

Weapon and Wire Test Meter

User Guide

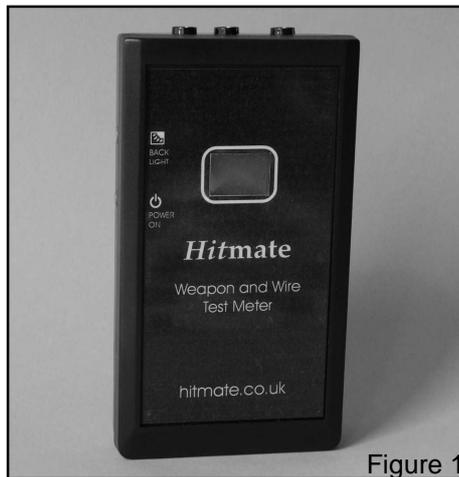


Figure 1

The Hitmate Test Meter measures and displays resistance in the range of zero to 20 ohms. It has two measuring circuits specifically for fencing applications, and it has a 3-pin socket for direct connection to a body wire.

Fencing competition rules require that weapons present low resistance to the scoring equipment: two ohms for foil and épée, and three ohms for spool cable conductors.

The Test Meter can check and measure floor cables and spool wiring as well as Épée and Foil weapons. It can also show up intermittent conditions such as failing body wires and inconsistent wiper connections in spools. The Test Meter gives an audible indication when it detects intermittent connections.

About the Test Meter

- 1 Power-on button
- 2 Back light button
- 3 Body Wire socket
- 4 Display Area
- 5 'Near' circuit indicator
- 6 Foil tip contact

The meter is switched on by pressing the button (1) on the side. It switches off automatically after 5 minutes.

The two-digit display shows resistance in ohms, from 0.1 to 20.

There are two circuits for Fencing measurements, one from the 'near' pin to 'centre' and the other from the 'far' pin to 'centre'. When both 'near' and 'far' circuits are above 20 ohms, the display shows "- -".

The meter indicates a low battery by flashing "Lo" in the display.

The Test Meter is powered by a PP3 battery. To fit or replace the battery, undo the two screws on the back panel to release the battery cover.

Fit the new battery to the connector clip, place the battery into the battery compartment and replace the cover and fixing screws. A new alkaline PP3 battery gives approximately 100 hours operation.

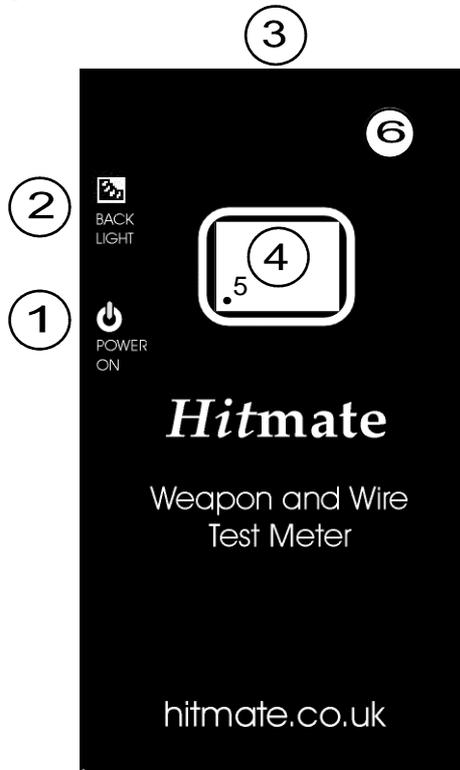


Figure 2

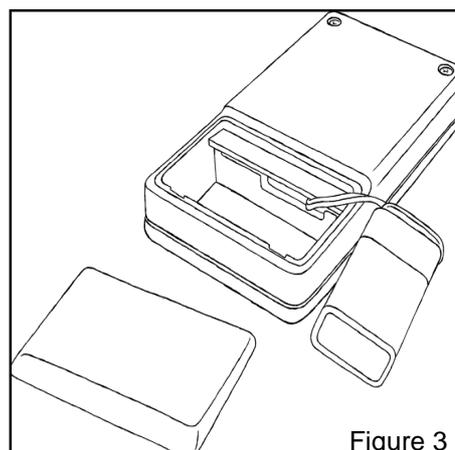


Figure 3

Using the Test Meter

Épée

Switch on the Test Meter. Plug the épée into a body wire and plug the body wire into the Test Meter. The display should show '- - ' indicating an open circuit. Now press the épée tip and read the resistance of the weapon and body wire combined. The maximum value allowed is 2 ohms (FIE Material Rules, m.5.4.a).

If the resistance is high, disconnect the épée from the body wire and touch the body wire centre pin to the metal cup on the Test Meter. The display now shows the resistance of the body wire alone. The difference between this figure and the previous one gives the resistance of the épée alone. A high resistance reading due to the épée can be caused by poor condition of the tip switch, or fatigue in the wires leading from the tip switch to the connector behind the guard.

Holding the weapon switch closed, wriggle the connectors at each end of the body wire, and move the sword while holding the grip. If there are intermittent connections, the Test Meter will sound warning beeps. It will also beep once when you release the weapon switch.

Foil

Switch on the Test Meter. Plug the foil into a body wire and plug the body wire into the Test Meter. The display shows the resistance of the weapon switch and body wire. The maximum value allowed is 2 ohms (FIE Material Rules, m.5.4.a). Now press the foil tip and see the display change to '- - ' indicating that the switch has opened.

Press the foil tip into the metal cup on the Test Meter and read the resistance value of the body wire and weapon tip combined. The maximum value allowed is 2 ohms (FIE Material Rules, m.5.5.b).

If the resistance readings are high, disconnect the foil from the body wire and join the two contacts in the bayonet plug of the body wire. The Test Meter now shows the resistance of the body wire alone. The resistance of the foil alone is the difference between this reading and the value previously displayed when the body wire and foil were both connected. A high resistance reading can be caused by poor condition of the foil tip switch, or fatigue in the wires leading from the tip switch to the connector in the grip.

(Continued ...)

(... Foil, continued)

Wriggle the connectors at each end of the body wire, both with the tip pressed and with the tip released. Move the sword while holding the grip. If there are intermittent connections, the Test Meter will sound warning beeps. It will also beep once when you disconnect the weapon.

Spools & Cables

Spools and cables generally have a 3-pin plug at one end and a 3-pin socket at the other. Put the plug into the Test Meter and use the supplied linking cable to make a connection between the centre pin and the far pin at the other end of the spool or cable.

Wriggle any parts that might be a source of intermittent connection, including turning the spool if connected. If there are intermittent connections, the Test Meter will sound warning beeps.

Then use the linking cable to connect between the centre pin and the near pin, read the resistance of the cable, and wriggle to reveal possible intermittent connections, including turning the spool if connected. If there are intermittent connections, the Test Meter will sound warning beeps.

Competition rules require that the resistance of each wire of the spool does not exceed 3 ohms (FIE Material Rules m.55. 1). When used as described, the Test Meter displays the resistance of two wires together, so the maximum permissible display is 6.

If the near and far tests both indicate ' - - ' (open circuit) then the open-circuit fault lies with the wire connecting to the centre pin. If only one of the tests indicates ' - - ', then the faulty wire is the one being tested at that time.

REASONS FOR HIGH RESISTANCE READINGS

- Oil or dirt on plug pins
- Oil or dirt on socket surfaces
- Fatigued wire connection to plug (pending break)
- Worn contacts in spool wipers
- Corrosion or oxidation of any metal-to-metal connection.

There are tips on fencing equipment maintenance at the Hitmate web site.

Hitmate

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