

Part No. 6549

LASER[®]

High Voltage Insulation Tester

CAT III

Instructions



www.lasertools.co.uk

Introduction

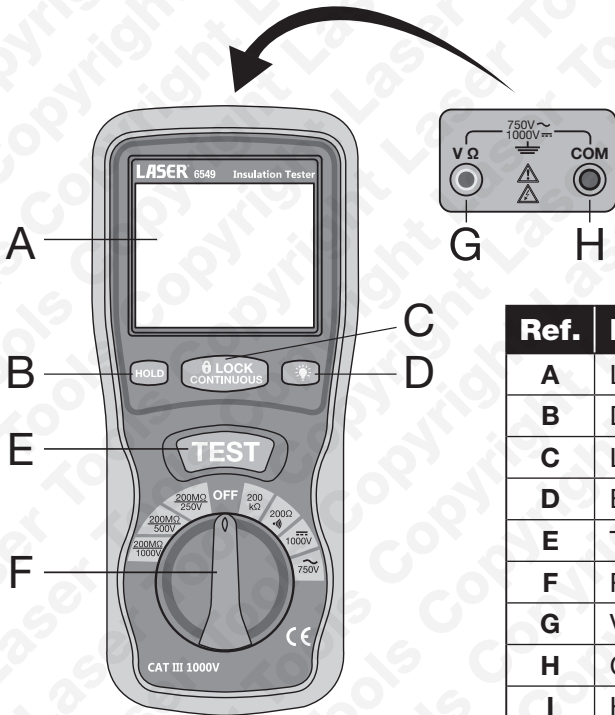
Designed to check insulation on electrical wiring systems, appliances and machinery, and suitable for use on hybrid and electric vehicles. Insulation testers for use in vehicle workshops need to be both physically robust because of the environment in which they are used and to provide accurate diagnostic information. The drive trains of hybrid and electric vehicles can be subject to moisture ingress and carbon deposits, and insulation testing information is particularly useful in these applications. The Laser 6549 can supply 1000V, a voltage level necessary to diagnose a voltage leak in high voltage cables or hybrid motor-generators.

Precautions

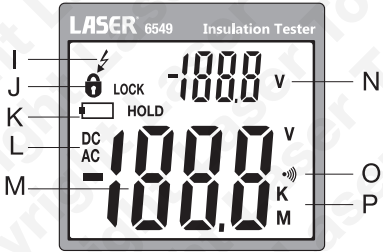
Improper use of this instrument can cause damage, shock, injury or death. It should only be used by properly qualified and experienced users. Read and understand this instruction leaflet (and in the case of hybrid or electric vehicles, all manufacturer's technical documentation) before operating the instrument.

- Do not work alone.
- Do not exceed the maximum allowable input range of any function.
- Use great care when making measurements if the voltages are greater than 25V AC rms or 35V DC; these voltages are considered a shock hazard.
- Any circuit to be tested **must be switched OFF** and **disconnected** from its power source.
- With hybrid and electric vehicles the high voltage (HV) systems **must be disconnected and isolated** from the batteries before performing any test with the instrument.
- **Always discharge** capacitors and remove power from the device under test before carrying out resistance or continuity tests.
- **Do not** apply voltage to the tester when insulation testing or resistance function is selected.
- Set functions to the appropriate position before measuring.
- When measuring volts do not switch to current or resistance modes.
- Do not measure DC voltages if a motor on the circuit is being switched ON or OFF. Large voltage surges may occur that can damage the meter.
- When changing ranges using the rotary function switch, always disconnect the test leads from the circuit under test.
- Do not use the insulation resistance tester near explosive gas, vapour or dust.
- When using the test leads, keep fingers away from the lead contacts. Keep fingers behind the test lead finger guards.
- Immediately after an insulation test, do not touch the test leads or component being tested as there may be residual voltage in the circuit.
- Set the rotary function switch to OFF when the meter is not in use and remove the test leads from the instrument.
- Inspect the condition of the test leads and the meter itself for any wear or damage before operating the meter. Repair or replace any wear or damage before use.
- Do not use the insulation resistance tester if the battery indicator shows a low battery - readings may be inaccurate.
- Remove the batteries if the meter is to be stored for long periods.
- Ensure that the insulation resistance tester is switched off when opening the battery compartment.
- Always remove the test leads before replacing the batteries.

Components



Ref.	Description
A	LCD Display
B	Data HOLD button
C	LOCK button
D	Backlight
E	TEST button
F	Rotary function switch
G	VΩ jack
H	COM jack
I	High voltage indicator
J	LOCK function indicator
K	Low battery indicator
L	DC / AC indicators
M	Main digital display
N	Live current voltage indicator
O	Continuity indicator
P	Units indicators

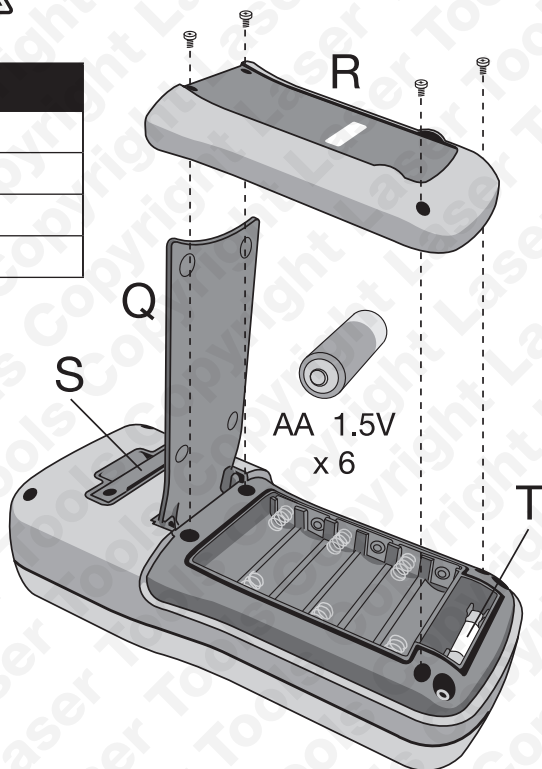


Components



Battery Compartment

Ref.	Description
Q	Tilt stand support
R	Battery cover
S	Carrying strap mount
T	Fuse (250mV 600V)



Instructions

Test Leads:

- Red lead to V-Ω terminal
- Black lead to COM terminal

Note: for insulation tests use the supplied Black crocodile clip lead connected to the COM terminal.

Test Lead Check:

To test correct function of the test leads:

- Set the rotary function switch (F) to the 200Ω range.
- With the tip and crocodile clip of the test leads connected, the indicator should read 00.0.
- When the leads are not connected the display will read infinity (indicated by 1).

Insulation Testing:

- When the rotary function switch (F) is on one of the three insulation positions (to the left of OFF), pressing and holding the red TEST button (E) initiates an insulation test. This causes the instrument to source (output) a high voltage and measure insulation resistance.
- Read the measured value on the LCD display.
- Pressing the LOCK button (C) and then the TEST button (E) acts to hold down the TEST button until you press the LOCK button again to release the lock.

Continuity (low resistance) Testing:

- Set the rotary function switch (F) to the 200Ω range.
- Red lead to V-Ω terminal
- Black lead to COM terminal
- Connect the tips of the test leads to both ends of the circuit under test.
- When the impedance on the circuit is below approximately 40Ω it will indicate by a continuous beep.

AC/DC Voltage measurements:

- Set the rotary function switch (F) to the DC V or AC V range.
- Red lead to V-Ω terminal
- Black lead to COM terminal
- Connect test leads in parallel to the circuit being measured.
- Read the measured value on the LCD display.

Specifications

Display:	Large LCD with dual display
Measurement Range:	200Ω, 200kΩ, 200MΩ/250V, 200MΩ/500V, 2000MΩ/1000V, 750V/ACV, 1000V/DCV.
Sampling Rate:	2.5 times per second.
Zero Adjustment:	Automatic adjustment.
Over Range Indicator:	Number 1 of highest digit is displayed.
Low Battery Indication:	Refer to diagram above: the low battery symbol (K) is displayed when the battery voltage drops below the operating voltage.
Operating Temperature:	0°C to 40°C (32°F to 104°F) and Humidity below 80% RH
Storage Temperature:	-10°C to 60°C (14°F to 140°F) and Humidity below 70% RH
Power source:	9V DC: (6x1.5V Size AA battery or equivalent)
Dimensions:	200(L) x 92(W) x 50(H) mm
Weight:	Approximately 700g include battery.
Accessories:	Test leads, 6pcs battery, carrying case, carrying strap.

Electrical Specifications

OHMS:

Range	Resolution	Accuracy	Max. Open Circuit Voltage	Overload Protection
200Ω	0.1Ω	±(1%+2)	4.5V	250Vrms
200kΩ	0.1kΩ		3.0V	

Continuity Beeper:

Range	Resolution	Operations Resistance	Max. Open Circuit Voltage	Overload Protection
•)))	0.1Ω	Resistance ≤40Ω	44.5V	250Vrms
Short circuit current		≤200mA		

DC Voltage:

Range	Resolution	Accuracy	Max. Open Circuit Voltage	Overload Protection
1000V	1V	±(0.8%+3)	10MΩ	1000Vrms

AC Voltage (40Hz~400Hz):

Range	Resolution	Accuracy	Max. Open Circuit Voltage	Overload Protection
50V	1V	(±(1.2%+10)	10MΩ	750Vrms

Meg OHMS:

Range	Resolution	Accuracy	Terminal Voltage
200MΩ/250V	0.1MΩ	±(3%+5)	250V+10%~-0%
200MΩ/500V	0.1MΩ		500V+10%~-0%
0~1000MΩ/1000V	0.1MΩ	±(5%+5)	1000V+10%~-0%
1000~2000MΩ/1000V			

Range	Test Current		Short Circuit Current
200MΩ/250V	1mA	250KΩ (load)	≤1mA
200MΩ/500V		500KΩ (load)	
0~1000MΩ/1000V		1MΩ (load)	
1000~2000MΩ/1000V			

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Note: Dispose of this product at the end of its working life in compliance with the EU Directive on Waste Electrical and Electronic Equipment (WEEE). When the product is no longer required, it must be disposed of in an environmentally protective way. Contact your local solid waste authority for recycling information.



Guarantee

If this product fails through faulty materials or workmanship, contact our service department direct on: **+44 (0) 1926 818186**. Normal wear and tear are excluded as are consumable items and abuse.

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