

Major Megger[®] Insulation Resistance Testers



- **No scale multipliers**
- **Multiple test voltages for spot and step voltage testing**
- **Guard terminal to eliminate surface leakage current**

DESCRIPTION

Quality is crafted into every Major MEGGER[®] Insulation Tester, with excellent test voltage regulation, direct measurement readout and an external guard terminal to eliminate surface leakage current from the measurement. Two models are available for general purpose testing which include a low-voltage model. Both are portable, self-contained instruments designed to give rapid and accurate measurements.

The instruments feature an analog display having four selectable test voltages of 100, 250, 500 and 1000 Vdc, measuring insulation resistance up to 2000 M Ω , and an ohm range to 5000 Ω .

The only other difference among the two models is the type of power source. Power for model MJ159 is derived from a low-voltage, hand cranked generator which has been designed to be easy to turn even under full load conditions. The low-voltage generator is connected to an electronic inverter to provide a very stable test voltage. Accuracy of measurement is unaffected by variations in the generator cranking speed and the test voltage is maintained at its rated value. Power for model MJ359 is provided by 120 V ac 50/60 Hz or low-voltage generator.

As a safety feature, the ac voltage range becomes effective as soon as the instrument is connected to the circuit under test. Therefore, a warning is given that the circuit under test is not de-energized before the instrument is operated. Though calibrated for ac voltage, this range also monitors the automatic discharge feature so that after equipment having capacitance (i.e. a cable), has been tested, an indication can be given that the voltage has discharged to a level that is safe for removing the test leads.

Each instrument has a guard terminal which may be used to prevent the effects of surface leakage from influencing the readings. This is achieved by diverting the leakage current through the guard terminal and away from the instrument's measuring circuit. The instruments are built into a strong ABS plastic case with a fold down carrying handle.

APPLICATIONS

The Major Meggers have been designed for convenience and ease-of-use when testing complex or larger electrical installations, and commissioning, servicing or maintaining electrical equipment. They are designed for the safe testing of motors, generators, cables, switchgear, transformers, distribution networks, industrial and domestic installations, components and appliances.

The instruments are suitable for testing installations to the requirements of most international wiring regulations including the IEE Wiring Regulations and the German Regulations VDE 0100. To achieve this, an instrument's performance on the resistance ranges fully conforms to VDE 0413 parts 1 and 4.

The range of insulation test voltages available allows one instrument to be used for a variety of applications. For example, installations and equipment can be tested at 1000 V d.c. when this requirement is specified, also aircraft and telecommunications equipment can be tested at the relatively low 100 V d.c. and 110 V to 120 V a.c. systems can be tested using 250 V d.c.

Test leads with fused prods are available and it is recommended that these be used when checking that equipment has been isolated from the supply (by performing a voltage test), especially in high energy situations.

SPECIFICATIONS

Insulation Range

Insulation Resistance: 0.1 Ω - 2000 M Ω
Accuracy: $\pm 1.25\%$ of fsd on a 2.8 in. (71.1mm) arc length

Nominal Test Voltages

d.c.: 100 V, 250 V, 500 V, 1000 V

Accuracy

250 V, 500 V, 1000 V +30%, -0% max.
50 V, 100 V, +40%, -0% max.

Midscale: 4 M Ω

Short Circuit Current: 1.9 mA

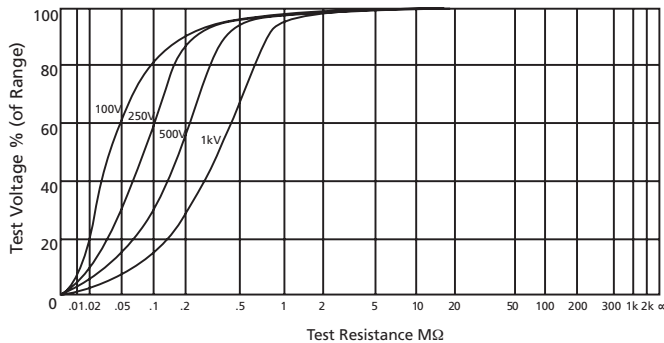
Maximum Load Capacitance: 1 μ F with less than ± 0.1 in. pointer movement

Discharge: Up to 1 μ F capacitance is discharged from 1000 V to less than 42.4 V in less than 4 secs

Resistance Range

0.1 Ω - 5000 Ω

Test Voltage Characteristics



Open circuit Test voltage: 3 V ± 0.2 V

Short Circuit Current: 2 mA $\pm 10\%$

Accuracy: $\pm 1.25\%$ of fsd on a 2.8 in. (71.1mm) arc length

Safety Voltage Check

Voltage measurement: 0.1 V - 600 V a.c.; the meter is RMS calibrated and average responding

Safety voltage indicator: Indicates the presence of d.c. voltages. Scaling is not the same as the a.c. meter. True d.c. voltage equals scale reading divided by 2.22

Accuracy: 2.5% of full scale

Power Supplies

MJ159: Low voltage brushless a.c. generator. Cranking speed between 130 rpm and 170 rpm

MJ359: Dual operation low voltage brushless a.c. generator or 120 V 50/60 Hz mains (line) supply

Safety

The instruments meet the requirements for double insulation to IEC 1010-1(1995), EN 61010 (1995) to installation Category II, 300 V phase to earth (ground), 600 V installation Category I

Flash Test

6 kV a.c. r.m.s.

Fuses

500 mA (FF) 660 V Ceramic 50 kA HBC 1 1/4 x 1/4 in. (32 mm x 6 mm)

7A (F) 440 V Ceramic 10 kA HBC 1 1/4 x 1/4 in. (32 mm x 6 mm)

100 mA (F) HBC 20 mm x 5 mm (for line protection only)

MJ359 only:

Power connection plug fuse 100 mA 240 V HBC (20 mm x 6 mm)
Mains power cord fused plug (when applicable) 3 A 250 V ceramic HBC fuse to BS1362 1 1/4 x 1/4 in. (32 mm x 6 mm)

E.M.C.

In accordance with IEC 61326 includes amendment No. 1.

Operating Temperature Range

32° to 113°F (0° to 45°C) for battery operated models
14° to 122°F (-10° to 50°C)

Humidity Range

Operating:

70% RH max. at 68°F (20°C)

60% RH max. at 95°F (35°C)

50% RH max. at 105°F (40°C)

Storage: 95% RH max. at 95° F (35°C)

Dimensions

5.1 H x 4.9 W x 7 L in.
(130 H x 125 W x 180 L mm)

Weight

Approximately 2.3 lb (1 kg)

Cleaning

Wipe disconnected instrument with a clean cloth dampened with soapy water or Isopropyl Alcohol (IPA).

ORDERING INFORMATION

Item (Qty)	Cat. No.	Item (Qty)	Cat. No.
MJ159 Hand-cranked insulation tester	212159	Optional Accessories	
MJ359 120 Vac, Hand-cranked insulation tester	212359	Test record card (pack of 20)	6111-216
Included Accessories		Black test lead with large alligator clip	6220-295
User guide	6172-113	Red test lead with large alligator clip	6220-586
Test lead set (3 leads, 3 prods, 3 clips)	6220-436	Green test lead with large alligator clip	6220-587
Power cord (where applicable)	25670-002	Set of test leads with fused prods (FPK5) 1000 V ac 500 mA fuse	6111-288
Test record card (5 supplied)	6172-111	Test lead set, 3.6 m [12 ft] (1 pair)	210972
Carrying case	6420-111	Electrodes (for floor testing), 2.25 kg [5 lb] (1 pair)	260565
		"A Stitch in Time"	AVTM21-P8B

SALES OFFICE

Megger
 2621 Van Buren Avenue
 Norristown, PA 19403 USA
 T 866-254-0962
 E VFCustomerSupport@megger.com

MJ_TESTERS_DS_US_V13

www.megger.com
 ISO 9001:2008
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