

LEADER

**TV FM RADIO &
AUDIO
TEST INSTRUMENTS**

OHMATSU ELECTRIC CO. LTD.

LEADER TEST INSTRUMENTS

LFM-801 HETERODYNE FREQUENCY METER

This instrument is an accurate and handy frequency meter designed for use in the electronics laboratories. It will be most useful in frequency checks and calibration of signal generators, oscillators, transmitters and receivers up to 250 Mc, utilizing the fundamental and harmonics of the oscillators.

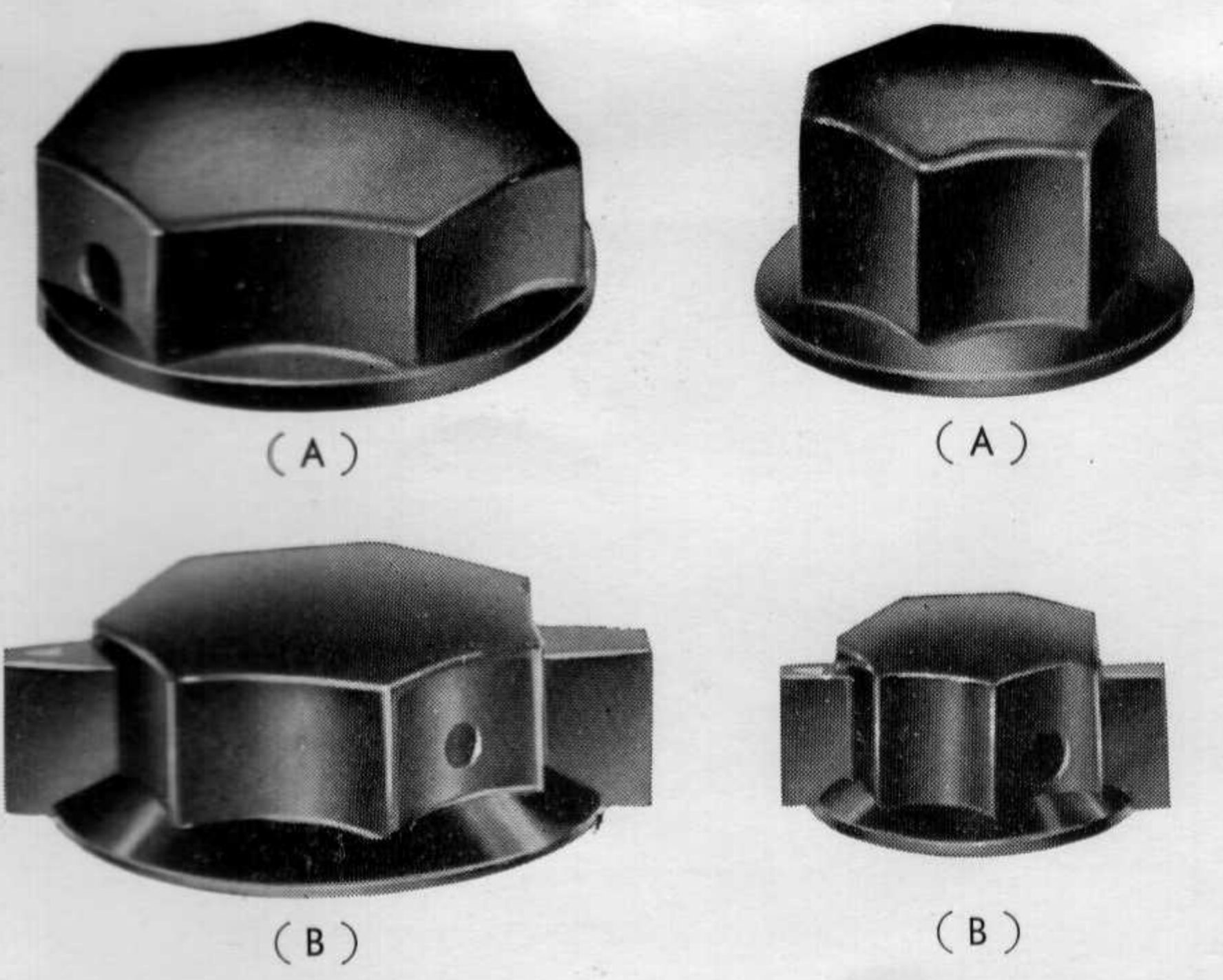
The LFM-801 is made up of a stable RF oscillator, detector, audio amplifier, modulating oscillator and crystal oscillator. Provision is made for self-calibration using one of the three crystal frequencies, 100 Kc, 1 Mc or 5 Mc, or external. The operation is very simple and is recommended for use as a convenient frequency sub-standard.



Specifications :

- RF Oscillator
 - Frequency Range 100 Kc to 36 Mc, fundamentals in 6 bands
 - Calibration Accuracy within 1%
- Crystal Oscillator
 - 100 Kc, 1 Mc, 5 Mc; within 0.01%
- Oscillator Output over 100,000 μ V
- Output Control HIGH, LOW and FINE
- Detection Sensitivity better than 30 mV
- Detection Range 50 Kc to over 250 Mc
- Audio Modulation 400 or 1,000 cps: $\pm 10\%$
- Audio Output
 - 400 cps : 0-20 V
 - 1,000 cps : 0-10 V
- External Modulation 8 V approx. for 30%
- External Crystal Socket FT-243 for 1-15 Mc crystals
- Tube Complement 6J6 6BE6 6BD6 6U8 6AR5 6X4
- Accessories
 - 1 RF cable 1 earphone
 - 1 Terminal Adapter
- Power Supply AC 50/60 cps : 100, 115 or 230 V as specified; 38 VA
- Size and Weight 32x21.5x17 cm 7 kg
(12-5/8" x 8 1/2" x 6 3/4"); (16 lb)

KNOBS



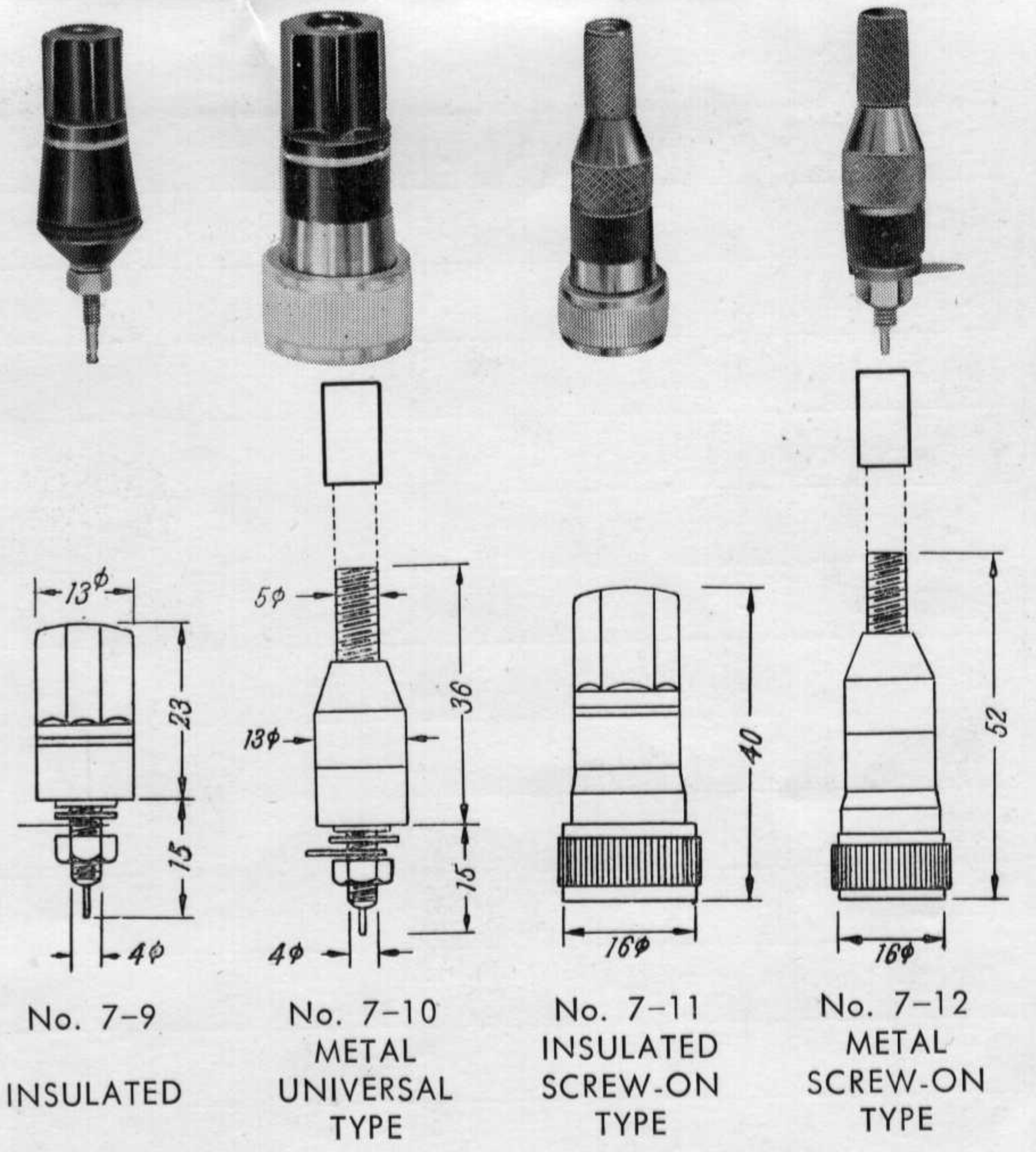
KNOBS

No.	Dimensions mm	
7-1	D	40
	H	15
7-2	D	37
	H	13
7-3	D	35
	H	11
7-4	D	28
	H	15

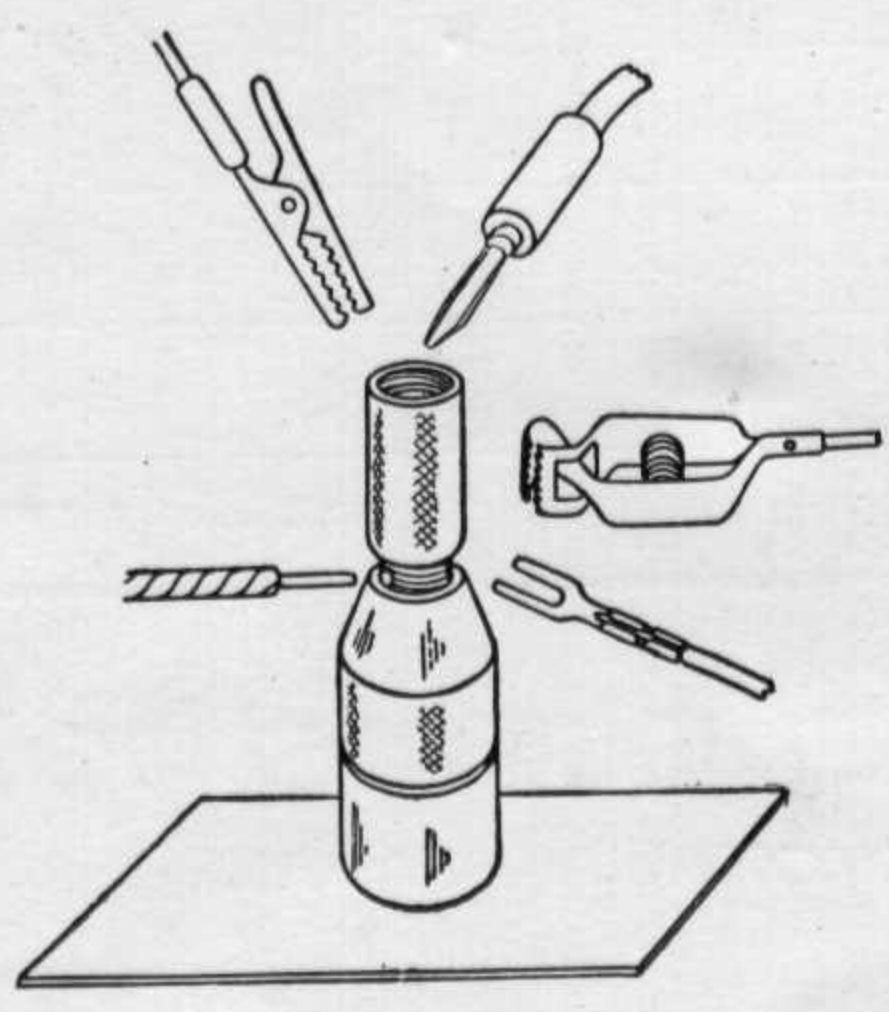
KNOBS

No.	Dimensions mm	
7-5	D	17
	H	15
7-6	D	20
	H	64
7-7	D	15
	H	33
7-8	D	16
	H	48

BINDING POSTS



No. 7-9 INSULATED
 No. 7-10 METAL UNIVERSAL TYPE
 No. 7-11 INSULATED SCREW-ON TYPE
 No. 7-12 METAL SCREW-ON TYPE



CONNECTIONS FOR No 7-10, or 7-12

KNOB AND BINDING POSTS AVAILABLE IN BLACK AND RED.

LEADER TEST INSTRUMENTS

FEATURES :

1. All materials and components used in the **LEADER TEST INSTRUMENTS** have been selected and treated to obtain the highest degree of frequency stability.
2. Only the highest grade components and vacuum tubes are employed for the utmost in reliability and accuracy. All the instruments are passed through an ageing cycle of at least 12 hours before the final frequency calibrations are made.
3. The lucite cover protects the indicator and the frequency scale, and lends a striking appearance to the whole instrument. Uniformity of design and cabinet color, in a pleasing grey tone, make the **LEADER** instruments distinctive wherever they are used.
4. All **LEADER** instruments are designed for the busy technicians for maximum of service and simplicity in operation. Compactness and rugged construction for field work are big factors in the design.
5. Special dial markings are available for the European CCIR TV channels upon order (for **LGO-600**, **LSW-321**, **LSG-531**, **LSG-532** and **LSG-301** only.)

SPECIFICATION CHANGES :

The **OHMATSU ELECTRIC COMPANY** reserves the right to discontinue instruments and to change the specifications at any time without responsibility for the incorporation of new features for the instruments already sold.

ORDERING INFORMATION :

When inquiries or orders are made, please specify the **VOLTAGE** and **FREQUENCY** of the mains supply of your locality, or where the instruments are to be used. Instruments can be furnished for the AC line voltages of 100, 115 or 230 volts, or intermediate voltages. **LEADER** instruments will operate at voltages which are within $\pm 8\%$ of the rated line voltages.

Equipment for DC mains supply cannot be furnished.

PACKING SPECIFICATIONS :

Model No.	Net weight Per Pc	Legal weight Per Pc	Contents Per case	Gross weight Per case (approx)	Measurement Per case (approx)
LSG-10	2.7 Kg.	2.9 Kg.	2 0 Pc.	7.5 Kg.	1.8 Cu.Ft.
LSG-11	2.8	3.0	2 0	8.0	1.8
LSG-20	4.8	5.0	1 2	8.0	1.6
LSG-100	2.7	2.9	2 0	7.5	1.8
LSG-200	4.2	4.4	1 2	7.3	1.2
LSG-220	6.5	6.7	8	7.3	1.7
LSG-301	6.0	6.3	1 2	8.8	1.2
LSW-321	6.5	6.7	1 2	9.5	1.2
LMA-1000	2.2	2.4	1 2	3.6	9
LSG-531	7.0	7.4	8	8.0	1.7
LSG-532	10.4	10.8	6	9.0	1.9
LGO-600	27.0	27.7	2	9.0	2.0
LAG-55	5.0	5.3	1 0	9.0	1.8
LAG-65	7.5	7.8	8	9.0	1.8
LBO-3A	7.7	8.0	6	7.2	1.7
LBO-5A	7.7	8.0	6	7.2	2.4
LBO-5B	10.0	10.5	6	8.0	2.0
LFM-801	7.0	7.4	1 0	9.0	1.8

OHMATSU ELECTRIC CO., LTD.
YOKOHAMA, JAPAN.

LEADER TEST INSTRUMENTS

MODEL LCG-380A COLOR BAR/DOT/CROSSHATCH GENERATOR

The **LEADER LCG-380A** is an instrument for generating signals for use in the testing and servicing of color television receivers. A single switch selects the bar, dot crosshatch and shading bar signals. The pattern representing color bars is printed on the panel for convenience in operation. Uses: Adjustments of convergence, luminance and background in color TV receivers; pattern generation for monochrome TV receivers.



Specifications:

RF Output	
Carrier Frequency (Video and Sound)	CHAN 1, 2 or 3, as specified on order
Output Voltage	100 mV, approx.
Video Output	
Polarity	Positive
Output Voltage	0-10 V p-p, adjustable
Output Impedance	10 K, approx.
Generated Signals	
Bars	Horizontal: 15 lines Vertical: 12 lines
Color Bars	Number: 10 lines
Shading Bars	Wide Crosshatch
Dots	Horizontal: 15 lines Vertical: 12 lines Type: white on black field Size: equiv. to 3 lines Number: 180
Synchronizing Signals	Horizontal: 15.75 Kc Vertical: 60 cps
Color Burst Frequency	3.563795 Mc
Accessories	1-300 ohm cable 1-75 ohm cable
Power Supply	AC 50/60 cps: 100, 115 or 230 V as specified: 85 VA approx.
Size and Weight	26.5 x 36 x 19 cm 8 kg (18 lb) (10 1/2" x 14 1/4" x 7 1/2")

LGO-600 GENESCOPE

The **LEADER Model LSG-600** is an integrated TV, FM and VHF circuit aligning unit. It comprises a wide-band 3 inch oscilloscope, a sweep generator and a marker generator in one cabinet, with all the necessary cables. The controls on the panel are arranged for operation without confusion. The oscilloscope is used for visual alignment and for the observation of waveforms. It has been designed so that it may be used independently of the generators. The sweep generator covers from 2 to 260 Mc in 2 bands, with a maximum width of 20 Mc. The marker generator covers 3.5 to 270 Mc in 6 frequency bands. A stable RF oscillator is used, and various modulating frequencies for vertical and horizontal bars can be applied. The self-contained crystal oscillator is used for marking, and also for accurate calibration with the internal heterodyne detector. Other details are listed in the specifications.

Specifications:

Sweep Generator	
Frequency Range	2 to 260 Mc in 2 bands A 2 to 120 Mc (Beat) B 140 260 Mc (Fundamental)
Sweep Width	0 to 12 Mc (max. 20 Mc)
Output Voltage	50,000 μ V, adjustable
Output Impedance	75 ohms, unbalanced
Marker Generator	
Frequency Range	3.5 to 270 Mc in 6 bands
	Fundamental Harmonics
A	3.5 to 6.0 Mc 7.0 to 12 Mc
B	20 to 30 Mc 40 to 60 Mc
C	65 to 135 Mc 130 to 270 Mc
Frequency Calibration	Accuracy within $\pm 1\%$ on dial
Quartz Crystal	4.5 Mc, or 5.5 Mc (specify which): 0.05%
Internal Modulation	on Carrier osc.: 4.5, or 5.5 Mc; 600 cps; 100 to 150 Kc on crystal osc: 600 cps; 100 to 150 Kc
Output Voltage	50,000 μ V, max., continuously adjustable
Oscilloscope	
Vertical Channel	
Sensitivity	0.04 V rms per cm (at 1 Kc)
Frequency Response	within 3dB: 4 cps to 1.2 Mc
Input Attenuator	$\times 1, \times 10, \times 100$; accuracy ± 0.5 dB
Rise Time	0.25 μ seconds or less
Horizontal Channel	
Sensitivity	0.2 V rms per cm (at 1 kc)
Frequency Response	within 3 dB: 2 cps to 425 Kc
Sweep Generator	
Frequency Range	20 cps to 150 Kc in 5 steps
Synchronizing	Internal, external, line
Controls	Phasing 0 to 140° adjustable



Tube Complement	1-6J6 1-6CB6 1-6AV6 1-6C4 1-12AT7 1-6DT6 4-6U8 1-12BH7 3-12AU7 1-6X4 1-1X2B
Cathode Ray Tube	3RP1 (Flat face)
Accessories	Cables: 1 300 ohm 2 75 ohm 1 Vertical input 1 Horiz. input 1 Detector input 1 Test probe
Power Supply	Input terminal adapter AC 50/60 cps, 100, 115 or 230 V as specified; 80 watts, approx.
Size and Weight	56 x 38 x 25 cm; 27 kg (22" x 15" x 9 3/4"; 60 lb)

LAG-65 AUDIO SIGNAL GENERATOR

This instrument is an innovation in audio generators. The range from 11 to 110,000 cps is covered in 4 decades. Each decade has 10 steps and a fine frequency adjuster. The generated frequency is read on the calibrated meter scale. The output voltage is determined by the output voltmeter reading and attenuator setting. The voltmeter has auxiliary scales calibrated in decibels, where 0 dB=1 volt, and the range from -60 dB to +20dB, or 1 millivolt to 10 volts, so that the output level may be easily read. This feature is very useful for rapidly obtaining the characteristics of amplifiers and filter networks. The frequency meter covers the range from 10 to 110,000 cps in 4 bands. It may be used independently by connection to an external source for the determination of the frequencies of oscillators, horn, audio beats, etc.

The **LAG-65** is a compact generator which should be in every audio and supersonic laboratory and workshop for development, testing and checking.



Specifications :

Generator
Frequency Range 11 to 110,000 cps in 4 bands ;

Output Voltage	10 steps per decade, with continuously adjustable fine frequency 600 ohm : 0 to 1 volt in 7 ranges 10 K-ohm : 0 to 10 volts in 2 ranges
Distortion	less than 0.1%, 20 to 20,000 cps
Frequency Meter	
Range	10 to 110,000 cps in 4 ranges
Input Voltage	3 to 300 volts, rms
Input Waveform	Sine or square
Input Impedance	200,000 ohms, approx.
Accuracy	± 1.5% of full scale, 10 to 11,000 cps ± 3.5% of full scale, 10 to 110 Kc
Tube Complement	2-6AU6 1-6CL6 1-6AQ5 1-6AL5 1-6X4 1-0A2
Power Supply	AC 50/60 cps; 100, 115 or 230V as specified; 55 W
Size and Weight	34×23×18.5 cm ; 7.5 kg (13½"×9"×7¼" ; 17 lb)

LAG-55 AUDIO GENERATOR

The **LEADER** Model **LAG-55** is an indispensable instrument for checking, testing and maintenance of audio amplifiers, speakers, etc. Three different waveforms, namely, sine, square and complex, are available. The wide frequency range, 20 to 200,000 cps, calibrated on a clear dial, and the constant output level, are very desirable features which have been incorporated in the generator. The sine wave output with very low harmonic content is suited for the determination of distortion in high fidelity amplifiers. The square wave output is used for observing the transient characteristics of amplifiers, networks, filters, etc. The complex wave output of two combined frequencies, a low (line) and a high (5,000 to 8,000 cps) with an amplitude ratio of 4 : 1 is used for I-M distortion testing. The internal high pass filter and an external scope are used. Instructions are supplied.

Specifications :

Frequency Range 20 to 200,000 cps in four 10:1 bands
Calibration Accuracy within 2%, or 2 cps
Frequency Stability within 1% for 5% line voltage variation
Output Impedance 10 KΩ, approximately
Sine Wave output 20 to 200,000 cps
Output Variation less than ± 0.5 dB, referred to 1 Kc, below 100 Kc
Output: 5 V rms, below 100Kc
Distortion less than 1%
Square Wave output 20 to 20,000 cps
Voltage: 10 V peak-to-peak
Complex Wave output above 5,000 cps, using line frequency for base frequency
Amplitude ratio 4:1 (low to high)
Output 10V, peak-to-peak
High pass Filter Cutoff at 4,000 cps. approximately
Tube Complement 1-6AV6 1-12AT7 2-6AR5 1-6X4
Power Supply AC 50/60 cps, 100, 115 or 230V as specified;
35 W, approximately



Size and Weight 17×32×21.5 cm ; 5 kg
(6¾"×12⅝"×8½" ; 11 lb)

LSG-532 TV-FM SWEMAR GENERATOR

This instrument is a combination sweep and marker generator for use in TV and FM receiver servicing, testing, checking and maintenance. It has been designed as a companion unit to the **LEADER LBO-3A** Oscilloscope.

The **LSG-532** incorporates many features which make it the most useful piece of apparatus on the work bench. The stray leakage field has been reduced to negligible proportions. The signal can be attenuated to very low outputs to permit the testing of high sensitivity receivers.

The **LSG-532** is housed in an attractive two-toned cabinet and the controls have been placed on the panel functionally for the maximum ease in operation.



Specifications :

Sweep Generator	
Frequency Range	2 to 270 Mc
	A 2~120 Mc (beat)
	B 150~270 Mc (fund)
Sweep Deviation	0~12 Mc (20Mc max.)
Sweep Method	Vibrating capacitor, sinusoidal
Output Voltage	over 50,000 μ V

Output Impedance	75 Ω , unbalanced	
Output Control	4 steps	
	Fine Adjustment	
Output Variation	within 2 dB	
Frequency Linearity	within 5%	
Marker Generator		
Frequency Range	3.5 to 250 Mc	
	Fund	Harmonic
	A 3.5~6.5 Mc	7~13 Mc
	B 10~18 Mc	20~36 Mc
	C 36~68 Mc	72~136 Mc
	D 58~125 Mc	116~250 Mc
Frequency Accuracy	within 1%	
Quartz Crystal	4.5 Mc, or 5.5 Mc, as specified, 0.05%	
Internal Modulation	600 cps, approx	
Output Voltage	over 50,000 μ V	
Crystal Socket	for FT-243 holder	
Quartz Oscillator	1 to 12 Mc	
Tube Complement	6J6 6U8 12BH7 6CB6 6C4 6AV6 6X4	
Accessories	Cables: 75 Ω RF output	
	Test-point to Scope input	
	Earphone	
Power Supply	AC 50/60 cps, 100, 115 or 230 V	
	as specified; 60 W approx	
Size and Weight	36 \times 26.5 \times 18 cm; 10.4 kg	
	(14 $\frac{1}{4}$ " \times 10 $\frac{1}{2}$ " \times 7 $\frac{1}{4}$ " ; 23 lb)	

LBO-3A OSCILLOSCOPE (UTILITY MODEL)

The **LBO-3A** has been designed for the servicing, testing and maintenance of TV receivers, audio amplifiers and other electronic equipment. It has a wide frequency response enabling the technician to observe all types of waveforms. A stable multivibrator type sweep generator permits the observation of single cycle traces up to 150 kc. The amplified synchronizing signal controlled by the internal (+ or -) pulses will "stop" the traces with positive action. Printed circuitry has been employed for long troublefree life.

Specifications :

Vertical Channel	
Sensitivity	0.03 Vrms per cm (at 1 Kc)
Response	1.5 cps to 1.5 Mc within 3 dB
Input Selector	$\times 1$, $\times 10$, $\times 100$, accuracy ± 1 dB; 0.2 V and 1 V PK-PK
Calibrating Voltage	1 V PK-PK at terminals
Horizontal Channel	
Sensitivity	0.24 Vrms per cm (at 1 kc)
Response	1 cps to 500 Kc, within 3 dB
Sweep Frequency	10 cps to 150 Kc, adjustable 15.75-Kc/2 for Hori TV
Input Impedance	2 Megs shunted by 20 pf
Sync Signal	Int (+, -); Ext; Line
Phasing	0 to 150° adjustable
Circuit Features	Return trace elimination; direct plate connections; Z-axis modulation
Tube Complement	2-12AT7 3-12AU7 1-6U8 1-6X4 1-1X2B
Cathode Ray Tube	3KP1 (1000V accel. voltage)
Power Supply	AC 50/60 cps, 100, 115 or 230V as specified; 55W approx
Size and Weight	18 \times 26.5 \times 31cm; 7.7kg (7 $\frac{1}{4}$ " \times 10 $\frac{1}{2}$ " \times 12 $\frac{1}{4}$ " ; 17.5 lb)



LBO-5A 5" OSCILLOSCOPE WIDE-RANGE

The **LEADER** Model **LBO-5A** Oscilloscope is a sensitive instrument meeting practically all the requirements for general use. Due to its extremely wide frequency response, it is suited for observing TV signal waveforms and pulses. The horizontal sweep frequency extends to 500 Kc, which makes it possible to make full use of the wide frequency response of the vertical channel. The scope has been designed for maximum stability, long life and reliability. The traces may be photographed with the **CANON** 35mm camera and adapter. The **LBO-5A** is suited for use in development laboratories; production lines, servicing and instruction.



Specifications :

Vertical Channel	
Sensitivity	0.015 V rms per cm (at 1 Kc)
Frequency Response	within 1 dB 8 cps to 2.5 Mc within 5 dB : 3 cps to 5 Mc down - 2.2 dB at 3.6 Mc

Input Attenuator	×1, ×10, ×100; accuracy ± 0.5 dB
Horizontal Channel	
Sensitivity	0.24 V rms per cm (at 1 Kc)
Frequency Response	within 1 dB : 3 cps to 200 Kc within 3 dB : 1 cps to 400 Kc
Input Impedance	3 megohms shunted by 31 PF
Rise Time	0.08 μseconds or less
Overshoot	less than 10 %
Calibrating Voltage	0.2 and 1V, peak-to-peak
Input Impedance	3 megohms shunted by 21 PF at × 1 step 3 megohms shunted by 15 PF at × 10, ×100 steps
Sweep Generator	
Frequency Range	10 cps to 500 Kc in 5 steps
Synchronizing	Internal : (+, -); External ; line
Phasing	0 to 150°, continuously adjustable
Circuit Features	Return trace elimination; direct connections to deflection plates; Z-axis modulation; push pull output
Tube Complement	2-6C4 1-6BQ7 3-12AU7 1-12BH7 1-6DT6 1-6X4 1-1X2B
Cathode Ray tube	5UP1-F (Flat-face)
Accessories	Low capacity probe; 1 set of connecting leads
Power Supply	AC 50/60 cps, 100, 115 or 230V as specified, 80 watts, approx
Size and Weight	36.5×24×41cm ; 15 kg (14½"×9½"×16¼" ; 34 lb)

LBO-5B 5" DC OSCILLOSCOPE

The **LEADER LBO-5B** is one of the most compact 5-inch oscilloscopes on the market. It has been specially designed for the laboratories, service shops, production lines, schools etc. The small size is one of the features, it occupies less space than some of the 3-inch oscilloscopes. The vertical input signals may range from DC up to 2 Mc, which is useful for studies from the low audio to the TV waveforms. A very stable cathode coupled DC amplifier is used in a paraphase connection for practically distortionless response. The sweep circuit is the hard tube multivibrator type covering a wide frequency range. Dual concentric controls are used to save space on the panel and at the same time for ease in the adjustment.

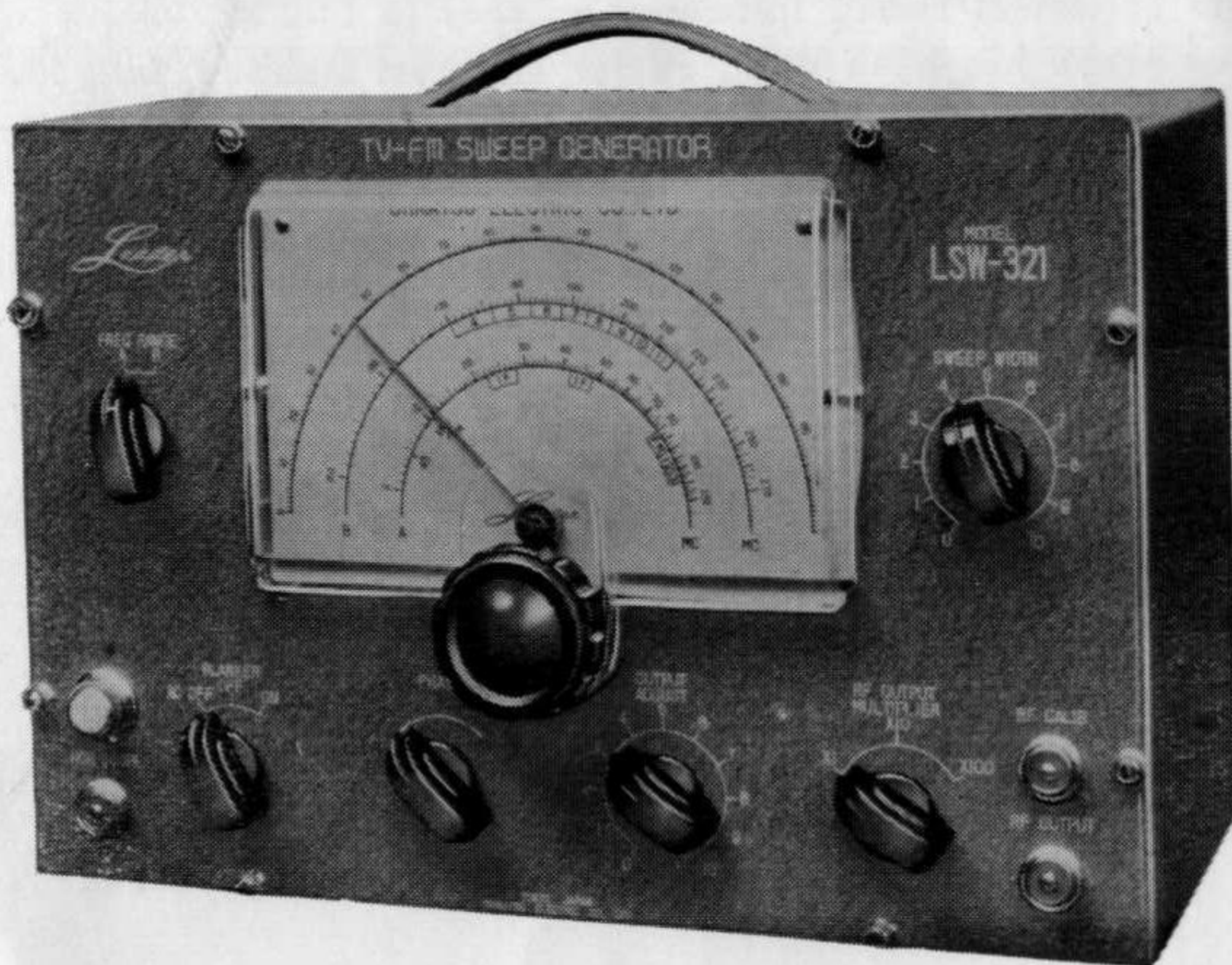
Specifications :

Vertical Channel	
Sensitivity	0.038 V rms/cm at 1 Kc
Gain	40 dB
Frequency Response	DC to 2 Mc AC 1.5 cps to 2 Mc, ± 3 dB
Input Control	×1, ×10, ×100, accuracy ± 0.5 dB FINE adjuster
Input Impedance	1 Meg shunted by 25 pf
Calibrating Voltage	1 V pk-pk
Horizontal Channel	
Sensitivity	0.27 V rms/cm at 1 Kc
Gain	over 26 dB
Frequency Response	1.5 cps to 500 Kc, ± 3 dB
Input selector	×1, ×10 accuracy ± 0.5 dB FINE adjuster
Input Impedance	1 Meg shunted by 25 pf
Sweep Generator	8 cps to 150 Kc in 6 steps; H/TV (15.75 Kc/2)
Sweep Direction	Left to right
Synchronization	Int (+, -), Line, external
Tube Complement	4-12AT7 2-12AU7 1-6X4 1-1X2B 1-5UP1F (flat face)
Accessories	1 low capacitance probe 1 test cable
Power supply	AC 50/60 cps; 100 V, 115 V or 230 V as specified; 65 VA approx.
Size and Weight	18×26.5×40cm; 9.5 kg (7¼"×10½"×15¾" approx; 21.5 lb)



LSW-321 TV-FM SWEEP GENERATOR

The **LEADER LSW-321 SWEEP GENERATOR** is an improved instrument which is probably the best in its class. Laboratory performance is obtained due to the thorough shielding employed. It is possible to make overall response tests from the antenna to the detector. Signals for the VHF, IF and FM frequencies in the range, 2 Mc to 270 Mc are available.



Specifications :

Frequency Range	A 2 Mc to 120 Mc B 150 Mc to 270 Mc
Sweep Deviation	12 Mc or more
Sweep Method	Vibrating Capacitor, at line frequency
Output Impedance	75 Ω , unbalanced
Output Voltage RF	over 100,000 microvolts
Horiz Sweep	2 V, phase controlled
Tube Complement	6J6, 6CB6, 6C4, 6AV6, 6X4
Accessory Cables	75 Ω RF; 300 Ω padded Horizontal input to scope
Power Supply	AC 50/60 cps 100, 115V, or 230V, as specified; 35W approx.
Size and Weight	32 \times 21.5 \times 14cm; 6.4 kg (12 $\frac{5}{8}$ \times 8 $\frac{3}{4}$ \times 5 $\frac{1}{2}$ in; 14.4 lb)

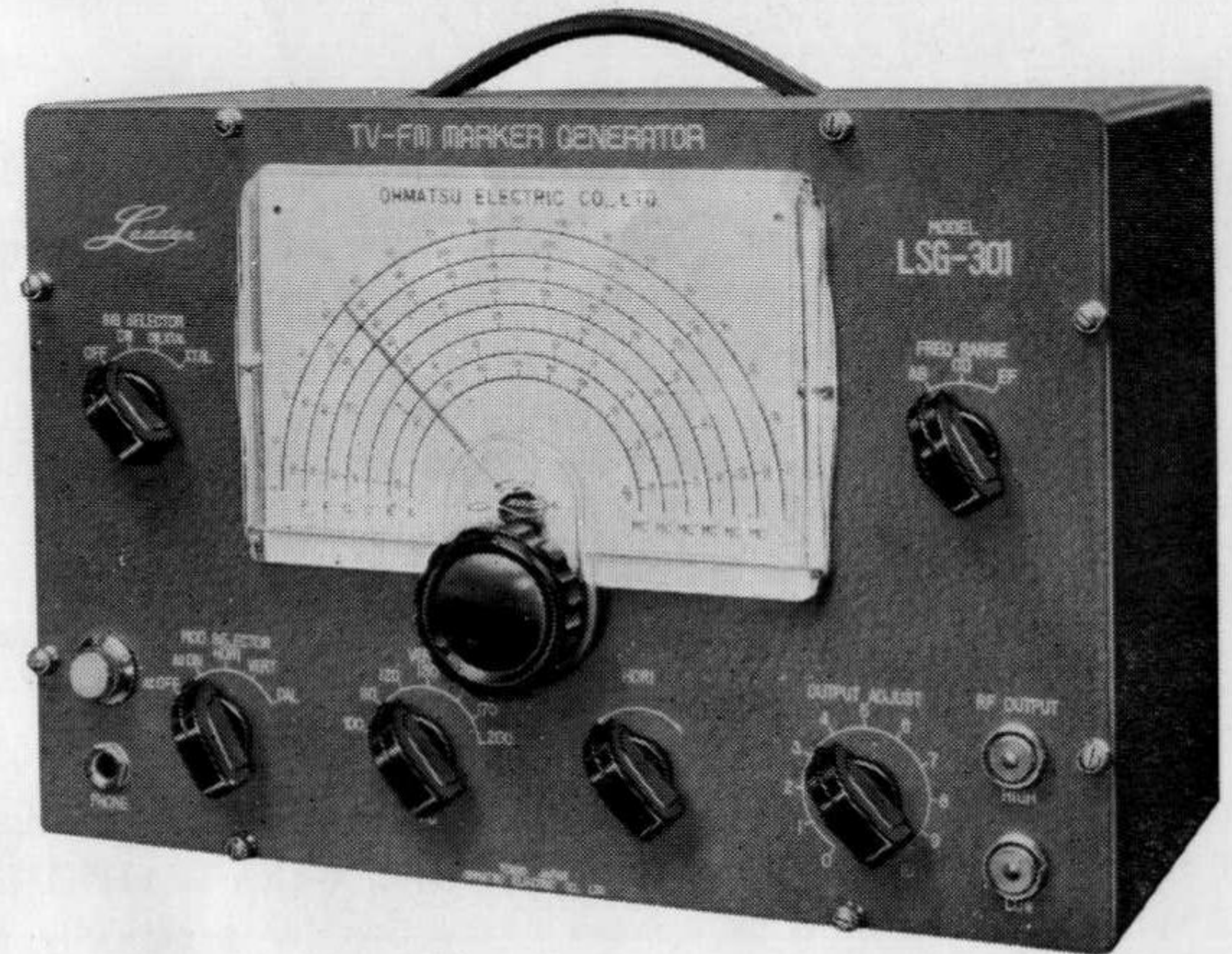
LSG-301 TV-FM MARKER GENERATOR

The use of an oversized dial enables the operator to set and read the frequencies very accurately. The crystal oscillator output may be used independently for calibrating external oscillators, etc. For linearity checking of TV receivers. the vertical and the horizontal bars can be generated in the absence of broadcast patterns. A self contained crystal diode detector and a 2-stage audio amplifier are used for self or external frequency calibration, local oscillator checking, etc.

Specifications :

Frequency Range	Fundamental	Harmonic
	A 3.5 Mc to 8 Mc	B 7 Mc to 16 Mc
	C 16 Mc to 40 Mc	D 32 Mc to 80 Mc
	E 75 Mc to 125 Mc	F 150 Mc to 250 Mc
Frequency Calibration	within 1 %	
Quartz Crystal(furnished)*	4.5 Mc (or 5.5 Mc) \pm 0.05% accuracy	
Quartz Oscillator	1 Mc to 12 Mc xtals may be used	
Output Impedance	75 Ω , unbalanced	
Output Voltage	over 100,000 microvolts, continuously adjustable	
Bar Mod. Frequencies (adjustable)	Vertical 100 Kc to 200 Kc Horizontal 700 cps to 900 cps	
Output Cable	75 Ω . co-axial (supplied)	
Audio Output Indicator	2 $\frac{1}{2}$ inch Speaker; earphone	
Tube Complement	6C4, 6J6, 12AT7, 12BH7, 6X4	
Power Supply	AC 50/60 cps 100, 115V, or 230V as specified; 35 W approx.	
Size and Weight	32 \times 21.5 \times 14 cm; 6 kg (12 $\frac{5}{8}$ \times 8 $\frac{3}{4}$ \times 5 $\frac{1}{2}$ in; 13.5 lb)	

* 4.5 Mc crystal will be supplied, unless specified.



LMA-1000 HETERODYNE MARKER ADDER

The **LMA-1000** is most useful device when used in combination with the **LSW-321** and the **LSG-301** described above for receiver alignment. It is possible to "mark" the calibrating frequencies on the resonance curves at all points, even in the trap circuits without disappearance. This is done without distorting or overloading the circuits under test. The marker signal does not pass through the receiver. Alignment will be more accurate because the pip amplitude can be varied independently of the swept frequencies. The instrument is specially designed for use with the **LEADER LSW-321** and **LSG-301**, and is highly recommended.

Specifications :

RF Input Impedance	75 Ω , unbalanced
Marker Output Voltage	3V, max.
Input RF Voltage required	at least 50,000 microvolts
Marker Attenuation	0-60 DB, variable
Response Curve Attenuation	0-20 DB, variable
Tube Complement	6BE6, 6AU6, 12BH7, 6X4
Accessory Cables	2 75 Ω co-axial 2 Shielded Connectors
Power Supply	AC 50/60 cps 100, 115 or 230 V as specified 15W approx
Size and Weight	14 \times 21.5 \times 14cm; 2.2 kg (5 $\frac{1}{2}$ \times 8 $\frac{3}{4}$ \times 5 $\frac{1}{2}$ in; 5 lb)



LEADER TEST INSTRUMENTS

LSG-11 WIDE BAND SIGNAL GENERATOR

The **LEADER LSG-11** is a general purpose signal generator having features which make it most useful in testing, checking and experimenting with the radio and audio frequency circuits. The calibration accuracy is $\pm 1\%$ below 30 Mc and $\pm 3\%$ to 390 Mc. This feature permits the lining up and also checking of the tuned circuits, IF amplifiers, etc.

Wide frequency range, 120 Kc to 390 Mc. Stable Colpitts oscillator with buffer stage. Two audio modulation frequencies. Provision for quartz crystal. Clear scales for frequency calibration. Compact and robust construction. Attractive heavy steel cabinet.



Specifications :

Frequency Range	120 Kc to 130 Mc on fundamentals
Calibrated Harmonics	120~390Mc
R. F. Output	0-100,000 μ V, adjustable
Modulation Frequencies	400 and 1,000 cps, A. F. Output adjustable
Crystal Oscillator	1 Mc to 15 Mc
Tube complement	12BH7 6AR5
Accessory	Coaxial cable
Power Supply	AC 50/60 cps; 100 V, 115 V, or 230 V as specified; 13 VA approx.
Size and Weight	19×27.5×115 cm; 2.75 kg (7½"×11"×4½" ; 6 lb. approx.)

LSG-20 DE LUXE SIGNAL GENERATOR

The **LSG-20 DELUXE SIGNAL GENERATOR** has been designed for the radio set manufacturers, laboratories, educational institutions and service benches, where a high grade instrument is required.

Specifications :

Frequency Range	120 Kc to 130 Mc on fundamentals (6 Bands) 120 Mc to 260 Mc on harmonics
R. F. Output	0-100,000 microvolts Variable, with 2 connectors
Crystal Oscillator	1 Mc to 12 Mc
Mod. Frequency	Approximately 400 cps
A. F. Output	2 to 3 volts
A. F. Input	Approximately 4 volts
Tube Complement	12BH7 6AR5 6X4 OB2
Accessories	FT-243 type 5Mc crystal; Co-axial Output Cable
Power Supply	AC 50/60 cps, 100, 115 or 230V as specified; 17 W approx.
Size and Weight	20×30×12.5 cm; 4.8 kg (8×10×5 in; 11 lb)

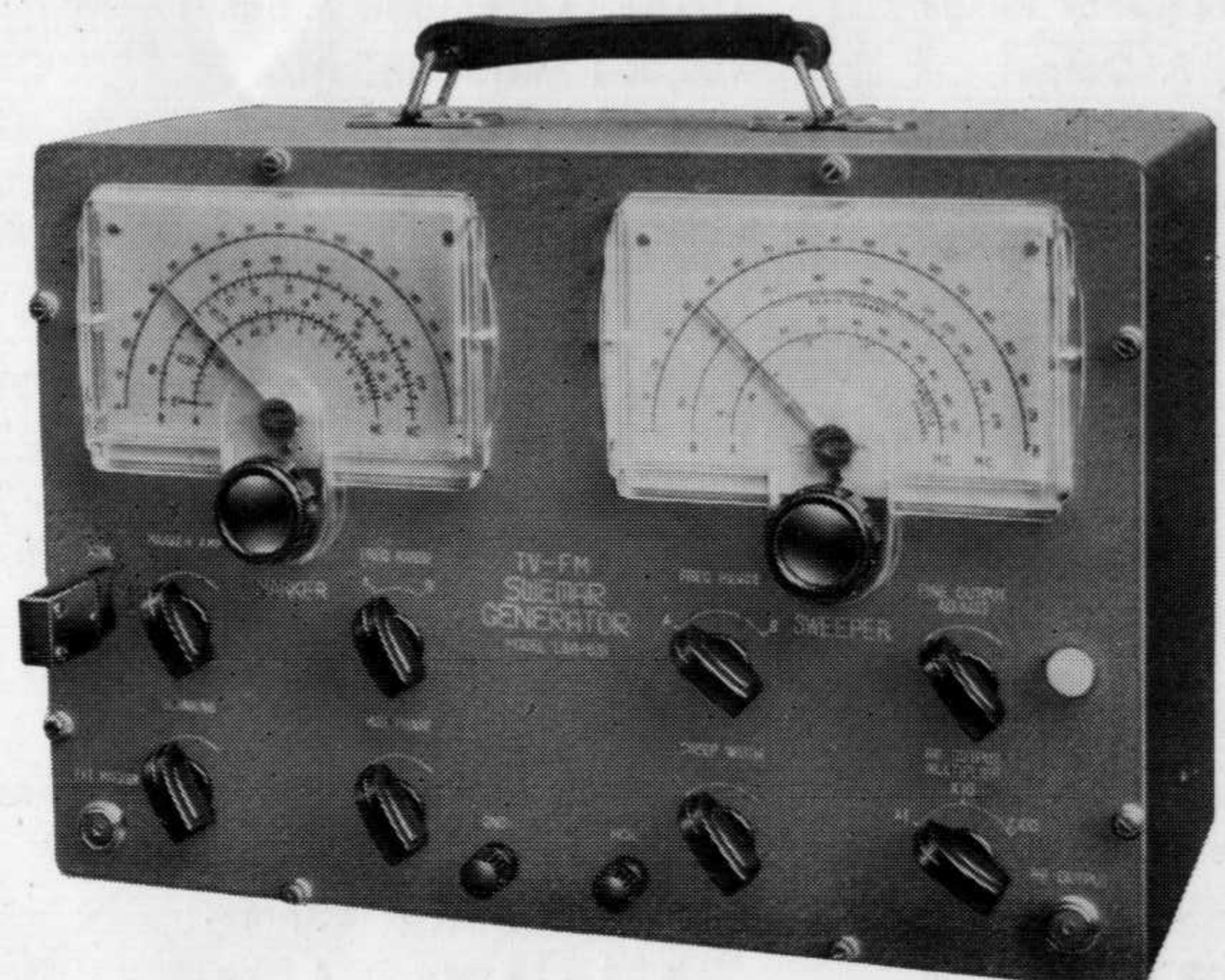


LSG-531 TV-FM SWEMAR GENERATOR

The Model **LSG-531 SWEMAR GENERATOR** is a Sweep and Marker Generator designed for use in the servicing, maintenance and checking of TV and FM receiving sets. It is used to obtain the response curves on an oscilloscope screen. Being of rugged construction, it will withstand the rough usage on the benches and in the field. The **LSG-531** is very compact, but nothing has been sacrificed to obtain the highest performance of the equipment in its class.

Specifications :

Frequency Range	Sweeper A	3 Mc~120 Mc Beat Frequency
	B	150 Mc~270 Mc Fundamentals
Marker	A	3 Mc~ 11 Mc Fundamentals
		9 Mc~ 33 Mc Harmonics
	B	19 Mc~ 75 Mc Fundamentals
		57 Mc~225 Mc Harmonics
Marker Calibration	Within 1% or better	
Quartz crystal *	4.5 Mc (or 5.5Mc) $\pm 0.05\%$	
Sweep Method	Vibrating Capacitor, sinusoidal	
Sweep Deviation	0~12 Mc or more	
Output Impedance	75 Ω , unbalanced	
Output Voltage	over 100,000 microvolts	
Tube Complement	6C4 6CB6 6J6 12BH7 6AV6 6X4	
Accessories	Cables : 75 Ω R. F. Output, Ext Marker Input	
Power Supply	AC 50/60 cps, 100, 115, or 230V as specified; 30W approx.	
Size and Weight	23×34×15 cm ; 7 kg (9×13½×6 in ; 16 lb)	

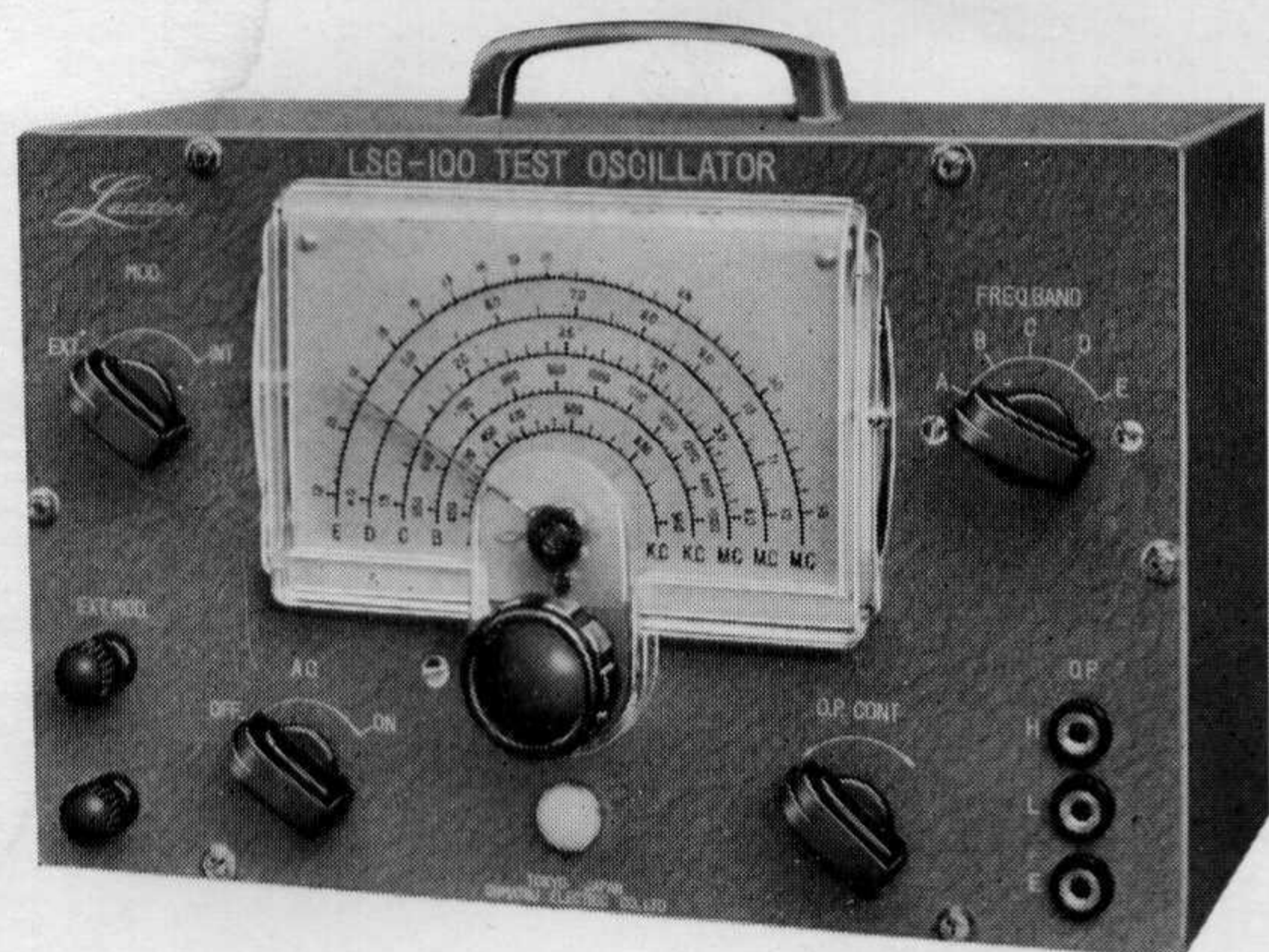


* 4.5 Mc Crystal will be supplied, unless specified

LEADER TEST INSTRUMENTS

LSG-100 POPULAR SIGNAL GENERATOR

A smaller and simplified version of the **LEADER LSG-200**, this generator is suitable for the amateur constructor and for all-around shop work.



Specifications :

Frequency Range	400 kc to 36 Mc, 5 bands (Lowest is band-spread)
Calibration Accuracy	Within 1 %
Output	High, Low, and Fine
Internal Modulation	400 cps, approx.
External Modulation	Approx. 6 volts
Tube Complement	6BE6 6X4
Power Supply	AC, 50/60 cps, 100, 115 V, 230V as specified, 15 W
Size and Weight	16×25×11.5 cm; 2.7 kg (6½×10×4½ in; 6 lb)

LSG-200 ALL WAVE SIGNAL GENERATOR

The **LSG-200 SIGNAL GENERATOR** is designed to meet the demand for a high grade and versatile instrument covering the wide requirements. The frequency coverage is sufficient for practically all type of all-wave receivers. It is recommended for service benches, assembly plants, schools and laboratories.

Specifications :

Frequency Range	100 Kc to 36 Mc, 6 bands
Calibration Accuracy	Within 1 %
Output	High, Low, and Variable
Internal Modulation	400 cps, approx; 40 % depth
External Modulation	1.5 V approx for 40 % Modulation,
Tube Complement	2-6BD6, 6X4
Power Supply	AC, 50/60 cps, 100, 115 V or 220 V, as specified, 20W approx.
Size and Weight	20×30×12.5 cm; 42 kg (8×12×5 in; 9.5 lb)



LSG-220 LABORATORY SIGNAL GENERATOR

The **LSG-220** is a signal generator designed for use in the development, testing and maintenance of radio receivers in the frequency range from 100 Kc to 38 Mc. The radio frequency output level and the degree of modulation can be adjusted to known values by the metering circuit.

The accuracy of indication is sufficient to compare the performance of all types of AM receivers, for sensitivity, selectivity, image ratios, etc. It is most useful in aligning the IF amplifier circuits, checking detector and AVC characteristics, setting the frequencies and response of audio circuits.

Specifications :

Frequency Range	100 Kc to 38 Mc in 6 bands
R. F. Output	100,000 microvolts, max.
Output Impedance	75 Ω unbalanced
Attenuation	10 : 1 steps, 5-stages; FINE adjuster
Modulation	CW; 400 cps int.; External
Modulation Depth	to 50 %
Controls, etc.	Tuning RANGE STEP ATTENUATOR FINE output METER reading FUNCTION : CW MOD EXT-MOD MODULATION METER : MOD RF-CARRIER RF OUTPUT cable connector EXT MOD terminals pilot lamp
Tube Complement	6J6 6AQ5 12BH7 6X4
Accessory	75 Ω coaxial cable, 75 Ω termination
Power Supply	AC 50/60 cps, 100, 115 or 230 V as specified; 30 W approx.
Size and Weight	23×34×15 cm; 6.5 kg (9"×13¼"×6"; 14.5 lb)

