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*Collins*

**21E/M 5/10 KW**

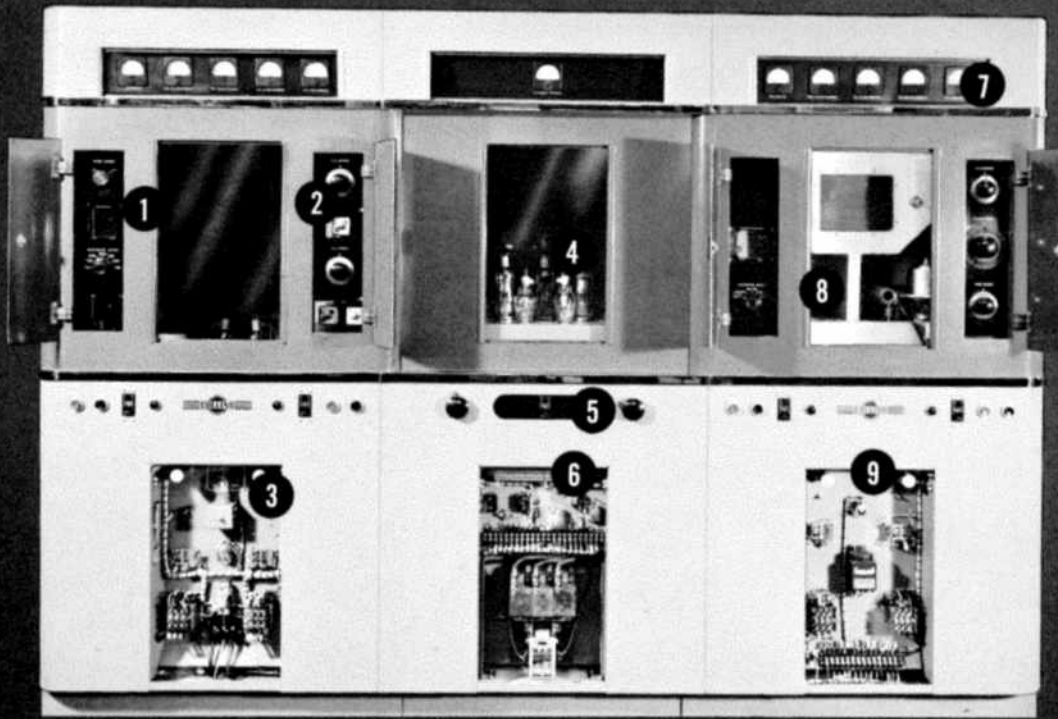
# Collins

# AM TRANSMITTERS

with

A survey of U.S. broadcasters shows that Collins AM Transmitters have less down-time than any other make. This is because Collins AM Transmitters are fully tested on the broadcaster's frequency before leaving the factory; they are straightforward electrically and me-

chanically; and they take advantage of improved performance offered by modern tubes and components. The superiority of the Collins line of AM transmitters has been proven and acclaimed by radio broadcasters throughout the world.

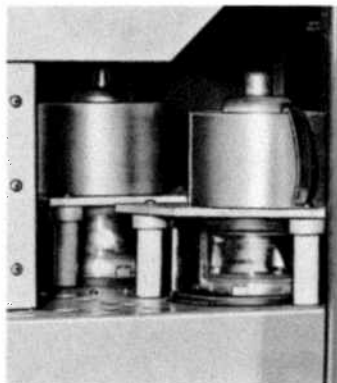


- 1 Driver cabinet audio chassis
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**DRIVER CABINET  
AUDIO CHASSIS**



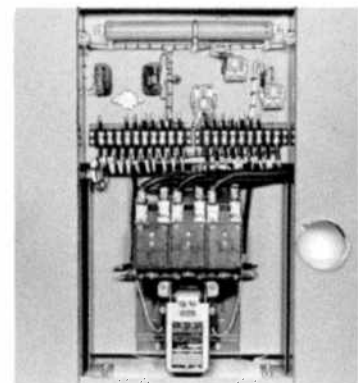
**MODULATOR TUBES**



**POWER RECTIFIERS**



**RELAY ENCLOSURE**



# Provable Quality

**MODERN STYLING** is used throughout in keeping with the modern design of the transmitter circuitry. Streamlined polished chrome adds to the attractive appearance of the ruggedly constructed cabinet, which is finished in high gloss two-tone blue-gray enamel.

**OPERATING CONTROLS** feature flexibility and convenience. Pushbutton control of filament and plate power is provided and may be extended to a remote position. Automatic sequencing is supplied. Power circuit controls are easily accessible for adjustment while the transmitter is in operation.

**FREQUENCY STABILITY** is exceptionally good and well within the FCC specifications of  $\pm 10$  cps with typical stability of  $\pm 2$  cps. This stability is attained by using a highly perfected oscillator design in conjunction with very stable, low temperature coefficient crystals.

**THERMAL TIME DELAY** circuitry selects the proper time interval before returning the transmitter to the air after a power line failure. After an instantaneous power interruption the carrier can be returned to the air immediately, cutting off-the-air time to a minimum.

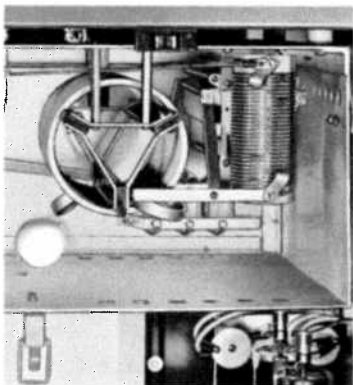
**POWER SUPPLIES** are heavy duty and conservative, which also simplifies the over-all circuitry. Used in com-

mon are power supplies for the plate voltage of the modulator and final amplifier; for the modulator bias and final amplifier bias; and for plate voltage of the audio driver and RF driver. A separate low voltage supply feeds the audio driver screens as well as the plates and screens of the other RF and audio tubes. Driver power supplies are separate for high voltage, low voltage and bias. The high voltage supplies dc voltage for the plates of the audio drivers and the plates and screens of the RF driver tubes. The low voltage provides dc voltage for plates and screens of the low power stages and for screens of the audio driver tubes. The bias supplies amplifier, audio driver, RF driver amplifier tubes and dc voltage for the arc suppression circuit.

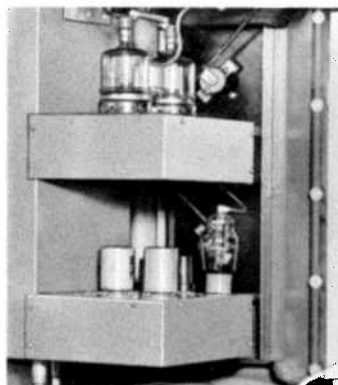
**OVERLOAD RELAYS** are adjustable and provided for the RF driver, audio driver, power amplifier and modulator stages. An overload in the power amplifier or modulator stages causes plate power to be removed and reapplied. If the overload has cleared, the transmitter remains on the air in normal operation. If the overload persists or if a second overload occurs within a four-second period, however, the plate voltage is removed and must be reapplied manually.

Collins AM Transmitters have long used high efficiency, economical and dependable tubes and circuitry. Too, major advances by Collins in crystal stability and oscillator design have eliminated crystal ovens and associated thermostats, relays and complex circuits. Many of these Collins AM Transmitter features only recently have been industry-wide accepted as the best in transmitter design and incorporated by others.

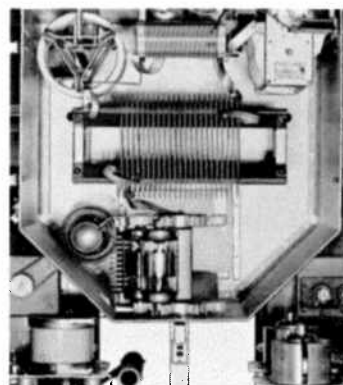
**DRIVER OUTPUT NETWORK**



**DRIVER RF CHASSIS**



**POWER AMPLIFIER  
OUTPUT NETWORK**



Examine the quality features of Collins AM Transmitters. Then call or write your Collins Broadcast Sales Engineer for a more complete and technical discussion.

**DOUBLE SHIELDING** of the entire RF network reduces spurious radiation. RF circuits are completely independent of the cabinet proper. A high degree of harmonic attenuation exists in the RF output network. **ARC SUPPRESSION** circuit protects the final amplifier and RF driver tank circuits against arcs due to lightning or other causes. When an arc occurs, the arc suppres-

sion circuit removes plate power until the arc is extinguished and returns the unit to normal operation.

**COOLING SYSTEM** in the final amplifier cabinet produces a high capacity air flow at a quiet, low speed. The blower continues to run for an adjustable period up to five minutes after power is removed. Ventilation in the other two cabinets is provided by circulating fans.

## SPECIFICATIONS

**FREQUENCY RANGE:** 540-1600 kc standard, frequencies to 10 mc available.

**POWER OUTPUT:** 21E — 5,500/1,100 watts; 5,500/550 watts on order.

21M — 10,600/5,500 watts; 10,600/1,110 watts on order.

**POWER INCREASE PACKAGE:** Converts 21E to a 21M.

**FREQUENCY STABILITY:** Better than  $\pm 5$  cps. (Typical — Better than  $\pm 2$  cps.)

**AUDIO FREQUENCY RESPONSE:** Within  $\pm 1.5$  db from 30-12,000 cps. (Typical — Within  $\pm 1.5$  db from 30-15,000 cps.)

**DISTORTION:** Less than 3% from 50-10,000 cps for 95% modulation, including all harmonics up to 16 kc. (Typical — Less than 3% from 30-15,000 cps.)

**RESIDUAL NOISE LEVEL:** 60 db or more below 100% modulation.

**CARRIER SHIFT:** Less than 3%. (Typical value less than 2%.)

**RF OUTPUT IMPEDANCE:** 50 ohm unbalanced, 40-600 ohm unbalanced on order.

**AUDIO INPUT IMPEDANCE:** 150/600 ohm.

**AUDIO INPUT LEVEL:** +10 dbm  $\pm 2$  db, 600 ohm input with built-in input pad. With the input pad removed, -5 dbm is sufficient for 100% modulation. 150 ohm connection of input transformer is possible when desired.

**POWER SOURCE:** 208/230 v, 3 phase 50/60 cps; 50 cps on special order.

### POWER DEMAND:

|                        | Power (kw) | Power Factor (%) |
|------------------------|------------|------------------|
| *5,000 watts           |            |                  |
| Output — No Modulation | 12.8       | 90.0             |
| — 30% Modulation       | 13.8       | 90.0             |
| — 100% Modulation      | 18.5       | 90.0             |
| *10,000 watts          |            |                  |
| Output — No Modulation | 21.2       | 90.5             |
| — 30% Modulation       | 23.6       | 90.1             |
| — 100% Modulation      | 32.8       | 91.5             |

### TUBE COMPLEMENT:

| 21E        |                      | 21M        |  |
|------------|----------------------|------------|--|
| 1 6AU6     | Crystal Oscillator   | 1 6AU6     |  |
| 1 6SJ7     | Buffer or Multiplier | 1 6SJ7     |  |
| 1 807      | Amplifier            | 1 807      |  |
| 2 4-125A   | Driver               | 2 4-125A   |  |
| 1 3X2500A3 | Final Amplifier      | 2 3X2500A3 |  |
| 2 6SJ7     | Audio Amplifier      | 2 6SJ7     |  |
| 2 4-125A   | Driver Amplifier     | 2 4-125A   |  |
| 2 3X3000A1 | Modulator            | 2 3X3000A1 |  |
| 1 5U4G     | Exciter Bias         | 1 5U4G     |  |
| 2 866A     | Final Amplifier Bias | 2 866A     |  |
| 2 866A     | Low Voltage Plate    | 2 866A     |  |
| 2 872A     | Intermediate Plate   | 2 872A     |  |
| 6 575A     | High Voltage Plate   | 6 575A     |  |

**AMBIENT TEMPERATURE RANGE:** Up to 45°C.

**SIZE:** 105 1/4" W, 76" H, 28" D. (Plate transformer external.) Occupies 21 square feet of floor space.

**WEIGHT:** 21E — Approx. 2,700 lbs.  
21M — Approx. 3,000 lbs.

\*21E capable of 5,500 watts output; 21M capable of 10,600 watts output.



CREATIVE LEADER IN COMMUNICATION

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