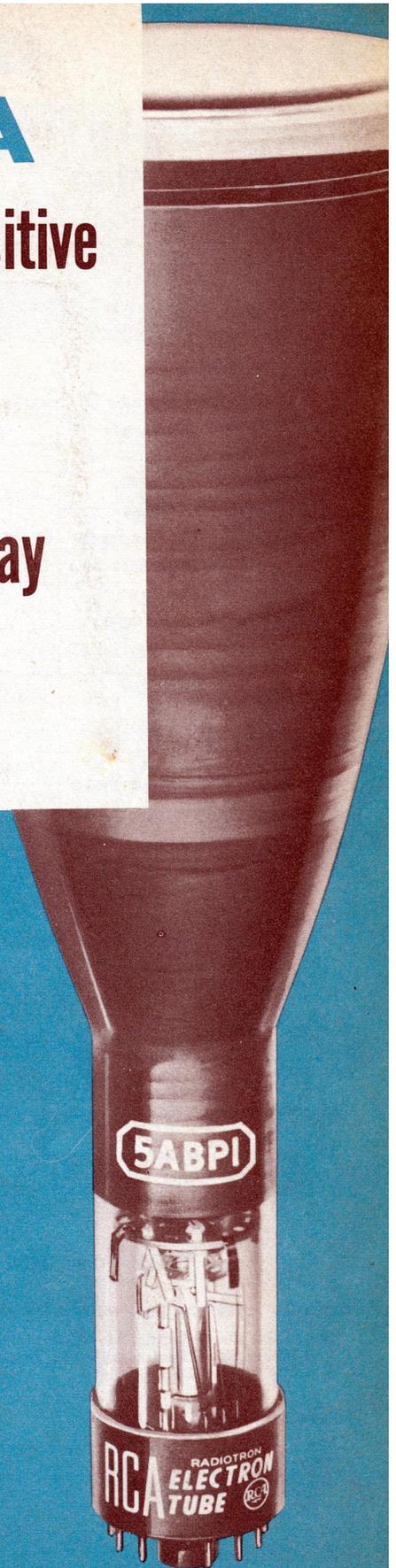


PRICE 20¢



RCA photosensitive devices and cathode-ray tubes

- Gas and vacuum phototubes
- Multiplier phototubes
- Camera tubes
- Monoscopes
- Flying-spot cathode-ray tubes
- View-finder kinescopes
- Monitor kinescopes
- Transcriber kinescopes
- Projection kinescopes
- Oscillograph tubes
- Storage tubes



RADIO CORPORATION of AMERICA
TUBE DIVISION **HARRISON, N. J.**

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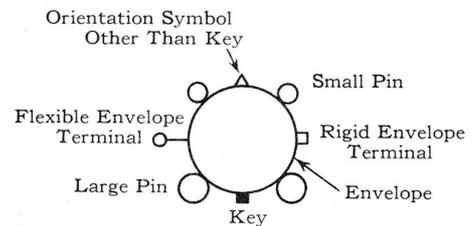
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KEY TO BASE AND ENVELOPE CONNECTION DIAGRAMS

Diagrams show terminals viewed from the base end of the type

- | | | |
|--|-------------------------------------|------------------------|
| C = External Conductive Coating | G = Grid | PC = Photocathode |
| C _b = Balancing Capacitance | H = Heater | PJ = Pattern Electrode |
| CL = Collector | IC = Internal Connection—Do Not Use | SJ = Signal Electrode |
| DJ = Deflecting Electrode | K = Cathode | SS = Storage Surface |
| DY = Dynode | NC = No Connection | U = Unit |
| | P = Anode | ● = Gas-Type Tube |



In addition to the tube types covered in this booklet,
the **TUBE DIVISION** of the **RADIO CORPORATION OF AMERICA** offers the following:

RECEIVING TUBES FOR AM, FM, AND TV BROADCAST

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

POWER AND GAS TUBES

Vacuum Power Tubes, Rectifier Tubes, Thyratrons, Ignitrons, Magnetrons, and Vacuum-Gauge Tubes.

SEMICONDUCTOR DEVICES

Transistors and Crystal Diodes.

MINIATURE LAMPS

For Radio and Instrument Panels, and Flashlights.

ELECTRONIC COMPONENTS

TV Deflection Components, Speakers, TV Set Couplers, and Lightning Arresters.

DRY BATTERIES

For Radios, Flashlights, and Industrial Applications.

RECEIVING-TYPE TUBES FOR INDUSTRY AND COMMUNICATIONS

"Special Red" Tubes, Premium Tubes, "Pencil-Type" Tubes, Computer Tubes, Glow-Discharge Tubes, Small Thyratrons, and Other Special Types.

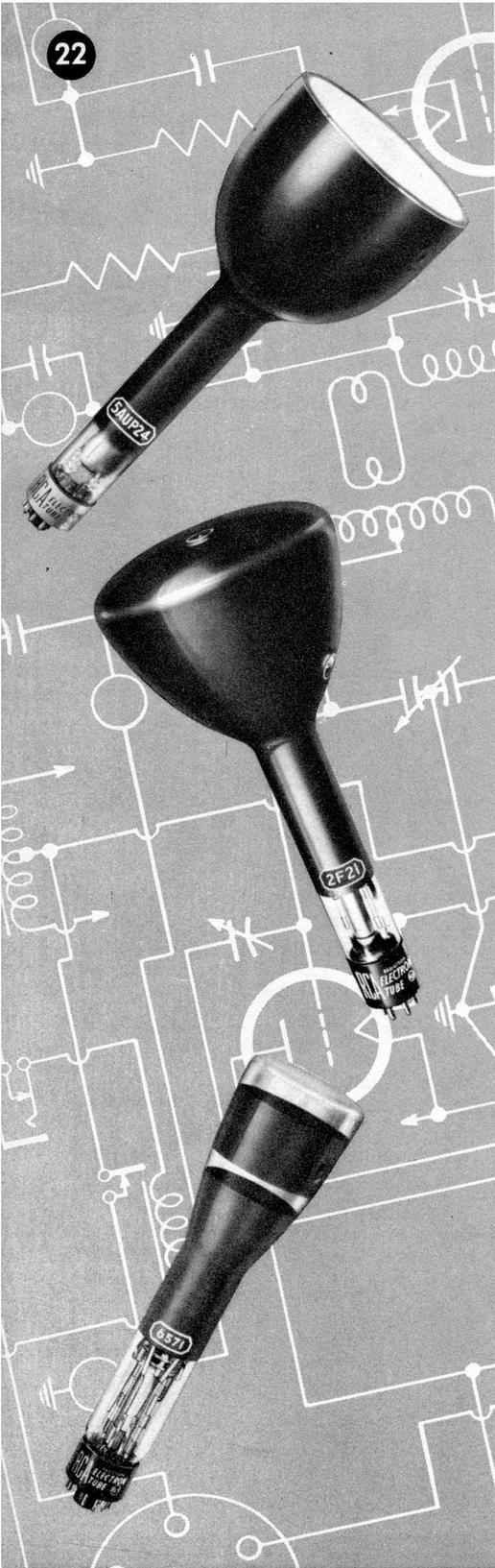
TEST AND MEASURING EQUIPMENT

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

RCA VICTOR SERVICE PARTS

For RCA Phonographs, Radios, and TV Receivers.

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.

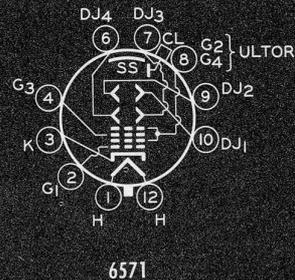
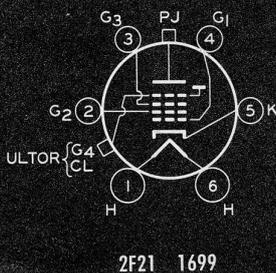
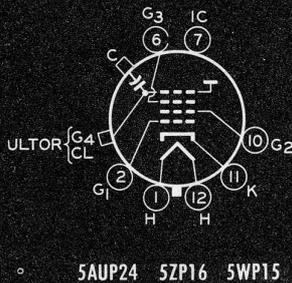


CATHODE-RAY TUBES, MONOSCOPES, STORAGE TUBES

RCA Type	Description ^Δ
FLYING-SPOT CATHODE-RAY TUBES	
5AUP24	5" electrostatic-focus, magnetic-deflection type. Intended primarily for use as a scanner in a color video-signal generator. Features useable radiant energy output over the visible spectrum, extremely short persistence, high resolution, aluminized screen, and external conductive coating. Recessed small cavity cap. Small-shell duodecal 7-pin base.
5WP15	5" electrostatic-focus, magnetic-deflection type. Intended primarily for use as a scanner in a video-signal generator. Features aluminized screen, extremely short persistence, and external conductive coating. Recessed small cavity cap. Small-shell duodecal 7-pin base.
5ZP16	5" electrostatic-focus, magnetic-deflection type. Intended primarily for use as a scanner in a high-quality video-signal generator. Features extremely short persistence, high resolution, aluminized screen, and external conductive coating. Recessed small cavity cap. Small-shell duodecal 7-pin base.
MONOSCOPES	
2F21	5" electrostatic-focus, magnetic-deflection type with Indian Head Pattern. For supplying signal to test video performance of television transmitters and receivers. Two recessed small ball caps. Long medium-shell small 6-pin base.
1699	Custom-built type like the 2F21 except that its pattern is individually styled to customer requirements.
COMPUTER STORAGE TUBE	
RCA Type	Description ^Δ
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.

^Δ All of these types have a heater rating of 6.3 volts and 0.6 amp.

*For Key to Base and Envelope Connection Diagrams,
see page 2.*



CATHODE-RAY TUBES, MONOSCOPES, STORAGE TUBES

Maximum Dimensions		Min. Useful Screen Diam. inches	Maximum Ratings♦♦					Operating Conditions					RCA Type	
			Final High-Voltage Electrode		Grid-No. 3 Volts	Grid-No. 2 Volts	Grid-No. 1 Bias Volts†	Final High-Voltage Electrode⚡ Volts	Grid-No. 3 Voltage for Focus Approx.	Grid-No. 2 Volts	Maximum Grid-No. 1 Volts for Visual Cutoff‡	Deflection Factor Volts DC/in.		
Overall Length inches	Envelope Diam. inches	Post-Ultor Volts	Ultor Volts	DJ1 & DJ2								DJ3 & DJ4		
FLYING-SPOT CATHODE-RAY TUBES														
12 $\frac{7}{8}$	5 $\frac{1}{8}$	4 $\frac{1}{4}$	—	27000	6000	350	-150	27000	4600 to 5800	200	-100	Deflection Angle, 40° approx.	5AUP24	
11 $\frac{13}{16}$	5 $\frac{1}{8}$	4 $\frac{1}{4}$	—	27000	6000	350	-150	20000	3000 to 3800	200	-98	Deflection Angle, 50° approx.	5WP15	
14 $\frac{3}{4}$	5 $\frac{1}{8}$	4 $\frac{1}{4}$	—	27000	7000	350	-150	27000	5500 to 7100	200	-100	Deflection Angle, 40° approx.	5ZP16	
MONOSCOPES														
12 $\frac{11}{16}$	5 $\frac{1}{16}$	2 $\frac{9}{16}$ x 3 $\frac{1}{16}$ °	—	1500	Resolution Capability (with full scanning), 500 TV lines. Pattern-Electrode Signal Current (peak-to-peak), 0.3 to 0.7 μ amp.							2F21		
For additional data, refer to type 2F21.													1699	
COMPUTER STORAGE TUBE														
Maximum Dimensions		Maximum Ratings♦♦					Typical Operating and Storage Characteristics					RCA Type		
Overall Length inches	Envelope Diam. inches	Collector Volts π	Ultor Volts	Grid-No. 3 Volts	Grid-No. 1 Bias Volts†	Ultor Volts §	Deflection Factor		Storage Surface(SS) Boundary (in deflection volts)		Max. Blemish Factor*		Spill ϕ	
							DJ1 & DJ2 γ v dc/in.	DJ3 & DJ4 v dc/in.	DJ1 & DJ2 Direction	DJ3 & DJ4 Direction		At center of SS [▲]	At mid-point on each side SS boundary [▲]	
11 $\frac{3}{4}$	3 $\frac{1}{16}$	150	2500	1000	-200	2500	97.5 to 133	89 to 122	$\pm 109^*$	$\pm 100^*$	0.5	8 max. volts	10 max. volts	6571

■ The "ultor" is the electrode to which is applied the highest dc voltage for accelerating the electrons in the beam prior to its deflection.
♦♦ Design-center values.
† Positive bias value = 0 volts, positive peak value = 2 volts.
‡ For visual cutoff of undeflected focused spot.
 π Difference between collector voltage and ultor voltage.
 γ DJ1 and DJ2 are deflecting electrodes nearer storage surface.
* Blemish factor is defined as the factor by which the normal positive signal is reduced by the blemish.

° Pattern size, approximate.
* Direction from position of undeflected focused beam.
§ For ultor voltage shown other typical voltages are:
Collector voltage = 2375 to 2625 volts.
Grid-No. 3 Voltage = 500 to 700 volts.
Max. Grid-No. 1 Voltage for Beam-Current Cutoff = -60 volts.
▲ Determined for double-dot pattern under conditions involving 255 references to "spill" element and one reference to "test" element. Separation between storage elements in either the DJ1-DJ2 or DJ3-DJ4 direction in terms of deflection voltage.

ϕ Spill is indicative of the amount of binary information that can be stored by the tube. The storage capability is determined by the separation between two storage elements at which the signal from one element is changed by no more than a specified amount after repeated references to the other element. The separation is measured, in terms of deflection voltage, when the amplitude of the negative signal of the "test" element has decreased to 50% of its maximum negative amplitude. The maximum negative amplitude is determined by separating the two elements far enough to eliminate the effects of secondary electron redistribution from the "spill" element.

TECHNICAL PUBLICATIONS ON RCA ELECTRON TUBES



● **TUBE HANDBOOK—ALL TYPES HB-3** (7 $\frac{3}{8}$ " x 5")—The bible of the industry—contains over 3100 pages of loose-leaf data and curves on all RCA receiving tubes including kinescopes, power tubes, cathode-ray tubes, phototubes, and special tubes. Four deluxe 4-prong binders imprinted in gold. Available on subscription basis. Price \$13.50* including service for first year. Write to Commercial Engineering for descriptive folder and order form.

● **RECEIVING TUBE MANUAL—RC-17** (8 $\frac{3}{8}$ " x 5 $\frac{3}{8}$ ")—336 pages. Revised, expanded, and brought up to date. Contains the latest receiving tubes, including types for black-and-white and color television applications. Features tube theory written for the layman, application data, Resistance-Coupled Amplifier Section, and several new circuits for high-fidelity audio amplifiers. Features lie-flat binding. Price 60 cents.*

● **RADIOTRON DESIGNER'S HANDBOOK**—4th Edition (8 $\frac{3}{4}$ " x 5 $\frac{1}{2}$ ")—1500 pages. New, enlarged, up-to-date 4th Edition is 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.*

● **POWER AND GAS TUBES FOR RADIO AND INDUSTRY**—Booklet PG-101B (10 $\frac{7}{8}$ " x 8 $\frac{3}{8}$ ")—24 pages. Completely revised and brought up to date. Technical information on 178 RCA vacuum power tubes, rectifier tubes, thyratrons, ignitrons, magnetrons, and vacuum-gauge tubes. Includes terminal connections. Price 20 cents.*

● **RECEIVING-TYPE TUBES FOR INDUSTRY AND COMMUNICATIONS**—Booklet RIT-104 (10 $\frac{7}{8}$ " x 8 $\frac{3}{8}$ ")—20 pages. Technical information on 130 RCA special red tubes, premium tubes, computer tubes, pencil tubes, glow-discharge tubes, small thyratrons, low-microphonic amplifier tubes, and other special types. Includes socket connection diagrams. Price 20 cents.*

● **RECEIVING TUBES FOR AM, FM, AND TELEVISION BROADCAST** Booklet 1275-G (10 $\frac{7}{8}$ " x 8 $\frac{3}{8}$ ")—28 pages. New booklet contains classification chart, characteristics chart, and base and envelope connection diagrams on more than 600 entertainment receiving tubes and picture tubes. Price 25 cents.*

● **RCA PICTURE TUBES**—Booklet KB-106 (10 $\frac{7}{8}$ " x 8 $\frac{3}{8}$ ")—16 pages. Contains characteristics and base connection diagrams for RCA's complete line of picture tubes. Features an interchangeability directory on more than 150 types. Price 20 cents.*

● **INSTRUCTION BOOKLETS**—Complete authorized information on RCA transmitting tubes and other tubes for communications and industry. Be sure to mention tube-type booklet desired. Single copy on any type free on request.

● **RCA POWER-TUBE FITTINGS**—Booklet PTF-1012A (10 $\frac{7}{8}$ " x 8 $\frac{3}{8}$ ")—24 pages. Lists 39 power-tube fittings designed for supporting and cooling power tubes, and illustrates their use with power tubes made by RCA and other manufacturers. Includes exploded-view assembly drawings as well as detail drawings of all fittings. Price 25 cents.*

● **HEADLINERS FOR HAMS**—Booklet HAM-103B (10 $\frac{7}{8}$ " x 8 $\frac{3}{8}$ ")—4 pages. Technical information and terminal connection diagrams for 48 RCA "HAM" PREFERENCE TYPES: modulators, class C amplifiers and oscillators, frequency multipliers, rectifier tubes, thyratrons, cold-cathode (glow-discharge) tubes, and cathode-ray tubes. Single copy free on request.

● **TUBE PICTURE BOOK**—Booklet TPB-1 (10 $\frac{7}{8}$ " x 8 $\frac{3}{8}$ ")—16 pages. Collection of photographs and cutaway drawings of representative tube types. Prepared especially for use by students. A visual aid for the details of tube construction. Price 25 cents.*

● **RCA PREFERRED TYPES LIST**—Bulletin PTL-501-B (10 $\frac{7}{8}$ " x 8 $\frac{3}{8}$ ")—4 pages. Lists RCA Preferred Tube Types, both receiving and non-receiving, by function. An aid to equipment designers in the selection of tube types for new equipment design. Single copy free on request.

● **RCA INTERCHANGEABILITY DIRECTORY OF INDUSTRIAL-TYPE ELECTRON TUBES**—Booklet ID-1020A (10 $\frac{7}{8}$ " x 8 $\frac{3}{8}$ ")—16 pages. Lists more than 2000 type designations of 26 different manufacturers arranged in alphabetical-numerical sequence; shows the RCA Direct Replacement Type or the RCA Similar Type, when available. Price 20 cents.*

● **PHOTOTUBES BOOKLET—PT-20R1** (10 $\frac{7}{8}$ " x 8 $\frac{3}{8}$ ")—16 pages. Phototube theory, data on 15 types, curves and circuits for light-operated relays, light measurements, and sound reproduction. Single copy free on request.

● **RCA PHOTSENSITIVE DEVICES AND CATHODE-RAY TUBES** Booklet CRPD-105 (10 $\frac{7}{8}$ " x 8 $\frac{3}{8}$ ")—24 pages. Contains technical information on 109 RCA tubes including single-unit, twin-unit, and multiplier phototubes; flying-spot tubes; monitor, projection, transcriber, and view-finder kinescopes, and storage tubes. Price 20 cents.*

● **TV SERVICING**. Booklet TVS-1030 (10 $\frac{7}{8}$ " x 8 $\frac{3}{8}$ ")—48 pages. This new booklet contains a compilation of 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**. Booklet TVS-1031 (10 $\frac{7}{8}$ " x 8 $\frac{3}{8}$ ")—12 pages. This new booklet contains an article by John R. Meagher on solving trouble shooting problems in those hard-to-service television receivers known to service technicians as "tough" sets or "dogs". Emphasizes time-saving component-checking techniques and proper use of test equipment. Price 15 cents.*

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

● **PRACTICAL COLOR TELEVISION, SUPPLEMENT 1**. (11" x 8 $\frac{1}{2}$ ") Contains 36 pages plus fold-out schematic and block diagrams; describes theory, operation and servicing of latest large-screen color TV receiver utilizing RCA-21AXP22 color kinescope; includes 55 black-and-white and color illustrations including schematic and block diagrams, waveforms, and explanations of new color circuits and adjustments. Price 75 cents.*



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

Copies of the publications listed above may be obtained from your RCA Tube Distributor, or direct from Commercial Engineering, Tube Division, Radio Corporation of America, Harrison, New Jersey.