



# TUBE TIPS



A NEWSLETTER TO THE BROADCASTING INDUSTRY

RCA TUBE DIVISION

HARRISON, N. J.

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## New RCA Super-Power Tube Delivers Up to 30 Kw at 550 Mc

A new super-power tube, designed for operation as a grid-driven power amplifier at frequencies up to 1,000 Mc, was announced by RCA on November 1st. Designated as the RCA-6806, the new tube has a maximum plate-dissipation rating of 35 kw.

In color or black-and-white television service, the 6806 is capable of delivering a synchronizing-level power output of 30 kw at 550 Mc, or of 25 kw at 750 Mc. As a cw amplifier in class C telegraphy service, the 6806 is capable of giving a useful power output of 25 kw at 400 Mc. The 6806 is also well suited for use in single-sideband service. For example, as a class AB power amplifier, the 6806 is capable of delivering a maximum-signal power output of 15 kw at 550 Mc.



The 6806 employs a unique design featuring a coaxial-electrode structure in which the centrally located plate is surrounded by a symmetrical array of unit electron-optical systems. These systems embody a structural design which permits not only close spacing but also unusually accurate alignment of the electrodes. Furthermore, effective bypassing of grid No. 2 to cathode is provided by built-in capacitors. Ducts for water-cooling the plate, the grid-No. 2 block, the grid-No. 1 block, the rf cathode terminals, and the filament-section blocks are built in.

Other features of the 6806 include low-inductance, large-area, rf electrode terminals insulated from each other by low-loss ceramic bushings; relatively low output capacitance; very low feedback capacitance; and a multistrand thoriated-tungsten filament for economical operation, high emission capability, and long life.

The developmental version of this new tube was described by RCA Tube Division engineer W. P. Bennett in a paper presented at the Western Electronics Show and Convention held three months ago in San Francisco. Mr. Bennett pointed out that the basic design of this new type is similar to that of the RCA-6448 UHF beam power tube but that continued evaluation of the design principles embodied in the 6448 had made it possible to extend the usefulness of this tetrode configuration. Refinements and modifications in the design have produced higher power output and power gain. As a result, the new tube has a power output of 30 kw in comparison with the 15-kw output of the 6448.

Distributor Resale price (optional) of the RCA-6806 is \$6185.00.

## New RCA Tube Publications Available

RCA recently issued three new publications which should prove valuable additions to every broadcast station's library.

The first publication, a completely revised edition of RCA's Power and Gas Tubes booklet, contains 24 pages of up-to-the-minute technical data on 178 vacuum power tubes including forced-air-cooled and water-cooled types ranging in output capability up to 500 kw. The new publication also supplies pertinent data on gas, mercury-vapor, and vacuum rectifier tubes; gas and mercury-vapor thyratrons; ignitrons; magnetrons; and vacuum-gauge tubes.

A second new RCA publication, Receiving-Type Tubes for Industry and Communications, contains data on 130 RCA receiving-type tubes. Prepared in response to numerous industry requests, this new 20-page technical booklet includes information on "Special Red" tubes, premium tubes, computer tubes, UHF "pencil-type" tubes, glow-discharge (cold-cathode) tubes, low-microphonic amplifier tubes, and other miscellaneous types. Additional features of this booklet include a special section on premium tubes, their prototypes, and their special tests and controls.

Both the Power and Gas Tubes booklet (Form PG-101B) and the Receiving-Type Tubes for Industry and Communications booklet (Form RIT-104) give a textual description, tabular data, and a base-or envelope-connection diagram for each tube type discussed.

The third new RCA publication is a newly revised and enlarged printing of the RCA Receiving Tube Manual (RC-17) that is filled with the latest information on RCA's comprehensive line of entertainment-type receiving tubes. Material in this new, 336-page book has been augmented to keep abreast of advances in electron tubes. A 26-page supplement covering 51 newly added tube types (including types developed especially by RCA for use in color-television receiver circuits) has been incorporated in the new volume. Like former editions, the latest Manual presents a section on electron-tube theory, tube characteristics, and applications. Another section contains 22 circuit diagrams most commonly encountered by experimenters. Among the charts in the new edition is one listing the operating characteristics of 64 RCA types of picture tubes – including color tube types 15GP22 and 21AXP22.

Distributor Resale prices (optional) of the three new RCA publications are as follows: Power and Gas Tubes booklet, 20¢; Receiving-Type Tubes for Industry and Communications, 20¢; Receiving Tube Manual, 60¢. Copies are now available from your RCA tube distributor.

## RCA High-Fidelity Speakers Demonstrated

RCA speaker 502S1 was shown to the public for the first time on October 13th at the Audio Fair, held in New York City. The 502S1, a 12-inch high-fidelity speaker capable of handling 12 watts and having a substantially uniform response over the range of frequencies from 40 to 16000 cps, was described in the August, 1955, issue of TUBE TIPS. Also displayed by RCA at the Audio Fair was a developmental speaker comprising a woofer-and-tweeter combination with cross-over network. This speaker is capable of handling 15 watts and has a substantially uniform response over the range of frequencies from 30 to 20,000 cycles per second.

## Vidicon Camera Tube Prices Reduced by RCA

Substantial reductions in the prices of RCA-6198 and -6326 vidicon camera tubes were announced on November 7th by Lee F. Holleran, general marketing manager, RCA Tube Division. Distributor Resale (optional) prices were reduced from \$315 to \$230 on type 6198, and from \$565 to \$515 on type 6326, Mr. Holleran stated. "These reductions," he said, "have been made possible by substantial savings in manufacturing costs."

Type 6198 is used extensively for industrial television applications, while type 6326 is employed in black-and-white and in color-TV broadcast film cameras.

RCA-6198 is about one inch in diameter by 6-1/4 inches in length, provides 400-line resolution, employs magnetic focus and magnetic deflection, and operates with relatively low dc voltages. Utilizing a photoconductive layer as its light-sensitive element, the 6198 has a sensitivity which permits televising scenes with 100 to 200 foot-candles of incident illumination on the scene.

RCA-6326 also measures only about one inch in diameter and 6-1/4 inches in length. Utilizing a photoconductive layer as its light-sensitive element, the 6326's sensitivity permits televising motion-picture film with 1/3 to 1/2 of the light requirements of the iconoscope. For televising transparencies and opaques, the light requirement is only 1/20 of that needed for film pickup.

Price reductions for four other RCA tube types – the 2C39-A, the 833-A, the 3B28, and the 3C23 – were put into effect on September 1st. The RCA Tube Division credited increased volume. The new Distributor Resale prices (optional) of these types are as follows: 2C39-A, \$22.50; 833-A, \$49.00; 3B28, \$6.45; and 3C23, \$11.98.

RCA-2C39-A is a high-mu transmitting triode of the planar-electrode type designed for use as an rf power amplifier, oscillator, or frequency multiplier at frequencies up to 2,500 Mc and above. It has a maximum plate-dissipation rating of 100 watts, low interelectrode capacitances, and exceptionally high transconductance. Operating as a grounded-grid class C rf power amplifier at 500 Mc, the 2C39-A is capable of delivering a useful power output of 27 watts with a driver output of about 6 watts. As an oscillator at 2,500 Mc, this tube type can deliver a minimum initial useful power output of 12 watts.

RCA-833-A is the "old reliable" of 1-kw transmitter circuits. This power triode features a giant zirconium-coated anode for ample dissipation, shielding that eliminates bulb bombardment, and a husky filament that has tremendous emission reserve for peak loads. In typical operation as a plate-modulated rf power amplifier in class C telephony service, the 833-A is capable of 800 watts output with natural air cooling, and 1,500 watts output with forced-air cooling.

RCA-3B28 is a small, xenon-filled half-wave rectifier. In full-wave, single-phase operation, two 3B28's are capable of supplying to the filter system 0.5 ampere at 3,200 volts.

RCA-3C23 is a gas-and-mercury-vapor-filled triode thyratron with an average anode current rating of 1.5 amperes maximum. Ionization time of the 3C23 is 3 microseconds (approximate); deionization time is 360 microseconds (approximate).



Report from Canadian Broadcasting Corporation

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RCA-857B  
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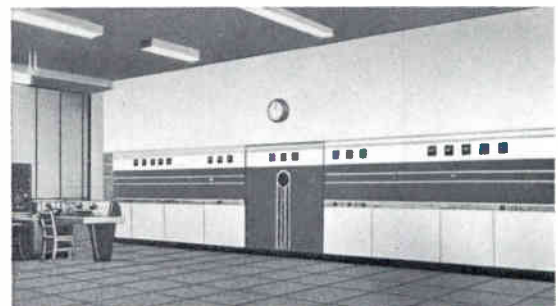
*\*Reported July 8, 1955*

The Canadian Broadcasting Corporation writes:

*"In the RCA 50-kw shortwave transmitter at the Canadian Broadcasting Corporation's International Service transmitting station at Sackville, New Brunswick, one RCA-857B mercury-vapor rectifier tube has been operating for 33,738 hours—and another for 30,571 hours."*

RCA-857B is just ONE type among the many RCA rectifiers that are setting year-after-year records for maximum performance—in greater operating reliability of equipment—minimum equipment outages—lower capital investment per hour of tube operation!

Your local RCA Tube Distributor is ready to meet your requirements on RCA Tubes of all types for broadcast station operations—regardless of whether your station is AM, FM, television, or international. For prompt attention—call him!



RCA 50-KW Shortwave Transmitter using RCA-857B high-power mercury-vapor rectifiers



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HARRISON, N.J.