY RANGE:** 540 kHz to 2000 kHz (as ordered).  
**RF OUTPUT IMPEDANCE:** 50/70 ohms.  
**FREQUENCY STABILITY:**  $\pm 5$  Hz.  
**CARRIER SHIFT:** 3% or less at 100% modulation.  
**AUDIO RESPONSE:**  $\pm 1\frac{1}{2}$  dB, 30-12,000 Hz (typical:  $\pm 1\frac{1}{2}$  dB, 30-16,000 Hz under practical programming conditions).  
**AUDIO DISTORTION:** 3% or less 50-10,000 Hz at 95% modulation.  
**NOISE:** 60 dB, or better, below 100% modulation level.  
**AUDIO INPUT:** 150 or 600 ohms. +9 dB  $\pm 2$  dB for 100% modulation.  
**MONITORS:** Will accommodate all current models. Gates FCC approved M-4990 Frequency Monitor and M-5693 Modulation Monitor recommended.  
**A.C. INPUT:** 230 volts, 3 wire, 50/60 Hz single phase. Available for 208 volts, 3 wire, at slightly additional cost. Power consumption (0 modulation) 1900 watts; (program modulation) 2200 watts; (100% modulation) 2600 watts.  
**DUMMY ANTENNA:** 50 ohms.  
**SIZE:** 78" high, 37" wide, 29" deep. Front door swing 32".  
**FINISH:** Two tone beige with trim in brushed aluminum.  
**WEIGHT AND CUBAGE:** (Domestic) 950 lbs. net, 1100 lbs. packed (Export) 1350 lbs. packed. Cubage: 100 cu. ft.  
**TUBES:** 12BY7A oscillator, 12BY7A 1st, IPA, (2) 807 2nd, IPA, (1) 833A power amplifier, (2) 807, 1st audio, (2) 807 2nd audio, (2) 833A modulators.

## ORDERING INFORMATION

Model BC-500G AM broadcast transmitter, 500 watts, with tubes, one crystal, silicon rectifiers ..... M-6333  
 Spare 100% tube complement for BC-500G ..... TK-481  
 Recommended minimum spare tube kit for BC-500G ..... TK-479  
 Spare vacuum crystal ..... A-35177-1

## AM MODULATION MONITOR



The only truly new AM modulation monitor in recent years, the Gates Model M-5693 monitor is not just an indicating device, but an instrument that will assure maximum transmitter performance through fullest utilization of the R. F. carrier. Manufactured by Gates under U.S. Patents, "full performance" advantages include: (1) extremely accurate self-calibration—no oscilloscope or other external device is needed to calibrate for exact modulation percentage, (2) long term accuracy—no false modulation percentage readings to either reduce signal strength or over-modulate, (3) a new derivative controller circuit—this circuit provides high speed meter response to indicate even the fastest transient program peaks, and (4) new exclusive design—no need to down rate performance to prevent overmodulation.

Also included in the new Gates M-5693 Monitor are controls for compensation of varying telephone line characteristics to permit location of the monitor at the transmitter site. Operation by remote control is then initiated by Gates optional M-5837 Remote Meter Panel. The monitor can be used on any telephone pair not exceeding 1500 ohms loop resistance.

### SPECIFICATIONS

**FREQUENCY RANGE:** 540 kHz to 1600 kHz.  
**R.F. INPUT:** For 50/70 ohm line at approximately 10 volts.  
**MODULATION INDICATION:** (meter) 0%-100% negative peaks. 0%-110% positive peaks.  
 (flasher) 50%-100% in 5% steps on negative peaks, 0.6 dB, 20-7500 Hz. (accuracy) Meter: 2% full scale at 1000 Hz. Flasher: 2% at 1000 Hz. (response time) Meter responds to correct reading with a 50 millisecond pulse. Returns to 10% of reading in 500-800 milliseconds after signal is removed.  
**DETECTOR LINEARITY:** Negative peak clipping negligible up to 7500 Hz and 5% or less at 10,000 Hz.  
**LOADING EFFECT:** 1000 mmf.  
**FIDELITY AT MEASURING OUTPUT:**  $\pm 0.5$  dB, 20-30,000 Hz at less than 0.5% distortion at 4½ volts into a 100,000 ohm load. Noise: 75 dB below 4.5 volts RMS.  
**REMOTE OUTPUT:** To extend modulation percentage meter, use Gates Model M-5837.  
**TUBES:** (3) OA2, (2) 12B4A, and (1 each) 6X4, 5879, (OB2, OC2, 5687, 12AU7, 2D21 and 8-4 (ballast tube).  
**POWER:** 105/125 volts, 50/60 Hz, 70 watts.  
**FCC APPROVAL NO:** 3-109  
**MECHANICAL:** 19" x 8¾" x 11½" deep. Weight packed, Domestic 35 lbs. Export 85 lbs. Cubage 3 cu. ft. Finish: Two-tone beige-gray and black.  
**LICENSE:** Exclusively licensed to Gates (other than to U.S. Government) under U.S. Patent 2,984,796.

### ORDERING INFORMATION

AM Modulation Monitor with tubes ..... M-5693  
 100% spare tube kit ..... TK-345  
 Remote Meter Panel ..... M-5837

## AM FREQUENCY MONITOR



The FCC approved M-4990 AM frequency monitor is another Gates product where progressive engineering has developed an advanced unit. With it, the operator may feel confident that his frequency is accurately monitored at all times. The unit can be operated locally or remotely.

For remote control operation, the unit may be operated as an off the air monitor, or over telephone lines when used with the Gates M-5631 Extension Meter Panel. For off the air monitoring, the Gates M-5549 Whip Antenna is suggested. Frequency is direct reading. The same meter, by switching, also indicates (a) carrier level and (b) oscillator current. Controls include: A.F. level for correct input signal, phone jack for 1000 cycle tone, power switch and OVEN ON pilot light. This unit is an excellent companion for the adjacent broadcast modulation monitor.

### SPECIFICATIONS

**FREQUENCY RANGE:** 540-1600 kHz (as ordered).  
**METER:** Reads direct 30-0-30 Hz above and below carrier frequency.  
**OSCILLATOR AND STABILITY:** Electron coupled, 1000 Hz. below assigned frequency. Accuracy of  $\pm 0.5$  parts per million. Over-all monitor stability,  $\pm 2.0$  parts per million.  
**INPUT:** 50/70 ohms. When used with M-5549 whip antenna will operate on input as low as 5 MV. When direct connected, will accommodate input voltages from 5 to 50 volts. The input signal may be either modulated or unmodulated.  
**POWER INPUT:** 105/125 volts, 50/60 Hz, 85 watts.  
**TUBES:** (5) 6AU6, (3) 6AQ5, (2) 6AL5 and (1 each) 12BY7A, 6C4, 12AT7, 6X4, OB2, and 13-4 ballast tube.  
**FCC APPROVAL:** No. 3-102.  
**MECHANICAL:** 19" x 10½" deep. Weight packed, Domestic 53 lbs. Export 77 lbs. Cubage 4. Finish: Two-tone beige-gray with escutcheons in black.

### ORDERING INFORMATION

Frequency Monitor with tubes ..... M-4990  
 Remote Control Extension Meter ..... M-5631  
 Whip Antenna and Coupler for Air Monitoring ..... M-5549  
 Spare 100% tube kit for Monitor ..... TK-281

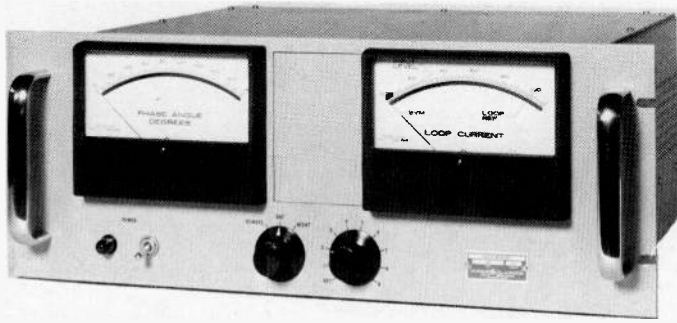


M-5837 remote meter panel is installed at studios and connected to the modulation monitor via a standard telephone line not to exceed 1500 ohms loop resistance. The remote 4" meter reads modulation percentage corresponding to the monitor meter. Size: 19" x 5¼" x 3" deep. Finish: Medium gloss gray and black.



# AM ACCESSORIES

## PHASE MONITOR



A completely new solid state AM phase monitor for directional systems up to 9 towers. Phase readings are not affected by modulation and it is accurate to  $\pm 1\%$ . No operator adjustments are required.

The Model 112 Phase Monitor is simple to operate, easy to read, and it is fully adaptable to remote control operation. Reliability is assured by the use of silicon transistors and new taut-band meters.

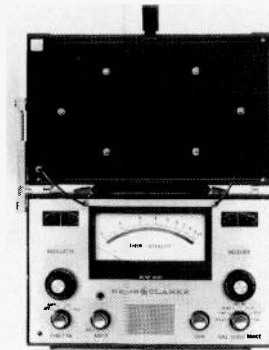
### SPECIFICATIONS

ACCURACY:  $\pm 1\%$ .  
 INPUT IMPEDANCE: 50 to 75 ohms.  
 NUMBER OF INPUTS: Up to 9.  
 INPUT LEVEL: 1.5 to 20 volts RMS.  
 FREQUENCY RANGE: 540-1600 kHz.  
 SIZE: 19" W x 7" H x 14" D.  
 POWER REQUIRED: 115/230 VAC, 15 watts.

### ORDERING INFORMATION

Phase Monitor ..... 112

## FIELD INTENSITY METER



The FIM-135 is a lightweight, compact field intensity meter which incorporates all the latest innovations for portable test instruments.

By employing all solid state components the drain on the mercury battery permits long battery life.

Accurate measurements are easily obtained by direct reading. Range is 10 microvolts to 10 volts per meter making this unit equally effective for interference studies at low signal strength and for close-in work at high power.

The FIM-135 features a built-in front panel speaker for easy monitoring.

### SPECIFICATIONS

FREQUENCY RANGE: 540-1600 kHz.  
 FIELD INTENSITY RANGE: 10 microvolts to 10 volts.  
 POWER REQUIREMENTS: Two 4.2 V mercury batteries.  
 BATTERY LIFE: 175 hours, without audio.  
 DIMENSION: 6 1/2" H x 10 1/8" W x 6 1/2" D.  
 WEIGHT INCLUDING BATTERIES: 9 lbs., 2 ozs.

### ORDERING INFORMATION

Field Intensity Meter ..... 700-0057-000

## SOLID STATE BEACON FLASHER



The Gates Solid State Beacon Flasher represents an entirely new concept in tower light flashers with no moving parts—no motor, no relay contacts to char. Silicon controlled rectifier switching circuits are employed to replace all moving parts and fully meet FAA flash time interval requirements. A silicon controlled rectifier is triggered by an avalanche switching device. Beacon ON-OFF intervals are determined by two separate RC constants. Voltage is supplied to the beacon when the control rectifier is in open circuit condition. Factory adjusted for correct FCC/FAA flashing rate but fully adjustable from 10 to 75 flashes per minute. Not affected by temperature variations and with no motor to slow down or stop in extreme cold weather, the advantage of this new unit is substantial.

### SPECIFICATIONS

CIRCUIT: Single Pole single throw.  
 CAPACITY: 1300 watts.  
 POWER CONSUMPTION: Negligible.  
 SIZE: (M-6393): 9" x 7" x 3 1/4".  
 (M-6393A): 12 1/4" x 8 1/2" x 4".  
 WEIGHT: (M-6393): 2 lbs.  
 (M-6393A): 9 lbs.  
 CONDUIT ENTRANCE: (M-6393A): 1" and 3/4" knockouts on all four sides.  
 VOLTAGE: 115 volts, 50 or 60 Hz.

### ORDERING INFORMATION

Beacon Flasher, panel type, less housing ..... M-6393  
 Beacon Flasher, indoor switch box housing ..... M-6393A

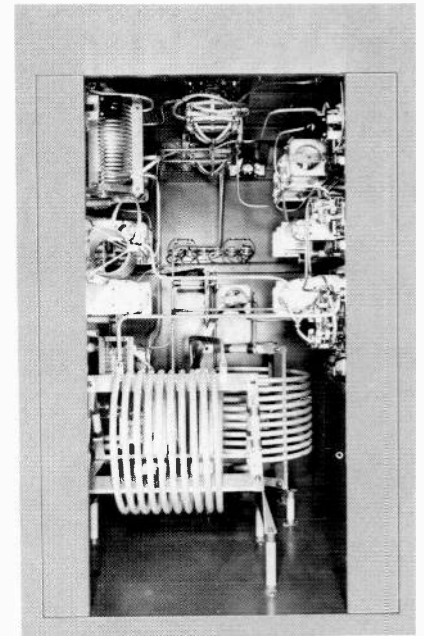
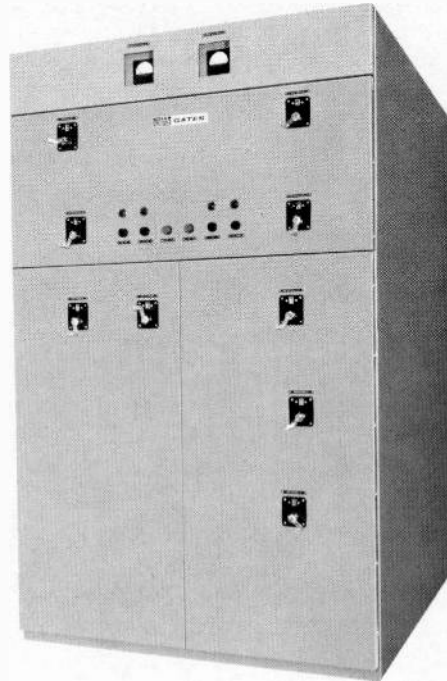


# ANTENNA PHASING EQUIPMENT

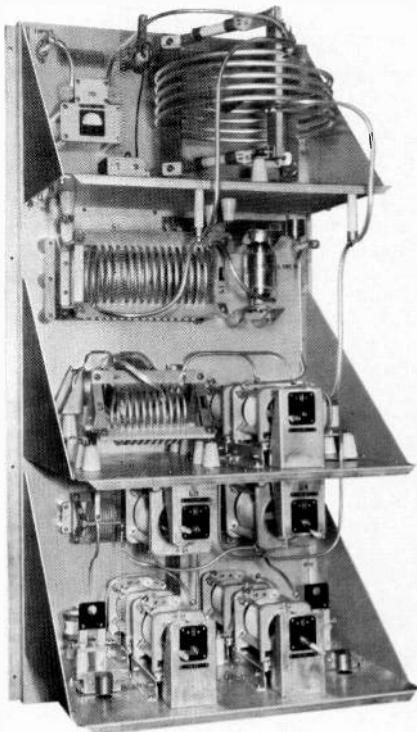
**CUSTOM DESIGNED:** Gates phasing equipment is always custom built, utilizing Gates manufactured inductors and other quality components for precise coverage patterns requiring a minimum of adjustment and a maximum of stability. Some of the most complex phasing systems in existence have been built by Gates.

**ADVANCED RESEARCH:** As the world leader in the design and manufacture of phasing equipment, Gates engages heavily in highly advanced phasor research and development, backed up by industry's largest full time phasor production department. Headed by three registered professional engineers this group is staffed by design and production experts, with years of experience in design and manufacture of specialized phasing equipment.

**STABILITY AND EFFICIENCY:** All directional phasing equipment is designed to the parameters provided by the station's consulting engineer and work is not initiated until the consultant and customer approve the design. To provide custom designed phasors suited for the specific broadcasting needs, Gates provides detailed specifications for your equipment, so you may determine exactly what you are buying. The full

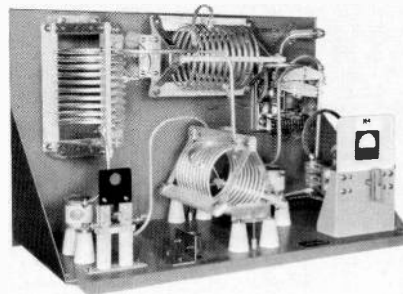


Typical Two Tower 50KW Phasor



Custom Built Open Panel Phasor

range of adjustment can be precisely determined—before it is delivered. You need not be faced with having to replace inadequate components, or to make costly field modifications of design to relieve difficult adjustment. The careful design and construction practices maintained by Gates give you more than reasonable assurance of the best possible long term stability and efficiency. This avoids expensive readjust-



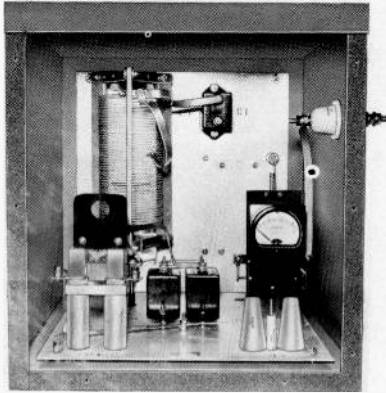
Custom Built Antenna Coupler

ments and reproof of pattern later on. Gates Phasors are constructed to give a safety factor of 1.4 times on RMS current and four times on maximum RMS voltage based on expected operating adjustments.

**CONSTRUCTION:** Antenna tuning units are constructed as panel and shelf type for wall mounting in a doghouse, or in weatherproof metal cabinets. Phasor cabinetry built to your specifications is available and becomes an integral planning factor in the coordination of design and styling to reflect over-all system compatibility and appearance. Gates manufactures phasing equipment, including 50 KW or 100 KW in power and for any number of towers; 250 watt to 250 KW antenna tuning units; diplexers for medium wave and for 2-30 MHz short wave; triplexers, rejection filters and a wide range of radio frequency networks. Each is custom tailored for the particular application.

# ANTENNA COUPLERS FOR AM

## WEATHERPROOF SERIES— FED ANTENNA COUPLER, 1250 WATTS



Recommended for broadcast transmitter powers of 1000, 500 and 250 watts, 100% modulated. Heavy edgewound micaex insulated silver plated coil has generous inductance for a full Tee network along with fixed mica capacitors supplied. Extra room is provided to install either diode or thermocouple remote metering equipment. Heavy duty meter shorting switch eliminates antenna meter from the circuit when not in use for lightning protection. Meter is observed through glass porthole. Front door of cabinet has been removed for illustrative purposes.

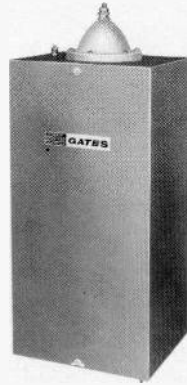
### SPECIFICATIONS

**CARRIER POWER:** Up to 1250 watts AM.  
**FREQUENCY:** 525-1700 kHz as ordered.  
**LINE IMPEDANCE:** 40-230 ohms as ordered.  
**TO MATCH:** Series-fed tower of from 70° to 95° electrical length.  
**CIRCUIT:** Full Tee Network.  
**WEIGHT:** 98 lbs.  
**SIZE:** 20" high, 20¼" wide, 18¾" deep.

### ORDERING INFORMATION

Antenna Coupler with antenna meter .... 44A  
**NOTE:** When ordering, state transmission line impedance, frequency, tower height, and tower measurements, if known. For remote meters, see below. Couplers to match unusual loads such as short or tall towers, shunt feed, etc., are available on special order at extra cost.

## SERIES AND SHUNT FED COUPLERS



Both series and shunt fed models are constructed in a non-weatherproof cabinet with slip-off front door and large lead in bowl at top. Coil is micaex insulated edgewound silver plated and capacitors are supplied to tune to buyer's specific frequency. Size: 21" high, 10" wide, 9" deep. Usually mounted in small dog house at base of tower. Rating 1250 watts, 100% modulated.

\***SERIES FEED MODEL:** Provides full Tee network inductance with capacitors to match wide range of input and output impedances. State frequency line impedance, and tower height when ordering ..... M-5178  
 \***SHUNT FEED MODEL:** Includes inductor and capacitors to tune out reactance in shunt fed antenna coupling. If tower measurements are known, these are always especially helpful. State line impedance and frequency ..... M-5179  
 \***NOTE: METER NOT INCLUDED.**

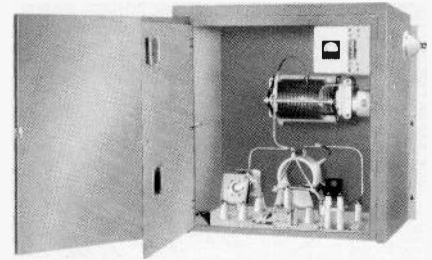
### ISOLATION COIL

This isolation coil is quickly made to customer's order by carrying all basic materials in stock. The same type of coaxial cable is used in winding the coil as is used for sampling line. If the customer used Helix sampling line, then the isolation coil would be wound with Helix coaxial cable. Inductance 85 uH. Available in weatherproof or open model. Sizes (weatherproof model), 20" wide, 12½" high and 18½" deep. (Open model), 16" wide, 10" high and 16" deep. When ordering, please state type or make of sampling line or preferred coaxial cable for coil construction. Resonating capacitor is not included.

### ORDERING INFORMATION

Weatherproof isolation unit ..... M-3073  
 Open unit coil only, less cabinet .... M-4561A

## WEATHERPROOF 5-10 KW ANTENNA COUPLING UNITS



Housed in aluminum cabinet with double front doors. Porthole for meter reading and heavy duty meter shorting switch operates with doors closed. Large micaex insulated silver plated coils combined with capacitors of generous voltage and current ratings to assure a lifetime of service under extreme heat or cold. A large antenna lead in bowl is provided. Mounting is with metal flanges on the back of the tuning unit for attachment to wooden poles set in ground or for mounting on wall.

### SPECIFICATIONS

**CARRIER POWER:** M-5309A 5000 watts AM.  
 M-5309B 10000 watts AM.  
**FREQUENCY:** 525-1700 kHz as ordered.  
**LINE IMPEDANCE:** 40-230 ohms as ordered.  
**TO MATCH:** Series fed tower of from 70° to 95° electrical length.  
**CIRCUIT:** Full Tee Network.  
**WEIGHT:** Approximately 200 lbs.  
**SIZE:** 38" high, 37" wide, 21½" deep.

### ORDERING INFORMATION

Antenna Coupling Unit, 5 KW ..... M-5309A  
 Antenna Coupling Unit, 10 KW ..... M-5309B  
**NOTE:** When ordering, state carrier frequency, transmission line impedance, power, tower height and tower measurements, if known. Couplers to match unusual loads such as short or tall towers, shunt feed, etc., are available on special order, at extra cost.

### R.F. ANTENNA METERS

Internal thermocouple standard scale. Weston Model 308, three-inch square case. Other ranges not listed below are available with many carried in stock. Also expanded scale meters in inventory.

### ORDERING INFORMATION

Meter, 0-3 R. F. amperes ..... 634-0206  
 Meter, 0-6 R. F. amperes ..... 634-0238  
 Meter, 0-8 R. F. amperes ..... 634-0209  
 Meter, 0-10 R. F. amperes ..... 634-0210

## DIODE TYPE REMOTE METER EQUIPMENT



For remote indication of RF current. Consists of a carefully constructed pickup loop attached through a short coaxial cable to a solid state rectifier assembly. RF current is measured without breaking the main lead. No AC power is required. May be used with any good 1 MA movement. Power range: 250 watts to 50,000 watts. Frequency range: 540 kHz to 10 MHz.

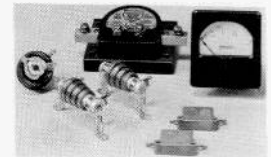
### ORDERING INFORMATION

Diode remote meter unit, less meter ..... M-6112  
 Meter 3" sq. case, scale 0-3 R. F. amperes ..... 632-0418  
 Meter 3" sq. case, scale 0-5 R. F. amperes ..... 632-0419  
 Meter 3" sq. case, scale 0-8 R. F. amperes ..... 632-0420  
 Meter 3" sq. case, scale 0-10 R. F. amperes ..... 632-0421  
 Meter 4" sq. case, scale 0-3 R. F. amperes ..... 632-0425  
 Meter 4" sq. case, scale 0-8 R. F. amperes ..... 632-0426  
 Meter 4" sq. case, scale 0-10 R. F. amperes ..... 632-0361  
 Meter 4" sq. case, scale 0-15 R. F. amperes ..... 632-0428

**NOTE:** Other meter scale ranges available at extra cost. Above for use with diode remote unit, not thermocouple.

## THERMOCOUPLE REMOTE METER KITS

Thermocouple Type: Includes 3" square case meter, thermocouple, adjusting rheostat, chokes and capacitors. May be used with up to 140 ohms of 2-conductor line for remote metering between antenna coupling equipment and transmitter. Also available with 4" meters on special order.

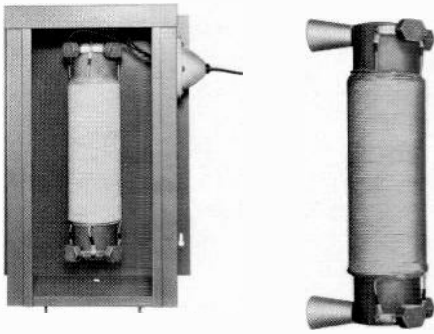


### ORDERING INFORMATION

Complete kit (meter range 0-3 R. F. amperes) ..... M-3383  
 Complete kit (meter range 0-5 R. F. amperes) ..... M-3133  
 Complete kit (meter range 0-8 R. F. amperes) .....  
 Complete kit (meter range 0-10 R. F. amperes) ..... M-3386  
**NOTE:** Other meter ranges available.

# ANTENNA COUPLING ACCESSORIES FOR AM

## SOLENOID TOWER CHOKES (20 amp AC rating)



Most popular of all tower light isolation chokes. Available in 2 or 3 section and in open type, or weatherproof as illustrated. Wound on heavy triple X tubing with mica-by-pass condensers on each circuit end. Inductance approximately 350 uH. 3" stand-off insulators are part of coil. (Weatherproof type), 24" high, 17 3/4" wide, 10 1/4" deep. Illustration to left shows weatherproof unit with front cover removed.

### ORDERING INFORMATION

Tower Choke, 2 wire, weather proof,  
Fig. A ..... M-3937  
Tower Choke, 3 wire, weather proof,  
Fig. A ..... M-3938  
Tower Choke, 2 wire, open type, Fig. B . M-3935  
Tower Choke, 3 wire, open type, Fig. B . M-3936

## RADIO FREQUENCY CONTACTOR

A heavy duty solenoid operated RF contactor for most switching applications through 50 KW power. Available in either SPDT or DPDT types and in two voltage ratings. Will operate on 115/230 volts AC, latching type. Will handle up to 25 amperes RF per contact.

### ORDERING INFORMATION

Contactor SPDT insulated 17 kv. peak  
voltage ..... 145-101  
Contactor DPDT insulated 17 kv. peak  
voltage ..... 145-102  
Contactor SPDT insulated 22 kv. peak  
voltage ..... 145-201  
Contactor DPDT insulated 22 kv. peak  
voltage ..... 145-202



## HEAVY DUTY SAMPLING LOOP

This is a very rugged fixed non-shielded RF sampling loop. It is heavily galvanized after welding, and is fitted with large steatite insulators and heavy duty tower leg clamps for easy and positive mounting. Complete with type "N" jack. For 50 to 70 ohm sampling line.

### ORDERING INFORMATION

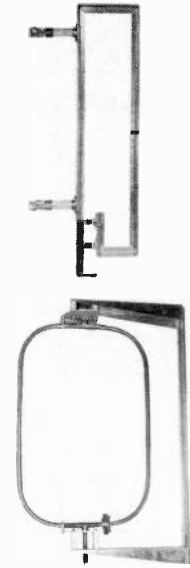
Heavy duty sampling loop ..... M-6126

## ROTATING PHASE SAMPLING LOOPS

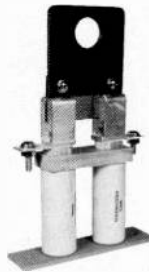
This model is especially applicable where high current ratios are to be sampled. May be rotated so that phase monitor amplitude values are nearly equal. Electrostatically shielded and insulated from tower. May be used with or without isolation coil at base of tower. Coil is single loop, heavily insulated from base frame. Matches either 50 or 70 ohm line. Size: 48" wide, 32" high.

### ORDERING INFORMATION

Rotating Sampling Loop ..... M-3283A



## METER JACK AND SHORTING BAR-MOUNTING PLUG



A great convenience to allow RF current measurements to be made by simply plugging in a meter. Will accommodate most 3" or 4" meters. A "must" in critical RF circuit areas in phasors, couplers, etc. Rating up to 50 KW on a 50 ohm line.

### ORDERING INFORMATION

Meter jack and shorting bar ..... M-3280  
Meter mounting plug ..... M-3281

## METER SHORTING SWITCH



A heavy duty make-before-break meter shorting switch of the plunger or push type. Designed for power ranges through 10 KW (see Note 1) Model M-5557 has inbuilt compensating loop. Heavy bronze tempered spring grip on both sides assure accuracy and durability.

### ORDERING INFORMATION

Metering Shorting Switch, rating 15 Amperes  
modulated ..... M-3493  
Meter Shorting Switch, rating 40 Amperes  
modulated ..... M-5557  
Meter Shorting Switch, rating 75 Amperes  
KW ..... M-3823

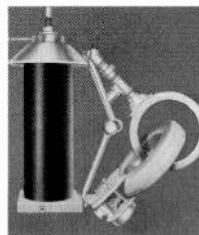
**NOTE 1:** Illustrated is M-5557. In certain instances, where voltage at base of tower is abnormally high, the power ratings would be less than stated.

## LARGE INVENTORY OF METERS

In the manufacture of transmitting and audio equipment for broadcasting, communications and defense, Gates is required to carry thousands of meters in inventory. Whether AC, DC, or RF, or microammeter, milliammeter or ammeter, it is very likely the meter you need in emergency or expansion is quickly available. Give us desired case size, range and type of movement and we will serve you speedily. Many meters are also carried at our Houston, Texas branch.

## AUSTIN RING TYPE TOWER CHOKE

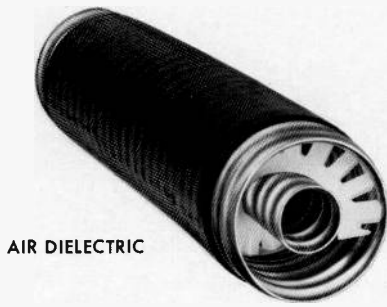
Ring type tower choke is a transformer with clear air space between primary and secondary and minimum antenna shunting effects. Independent of frequency. All models are for 115/230 volt primary and 115 volt secondary. Base insulator in photo for illustration purposes only.



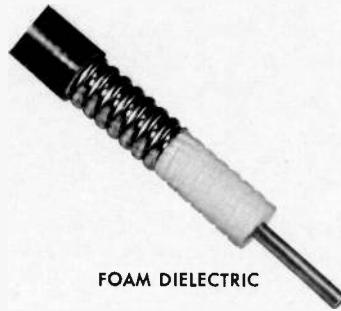
### ORDERING INFORMATION

CAP-KVA	MFG. STYLE	LBS.	ATTACHMENTS	TYPE
1-1.75	Side Bracket	81	none	A-2100
1-1.75	Side Bracket	85	lightning gap	A-2101
1-1.75	Pedestal	82	none	A-2102
1-1.75	Pedestal	86	lightning gap	A-2103
2-3	Side Bracket	188	none	A-1970
2-3	Side Bracket	201	lightning gap	A-1971
2-3	Pedestal	182	none	A-1972
2-3	Pedestal	200	lightning gap	A-1973

# FLEXIBLE COAXIAL CABLE



AIR DIELECTRIC



FOAM DIELECTRIC

Foam Heliax is used in those broadcast installations requiring low loss coaxial cable in which pressurizing is not desirable. A corrugated copper outer conductor and foam dielectric provide a combination of high strength, low loss and power handling not available in solid dielectric cables. The flexibility of foam Heliax provides maximum resistance to crushing, kinking or denting and enables it to be pulled through conduits and around obstructions. Please order by type number.

Produced in continuous splice free lengths, Heliax low loss cable is ideally suited for any application where use of coaxial transmission line is indicated. For Medium Wave VHF and UHF applications, long continuous lengths provide ease of installation and maintenance free service. Corrugated copper conductors provide a combination of flexibility and low loss. For direct burial, exposure to rough handling or where the outer conductor must be insulated, Heliax jacketed with polyethylene is also available. Although Heliax connectors and fittings are easily attached, it is recommended that all cable assemblies be ordered with fittings factory attached using specialized manufacturing equipment. Please order by type number.

## SPECIFICATIONS

### FOAM DIELECTRIC

SIZE:	1/2"	7/8"
TYPE NUMBER:	FH4-50A	FH5-50
TYPE NUMBER, JACKETED:	FHJ4-50A	FHJ5-50
IMPEDANCE:	50 ohms	50 ohms
ATTENUATION @ 100 MHz, dB/100 ft.:	0.82	0.44
VELOCITY, %:	79	79
AVERAGE POWER, @ 100 MHz, Kw	2.3	4.8
BEND RADIUS (MINIMUM)—INCHES:	5	10
NET WEIGHT—POUNDS/FT.:	.19 lbs.	.36 lbs.
NET WEIGHT—JACKETED:	.24 lbs.	.44 lbs.

## SPECIFICATIONS

### AIR DIELECTRIC

SIZE:	7/8"	1 1/8"	3"
TYPE NUMBER:	H5-50	H7-50A	H8-50A
TYPE NUMBER, JACKETED:	HJ5-50	HJ7-50A	HJ8-50A
IMPEDANCE:	50 ohms	50 ohms	50 ohms
ATTENUATION @ 100 MHz, dB/100 ft.:	0.37	0.21	0.14
VELOCITY, %:	91.6	92.1	93.3
AVERAGE POWER, @ 100 MHz-Kw:	6.4	14.5	34.0
BEND RADIUS (MINIMUM)—INCHES:	10	20	30
NET WEIGHT—POUNDS/FT.:	.43 lbs.	.72 lbs.	1.2 lbs.
NET WEIGHT—JACKETED:	.51 lbs.	.92 lbs.	1.5 lbs.

## FITTINGS

Size, nominal:	1/2"	7/8"	7/8"	1 1/8"	3"
Style	Foam	Foam	Air	Air	Air
Type Numbers					
Unjacketed:	FH4-50A	FH5-50	H5-50	H7-50A	H8-50A
Jacketed:	FHJ4-50A	FHJ5-50	HJ5-50A	HJ7-50A	HJ8-50A
EIA Flange:	—	45AR	75AR	87R	78RM, 78RF
UHF Jack:	44AU	45AU	75AU	87U	—
N Jack:	44AN	45AN	75AN	87N	78RM-2262
End Terminal:	44AT	45AT	75AT	87T	78RM-2062
Connector and reducer:	—	—	—	87S	78S
Connector and Gas Barrier:	—	—	75AG	87G	78G(2)
Splice Kit:	44AZ	45AZ	75AZ	87Z	78Z
Hoist Kit:	—	29958	29958	24312	26985
Hoist Kit, jacket:	—	19256B	19256A	24312	26985-A
Grounding Kit:	26892-1	24810-1	24810-1	24811-1	28708-1
Ground Kit, jacket:	26892-2	24810-2	24810-2	24811-2	28708-2
Rigid Hanger:	12395-1	12395-1	12395-1	33598-2	33598-4
Insulated Rigid Hanger:	—	11662-2	11662-2	33948-3	33948-2



EIA FLANGE

END TERMINAL

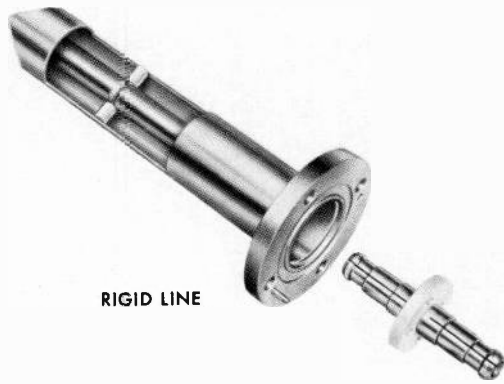
SPLICE

(Please order by type number)

- (1) Also available stainless wraplock, Type 12395-1, 100 feet per can.
- (2) Have captivated connector, use adaptor Type 23187 to connect male component, connectors mate with 3/8" EIA Flange.



# RIGID TRANSMISSION LINES—Pressurization Equipment

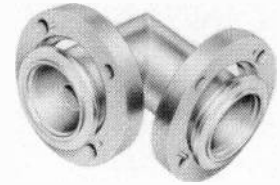


RIGID LINE

## COMPONENTS



2061, END TERMINAL



1061, ELBOW

RIGID LINE: Teflon insulated rigid copper coaxial transmission lines for broadcast application. Line and connectors meet all EIA applicable standards. Mitered elbows are compensated to provide low VSWR. All rigid sections and components include inner connectors, "O" ring and hardware. Please order by type number.

## SPECIFICATIONS

SIZE:	7/8"	1 1/8"	3 1/8"
TYPE NUMBER:	560	561	562A
IMPEDANCE:	50 ohms	50 ohms	50 ohms
ATTENUATION @ 100 MHz, dB/100 ft.:	0.40	0.20	0.11
VELOCITY, %:	99.8	99.8	99.8
AVERAGE POWER, @ 100 MHz	4.3 KW	15.0 KW	48.0 KW
NET WEIGHT—POUNDS/FT.	.65	1.25	2.75

SIZE:	7/8"	1 1/8"	3 1/8"
20 FT. SECTION, TYPE:	560	561	562A
INNER CONNECTOR:	34389A	34660	15093A
MITER ELBOW:	1060	1061	1062
GAS BARRIER:	1260A	1261B	1262A
REDUCER:	—	1860	1861
N ADAPTOR:	2260AB	2261	2262
END TERMINAL:	—	2061	2062
FLEX SECTION:	—	20695	19209B
INNER 51.5 OHM ADAPTOR:	4850	4851	4852
FIXED FLANGE KIT:	18630	18631	18640
SWIVEL FLANGE KIT:	18096	18041	18200
HARDWARE KIT:	11381-1	11381-2	11381-3
"O" RING GASKET:	10683-11	10683-2	10683-3
RIGID HANGER:	14328	13924	13927
SLIDING HANGER:	14327	14378	—
SPRING HANGER:	13889	14379	13925
INSULATED RIGID HANGER:	11662-1	—	—
INSULATED SLIDING HANGER:	11662-2	14442	—
INSULATED SPRING HANGER:	—	14441	13926

## PRESSURIZATION EQUIPMENT



DEHYDRATORS: Type 1920A is a heatless, fully automatic dehydrator capable of delivering a continuous supply of dry air. No down time is necessary to reactivate drying agent. The unit will operate over an ambient range of 0° to 125°F with an input humidity of 95%. Twenty feet of 3/8" poly tubing is included for connection to the line. Please order by type number 1920A.

OUTPUT:	1 CFM @ 8 psig
POWER:	115v 60 Hz
INTERNAL OPERATING PRESSURE:	60 psig
OUTLET DEW POINT:	Below — 37°F
NET WEIGHT, POUNDS:	80
DIMENSIONS, INCHES:	15 1/2 x 24 x 14 1/4

\*220v 50/60 Hz option available.

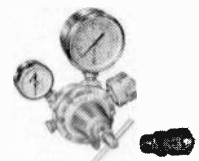
### DRY AIR HAND PUMP

Type 878A, Dry Air Hand Pump, pressurizes up to 1,000 feet of 7/8" cable or 250 feet of 1 1/8" line. One pound of silica gel and 8 feet of hose is supplied. Please order by type number 878.

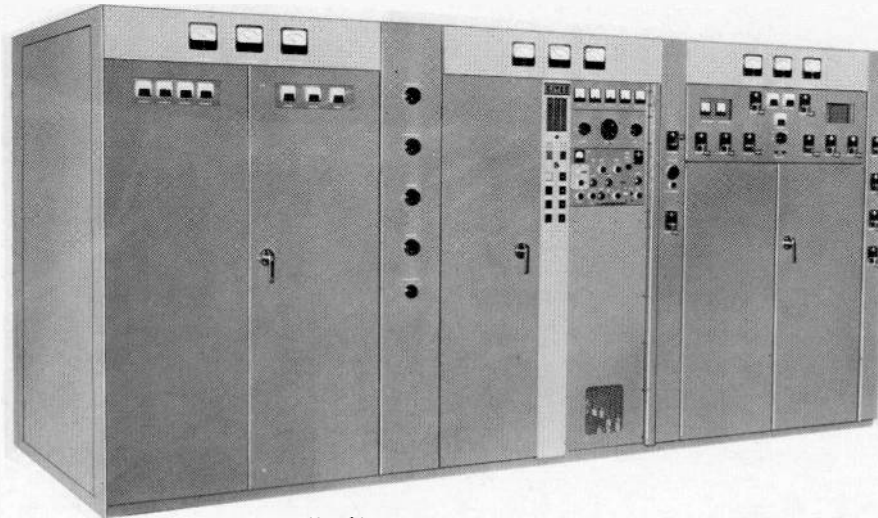


### NITROGEN TANK FITTINGS

Type 858A, Nitrogen Tank Fittings, includes pressure regulator, high and low pressure gauges and 10 feet of 3/8" O.D. poly tubing and fittings to fit 1/8" MPT.



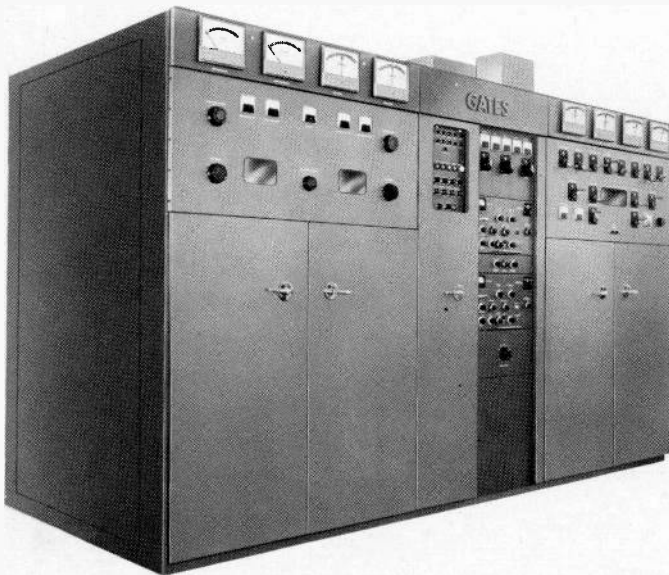
# HF BROADCAST TRANSMITTERS



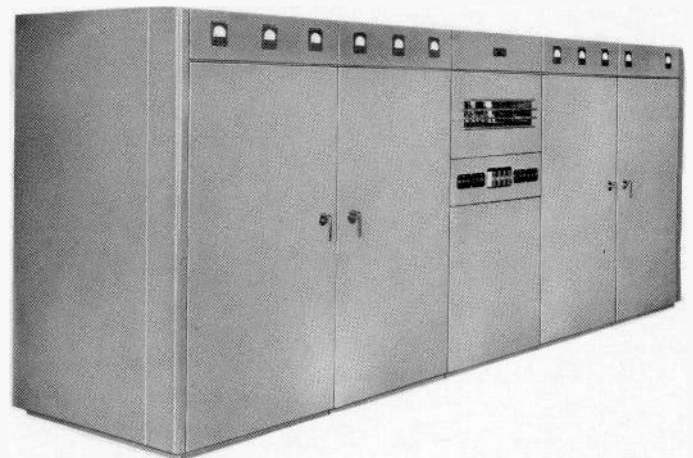
HF-100, 100,000 WATTS

## GATES SHORT WAVE BROADCAST TRANSMITTERS

POWER	250 KW	100 KW	50 KW	20 KW	10 KW	5KW	1 KW
MODEL	HC-114	HF-100	HF-50C	HF-20B	HF-10B	HF-5B	HF-1M
FREQUENCY	3.95-26.5 MHz	3-26.1 MHz	3.9-30 MHz or 3-26.5 MHz	2-22 MHz or 4-22 MHz	2-22 MHz or 4-30 MHz	2-22 MHz or 4-30 MHz	2-32 MHz



HF-50, 50,000 WATTS



HF-20B, 20,000 WATTS

## HOW TO ORDER

**ORDERING PROCEDURE:** All sales are made in accordance with the standard Gates Terms and Conditions of Sale. No order shall be binding upon Gates until accepted by it in writing at its home office in Quincy, Illinois.

**PRICES:** Catalog prices are net, f.o.b. Quincy, Illinois, or point of shipment. Our prices are based on cash transactions and all applicable discounts have been deducted. Prices are subject to change without notice. Orders are filled at prices in effect at time of shipment. You will be billed for any price increase and credited for any price reduction. We reserve the right to add any federal, state, or local taxes required by law. If you have a tax exemption number, please include it with your order. These prices and terms apply only to the U.S. For prices and terms in other countries, please contact Export Department, Gates Radio Company.

**PAYMENT:** There are five ways to pay for your equipment purchases:

- (1) **CASH**—This means full payment with order.
- (2) **C.O.D.**—A 25% down payment is required on C.O.D. orders.
- (3) **SIGHT DRAFT**—A down payment of 25% is required. The balance is remitted by the customer's bank upon presentation of the carrier's order bill of lading.
- (4) **OPEN ACCOUNT**—A 25% down payment is recommended. The balance is payable within 30

days of invoice date. If you do not have an established account, please provide a current financial statement, plus trade and bank references with your order. Allow at least two weeks for processing.

- (5) **GATES FINANCE PLAN**—On major purchases, by domestic customers, a portion of the cost may be financed through a monthly payment plan. Since Gates financing plans are subject to change from time to time, contact our Credit Manager or your nearest Gates Sales Engineer for full information. The Gates finance plan applies only to the United States.

### RETURNS AND EXCHANGES

Do not return any merchandise without our written approval and Return Authorization. We will provide special shipping instructions and a code number that will assure proper handling and prompt issuance of credit. Please furnish complete details as to circumstances and reasons when requesting return of merchandise. Custom built equipment or merchandise specially ordered for you is not returnable. Where return is at the request of, or for the convenience of the customer, a restocking fee of 15% will be charged. All returned merchandise must be sent freight prepaid and properly insured by the customer. When writing to Gates Radio Company about your order, it will be helpful if you specify the Gates Factory Order Number or Invoice Number.

**SHIPPING:** Please specify method of

shipment on your order. Shipping charges, insurance, and C.O.D. fees (when applicable) will be collected at time of delivery when shipment is made by air, rail or motor freight, or express. If you request parcel post shipment, postage and insurance fees will be billed to your account. Purchaser assumes all responsibility for and risk of loss of, or damage to equipment upon shipment from Gates shipping point(s). Should you receive merchandise damaged in shipment, it is your responsibility to file a damage claim immediately with the delivering carrier. Export packing for overseas shipment is available at slight extra charge.

**WARRANTY ADJUSTMENTS:** In the event of equipment failure during the warranty period, replacement or repair parts may be provided in accordance with the provisions of the Gates Warranty. In most cases you will be required to return the defective merchandise or part to Gates f.o.b. Quincy, Illinois, for replacement or repair. Cost of repair parts or replacement merchandise will be billed to your account at the time of shipment and, as to repairs or replacement within warranty, compensating credit will be issued to offset the charge.

**MODIFICATIONS:** Gates reserves the right to modify the design and specifications of the equipment shown in this catalog without notice or to withdraw any item from sale provided, however, that any modification shall not adversely affect the performance of the equipment so modified.

*The mechanical and electrical design of the equipment described herein is subject to change without notice as deemed necessary by Gates Radio Company or its suppliers in the interest of advancing industry requirements or the state of the art.*

**HOME OFFICE AND  
MANUFACTURING FACILITIES**  
QUINCY, ILLINOIS 62301  
123 Hampshire Street  
Phone: 222-8202, Area 217

**AUTOMATIC TAPE CONTROL DIVISION**  
BLOOMINGTON, ILLINOIS 61702  
1107 East Croxton Avenue  
Phone: 829-7006 Area 309

**STOCK CARRYING BRANCH**  
HOUSTON, TEXAS 77027  
4019 Richmond Avenue  
Phone: MO6-4333 Area 713

**DISTRICT OFFICES**  
NEW YORK, NEW YORK 10017  
800 Second Avenue  
Phone: MU7-7971 Area 212

LOS ANGELES, CALIFORNIA 90007  
1945 South Figueroa  
Phone: RI7-7129 Area 213

WASHINGTON, D.C. 20005  
730 Federal Building  
1522 K Street, N.W.  
Phone: 223-5508 Area 202

**EXPORT SALES**  
ROCKE INTERNATIONAL CORPORATION  
13 East 40th Street  
New York, New York 10016  
Phone: MU9-0200 Area 212  
Cables: ARLAB

**CANADIAN SALES**  
GATES RADIO COMPANY (CANADA)  
Division of Harris-Intertype (Canada) Ltd.  
Montreal Office: 212 Brunswick Boulevard  
Pointe-Claire, Quebec, Canada  
Phone: 695-3751 Area 514

Toronto Office: 19 Lesmill Road  
Don Mills, Ontario, Canada  
Phone: 447-7234 Area 416

**HARRIS  
INTERTYPE  
CORPORATION**

**GATES**

**GATES RADIO COMPANY**  
A Subsidiary of Harris-Intertype Corporation  
QUINCY, ILLINOIS, 62302



# PRICE LIST

Applies to Catalog #97—Effective April 1, 1967

This is your price list for items listed in your Gates catalog. Each price has been carefully checked for accuracy. Rapidly changing conditions as well as the human element, will necessitate price changes or corrections from time to time. Therefore, the prices herein are subject to change without notice.—All prices are F.O.B. Quincy, Illinois or point of manufacture.

CAT. PAGE	TYPE NUMBER	PRODUCT DESCRIPTION	UNIT PRICE	CAT. PAGE	TYPE NUMBER	PRODUCT DESCRIPTION	UNIT PRICE
FM BROADCAST TRANSMITTER							
4	FM-20H	20,000 watt transmitter, one set of tubes, and crystal . . .	\$24,500.00	11	BFE-10C (M-5594B)	10 watt FM broadcast transmitter with tubes and crystal	1,550.00
	TK-552	Spare 100% tube kit . . . . .	766.20		TK-391	Spare 100% tube kit . . . . .	42.00
5	FM-10H	10 KW FM broadcast transmitter, with tubes and crystal	17,500.00		TK-488	Recommended minimum tube kit . . . . .	24.00
	TK-551	Spare 100% tube kit . . . . .	604.00		BFE-50C (M-5595B)	50 watt FM broadcast transmitter with tubes and crystal	2,050.00
6	FM-5H	5 KW transmitter, with tubes and crystal . . . . .	13,250.00		TK-489	Spare 100% tube kit . . . . .	54.00
	FM-7.5H	7.5 KW transmitter, with tubes and crystal . . . . .	15,250.00		TK-490	Recommended minimum tube kit . . . . .	30.00
	TK-549	Spare 100% tube kit for FM-5H or FM-7.5H transmitter . . . . .	530.60		BFR-50C (M-5599B)	50 watt relay transmitter (40-220 MHz) with tubes, crystal and aven . . . . .	2,150.00
7	FM-3H	3 KW FM transmitter with one set of tubes and crystal . . . . .	10,500.00		TK-310	Spare 100% tube kit . . . . .	63.00
	TK-549	100% set of spare tubes for FM-3H . . . . .	530.60		TK-458	Recommended tube kit . . . . .	49.00
8	FM-1H	1000 watt FM transmitter, with tubes and crystal . . . . .	6,795.00		M-5765	FM-11 Single Ring Educational (88-108 MHz) FM Antenna . . . . .	150.00
	TK-550	Spare tube for FM-1H . . . . .	181.00		M-5766	FM-22 Double Ring Educational (88-108 MHz) FM Antenna . . . . .	400.00
9	FM-250H	250 watt FM broadcast transmitter with tubes and crystal	5,470.00	CYCLOID FM RING ANTENNA			
	374-0081	Spare 4CX250B . . . . .	35.60	13	FMA-2A	Two ring, 1 1/2" . . . . .	1,050.00
1-10	TE-1	M-6425 100% solid state 10 watt FM exciter 88-108 MHz	2,795.00		FMA-2B	Two ring, 3 1/8" . . . . .	1,120.00
	TK-560	100% spare transistor kit for M-6425 . . . . .	204.00		FMA-3A	Three ring, 1 1/2" . . . . .	1,560.00
	M-6533	Stereo Generator for M-6425 exciter . . . . .	995.00		FMA-3B	Three ring, 3 1/8" . . . . .	1,680.00
	TK-561	100% set of spare transistors for M-6533 . . . . .	27.75		FMA-4A	Four ring, 1 1/2" . . . . .	2,080.00
	M-6507	SCA-Generator for M-6425 exciter (specify frequency) . . . . .	475.00		FMA-4B	Four ring, 3 1/8" . . . . .	2,240.00
	TK-562	100% set of spare transistors for M-6507 . . . . .	9.50		FMA-5A	Five ring, 1 1/2" . . . . .	2,600.00
					FMA-5B	Five ring, 3 1/8" . . . . .	2,800.00
					FMA-6A	Six ring, 1 1/2" . . . . .	3,120.00
					FMA-6B	Six ring, 3 1/8" . . . . .	3,360.00
					FMA-7A	Seven ring, 1 1/2" . . . . .	3,680.00



CAT. PAGE	TYPE NUMBER	PRODUCT DESCRIPTION	UNIT PRICE	CAT. PAGE	TYPE NUMBER	PRODUCT DESCRIPTION	UNIT PRICE
	M-5206	For GR1931A or RCA WM43A modulation monitors .....	78.00	20	M-6209B	President, dual channel audio console, complete, includes 2 external VU meters and 4 type 478-0275 speaker matching transformers .....	2,995.00
	M-5208	For GR1181A or RCA WF48A frequency monitors .....	78.00		M-6034	Optional plug-in microphone pre-amplifiers .....	82.50
	M-5209	For RCA 311A monitor ....	78.00		M-6208	External VU meter with housing .....	73.00
	M-5862A	Complete RDC-10AC system includes studio and transmitter units and plate current unit, plate voltage unit and tower light indicator .....	1,150.00		M-6424	Intercom sub-station, deluxe .	49.00
	M-6112	Antenna diode .....	84.00		TK-503	Spare 100% semi-conductor kit .....	78.50
	M-4703A	Motor/rheostat for 250 watt	131.00		M-6482	Relay, 30 volt D.P.D.T. to start stop external equipment	18.50
	M-4703B	Motor/rheostat for 500 watt	131.00	21	M-5564A	Ambassador, single channel console, complete with 2 pre-amplifiers and 4 type 478-0275 speaker matching transformers .....	2,395.00
	M-4703C	Motor/rheostat for 1 KW ..	135.00		M-6034	Extra plug-in microphone pre-amplifier .....	82.50
	M-5066	Tuning motor assembly ....	130.00		M-6424	Intercom Sub-station, deluxe	49.00
	M-4806	Relay assembly to operate M-5066 motor .....	63.00		478-0275	Speaker matching transformer	3.95
	M-4720A	Plate current metering kit ..	36.50		M-6482	Relay kit for use with Control Center to start mechanical device .....	18.50
	M-4719A	Plate voltage metering kit ..	36.50		913-6060	Plug-in jumper board .....	3.50
		AUDIO CONSOLES					
15	M-6541A	Gatesway II, 8-channel mono-aural console .....	2,795.00	22	M-5133C	Gatesway Audio Console complete .....	1,975.00
	TK-556	100% spare semi-conductor kit .....	133.65		TK-451	100% spare tube kit .....	38.00
	478-0009	Line input transformer .....	12.00		M-5304A	Optional preamplifier .....	59.50
16	M-6542	Dualux II, 8 channel mono/stereo console .....	3,695.00		478-0275	Speaker matching transformer	3.95
	TK-547	100% spare semi-conductor kit .....	189.95		M-6424	Studio cue/intercom speaker	49.00
	M-6565	Cough switch, relay kit ....	10.50		AK-11939	Extra muting relay .....	14.85
17	M-6540A	Stereo Statesman, 5 channel stereo console .....	2,495.00	23	M-6188	Stereo Yard Audio Console, complete .....	2,995.00
	TK-554	100% spare semi-conductor kit .....	116.00		TK-417	100% spare tube kit .....	65.00
18	M-6158	Executive Audio console, complete includes 4 type 478-0275 speaker matching transformers .....	4,495.00		478-0275	Speaker matching transformer	3.95
	M-6034	Optional preamplifier .....	82.50		M-5526C	Yard Audio Console, complete .....	1,595.00
	M-5700B	Optional program amplifier .	164.00		TK-446	100% spare tube kit .....	33.50
	478-0275	Speaker matching transformer	3.95		M-5304A	Optional preamplifier .....	59.50
	M-6208	Optional 3rd VU meter ....	73.00		478-0275	Speaker matching transformer	3.95
	M-6424	Intercom sub-station .....	49.00		AK-12626	Optional muting relay .....	14.85
19	M-6377A	Diplomat audio console complete, with 4 type 478-0275 speaker matching transformers	3,595.00	24	M-5236D	Dualux Audio Console complete .....	2,495.00
	M-5700B	Optional program amplifier .	164.00		TK-449	100% spare tube kit .....	46.00
	M-6034	Optional preamplifier .....	82.50		M-5304A	Optional preamplifier .....	59.50
	478-0275	Speaker matching transformer	3.95		478-0275	Speaker matching transformer	3.95
	M-6424	Studio cue/intercom speaker	49.00		M-6424	Studio cue/intercom speaker	49.00
	TK-505	100% spare semi-conductor kit .....	75.00				

CAT. PAGE	TYPE NUMBER	PRODUCT DESCRIPTION	UNIT PRICE	CAT. PAGE	TYPE NUMBER	PRODUCT DESCRIPTION	UNIT PRICE
24	M-5381B	Studioette Audio Console ..	1,225.00				
	TK-444	100% spare tube kit .....	22.50				
	M-5304A	Optional preamplifier .....	59.50				
	478-0275	Speaker matching transformer	3.95				
	AK-12626	Extra muting relay .....	14.85				
25	M-6407	Producer recording mixer ..	675.00				
	478-0275	Speaker matching transformer	3.95				
26		AUTOMATE 244, consisting of:					
	2	Magnecord 1028 stereo record/play.					
	STC-9	Simplex Programmer w/25 Hz Sensor.					
	TPG-9	Timer.					
	TG	25 Hz Tone Generator.					
	FA-S	25 Hz Filters.					
	CAR-13	Cartridge Recording Amplifier, Mono.					
	2 CPR-13	Cartridge Reproducer, Mono.					
	CAB-77-SD	Rack w/AC wiring and all cabling.					
		TOTAL SYSTEM (STEREO MUSIC, MONO CART) .....	\$ 6,815.00				
		TOTAL SYSTEM, FULL STEREO .....	7,275.00				
		Optional additions and substitutions, Automate 244					
	CAB-77-SD	Rack w/AC wiring and necessary cabling .....	315.00				
	APL-M	Automatic Program Logging (including encoder, decoder, digital clock and printer) ..	3,350.00				
	ATC-55	Multiple Cartridge Unit (no rack needed, Mono) .....	2,650.00				
	ATC-55	Multiple Cartridge Unit, Stereo .....	2,850.00				
	CAR-23	Cartridge Recording Amplifier, Stereo .....	610.00				
	CPR-23	Cartridge Reproducer, Stereo	900.00				
	MA-C	Monitor Amplifier and Cue Selector, Mono .....	195.00				
	MA-C-S	Monitor Amplifiers and Cue Selector, Stereo .....	295.00				
	SSA	Silence Sensor Alarm and Restart .....	210.00				
	AP-M	Audio Package including VU and AGC Amplifier .....	630.00				
	AP-S	Audio Package, as above, Stereo .....	1,055.00				
				27		AUTOMATE 484, consisting of:	
					Ampex AG-440-2	Stereo record/play.	
					TG	25 Hz Tone Generator.	
					FA-S	25 Hz Filter Assembly.	
					CAR-13	Cartridge Recording Amplifier, Mono.	
					CPR-13	Cartridge Reproducer, Mono.	
					Ampex AG-440-2	Stereo Reproducer.	
					SC-48	Simplex Programmer w/25 Hz Sensor.	
					AP-S	Audio Package (includes AGC amplifiers).	
					MA-C-S	Monitor Amplifiers and Cue Selector.	
					TPG-48	Timer.	
					SSA	Silence Sensor Alarm and Restart.	
					ATC-55	Multiple Cartridge Unit, Mono.	
					2 CAB-77-SD	Racks w/AC wiring and all cabling.	
						TOTAL SYSTEM (STEREO MUSIC, MONO CART) .....	\$12,710.00
						TOTAL SYSTEM, FULL STEREO .....	13,220.00
						TOTAL SYSTEM, MONOPHONIC .....	11,200.00
						Optional additions and substitutions, Automate 484	
					CAB-77-SD	Rack w/AC wiring and necessary cabling .....	315.00
					APL-M	Automatic Program Logging (including encoder, decoder, digital clock and printer) ..	3,350.00
					ATC-55	Multiple Cartridge Unit, Stereo .....	2,850.00
					CAR-23	Cartridge Recording Amplifier, Stereo .....	610.00
					CPR-23	Cartridge Reproducer, Stereo	900.00
					Scully 280-2	SP-14 Stereo record/reproduce, 14" reels .....	2,565.00
					Scully 270-2	Stereo, reproducer, 14" reels	1,595.00
						AUTOMATE 1007, consisting of:	
				28	2 Scully 270-2	Stereo Reproducer.	
				29	2 DCU	25 Hz Detector Control Unit.	
					2 CPR-13	Cartridge Reproducer, Mono.	
					ATC-55	Multiple Cartridge Unit, Mono.	



CAT. PAGE	TYPE NUMBER	PRODUCT DESCRIPTION	UNIT PRICE	CAT. PAGE	TYPE NUMBER	PRODUCT DESCRIPTION	UNIT PRICE
	EAA	External Audio Adapter, Dual Input.					
	SSA-1	Silence Sensor Alarm and Print Red.					
	SSA-2	Silence Sensor Alarm and Restart.					
	DC	Digital Clock.					
	AP-5	Audio Package, VU meters and Control and 2 AGC Amplifiers.					
	SP-10	System Programmer Control.					
	SP-10	Programmer Deck.					
	PTC-2	Program Time Control, Time Selector and Fade Start.					
	RE	Re-Entry.					
	LD	Logging Decoder.					
	AMS-10	Switcher.					
		Audio Distribution.					
		Logging Printer.					
3	CAB-77-SD	Racks, one with blower, System wiring and Cabling.					
		AUTOMATION SYSTEM					
		SUB TOTAL .....	\$16,650.00				
		(Stereo Music—Mono Cart)					
		AUTOMATION SYSTEM,					
		FULL STEREO .....	17,150.00				
		AUTOMATION SYSTEM,					
		MONO .....	15,965.00				
		Optional additions and substitutions, Automate 1007					
	CAB-77-SD	Rack w/AC wiring and necessary cabling .....	\$ 315.00				
	MSC-10	Manual System Control (remote control) .....	595.00				
	CG-8	Code Generator for Automatic Program Logging .....	575.00				
	SCN	Sum Channel Network to combine stereo channels ...	515.00				
	OPC-10	Overlap Program Control ...	995.00				
	MCP-10	Monitor Amplifiers and Cue Selector, Stereo .....	995.00				
	MCP-10	As above except monophonic	595.00				
	TA-1	Time Announce Control (requires two cart units) .....	330.00				
		MULTIPLE CARTRIDGE					
30 & 31	Criterion 55	Multiple Cartridge Handler for use in automated systems or in any application requiring multiple cartridge storage.					
		Operation is normally sequential from top to bottom. Cartridge stack stores 55 tape cartridges. Modified Criterion Series cartridge playback travels in vertical plane behind storage stack for playback .....					2,650.00
		As above, except stereophonic			Criterion 55-S		2,850.00
		Basic Criterion solid state playback only unit with 1000 Hz cue amplifier and monophonic program pre-amplifier for rack mount. ....			CPR-11		\$ 690.00
		Playback unit as above, monophonic and single cue, but in self-contained desk top mounting .....			CPD-11		690.00
		Playback unit, monophonic, with 1000 Hz primary and 150 Hz secondary cueing for rack mount .....			CPR-12		720.00
		Playback unit, monophonic, dual cue for desk top mounting .....			CPD-12		720.00
		Playback unit, monophonic, with 1000 Hz primary 150 Hz secondary and 8000 Hz tertiary cueing for rack mount			CPR-13		750.00
		Playback unit, monophonic, triple cue for desk top mounting .....			CPD-13		750.00
		Criterion Booster Amplifier. Plug-in amplifier for Criterion Playback machines. Provides an output of +18 dBm; 600 ohms, unbalanced. Monophonic .....			CBA		80.00
		Basic Criterion solid state recording amplifier with interconnecting cable for connection to any CPR-D playback unit to provide record/play combination. Rack mount			CAR-11		345.00
		Recording amplifier, as above, except for desk top mounting			CAD-11		345.00
		Recording amplifier, monophonic with 1000 Hz, 150 Hz and 8000 Hz cue oscillators. For rack mount .....			CAR-13		450.00
		Recording amplifier, as above, except for desk top .....			CAD-13		450.00

CAT. PAGE	TYPE NUMBER	PRODUCT DESCRIPTION	UNIT PRICE	CAT. PAGE	TYPE NUMBER	PRODUCT DESCRIPTION	UNIT PRICE
	CPR-21	Stereo playback unit, single cue, rack mount . . . . .	850.00		M-6221	Carritape II Remote Unit, Playback . . . . .	42.00
	CPD-21	Stereo playback unit, single cue, desk top mounting . . . .	850.00		M-6234	Carritape II Remote Unit, Record . . . . .	42.00
	CPR-22	Stereo playback unit, dual cue, rack mount . . . . .	875.00		M-5986	Carritape II Cartridge Storage Rack . . . . .	39.50
	CPD-22	Stereo playback unit, dual cue, desk top mounting . . . .	875.00		ALT-1	Azimuth Alignment Cartridge, 15 kHz . . . . .	7.50
	CPR-23	Stereo playback unit, triple cue, rack mount . . . . .	900.00		HD-11M	Bulk Tape Eraser . . . . .	23.50
	CPD-23	Stereo playback unit, triple cue, desk top mounting . . . .	900.00		730-0180	Tape Head Demagnetizer . .	6.00
	CAR-21	Stereo recording amplifier, 1000 Hz cue, rack mount . .	505.00			<b>TAPE CARTRIDGES</b> Packed 6 to a box. <b>NAB-A SERIES</b>	
	CAD-21	Stereo recording amplifier, 1000 Hz cue, desk top mounting . . . . .	505.00		A-300	Empty . . . . .	1.70
	CAR-23	Stereo recording amplifier, 1000 Hz, 150 Hz and 8000 Hz cues. Rack mount . . . . .	610.00		A-300A	40 Seconds . . . . .	2.16
	CAD-23	Stereo recording amplifier, as above except desk top mounting . . . . .	610.00		A-300B	70 Seconds . . . . .	2.28
					A-300C	100 Seconds . . . . .	2.40
					A-300D	3½ Minutes . . . . .	2.74
					A-300E	5½ Minutes . . . . .	3.14
					A-300G	10½ Minutes . . . . .	4.12
32	M-6211F	Carritape II Playback Unit for Monaural, 1 Tone . . . .	630.00			<b>NAB-B SERIES—2 to a box</b>	
	M-6211G	Carritape II Playback Unit for Monaural, 2 Tone . . . .	675.00		B-600	Empty . . . . .	2.82
	M-6211H	Carritape II Playback Unit for Monaural, 3 Tone . . . . .	720.00		B-600H	16 Minutes . . . . .	6.76
	M-6212C	Carritape II Playback Unit for Stereo, 1 Tone . . . . .	825.00			<b>NAB-C SERIES</b>	
	M-6212D	Carritape II Playback Unit for Stereo, 2 Tone . . . . .	870.00		C-1200	Empty . . . . .	4.24
	M-6212E	Carritape II Playback Unit for Stereo, 3 Tone . . . . .	915.00		C-1200J	31 Minutes . . . . .	11.90
	M-6213I	Carritape II Record/Play Unit for Monaural, 1 Tone . . . .	1,075.00			<b>REMOTE AMPLIFIERS</b>	
	M-6213J	Carritape II Record/Play Unit for Monaural, 2 Tone . . . .	1,130.00		M-6434	Dynamote "70" 4-channel remote amplifier, complete but less male microphone connectors and batteries . . . . .	595.00
	M-6213K	Carritape II Record/Play Unit for Monaural, 3 Tone . . . .	1,185.00	33	XLR3-12C	Microphone plugs, male (4 required) . . . . .ea.	1.68
	M-6214F	Carritape II Record/Play Unit for Stereo, 1 Tone . . . . .	1,395.00		M-6441	Battery complement . . . . .	2.24
	M-6214G	Carritape II Record/Play Unit for Stereo, 2 Tone . . . . .	1,450.00		M-6445	Vinyl cover with accessory pocket . . . . .	9.00
	M-6214H	Carritape II Record/Play Unit for Stereo, 3 Tone . . . . .	1,505.00		M-6435	In-line D.C. power supply, complete . . . . .	45.00
	M-6216A	Carritape II 150 Hz Cue Amplifier . . . . .	47.00		M-6433	Attache 3-channel remote amplifier, less batteries and male microphone connectors . . . .	395.00
	M-6216B	Carritape II 8000 Hz Cue Amplifier . . . . .	47.00		XLR3-12C	Microphone connector, 3 req. . . . .ea.	1.68
	M-6219	Carritape II Switcher, Monaural . . . . .	156.00		M-6441	Battery kit complete . . . . .	2.24
	M-6220	Carritape II Switcher, Stereo	203.00		478-0221	Optional microphone input transformer . . . . .	22.50
					M-6435	Power supply, in-line type . .	45.00
					M-6444	Pliable vinyl cover . . . . .	8.00

CAT. PAGE	TYPE NUMBER	PRODUCT DESCRIPTION	UNIT PRICE	CAT. PAGE	TYPE NUMBER	PRODUCT DESCRIPTION	UNIT PRICE
34	M-6432A	Courier "70" 2-channel transistorized remote amplifier, complete with transistors, less batteries .....	340.00		M-6463E	CB-1525A Complete trans. equipment in cabinet, M-6053E equipment and M-6448A cabinet .....	591.00
	M-6441	100% battery kit .....	2.24		M-6448A	Floor cabinet only with cutout for CB-500 chassis .....	120.00
	478-0221	Microphone input transformer .....	22.50		M-6448	Floor cabinet less cutout for turntable .....	120.00
	M-6444	Vinyl cover, with accessory pocket .....	8.00		M-6590	Complete stereo turntable equipment with diamond stylus and M-6448B cabinet ..	741.95
	M-6435	In-line power supply for 117 volt operation .....	45.00		M-6590F	Stereo equipment, same as above, but less floor cabinet	621.95
	XLR3-12C	Microphone connectors, male (2 required) .....	1.68		M-6587	Complete 12 inch trans. equipment in floor cabinet, consisting of M-6584 equipment and M-6448A cabinet .	580.00
	M-6431A	Unimote "70" single channel remote amplifier, less batteries	150.00		M-6587A	Complete trans. equipment in cabinet consisting of M-6584A (diamond styli) & M-6448B cabinet .....	587.00
	660-0020	Battery complement (12) @ .16 .....	1.92		M-6448B	Floor cabinet only with cutout for CB-77 chassis .....	120.00
	478-0221	Input transformer .....	22.50		M-6448A	Floor cabinet only, less cutout	120.00
	M-6435	In-line power supply .....	45.00		474-0011	Step-down transformer, primary 230 V, 50/60 Hz, secondary 115 V .....	11.22
	XLR3-12C	Microphone connector, male (1 required) .....	1.68		M-6449B	Dual turntable cabinet, with cutouts for two CB-77 or CB-88 equipments .....	195.00
		<b>TRANSCRIPTION TURNTABLES</b>			M-6449A	Dual turntable cabinet, with cutouts for two CB-500 or CB-525 equipments .....	195.00
35	M-5739B	CB-500 16-inch trans. turntable, chassis only 60 Hz ..	295.00			<b>TURNTABLE PREAMPLIFIERS</b>	
	M-5739C	CB-500A, as above but 50 Hz	310.00	38	M-6442	Stereophonic Transistor Equalizer Turntable Preamplifier .	260.00
	M-6053D	CB-510 Complete 16 inch trans. equipment including turntable, self-contained preamp., power supply, 2-position equalizer, pickup arm and dual sapphire stylus	464.00		M-6244	Monophonic Transistor Equalizer Turntable Preamplifier .	104.00
	M-6053E	CB-510A Complete trans. equip., as above, but with dual diamond styli .....	471.00			<b>TRANSCRIPTION ARMS</b>	
36	M-5798D	CB-77 12 inch trans. turntable, chassis only 60 Hz ..	275.00		212-TN	12" Gray viscous-damped arm	37.50
	M-5798E	CB-77A, as above, but 50 Hz	290.00		208-S	16" Gray viscous-damped arm	52.00
	474-0011	Step-down transformer, primary 230 V, 50/60 Hz, secondary 115 volts .....	11.22		208-S/G	16" Gray viscous-damped arm for turn-around cartridge ..	52.00
	M-6584	CB-88, complete 12 inch trans. equipment including turntable self-contained pre-amp., power supply, 2-position equalizer, pickup arm and dual sapphire styli .....	459.00		206-S/G	12" version of the 208 ....	67.00
	M-6584A	CB-88A, complete trans. equipment, as above, with dual diamond styli .....	466.00			<b>PICKUP CARTRIDGES</b>	
37	M-6463D	CB-1525 Complete 16 inch trans. equipment, in color cabinet, consisting of M-6053 equipment and M-6448A cabinet .....	584.00		4G050	Pickup Cartridge .....	12.95
					4G053	Pickup Cartridge .....	19.95
					4G015	Pickup Stylus .....	2.29
					4G025	Pickup Stylus .....	2.29
					4G01D	Pickup Stylus .....	5.95
					4G02D	Pickup Stylus .....	5.95
					723-0236	M44-7 Stereophonic cartridge with 0.7 mil diamond stylus	19.95
					723-0237	Replacement 0.7 mil stereo stylus (diamond) .....	9.75

CAT. PAGE	TYPE NUMBER	PRODUCT DESCRIPTION	UNIT PRICE	CAT. PAGE	TYPE NUMBER	PRODUCT DESCRIPTION	UNIT PRICE
GATES BROADCAST MICROPHONES							
39	G-100	Gates Dynamic, Omnidirectional Microphone .....	33.00		SCB-8D	Corner baffle, 8" (specify blond or walnut) ...	9.15
	418	Matching desk stand .....	7.80		SCB-12D	Corner baffle, 12" (specify blond or walnut) ...	12.95
	G-200	Gates Dynamic, Omnidirectional Microphone .....	45.50		DWB-8A	Wall baffle, 8" (specify blond or walnut) ...	6.00
	418	Matching desk stand .....	7.80		DWB-12A	Wall baffle, 12" (specify blond or walnut) ...	8.40
	G-300	Gates Dynamic, Cardioid Microphone .....	53.50		WB-8D	Wall baffle, 8" (specify blond or walnut) ...	4.65
	419	Matching desk stand .....	7.80		WB-12D	Wall baffle, 12" (specify blond or walnut) ...	6.38
	G-500	Gates Dynamic Lavalier Microphone, with Lavalier cord and clip .....	47.50		SPEAKER TRANSFORMERS		
					478-0250	Matching transformer TR-15 .	3.60
					478-0275	Transformer, primary 45/48 ohms secondary: 8/16 ohms .	3.95
					554-0227	Pad, 8 ohm T pad .....	5.90
					554-0180	Pad, 4 ohm T pad .....	5.90
					AUDIO ACCESSORIES		
				42	M-6208	Desk or console top VU meter	73.00
					LE-1	Fixed equalizer complete ..	54.00
					LE-2	Variable equalizer .....	136.00
					V-22	VU meter and range panel .	147.50
					PREMIUM SOLID STATE AUDIO AMPLIFIER—6300 SERIES		
				43	M-6313A	Preamplifier .....	179.00
					M-6321A	Program amplifier .....	250.00
					M-6314A	Program/AGC amplifier ....	310.00
					M-6315A	Monitor amplifier .....	389.00
					550-0255	Potentiometer for monitor amplifier gain control .....	5.35
					M-6421	300 Ma. 48 volt power supply	175.00
					M-6338	1.5 Amp. 48 volt power supply	225.00
					M-6341	Mtg. Tray for preamplifier ..	10.00
					M-6426	Mtg. Tray for program amplifier .....	10.00
					M-6342	Mtg. Tray for PGM/AGC amplifier .....	12.00
					M-6343	Mtg. Tray for monitor amplifier	10.00
					M-6422	Mtg. Tray for M-6421 power supply .....	10.00
					M-6344	Mtg. Tray for M-6338 power supply .....	10.00
					M-6345	Panel and shelf assembly ...	42.00
					PROOF OF PERFORMANCE EQUIPMENT		
				44	SA-131	Complete Proof of Performance Package, consists of one each, Models 210, 410, M-3625 & M-3626 units ....	887.00
					210	Audio Oscillator .....	247.50
					410	Distortion Meter .....	337.50
					M-3625	Gain Set .....	235.00
					M-3626	Diode and Pickup .....	67.00
STUDIO AND MICROPHONE CABLE							
		SH-2-20	.06/ft.				
		8450	.06/ft.				
		8451	.06/ft.				
SELECTED PROFESSIONAL MICROPHONES							
40	SH-300	Microphone, complete with connector and 20 ft. cable .	90.00				
	642	Microphone, complete with connector and 20 ft. cable .	234.00				
	356	Shockmount (required) ....	30.00				
	666	Microphone, complete with 20 ft. cable and connector ...	153.00				
	420	Desk stand .....	12.00				
	RE-15	Microphone, complete with 18 ft. cable, XR3-11 Connector metal carrying case, and model 310 clamp .....	153.00				
	635A	Microphone, complete with 18 ft. cable, XR3-11 connector Lavalier neck cord and model 310 clamp .....	49.20				
41	M-6529	Monaural speaker with solid state amplifier tone and volume controls .....	199.50				
	M-6530	Speaker only, no amplifier, tone or volume controls ...	89.50				
	M-6531	Stereo speaker system consisting of two speakers, one with stereo amplifier, with stereo volume and tone controls .....	385.00				
SPEAKERS & BAFFLES							
41	GRS-800	Gatespeaker 8" speaker ....	8.95				
	GRS-1200	Gatespeaker 12" speaker ...	9.50				
	722-0044	Studio quality loudspeaker system .....	165.00				

CAT. PAGE	TYPE NUMBER	PRODUCT DESCRIPTION	UNIT PRICE	CAT. PAGE	TYPE NUMBER	PRODUCT DESCRIPTION	UNIT PRICE
MICROPHONE STANDS				AMPEX PROFESSIONAL TAPE RECORDERS			
	BS-36	Boom stand without casters .	42.00	49	730-0933	AG-440-U Recorder, full track, unmounted, 7.5/15 ips, 60 Hz	1,970.00
	BS-36W	Boom stand with silent casters	48.00		730-0934	AG-440-C, as above except console mounted	2,350.00
	FM-1	Flexo Mikester	10.77		730-0939	AG-440-2U Recorder two track stereo, unmounted, 7.5-15 ips, 60 Hz	2,640.00
	418	Desk stand	7.80		730-0940	AG-440-2C as above, except console mounted	3,020.00
	419	Desk stand	7.80		730-0941	AG-440-2U + 1/4 Recorder two track stereo plus quarter track playback, unmounted, 7.5/15 ips.	2,690.00
	DS-7	Desk stand	3.60			MODEL AG-445 REPRODUCERS	
	DS-5	Desk stand	2.10		730-0947	AG-445-U reproducer, full track, unmounted, 7.5/15 ips, 60 Hz	1,490.00
	TS-8	Banquet stand	6.45		730-0948	AG-445-1/2U reproducer, half track, unmounted, 7.5/15 ips	1,490.00
	MS-25	Professional floor stand	17.70		730-0951	AG-445-2U stereo reproducer two track and qtr. track stereo, unmounted, 7.5/15 ips	1,720.00
	MS-10C	Utility floor stand	6.45		730-0952	AG-445-2U as above, except 3.75/7.5 ips	1,720.00
	BB-1	Baby boom attachment	5.10		730-0953	Accessory remote control. Desk type for AG-440 or AG-445, with 30 ft. cable	60.00
DUAL PEAK LIMITING AMPLIFIER					730-0960	Portable transport case—for AG-440 or AG-445	100.00
45	M-6144B	Dual peak limiting amplifier with tubes	1,070.00		730-0961	Portable electronics case. Accommodates monophonic or two track stereo electronics	55.00
	TK-420	Spare 100% tube kit	18.50		730-0397	Type 602-01 Portable half track monaural, 60 Hz, 7.5 ips, w/case	625.00
	M-3529B	SA-39B Peak Limiting Amplifier with tubes	495.00		730-0398	Type 602-02 Portable full track monaural, 60 Hz, 7.5 ips, w/case	625.00
	TK-150	Spare 100% tube kit	27.50		730-0408	Type 864 Rack mount adaptor for 602-1 monaural recorders	17.50
46	M-6467	Gates FM Top Level, complete	575.00		730-0402	Type 6022-01 Portable two track stereo, 60 Hz, 7.5 ips, w/case, weight 42 lbs.	875.00
	M-5576B	Program or line amplifier	260.00		730-0409	Type 865 Rack mount adaptor for 602-02 stereo recorder	25.00
	TK-450	100% spare tube kit	6.50		730-0362	Plug-in preamplifier, low impedance 40 dB gain	45.00
	M-5575	Monitor Amplifier	270.00		730-0363	Plug-in preamplifier, low impedance, 60 dB gain	60.00
	TK-303	100% spare tube kit	12.00		730-0405	Type 622 Amplifier-Speaker, with case	189.50
	M-5377	Unique-Cueing Amplifier	190.00				
	TK-305	100% spare tube kit	2.50				
	M-6108	Transistorized Monitor Amplifier	130.00				
47	M-5167	Sta-Level with tubes	285.00				
	TK-243	Spare 100% tube kit	15.00				
	M-5546A	Level Devil with tubes	465.00				
	TK-452	Spare 100% tube kit	19.00				
RACK CABINETS							
48	RAK-1	Basic cabinet assembly less side panels but including rear door	190.00				
	TRM-1	Single corner trim	12.50				
	TRM-2	Double corner trim	14.00				
	SP-1	Side panel	42.00				
	SH-1	Shield	8.00				
	BRK-1	Terminal board mounting bracket	7.50				
	RAK-F-1	Ventilating fan	41.50				
	RAK-7	Rack cabinet	110.00				
	M-5577	Joiner trim	13.00				
	M-4242	Switch and fuse panel	55.00				
	1261	Audio cable . . . . . per ft.	0.14				
	PJ-106	Audio terminal block	9.45				
	M-6582	Panel Mtg. Hdw. Kit for RAK-7	5.00				
	M-6583	Panel Mtg. Hdw. Kit for RAK-1	5.00				

CAT. PAGE	TYPE NUMBER	PRODUCT DESCRIPTION	UNIT PRICE	CAT. PAGE	TYPE NUMBER	PRODUCT DESCRIPTION	UNIT PRICE
SCULLY PRECISION TAPE DECK							
50	730-0927	Model 270-1 Rack mount reproducer, 1/2 track monophonic, 14" reel capacity. 7.5/15 ips . . . . .	1,465.00	53	BC-5H	5 KW AM transmitter, with one set of operating tubes and two crystals, for operation from 208/240 VAC, 3 phase, 60 Hz power. 50 Ohm output impedance. Power reduction to either 1000 or 500 watts is included, specify which . . . . .	17,695.00
	730-0928	Model 270-2 As above, except for stereophonic reproduction . . . . .	1,595.00		TK-535	100% set of spare tubes for BC-5H . . . . .	665.00
	730-0923	Model 280-1 Rack mount record/reproduce. 1/2 track monophonic, 10 1/2" reel capacity. 7.5/15 ips. . . . .	1,975.00		TK-540	100% set of spare transistors for BC-5H . . . . .	266.30
	730-0924	Model 280-2 As above, except for stereophonic . . . . .	2,465.00		M-6548	Kit for remote control of power output . . . . .	225.00
	730-0925	Model 280-AP/14 Rack mount model 280 monophonic recorder with 14" reel capacity . . . . .	2,075.00				
	730-0926	Model 280-20SP/14 As above, except for stereo . . . . .	2,565.00	54	BC-1G (M-6245)	1 KW AM broadcast transmitter, 1000/250 watts, solid state rectifier model, with tubes and 1 vacuum crystal . . . . .	5,595.00
MAGNECORD RECORDER/REPRODUCERS							
	730-0421	1028-2 Stereo, 7.5/15 ips., half track stereo, less case . . . . .	995.00		BC-1G (M-6245B)	1 KW AM broadcast transmitter, 1000/250 watts, tube rectifier model, tubes and 1 vacuum crystal . . . . .	5,395.00
	730-0428	1028-4 As above, 1/4 track version . . . . .	995.00		M-5602	Spare vacuum crystal . . . . .	95.00
	730-0841	Carrying case for 1028 models . . . . .	50.00		TK-471	Spare tube complement, Model M-6245 . . . . .	310.15
	730-0007	32X33-Input transformer, plug-in. 50/250 ohm (2 req. for Stereo) . . . . .	26.25		TK-472	Spare tube complement, Model M-6245B . . . . .	340.75
	730-0336	32B90-Output transformer, plug-in. 600 ohm (2 req. for Stereo) . . . . .	26.25		M-6326	Output power remote control kit . . . . .	125.00
	730-0337	66X152 Transformer hold-down clip (1 req. per transformer) . . . . .	.81				
	730-0338	91C2959 Rack adapter panel . . . . .	19.00	55	M-6519	Vanguard II, 1000/250 watts, with tube and two crystals . . . . .	6,495.00
51	M-6523	VP-50 with one set of tubes and two crystals . . . . .	On Request		4CX3000A	Spare power tube . . . . .	395.00
	TK-537	100% spare tube kit . . . . .	On Request		TK-515	100% spare transistors . . . . .	49.00
52	BC-10H	10 kw AM transmitter, with one set of operating tubes and two crystals, for operation from 208/240 VAC, 3 phase, 60 Hz power. 50 ohm output impedance. (Power reduction to 2.5 KW) . . . . .	19,750.00		TK-516	Min. set spare transistors . . . . .	35.00
	BC-10H	Same as above except with power reduction to 5 kw . . . . .	19,850.00	56	BC-250GY	250 watt AM broadcast transmitter, one set of tubes and one vacuum crystal . . . . .	3,995.00
	BC-10H	Same as above except with power reduction to 1 kw . . . . .	20,050.00		TK-507	Spare tubes . . . . .	172.50
	TK-539	100% set of spare tubes for BC-10H transmitter . . . . .	870.00		TK-508	Recommended minimum set of spare tubes . . . . .	99.50
	TK-540	100% set of spare transistors for BC-10H transmitter . . . . .	266.30		A-35177-1	Spare vacuum crystal . . . . .	95.00
	M-6548	Kit for remote control of power output . . . . .	225.00		BC-500G	500 watt AM broadcast transmitter, with tubes, one crystal, silicon rectifiers . . . . .	4,995.00
					TK-481	Spare tubes . . . . .	238.50
					TK-479	Recommended minimum spare tube kit . . . . .	83.45
					A-35177-1	Spare vacuum crystal . . . . .	95.00

CAT. PAGE	TYPE NUMBER	PRODUCT DESCRIPTION	UNIT PRICE	CAT. PAGE	TYPE NUMBER	PRODUCT DESCRIPTION	UNIT PRICE
Broadcast Modulation Monitor				R. F. ANTENNA METERS			
57	M-5693	AM Modulation Monitor with tubes .....	695.00	634-0206		Meter, 0-3 R.F. amperes ....	31.35
	TK-345	100% spare tube kit .....	22.00	634-0238		Meter, 0-6 R.F. amperes ....	63.75
	M-5837	Remote Meter Panel .....	114.00	634-0209		Meter, 0-8 R.F. amperes ....	31.35
AM Frequency Monitor				634-0210		Meter, 0-10 R.F. amperes ...	31.35
	M-4990	Frequency Monitor with tubes	950.00	DIODE TYPE REMOTE METER EQUIPMENT			
	M-5631	Remote Control Extension Meter .....	83.00	M-6112		Diode remote meter unit, less meter .....	84.00
	M-5549	Whip Antenna and Coupler for Air Monitoring .....	57.00	632-0418		Meter 3" sq. case, scale 0-3 R.F. amperes .....	25.60
	TK-281	Spare 100% tube kit for Monitor .....	17.00	632-0419		Meter 3" sq. case, scale 0-5 R.F. amperes .....	25.60
Phase Monitor—Model 112				632-0420		Meter 3" sq. case, scale 0-8 R.F. amperes .....	25.60
58	731-0200	Phase Monitor, 2 towers ....	1,395.00	632-0421		Meter 3" sq. case, scale 0-10 R.F. amperes .....	25.60
	731-0201	Phase Monitor, 3 towers ....	1,445.00			Meter 4" sq. case, scale 0-3 R.F. amperes .....	30.40
	731-0202	Phase Monitor, 4 towers ....	1,495.00	632-0426		Meter 4" sq. case, scale 0-8 R.F. amperes .....	30.40
	731-0203	Phase Monitor, 5 towers ....	1,545.00	632-0361		Meter 4" sq. case, scale 0-10 R.F. amperes .....	30.40
	731-0204	Phase Monitor, 6 towers ....	1,595.00	632-0428		Meter 4" sq. case, scale 0-15 R.F. amperes .....	30.40
Field Intensity Meter				Solenoid Tower Choke			
	FIM-135	Field Intensity Meter (less batteries) .....	925.00	61	M-3937	Tower Choke, 2 wire, weatherproof .....	130.00
	M-6393	Beacon Flasher, panel type, less housing .....	105.00		M-3938	Tower Choke, 3 wire, weatherproof .....	150.00
	M-6393A	Beacon Flasher, indoor switch box housing .....	109.00		M-3935	Tower Choke, 2 wire, open type .....	78.00
ANTENNA COUPLER 1250 WATTS					M-3936	Tower Choke, 3 wire, open type .....	99.00
60	44A	Antenna coupler with antenna meter .....	395.00	Radio Frequency Contactor			
5-10 KW ANTENNA COUPLING UNITS				145-101		Contacting SPDT insulated 17 kv. peak voltage .....	125.00
	M-5309A	Antenna Coupling Unit, 5KW	695.00	145-102		Contacting DPDT insulated 17 kv. peak voltage .....	135.00
	M-5309B	Antenna Coupling Unit, 10 KW .....	950.00	145-201		Contacting SPDT insulated 22 kv. peak voltage .....	145.00
SERIES & SHUNT FEED COUPLERS				145-202		Contacting DPDT insulated 22 kv. peak voltage .....	155.00
	M-5178	Antenna coupler, 1 KW, direct series feed .....	235.00	Heavy Duty Sampling Loop			
	M-5179	Antenna coupler, 1 KW, direct shunt feed .....	235.00	M-6126		Heavy duty sampling loop ..	150.00
ISOLATION COIL							
	M-3073C	Weatherproof isolation unit .	307.00				
	M-4561B	Open unit coil, only, less cabinet .....	203.00				

CAT. PAGE	TYPE NUMBER	PRODUCT DESCRIPTION	UNIT PRICE	CAT. PAGE	TYPE NUMBER	PRODUCT DESCRIPTION	UNIT PRICE
		Rotating Phase Sampling Loops					
	M-3283A	Rotating Sampling Loop ....	140.00		87T	End terminal .....	75.00
		Meter Jack and Shorting Bar—Mounting Plug			87S	Connector and reducer .....	60.00
	M-3280	Meter jack and shorting bar .	13.50		87G	Connector and gas barrier .	60.00
	M-3281	Meter mounting plug .....	8.50		87Z	Splice .....	65.00
		Meter Shorting Switch			Hanger Accessories		
	M-3493	Meter Shorting Switch, rating 1 KW modulated .....	30.00		24312A	Cable grip .....	13.00
	M-5557	Meter Shorting Switch, rating 10 KW modulated .....	42.00		24811-1	Grounding kit .....	3.00
	M-3823	Meter Shorting Switch, rating 50/100 KW .....	83.00		24811-2	Ground kit, jacket .....	3.50
		Austin Ring Type Tower Choke			33598-2	Rigid Hanger .....	20.00
	A-2100	Side Bracket .....	319.00		H8-50A	50 ohm .....	7.00
	A-2101	Side Bracket .....	330.00		HJ8-50A	50 ohm, jacketed .....	7.50
	A-2102	Pedestal .....	319.00		Components		
	A-2103	Pedestal .....	330.00		78AR-F	EIA flange, female .....	100.00
	A-1970	Side Bracket .....	357.00		78R-M	EIA flange, male .....	90.00
	A-1971	Side Bracket .....	375.00		2262	N jack .....	85.00
	A-1972	Pedestal .....	357.00		2062	End terminal .....	90.00
	A-1973	Pedestal .....	375.00		78S	Connector and reducer ....	110.00
		FLEXIBLE COAXIAL CABLE		62	78AG-F	Connector and gas barrier, female .....	110.00
62	H5-50	50 ohms .....	1.65		78G-M	Connector and gas barrier, male .....	100.00
	HJ5-50	50 ohms, jacketed .....	1.80		78Z	Splice .....	110.00
		Components			Hanger Accessories		
	75AR	EIA flange .....	24.00		26985A	Hoist kit .....	20.00
	75AU	UHF jack .....	20.00		28708-1	Grounding kit .....	4.00
	75AN	N jack .....	20.00		28708-2	Ground kit, jacket .....	6.00
	75AT	End terminal .....	40.00		13927	Rigid hanger .....	14.00
	75AG	EIA Flange/gas barrier ....	40.00		33948-2	Insulated rigid hanger ....	20.00
	75AZ-3	Splice .....	32.00		FH4-50A	50 ohm .....	.53
		Hanger Accessories			FHJ4-50A	50 ohm, jacketed .....	.60
	29958	Hoist Kit .....	11.00		Components		
	19256-B	Hoist Kit, jacket .....	12.00		44AU	UHF jack .....	5.00
	24810-1	Grounding Kit .....	2.50		44AN	N jack .....	6.00
	24810-2	Ground Kit, jacket .....	3.50		44AT	End terminal .....	20.00
	12395-1	Rigid Hanger .....	13.00		44AZ	Splice .....	20.00
	11662-2	Insulated rigid hanger ....	5.00		Hanger Accessories		
62	H7-50A	50 ohm .....	3.70		26892-1	Grounding kit .....	2.00
	HJ7-50A	50 ohm, jacketed .....	4.00		26892-2	Ground kit, jacket .....	3.00
		Components			12395-1	Rigid hanger .....	13.00
	87R	EIA flange .....	45.00		FH5-50	50 ohm .....	1.40
	87U	UHF jack .....	65.00		FHJ5-50	50 ohm, jacketed .....	1.55
	87N	N jack .....	50.00		Components		
					45AR	EIA flange .....	20.00
					45AU	UHF jack .....	12.00



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	45AN	N jack .....	15.00			Components	
	45AT	End terminal .....	30.00	15093A	Inner connector .....		20.00
	45AZ	Splice .....	24.00	1062	Miter elbow .....		80.00
		Hanger Accessories		1262B	Gas barrier .....		90.00
	29958	Cable grip .....	11.00	1861	Reducer .....		75.00
	19256B	Cable grip .....	12.00	2262	N adaptor .....		85.00
	24810-1	Grounding kit .....	2.50	2062	EIA End terminal .....		90.00
	24810-2	Ground kit, jacket .....	3.50	19209C	Flexible section .....		275.00
	12395-1	Rigid hanger .....	13.00	4852	Inner 51.5 ohm adaptor ...		12.00
	11662-2	Insulated rigid hanger .....	5.00	15840	Fixed flange kit .....		10.00
		RIGID COAXIAL TRANSMISSION		18200	Swivel flange kit .....		14.00
63	560	20 ft. section, type .....	90.00	11381-3	Hardware kit .....		2.90
		Components		10683-3	"O" ring gasket .....		.50
	34389	EIA Inner connector .....	9.50	13927	Rigid honger .....		14.00
	1060	90° Miter Elbow .....	30.00	13925	Spring hanger .....		20.00
	1260A	EIA Gas barrier .....	28.00	13926	Insulated spring hanger ....		35.00
	2260A	N adaptor .....	36.00		PRESSURIZATION EQUIPMENT		
	4850	Inner 51.5 ohm adaptor ...	10.00	1920A	Heatless, automatic dehydrator .....		640.00
	18630	Fixed flange kit .....	4.00	878A	Dry air hand pump .....		65.00
	18096	Swivel flange kit .....	9.00	858B	Nitrogen tank fittings .....		65.00
	14328	Rigid hanger .....	7.50		HIGH FREQUENCY BROADCAST TRANSMITTER		
	14327	Sliding hanger .....	5.00	64	HC-114	250,000 watt short wave broadcast trans., one set of tubes, less crystal	On Request
	13889	Spring honger .....	18.00		TK-524	Spare tubes for 250 KW, HF Transmitter .....	
	11662-2	Insuloted rigid honger ....	5.00		M-6458	Set of lamps and fuses for 250 KW transmitter .....	
	561	20 ft. section, type .....	110.00		M-6459	Set of installation materials for 250 KW transmitter...	
	34660	Inner connector .....	9.50		M-6460	Set of recommended spare parts for vapor phase cooling system .....	
	1061	Miter elbow .....	44.00		M-6461	Running spare part kit for 250 KW transmitter .....	
	1261B	Gas barrier .....	50.00		CR-27A/U	Crystal for 250 KW transmitter .....	
	1860	Reducer .....	44.00		HIGH FREQUENCY BROADCAST TRANSMITTER		
	2261A	N adaptor .....	44.00		HF-100	100,000 watts, High Frequency Broadcast Transmitter, with tubes, less crystals	On Request
	2061	End terminal .....	58.00		(M-5966)		
	20695	Flexible section .....	150.00		HF-100TX	100,000 watts, High Frequency Telegraph Transmitter, with tubes, less crystals	On Request
	4851	Inner 51.5 ohm adaptor ...	12.00		(M-5966A)		
	18631	Fixed flange kit .....	8.00		HF-50C	50,000 watts, High Frequency Broadcast Transmitter, with tubes, less crystals	115,000.00
	18041	Swivel flange kit .....	10.00		(M-5924)		
	11381-2	Spare Hardware kit .....	2.00		M-5924A	Same as above for 50 Hz operation .....	115,000.00
	10683-2	"O" ring gasket .....	.50				
	13924	Rigid hanger .....	9.00				
	14378	Sliding hanger .....	8.00				
	14379	Spring hanger .....	15.00				
	14442	Insulated sliding hanger ...	13.00				
	14441	Insulated spring hanger ....	20.00				
	562A	20 ft. section, type .....	200.00				

CAT. PAGE	TYPE NUMBER	PRODUCT DESCRIPTION	UNIT PRICE	CAT. PAGE	TYPE NUMBER	PRODUCT DESCRIPTION	UNIT PRICE
	CR-27A/U	Crystals .....	16.00		HF-5CX	Communications transmitter, 5 KW, with tubes, electronic keyer, less crystals .....	22,900.00
	JK-09C	Crystal Oven (holds two crystals) .....	20.25		TK-252	Spare 100% tube kit ....	1,145.00
	TK-374	Spare 100% tubes for HF-50C .....	6,916.00		CR27A/U	Crystal and holder (mounts in JK-09C below) .....	16.00
	M-5569D	Additional exciter with power supply .....	1,070.00		JK-09C	Temperature controlled oven, holds two CR27A/U (.003% accuracy) .....	20.25
	HF-20B	Transmitter, 20 KW Broadcast, 4-22 MHz, with tubes, less crystals .....	51,500.00		HF-1M	High frequency transmitter with tubes, less crystals ...	7,500.00
	HF-20BX	Transmitter, 20 KW Broadcast, with tubes and with keyer added, 4-22 MHz, less crystals .....	51,700.00		TK-249	100% tube complement ..	330.00
	HF-20CX	Transmitter, 20 KW Telephone and Telegraph, with tubes and keyer, 4-22 MHz, less crystals .....	On Request		CR-27A/U	Crystal and holder to mount in JK-09C oven .....	16.00
	TK-139	Spare 100% tube kit for all models above .....	2,195.00		JK-09C	Temperature controlled oven for 1 or 2 type CR-27A/U crystals .....	20.25
	CR-27A/U	Crystal and holder, .02% accuracy .....	16.00				
	JK-09C	Temperature controlled crystal holds two CR-27A/U crystals for 0.003% accuracy .....	20.25				
64	HF-10B	Broadcast transmitter, 10 KW, with tubes, less crystals .....	27,250.00				
	HF-10BX	Broadcast transmitter, 10 KW, with tubes, electronic keyer, less crystals .....	27,250.00				
	HF-10C	Communications transmitter, 10 KW, with tubes, less crystals .....	On Request				
	HF-10CX	Communications transmitter, 10 KW, with tubes, electronic keyer, less crystals .....	26,650.00				
	TK-253	Spare 100% tube kit ....	1,221.50				
	CR27A/U	Crystal and holder, (.02% accuracy) .....	16.00				
	JK-09C	Temperature controlled oven, holds two CR27A/U (.003% accuracy) .....	20.25				
	HF-5B	Broadcast transmitter, 5 KW, with tubes, less crystals ...	25,250.00				
	HF-5BX	Broadcast transmitter, 5 KW, with tubes, electronic keyer, less crystals .....	24,600.00				
	HF-5C	Communications transmitter, 5 KW, with tubes less crystals .....	19,950.00				

# HOW TO ORDER

## ORDERING PROCEDURE:

All sales are made in accordance with the standard Gates Terms and Conditions of Sale. No order shall be binding upon Gates until accepted by it in writing at its home office in Quincy, Illinois.

## PRICES:

Catalog prices are net, f.o.b. Quincy, Illinois, or point of shipment. Our prices are based on cash transactions and all applicable discounts have been deducted. Prices are subject to change without notice. Orders are filled at prices in effect at time of shipment. You will be billed for any price increase and credited for any price reduction. We reserve the right to add any federal, state, or local taxes required by law. If you have a tax exemption number, please include it with your order. These prices and terms apply only to the U.S. For prices and terms in other countries, please contact Export Department, Gates Radio Company.

## PAYMENT:

There are five ways to pay for your equipment purchases:

1. Cash—This means full payment with order.
2. C.O.D.—The amount due is collected by the delivery agent. A 25% down payment is required on C.O.D. orders.
3. Sight draft—Your local bank releases payment to us upon receipt of bill of lading. A 25% down payment is normally required.
4. Open Account—Payment to be remitted by you within 30 days after date of each invoice. This privilege is extended to established accounts with good payment records. If you do not have an established account, please provide a current financial statement, plus trade and bank references with your order. Allow about ten days to process the information.
5. Gates Finance Plan—On major purchases, by domestic customers, a portion of the cost may be financed through a monthly payment plan. A finance charge of 6% per annum will be added when the total amount of the order is less than \$4,000.00. On orders of \$4,000.00 or over, the finance charge is 5% per annum. Title to and/or rights to the merchandise remain with Gates Radio Company until the balance is fully paid. Finance laws vary from state to state, but all states require the execution and acceptance of conditional sales contract, chattel mortgage, notes, or other documentation prior to shipment. You may not sell, remove, or encumber the merchandise covered by such contracts without Gates Radio Company's prior written consent, and you assume all responsibility for loss or damage. Acceptable insurance, with a loss payable clause naming Gates Radio

Company, is required for the full term of the contract. Since Gates financing plans are subject to change from time to time, contact our Credit Manager or your nearest Gates Sales Engineer for full information. The Gates finance plan applies only to the United States.

## SHIPPING:

Please specify method of shipment on your order. Shipping charges, insurance, and C.O.D. fees (when applicable) will be collected at time of delivery when shipment is by air, rail or motor freight, or express. If you request parcel post shipment, postage and insurance fees will be billed to your account. Purchaser assumes all responsibility for and risk of loss of, or damage, to, equipment upon shipment from Gates shipping point(s).

Should you receive merchandise damaged in shipment, it is your responsibility to file a damage claim immediately with the delivering carrier. Export packing for overseas shipment is available at slight extra charge.

## RETURNS AND EXCHANGES:

Do not return any merchandise without our written approval and return authorization. We will provide special shipping labels and a code number that will assure proper handling and prompt issuance of credit. Please furnish a detailed report to assure prompt handling of returned merchandise. Custom built equipment or merchandise specially ordered for you is not returnable. Where return of standard equipment is allowed by Gates, a restocking fee of 15% will be charged. All returned merchandise must be sent freight prepaid and properly insured by the customer. When writing to Gates Radio Company about your order, it will be helpful if you specify the Gates Factory Order Number or Invoice Number.

## WARRANTY ADJUSTMENTS:

In the event of equipment failure during the warranty period, replacement or repair parts may be provided in accordance with the provisions of the Gates Warranty. In most cases you will be required to return the defective merchandise or part to Gates f.o.b. Quincy, Illinois, for replacement or repair. Cost of repair parts or replacement merchandise will be billed to your account at the time of shipment and, as to repairs or replacement within warranty, compensating credit will be issued to offset the charge.

## MODIFICATIONS:

Gates reserves the right to modify the design and specifications of the equipment shown in this catalog without notice or to withdraw any item from sale provided, however, that any modification shall not adversely affect the performance of the equipment so modified.

## OFFICES

### HOME OFFICE AND PLANT

Gates Radio Company  
123 Hampshire Street  
Quincy, Illinois 62301  
Tel: 217-222-8202

### AUTOMATIC TAPE CONTROL DIVISION

Gates Radio Company  
1107 East Croxton Ave.  
Bloomington, Illinois 61701  
Tel: 309-829-7006

### SOUTHWEST SERVICE CENTER

Gates Radio Company  
4019 Richmond Ave.  
Houston, Texas 77027  
Tel: 713-666-4333

### EXPORT

Rocke International Corp.  
13 E. 40th Street  
New York, N.Y. 10016  
Tel: 212-689-0200

### U.S. GOVERNMENT

Gates Radio Company  
730 Federal Bldg.  
1522 K Street N.W.  
Washington, D.C. 20005  
Tel: 202-223-5508

### OTHER U.S. OFFICES

New York, N.Y.  
Los Angeles, Calif.  
Washington, D.C.



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