

PRICE 50 CENTS

RCA PHOTOSENSITIVE DEVICES AND CATHODE-RAY TUBES



- Phototubes
- Photocells
- Image-Converter Tubes
- Camera Tubes
- Storage Tubes
- Oscillograph Tubes
- Special Industrial Kinescopes



RADIO CORPORATION OF AMERICA
ELECTRON TUBE DIVISION

HARRISON, N. J.

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CRPD-105B
Printed in U.S.A.

RCA Photosensitive Devices and Cathode-Ray Tubes

THIS CATALOG provides concise technical information on RCA Photosensitive Devices and Cathode-Ray Tubes.

Covered in this revised edition are data and descriptive material on new varieties of multiplier phototubes, new photojunction and photoconductive cells, new camera tubes, new storage tubes, and new cathode-ray tubes.

Also included for the first time are spectral-energy emission curves for the phosphors used in RCA Industrial Tubes. The section

on fluorescent screens has been revised to cover the latest descriptions of their persistence characteristics.

The detailed information shown in this catalog for single- and twin-unit phototubes is suitable for design purposes. For other types, more complete information is available in the individual technical bulletins for each type on request to Commercial Engineering, RCA, Harrison, N. J. In requesting such bulletins, please specify the type in which you are interested.

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OTHER RCA PRODUCTS

In addition to the electron devices covered in this booklet, the ELECTRON TUBE DIVISION of the RADIO CORPORATION OF AMERICA offers the following:

RECEIVING TUBES FOR ENTERTAINMENT USE

Rectifiers, Diode Detectors, Converters, Voltage and Power Amplifiers, Oscillators, Mixers, and TV Picture Tubes.

POWER AND GAS TUBES

Vacuum Power Tubes, Rectifier Tubes, Thyratrons, and Ignitrons.

MICROWAVE TUBES

Magnetrons, Traveling-Wave Tubes, and Pencil Tubes.

TEST AND MEASURING EQUIPMENT

For AM, FM, and TV Servicing as well as for Laboratories and Industrial Use.

RECEIVING-TYPE INDUSTRIAL TUBES

"Special Red" Tubes, Premium Tubes, Nuvistor Tubes, Computer Tubes, Glow-Discharge Tubes, Small Thyratrons, Vacuum-Gauge Tubes, and other Special Types.

DRY BATTERIES

For Electron-Tube and Transistor Radios, Flashlights, and Industrial Applications.

AUDIO DEVICES AND TV ACCESSORIES

Magnetic Recording Sound Tape and Accessories, TV-Set Couplers and Lightning Arrestors.

SEMICONDUCTOR DEVICES

Transistors and Semiconductor Diodes.

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For a complete listing of these RCA products, or for technical information on any of these items, see your RCA Tube Distributor, or write to Commercial Engineering, RCA, Harrison, New Jersey.

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KEY TO BASE AND ENVELOPE CONNECTION DIAGRAMS

Diagrams show terminals viewed from the base end of the type

C = External Conductive Coating

C_b = Balancing Capacitance

CL = Collector

DJ = Deflecting Electrode

DY = Dynode

G = Grid

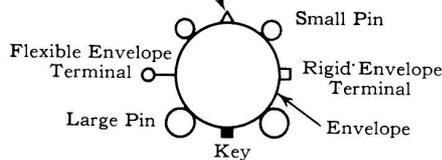
H = Heater

IC = Internal Connection
—Do Not Use

K = Cathode

NC = No Connection

Orientation Symbol
Other Than Key



P = Anode

PC = Photocathode

PJ = Pattern Electrode

SHJ = Shading Electrode

SJ = Signal Electrode

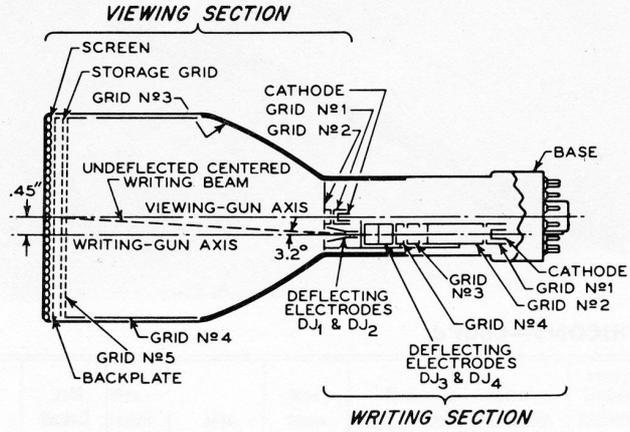
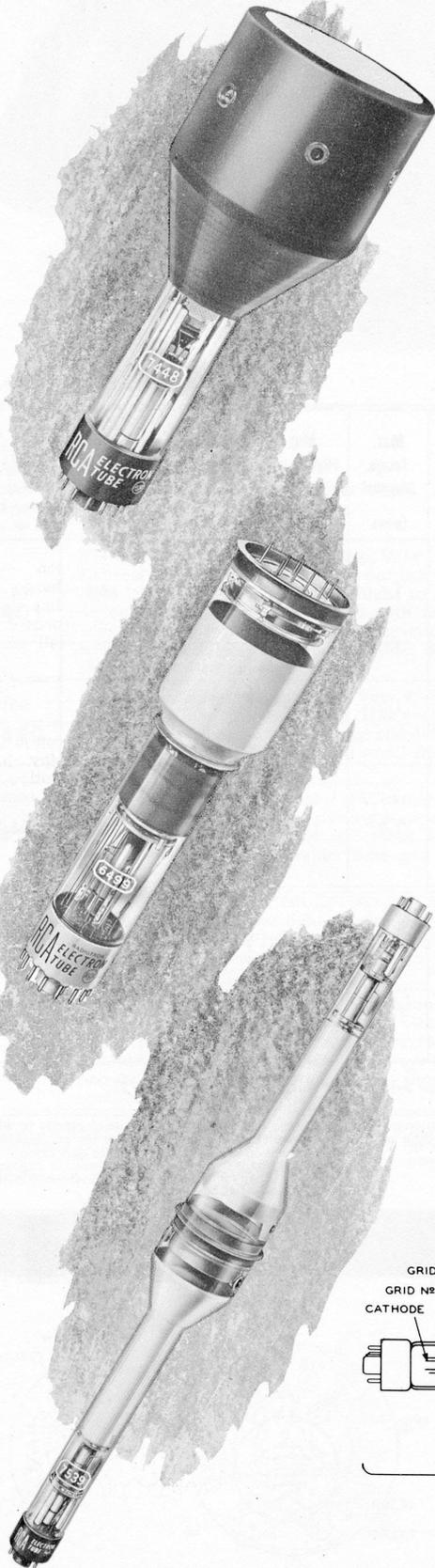
SS = Storage Surface

U = Unit

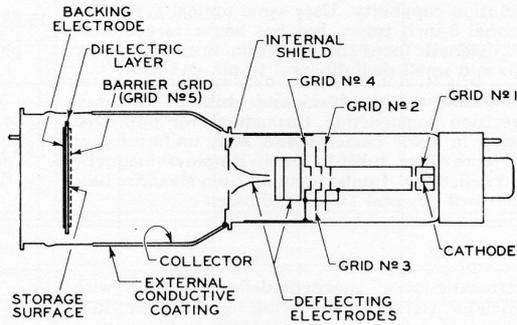
• = Gas-Type Tube

Lambda (λ) indicates that the primary characteristic of the element is designed to vary under the influence of light.

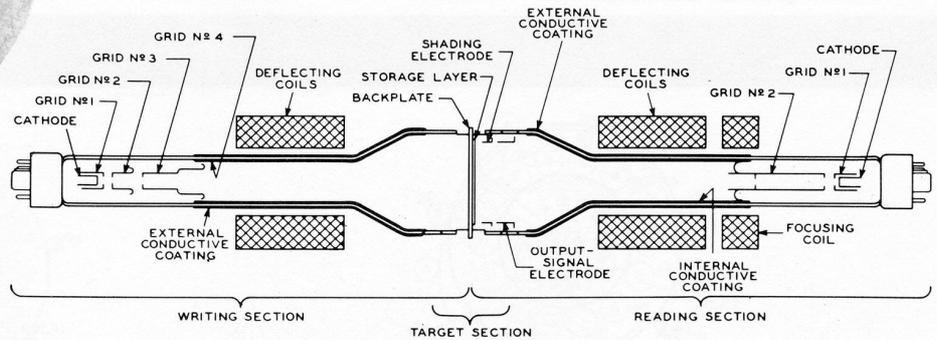
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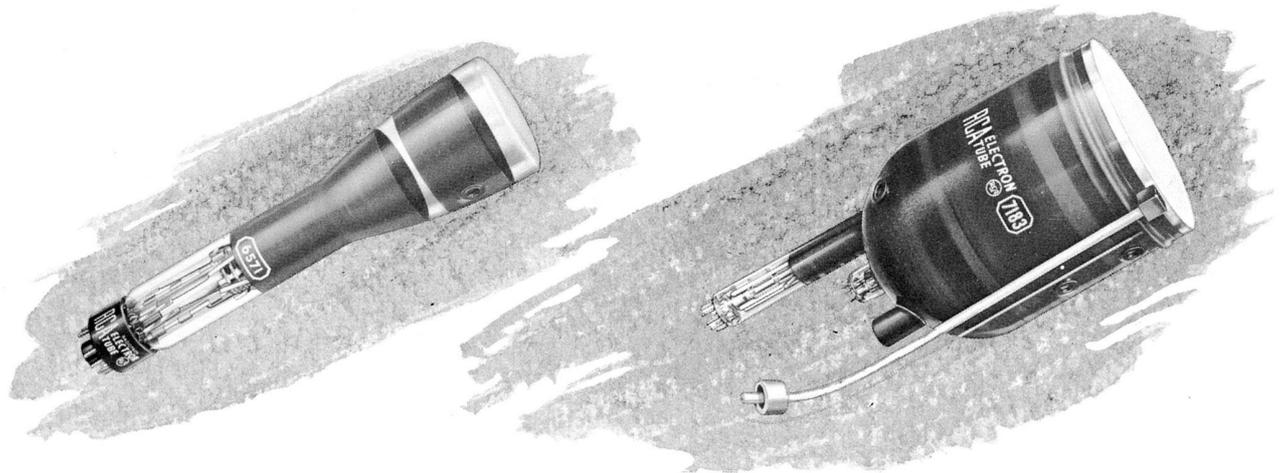
Schematic Arrangement of Type 7448



Schematic Arrangement of Type 6499



Schematic Arrangement of Type 7539



RCA Type	Description ^Δ	Maximum Dimensions		Max. High Voltage Electrode volts	Number of Beams	Operational Information
		Overall Length inches	Envelope Diam. inches			
COMPUTER STORAGE TUBE—Primary-Current-Modulation Type						
6571	3" electrostatic-focus-and-deflection type. Intended primarily for use in binary-digital computer systems. Single-beam type has storage surface on the inner surface of the faceplate, and requires an external signal-output electrode. Recessed small cavity cap. Small-shell duodecal 10-pin base.	11 $\frac{3}{4}$	3 $\frac{1}{16}$	2500*	1	Employs redistribution writing and capacitance-discharge reading. Storage surface has uniform secondary emission. Focused beam has exceptionally small effective area.
DISPLAY STORAGE TUBES—Direct-View Types						
6866	5" direct-view type. Intended for use in applications requiring a bright, non-flickering display of stored information for about 60 seconds after writing has ceased. Writing gun is electrostatic-focus-and-deflection type. Viewing gun floods screen, controls storage function, and brightness of display. Insulated flexible lead for screen and 2 recessed small cavity caps. Thirtyfivar 31-pin base. Viewing screen employs P20 phosphor.*	15 $\frac{1}{2}$	5 $\frac{1}{16}$	11000†	2	At 10,000 volts on screen produces full 4"-diameter display having brightness of 2500 footlamberts, good resolution in half-tone displays. Writing speed of about 300,000 in/sec "freezes" μ sec. transients.
7183	5" direct-view type. Intended for use in applications requiring a bright, non-flickering display of stored information for 20 or more seconds after writing has ceased. Writing gun is electrostatic-focus, magnetic-deflection type. Viewing gun floods screen, controls storage function, and brightness of display. Insulated flexible leads for screen and backplate. Small-button neoditetrar 8-pin writing-gun base, small miniature 7-pin viewing-gun base. Viewing screen employs P20 phosphor.*	11.62	5.06	10000†	2	At 8500 volts on screen produces full 4"-diameter display having brightness of 1500 footlamberts, good resolution in half-tone displays.

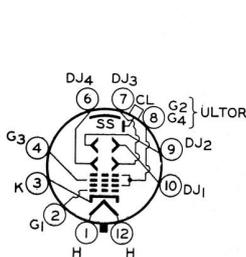
^Δ Heaters employed in these types have a rating of 6.3 volts and 0.6 amp.

* For information on fluorescent screens, see pages 27, 28, and 29.

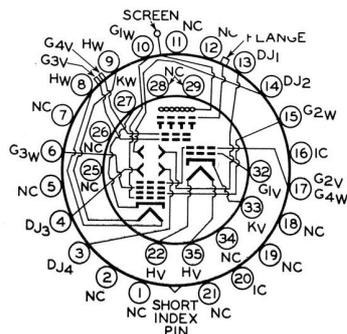
• Design-center value.

† Absolute value.

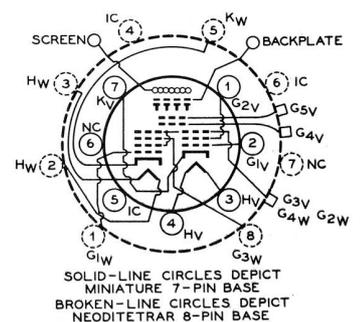
For Key to Base and Envelope Connection Diagrams, see page 3.



6571



6866



7183

SOLID-LINE CIRCLES DEPICT MINIATURE 7-PIN BASE
BROKEN-LINE CIRCLES DEPICT NEODITETRAR 8-PIN BASE

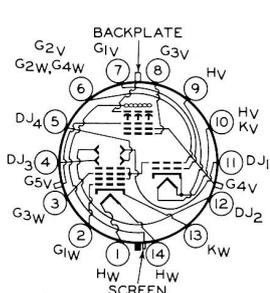
RCA Type	Description ^Δ	Maximum Dimensions		Max. High Voltage Electrode† volts	Number of Beams	Operational Information
		Overall Length inches	Envelope Diam. inches			
DISPLAY STORAGE TUBES—Direct-View Types — Cont'd						
7315	5" direct-view type. Intended for use in applications requiring a bright, non-flickering display of stored information for about 40 seconds after writing has ceased. Writing gun is electrostatic-focus-and-deflection type. Viewing gun floods screen, controls storage function, and brightness of display. Medium-shell diheptal 14-pin base. Viewing screen employs P20 phosphor.*	13.64	5.31	11000	2	At 10,000 volts on screen produces full 3.8"-diameter display having brightness of 2500 footlamberts, good resolution in half-tone displays. Writing speed of 3000 in/sec takes full advantage of integrating and half-tone capabilities of the tube.
7448	5" direct-view type. Intended for use in applications requiring a bright, non-flickering display of stored information for about 40 seconds after writing has ceased. Writing gun is electrostatic-focus-and-deflection type. Viewing gun floods screen, controls storage function, and brightness of display. Medium-shell diheptal 14-pin base. Viewing screen employs P20 phosphor.*	13.64	5.31	11000	2	At 10,000 volts on screen produces full 3.8"-diameter display having brightness of 2500 footlamberts, good resolution in half-tone displays. Writing speed of about 300,000 in/sec "freezes" μsec. transients.
RADECHON—Single-Beam, Barrier-Grid Type						
6499	Charge storage tube of barrier-grid, single-beam type intended for information-processing systems. Non-equilibrium writing and capacitance-discharge reading. Electron gun is of the electrostatic-focus-and-deflection type. Base on large end of tube is small-button twenty-ninar 8-pin. Base on small end of tube is small-shell diheptal 14-pin.	12 ⁷ / ₃₂	3.35	1500	1	Information in digital or analog form may be introduced to the active elements of the tube, stored (time controllable from μsec. to minutes), and then extracted at a rate the same as or different from the writing rate.
GRAPHECHON—Scan-Conversion Type						
7539	Sturdy charge-storage tube for use in data processing applications where information is to be continuously transformed from one time base or scanning presentation to another. Writing gun is electrostatic-focus, magnetic-deflection type. Reading gun is magnetic-focus-and-deflection type. Employs two small-shell duodecal bases.	26	3.40	11000	2	Has resolution capability of 150 range rings per display radius with a response of at least 50 per cent. Permits bright displays having continuous range of half-tone information when viewed on suitable TV monitors.

^Δ Heaters employed in these types have a rating of 6.3 volts and 0.6 amp.

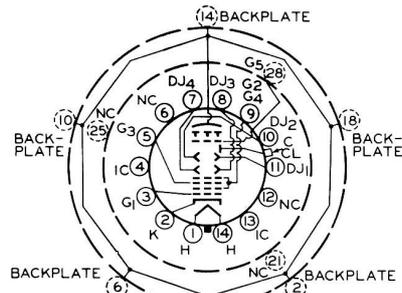
† Absolute values.

* For information on fluorescent screens, see pages 27, 28, and 29.

For Key to Base and Envelope Connection Diagrams, see page 3.

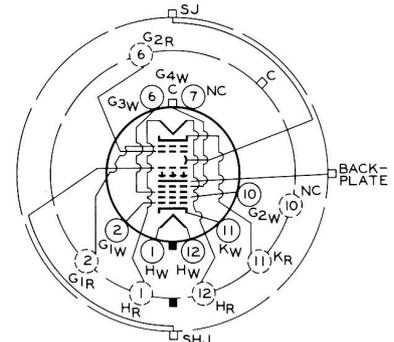


7315 7448



SOLID-LINE CIRCLES DEPICT DIHEPTAL BASE
BROKEN-LINE CIRCLES DEPICT TWENTYNINAR BASE

6499



7539

TECHNICAL PUBLICATIONS

ELECTRON TUBES —

● **RCA ELECTRON TUBE HANDBOOK—HB-3** (7 $\frac{3}{8}$ " x 5 $\frac{3}{8}$ ")—Five deluxe 2 $\frac{1}{4}$ -inch-capacity black binders imprinted in gold. The "bible" of the industry—contains over 4200 pages of loose-leaf data and curves on RCA receiving tubes, transmitting tubes, cathode-ray tubes, picture tubes, photocells, phototubes, camera tubes, ignitrons, vacuum and gas rectifiers, magnetrons, traveling-wave tubes, premium tubes, pencil tubes, and other miscellaneous types for special applications. Available on subscription basis. Price \$20.00 including service for first year. Also available with RCA Semiconductor Products Handbook HB-10 at special combination price of \$22.50.* Write to Commercial Engineering for descriptive flyer and order form.

● **RCA RECEIVING TUBE MANUAL—RC-20** (8 $\frac{1}{4}$ " x 5 $\frac{3}{8}$ ")—432 pages. Revised and expanded. Contains technical data on more than 760 receiving types and 170 picture-tube types. Features tube theory written for the layman, application information and a circuit section. Features lie-flat binding. Price \$1.00.*

● **RADIOTRON DESIGNER'S HANDBOOK—4th Edition** (8 $\frac{3}{4}$ " x 5 $\frac{1}{2}$ ")—1500 pages. Comprehensive reference thoroughly covering the design of radio and audio circuits and equipment. Written for the design engineer, student, and experimenter. Contains 1000 illustrations, 2500 references, and cross-referenced index of 7000 entries. Edited by F. Langford-Smith of Amalgamated Wireless Valve Company Pty. Ltd. in Australia. Price \$7.00.*

● **RCA TRANSMITTING TUBES—TT-4** (8 $\frac{3}{8}$ " x 5 $\frac{3}{8}$ ")—256 pages. Contains basic information on generic tube types, on tube parts and materials, and on tube installation and application. Includes technical data and curves for power tubes having plate-input ratings up to 4 kilowatts, and data for associated rectifier tubes. Contains sections on transmitter-design considerations, rectifier circuits and filters, and circuit diagrams for transmitting and industrial applications. Features lie-flat binding. Price \$1.00.*

● **RCA POWER AND GAS TUBES—PG-101D** (10 $\frac{7}{8}$ " x 8 $\frac{3}{8}$ ")—32 pages. Technical information on over 175 RCA vacuum power tubes, rectifier tubes, thyratrons, and ignitrons. Includes terminal connections. Price 30 cents.*

● **RCA RECEIVING-TYPE TUBES FOR INDUSTRY AND COMMUNICATIONS—RIT-104B** (10 $\frac{7}{8}$ " x 8 $\frac{3}{8}$ ")—32 pages. Technical data on over 190 RCA "special red" tubes, premium tubes, nuvistors, computer tubes, pencil tubes, glow-discharge tubes, small thyratrons, low-microphonic amplifier tubes, traveling-wave tubes, and other special types. Price 30 cents.*

● **RCA RECEIVING TUBES AND PICTURE TUBES—1275J** (10 $\frac{7}{8}$ " x 8 $\frac{3}{8}$ ")—48 pages. New, enlarged, and up-to-date booklet contains classification chart, characteristics chart, and base and envelope connection diagrams on more than 900 entertainment receiving tubes and picture tubes. Price 35 cents.*

● **RCA PREFERRED TYPES LIST—PTL-501G** (10 $\frac{7}{8}$ " x 8 $\frac{3}{8}$ ")—8 pages. Lists RCA Preferred Tube Types both receiving and non-receiving by function. An aid in the selection of tube types for new equipment design. Single copy free on request.

● **RCA INTERCHANGEABILITY DIRECTORY OF INDUSTRIAL-TYPE ELECTRON TUBES—ID-1020B** (10 $\frac{7}{8}$ " x 8 $\frac{3}{8}$ ")—24 pages. Lists more than 2700 type designations of 33 different manufacturers; shows

the RCA Direct Replacement Type or the RCA Similar Type, when available. Price 25 cents.*

● **RCA PHOTSENSITIVE DEVICES AND CATHODE-RAY TUBES—CRPD-105B** (10 $\frac{7}{8}$ " x 8 $\frac{3}{8}$ ")—36 pages. Technical information on 151 RCA tubes including single-unit, twin-unit, and multiplier phototubes; photocells; camera and image-converter tubes; flying-spot tubes; monitor, projection, transcriber, and view-finder kinescopes; oscillograph and storage tubes. Price 50 cents.*

● **RCA MAGNETRONS AND TRAVELING-WAVE TUBES—MT-301A** (10 $\frac{7}{8}$ " x 8 $\frac{3}{8}$ ")—48 pages. Operating theory for magnetrons and traveling-wave tubes, application considerations, and techniques for measurement of electrical parameters. Price 60 cents.*

● **RCA PENCIL TUBES—1CE-219** (10 $\frac{7}{8}$ " x 8 $\frac{3}{8}$ ")—28 pages. Contains operating theory for pencil tubes, electrical and mechanical circuit-design considerations, environmental considerations, application considerations, and data for commercial types. Price 50 cents.*



● **RCA TRIPLE PINDEX—PINDEX-109** (8 $\frac{1}{4}$ " x 5 $\frac{1}{4}$ ")—240 pages. Gives base diagrams for more than 2000 JEDEC-registered receiving types including picture tubes. Base diagrams of over 1500 receiving types are presented in triplicate to provide the user with any three base diagrams at any one time. More than 200 small industrial-receiving types and more than 200 foreign receiving types are cross-referenced to the receiving-tube section for base diagrams. Price \$1.75.*

● **RCA INTERCHANGEABILITY DIRECTORY OF FOREIGN vs U.S.A. RECEIVING-TYPE ELECTRON TUBES—1CE-197A** (8 $\frac{3}{8}$ " x 10 $\frac{7}{8}$ ")—4 pages. Covers approximately 500 foreign tube types used principally in AM and FM radios, TV receivers, and audio amplifiers. Indicates U.S.A. direct replacement type or similar type if available. Single copy free on request.

● **RCA HIGH-FIDELITY AMPLIFIER CIRCUITS BOOKLET—HF-110** (8 $\frac{3}{8}$ " x 10 $\frac{7}{8}$ ")—28 pages. Includes circuit diagrams with parts lists, design considerations and performance requirements, and characteristics chart of RCA high-fidelity tube types. For hobbyists, technicians, and others interested in construction of their own high-fidelity amplifier systems. Price 35 cents.*

● **RCA COLOR TELEVISION PICT-O-GUIDE—9 $\frac{5}{8}$ " x 5 $\frac{3}{8}$ "**—200 pages. Developed and written by John R. Meagher RCA's nationally recognized

authority on practical TV servicing. Prepared to aid TV technicians in trouble-shooting and adjusting color TV receivers. Color photographs are included to assist in recognizing and understanding visible symptoms of troubles and misadjustments. Price \$4.50.*

● **TV SERVICING—TVS-1030** (10 $\frac{7}{8}$ " x 8 $\frac{3}{8}$ ")—48 pages. Contains articles on TV trouble-shooting, TV tuner alignment, and TV circuit analysis by RCA's expert in the field of TV servicing and test equipment—John R. Meagher. Price 35 cents.*

● **TV SERVICING, SUPPLEMENT 1—TVS-1031** (10 $\frac{7}{8}$ " x 8 $\frac{3}{8}$ ")—12-page booklet by John R. Meagher on solving trouble-shooting problems in those hard-to-service TV receivers known to service technicians as "tough" sets or "dogs". Price 15 cents.*

● **PRACTICAL COLOR TELEVISION—Revised Edition** (11" x 8 $\frac{1}{2}$ ")—84 pages. Black-and-white and color illustrations. Comprehensive information on color principles, color signal, color camera, and color picture tubes. Covers commercial receiver circuit using the RCA-15GP22 color picture tube, as well as installation and service of color receivers. Provides detailed description of color-test equipment. Price \$2.00.*

● **PRACTICAL COLOR TELEVISION, SUPPLEMENT 1—(11" x 8 $\frac{1}{2}$ ")**—36 pages. Describes theory, operation and servicing of large-screen color TV receiver using RCA-21AXP22. Has 55 black-and-white and color illustrations, wave-forms, and explanations of color circuits and adjustments. Price 75 cents.*

SEMICONDUCTOR PRODUCTS —

● **RCA SEMICONDUCTOR PRODUCTS HANDBOOK—HB-10** (7 $\frac{3}{8}$ " x 5 $\frac{3}{8}$ ")—Deluxe 2 $\frac{1}{4}$ -inch capacity red binder imprinted in gold. Contains over 600 pages of loose-leaf data and curves on RCA semiconductor devices such as germanium transistors, silicon transistors, drift-field transistors, mesa transistors, power transistors, bidirectional transistors, mesa thyristors, silicon rectifiers, and semiconductor diodes. Available on subscription basis. Price \$5.00* including service for one year. Also available with RCA Electron Tube Handbook HB-3 at special combination price of \$22.50.* Write to Commercial Engineering for descriptive flyer and order form.

● **RCA SEMICONDUCTOR PRODUCTS—SCD-108C** (10 $\frac{7}{8}$ " x 8 $\frac{3}{8}$ ")—40 pages. Contains technical data on RCA transistors and silicon rectifiers. Includes an interchangeability directory which lists over 1200 types of 29 different manufacturers, and a section on circuits containing 33 schematics illustrating some of the more important applications of these devices. Price 30 cents.*

BATTERIES —

● **RCA BATTERIES—BAT-134B** (10 $\frac{7}{8}$ " x 8 $\frac{3}{8}$ ")—16 pages. Technical data on 100 Leclanché-and-mercury-type dry batteries for radios, industrial applications, flashlights, lanterns, and electronic toys. Includes interchangeability list and replacement guide for 1948 to June 1960 portable radios. Price 35 cents.*

● **RCA BATTERIES FOR TRANSISTOR APPLICATIONS—TBA-107A** (10 $\frac{7}{8}$ " x 8 $\frac{3}{8}$ ")—12 pages. Technical data and curves on 25 RCA Leclanché-and-mercury-type dry batteries specifically designed for use in applications utilizing transistors. Price 25 cents.*

*Prices shown apply in U.S.A. and are subject to change without notice.

Copies of the publications listed above may be obtained as follows:

ELECTRON TUBES
From your RCA Tube Distributor

or
From RCA, Commercial Engineering,
Electron Tube Division,
Harrison, New Jersey

SEMICONDUCTOR PRODUCTS
From your RCA Transistor Distributor

or
From RCA, Commercial Engineering,
Semiconductor and Materials Division,
Somerville, New Jersey