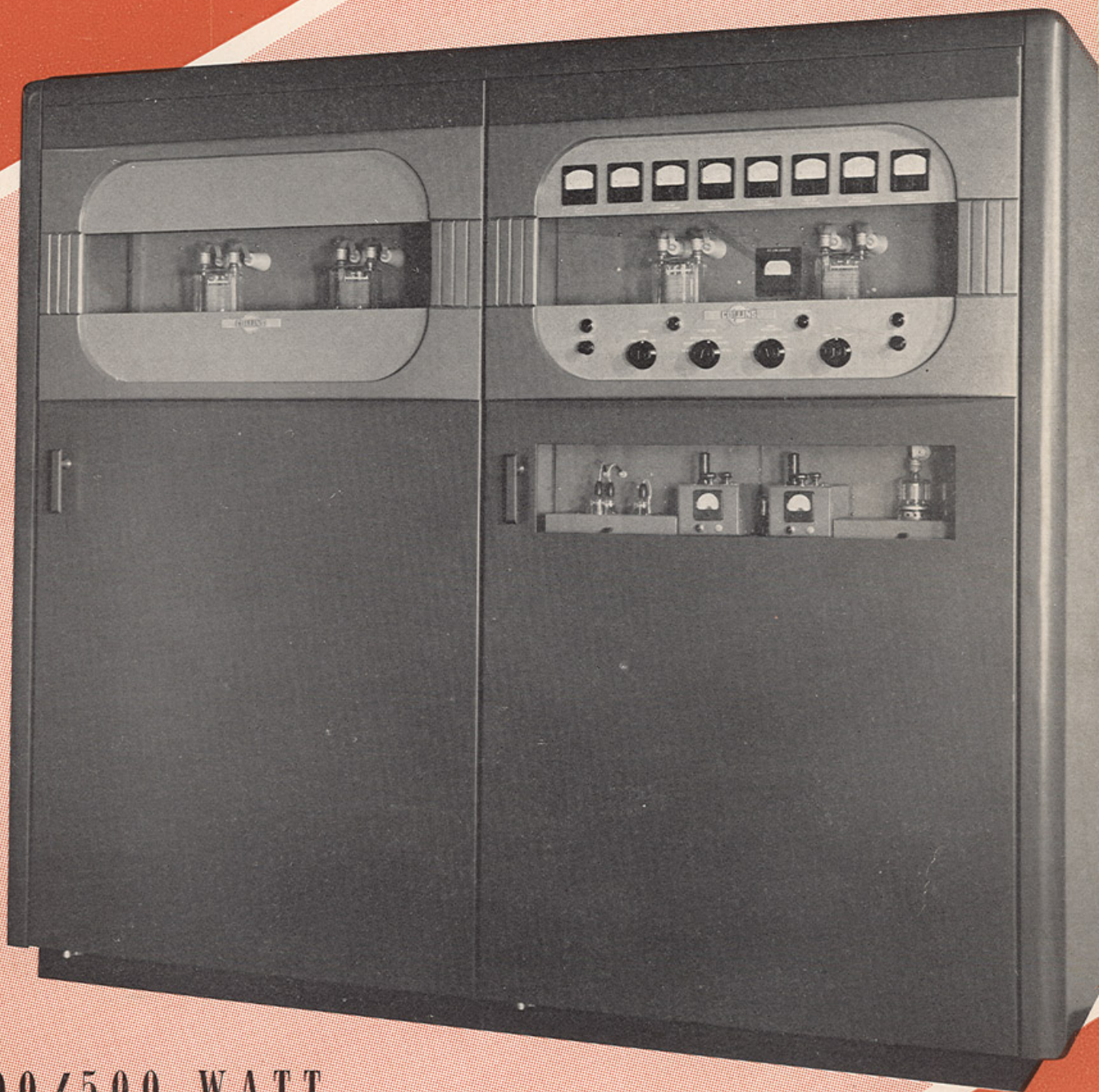


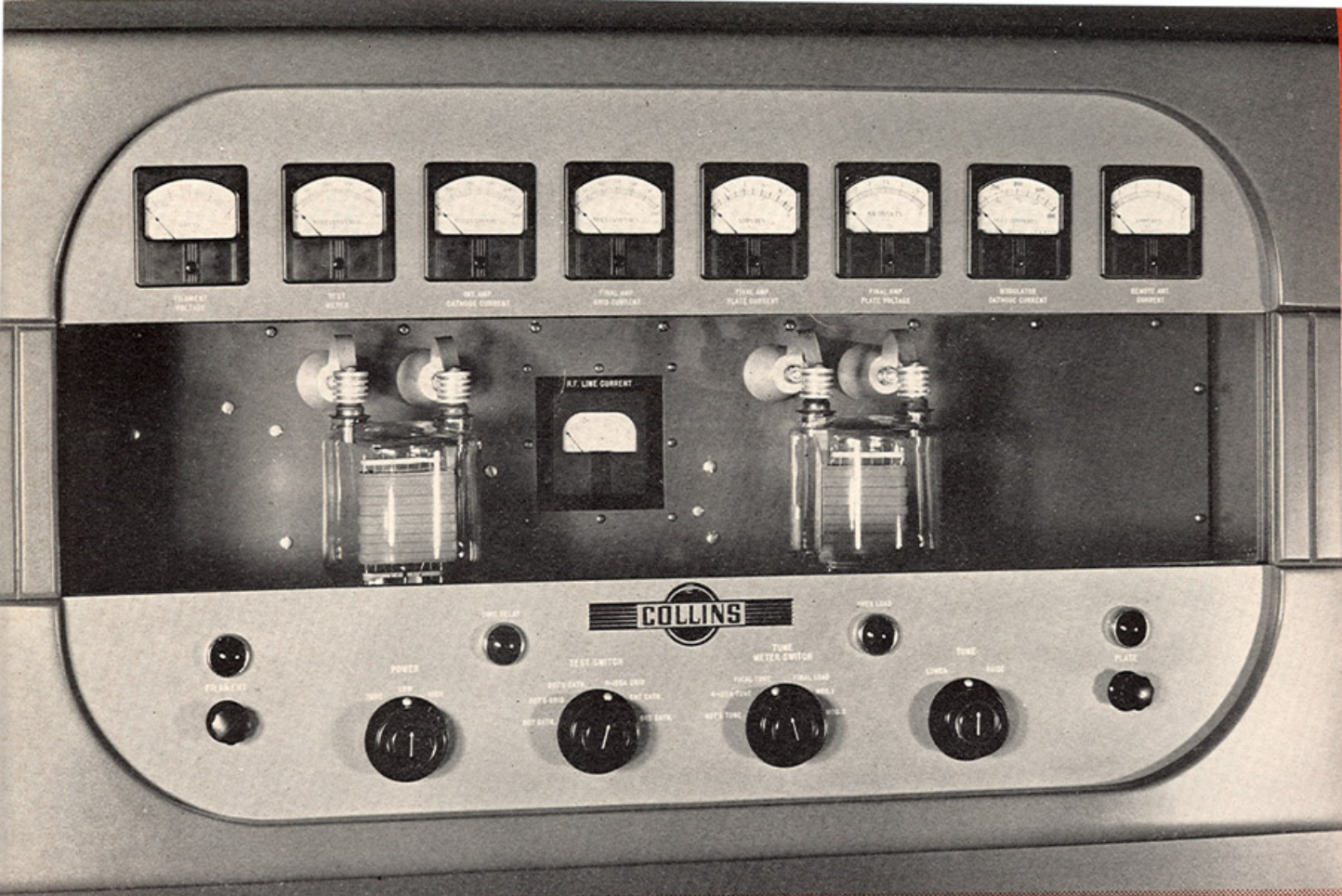
# COLLINS

# 20T



1000/500 WATT  
AM BROADCAST TRANSMITTER





## *The* COLLINS 20T

1000 / 500 WATT  
AM BROADCAST TRANSMITTER

high fidelity performance

low noise and distortion

vertical chassis construction

recycling overload relays

motor tuning

centralized controls

eye level metering

accessibility

low operating cost

inverse feedback

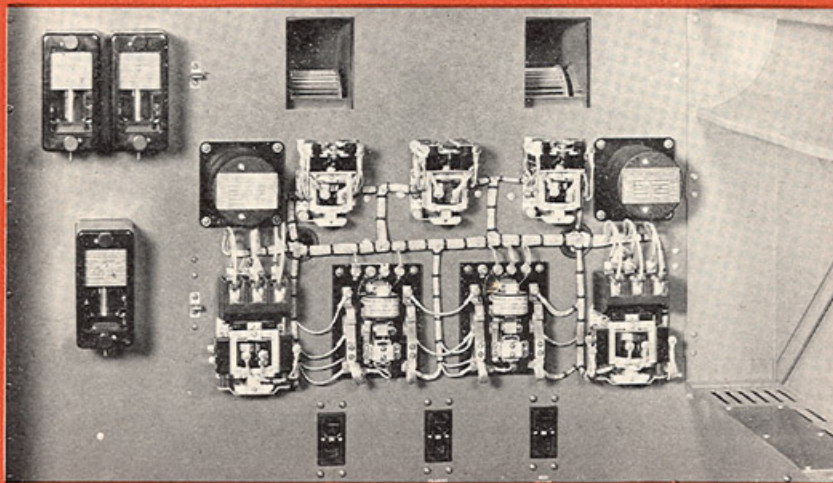
high safety factors

mechanical and electrical interlocks

only 9 tube types

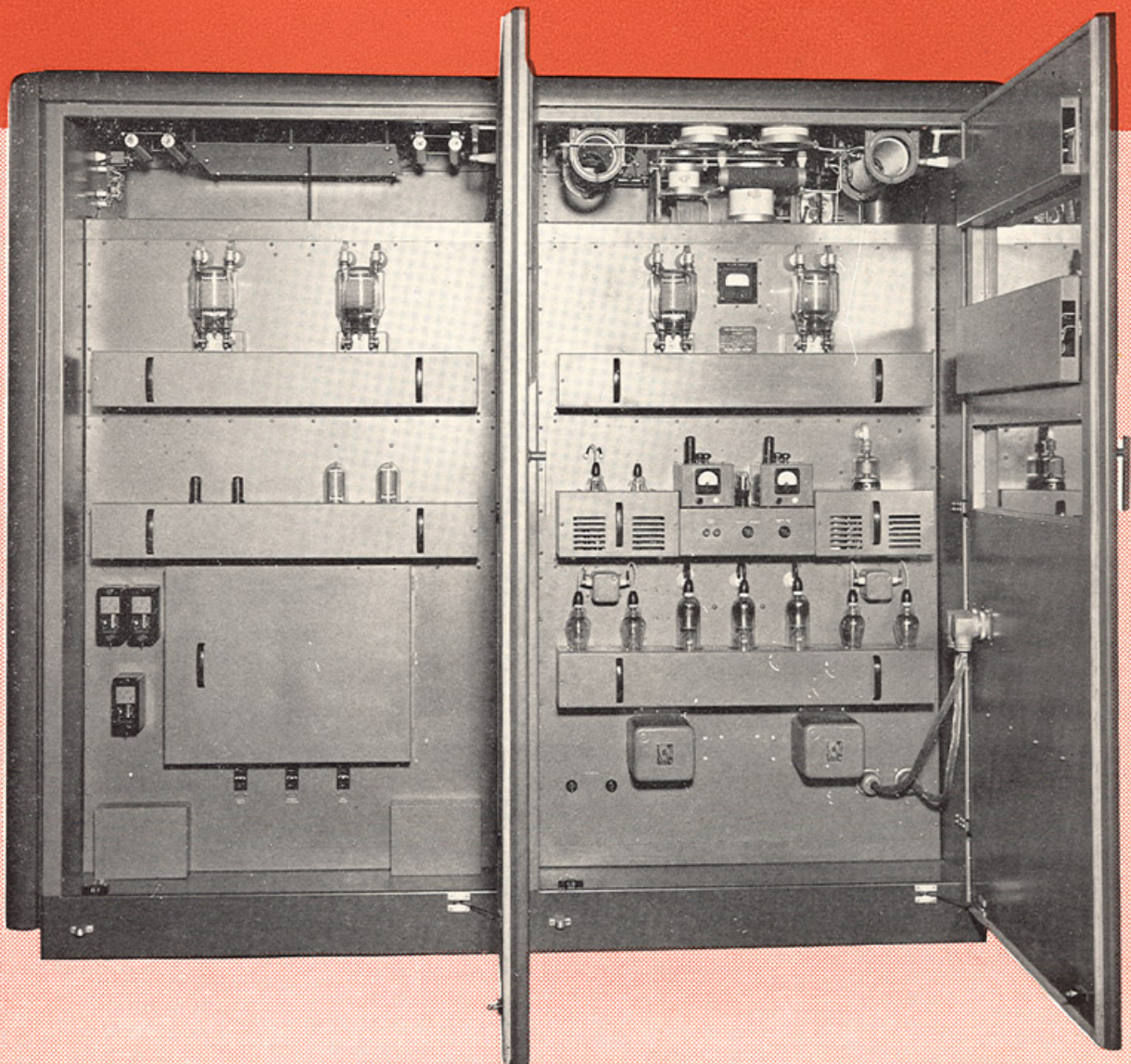
instantaneous power reduction



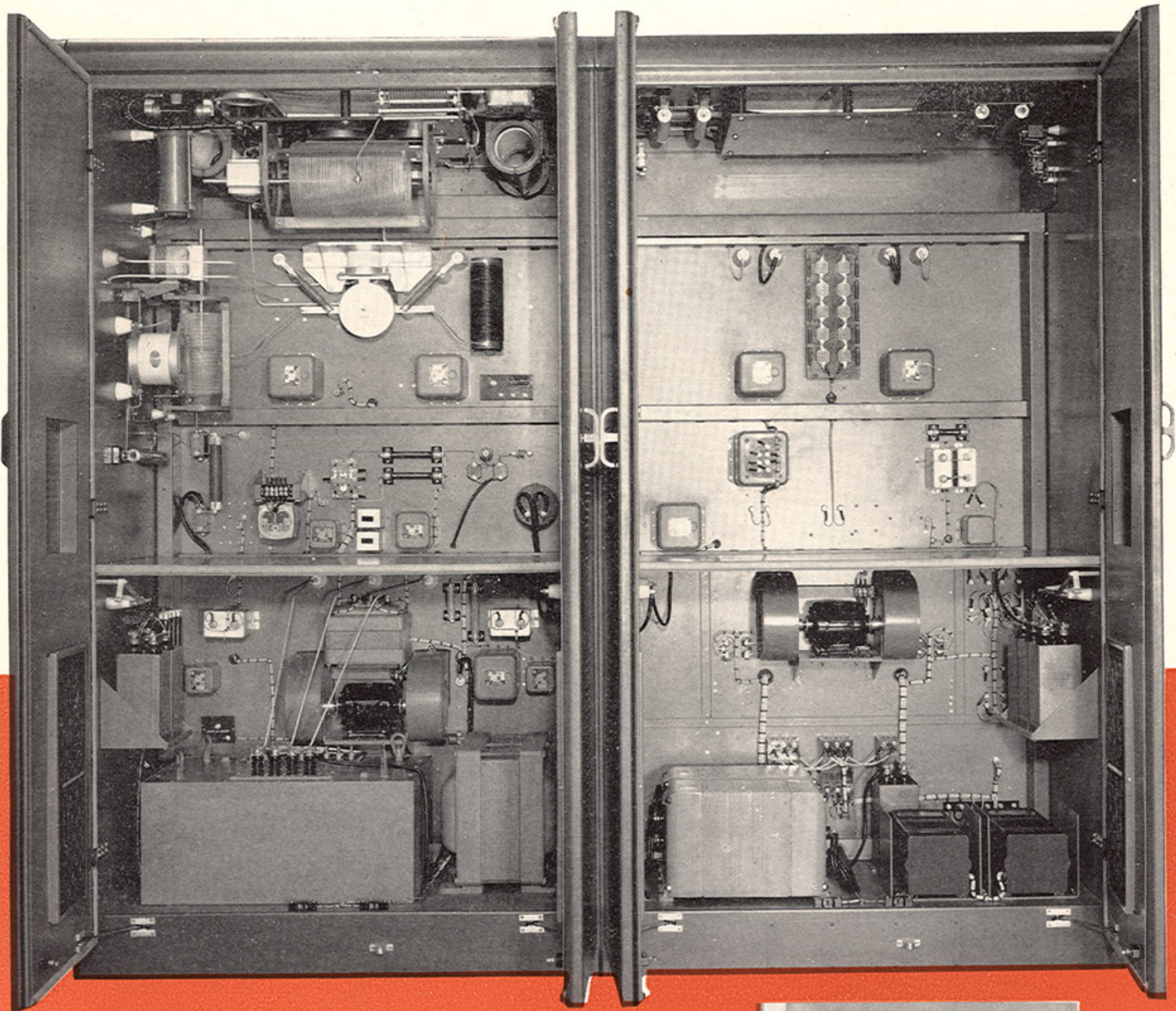


*Power and overload relays are accessible from the front of the transmitter. A hinged cover excludes dust and provides personnel protection.*

*The front inside view reveals the clean, straightforward construction. Relays and modulators are in the left bay, r-f and power supply components in the right bay. Removable covers allow quick access to circuits.*

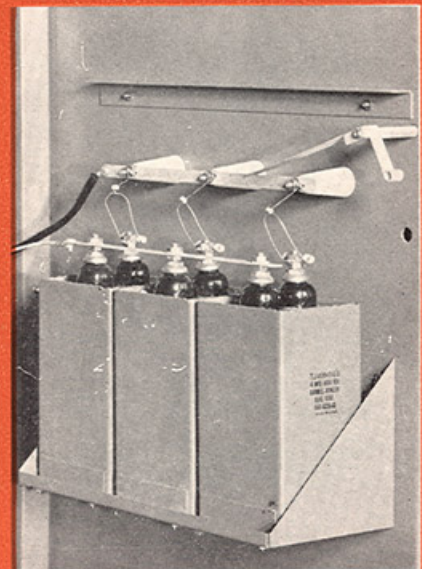






*The rear inside view shows the roomy cabinets, sturdy construction, and symmetrical layout. Maintenance is thus simplified and repairs are accelerated.*

*Circuit protection is a major feature of the 20T. All high voltage capacitors are individually fused through a spring connection. If the fuse opens, the spring immediately shorts out the capacitor and isolates it from the circuit.*

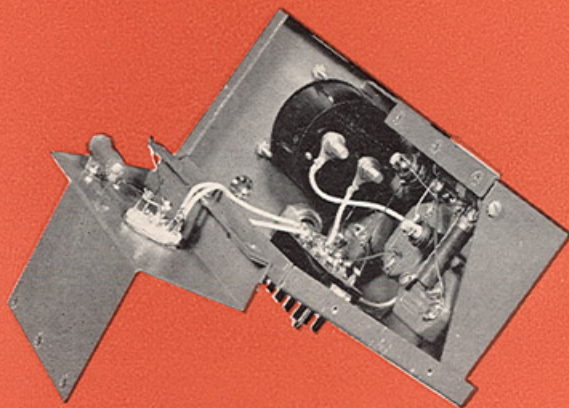
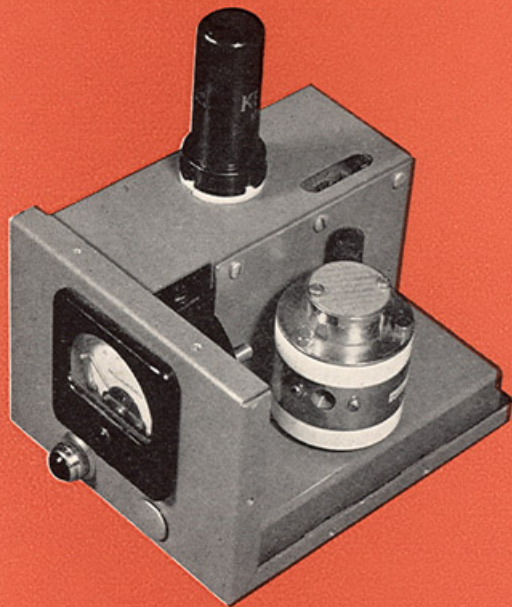
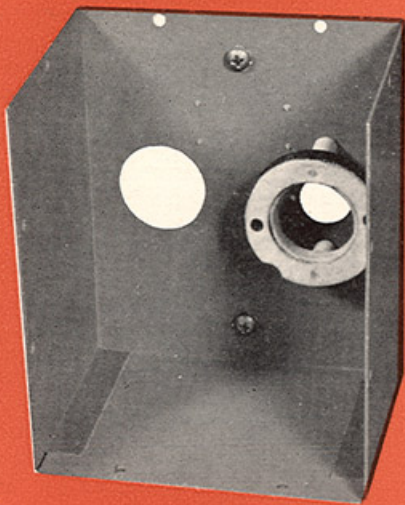




*Full length double rear doors require a minimum of space and permit quick entrance to the cabinets. Removable air filters cover the air inlets in the lower portions of the doors. The screened air inlets above the cabinet shelf level provide convection currents to assist proper distribution of air.*







*The oscillator unit can be disassembled quickly by removing the case screws. Wiring of frequency determining circuits is short and rigid.*



*Either oscillator unit can be removed quickly. The selector switch is set to the second unit and transmitter operation continued while the removed oscillator is checked.*



# Design

Many months of intense engineering effort have resulted in the 20T—a new and modern one kilowatt broadcast transmitter for continuous and dependable high fidelity operation. It is impressive in appearance and reliable in performance.

Two complete and independent temperature controlled oscillators are included, with selection by means of a switch. Both units have plug-in connections and either unit can be removed for maintenance while the other continues in operation.

Inverse feedback in the audio circuit maintains brilliant performance over normal changes in operating conditions. Noise and distortion are very low. The r-f power amplifier filaments are connected in quadrature to reduce further the noise level on the carrier. Push-pull triode audio amplifiers are employed.

Vertical chassis construction and careful arrangement of parts provide quick accessibility to all components and wiring. All tubes are accessible from the front of the transmitter, and are visible through windows in the doors. Flameproof wire is utilized throughout. Wire terminals are identified for ease in tracing circuits.

All important circuits are metered, and the meters are conveniently mounted at eye level on the cabinet front. Motor tuning allows centralized controls, with the circuit components located most advantageously. The motors are rated for continuous duty, therefore will give long uninterrupted service.

Forced air ventilation is employed for cooling. The air is drawn in through replaceable filters, and exhausted through outlets in the top. Dust traps prevent dirt from settling in the transmitter when the blowers are not running. The blower motors are designed for continuous unattended operation.

## Output

The 20T will deliver 1000 watts or 500 watts to the antenna on any specified frequency between 540 - 1600 kc. Standard output impedance is 75 ohms. Other impedances are available on special order. The power output can be changed instantaneously without program interruption.

An efficiency of 75% is obtained in the r-f amplifier and matching network. The matching section consists of a pi network followed by a T section, resulting in effective harmonic attenuation. The second harmonic is more than 70 db below the fundamental at the transmission line.

## Power Supplies

The high voltage supply utilizes type 8008 rectifiers. The low voltage and bias supply uses type 866A/866 tubes in parallel full wave rectification. The parallel tubes are connected through a center tapped choke to improve the regulation and give

uniform firing. Components are rated for continuous 100% modulation with single tone input. Voltage regulators are provided for the tube filaments. Terminals are provided for connecting a line voltage regulator for plate power.

The high voltage filter capacitors are fused in such a manner as to instantly remove and indicate a faulty capacitor. The program is not interrupted.

## Overload

All circuits are protected against damaging overloads. D-c circuits have overload relays of the automatic reset type, with visible indicators. Two overloads within an adjustable predetermined interval will remove the transmitter from the air. A-c overload protection is by means of magnetic circuit breakers.

## Personnel Protection

The 20T has both mechanical and electrical interlocks. When a door is opened the electrical circuit is broken, and the high voltage d-c supply is shorted to ground. Closing the door restores the transmitter to normal operation.

## Monitors

Convenient connections are provided for a remote antenna current meter, frequency monitor, modulation monitor, and audio monitor.

## Tubes

Only nine different tube types are used in the 20T; thus a minimum of spare tubes need be stocked.

- r-f: 2—6F6 oscillators
- 1—807 isolation amplifier
- 2—807 parallel buffers
- 1—4-125A intermediate amp.
- 2—833A parallel r-f power amp.
- a-f: 2—6N7 push-pull 1st audio
- 2—845 drivers
- 2—833A class B modulators
- rectifiers: 3—8008 H.V. supply
- 4—866A/866 L.V. and bias supply
- 2—OC3/VR105 oscillator voltage regulators

## Construction

The 20T is sturdily constructed in every respect. Ample cabinet space provides adequate ventilation and accessibility to components and wiring. The complete transmitter measures 93" wide, 79<sup>3</sup>/<sub>8</sub>" high, and 40<sup>3</sup>/<sub>4</sub>" deep. With the doors removed, the cabinets will pass through a standard 36" door.



# Specifications

Frequency range: 540-1600 kc.

Power output: 1000 watts or 500 watts.

Frequency stability:  $\pm 10$  cps.

Audio frequency response: less than  $\pm 1.0$  db variation from the average response between 30-10,000 cps.

Audio frequency distortion: less than 3% from 50-7500 cps, for 0-95% modulation, including all harmonics up to 16 kc.

Residual noise level: more than 65 db below 100% modulation (unweighted).

Carrier shift: less than 3%.

R-f output impedance: 75 ohms, other impedances available.

Audio input impedance: 600 ohms standard; 150 ohms available.

Audio input level: +18.0 dbm (+10 db). +12 dbm if input pad is removed.

Audio input pad: provides constant input impedance over the audio frequency range.

Temperature range: +15° to +45° C. ambient.

Altitude range: sea level to 6000 ft.

Power source: 208/230 volts a-c, 3 phase, 60 cps.

Power demand: 4.75 kw at 100% modulation at 85% p.f.

Weight: approximately 3600 pounds.

Dimensions: 93" w, 79 $\frac{3}{8}$ " h, 40 $\frac{3}{4}$ " d.

Ask us to send you a copy of our "Broadcast Speech Equipment and Accessories" catalogue.

FOR BROADCAST QUALITY IT'S . . .



**COLLINS RADIO COMPANY, Cedar Rapids, Iowa**

11 West 42nd Street  
New York 18, N. Y.

458 South Spring Street  
Los Angeles 13, California