

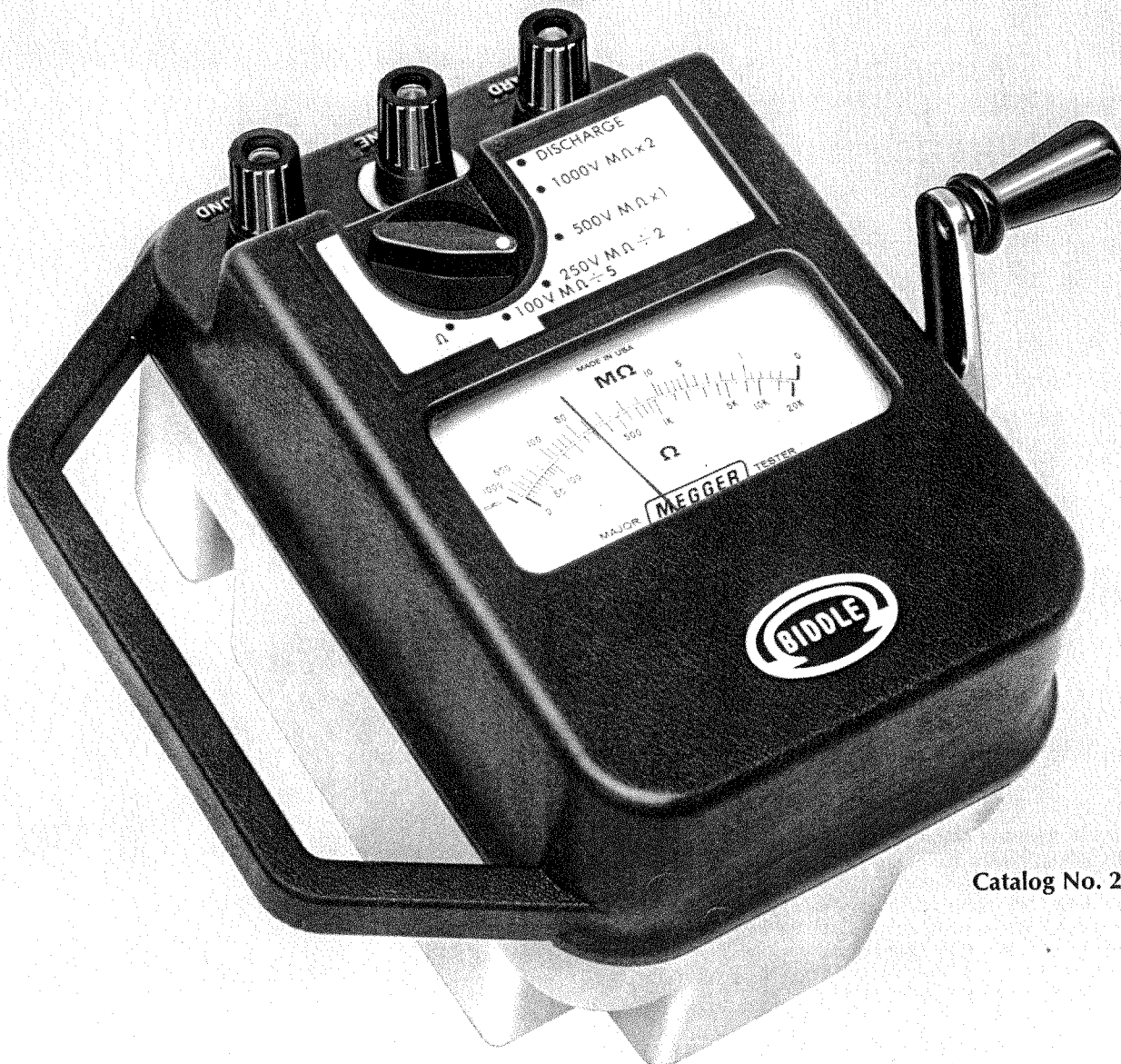
BULLETIN  
21-50d

# MAJOR MEGGER<sup>®</sup> insulation testers • HAND, LINE, OR DUAL OPERATED

**Compact, Lightweight, Multi-Voltage, Multi-Range**

- These 4-range instruments simplify selection and provide greater versatility!
- High-range instrument provides twice the sensitivity previously available. New dual-operated model now in one module.
- Low voltage instrument for use where damage may result from use of conventional voltages. High-range instrument provides twice the sensitivity previously available.

Major Megger testers are the most practical and dependable instruments for broadest use in the average plant. Applications include tests on motors, wiring, cable, control equipment and switchboards. Line-operated units are particularly suited for repetitive tests of communication and control circuits, and in production applications.



Catalog No. 21159

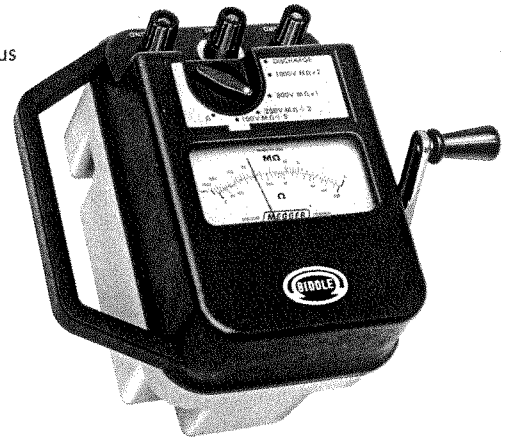
# Major™ Megger® Insulation Testing Instruments

The hand-cranked Catalog No. 21159 Major Megger tester shown on the right represents the latest development in the popular line of Major Megger testers. While similar to previous Major instruments, this new tester has *four* dc output test voltages instead of the customary three—allowing extended step-voltage testing, as well as providing a low 100-volt range for use during the early stages of a drying-out run. A 20,000 ohm continuity range and a discharge switch are standard on all instruments in this series.

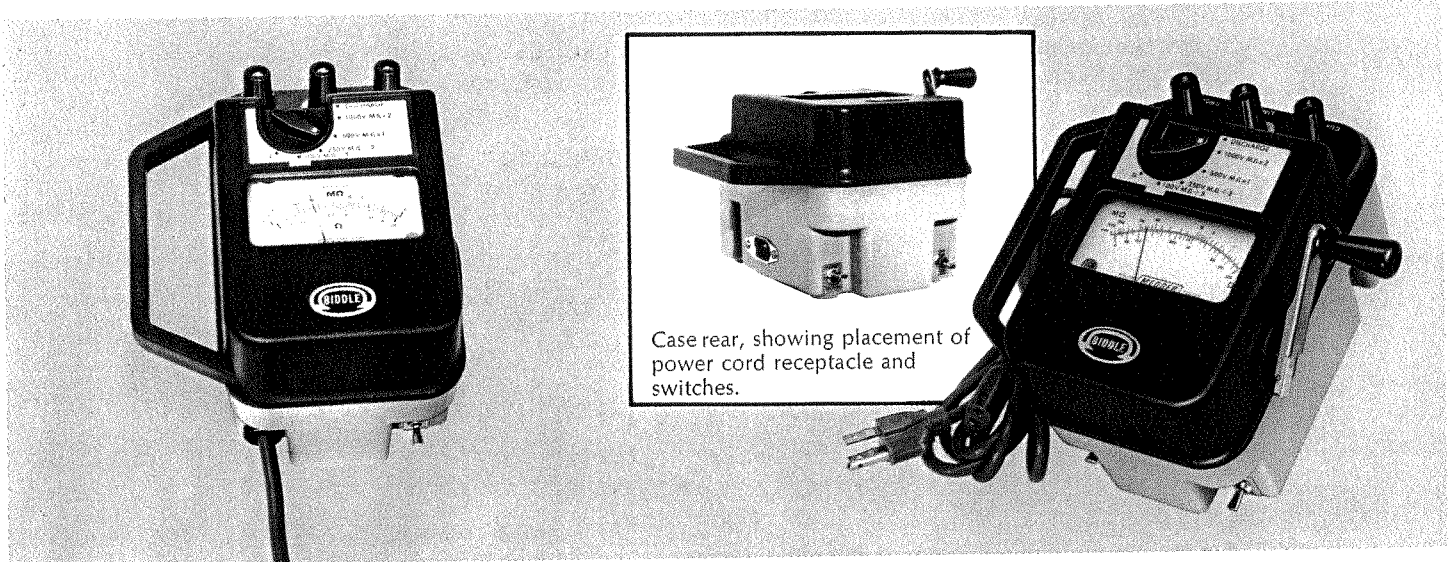
A hand-driven brushless ac generator—working with a solid state rectifier and stabilizing circuit—supplies constant test voltage; there is no dependence on batteries or other supply source! The generator movement is smooth and quiet with the crank operation requiring a minimum amount of turning effort. The crank folds back and nests into the side of the instrument when not in use. The terminals accommodate all standard types of cable termination: spade, 4 mm plug, soldered end, etc.

All instruments are internally guarded to prevent errors in the ohmmeter readings due to possible current leakage between the positive and negative sides of the dc circuit inside or outside the instrument. An external "Guard" terminal is provided as standard to eliminate surface leakage errors when necessary.

These instruments are extremely accurate and individually calibrated. The maximum displacement of the pointer is  $\pm 0.03$  in. (0.76 mm) from any marked scale position when checked against a standard resistor.



Cat. No. 21159 Hand-Cranked Model



Cat. No. 21259 Line-Operated Plug-In Model

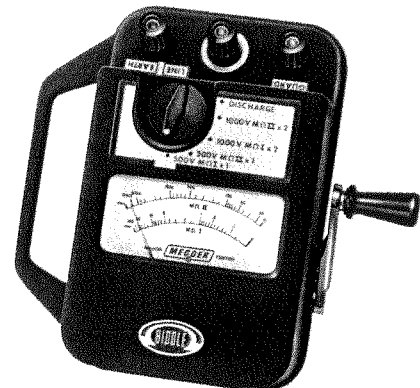
These instruments are essentially a modification of the hand-cranked tester, with a transformer and rectifier used in place of the hand generator, placed in the same case. The power pack consists of a step-up transformer and selenium rectifier which provide a constant dc test voltage. This feature lends itself to production-type testing, quality control and laboratory tests, and wherever long-range testing work will be performed. The Megger true ohmmeter covers a wide range and is independent of the supply voltage. A push-turn switch, scale pilot light, and connection cord are included with each instrument.

Cat. No. 21359 Dual Operated Model

This is the most versatile of the "Major" instruments, and it is now the same size as the other Major instruments! Dual operation is supplied by hand crank driving a brushless AC generator with rectifier and stabilizing circuit, or by simple connection to any 115V 50/60 Hz power source. The desired mode of operation can be chosen by a simple two-position selector switch. The instrument covers 4 test voltages: 100, 250, 500, 1000 Volts, with megohm ranges of 200, 500, 1000, and 2000.

## High-Range Model

This instrument is designed for testing high-grade insulation systems and cables where readings above 2000 megohms are normally encountered which require extra sensitivity. The High-Range Major instrument features the true crossed-coil ohmmeter movement used in the other Major Megger testers described above. A highly stable, solid state current amplifier has been added to provide the measuring capability to reach extremely high sensitivities. Operation of this instrument is identical to other Major testers, including the fact that no zero adjustment is required.



Cat. No. 21170 Dual Range,  
500 and 1000 volts.

# Selection Guide

## FOR MAJOR MEGGER INSULATION TESTING INSTRUMENTS

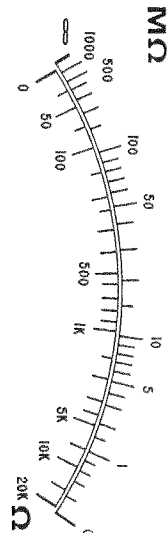
CATALOG NO.	DC TEST VOLTAGES	MEGOHM RANGES	OHM RANGE	DISCHARGE POSITION	CASE & LEADS
<b>HAND OPERATION</b>					
21159	100, 250, 500, 1000	200, 500, 1000, 2000	20,000	YES	217720 Case 21963C Leads
<b>LINE OPERATION (115 volts, 60Hz)</b>					
21259	100, 250, 500, 1000	200, 500, 1000, 2000	20,000	YES	217720 Case 21963C Leads
<b>DUAL OPERATION</b>					
21359	100, 250, 500, 1000	200, 500, 1000, 2000	20,000	YES	217720 Case 21963C Leads
<b>HIGH RANGE—Hand Operated</b>					
21170	500, 1000	100 & 10,000, 200 & 20,000	—	YES	217720 Case 21963E Leads
<b>LOW VOLTAGE—Hand Operated</b>					
21160	50, 100, 150, 250, 500	100, 200, 300, 500, 1000	—	—	217720 Case
21189	10, 25, 50, 100, 150	20, 50, 100, 200, 300	—	—	21963C Leads

### WEIGHTS AND DIMENSIONS

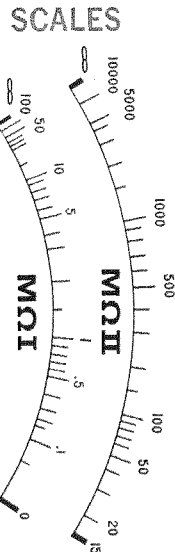
Cat. No.	Type	Weight	Dimensions
211	Hand-operated	5.25 lbs. (2.38 kg)	7" x 4¼" x 5" (17.8 x 10.8 x 12.7 cm)
212	Line-operated		
213	Dual-operated		
217720	Carrying Case	1¼ lbs. (.56 kg)	8" x 5¾" x 7¼" (20.3 x 14.6 x 18.4 cm)

### NOTES:

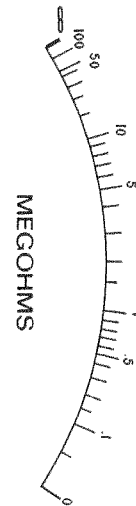
Short Circuit Currents:  
 Megohm Range:  
 0.5–0.6 mA all except 21170  
 2.0–4.5 mA–21170  
 Ohm Range:  
 2.0 mA  
 Open Circuit Voltages:  
 Ohm Range–2–300 volts



Cat. No. 21159  
thru 21359



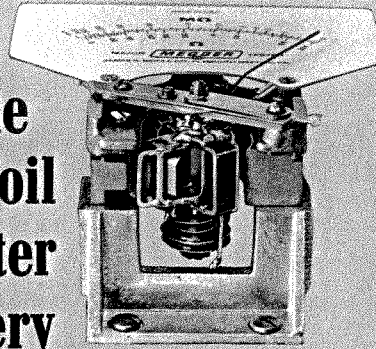
Cat. No. 21170



Cat. No. 21160 and  
21189



# True Crossed-Coil Ohmmeter is the Heart of Every Major Megger Tester



The movement used in all Major instruments is the universally accepted "true" Megger ohmmeter, not simply a voltmeter calibrated in ohms. The moving element consists of two coils—control and deflection—arranged to oppose each other. The control coil is connected across the current supply and in series with a fixed resistance. The deflecting coil is connected in series with the resistance under test and a fixed resistance. There is no control spring. Deflection of the movement depends on the ratio of the currents in the two coils which is determined solely by the value of the resistance under test since variations in the applied voltage affect both coils in the same proportion. It is for this reason that the ohmmeter may be calibrated directly in megohms and ohms.



## Case and Testing Lead Accessories

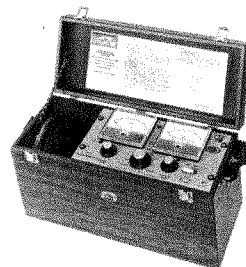
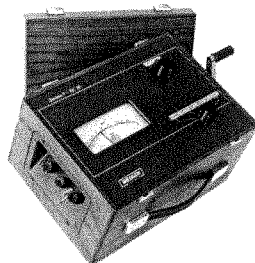
The Catalog No. 217720 Vinyl case is available for all Major Megger instruments. The case provides space for one pair of any of the following test leads: Cat. No. 21963B 12 ft. leads, or Cat. No. 21963C 6 ft. leads for all Major instruments except Cat. No. 21170; or Cat. No. 21963E 6 ft. leads for the Cat. No. 21170 instrument.

## INSTRUMENTS FOR OTHER INSULATION TESTING APPLICATIONS

### DUAL-OPERATED HEAVY DUTY MEGGER® INSULATION TESTERS

Hand cranked and motor driven. Two models available: Catalog No. 218638—Range 250,000 M $\Omega$  @ 2500 volts; Output volts 500 to 2500 volts in 5 steps. Catalog No. 218640—Range 500,000 M $\Omega$  @ 5000 volts; Output volts 1000 to 5000 volts in 5 steps.

Request BULLETIN 21-20.



### 2.5/5kV and 7.5/15kV MEGOHMMETERS

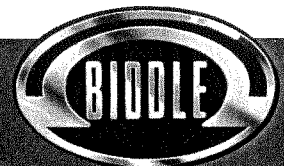
High-voltage, line-operated instruments for resistance tests that do not require the very high sensitivity of a Heavy-Duty Megger tester. All types of insulation tests to 15kV can be performed with these megohmmeters, including dielectric absorption and step-voltage testing.

Request BULLETIN 21-40.

James G. **Biddle** INSTRUMENTS

510 Township Line Road, Blue Bell, Pennsylvania 19422

215-646-9200/Cable: BIDDLE/Telex: 83-4423 BIDDLE PMTC. Sales offices in principal cities.



A member of the THORN EMI Group