HICKOK

ELECTRICAL and ELECTRONIC TEST INSTRUMENTS

. . . . Choice of the Experts

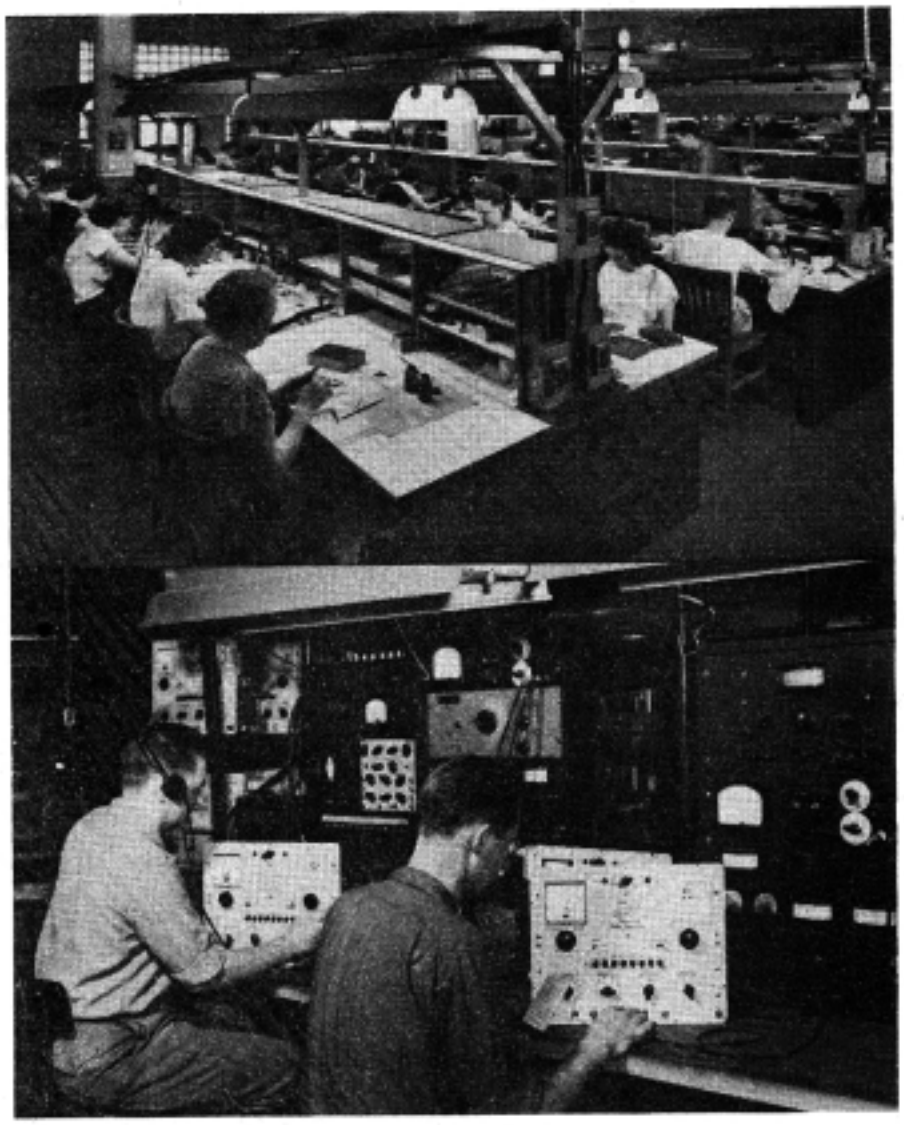
For more than forty-five years, HICKOK has developed and produced only the highest quality electrical-electronic test equipment and indicating instruments. Through the years. the HICKOK line of AM, FM, TV and industrial testers has grown to be the most complete available.

Every HICKOK instrument, including electrical indicating meters, is expertly engineered and exactingly manufactured within the company's own plants. These HICKOK instruments are built by experts — for expert engineers and technicians.

Thoroughly designed and precisely assembled, HICKOK equipment provides the means for increased speed and quality in the serviceman's work.

Practical engineering design is foremost in the reasons why HICKOK equipment is the leading choice of the vast majority of service engineers and technicians who want unexcelled accuracy and dependability with speed and versatility in the instruments that are the mainstay of their professions.

you can depend on HICKOK



Through qualified and experienced engineering skill, HICKOK has built a universal acceptance for its originality in practical electronic test equipment design. Vacuum Tube Testers, Signal Generators, Vacuum Tube Voltmeters and Oscilloscopes have gained for the company a user's rating of Unexcelled Quality, Accuracy and Dependability.

The HICKOK Laboratories are unquestionably credited with perfecting the first . . .

- Commercial Dynamic Mutual Conductance Tube Testers — now universally recognized by tube manufacturers and professional engineers as providing the true test of a vacuum tube.
- Electrical indicating instrument with internal pivot movement.
- The 250-degree arc angle instrument to provide a scale length 2½ times as long as conventional small panel-mount instruments.
- FM generator.
- Complete FM 'scope.
- Practical Television sweep-alignment-marker generator.
- Television linearity pattern generator.
- Complete Video generator.
- Accurate all-band airline generator.
- And many other electrical and electronic instruments now recognized as leaders in the industry.

Whenever you are considering the purchase of test equipment may we suggest that you compare HICKOK with any other — feature by feature. With such a comparison we are confident that you will choose HICKOK.

HICKOK

TUBE TESTERS

DYNAMIC MUTUAL CONDUCTANCE *TUBE TESTER*

Most Accurate Engineers' Laboratory Model

Tests Tubes Per Tube Handbooks and JAN Specifications

Model 700: For precise laboratory measurements of the most important vacuum tube characteristics, Transconductance (Mutual Conductance). With this Tube Tester it is possible to duplicate the results found in tube manuals. This instrument places a separate voltage on each element of the tube. These voltages can be varied and measured by means of separate variable rheostats and meters in each circuit. A.C. ripple has been completely filtered out of the plate, screen and grid circuits.

In addition to providing accurate measurements of Mutual Conductance, it is possible to study the behavior of various tubes when used in non-conventional and special types of circuits. Amplification Factor and Plate Resistance may be obtained from the test results.

The HICKOK Model 700 may be operated in either of two ways. First, by making use of alternating current null methods of measurement in which capacitance and resistance errors have been eliminated; and second, by direct reading on a meter. The Null Method of making measurements on the tube is the most accurate and is the one which is recommended where sufficient time for the test is available.

Complete with all leads and accessories. Attractive and sturdy case.

Model 700

TECHNICAL FEATURES...

1. Micromho ranges are available as follows: 600, 1500, 3000, 6000, 15,000, 30,000 and 60,000 micromhos.
2. Four separate signal voltages are available, 1.0 volts, 0.5 volts, 0.1 volt and 0.05 volts.
3. Plate voltage supply is continuously variable from zero to 300 volts. An individual D.C. voltmeter in the plate circuit reads plate voltage at all times.
4. Screen voltage is continuously variable from 0 to 300 volts. This is metered by means of a separate D.C. Voltmeter in the screen circuit.
5. The control grid voltage is continuously variable from 0 to 75 volts. This voltage is measured by means of a separate D.C. Voltmeter in the grid circuit. Provision is made to make bias either negative or positive. Suppressor can be used as control grid if desired.
6. An extra negative circuit is provided for holding unused tube elements negative while test is being made on other elements.
7. Provision is made for testing tubes under self-bias conditions when required by that particular tube or when such information is desired.
8. Filament voltage may be applied to the tube up to 117 volts A.C. The separate A.C. Voltmeter in this circuit measures the voltage applied to the filament at all times. This voltage is continuously adjustable. A two-range filament current meter is provided — enabling the measurement of filament current up to 8 amperes.
9. A D.C. Milliammeter is provided for measuring plate current, screen current, or cathode current. This reads from 0 to 150 ma. and may be switched into the three circuits for this purpose.
10. A separate D.C. Microammeter is mounted in the control grid circuit to read grid current, if and when it exists.
11. Amplification factor can be easily calculated from values obtained from the meter readings. Other factors may be similarly calculated.
12. Provision is made for testing tapped filaments either in series or in parallel.
13. Provision is made for adjusting to the electrical center of filament type tubes.
14. Twin tube sections may be tested either singularly or in parallel.
15. Screen grid tubes can be connected as triodes or tetrodes, etc., as may be desired. Switching arrangement is provided for this purpose.
16. A built-in power supply is included with the instrument providing thoroughly filtered D.C. on plate, screen, and control grid.
17. A voltage adjustment with an accurate A.C. meter in the circuit is provided to insure exact signal voltage and correct phasing.
18. Designed and calibrated for 60 cycles, 110 to 120 volts operation, 150 watts. Calibration for other frequencies and voltages available.
19. Approximate size — 8" D. x 20" W. x 29" L. Approximate 70 lbs. net, 90 lbs. shipping.

Model 7001: Null Reading Apparatus is self-contained in a small case placed alongside the Model 700 tester. It consists of a voltage supply (source from the Model 700 to assure correct phasing), a sensitive A.C. Galvanometer, a calibrated resistor, and an accurate A.C. Voltmeter. It is connected directly into the plate circuit of the tube under test by binding posts on the panel of the Model 700. The grid-signal-produced-component of plate current is balanced by an equal and opposite current applied to the plate from the power supply through the calibrated resistor. The reading of the Micromho Meter at the top of the panel is proportional to the Transconductance of the tube, and is therefore calibrated in Micromhos. The effect of the Null Reading Method is to reduce resistance in series with the plate to zero, thereby assuring the highest accuracies obtaineble.

Model 7001: for obtaining bridge type null readings of 1½% accuracy. 8" D., 8" W., 13½" L.

Model 7001

HICKOK

TUBE TESTERS

DYNAMIC MUTUAL CONDUCTANCE *TUBE TESTERS*

Model 539B

MOST ACCURATE LABORATORY PORTABLE

Model 539B: Most complete and most accurate Dynamic Mutual Conductance portable tube tester. Designed to furnish professional accuracy for laboratory design engineers and field engineers in all phases of electronics.

5 Micromho ranges: 60,000, 30,000, 15,000, 6,000, 3.000 and 600 Micromhos. Plus Rectifier Diode Range and Voltage Regulator (VR) Range. The 600 Micromho range is especially suited for more accurate testing of subminiature tubes.

Model 539B: Illustrated at left, strong portable carrying case with detachable cover. Case is attractively covered with durable black leatherette 16-¾" W., 18-⅜" L., 7-½" D. 28 lbs. 110-125 VAC. 40 watts.

SPECIFICATIONS

Choice of four AC signals: .25, .5, 1 or 2.5 Volts may be applied to the grid of the tube under test (in addition to the DC bias on the grid).

Separate DC voltmeter measures grid bias. Vernier adjustment of grid bias control permits accurate setting of the grid voltage. Separate AC meter measures line voltage at all times.

Voltage Regulator Test—Tests VR tubes under actual operating conditions—gives reading of striking voltage, regulating voltages and current at the same time.

Separate voltages (rectified DC) applied to each element of the tube.

Reads leakage on the Ohmmeter scale of the Micromho meter (to 50 Megohms). Also, has the regulator neon test lamp for a quick "good-bad" check.

Tests Selenium Rectifiers and Germanium Diodes.

Jacks are provided for measuring filament current by exterior means.

Self bias may be applied to the grid of the tube under test by a switching arrangement on the tester.

Permits matching of tubes such as 6SN7 when used in multivibrator circuits.

Tests future life of the tube by measuring the efficiency of the cathode. Tests tube for noise.

Tests the gas content. Gas test measures control grid current, thereby detecting any minute amount of gas in the tube.

Provision for testing tubes at normal plate and screen volts or at low plate and screen volts.

Model 750

PORTABLE RADIO-TV and COMMUNICATION TECHNICIANS' MODEL

Model 750: Accurately tests all tubes normally encountered in all phases of Electronic work including the latest ruggedized type tubes used by Airlines, Hearing Aid Tubes, Black and White and Color Television tubes, etc., and the new Series Heater-String (600 M. A.) tubes.

Model 750: Illustrated at the left, strong, portable carrying case with detachable cover. Case is attractively covered with durable black leatherette. 16-¾" W., 18-⅜"L., 7-½" D. 24 Lbs. 110-125 V. A. C., 40 watts.

SPECIFICATIONS

Micromho ranges on the dial of the large HICKOK 5" Meter: 0-1500, 0-3000, 0-6000, 0-15,000, 0-30,000 micromhos. Also, two "Replace-Good" ranges.

Tests voltage regulator (VR) tubes in accordance with any manufacturer's handbook data or by use of the up-to-date roll chart furnished.

a. Accurate DC Voltmeter readings up to 200 volts.
b. Accurate DC Milliammeter Measurements up to 100 milliamperes.
— Both on the Micromho Meter.

Two plate and screen voltages provided — Normal and Low — controlled by a Selector switch. The Low range is for use with subminiature tubes and for other tubes requiring a low range of plate and screen volts.

New 0-1500 Micromhos range for increased accuracy in testing sub-miniature tubes.

Four signal voltages provided — as low as .25 volt.

Two "red-green" ranges on the Micromho Meter scale offer easier customer readings.

Quick and easy scale selection — The Chart identifies the range to be read by the letters from "A" through "H" inclusive. A simple selector switch carries the same letters and identifies the various ranges.

Short test — Recent HICKOK engineering achievements have provided a highly accurate short test which will show up even the slightest heater cathode leakage condition of a vacuum tube.

Line adjust knob automatically indicates wether the line voltage is low or high.

Permits matching of tubes such as 6SN7 when used in critical circuits.

Forecasts the future life of the tube under test. Tests the gas content of the tube. Tests for tube noise.

Bias and line fuses prevent accidental damage. Chart arrangement makes for quickest tube selection. The Tube's location on the chart is indicated by a key type number stamped beneath the chart openings.

HICKOK

TUBE TESTERS

RADIO *and* TELEVISION TECHNICIANS' SMALL SIZE MODELS

DYNAMIC MUTUAL CONDUCTANCE IN A HANDIER, PORTABLE SIZE

Model 600A

Model 600A: New lighter weight portable. Dynamic Mutual Conductance in a radio and TV technicians' popularly priced model. Smaller, handier, but built to the high HICKOK standard for accuracy and dependability. A very popular model for on-location or shop-bench servicing. The 600A may also be used for lab. and industrial applications.

Model 600A, illustrated at the left. Strong portable carrying case with detachable cover. Case is attractively covered in durable, dark red leatherette. 16¾" W., 11¾" L., 7½" D. 16 lbs. net, 21 lbs. shipping weight. 110-120 V.A.C. 40 watts.

HICKOK testers remain up to date. . . . Periodically revised roll-charts, covering new tubes, are available to all registered owners of HICKOK Tube Testers.

SPECIFICATIONS:

Scale readings in micromhos for most accurate tube evaluation. A.C. Signal 2.5 volts: 0-3000, 6000, 15,000 micromhos.

Contains the HICKOK Tube Gas Test.

Acclaimed by the experts as a must for accurate television servicing.

New, large 5" meter scale is easier to read more accurately.

Detects more weak tubes with professional accuracy

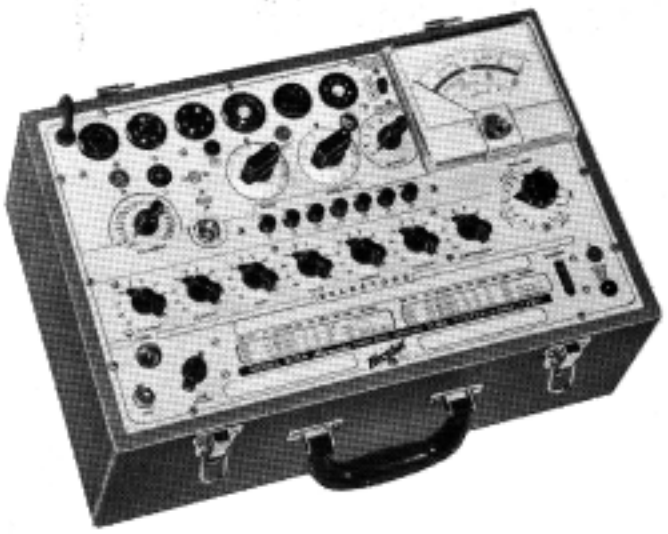
Tests tubes under simulated operating conditions.

Tests the latest tubes including miniature and sub-miniature types.

New bias fuse prevents accidental damage to bias potentiometer.

Contains the new HICKOK improved "Short Test."

ALL-PURPOSE TUBE *and* SET TESTER IN A HANDIER, PORTABLE SIZE



Model 605A

Model 605A: New, lighter weight portable. Radio and television technicians' popularly priced, all-purpose tube and set tester with built-in 20,000 ohm per volt D.C. multimeter panel. Designed for speedy, highly accurate radio and TV servicing.

Built to the high HICKOK quality standard throughout. Provides Dynamic Mutual Conductance circuits with tube readings in micromhos. A popular technicians model for on-location servicing. Smaller, lighter, but built entirely with highest quality components for accuracy and dependability.

Excellent for leakage tests of electrolytics, and checks for hum in any stage of receivers. Built with a minimum number of jacks. Ranges are selected with a rotary master switch. Test leads supplied.

Model 605A, illustrated at the left. Same case as Model 600A, above 17 lbs. net, 22 lbs. shipping weight 110-120 V.A.C. 40 watts.

SPECIFICATIONS:

Contains all features of the Model 600A listed above, including the HICKOK standard built-in roll chart and new HICKOK improved "Short Test."

New, large 5" meter scale is easier to read more accurately. Attractive lucite window has static-proof coating.

Accurate, built-in multimeter panel measures:
Volts: 0-1000 A.C. — D.C. in four ranges each.
Ohms: 20,000 per volt D.C.
1,000 per volt A.C.

Resistance: 0.1 to 100 megohms. (Center scale 25, 2500, 500,000 ohms.)

Inductance: to 70 henries. (By use of conversion chart furnished).

Capacitance: 50 microfarads, 5 microfarads, as low as .001 microfarads.

Current: D.C.; 10, 100, 500 MA.

Decibels: —10 to +50.

New bias fuse prevents accidental damage to bias potentiometer.

HICKOK

TUBE TESTERS

DYNAMIC MUTUAL CONDUCTANCE IN A SMALLER COUNTER MODEL

Model 533AC, a lower cost dealer's counter model. Attractively designed to set on the counter and increase your tube sales. Highly accurate Dynamic Mutual Conductance circuits. Encourages customers to bring their tubes in where they can see the actual test. If customers' tubes check "OK" you have an excellent opportunity to invite him to bring his receiver in for a thorough check of all its circuits. With the 533-AC you will build customer confidence, increase tube sales and promote your complete radio and TV service.

Model 533AC, illustrated at the left. Satin finish aluminum panel. Beautifully styled, blue enameled steel case. 17½" W., 18½" L., 6" H. 23 lbs. net, 30 lbs. shipping weight. 105-125 V.A.C. 40 watts.

Model 533AC

SPECIFICATIONS:

Dual-scale meter provides readings in micromhos for the technician.
A.C. Signal 2.5 volts: 0-3000, 6000, 15,000 micromhos.
Quick, impressive, accurate, and dependable.
Detects more weak, ordinarily passable tubes.
Contains the HICKOK Tube Gas Test and a circuit for accurate forecast of future tube life.
Simple to operate.
Contains all necessary tube information on a handy built-in roll chart.
Tests tubes under simulated operating conditions.
Tests all the latest tubes including television.
Large 5" easy-to-read meter scale and calibrated GM circuit provide increased accuracy in testing today's newer tubes.
Contains the new HICKOK improved "Short Test."

PROFESSIONAL RADIO-TV TECHNICIANS PORTABLE MODEL

Model 533AP: Radio, television and communication technicians' portable model with true Dynamic Mutual Conductance circuits pioneered by HICKOK. Acclaimed by the experts as the only true test of a tube.

Model 533AP, illustrated at the left. Strong, portable carrying case with detachable cover. Designed for on-location or shop-bench servicing. Case is attractively covered with durable black leatherette. 16¾" W., 18⅜" L., 7½" D. 23 lbs. net, 30 lbs. shipping weight. 110-130 V.A.C. 40 watts.

Model 533AP

SPECIFICATIONS:

New Bias Fuse prevents accidental damage to bias potentiometer. New lucite meter window has static-free coating.
Tube readings in micromhos — 0-3000, 6000, 15,000.
Tests tubes under simulated operating conditions.
Contains the HICKOK Tube Gas Test and Tube Noise test.
Incorporates the new test feature that forecasts future life of a tube.
Larger, 5" easy-to-read meter scale and calibrated GM circuit provide increased accuracy in testing today's newer tubes.
Tests all the latest tubes including miniature and subminiature types.
An improved "Short Test" is incorporated into the design of this tester.
Completely built of highest quality components for lasting accuracy and dependability.
Most valuable for accurate matching of tubes in television servicing.

HICKOK

TUBE TESTERS

IN AN ATTRACTIVE DISPLAY MODEL

MOST EFFECTIVE TUBE SALESMAN

Model 533ADM. Dealers who use this tube tester enthusiastically report that it is the best salesman they ever used.

Customer convincing, the 533ADM contains a huge, illuminated nine-inch meter that clearly and accurately shows condition of the tube under test. Dual-scale meter provides micromho readings for the technician, and a multi-color "Good," "Replace," scale for easy customer interpretation across the counter.

Contains the HICKOK Tube Gas Test, and a circuit for accurate forecast of future tube life.

Detects more weak tubes.

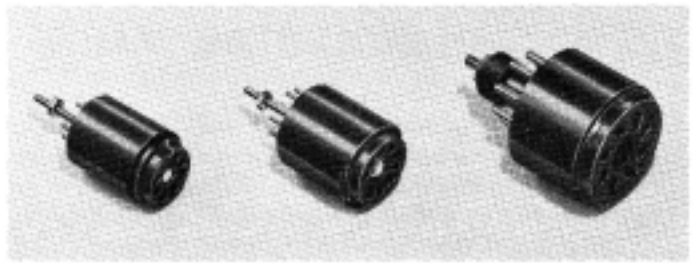
Tests all the latest tubes including television.

AC Signal 2½ Volts: 0.3000, 6000, 15,000 micromhos.

Model 533ADM, illustrated at the left. 9" chrome meter case, satin finish aluminum panel. Strong, attractive, enameled steel case. 26½" H., 17" W., 11" D. 33 lbs. net, 43 lbs. shipping weight. 110-130 V. A.C. 65 watts.

Model 533ADM

TUBE TESTER
SOCKET ADAPTERS



7-Pin . . . 8-Pin . . . 9-Pin

- Easy to permanently install.
- Add years more life to your tester.
- Eliminate wear on tube sockets in your HICKOK tube tester.
- Available as a set of 3 most popular types from your Radio-TV Parts Jobber.

Set of three most popular types.

MODEL 590

TV PICTURE TUBE TESTER

• Lights TV picture tube . . . Places actual raster on the face of the tube. NO OTHER TESTER DOES THIS. • Tests all sizes of electromagnetically deflected TV picture tubes . . . Both electromagnetic and magnetic focus . . . Both glass or metal shells. • Has definite and accurate rejection limits. Actually measures light output. • Dual fused for full protection. Shorting switch arrangement prevents shock hazard. • High voltage . . . 7000 volts DC is more than enough to illuminate aluminized screens. Horizontal sweep frequency is 15,750 cps nominal sawtooth; vertical is 60 cycle sinusoidal. • When used with any standard HICKOK Dynamic Mutual Conductance Tube Tester, 590 will also accurately check for emission, shorts, gas content and grid control. • Portable case 7½" H., 19½" W., 18" D. 25 lbs. net; 33 lbs. ship. 105-125 V., 50-60 cycles, 60 watts. Single and double ion traps, test leads and protective goggles are included.

TUBE TESTER ROLL CHARTS

HICKOK periodically issues revised tube reference charts to include the data on all tubes available at time of each printing. Announcement of the availability of each new chart is sent to all registered owners of HICKOK tube testers. This is another HICKOK service designed to help you maintain the speed and accuracy necessary in your profession. $1.00 delivers up-to-date chart to you.

HICKOK

OSCILLOSCOPES

PROFESSIONAL ENGINEERS'

Model 770

Laboratory OSCILLOSCOPE

Model 770: A new 5-inch oscilloscope designed for outstanding versatility in general purpose, industrial laboratory and television applications. This equipment provides unusually wide range without sacrifice to sensitivity, and is completely built to the highest specifications for accuracy and dependability. The 770 has been thoroughly field tested and proven to provide exceptionally useful service features in the observation of transient or regular recurring phenomena.

The DC to 5 MC response with a 10 M.V. RMS per inch sensitivity quickly identifies this 'scope as unusual value in a class by itself.

SPECIFICATIONS

WIDE BAND AMPLIFIER: Frequency response DC, to 5mc (down 3db).

VERTICAL DC AND AC AMPLIFIER: 10 M. V. RMS per inch with band width switch in narrow position. 35 M. V. RMS per inch in wide position. No jitter, even with high gain amplifiers. Maximum Input Potential: 1000 volts peak. Input impedance: 2.2 megohms, 50 mmf. Excellent stability and minimum microphonics and drift.

FREQUENCY RESPONSE: 0 to 2,500,000 cycles, 3 db down, in narrow position. 0 to 5,000,000 cycles, 3 db down, in wide position. (Better than standard I.R.E. Roll-Off characteristics.)

HORIZONTAL AMPLIFIER: Deflection Factor — Full Gain Setting: 75 millivolts RMS per inch. Frequency Response: 0 to 500,000 cycles, 3 db down. Maximum Input Potential: 1000 volts peak. Input Impedance: 2.2 megohms, 50 mmf.

BUILT-IN CALIBRATING VOLTAGES: Peak-to-Peak; 100, 10, 1, .01 volts.

TEST SIGNALS: Line Frequency: 3 volts RMS per inch. Sawtooth: Available from front panel. Direct connection to both horizontal and vertical deflection plates.

SHOCK MOUNTED: Provides minimum microphonics due to external mechanical vibrations.

SHIELDED: Mu Metal magnetic shield gives maximum protection to the cathode ray tube against effects of external magnetic fields.

ILLUMINATED, CALIBRATED SCREEN: Backed with a green filter reduces reflections caused by incidental illumination — ideal for accurate qualitative and quantitative measurements.

LINEAR TIME BASE: Recurrent and Driven Sweep: 2 cycles to 30,000 cycles. Provision for external capacities for slower frequency sweeps of 10 seconds and slower. Sweep Speeds: Faster than 0.75 inch per micro-second. Television fixed frequencies; 30 and 7,875 for observing blanking and sync waveforms in the horizontal and vertical circuits of TV receivers. Synchronization at line or 2-times line frequency.

EXPANDABLE SWEEP: 6 times expansion, or equivalent to 30 inches of screen.

LINE FREQUENCY PHASING CONTROL: Zero, plus or minus 90° phase shift.

"Z" AXIS MODULATION: Capacitively coupled to the grid of the cathode ray tube. 2 volts peak-to-peak will blank trace fully at normal intensity.

INTENSITY: Standard Model 770 includes 5ABP1 cathode ray tube with medium persistence screen. High accelerating potentials give excellent intensity for viewing transient waves and high frequencies. Some engineers may prefer a 5ABP11 tube for short persistence, or 5 ABP7 tube for long persistence. Either is available in the Models 770HA (with High Actinic Tube) or 770LP (with Long Persistence Tube) at a slightly higher cost.

STABILIZED: Designed so that sweep lengths and synchronizations are maintained as signal level varies.

DIMENSIONS: Portable steel case, 14" x 12" x 18", 50 lbs. net, 60 lbs. shipping. 105-125 Volts, 50-70 Cycles, 150 Watts. Combination light shield and camera base provided. Furnished complete with leads.

HICKOK

OSCILLOSCOPES

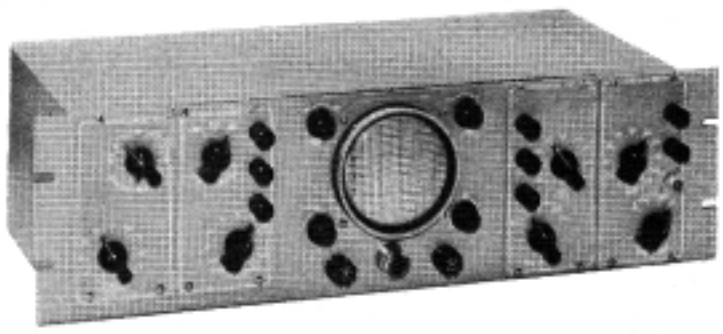
LIGHT WEIGHT 3" PORTABLE OSCILLOSCOPE

Model 385: A new light weight field engineer's portable that incorporates all the latest quality features. Ease of use and dependable design is similar to a model used by the Armed Services. Contains DC Amplifiers, both horizontal and vertical. Frequency coverage to 4MC, 3db down. Both vertical and horizontal sensitivity is .075 RMS volts per inch. Both vertical and horizontal attenuators are fully compensated.

Features unitized construction for quick accessibility to circuitry as well as replaceable circuit sections. Case is shock mounted. Built-in retractable light shield, with CR tube mounted at a 20° angle, facilitates use of the portable model. Terminal board at rear provides direct connection to CR tube elements. This equipment has provision for Z-axis modulation.

Model 385

Also available with shock-mounted, moisture-proof case.



MODEL 385R for RACK MOUNT

The popular rack mount model permits a functional laboratory installation with the same circuit specifications and design features of the portable model excepting that the circuitry is encased in a standard rack mount type case.

Model 385R

SPECIFICATIONS

CATHODE RAY TUBE: 3" Screen, Type 3RP-1.

FREQUENCY RANGE: Vertical Amplifier: DC to 4MC 3db down, with Band Width Switch in Wide position for color burst observation. D.C. to 2 MC, 3db down, with Band Width Switch in 2 MC position for pulse observation. This 2 MC response is in accordance with the I.R.E. Standard Roll-off Specification for television level setting. Horizontal Amplifier: DC to 500 KC, 3db down. Sweep Circuit Oscillator: 3 cycles to 50 KC.

INPUT IMPEDANCE: Vertical Amplifier: 2.2 megohms shunted by 25 mmf. Horizontal Amplifier: 2.2 megohms shunted by 25 mmf.

DEFLECTION SENSITIVITY: Vertical Amplifier: .075 RMS Volts/Inch. Horizontal Amplifier: .075 RMS Volts/Inch. Vertical Direct Connection: 17 RMS volts per inch. Horizontal Direct Connection: 25 RMS volts per inch.

POWER SUPPLY REQUIREMENTS: 105-125 volts, 50-1000 cycles. Power consumption is 60 watts at 115 volts.

ACCESSORIES INCLUDED: 4 foot Coaxial Test Cable and 4 foot Ground Lead. Telescopic light shield and ruled plastic screen.

DIMENSIONS: Including carrying case: 6" W, 9" H, 13½" D. 15 lbs. net. Less carrying case: 5½" W, 8" H, 13¼" D. 11 lbs. net. Rack Mount Case: 19" W, 5½" H, 9¼" D. 15 lbs. net.

HICKOK

OSCILLOSCOPES

NEW MODEL 670 OSCILLOSCOPE

Model 670

Accurate, Stable, High Sensitivity with AC and DC AMPLIFIERS

Model 670: The more exacting requirements of today's television maintenance have made it necessary for the service technician to have a good 'Scope. The HICKOK Model 670 is designed with DC amplifiers to provide excellent square wave response — even down to DC.

Many TV receivers are so far out of alignment that extreme 'Scope sensitivity is necessary to properly show the response curve. The 670 provides this extra sensitivity — to 15 MV per inch.

To properly view all TV frequencies a wide band vertical amplifier is necessary. The 670 provides for this need by having a band width useable to beyond 2 MC. Push-pull amplifiers and polarity reversing switches are also new features you will find most useful in the 670.

TECHNICAL CHARACTERISTICS

Deflection Sensitivity:

a.	vertical amplifier	.015 volts (RMS) per inch
b.	vertical direct	12 volts (RMS) per inch
c.	horizontal amplifier	07 volts (RMS) per inch
d.	horizontal direct	13 volts (RMS) per inch

Input Impedance:

a.	vertical amplifier	2.2 megohms—30 mmf
b.	vertical direct	3.3 megohms
c.	horizontal amplifier	1 megohm—35 mmf
d.	horizontal direct	3.3 megohms

Frequency Range:

a. Vertical Amplifier: D.C. to 600 KC, within 3 db. Useful beyond 2 MC; pulse rise time 0.6 microseconds.

b. Horizontal Amplifier: O to 250 KC; pulse rise time 1.2 microseconds.

Sweep Oscillator: 3 to 50 KC.

Power Supply: 105-125 VAC, 50-70 cycles, 65 watts at 115 VAC.

Size: 10" W x 13" H x 18" D. In attractive, steel portable case or matched set "D" case.

Weight: 27 lbs. net; 35 lbs. ship.

TECHNICAL FEATURES:

Highest practical sensitivity: 0.015 (15 millivolts) RMS per inch.

Demodulator circuit for viewing modulation on RF signal.

Recurrent linear sweep; 3 cycles to 50,000 cycles.

Reversing switches for both horizontal and vertical deflection.

Fixed sweep frequency for horizontal and vertical wave forms to TV receivers.

Both negative and positive synchronizing.

Line phasing control (approximately 180°).

Wide band vertical amplifier, useable beyond 2 MC.

Direct coupled, balanced (push-pull) amplifiers for both vertical and horizontal deflection. Provision for Z-axis modulation.

Permits the study and analysis of wave forms, and other electric and magnetic phenomena. Excellent square wave response.

Provides for the visual testing and alignment of amplitude and frequency modulated receivers, as well as television equipment when used with a frequency modulated RF oscillator or sweep generator.

RACK MOUNT 'SCOPE

with AC-DC AMPLIFIERS and Illuminated, Calibrated Screen

Model 670R

Same technical specifications as Model 670 listed above.

Model 670R: In sturdy steel, rack mount design in attractive dark gray finish panel with white lettering. Case size: 8¾" H., 19" W., 18" D., 27 Lbs. net, 35 Lbs. shipping. Test leads are included.

Here is a high quality Oscilloscope that is engineered to meet the more exacting requirements of today's electronic eqvipment maintenance as well as provide a modern tool for the electronic engineer in design work. Identified as the Model 670R, this scope has D.C. amplifiers for excellent square wave response — even down to D.C.

Push-pull vertical amplifiers, polarity reversing switches, horizontal attenuator and Z-axis (intensity modulation post) on front panel for easier connection of blanking or intensity voltages, are additional time-saving features that make this scope a most practical instrument. Attractive dark gray panel with white lettering provides a professional type case that fits standard rack mount panels which are rapidly growing in popularity.

High Sensitivity: 0.015 (15 millivolts) RMS per inch. Demodulator circuit for viewing modulation on RF signal . . . Recurrent linear sweep; 3 cycles to 50,000 cycles. Reversing switches for both horizontal and vertical deflection. Fixed sweep frequency for horizontal and vertical wave forms of TV receivers. Both negative and positive synchronizing. Line phasing control (approximately 180°). Vertical amplifier useable beyond 2 MC. Direct coupled, balanced (push-pull) amplifiers for both vertical and horizontal deflection. Provision for Z-axis modulation. A 3-step attenuator in the horizontal amplifiers circuit operates in conjunction with the vernier attenuator control permits a more accurate adjustment of gain in cases where voltages under question are comparatively high. Permits the study and analysis of wave forms, and other electric and magnetic phenomena. Excellent square wave response. Provides for the visual testing and alignment of amplitude and frequency modulated receivers, as well as television equipment when used with a frequency modulated oscillator or sweep generator.

HICKOK

OSCILLOSCOPES

WIDE BAND . . . HIGH SENSITIVITY

Technicians'
5" OSCILLOSCOPE
WITH ILLUMINATED, CALIBRATED SCREEN

Model 675

Model 675: Here is a new 5-inch scope that provides all the late design features to permit unusual accuracy in servicing present-day electronic equipment . . . including color TV receivers. This instrument features practical engineering advantages heretofore found only in much higher priced equipment.

The illuminated, calibrated screen with astigmatic focus provides a new standard in undistorted trace detail. The stability of this equipment plus the many definitely new circuit innovations provides a technician's scope that will rival the features of many high-priced engineer's models. The unusually wide range of the Model 675 is not achieved at the expense of sensitivity. Check the specifications listed below, and then see your Radio-Electronic Parts Jobber for an actual demonstration of this high quality though moderately priced scope.

SPECIFICATIONS

VERTICAL AMPLIFIER: Frequency Response: 1 CPS to 4.5 MC (within 3db). Flat through the Color Burst Frequency (3.58MC). Pulse Response: Excellent pulse response with a Rise Time of .08 Microseconds. Sensitivity: 20 MV RMS per inch. Vertical Attenuator: Frequency compensated decade steps of 1 to 1, 10 to k, 100 to 1 and 1000 to 1. Gain Control: Non-frequency discriminating 10 to 1 gain control. Trace Reversal: A switch is provided for reversing the polarity of the vertical trace. Deflection: Full screen vertical deflection without low or high frequency distortion. Shock Mounted Amplifiers. Self-contained Voltage Calibrator.

HORIZONTAL AMPLIFIER: Frequency Response: 1 CPS to 450 KC (within 3db). Sensitivity: 250 MV RMS per inch. Horizontal Attenuator: Frequency compensated decade steps of 1 to 1 and 10 to 1. Line Sweep: Phaseable (180°) line frequency signal available. Gain Control: Non-frequency discriminating 10 to 1 gain control. Deflection: Full screen horizontal deflection without low or high frequency distortion.

TIME BASE GENERATOR: Frequency: Frequency coverage from 10 CPS to 100 KC, in four calibrated decade ranges, with vernier control of 10 to 1, as follows:

10 CPS to 100 CPS	1 KC to 10 KC
100 CPS to 1 KC	10 KC to 100 KC

Time Base Expansion: Time base expansion of ten times full screen (40 inches) with complete positioning of expanded trace. Writing Speed: The wide frequency coverage together with expansion will produce writing speeds variable from 25,000 Microseconds per inch (based on 4 inches) or 10,000 Microseconds per CM (based on 10CM) to 0.1 Microseconds per CM based on 100CM).

DISPLAY INFORMATION: The Trace is displayed on a type 5UP1 Cathode Ray tube with a high accelerating potential providing sharp trace detail. Intensity Modulation: Input provided for Intensity (Z-axis) Modulation.

DUAL FUSED: Both B+ and Line are fused for extra protection!

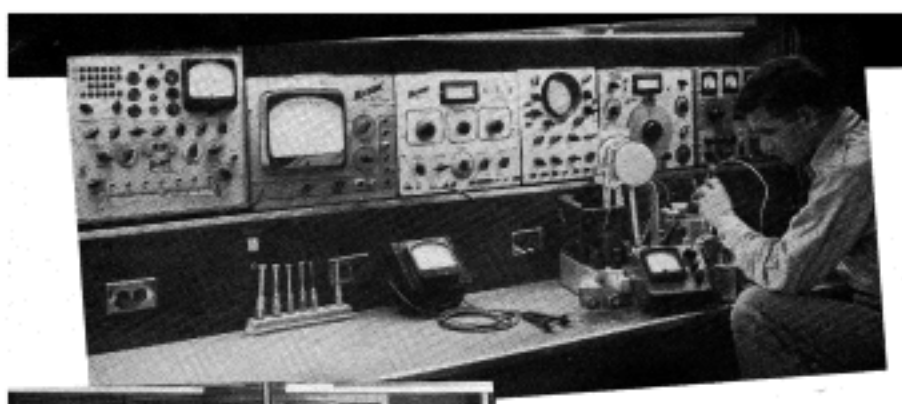
ILLUMINATED, CALIBRATED SCREEN: The Illuminated, Calibrated Screen is backed with a green filter — reducing reflections caused by incidental illumination, thereby permitting accurate qualitative and quantitative measurements. Astigmatic focus control provides a new standard in undistorted trace sharpness.

FOR SPECIAL APPLICATIONS: Some engineers may prefer a 5UP11 tube for short persistence or 5UP7 tube for long persistence observations. Either is available in the Models 675HA (with High Actinic Tube) or 675LP (with long Persistence Tube) at a slightly higher cost.

DIMENSIONS: 13" H., 10" W., 16" D., 35 lbs. Net, 43 lbs. shipping.

POWER SUPPLY REQUIRED: 105-125 Volts, 50-400 CPS.

POWER CONSUMPTION: 125 Watts at 115 Volts. Furnished complete with test leads.



"We use Hickok equipment continually and are well pleased with its operation."
Peter Harding, Mgr., National Radio Company • Washington 12, D. C.

"I am very much impressed with the Hickok Model 650 Video Generator. I feel that you have made a great contribution to the service trade by producing this fine instrument within the reach of all. In my opinion, no self-respecting TV Service Organization should be without one. Hickok has again pioneered with a quality piece of equipment at a price anyone can afford."
D. T. Birch, Instructor, Lively Technical School • Tallahassee, Fla.

"We have the entire shop here of Hickok Test Equipment and the equipment has measured up to all of its claims. I have personally bought the 600 Tube Tester and am very much pleased with it. Hope to soon have the complete line of Hickok for my own use."
Yours for more equipment like Hickok,
Loyd G. Lands, Chapman & Wilhelm Co. • Charlotte 1, N. C.

"I am happy to say that almost all Westinghouse distributors in my territory are equipped with Hickok test equipment. I do not hesitate to recommend Hickok equipment to the many distributor, dealer and service agencies that I come into contact with throughout my travels."
V. E. Dell'Angelo, FSR Westinghouse Electric Corp.

"I recently bought one of your 533A Tube Testers, which I cannot praise enough. It's the best tube tester I have ever used in twenty-three years of servicing."
Walter Demski, Walter's Auto & Radio Supply • McKeesport, Pa.

"Several years ago we purchased a full set of your test equipment comprising tube tester, analyzer, signal generator, and oscilloscope. Might I say what a splendid set of equipment it is and how reliable it has proved on the test bench?"
L. G. Gamble • Christchurch, New Zealand

"I purchased a 600A last Fall, and have found it to be one of the best investments in test equipment that I have ever made. With color TV on the way, no serviceman should be without your 691 Marker Adder — a must for proper I.F. alignment."
R. Lytwyn, Nytyl Electronics Royal Oak, Michigan

"That tester is certainly unbeatable! I have sold four 600A testers for you by just letting service centers use mine for part of one day."
Harold F. Tolles St. Johns, Michigan

"This is to let you know of the great help and satisfaction that I find in having in my radio repair shop a Hickok Tube Tester and a Hickok 288X Oscillator."
Elias Sucar Besmar • Camaguey, Cuba

"The Model 650 now completes my bench which also includes your 288X, 209A and 610A. Results from each instrument equal or exceed your advertising data."
Milton Tewksbury • Bath, N. Y.

"Recently I purchased the Hickok Model 610A and the Model 209A and I don't know how I got along without them before. They sure make my work much easier and quicker."
Anthony J. D'Amico, D'Amico Radio Service • Akron 1, Ohio

"Your Hickok Model 650 Video Generator is the most practical single piece of Television test equipment offered to the TV serviceman. I like every feature about it, and believe me, I have seen it used in every way possible."
J. P. Moore, Service Mgr., Commonwealth Television • Cambridge 38, Mass.

"I have always held the workmanship of your test instruments in highest esteem and now I can say that of your courteous service."
William Fiocca, Weather Bureau Office • Norfolk, Va.

"My present Hickok has been trouble-free for the past 7 years. It is indeed surprising that this old model Hickok, one of your earliest tube testers that I bought over 20 years ago, is still trouble-free."
Adam Tabacek • Chicago 16, Ill.

HICKOK HAS THE MOST COMPLETE LINE OF TOP QUALITY ELECTRONIC TEST EQUIPMENT

No other Test Equipment manufacturer has the popular acceptance of HICKOK. National surveys, year after year, continually show that HICKOK equipment is preferred by more technicians, engineers and dealers than any other make.

The HICKOK factory receives thousands of unsolicited complimentary letters. These actual users of HICKOK equipment are more than satisfied with the quality, accuracy and dependability of HICKOK Testers.

"I used to think I couldn't afford your testers, but after such a dynamic demonstration of dependability, I see now that no Radio or Television serviceman can afford to be without them."
R. L. Walton, Orwell Electric • Orwell, Ohio

"I have one of your Model 600 Tube Checkers, which I consider to be the best tube checker I have used during 30 years of radio servicing."
Keith Crockett • Lees Summit, Mo.

"Am gradually going All-Hickok in my equipment. The latest piece, a 209A, is all that could be desired in a VTVM. To say I am pleased would be a very mild way of saying it."
Harry J. Albert • Butler, Pa.

"The Hickok Model 650 is, without a doubt, one of the most useful instruments yet developed for the Television Servicing Technician."
R. S. Guichard • Capehart-Farnsworth Corp.

"I recently purchased a 533 DM tube tester which is performing beyond any expectations. My tube sales have tripled since I purchased it and many inquiries have resulted in service calls because I have installed it near the window facing the street."
Sam Totaro, Sam's TV Service • Buffalo, N. Y.

"To keep up with the latest developments and to continue to give the best in television we have recently installed a complete set of Hickok electronic testing equipment. The exacting demands of present day radio and television can be met only by using the best and most modern equipment. We are died-in-the-wool Hickok servicemen and will use this equipment over any other."
Denison Radio & Television • Denison, Iowa

"Since 1946 I have owned a Dynamic Mutual Conductance Tube Tester, and its performance has been most satisfactory."
Franco Cicogna • Columbus, Ohio

"I have one of your Model 600A Tube Testers, and it is the best tube tester that I have ever used. I want you to know that my shop would be considered a loss without it. This tester gets constant use every day and has not given a minute's trouble at any time."
John E. Love, Corsicana Television Service • Corsicana, Texas

"I am very happy with my Hickok equipment. My shop is all Hickok."
Richard I. Heath, Heath Radio • Billings, Mont.

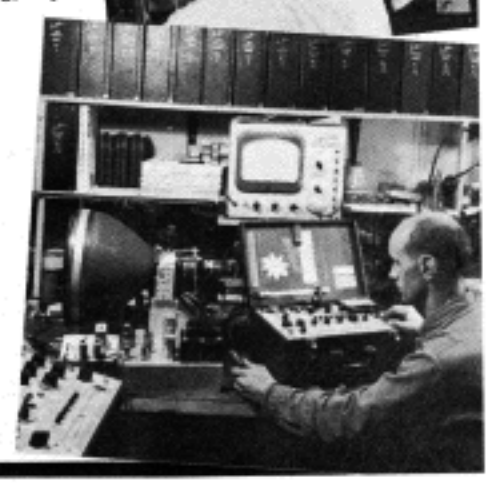
"I am the proud owner of one of your Model 532 Hickok Tube Checkers. I can safely say that it has put eight other competitive makes of tube checkers under the work bench, and although it is old as checkers go, I would not part with it since it is my 'stand-by'."
I remain a real Hickok Booster,
Jim Caton, Jim's Radio Shack • Vallejo, Calif.

"I am in an established appliance business and felt safer in buying a tube tester and multimeter where no substitute materials are used in their manufacture. I chose the Hickok 533 and 209A, and now I know their quality pays off."
L. M. Mountjoy • Lawrenceburg, Ky.

"I have recently obtained one of your Signal Generators. I regard its stability and reset accuracy as excellent. It is the only signal generator I have used which has been entirely satisfactory in lining up sensitive communication receivers."
P. W. Winsford, G4DC • London S. E. 14, England

"I am well pleased with the operation of the Hickok equipment that I own. I used your equipment for six years while in the U. S. Navy and I found that it stood up under the most trying conditions."
Glenn D. Kimmerer, Kimmerer's Electrical Appliances • Live Oak, Calif.

HICKOK HAS MORE SATISFIED USERS THAN ALL OTHER ELECTRONIC TEST EQUIPMENT MANUFACTURERS COMBINED



HICKOK

VACUUM TUBE VOLTMETERS

CAPACITANCE TESTER, TRUE VACUUM TUBE VOLT-OHM MILLIAMMETER

Model 209-A

LABORATORY SIZE . . . LARGE NINE-INCH METER WITH ZERO CENTER SCALE

Model 209-A: A universal test instrument for all radio and electronic service work. Accurately and easily measures wide ranges of inductances, capacitances, resistances, currents and voltages, both A.C. and D.C.

This new giant size instrument matches the size and attractiveness of the Hickok complete line of test equipment. Large 9-inch meter improves ease of operation. Has a 1200 Volt scale, and a new Peak-to-Peak Voltmeter to measure peak to peak or RMS values of A.C.

The new Zero-Center scale on D.C. permits much faster alignment of discriminator and other galvanometer applications.

High input impedance prevents loading when making voltage tests. Measurement of inductances are possible with the use of a conversion chart supplied in the instruction book. Possibility of damage due to overload is slight in all except current measurements. Power supply permits normal operation and accuracy with wide line voltage fluctuation.

Includes high frequency probe and all leads.

POWER SUPPLY: 105-125 V, 50-70 cycles. Ranges Volts, A-C and D-C 0-3, 12, 30, 120, 300, 1200. Mils (D-C): 0-3, 12, 30, 120, 300, 1200. Cap.: 0-10,000 mmf in 2 ranges, 0-1000 mf in 5 ranges. Ind.: 50 mh-100 henries. Ohms: 0.1 ohm to 10,000 megohms in 7 ranges. Frequency: A-C up to approximately 200 mc may be measured. Input Impedance: Volts D-C: 15 megohms, Volt A-C: 12 megohms. Tube Complement: 6X5GT A-C rectifiers, 6SJ7 cathode follower, 6SN7GT vacuum tube voltmeter.

SPECIFICATIONS:

Dimensions—13¼" H., 16¼" W., 7" D.
Weight—18 lbs. Net; 26 lbs. Ship.
Attractive gray finish steel portable case with non-glare black scale and panel.

NEW LOW PRICE ELECTRONIC VOLT OHMMETER

Model 225

- ***Huge HICKOK-Built 9" Meter***
- ***Accurate Peak-to-Peak Scales***
- ***Fast Continuity Tests***
- ***AC-DC Single Unit Probe***

Model 225: HICKOK practical engineering provides the low-cost answer to your needs for a multi-range Volt-Ohmmeter in a professional engineer's top quality instrument.

Designed around the HICKOK-built 9" internal pivot meter, the 225 offers many new features to improve the speed and accuracy of your radio-TV servicing.

Extra long scales minimize reading errors and permit permanent placement of the equipment at a more practical working distance.

Additional features: • Built-in audio tone speeds continuity tests • Accurate Peak-to-Peak scales for measurement of complex waveforms • D.C. Zero-Center scale for galvanometer applications • New, HICKOK single unit A.C.-D.C. probe.

SPECIFICATIONS:

Dimensions—13¼" H., 16¼" W., 7" D.
Weight—15 lbs. Net.—23 lbs. Shipping.
Blue baked Hammertex finish steel case with etched aluminum panel.

Test leads and dual-purpose AC-DC probe are included.

TECHNICAL FEATURES

RANGES—D.C. VOLTMETER:

Plus D.C. Volts: 0 to 1.5, 3, 12, 30, 120, 300, 1200.
Minus D.C. Volts: 0 to 1.5, 3, 12, 30, 120, 300, 1200.
Input Resistance: 10 megohms with new HICKOK Dual-Probe.
Zero-Center Scale: For discriminator alignment and other galvanometer applications.

OHMMETER:

Design Center: 10 ohms.
Ranges: x1, x10, x100, x1000, x10,000, x100,000, x1 megohm.
Readability: 0.2 ohms to 1,000 megohms.

A.C. VOLTMETER:

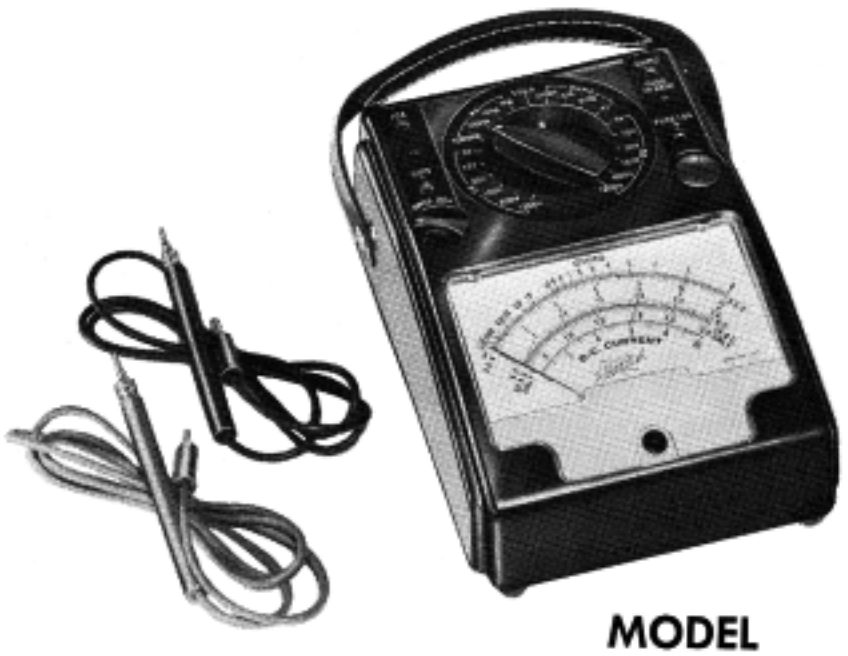
7 Ranges A.C. RMS: 0 to 1.5, 3, 12, 30, 120, 300, 1200.
7 Ranges A.C. Peak-to-Peak: 0 to 4, 8, 32, 80, 320, 800, 3200.
Frequency Characteristics: Flat from 40 cps. to 3.5 mc.

HICKOK

VOLT OHM MILLIAMMETERS

LATEST DESIGN VOLT-OHM-MILLIAMMETER

YOU CAN'T BURN IT OUT!



MODEL 455

Model 455: A new portable multimeter incorporating the very latest engineering advancements including a new technique that protects both the meter and the entire internal circuit against accidental burnouts. In fact, any high voltage or current may be applied directly across any function including ohms without any danger to the meter movement or associated components.

This instrument is available in two models: **Industrial Model 455**—has a sensitivity of 20,000 ohms per volt both AC and DC. **Audio Model 456**—has a sensitivity of 20,000 ohms per volt DC and 1,000 ohms per volt AC. Also includes DB ranges and provision for output measurement.

Technical Features

- Exclusive overload cut-out and fuse system provides complete protection, not only for the Meter, but for all Resistors, Shunts and other components.
- New streamlined ultra-modern case design with curved face and slanted meter dial permits easy reading while instrument is lying flat. Wide vision non-breakable lucite face permits extra light to facilitate meter reading.
- Built with a single Function-and-Range selector switch.
- Batteries housed in special compartment accessible without removing case. No soldering required — just snap batteries in or out.
- Incorporates full-wave bridge-type rectifier circuit.

TECHNICAL SPECIFICATIONS

INDUSTRIAL MODEL 455

Sensitivity:	20,000 ohms per volt DC. 20,000 ohms per volt AC.
Volts:	3, 12, 30, 120, 600, 1200 volts A.C. 3, 12, 30, 120, 600, 1200 volts DC.
Resistance:	0 to 100 megohms in four ranges.
Center Scale Ranges:	5, 500, 5000, 500,000 ohms.
Current:	50 microamperes. 1, 10, 100, 1000 milliamperes. 10 amperes.

AUDIO MODEL 456

Sensitivity:	20,000 ohms per volt DC. 1,000 ohms per volt AC.
Volts:	3, 12, 30, 120, 600, 1200 volts A.C. 3, 12, 30, 120, 600, 1200 volts DC.
Resistance:	0 to 100 megohms in four ranges.
Center Scale Ranges:	5, 500, 5000, 500,000 ohms.
Current:	50 microamperes. 1, 10, 100, 1000 milliamperes. 10 amperes.
DB Range:	—18 to +57 in 5 ranges.

Frequency compensated for accurate readings over the entire audio range.

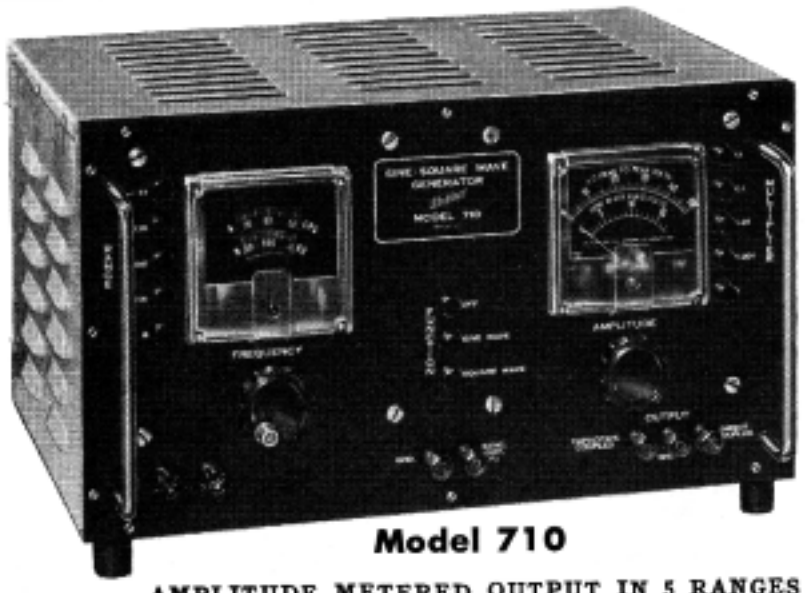
This versatile and compact portable has the most attractive, up-to-date appearance of any Volt-Ohm-Milliammeter on the market. The unique case design, coupled with a practical circuit overload protection and ease of operation, makes the 455 the best VOM available today.

Molded case: 8½" L., 5⅞" W. Height is 3" tapering down to 1¾". Net weight: 3¾ lbs.

Attractive and durable neoprene carrying case is available to house instrument and leads.

HICKOK

GENERATORS



Model 710

NEW SINE-SQUARE WAVE GENERATOR

For Laboratory and Industrial Use

Model 710: This new instrument is a professional laboratory design to provide an accurately calibrated source of sine-wave and square-wave functions over a very wide frequency range.

TECHNICAL FEATURES

- Sine wave total harmonics distortion below 1%.
- Hum level better than 90 db down.
- Square wave rise time less than 0.1 Micro-second
- Direct coupled output for square wave.
- Synchronization output provided.
- Edge-lighted parallax correcting hairline on frequency dial facilitates highly accurate readings.
- May be used as a portable instrument or for rack Mounting.

FREQUENCY COVERAGE
20 cycles to 1 MC in 5 ranges.

(A) Scale: 20 to 200 cps; x1, x10, x100, x1K.
Calibrated to ±2%, ±1 cps.

(B) Scale: 200 KC to 1 MC.

POWER CONSUMPTION:
50-60 cps., 115 Volts, 110 Watts, 8¾" H., 12" D., 16" W. (19" wide when rack mounted), 44 lbs. Net; 52 lbs. Shipping.

AMPLITUDE METERED OUTPUT IN 5 RANGES

Multiplier	Output Resistance	Sine Wave Volt. Range RMS VOLTS	Square Wave Volt. Range Peak-to-Peak Volts
X1	1000 Ohms	1.5 -15	5 -50
X.1	100 Ohms	.15 - 1.5	.5 - 5
X.01	10 Ohms	.015 - .15	.05 - .5
X.001	1 Ohms	.0015- .015	.005- .05
X Zero*	0 Ohms	0	0

*Provided for zero reference.

MOST PRACTICAL UNIVERSAL NOISE GENERATOR

Industrial Engineer and Radio-TV Technician's Model

Model 755

(with 300 mc head)

Also available with 1000 mc head.

Model 755: Extremely versatile unit for measurement of Noise factor in any receiver. This equipment is HICKOK engineered to provide the First Noise Generator in a completely self-contained unit. No additional equipment is required. Unit has two indicating Meters. Most valuable for improved TV service. Quickly indicates amount of Noise inherent in receiver. By reducing the Noise in a TV receiver, the snow is reduced resulting in a clearer picture.

The Model 755 is designed with a VTVM side and a Generator Noise Side.

VOLTMETER SECTION:
Meter readings: 0-0.1 V., 0.5 V., 1.0 V., and 5.0 V., Zero Center. Zero adjust provided for cancelling out contact potential (plus or minus 1 Volt maximum).

VTVM Meter scale permits reading double power to eliminate referring to instruction book for calculations.
VTVM is voltage regulated.

OUTPUT SECTION:
DB Meter Output readings:
Receiver Input Impedance 300 Ohms: 0-19 db
Receiver Input Impedance 75 Ohms: 0-19 db
Receiver Input Impedance 50 Ohms: 0-17 db
NO BALUM NECESSARY TO MATCH IMPEDANCE.
Frequency Response: 10 MC to 250 MC.

SPECIAL FEATURES:
Permits extremely low sensitivity measurements. Has built-in stand-by position for Noise output. Spring loaded output control—increases life of noise diodes by returning it to zero output when not in use.
Noise diodes are built into probe whereby the output noise is connected directly to receiver input. This eliminates cancelling out capacities to the generator.

Three separate scales on the noise figure Meter permit more simplified reading.

UHF Head with 100-1000 MC is available . . . 50 Ohms output, 0-17 db. Dual-purpose portable case. 16¼" W., 13¼" H., 8" D. 25 lbs. Net; 33 lbs. Shipping. Power consumption: 50-60 cycles, 115 Volts, 50 Watts.

NEW UHF-VHF FIELD STRENGTH METER

Model 235

Model 235: Attractively designed technician's equipment for measurement of Field Strength. Large 4" meter is accurately calibrated in microvolts. Handy portable size design has self-contained battery power supply.

RANGES: VHF range has a sensitivity of from 10 Microvolts to 100,000 Microvolts.

UHF range sensitivity is from 30 Microvolts to 50,000 Microvolts.

TECHNICAL FEATURES: Frequency calibration is marked in Channel numbers for easier measurement. An Impedance Matching Network is available.
Phone Jack Audio Monitoring.
8½" W.; 5" D., 11½" H., 10 lbs. Net; 15 lbs. Shipping.

HICKOK

TELEVISION GENERATORS

NEW UNIVERSAL VIDEO GENERATOR COMPATIBLE FOR COLOR OR BLACK AND WHITE RECEIVERS

Model 650C

This fine new instrument is the first of its kind. Now available to rapidly and accurately solve your service problems. Does in minutes many TV servicing jobs that would require hours by other methods.

The 650C has a new timer circuit which delivers video pulses of 60 cycles, 900 cycles, 15,750 cycles and 315 kc., singularly or in any combination, both positive and negative output. Pulses are all locked together and crystal controlled for greater accuracy.

Pulses can be used directly, metered in peak-to-peak volts or to modulate the self-contained RF oscillator.

RF oscillator covers all TV channels in two bands (2-6 and 7-13), all on fundamentals. RF output is metered at all times from 1 to 10,000 microvolts with calibrated attenuation and variable percentage modulation. RF can be externally modulated with video frequencies from 5 cycles to 4 MC with variable percentage modulation on all channels.

Self-contained, substitute external video amplifier, 5 cycles to 4 MC with a variable gain from 0 to 10, with high input impedance, low output impedance and metered peak-to-peak voltage output.

Includes horizontal and vertical sawtooth voltages which can be directly substituted for vertical and horizontal oscillator in a TV receiver. Both the vertical and horizontal sawtooth amplitude is sufficient to give full raster deflection and in the case of flyback type high voltage power supplies the horizontal sawtooth can be used to light up the picture tube.

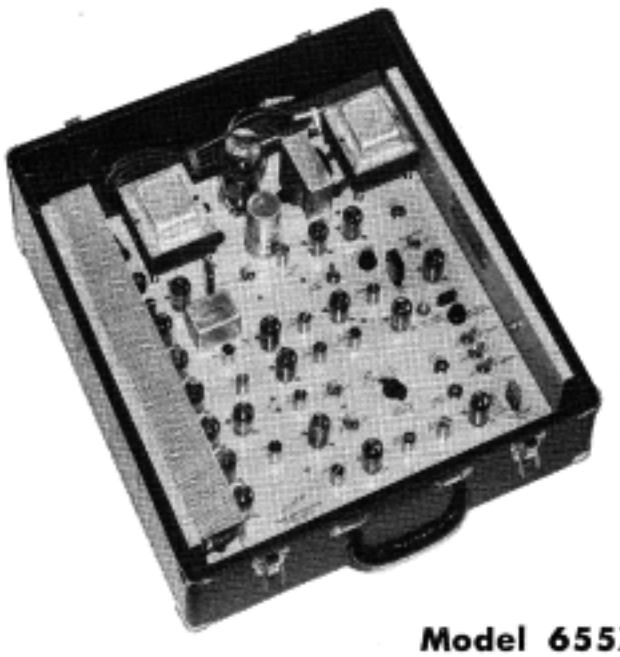
The 650C also contains an AC line voltage scale for instantaneous check on line voltage fluctuation, a common source of TV trouble.

This tester is an absolute must for accurate registration adjustment of the three color guns of color TV receivers, as well as accurate adjustment of focus, convergence, centering of individual beams, purity yoke, dynamic convergence, linearity and aspect ratio. A real time saver, you need the 650C for TV servicing now.

OUTSTANDING FEATURES

Quickly localizes and identies trouble in any section of a TV receiver.
Provides electronically accurate bar or dot pattern on the screen of any TV receiver — independent of station operation.
R.F. output, directly calibrated in microvolts for sensitivity measurements.
Attractive portable case. 16¼" x 13¼" x 7". 29 lbs. net; 37 lbs. shipping.
Substitute Video Amplifier with gain of 0 to 10.
Provides white-dot pattern for convergence adjustment of color TV receivers.
Fast, accurate, the ideal instrument for fringe area TV servicing.

100% FULLY SATURATED NTSC* STANDARD TV COLOR BAR GENERATOR



Model 655XC

Model 655XC: Matched to the other HICKOK instruments, housed in a handy portable detachable cover carrying case attractively covered with durable black leatherette. 16¾" W., 18⅜" L., 7¼" D. 34 Lbs. net; 42 Lbs. shipping.

*National Television Systems Committee as approved by Federal Communications Commission.

Absolutely stable. Entirely independent of changes in line voltage. Compare the wave form information and sharpness of detail of the 655XC with any other TV color bar generator. . . . You'll pick the HICKOK immediately.

Model 655XC: Produces a standard 100% fully saturated NTSC color bar pattern on color TV sets. This is a must for non-obsolescence. Regardless of future color television receiver design this HICKOK color bar generator will be compatible. This is the type of signal that is transmitted over the air. All literature and alignment data are published around this standard NTSC signal. The Model 655XC provides signal for complete color alignment. When alignment is made with this type of signal the operator is sure when a color transmission is received that proper colors will be displayed on the TV receiver. Produces color bars on TV screen in the following order from left to right: green, yellow, red, magenta, white, cyan, blue and black. Phase of colors produced is accurately set with precision delay lines. The amplitude of sub-carrier and the amplitude of the brightness component are accurately set with precision resistive Networks. This results in the high stability required for proper alignment. Proper colors are generated within 30 seconds after warmup. To produce proper colors, a luminescent component of proper amplitude for each color is necessary. This is not found in other generators on the market which employ the side-lock principle, as they lack the ability to produce the brightness component of a color.

DESIGN FEATURES:

Precisely crystal controlled: Sub carrier and horizontal framing.
Produces clearly defined wave forms to provide ease of alignment and assure minimum possible error.
NTSC standard phase and brightness: This NTSC standard signal was used in designing all color TV receivers, and is now used by TV manufacturers.
Self checking: Assures operator that generator is producing accurate NTSC standard signal at all times.
Generates 3 primaries, 3 complements plus black and white. (An essential feature of this equipment is that white is produced by adding the 3 primaries.)
The Model 655XC is preferred for its accuracy, stability and long trouble-free operation. This instrument was designed and built in cooperation with leading color TV receiver manufacturers, and is specified by them for their field service engineers.
Generator is self contained . . . no complicated external synchronizing connections are necessary.
Output is either R.F. or Video. Video: 0-2 volts peak-to-peak open circuit. 0-1 volt peak-to-peak across 100 ohms with positive or negative output. R.F.: modulated output modulated through color bar pattern is available through channels 4, 5 and 6. A sound carrier is also provided for accurate setting of local oscillator in TV receivers.
In addition to color bars this instrument generates the necessary signals for I (In Phase, delayed 57° from color burst), Q (Quadrature Phase, delayed 147° from burst), R-Y (delayed 90° from burst) and B-Y (delayed 180° from burst) for demodulator alignment. These bars appear at black level with equal amplitudes.
Provision for switching I, Q, R-Y, B-Y or Chroma On-or-Off.
The 3.58 MC sub-carrier output of one volt peak-to-peak is also available for trouble-shooting and alignment of color synchronizing circuits.

TELEVISION GENERATORS

VHF-UHF MARKER GENERATOR

Model 690: Crystal controlled. High .25 volt RF output. Provides dual markers with any TV sweep generator. Features another HICKOK First — a Non-Parallax shadow type dial. Conventional dials unless viewed at exact, right-angle introduce error, since hairline indicator is always a slight distance from the scale. The HICKOK Non-Parallax dial can be viewed from any angle without introducing error. The 45 inches of dial can be self-calibrated to within .05% accuracy with self-contained crystal calibrator. Complete RF coverage channels 2 thru 83. Also, 3.57 mc crystal (color burst frequency) is available. Leading TV manufacturer's engineers have tested this unit and comment highly on its frequency, stability and time saving features. You need the 690 for VHF or UHF black and white alignment right now.

Model 690

OUTSTANDING FEATURES

- Exceptionally rapid and time saving method is employed in calibrating the dial. No counting of beats —no interpolation—no remembering of frequencies.
- Calibrates other signal generators to crystal accuracy.
- Complete IF-RF coverage thru channel 83. Picture and sound settings marked for all channels.
- Marker can be modulated by self-contained 400 cycle. Especially valuable in stage-by-stage alignment. Eliminates use of another instrument.
- Provision for two other crystals, in addition to 2.5 mc crystal supplied. (3.57 mc crystal, frequency of the color burst, available for color work.)
- View two markers at once on response curve . . . main marker and marker of crystal selected. Greatly speeds alignment.
- Both electronic-eye and headphone jack provide visual or audible zero-beat.
- Attenuation is controlled by both step attenuator and vernier for completely regulated output.
- Unit is completely double-shielded.
- All VHF frequencies on fundamentals. No spurious or confusing beats.
- Strong, attractive steel portable case. 16½" W., 13¼" H., 8" D. 26 lbs. Net; 34 lbs. Ship.

HETERODYNED MARKER ADDER

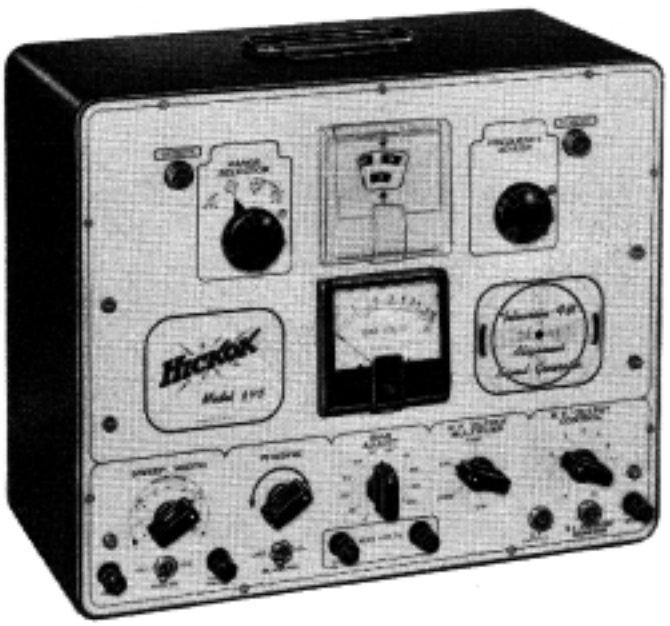
Model 691: This unit in conjunction with the Model 695 Sweep-Alignment and Model 690 Marker provides the utmost in TV alignment technique. Takes guesswork out of alignment jobs. Eliminates errors previously introduced by overload due to markers. The 691 provides a marker visible at all times (including trap points) and will not change in amplitude or distort the response curve WHAT-SO-EVER. This feature, in addition to the accuracy and minimum leakage of the other units (690-695), will greatly simplify any alignment. The outputs of the sweep and marker generators are heterodyned and applied to a scope in such a manner that the marker signal will never pass through the receiver itself — therefore cannot cause overloading. This unit will work well with any of your present equipment that has an output of 50,000 microvolts or more.

Model 691

OUTSTANDING FEATURES

- Input RF voltage required; 50,000 microvolts.
- Output marker voltage; maximum 3 volts.
- Attenuation of marker; variable 0 to 60 db.
- Attenuation of response curve; variable 0 to 20 db.
- Input impedance: 90 ohms.
- Power supply required: 105-125 volts A.C., 50-60 cycles, 25 watts.
- Attractive steel portable case. 11¼" W., 8¼" H., 7" D. 10 lbs. Net; 15 lbs. Ship.

TELEVISION GENERATORS



VHF SWEEP-ALIGNMENT GENERATOR

All Electronic Sweep

Model 695: Here is a completely new generator with ALL-ELECTRONIC sweep. It will exactingly fill top requirements of the professional TV serviceman or lab. engineer. There are no moving parts to wear out. Though moderately priced, this unit features a sweep signal that is absolutely linear and without amplitude modulations. Features a high .3 volt output. Triple shielded — no leakage problem here. Signal can be attenuated from 3 to 300,000 microvolts. 0-12 volts variable bias voltage with continuous tuning allows set alignment to more sensitive for "fringe areas," or less sensitive for "prime areas" to prevent overloading. Continuous tuning and detailed, easy-to-read scales provide foolproof method of alignment. Three RF oscillators provide complete VHF coverage on fundamentals and heterodyned output IF 0 to 50 mc. This assures the strong signal necessary for aligning front ends.

Model 695

OUTSTANDING FEATURES

- All-Electronic sweep.
- Fundamental output on all VHF channels (.3 volt output).
- Continuously variable tuning.
- 0 to 50 mc. IF heterodyned output, .15 volts output.
- Blanking of oscillator, provides reference base line.
- 100 db. attenuation, .3 volt to 3 microvolts.
- Triple shielded, very low leakage. Provides attenuation down into "snow" region to check IF's for oscillation.
- Metered, variable DC bias voltage 0-12 volts. Eliminates use of batteries for fixed bias.
- 170° of phasing.
- Sweep width of 0-15 mc., ±3 mc. depending on frequency.
- Linear sweep.
- Amplitude variation of less than 0.1 db. per mc.
- Output impedance is 90 ohms.
- Attractive steel portable case. 16¼" W., 13¾" H., 8" D. 30 lbs. net; 38 lbs. Shipping.

THE ACCEPTED TV ALIGNMENT GENERATOR

Model 610A

Power Supply: 115-125 V., 50-60 cycles, A.C.

Tube Compliments: 6J6—Variable oscillator; 6J6—Fixed oscillator; 6J6—Mixer; 6SN7—Crystal oscillator & marker oscillator; 6J5—Audio oscillator; 6X5—Rectifier.

Net 28 lbs. Shipping Weight: 36 lbs.

Size: 16¼"13¾"x7"; Satin aluminum finish panel; Blue Hammertex finished steel portable case.

Model 610A: Popularly priced TV sweep generator — Harmonic output useable for UHF. Marker Range: 19 to 48 m.c. — Covers all I.F. frequencies in TV receivers.

Contains linear sweep with unusual accuracy to 2%. Hickok ferrous modulator furnishes symmetrical pattern response curve for easier and more accurate readings.

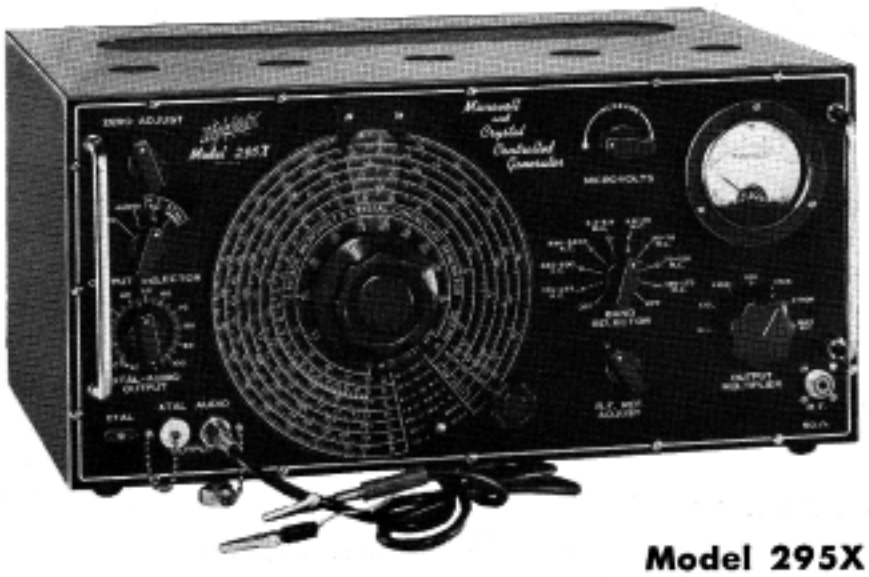
THIS ONE INSTRUMENT DOES THIS

1. Provides accurate, complete visual alignment of any TV receiver.
2. Visually align IF stages of any television receiver—including the old and current bands, and new bands. Marker range—19 to 48 mc.
3. Align all traps with a calibrated signal—modulated or unmodulated—19 to 48 mc.
4. Insert a marker—accurate to .05 mc—at any point along the IF response curve. This marker frequency is directly calibrated on a dial 9½ inches long.
5. Align IF or RF Sections by single stage method—with high output.
6. Attenuate the output down to a very low signal in microvolts.
7. Highly stable.
8. Output multiplier control is 5-stage with a vernier control calibrated from 1 to 10.
9. Panel Jack accommodates separate plug-in calibrating crystals for local TV channels, if desired.
10. Makes possible a crystal controlled frequency modulated or unmodulated for any frequency as low as 2 mc to the upper television channel No. 13 at 216 mc.
11. Temperature compensated.
12. Low amplitude modulation.
13. Completely shielded attenuator.
14. Sweep phasing control.
15. TV sweep frequency.
16. FM sweep frequency.

HICKOK

SIGNAL GENERATORS

NEW . . . ALL-BAND MICROVOLT SIGNAL GENERATOR



Model 295X

- 125 KC to 175 megacycle continuous coverage on fundamentals.
- Attenuation down to .1 microvolt. — No external attenuator pad required.
- Output 0.1 microvolt to 100,000 microvolts on all ranges.

Model 295X: Designed and built to exacting specifications, this generator is in a class by itself. The 295X is the only signal generator available today covering wide bands with these outstanding characteristics and at a moderate price. Advanced HICKOK engineering has provided this high quality instrument, which will find wide use in nearly every phase of the electronic industry.

An ideal generator for mobile radio applications such as police, taxicabs, airlines, or wherever critical alignment and a low microvolt signal is essential. Many other applications are possible since it covers AM radio bands as well as many of the identification marker frequencies for TV alignment. All in all, it is a very versatile signal generator.

Model 295X: Multi-purpose case design with attractive etched aluminum panel. 19" W., 12½" D., 9" H.

SPECIFICATIONS

125 KC to 175 MC continuous on fundamentals.
Output 0.1 microvolt to 100,000 microvolts when terminated at 50 ohms.
Outstandingly low leakage—encased in a copper cage, silver plated.
Constant metered output.
120 db non-frequency discriminating attenuator.
400 cycle modulation — approximately 30%.
Crystal Oscillator — 1 MC crystal provided. Oscillator functions on any crystal from 500 KC to 20 MC.
Vernier control allows fine hairline accuracy frequency settings.
No loading — Frequency does not change when the attenuator is changed.
Rigid quality control in manufacturing insures that this instrument will conform exactly with the outlined specifications even in the critical (below 1 microvolt) region.

UNIVERSAL CRYSTAL CONTROLLED SIGNAL GENERATOR

Model 288X

MODEL 288X

High Output AM-FM Generator

A variable frequency signal generator, crystal controlled, for accurate AM and FM alignment. Useable in TV alignment as a marker oscillator in connection with television front-end or IF alignment, or the 288X can also be used as an FM generator to align the sound IF amplifier of a TV receiver. RF unmodulated or internally amplitude modulated at 400 cycles, or internally frequency modulated. RF variable from 110 kc. to 110 mc. on AM and 110 kc. to 160 mc. on FM, in 7 bands, all fundamental. Fixed 50-mc. output is internally frequency modulated at 60 cycles or at 400 cycles for FM and television. Fixed, crystal-controlled 100-kc. and 1000-kc. outputs either unmodulated or internally amplitude modulated. Fixed 1000 kc. internally frequency modulated at 60 cycles for visual IF alignment. 50 mc. and 1000 kc. oscillators beat with variable RF oscillator to give variable FM signals. Variable AF output 0-15,000 cycles; fixed AF, 400 cycles. Outputs continuously variable with multiplier and linear controls. Db meter — 10 to plus 38 in 3 ranges. 105-125-volt 60-cycle operation. Test leads included.

SPECIFICATIONS

Dimensions—13¾" x 16¼" x 7" D.
Net Weight—25 lbs.—Ship. 33 lbs.
Meter—Model 51X
Scale—over 100"
Satin-aluminum finish panel
Blue baked Hammertex finished steel case

HICKOK

DAWE INSTRUMENTS

NEW PORTABLE STROBOFLASH

No Contact Required with Mechanism under Measurement

Type 1200

The Stroboflash is intended for measuring the speed of rotating, reciprocating and vibrating mechanisms, and for observing their operation in slow motion. The objects to be viewed are illuminated intermittently by the Stroboflash to produce the optical effect of slowing down or stopping the motion. These effects are achieved by illuminating a slightly different point by each flash, or the same point respectively. An important feature is that no contact with the mechanism is necessary. The special neon tube used is designed to give an extremely short flash so that very sharp images are obtained. The equipment is particularly suitable for checking the speed and timing adjustment of apparatus, which must be controlled within close limits, such as textile spindles, cams, shuttles, and gears. The frequency and amplitude of vibration can be studied, and points of greatest stress quickly located.

The circuit comprises a valve oscillator provided with a variable speed control having a calibrated dial graduated in flashes per minute. This oscillator is used to drive the neon flash tube mounted within a parabolic reflector. If desired, the flashing speed can be controlled by an external contactor, by the power line frequency, or by a suitable external voltage source.

Speeds outside the scale range of the instrument can be measured by using multiples of the flashing speed. The practical upper limit of speed measurement is around 100,000 r.p.m. Speeds below 600 r.p.m. may be difficult to measure with the Stroboflash except in darkened surroundings due to lack of persistence of vision at low flash intensities.

By means of a vibrating reed the speed calibration may easily be checked and, if necessary, adjusted, when the supply mains frequency is known.

SPECIFICATIONS

Internal Oscillator: Fundamental range 250-18,000 flashes per minute in three overlapping ranges.
Accuracy, when standardized in terms of a frequency controlled power line.
± 1% above 1,000 r.p.m.
± 2% below 1,000 r.p.m.

External Oscillator: Range: Single flashes to a maximum rate of 18,000 per minutue (300 c/s).
Accuracy: That of the external oscillator.
Amplitude required: Negative going, between 3 and 100 volts r.m.s. above 1,200 per minutue (20 c/s). More than 3 volts may be required at very low speeds depending on the wave-form of the applied voltage.

External Contactor: The flash may be initiated by closing two external contacts or by the Type 1200/1 Contactor Head.
Potential across contacts, about 3 volts.

Duration of Flash: Between 10 and 15 microseconds.

Power Supply: 200-250 volts, 50 c/s, 35 watts approx. (Other mains voltages and frequencies to special order.)

Mounting: In attractive and durable metal case.

Dimensions: 9½" x 9½" x 9½".

Weight: 15 lb. net. 21 lb. shipping.

5 ACCESSORIES ARE AVAILABLE TO PROVIDE ADDITIONAL FEATURES

HIGHLY ACCURATE SOUND LEVEL INDICATOR

30 to 135 db • Direct Reading • Self-Contained

Type 1408

The ever increasing trend towards automation and mechanization is bringing into daily use more and more noise producing machinery and equipment.

Architects, builders, engineers and designers are aware of this problem and energetic steps are being taken to combat noise. To carry out such work, however, it is essential to have an accurate means of measuring sound levels. Since the human ear is notoriously unreliable in this respect, it will, for example, give the impression that a particular machine is noisy in quiet surroundings but quiet in noisy surroundings; it is also incapable of retaining any reliable impressions of sound intensity even for short periods of time.

The Type 1408 Sound Level Indicator provides a simple means for accurate measurement of sound levels. It is small enough to be carried in the pocket or permit tripod mounting.

This very compact instrument is particularly suitable for comparing the intensity of similar sounds for preliminary investigations and surveys.

SPECIFICATIONS

The Sound Level Indicator comprises a sensitive crystal microphone, a calibrated adjustable attenuautor, high gain amplifier with three weighting networks, an indicating meter, and self-contained dry batteries.

Range: 30 to 135 db above standard reference level of 0.0002 dynes per sq. cm. at 1000 c/s.

Frequency: Three standard frequency characteristics are available, corresponding to 40 db, 70 db and "Flat" weighting curves. Under the latter condition, the response is substantially level from 4 to 6000 c/s.

Attenuator: Variable in 10 db steps from 40 to 100 db. A fixed step of 30 db is also provided.

Light weight aluminum case 8½", 3", 2". Net weight 2 lbs. Supplied complete with leather carrying case.

OTHER INSTRUMENTS

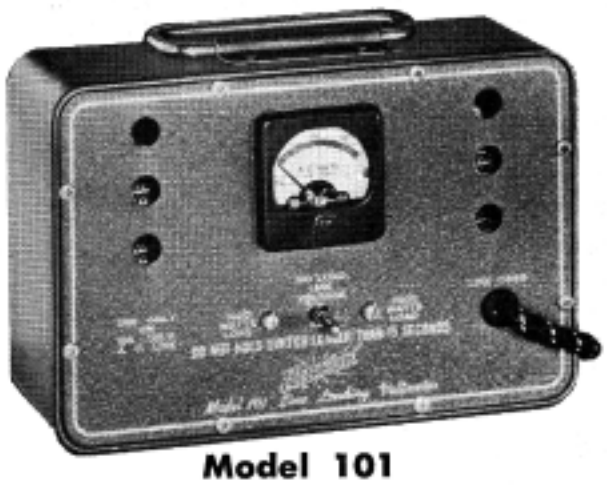
Model 465

DOUBLE RANGE DC KILOVOLTMETER

MODEL 465: For measuring DC Voltages as high as 30,000 volts. Has a sensitivity of 10,000 ohms per volt. This instrument has many industrial uses and features low current drain.

Phenolic case provides ample protection against the high voltages being measured.

Furnished complete with leads and carrying case, 7", 6⅛", 4¼". 6 lbs. net weight. 8½ lbs. shipping.



Model 101

NEW LINE LOADING VOLTMETER

MODEL 101: Electricians and appliance installation technicians are indeed receptive to this new time-saver. A built-in front panel switching arrangement permits 1000 watt or 2000 watt line load and reads resulting AC line voltage change due to load.

Field service and electrical unit installers effectively use this equipment to quickly determine circuit capacity and adequacy of existing wiring to handle air conditioning units, freezers, etc. in homes or institutions.

Instrument plugs into any 115 volt AC outlet and continuously reads line voltage, from 50 to 140 volts.

Entirely self-contained. Housed in attractive steel portable case. 9¼" W., 6¼" H., 3¼" D. 5 lbs. net weight. Moderately priced for every electrician or appliance installation service company.

Model 175

OSCILLOSCOPE VOLTAGE CALIBRATOR

MODEL 175: Permits quick and accurate Peak-to-Peak voltage measurements on any 'scope. Convenient switching arrangement permits peak-to-peak voltage measurement of wave shapes without disconnecting calibrator from 'scope. Readings are accurate to ± 5% at 115 volts.

Calibrates 'scope peak-to-peak at any desired voltage. Ranges: peak-to-peak 0.1, 1.0, 10.0, 100.0 volts.

Small, compact, very easy to use. Attractive metal case 6" L., 3¾" W., 2" D. 115 volts, 50-60 cycles, 5 watts. 3 lbs. net weight.

Model 900C

LOAD CHECK APPLIANCE TESTER

MODEL 900C: Appliance repairs are generally easy when you know precisely what is causing the trouble. This equipment will quickly spot the trouble and help you to build a profitable appliance service business. Basically a wattmeter load tester, it will permit a quick and easy test for shorts, high resistance, continuity of circuitry or accurate calculation of power factor.

When readings on this tester are compared to the rated values of the appliance, a quick and accurate evaluation of trouble can be determined.

A 20 watt range permits checking of non-inductive loads such as butter conditioner in new refrigerators, etc., and also has adequate multiple ranges (0 to 260 volts and 0 to 2000 watts) to service all major household appliances including electric ranges.

Permanently attached leads and AC receptacle prevent loss or misplacement. Spring loaded test prods eliminate electrical shock hazard to operators by necessitating a push-to-test action.

9A and 9B leads are available as a quickly attachable accessory for measurement of 3-wire circuits. With the C-105 (10 to 1) transformer accessory, this instrument is an excellent tool for load checking of industrial equipment up to 130 amps. and 10,000 watts (used Intermittently). A sturdy portable carrying case is available in black simulated leather. Has compartments for transformer, prods and leads and has removable cover. 11½" H., 10¾" W., 5½" D. 13 lbs. net weight.

Complete and detailed operating instructions with schematic diagrams are permanently mounted on the back of the portable steel case. 9½" H., 6¼" W., 4¼" D. 6½ lbs. net weight. 105-117 volts. Useable 50 to 400 cycles.

PROBES AND ACCESSORIES

HICKOK Probes and Accessories Increase the Range and Usefulness of Your Test Equipment

TVP-1

TVP-1, TELEVISION PROBE . . . increases 'scope usefulness in servicing TV receivers. Enables technician to accurately duplicate manufacturers' pattern. Reduces loading effect. Made of black phenolic with chrome probe and four foot heavy duty cord with spade connectors. Net weight 6 oz.; 2 lbs. shipping.

PR 30

PR 30, HIGH VOLTAGE DC PROBE . . . extends the range of your VTVM to 30,000 volts DC. Doubles the use of any voltmeter. Ideal for use with the HICKOK 203 or 209. Made of heavy duty black phenolic, with a four foot cord and cable type connector. Net weight 12 oz.; 2 lbs. shipping.

PR 30-A, HIGH VOLTAGE DC PROBE . . . same technical advantage of PR 30 listed above; however, this probe is specifically designed for use with the HICKOK Model 209A. Same weight and physical dimensions as PR 30 listed above.

PR 25, HIGH VOLTAGE DC PROBE . . . specifically designed to extend range of HICKOK Models 450 and 435A to 25,000 volts DC. This probe can also be used with any other 20,000 ohm per volt DC multimeter with a 250 volt scale. Same weight and physical dimensions as PR 30 listed above.

TYPE 34

TYPE 75

TYPE 34, CRYSTAL DEMODULATOR PROBE . . . ideal for use with any 'scope to trace a modulated RF signal at any frequency to 500 mc, through a radio or TV receiver from the antenna post to the detector or discriminator. Phenolic probe and heavy four foot cord with spade type connectors. Provides a quick and accurate aid to trouble-shooting with your 'scope. Net weight 2 oz.; 2 lbs. shipping.

TYPE 75, TERMINATION PAD . . . is available for use with the HICKOK 610A or any other TV-FM alignment generator. Eliminates most standing waves on the length of output cable to insure accurate frequency match of the generator and TV receiver. Can be used on both 90 and 300 ohm inputs. Net weight 6 oz.; 2 lbs. shipping.

MODEL CRT

CRT, CATHODE RAY TUBE TEST ACCESSORY . . . built for use with any HICKOK Tube Tester for accurate testing of all electromagnetic picture tubes, including Philco. Includes the HICKOK Tube Gas Test, the grid control test, short test and cathode emission test. By increasing the voltage on filament of a cathode ray tube, and holding that higher voltage for a few minutes, many tubes can be brought back to full operating brilliance.

CRYSTALS . . .
.005% accuracy for Model 295X
4.5 mc for Model 610A or 695
Specified channels for Model 610A or 695
Special frequencies for Model 610A or 695

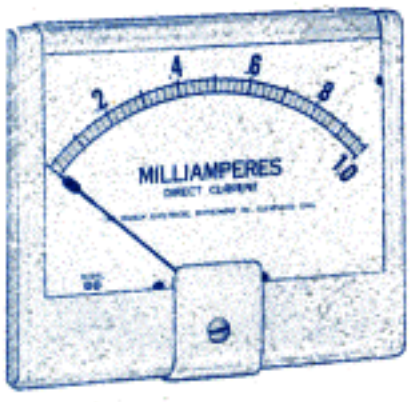
DUST COVERS . . .
Heavy, transparent-film dust covers are available for all HICKOK Test Instruments.

7/55

. . . since 1910 HICKOK has manufactured a complete line of electrical indicating instruments, laboratory portables and panel meters of finer accuracy. For detailed information kindly communicate with the factory offices.

HICKOK

AC-DC Portables



Modernistic, hermetically sealed and 250 degree arc-angle panel instruments

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The Standard of Quality for Over Forty-five Years

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