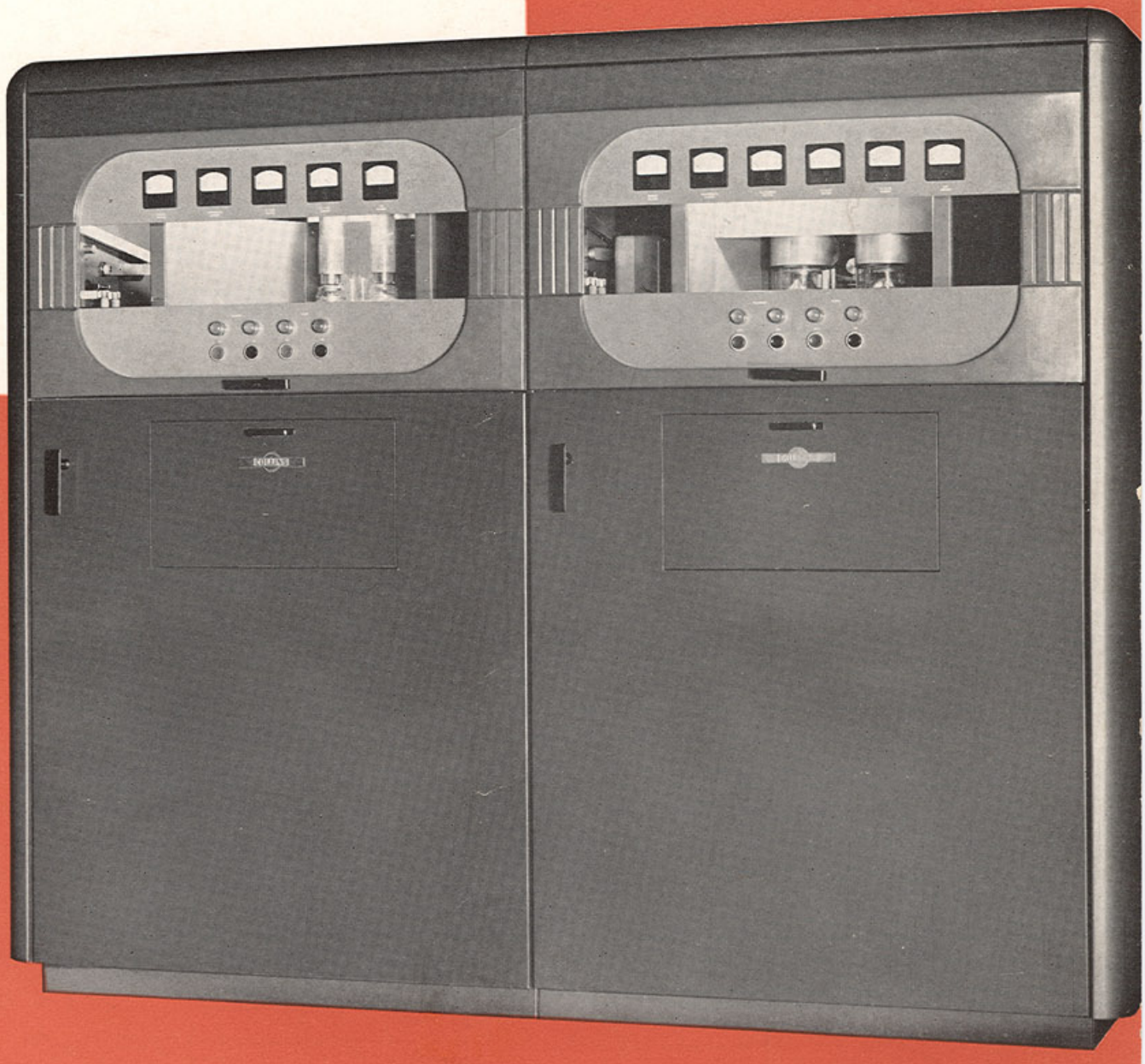
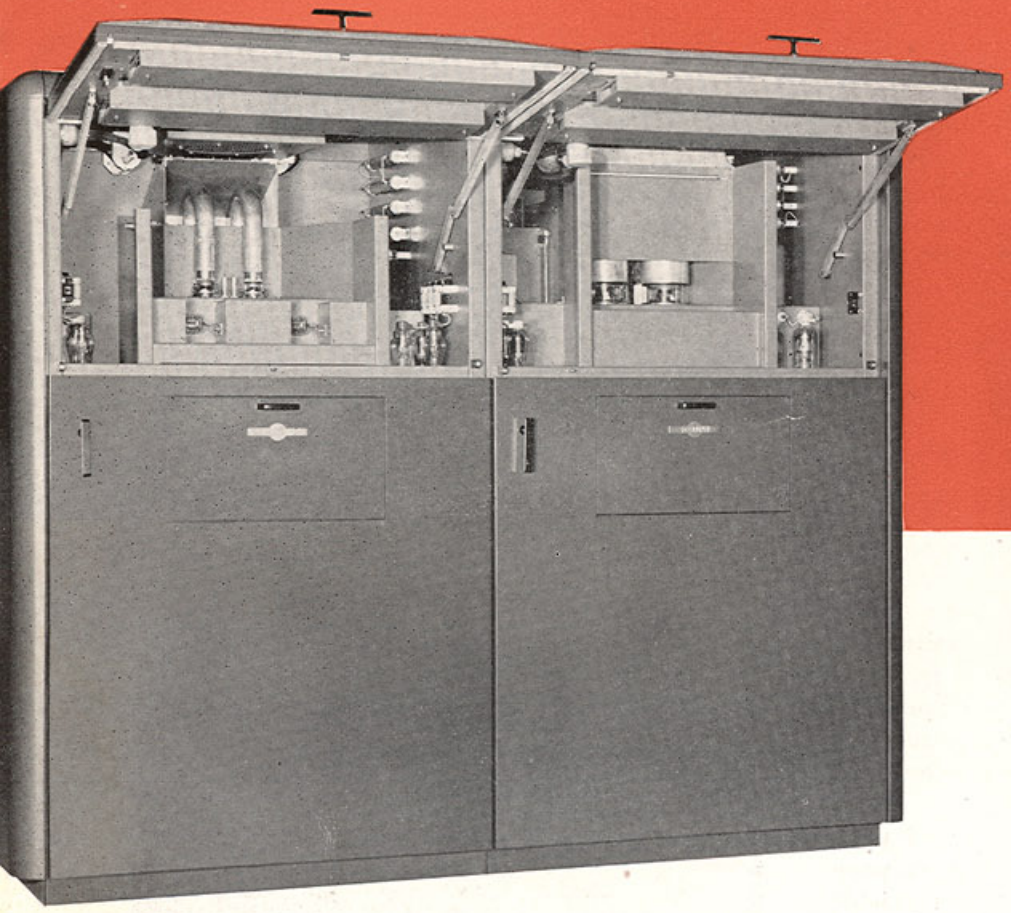
COLLINS

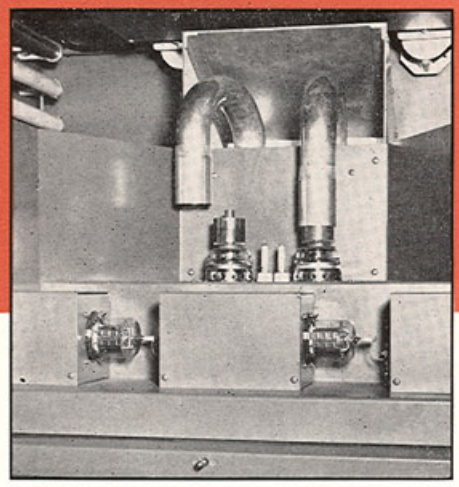
737A 5kw FM

Broadcast Transmitter



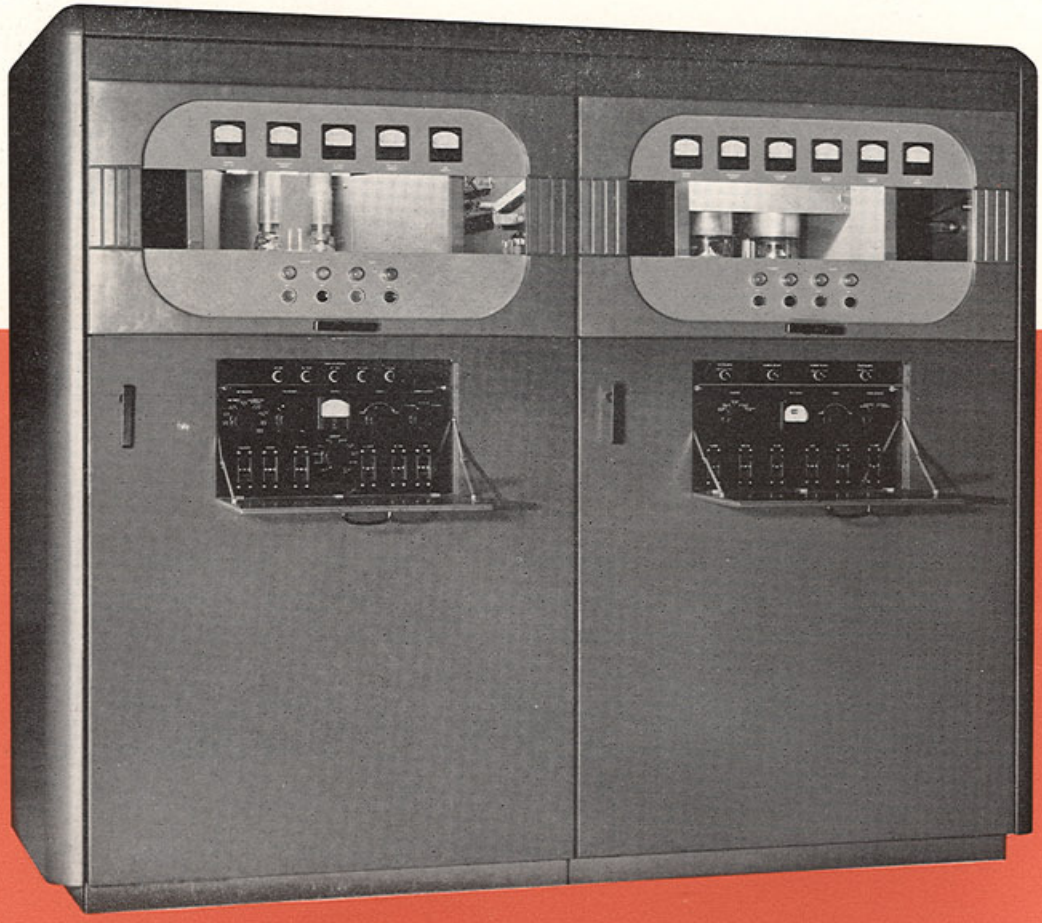


The upper doors swing upward and are held in that position by sturdy brackets. The exciter cabinet is at left, power amplifier at right.



In removing the exciter output tubes, the plate connector is pushed upward on the inductive element, and the element turned to one side. The tube is then lifted from the socket.

Centralized metering and controls contribute to the over-all operating simplicity. All tuning controls are accessible while the equipment is on the air.



The Collins 737A 5 kw FM transmitter consists of two basic units, a type 732A 1 kw exciter unit, and a 5 kw grounded-grid power amplifier, plus an external air-cooled plate transformer.

The cabinets are matched units attractively styled in three-tone gray. Their modern, distinctive appearance, simplicity of design, and color harmony will add smartness to your transmitter house. The left-hand cabinet as viewed from the front contains the 1 kw exciter, and the right-hand bay contains all components for the 5 kw amplifier with the exception of the externally located plate transformer.

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, utilizing a frequency multiplication of only 486, provides high stability without complexity of apparatus. No conversion or reference mechanisms are necessary.

The carrier stability is in the order of ± 2 parts per million. Normal variations in ambient temperature, line voltage, and humidity have no appreciable effect on the carrier frequency. This new circuit with fewer stages, fewer components and greater operating simplicity assures utmost reliability with a minimum of maintenance.

The external plate transformer is air-cooled and totally enclosed, requiring no vaults or retaining walls.

CRYSTAL UNITS

This transmitter is supplied with a spare plug-in crystal and oven unit. In order to place this spare in operation, it is necessary only to remove the original unit and plug in the spare. Not more than ten seconds are required to make the change. Without further adjustment, the carrier frequency will be within FCC requirements. If finer adjustment of the carrier frequency should be desired, it can be accomplished by varying the crystal tuning control knob on the exciter chassis while the transmitter is in operation.

CONTROLS

All controls are accessible while the transmitter is in full operation. A small panel in the front door of each cabinet opens to provide access to power switches, tuning controls, and metering controls. The lower front door opens without exposing personnel to high voltages and without operating the interlock circuits. With this door open on the exciter cabinet, the crystal tuning and Phasitron modulator controls are accessible for fine adjustments.

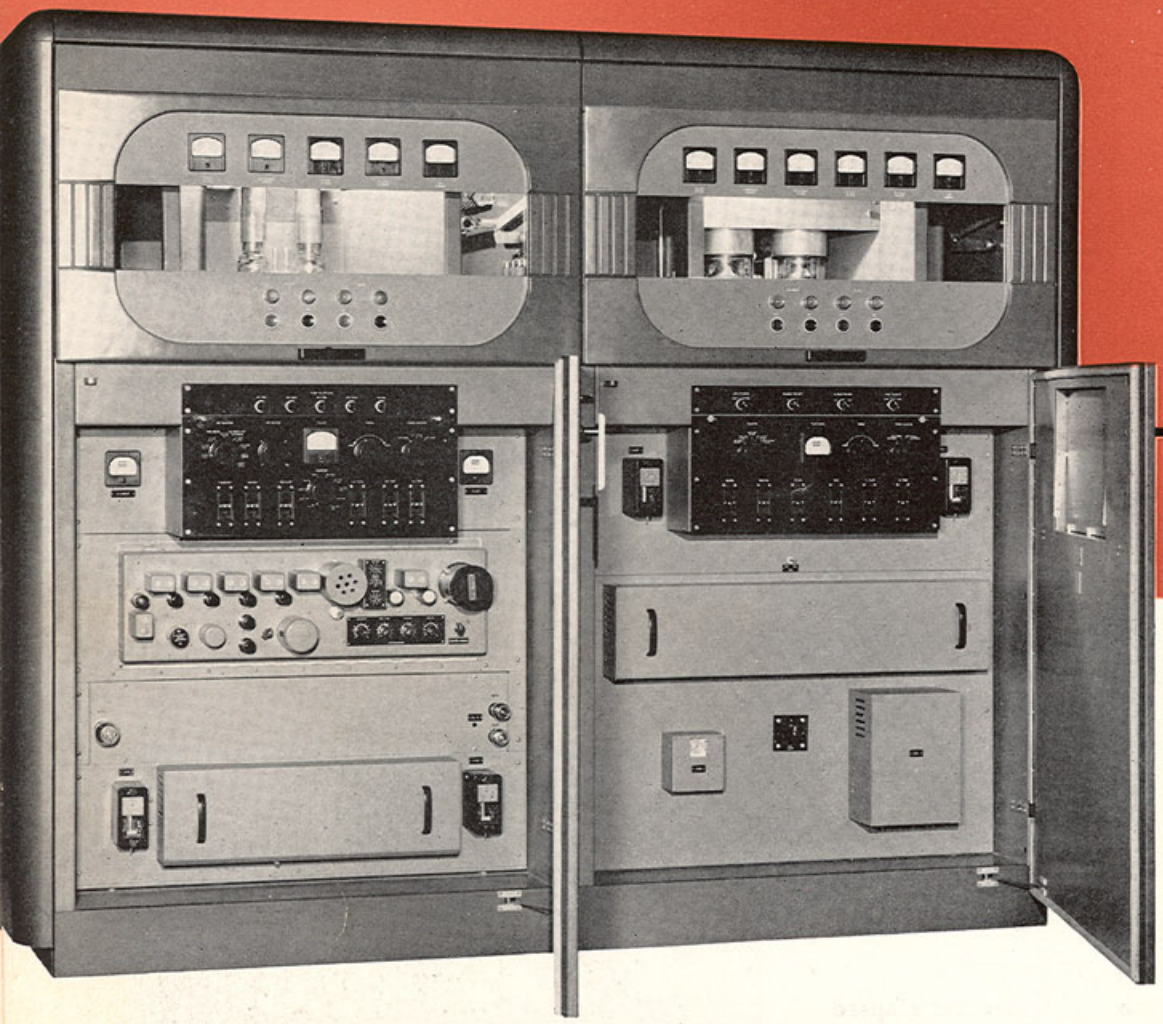
Motor driven variable tuning elements are utilized in the following circuits:

1. exciter plate tuning
2. exciter transmission line tuning

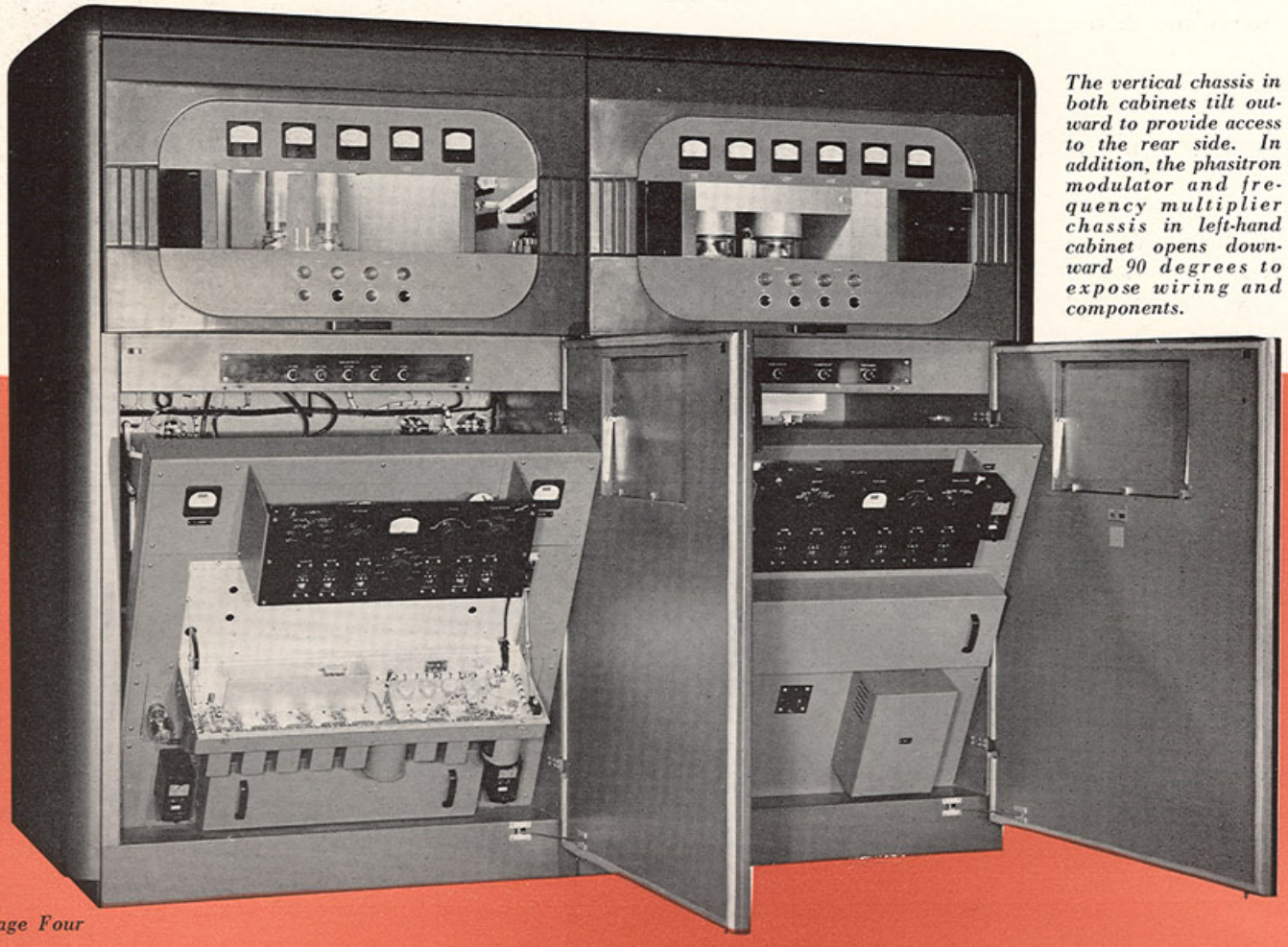
The power amplifier output tubes are also easy to remove with accessory equipment which is furnished with each of the transmitters.

3. exciter output coupling
4. power amplifier balance
5. power amplifier plate tuning
6. power amplifier transmission line tuning
7. power amplifier output coupling

These stages are precisely tuned from the control panel in a very few seconds, utilizing meters as tuning indicators. A single multiple conductor cable connects all power control circuits between the exciter



Vertical chassis construction and quick, easy accessibility are outstanding features of all Collins FM transmitters.



The vertical chassis in both cabinets tilt outward to provide access to the rear side. In addition, the phasitron modulator and frequency multiplier chassis in left-hand cabinet opens downward 90 degrees to expose wiring and components.

and power amplifier cabinets. Master power controls provide step by step or automatic sequencing control of the entire transmitter operation.

METERING

Metering circuits are provided for complete observation and recording of the transmitter performance. These circuits include:

1. primary line voltages
2. exciter plate voltage
3. exciter plate currents
4. exciter grid currents
5. exciter cathode currents
6. multiplier grid currents
7. multiplier plate currents
8. power amplifier filament voltages
9. power amplifier plate voltage
10. power amplier plate current
11. power amplifier grid currents
12. power amplifier cathode currents
13. r-f line current

Meters are also provided which measure the elapsed operating time of exciter and power amplifier filaments and plates.

ON-OFF CONTROLS

Filament and plate ON-OFF push buttons are located in the upper front doors of both cabinets. The entire transmitter can be automatically controlled with the ON-OF buttons on the amplifier. All filaments can be controlled with the buttons on either cabinet. Remote start and stop controls can be provided if they are desired.

TUBES

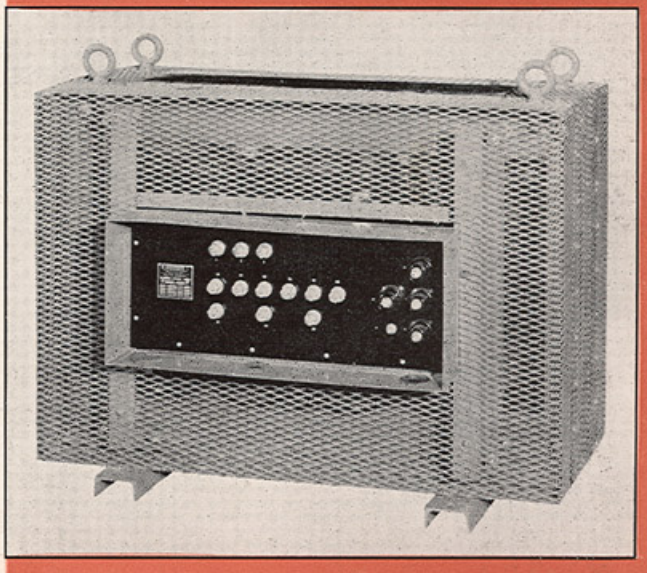
Tube types are kept to a minimum in order to reduce maintenance spares. Only ten different tube types are employed. A total of 29 tubes is employed in the complete equipment, 22 of which are utilized in the 1 kw exciter. The 5 kw power amplifier, together with associated rectifier circuits, employs 7 tubes. Push-pull triodes, type 3X2500A3, are used as grounded-grid power amplifiers.

R-F COUPLING

An r-f junction flange located in the upper rear portion of the power amplifier cabinet provides termination for RMA standard 3⅛" line.

PRE-EMPHASIS

A standard 75 microsecond pre-emphasis network is supplied for plug-in mounting on the exciter chassis of the transmitter or for mounting externally in the event the transmitter is fed by a limiting amplifier.

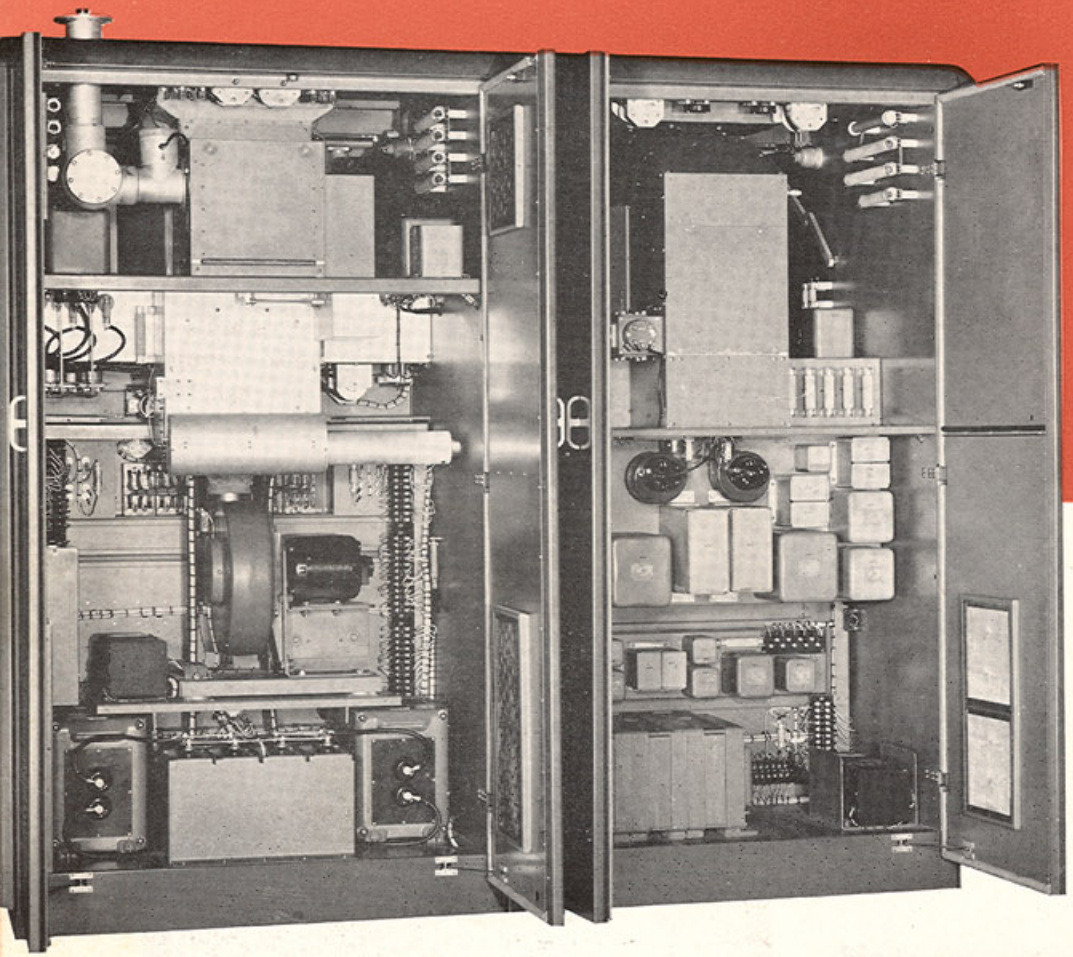


The external plate transformer is air-cooled and fully enclosed, requiring no vault or retaining walls.

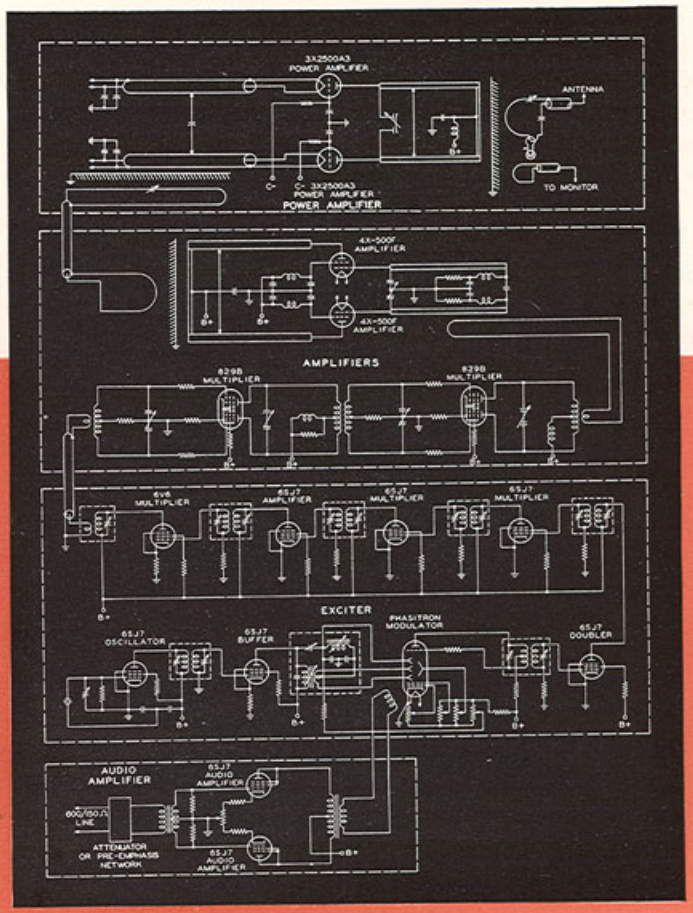
A plug-in type linear response attenuator pad is supplied for the exciter chassis when the pre-emphasis network is external.

PERSONNEL PROTECTION

Maximum personnel protection is provided on both the exciter and power amplifier units by electrical interlocks on doors opening to high voltage circuits. In addition, grounding bars are mechanically operated to short circuit high voltages to ground when the



Rear view showing the power amplifier at left and the exciter at right. Note open, well balanced component layouts.



TYPE 737A 5000 WATT FM BROADCAST TRANSMITTER

PERFORMANCE SPECIFICATIONS

COLLINS 737A 5 kw FM TRANSMITTER

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

POWER OUTPUT:
1 kilowatt to 5 kilowatts 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.

MODULATION CAPABILITY:
0 to 133% (±100 kc swing)

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 externally where transmitter is to be fed by compression amplifier.

DISTORTION:
At 100% modulation: 50 cps to 15,000 cps, less than 1.5%. 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 Amplifiers
1—6SJ7—Crystal Oscillator
1—6SJ7—Buffer
1—2H21—Phasitron Modulator
1—6SJ7—Doubler
1—6SJ7—Multiplier
1—6SJ7—Multiplier
1—6SJ7—Amplifier
1—6V6—Multiplier
1—829B—Multiplier
1—829B—Multiplier
2—4X-500F—Amplifiers
2—3X2500A3—Power Amplifiers
1—5R4GY—Rectifier
7—866A—Rectifiers
3—8008—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.

POWER DEMAND:
11.5 kw, 90% power factor at maximum rated output.

TRANSMITTER DIMENSIONS:
93¼" w, 37½" d, 79 5/16" h (with doors off, each unit will go through 36" door).

PLATE TRANSFORMER DIMENSIONS:
36½" w, 23 1/16" d, 29½" h.

SPACE REQUIREMENTS (for doors open):
93¼" w, 101⅝" d.

WEIGHT:
Approximately 4700 pounds.

3500-6-48—P1919—45709—Printed in U.S.A.