

COLLINS *FM*

732A 1 kw FM Broadcast Transmitter



High efficiency

Simplified circuits

Phasitron modulator

Motor tuning

High stability

Accessibility

Easy maintenance

Circuit protection

Vertical chassis construction

Low operating cost

Thorough engineering

Personnel protection

Harmonic attenuation

Centralized controls

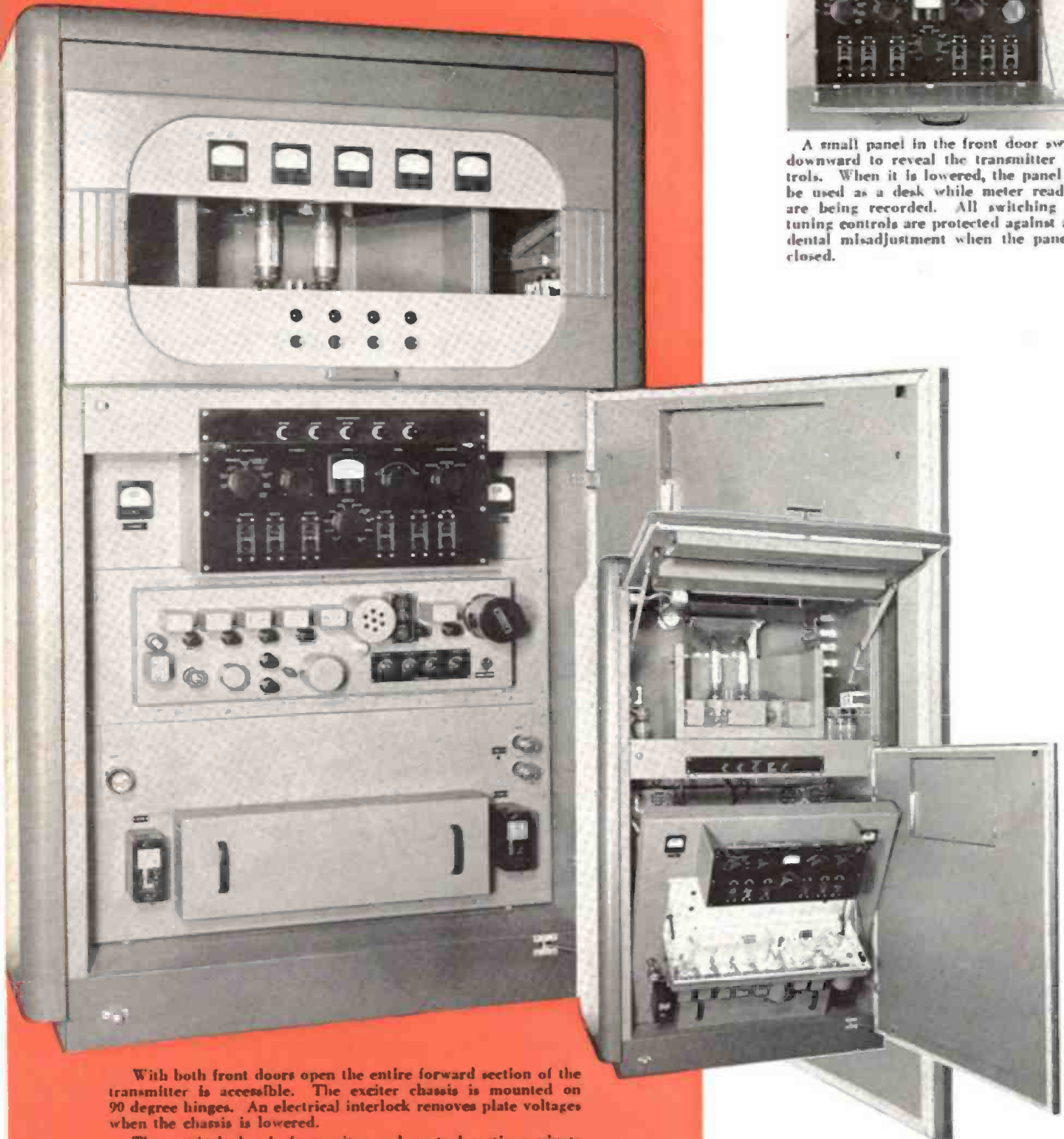
Sturdy construction

Heavy duty components

The lower front door may be opened while the transmitter is in full operation. All Phasitron and exciter controls are thus accessible for adjustment. With the door closed, the power amplifier shelf divides the transmitter into upper and lower sections for ventilation purposes.



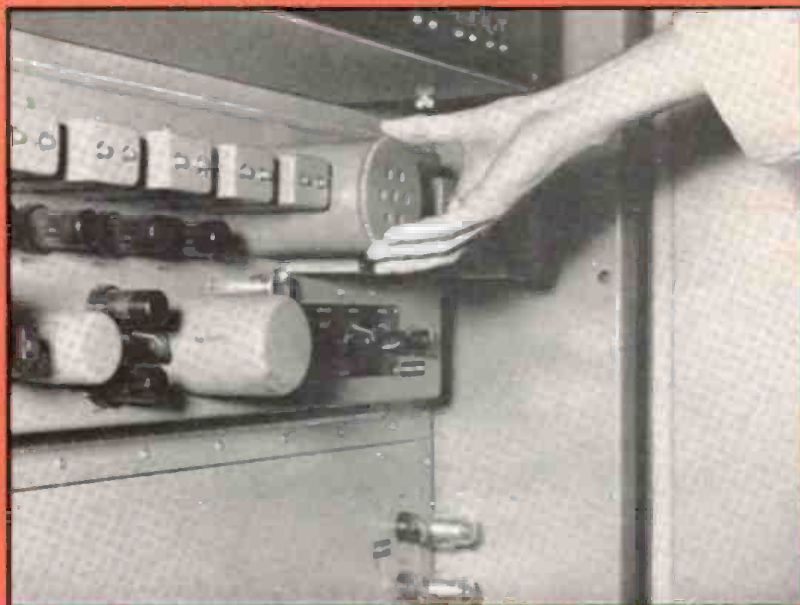
A small panel in the front door swings downward to reveal the transmitter controls. When it is lowered, the panel can be used as a desk while meter readings are being recorded. All switching and tuning controls are protected against accidental misadjustment when the panel is closed.



With both front doors open the entire forward section of the transmitter is accessible. The exciter chassis is mounted on 90 degree hinges. An electrical interlock removes plate voltages when the chassis is lowered.

The vertical chassis for exciter and control sections pivots on its support and can be tilted outward to provide access to the power circuit component connections. The chassis is attached to chains which hold it in the tilted position.

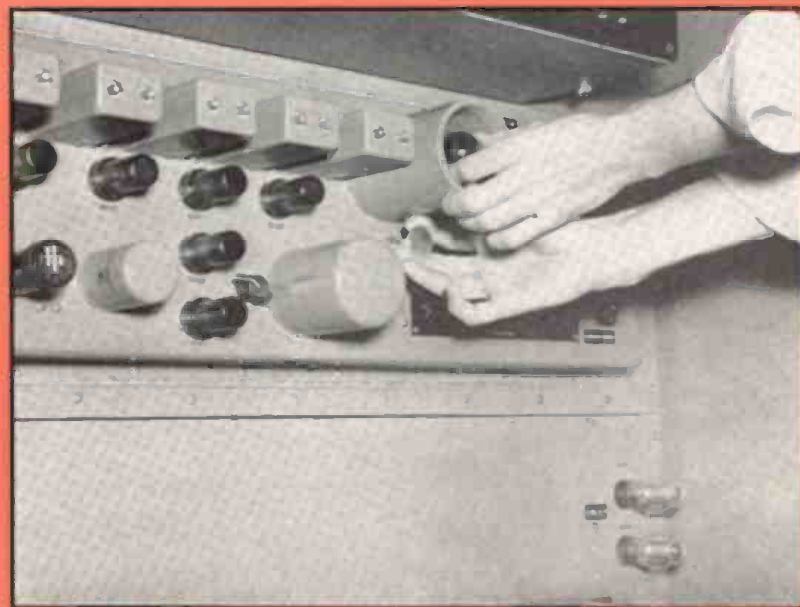
The Phasitron modulator tube is protected by a heavy shield. The shield cover is easily unscrewed.

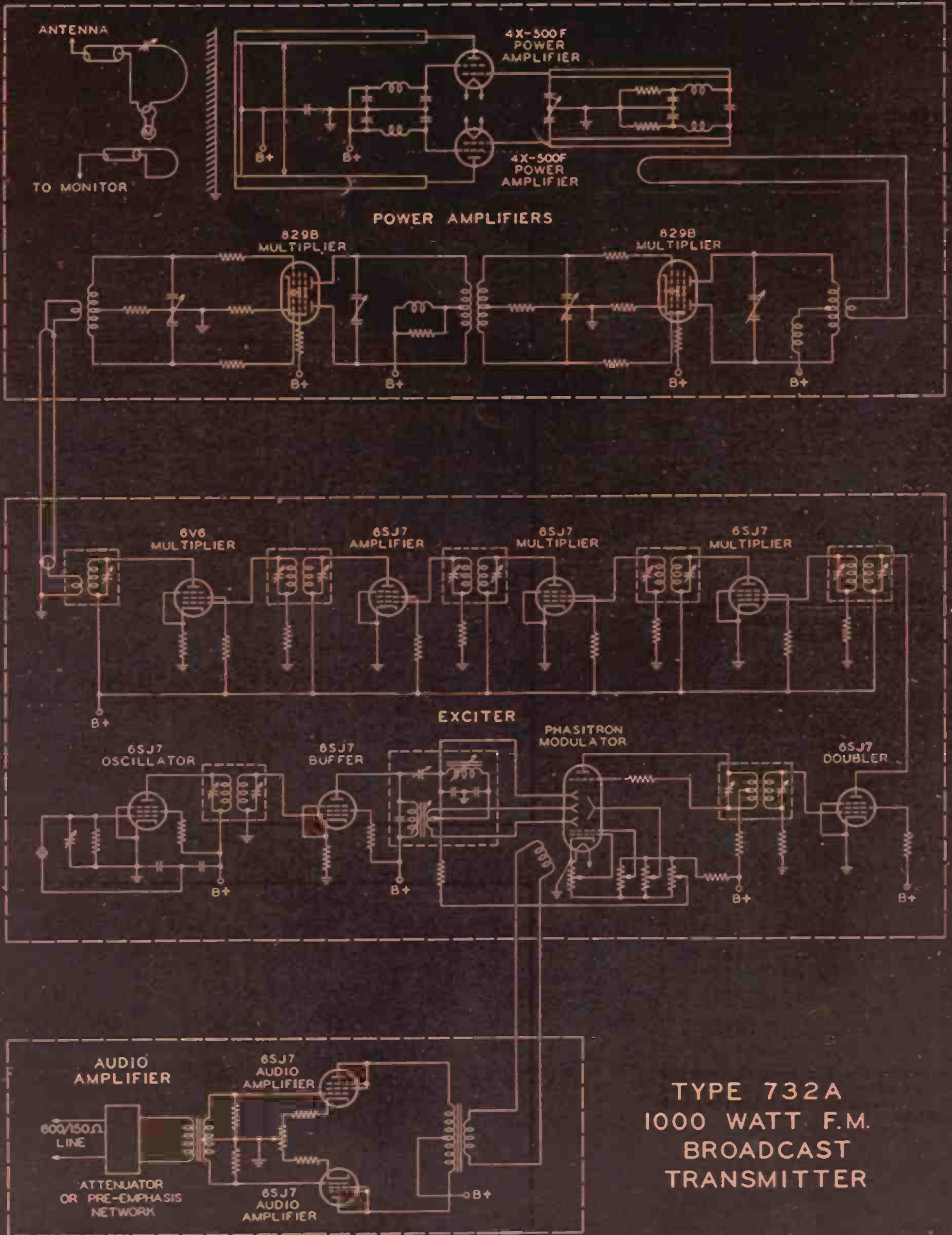


The Phasitron tube and coil are protected from damage and from external magnetic fields by the sturdy shield.



To remove the Phasitron, the operator exerts a small pulling force on the ejector knob which is immediately below the Phasitron shield.





**TYPE 732A
1000 WATT F.M.
BROADCAST
TRANSMITTER**

Collins FM transmitting equipment is characterized by its unique engineering, combining originality in design with selected features that have been contributed to the radio field by outstanding scientists and engineers. The Phasitron modulator circuit is employed, eliminating more than ten tubes and accompanying components compared with former circuits, and resulting in far greater simplicity and operating reliability. Direct crystal control of the carrier frequency provides high stability without complexity of apparatus. A frequency multiplication of only 486 produces the carrier frequency. No frequency conversion or reference mechanisms are necessary. This new circuit, with fewer stages, fewer components, and greater operating simplicity assures utmost dependability with a minimum of maintenance.

Each stage is individually engineered for its specific purpose. The complete equipment is an integrated unit, with all circuits performing in accordance with the overall plan. Harmonic radiation is kept low through the use of push-pull output stages and electrostatic shielding of output coupling circuits. Output stages are precisely tuned by motor driven elements that respond instantly to the operator. All controls are accessible from the front while the transmitter is in operation.

The transmitter can be placed on the air or shut down by pressing a single control button in each case. Remote control is available.

Receiving type tubes and high efficiency transmitting tubes are used to effect low operating cost. Tube types have been kept to a minimum, thus minimizing maintenance spares.

The 732A is cooled with filtered air, and the cabinet is pressurized to exclude dust. An ambient temperature of +45°C is permissible,

and room air may be recirculated for cooling the transmitter.

All power circuits include individual circuit breakers which open automatically under overload. Interlocking circuits prevent the application of plate voltages before the filaments have reached the specified operating temperature.

Particular attention has been given to accessibility. Vertical chassis construction is employed extensively. All tuning controls and the low voltage power circuits are accessible while the equipment is on the air. Centralized metering and controls contribute to the overall ease of operation.

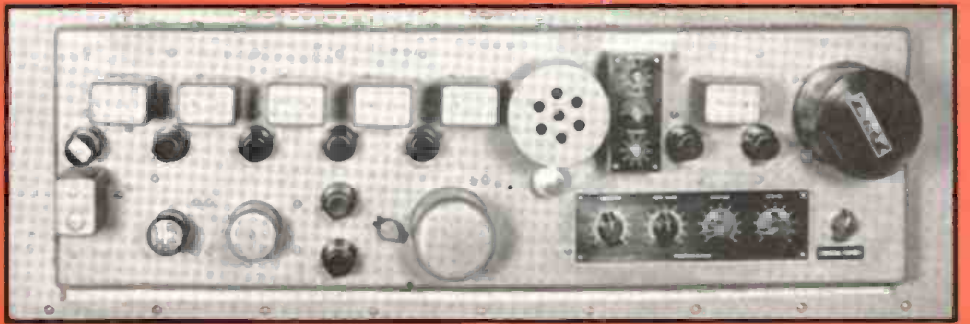
Maximum personnel protection is afforded by the use of electrical interlocks on doors opening to high voltage circuits, which are broken when the doors are opened. In addition, grounding bars are mechanically operated to short out the circuits.

Sturdy construction, and heavy duty components in thoroughly engineered circuits assure long life with continuous operation.

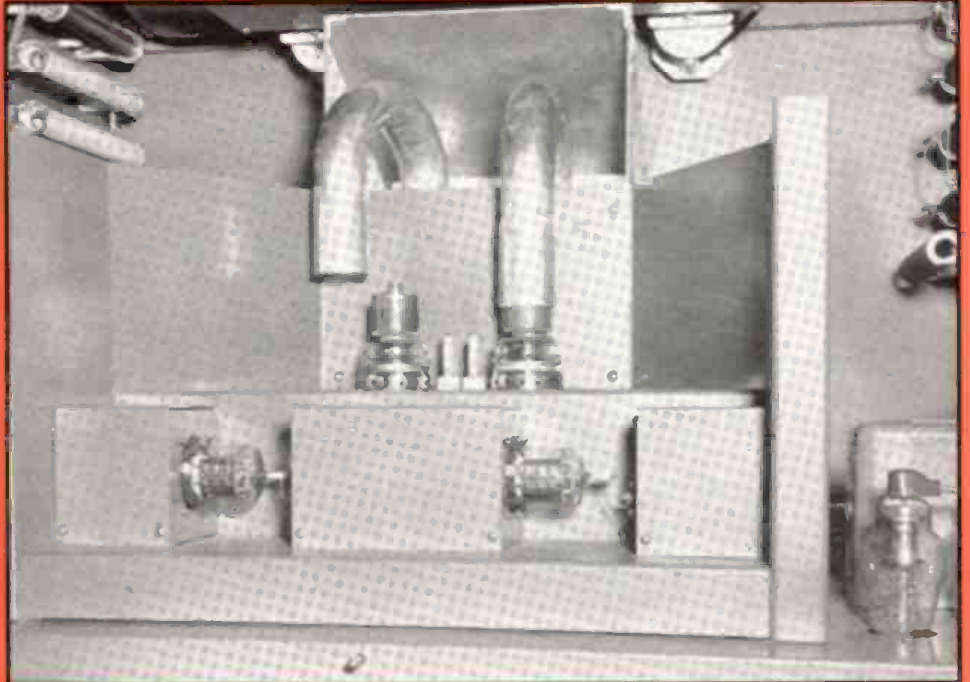
Collins FM transmitters are designed as units, and may be combined with additional amplifier units to increase the power output and area coverage. The cabinets are attractively styled in three-tone gray. The design is such that each installation, irrespective of the number of cabinets, has a distinctive, integrated appearance, and operates as a single transmitter.

SPEECH EQUIPMENT AND ACCESSORIES

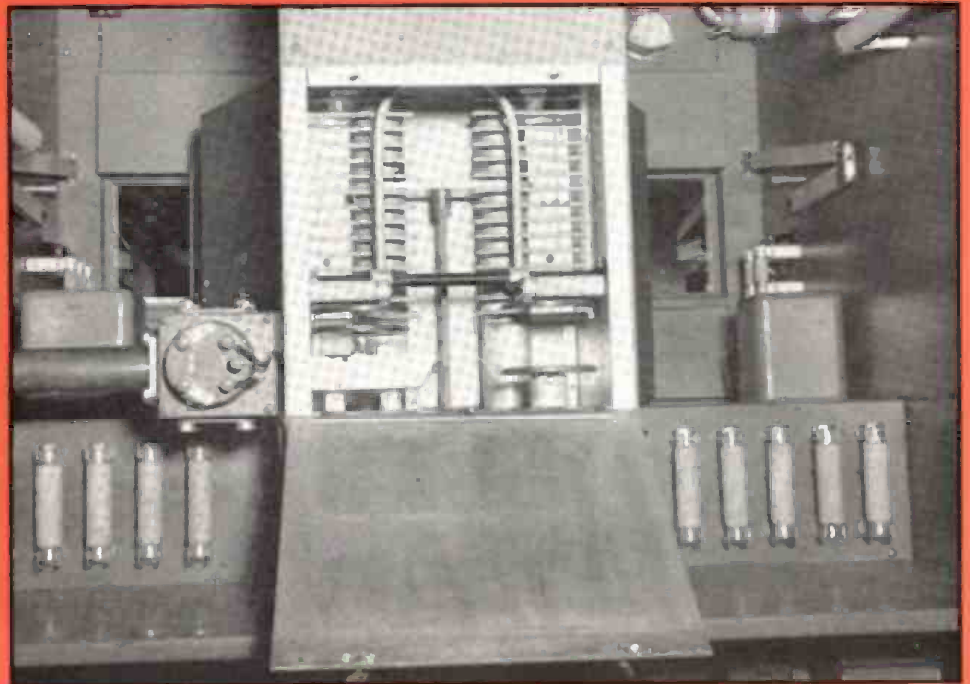
Complete studio facilities and transmitter accessories can be selected from the Collins Speech Equipment and Accessories booklet.



A close-up view of the Phasitron modulator and rf multiplier chassis. The crystal oven is at the extreme right.



Power amplifier tubes can be removed by gliding the plate connectors upward on the tuning elements, then turning the elements to one side.



The shorting bar which tunes the final amplifier stage is motor driven. The series-tuned output coupling network utilizes a motor driven variable capacitor for tuning the transmission line, and a motor driven variable link for adjusting power output. A Faraday shield maintains capacity balance in the power amplifier tank circuit and minimizes harmonic content in the radiated signal.

732A SPECIFICATIONS

FREQUENCY RANGE: Any specified channel between 88 mc and 108 mc.

POWER OUTPUT: 250 watts to 1 kilowatt continuous operation.

LOAD: 40 to 80 ohm coaxial transmission line, power factor 0.866 to 1.0 (other output arrangements are available).

STABILITY: Better than ± 250 cps.

SWING: 0 to 133% modulation.

FREQUENCY RESPONSE: Flat within 1 db from 50 cps to 15,000 cps.

PRE-EMPHASIS: Standard 75 microsecond pre-emphasis network to be supplied for mounting in transmitter, or on 19" relay rack panel where transmitter is to be fed by compression amplifier.

DISTORTION: At 100% modulation: 50 cps to 15,000 cps, less than 1.0%. Measurements in accordance with FCC requirements.

AUDIO INPUT LEVEL: Approximately +12 dbm for 100% modulation at 400 cps.

AUDIO INPUT IMPEDANCE: 600 ohms and 150 ohms, balanced to ground.

NOISE LEVEL: Measurements in accordance with FCC requirements.

- a. Frequency modulation—better than 65 db below 100% modulation.
- b. Amplitude modulation—better than 50 db below a level representing 100% amplitude modulation.

TUBE COMPLEMENT: 2—6SJ7—Audio Amplifier
1—6SJ7—Crystal Oscillator
1—6SJ7—Buffer
1—2H21—Phasotron Modulator
1—6SJ7—Doublers
1—6SJ7—Multiplier
1—6SJ7—Multiplier
1—6SJ7—Amplifier
1—6V6GT—Multiplier
1—829B—Multiplier
1—829B—Multiplier
2—1X500F—Power Amplifier
1—5R4GY—Rectifier
5—866A—Rectifiers
2—OC3/VR.105—Voltage Regulators

LINE VOLTAGE: 208/230 volts, 3 phase.

VOLTAGE LIMITS: 190 to 240 volts.

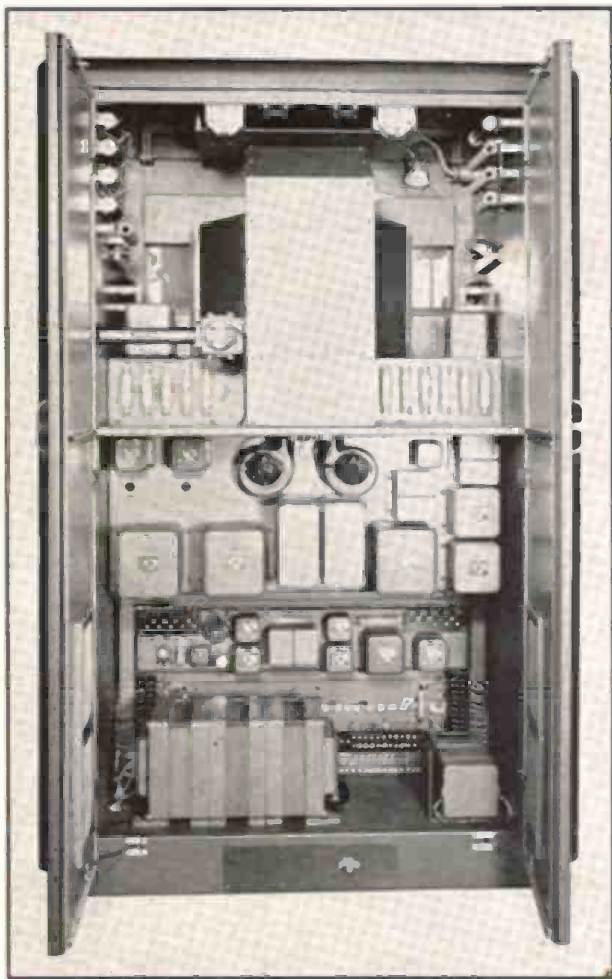
LINE FREQUENCY: 60 cycle normal, 50 cycle on special order.

POWER DEMAND: 3.0 KVA, 94% P. F. at maximum rated output.

DIMENSIONS: 49 $\frac{1}{2}$ " w, 37 $\frac{1}{2}$ " d, 79 $\frac{1}{2}$ " h (with doors off will go through 36" door).

SPACE REQUIREMENTS (for doors open):
49 $\frac{1}{2}$ " w, 101 $\frac{1}{2}$ " d.

WEIGHT (Approx.): 1950 pounds.



This rear view clearly illustrates the accessibility provided by vertical chassis construction. Each door has both mechanical and electrical interlocks, shown at top center of the picture.

The two air blowers are in the center of the view. Air is drawn through filters in the doors, forced upward through the final tank assembly and past the power amplifier tubes. It then leaves the cabinet through a screen in the top. A shelf immediately under the screen collects any dust that may settle into the cabinet during periods when the blowers are inoperative.

FOR BROADCAST QUALITY IT'S . . .



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