EN

Original Instructions
Version 2 – November 2023

DRAPER®

POCKET
DIGITAL MULTIMETER

52320



UK CA CE

1. Preface

These are the original product instructions. This document is part of the product; retain it for the life of the product, passing it on to subsequent holders. Read this manual in full before attempting to assemble, operate or maintain this product.

This Draper Tools manual describes the purpose of the product and contains all the necessary information to ensure its correct and safe use. Following all the instructions and guidance in this manual will ensure the safety of both the product and the operator and increase the lifespan of the product.

All photographs and drawings within this manual are supplied by Draper Tools to help illustrate correct operation of the product.

Every effort has been made to ensure the information contained in this manual is accurate. However, Draper Tools reserves the right to amend this document without prior warning. Always use the latest version of the product manual.

1.1 Product Reference

User Manual for: Pocket Digital Multimeter, 500V, AC/DC

Stock No.: 52320

Part No.: DMM7

1.2 Revisions

Version 1: March 2017
First release

Version 2: November 2023
General content and formatting updates

Please visit **drapertools.com/manuals** for the latest version of this manual and the associated parts list, if applicable.

1.3 Understanding the Safety Content of This Manual

WARNING! – Situations or actions that may result in personal injury or death.

CAUTION! – Situations or actions that may result in damage to the product or surroundings.

Important: – Information or instructions of particular importance.

1.4 Copyright © Notice

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In all cases, this copyright notice must remain intact.

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3. Product Introduction

3.1 Intended Use

This device is designed to measure voltage, current and resistance across AC and DC circuits. It may also be used to test the voltage of batteries up to 9V and the forward voltage drop of diodes. Any other application beyond the conditions established for use will be considered misuse. Draper Tools accepts no responsibility for improper use of this product.

Part of our core range, this product is suitable for regular use by enthusiasts and tradespersons alike.

Read this manual in full before assembling, operating or maintaining the product, and retain it for later use.

3.2 Specification

Stock No.:	52320
Part No.:	DMM7
Multimeter rating:	CAT III, 1,000V
Dimensions:	W 55 × H 112 × D 40 mm
Battery:	1 × 12V (Type 23A)
Weight:	70g
Circuit protection:	Fuse and diode
DC voltage:	
Input impedance:	1MΩ
Input protection:	500V
Measurement range:	200mV, 2,000mV, 20V, 200V, 500V
Accuracy:	±0.5% reading, ±2 digits
AC voltage:	
Input impedance:	450K
Input protection:	500V RMS
Frequency range:	40–400Hz
Measurement range:	200V, 500V
Accuracy:	±2.0% reading, ±5 digits
DC current:	
Overload protection:	200mA/250V fuse
Measurement range:	2,000A, 20mA, 200mA
Accuracy:	±2.0% reading, ±4 digits
Resistance:	
Measurement range:	200Ω, 2,000Ω, 20kΩ, 200kΩ, 2,000kΩ
Accuracy:	±1.5% reading, ±4 digits
Diode check:	
Test current:	1.6mA typical
Measurement range:	3.2VDC typical
Operating conditions:	
Ambient temperature:	0 – 50°C
Humidity:	<80%

4. Health and Safety Information

Important: Read all the Health and Safety instructions before attempting to use this product. Non-compliance may result in serious injury or death.

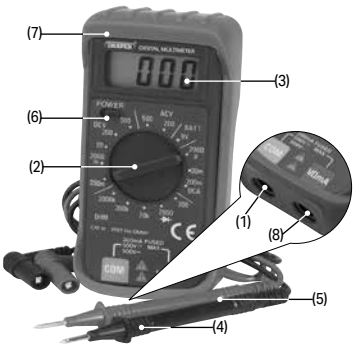
WARNING! Contact with live circuits can result in severe electrical shock. When measuring voltage above 30A, current above 10mA or AC power with an inductive load, take care not to touch the exposed contacts as they may give a serious electric shock.

- **ONLY** trained and competent personnel may operate this device.
- This product is safe to use on three-phase distribution circuits with overvoltage of up to 1,000V.
- Use **ONLY** accessories and spare parts supplied by Draper Tools.
  - **DO NOT** use any other leads with this product than those supplied. Contact Draper Tools for replacement options if the leads become damaged.
  - If the fuse must be replaced, use an identical item with the same specification.
  - If the battery must be replaced, use one with the same specification.
- Observe all standard precautions and good practice when working with live electrical currents.
- Inspect the product for damage before every use, particularly the contact tips.
  - **DO NOT** use this product if the device or probe cables are damaged in any way or if there is evidence of battery leakage.
  - If battery acid comes into contact with your skin, wash it off immediately with plenty of clean water.
  - If battery acid comes into contact with your eyes, flush them with plenty of clean water and seek immediate medical attention.
- Ensure that the device is clean, dry and free from grease before use.
- Ensure that the function dial is in the correct position before switching on the device.

- **DO NOT** use this product if it is functioning abnormally. Have it checked by a qualified and authorised technician before next use.
- **DO NOT** exceed the maximum rated capacity per function for this device as it may expose you to a shock hazard.
- Ensure that the probe contacts are disconnected from the load or test circuit before moving the function dial.
- Assess any specific additional risks to the operator before each use.
- **DO NOT** expose this product to excessive ambient temperature, high humidity, flammable substances or environments that produce a strong magnetic field.
- **DO NOT** use this product around explosive gases, vapours or dust.
- **DO NOT** immerse this device in water or expose it to wet conditions.
- **ALWAYS** wear protective insulated gloves while using this product.
- **ALWAYS** keep your fingers behind the guards on the probes during use.
- **ALWAYS** remove the contact cables from the device before removing the rubber cover or opening the back panel.
- **DO NOT** operate this device with the rear housing open or missing and **DO NOT** use it if the rear housing cannot be closed properly.
- **NEVER** insert the probe contacts into the device terminals.
- **DO NOT** abuse, mutilate or burn the battery.
- Remove the batteries when the product is stored for extended periods.
- **DO NOT** attempt to repair this device; it contains no user-serviceable parts.
- Keep this product out of reach of children.

WARNING! ALWAYS ensure that the operator is not in contact with the ground while taking measurements, using insulating materials to prevent the current from earthing.

5. Identification and Unpacking



5.1 Product Overview

1. Common earth probe terminal
2. Function dial
3. LCD screen
4. Negative (black) probe
5. Positive (red) probe
6. Power switch
7. Rubber cover
8. Voltage, amperage and resistance probe terminal

5.2 What's in the Box?

Carefully remove the product from the packaging and examine it for any signs of damage that may have occurred during shipment.

Before assembling the product, lay the contents out and check them against the parts listed below. If any part is damaged or missing, do not attempt to use the product. Please contact the Draper Helpline; contact details can be found at the back of this manual.

A. 1 × Digital multimeter
B. 1 × Positive (red) probe contact
C. 1 × Negative (black) probe contact
D. 1 × 12V battery (type 23A)

Please visit **drapertools.com** for our full range of accessories and consumables.

5.3 Packaging

Keep the product packaging for the duration of the warranty period in case the product needs to be returned for repair.

WARNING! Keep packaging materials out of reach of children. Dispose of packaging correctly and responsibly and in accordance with local regulations.

6. Operating Instructions

Important: Before operating this product, read and understand all the safety instructions listed in this manual.

Important: Inspect the device for signs of damage, particularly the probes and insulated cables. Replace faulty leads immediately.

For each measurement type, connect the positive probe (5) to the voltage, resistance and amperage probe terminal (8), and connect the negative probe (4) to the common earth probe terminal (1).

If a negative value is shown on the display, check the polarity of the probes at the component contacts and the device terminals.

6.1 Installing the Battery

Important: Use **ONLY** 12V (Type 23A) batteries identical to the battery supplied with this device.

1. Pull the rubber cover (7) back and remove the device from inside it.

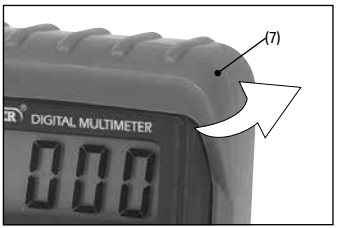


Fig. 1

2. Remove the screw on the back of the device to loosen the battery compartment cover.



Fig. 2

3. Separate the front of the device from the rear casing at the divide around the tapered edge of the housing.



Fig. 3

4. Install the battery between the two contacts (9) on the back of the circuit board, observing the polarity marked on the inside of the rear housing.

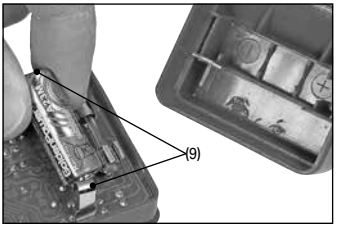


Fig. 4

Important: Read the polarity with the rear housing positioned as it would be when installed onto the back of the device.

5. Reassemble the device housing and tighten the rear screw securely.
6. Insert the device back into the rubber cover.

6.2 The Function Dial

Use the function dial (2) to select the value that most accurately represents the anticipated measurement range from the appropriate measurement type. If the value to be measured is not known, set the function dial (2) to the highest available range and reduce it until a suitable reading is displayed.

The dial can be rotated 360° through the following interface zones:

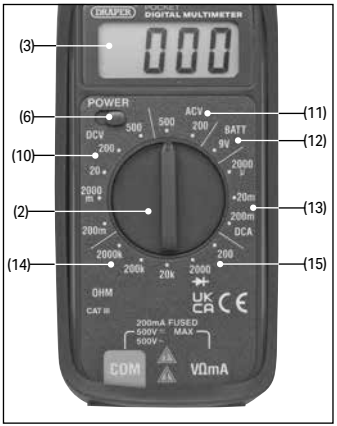


Fig. 5

10. DC voltage ranges
11. AC voltage ranges
12. Battery test function
13. DC current ranges
14. Resistance ranges
15. Diode test function

6.3 Voltage Measurement

1. Use the function dial (2) to select the appropriate range from either the DC voltage (10) or AC voltage (11) zones; see **6.2 The Function Dial**.
2. Move the power switch (6) to the right to switch on the device.
3. Position the probe contacts across the source of the circuit to be measured, observing the correct polarity.
4. Enable the power to the circuit to be measured. The voltage value is displayed on the LCD screen (3) along with the voltage polarity if reversed.

6.4 DC Current Measurement

1. Use the function dial (2) to select the appropriate range from the DC current ranges zone (13); see **6.2 The Function Dial**.
2. Open the circuit to be measured and connect the probes in series, using the correct polarity, to bridge the gap.
3. Enable the power to the circuit to be measured. The current value is displayed on the LCD screen (3).

6.5 Resistance Measurement

1. If the resistance to be tested is part of a circuit, switch the circuit off, disconnect the power and allow all capacitors to discharge before measurement.

   WARNING! NEVER measure resistance across a voltage source or on a powered circuit.

2. Use the function dial (2) to select the appropriate range from the resistance range zone (14); see **6.2 The Function Dial**.
3. Touch the probe contacts at either side of the resistance to be measured. The current value is displayed on the LCD screen (3).

6.6 Battery Test Function

Important: This product can be used to test batteries of up to 9V.

1. Use the function dial (2) to select the battery test function (12); see **6.2 The Function Dial.**
2. Touch the probe contacts against the contacts of the battery, observing the correct polarity. The current value is displayed on the LCD screen (3).

6.7 Diode Testing

1. Use the function dial (2) to select the diode test function (15); see **6.2 The Function Dial**.
2. Touch the probe contacts against the contacts of the diode, observing the correct polarity.
3. The approximate forward voltage drop of the diode is displayed on the LCD screen (3); a typical diode functioning normally will deliver a reading of 0.5–0.7.

7. Care and Disposal

Important: Disconnect the probes from the terminals and any other source of voltage before performing any maintenance on this product.

7.1 Maintenance and Storage

- Keep the product clean and free from dust, debris and grease.

- Use a dry cloth **ONLY** to clean the housing of this device.

CAUTION! DO NOT use abrasives, solvents or other aggressive chemicals as these may damage plastic or insulated parts.

- Replace the probes **IMMEDIATELY** if they are damaged in any way or the conductors are exposed; contact Draper Tools for replacement options.
- Important: Replacement probes must be rated CAT III 1,000V.
- If the low battery indicator is shown on the display screen, replace the battery as soon as possible; see **6.1 Installing the Battery**.
- If the fuse must be replaced, access the device circuit board **(see 6.1)**, remove the fuse from its holder and install an equivalent fuse its place.
- Important: This product requires a F200mA/250V fuse.
- Remove the battery when storing the device for extended periods.
- Store the device in a cool, clean and dry environment, out of direct sunlight and out of reach of children.

7.2 Disposal

For spare parts, servicing, and repair and replacement options, please contact the Draper Tools Product Helpline for details of your nearest authorised agent.

Draper Tools will endeavour to hold any spare parts, if applicable, for seven years from the date that it sells the final matching stock item.

Any servicing or repairs carried out by unauthorised personnel or installation of spare parts not supplied by Draper Tools will invalidate your warranty.

At the end of its working life, dispose of the product responsibly and in line with local regulations. Recycle where possible.

- **DO NOT** dispose of this product with domestic waste; most local authorities provide appropriate recycling facilities.
- **DO NOT** burn or mutilate batteries; this may release toxic or corrosive substances.
- Dispose of batteries separately and in accordance with local regulations.





8. Warranty

Draper Tools products are carefully tested and inspected before shipment and are guaranteed to be free from defective materials and workmanship.

Should the tool develop a fault, return the complete tool to your nearest distributor or contact Draper Tools directly. Contact information can be found at the back of this manual.

Proof of purchase must be provided.

If, upon inspection, it is found that the fault occurring is due to defective materials or workmanship, repairs will be carried out free of charge. This warranty period covers parts and labour for 12 months from the date of purchase. Where tools have been hired out, the warranty period covers 90 days from the date of purchase.

This warranty does not apply to any consumable parts, batteries or normal wear and tear, nor does it cover any damage caused by misuse, careless or unsafe handling, alterations, accidents, or repairs attempted or made by any personnel other than the authorised Draper Tools repair agent.

In all cases, to make a claim for faulty workmanship or materials within the standard warranty period, please contact or return the product to the place of purchase. Proof of purchase may be required.

If the place of purchase is no longer trading or if you experience any difficulties with your warranty, please contact Customer Services with the product details and your proof of purchase. Contact details can be found at the back of this manual.

If the tool is not covered by the terms of this warranty, repairs and carriage charges will be quoted and charged accordingly.

This warranty supersedes any other guarantees expressed or implied and variations of its terms are not authorised.

Your Draper Tools guarantee is not effective until you can produce, upon request, a dated receipt or invoice to verify your purchase within the guarantee period.

Please note that this warranty is an additional benefit and does not affect your statutory rights.

Draper Tools Limited

9. Explanation of Symbols


Read the instruction manual


Do not abandon in the environment


Keep out of the reach of children


Warning!


Warning! Risk of shock


Do not incinerate or throw onto fire


For indoor use only; do not expose to rain



Fuse protective device


Class II construction (Double insulated)


Measures DC Voltage


Measures AC Voltage


Measures resistance


Measures diode forward voltage drop



Measures battery voltage up to 9V


European conformity



UK Conformity Assessed


WEEE –
Waste Electrical & Electronic Equipment
Do not dispose of Waste Electrical & Electronic Equipment in with domestic rubbish

Contact Details

Draper Tools
Draper Tools Limited
Hursley Road
Chandler's Ford
Eastleigh
Hampshire
SO53 1YF
UK

Delta International
Delta International BV
Oude Graaf 8
6002 NL
Weert
Netherlands

Website: drapertools.com
Email: sales@drapertools.com

Product Helpline: +44 (0) 23 8049 4344
Telephone Sales Desk: +44 (0) 23 8049 4333
General Enquiries: +44 (0) 23 8026 6355
General Fax: +44 (0) 23 8026 0784

Please contact the Draper Tools Product Helpline for repair and servicing enquiries.

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