

MJ159

Major Megger Insulation Resistance Tester



- Portable tester
- No scale multipliers
- Multiple test voltages for spot and step voltage testing
- Guard terminal to eliminate surface leakage current
- Voltage indicating range
- Large, easy-to-read scale

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.

The instrument is all electronic; it generates a regulated DC high voltage and uses low-zero-drift, high-accuracy circuits, with high current sensitivity. Designed for portability, it is enclosed in a molded, impact-resistant, flame-retardant case. Power comes 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. The instrument is built into a strong ABS plastic case with a fold down carrying handle.

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 tester 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.

The MJ159 is a portable, self-contained instrument designed to give rapid and accurate measurements. The instrument is protected for connection to power distribution systems up to 300 V Line-Ground and 500 V Line-Line for Installation Category III.

This relates to transient overvoltage likely to be found in fixed installation wiring.

The MJ159 has four selectable test voltages of 100, 250, 500 and 1000 V DC. It measures insulation resistance up to 2000 MΩ, and an ohm range to 5000 Ω.

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APPLICATIONS

The Major Megger testers were designed for convenience and ease-of-use when testing complex or larger electrical installations, and commissioning, servicing or maintaining electrical equipment. Typically, the tester is used to take a series of measurements over a period of time which will show the gradual decline that takes place in the insulation during its operational life. Such monitoring enables the user to anticipate future performance and to plan ahead for repairs. It is also used to show improvements in the insulation of motor, transformer and generator windings that result from drying-out procedures used after exposure to excessive humidity or water.

The MJ159 offers multiple test voltages for performing spot and step-voltage tests. Typical applications include:

- Acceptance testing at time of installation to check conformance to specifications
- Routine preventive maintenance testing after installation
- Quality assurance testing by the manufacturer
- Diagnostic testing to isolate faulty components for repair

The Major Megger MJ159 unit is designed to safely test:

- Motors
- Generators
- Cables
- Switchgear
- Transformers
- Distribution networks
- Industrial and domestic installations
- Components and appliances

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 DC when this requirement is specified. Aircraft and tele-communications equipment can also be tested at the relatively low 100 V DC. 110 V to 120 V AC systems can be tested using 250 V DC.

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.

Major Megger insulation testers can be used for detecting high or low-resistance grounds, short circuits in apparatus, cables, wiring, etc., whether caused by moisture, oil, dirt, corrosion, damage to insulation or natural deterioration. They can also be used to determine the presence of moisture, solvents and semiconducting foreign materials in wires, cables and other conductors, and in built-up insulation systems such as those found in motor windings.

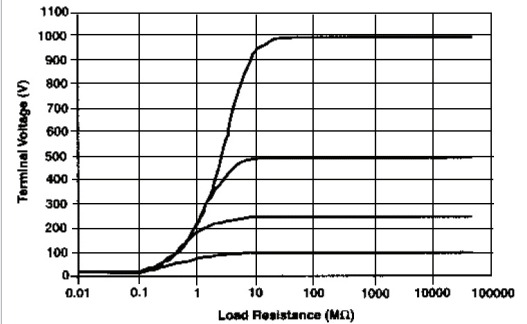
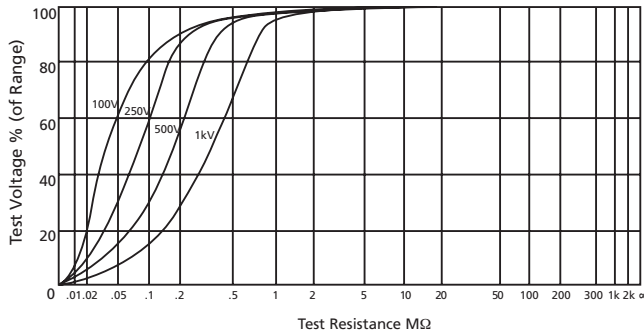
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SPECIFICATIONS

	MJ159
Insulation Resistance:	0 to 2,000 MΩ
Accuracy:	±1.25% of fsd on a 2.8 in. (71.1mm) arc length
Nominal Test Voltages:	DC: 100 V, 250 V, 500 V, 1000 V
Applied test voltage accuracy: 250 V, 500 V, 1000 V ranges	+30%, -0% max.
Applied test voltage accuracy: 100 V range	+40%, -0% max.

Test Voltage characteristics:



Midscale resistance:	4 MΩ
Short Circuit Current:	1.9 mA
Maximum Load Capacitance:	1μF with less than ±0.1" pointer movement
Discharge rate:	Up to 1 μF capacitance is discharged from 1000 V to less than 42.4 V in less than 4 secs
Automatic discharge:	Capacitive circuits are automatically discharged when the "TEST" button is released following an insulation test.

LOW RESISTANCE RANGE

Measuring range:	0.1 Ω - 5000 Ω
Accuracy:	±1.25% of fsd on a 2.8 in. (71.1mm) arc length
Test Voltage (open circuit):	3 V ±0.2 V
Scale length:	3.08 in. (78 mm)
Short circuit current:	2 mA ±10%

SAFETY VOLTAGE MEASUREMENT

Voltage measurement: 20 V to 600 V AC	20 V to 600 V AC; the meter is RMS calibrated and average responding
Safety voltage indicator:	Indicates the presence of DC voltages. Scaling is not the same as the AC meter. True DC voltage equals scale reading divided by 2.22
Accuracy:	2.5% of full scale

PHYSICAL CHARACTERISTICS

Dimensions	8.25 H x 5 W x 5 D in. (213 H x 124 W x 128 D mm)
Weight	Approximately 1 kg (2,3lb)
Cleaning	Wipe disconnected instrument with a clean cloth dampened with soapy water or Isopropyl Alcohol (IPA).

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POWER SUPPLY AND SAFETY	
Power Supply:	Hand cranked brushless AC generator, Cranking speed between 130 rpm and 170 rpm
Safety:	IEC 1010-1(1995), EN 61010 (1995) to installation Category II, 300 V phase to earth (ground), 600 V installation Category I, 500V line to line
Flash Test:	4.5 kV AC r.m.s
Fuses:	500 mA (F) HBC 10 kA, 600 V (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)
ENVIRONMENT	
E.M.C.:	In accordance with IEC 61326-1. Note: These instruments are designed for use in a controlled electromagnetic environment
Operating Temperature:	14° to 122°F (-10° to 50°C)
Storage Temperature:	-4°F to 158°F (-20°C to +70°C)
Humidity 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)
Humidity storage:	95% RH max. at 95° F (35°C)

ORDERING INFORMATION

Description	Part number	Description	Part number
MJ159 Hand-cranked insulation tester	212159	Optional accessories	
		Fuses 500 mA, 600 V (F) H.B.C. [pk of 5]	6121-561
Included accessories		"A Stitch in Time" manual	AVTM21-P8B
User guide	6172-113	Fused prod test leads	1002-015
Test lead set (3 leads, 3 prods, 3 clips)	6220-436		
Power cord (where applicable)	25970-002		
Test record card (5 supplied)	1010-850		
Carrying case	1008-021		

SALES OFFICE

Megger Limited
Archcliffe Road Dover
CT17 9EN England
T. +44 (0) 1304 502101
E. UKsales@megger.com

MJ_Tester_ds_en_V18

www.megger.com
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