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AOPUTTRIVER HP-770J

HP-770J Automotive Digital Multimeter User Manual

Model: HP-770J | Brand: AOPUTTRIVER

1. Introduction

The AOPUTTRIVER HP-770J is a high-precision automotive digital multimeter designed for both professional mechanics and DIY enthusiasts. It offers a wide range of measurement capabilities including DC/AC Voltage, DC Current, Resistance, Temperature, Tachometer (RPM), and Dwell Angle. Equipped with features like Non-Contact Voltage (NCV) detection, automatic backlight, and auto power-off, this multimeter is an essential tool for diagnosing electrical issues in vehicles and around the home.

2. Safety Information

Always adhere to safety precautions when operating the multimeter to prevent personal injury or damage to the device. This multimeter complies with 600V CAT IV and 1000V CAT III safety requirements.

General Safety Precautions

- Do not exceed the maximum input limits for any function.
- Use extreme caution when working with voltages above 60V DC or 30V AC RMS.
- Ensure the test leads are properly connected and the function switch is set to the correct range before making any measurement.
- Inspect the test leads for any damage before use. Do not use if insulation is damaged or bare metal is exposed.
- The multimeter is protected by internal fuses. Do not attempt to bypass or replace fuses with incorrect ratings.
- Always disconnect power to the circuit and discharge high-voltage capacitors before measuring resistance or continuity.
- Do not operate the meter if it appears damaged or if the case is open.

3. Product Overview

Package Contents

Verify that all items listed below are present in your package:

- 1 x HP-770J Automotive Digital Multimeter
- 1 x 9V (6F22) Battery

- 2 x Test Leads (Red and Black)
- 1 x Thermocouple (Temperature Probe)
- 1 x English User Manual
- 1 x Small Screwdriver
- 1 x Carrying Pouch



Figure 3.1: Contents of the HP-770J package, including the multimeter, test leads, temperature probe, battery, screwdriver, manual, and carrying pouch.

Multimeter Layout

Familiarize yourself with the components of your HP-770J multimeter:



Figure 3.2: Detailed view of the HP-770J multimeter's front panel, showing the LCD display, power key, NCV key, HOLD key, rotary switch, 20A input jack, TEMP input, and COM/VΩHz input jacks, along with dimensions.

Key Features

- High-precision measurements for DC/AC Voltage, DC Current, Resistance, Temperature, Tachometer (RPM), and Dwell Angle.
- Non-Contact Voltage (NCV) detection for identifying live wires without direct contact.
- Data Hold function to freeze the displayed reading.
- Automatic backlight for clear readings in low-light conditions.
- Auto Power Off feature to conserve battery life.
- Diode Test and Continuity Test with buzzer.
- Manual ranging capability.
- Switchable Celsius/Fahrenheit temperature units.
- Cylinder selection (3/4/5/6/8) for Dwell Angle and Tachometer measurements.

4. Setup

Battery Installation

1. Ensure the multimeter is powered off.
2. Locate the battery compartment cover on the back of the multimeter.
3. Use the provided small screwdriver to loosen the screw securing the battery cover.
4. Remove the cover and insert the 9V (6F22) battery, observing the correct polarity (+ and -).
5. Replace the battery cover and tighten the screw.

Connecting Test Leads

For most measurements, connect the test leads as follows:

- Insert the **black** test lead into the **COM** (Common) jack.
- Insert the **red** test lead into the **VΩHz** jack for voltage, resistance, frequency, diode, and continuity measurements.
- For current measurements up to 20A, insert the **red** test lead into the **20A** jack.

5. Operating Instructions

Power On/Off

Press the **POWER** button to turn the multimeter on or off. The multimeter will automatically power off after a period of inactivity to save battery life.

Function Selection

Rotate the central dial to select the desired measurement function (e.g., DCV, ACV, Resistance, Temperature, Tach, Dwell, etc.).

Measuring DC Voltage (DCV)

1. Set the rotary switch to the desired DCV range (e.g., 200mV, 2V, 20V, 200V, 1000V).
2. Connect the red test lead to the positive (+) side of the circuit and the black test lead to the negative (-) side.
3. Read the voltage value on the LCD display.

Measuring AC Voltage (ACV)

1. Set the rotary switch to the desired ACV range (e.g., 200mV, 2V, 20V, 200V, 750V).
2. Connect the test leads across the AC voltage source.
3. Read the voltage value on the LCD display.

Measuring DC Current (DCA)

1. Set the rotary switch to the 20A DC current range.
2. Connect the red test lead to the **20A** jack and the black test lead to the **COM** jack.
3. Break the circuit and connect the multimeter in series with the load.
4. Read the current value on the LCD display.

Measuring Resistance (Ω)

1. Set the rotary switch to the desired Resistance range (e.g., 200Ω, 2KΩ, 20KΩ, 200KΩ, 20MΩ, 200MΩ).
2. Ensure the circuit is de-energized before measuring resistance.

3. Connect the test leads across the component to be measured.
4. Read the resistance value on the LCD display.

Temperature Measurement

1. Set the rotary switch to the **TEMP** function.
2. Connect the thermocouple (temperature probe) to the dedicated temperature input jacks.
3. Place the tip of the thermocouple on or near the object whose temperature you wish to measure.
4. Read the temperature value on the LCD display. You can switch between Celsius and Fahrenheit using the °C/°F button.

Tachometer (RPM) Measurement

1. Set the rotary switch to the **TACH** function.
2. Select the correct number of cylinders (3, 4, 5, 6, or 8) using the appropriate button or switch if available, or ensure the multimeter auto-detects.
3. Connect the test leads according to the vehicle's service manual for RPM measurement (typically to the ignition coil or specific engine sensor).
4. Read the RPM value on the LCD display.

Dwell Angle Measurement

1. Set the rotary switch to the **DWELL** function.
2. Select the correct number of cylinders (3, 4, 5, 6, or 8).
3. Connect the test leads according to the vehicle's service manual for dwell angle measurement.
4. Read the dwell angle value on the LCD display.

NCV (Non-Contact Voltage) Detection

The NCV function allows for quick detection of AC voltage without direct contact with the conductor.

1. Press the **NCV** button.
2. Move the top part of the multimeter close to the wire or outlet you want to test.
3. If AC voltage ≥ 90V RMS is detected, the NCV red and green LED lights will flash alternately, and the buzzer will sound.



Figure 5.1: Illustration of the NCV function in use, showing the multimeter detecting live and null wires in an electrical outlet.

Diode Test

1. Set the rotary switch to the Diode Test function.
2. Connect the red test lead to the anode of the diode and the black test lead to the cathode.
3. The display will show the forward voltage drop. Reverse the leads to check for open circuit (OL) indication.

Continuity Test

1. Set the rotary switch to the Continuity Test function.
2. Connect the test leads across the circuit or component.
3. If the resistance is below approximately 50Ω, the buzzer will sound, indicating continuity.

Data Hold Function

Press the **HOLD** button to freeze the current reading on the display. Press it again to release the hold function.

Backlight Control

The multimeter features an automatic backlight. It will illuminate in low-light conditions to improve readability.

Automotive Applications

The HP-770J is ideal for various automotive diagnostic tasks, including engine analysis, vehicle battery testing, and general electrical troubleshooting.



Figure 5.2: Examples of the multimeter in use for automotive engine testing, temperature measurement, and general voltage detection.

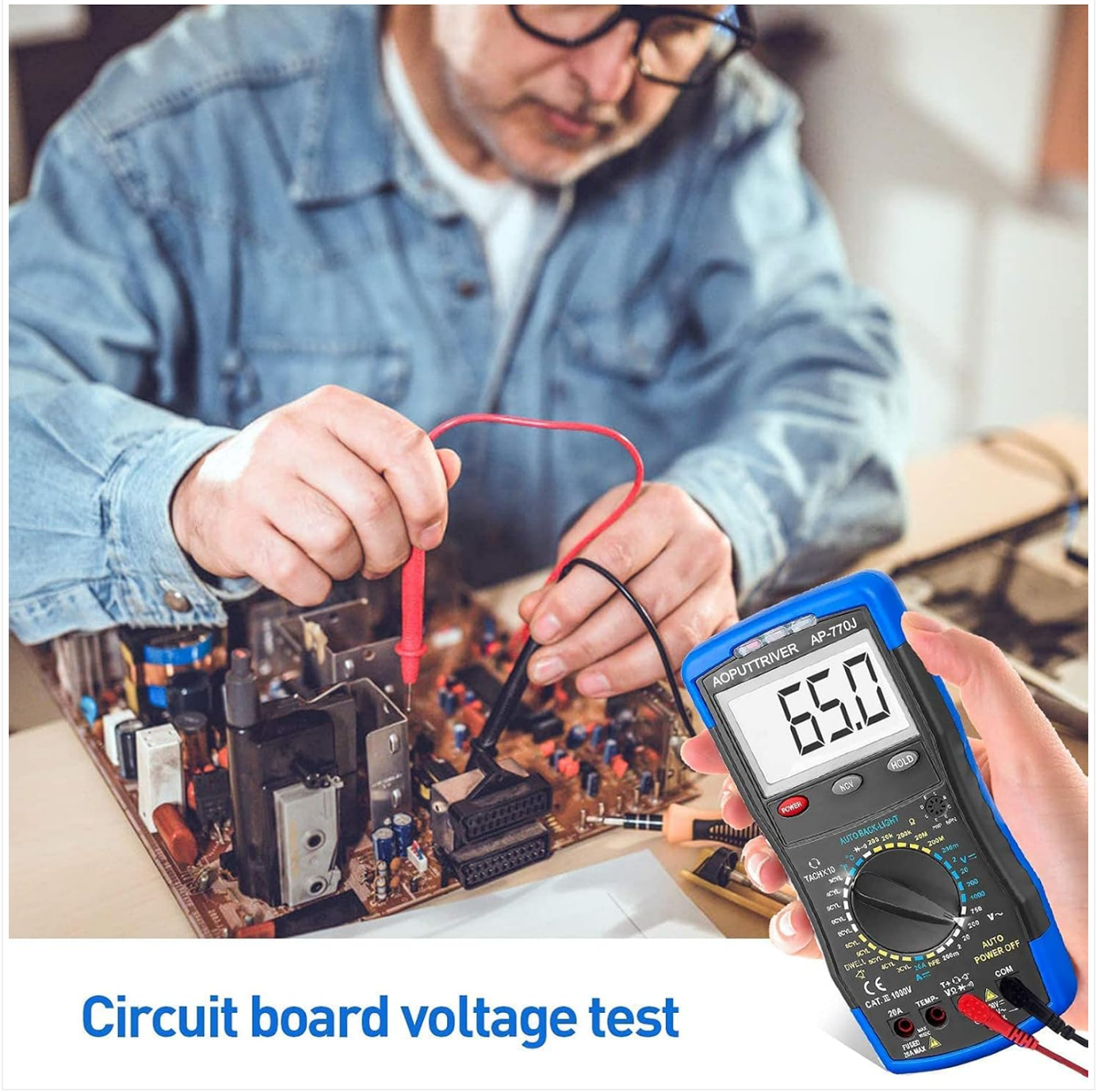


Figure 5.3: The multimeter performing a circuit board voltage test, demonstrating its utility for electronics troubleshooting.

6. Maintenance

Cleaning

Wipe the case with a damp cloth and mild detergent. Do not use abrasives or solvents. Keep the input terminals free of dirt or debris.

Battery Replacement

When the battery symbol appears on the display, the battery needs to be replaced. Follow the steps in the "Battery Installation" section (Section 4) to replace the 9V battery.

Fuse Replacement

If the multimeter fails to measure current, the fuse may be blown. Refer to the specifications for the correct fuse type and rating. Fuse replacement should only be performed by qualified personnel.

Storage

If the multimeter is not to be used for an extended period, remove the battery to prevent leakage and store it in a cool, dry place away from direct sunlight.

7. Troubleshooting

If you encounter issues with your HP-770J multimeter, refer to the table below for common problems and their solutions.

Problem	Possible Cause	Solution
No display or dim display	Low battery; Battery incorrectly installed; Power button not pressed.	Replace battery; Reinstall battery with correct polarity; Press POWER button firmly.
"OL" (Overload) displayed	Input value exceeds selected range; Open circuit (for continuity/resistance).	Select a higher range; Check circuit for breaks.
Incorrect readings	Incorrect function/range selected; Poor test lead connection; Blown fuse (for current).	Select correct function/range; Ensure leads are firmly connected; Check and replace fuse if necessary.
No continuity buzzer	Circuit resistance too high; Multimeter not in continuity mode.	Check circuit resistance; Ensure rotary switch is on continuity mode.

8. Specifications

Detailed technical specifications for the HP-770J Automotive Digital Multimeter:

Specifications

Basic function

Model	Range	Accuracy
DC Voltage	200mV/2V/20V/200V	±(0.5% of rdg + 8digits)
	1000V	±(1.5% of rdg + 8 digits)
AC Voltage	200mV/2V/20V/200V	±(1.5% of rdg + 10 digits)
	750V	±(2.5% of rdg + 10 digits)
DC Current	20A	±(2% of rdg + 10 digits)
Resistance	200Ω	±(1.2% of rdg +15 digits)
	2kΩ/20kΩ /200kΩ/20MΩ	±(0.8% of rdg +8 digits)
	200MΩ	±【5.0% of (rdg-10) +30 digits】
Temperature	(-20～1000)℃	±(3%of rdg +2 digits)＜400℃
		±(3.5%of rdg +5 digits)≥400℃
	(-4～1800)℉	±(3%of rdg+2 digits)＜750℉
		±(3.5%of rdg +5 digits)≥750℉
Tach	500～10000RPM	±(1.5% of rdg + 8 digits)
Dwell	0-120°/0-90°/0-72° /0-60°/0-45°	±(1.5% of rdg + 8 digits)

General features

Battery Type	9V(6F22)x1
Dimension	195x88x40mm
Weight	350g



Figure 8.1: Official specifications table for the HP-770J multimeter, detailing ranges and accuracies for various measurements.

Measurement	Range	Accuracy
DC Voltage	200mV / 2V / 20V / 200V / 1000V	±(0.5% + 8 digits) for 200mV-200V, ±(1.5% + 8 digits) for 1000V
AC Voltage	200mV / 2V / 20V / 200V / 750V	±(1.5% + 10 digits) for 200mV-200V, ±(2.5% + 10 digits) for 750V
DC Current	20A	±(2% + 10 digits)
Resistance	200Ω / 2KΩ / 20KΩ / 200KΩ / 20MΩ / 200MΩ	±(1.2% + 8 digits) for 200Ω-200KΩ, ±(0.8% + 8 digits) for 20MΩ, ±(5.0% + 30 digits) for 200MΩ
Temperature	-20°C ~ 1000°C (-4°F ~ 1800°F)	±(3% + 2 digits) for <400°C, ±(3.5% + 5 digits) for ≥400°C
Tachometer (RPM)	500 ~ 10000 RPM	±(1.5% + 8 digits)

Measurement	Range	Accuracy
Dwell Angle	0-120.0° / 0-90.0° / 0-72.0° / 0-60.0° / 0-45.0°	±(1.5% + 8 digits)

General Features

- **Battery Type:** 9V (6F22)
- **Dimensions:** 195mm x 88mm x 40mm
- **Weight:** 350g
- **Safety Rating:** CAT IV 600V, CAT III 1000V

9. Warranty and Support

AOPUTTRIVER provides a **2-year warranty** for the HP-770J Automotive Digital Multimeter from the date of purchase. Additionally, lifetime technical support is available for all customers.
If you have any questions, concerns, or require technical assistance, please do not hesitate to contact AOPUTTRIVER customer service. Our team is committed to responding and resolving your inquiries within 24 hours.
For support, please refer to the contact information provided on the AOPUTTRIVER official website or your purchase documentation.

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