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. Five models are available for general purpose testing which include a low-voltage model.

All are portable, self-contained instruments designed to give rapid and accurate measurements.

Four of the models feature an analog display having four selectable test voltages of 100, 250, 500 and 1000 Vdc, measuring insulation resistance up to 2000 MΩ, and an ohm range to 5000 ≈ . The other model has four test voltages of 50, 100, 250 and 500 Vdc measuring insulation resistance up to 1000 M≈ .

The only other difference between the five analog models is the type of power source. Power for models MJ159 and MJ160 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. Model MJ559 is also 120 Vac 50/60 Hz or internal rechargeable batteries and model MJ459 is powered by 6 replaceable “AA” alkaline cells.

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.

Each instrument is 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 tele-communications 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.

SPECIFICATION

Insulation Range

Insulation Resistance: 0.1 Ω - 2000 MΩ (0.1 Ω -1000 MΩ for MJ160)

Accuracy: ±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.

(MJ160 is 50 V, 100 V, 250 V, 500 V)

Accuracy

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

50 V, 100 V, +40%, -0% max.

Midscale: 4 MΩ (2 MΩ for MJ160)

Short Circuit Current: 1.9 mA
(0.65 mA for MJ160)

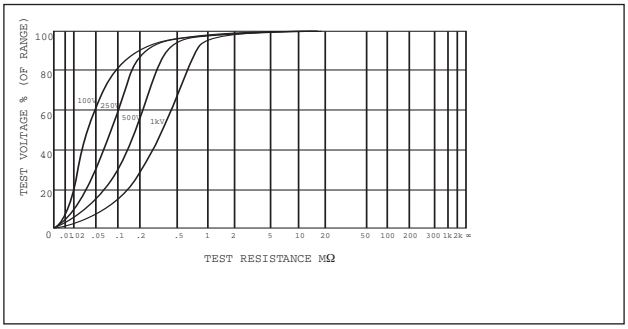
Maximum Load Capacitance: 1μF with less than ±0.1" pointer movement

Discharge: Up to 1 μF 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 ±10%

Accuracy: ±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 and MJ160: 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

MJ459: Six IEC LR6 cells (AA) Battery life: not less than 1300 insulation or Resistance range tests

MJ559: Dual operation 120 V 50/60 Hz mains (line) supply and rechargeable battery. Six Ni Cad cells (e.g. AA, NEDA 15 NC)

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 11/4 x 1/4 in.
(32 mm x 6 mm)

7A (F) 440 V Ceramic 10 kA HBC
11/4 x 1/4 in. (32 mm x 6 mm)

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

MJ359 and MJ559 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 11/4 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 1 kg (2,3lb)

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

ORDERING INFORMATION

Item	Cat. No.
MJ159 Hand-cranked insulation tester	212159
MJ359 120 Va.c./hand-cranked insulation tester..	212359
MJ459 Battery powered insulation tester	212459
MJ559 120 Va.c. rechargeable insulation tester	212559
MJ160 Low voltage, hand cranked insulation tester	212160
Included Accessories	
User guide	6172-113
Test lead set (3 leads, 3 prods, 3 clips)	6220-436
Power cord (where applicable)	25970-002
Test record card (5 supplied)	6172-111
Carrying case	6420-111

Item	Cat. No.
Optional Accessories	
Test record card (pack of 20)	6111-216
Black test lead with large alligator clip	6220-295
Red test lead with large alligator clip	6220-586
Green test lead with large alligator clip	6220-587
Set of test leads with fused prods (FPK5) - 1000 V a.c. 500 mA fuse	6111-288
Test lead set, 3.6m [12 ft] (1 pair)	210972
Electrodes (for floor testing), 2.25 kg [5 lb] each (1 pair)	260565
'A Stitch In Time'	AVTM21-P8B

UK
Archcliffe Road Dover
CT17 9EN England
T +44 (0) 1304 502101
F +44 (0) 1304 207342

UNITED STATES
4271 Bronze Way
Dallas TX 75237-1088 USA
T 800 723 2861 (USA only)
T +1 214 333 3201
F +1 214 331 7399

OTHER TECHNICAL SALES OFFICES
Norristown USA, Toronto CANADA, Mumbai INDIA, Trappes FRANCE, Sydney AUSTRALIA, Madrid SPAIN and the Kingdom of BAHRAIN.

ISO STATEMENT
Registered to ISO 9001:2000 Reg no. Q 09290
Registered to ISO 14001 Reg no. EMS 61597
MJ_TESTERS_DS_en_V10

www.megger.com