



® Automotive Circuit Probe & Breaker Finder Kit



V200 PRO

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1. Important safety information

To prevent personal injury or damage to vehicles and/or the circuit probe, read this instruction manual first and observe the following safety precautions whenever working on a vehicle:

- ◆ Always perform automotive testing in a safe environment.
- ◆ Wear eye protection that meets ANSI standards.
- ◆ Keep clothing, hair, hands, tools, test equipment, etc away from all moving or hot engine parts.
- ◆ Operate the vehicle in a well ventilated work area: Exhaust gas are poisonous.
- ◆ Put blocks in front of the drive wheels and never leave the vehicle unattended while running tests.

Use extreme caution when working around the ignition coil, distributor cap, ignition wires and spark plugs. These component create hazardous voltage when engine is running.

- ◆ Put the transmission in PARK (for automatic transmission) or NEUTRAL (for manual transmission) and make sure the parking brake is engaged.
- ◆ Keep a fire extinguisher suitable for gasoling/chemical/electrical fires nearby.
- ◆ Don't connect or disconnect the circuit probe while the ignition is on or the engine is running.
- ◆ Keep the tool dry, clean, free from oil/water or grease. Use a mild detergent on a clean cloth to clean the outside of the circuit probe, when necessary.
- ◆ When the power switch is depressed, battery current/voltage is conducted directly to the tip which may cause sparks when contacting ground or certain circuits. Therefore the tool should NOT be used around flammables such as gasoline or its vapors. The spark of an energized tool could ignite these vapors. Use the same caution as you would when using an arc welder.

2. Using the Circuit Probe

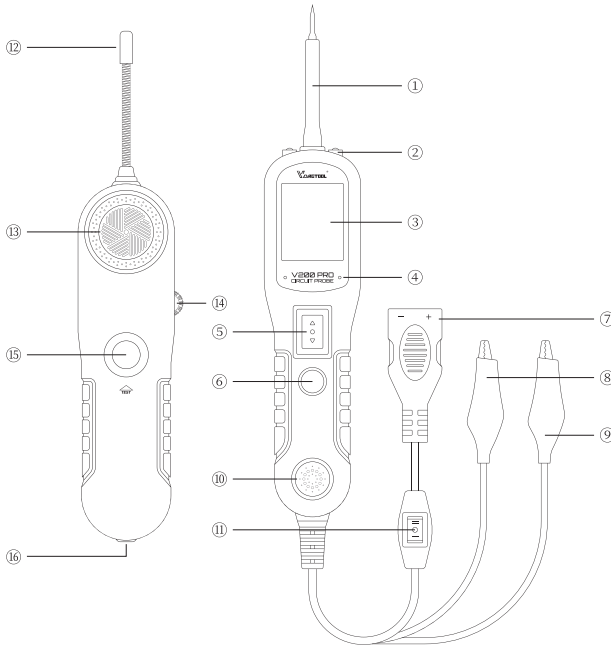
2.1 Specifications

V200PRO Circuit Probe	
Display	TFT Color Display (168×128 dpi)
Operating Temperature	0 to 60°C (32 to 140°F)
Storage Temperature	-40 to 70°C (-40 to 185°F)
External Power	12.0 or 24.0V Powered by Connecting to Vehicle Battery
Dimensions (L × W × H)	188 × 48 × 25mm(7.24 × 1.88 × 0.98 In) (Cable Length 174mm/6.85 in)
Material	Plastic Case
V200PRO Breaker Finder	
Operating Voltage	9V (Powered by Internal 9V Battery)
Material	Plastic Case + Bendable Metal Probe

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Operating Temperature	0 to 60°C (32 to 140°F)
Storage Temperature	-40 to 70°C (-40 to 185°F)
Dimensions (L × W × H)	184 × 48 × 24mm/7.24 X 1.88 X 0.94 In (Probe Length 72mm/2.83 In)

2.2 Tool Kit Description



- ① **Probe Tip** - Contacts the circuit or component to be tested.
- ② **Head Lights** - Illuminates dark work areas or work areas at night.
- ③ **LCD Display** - Indicates test results.
- ④ **Red/Green Polarity Indicator** - Identifies positive, negative or open circuits. The RED indicator lights up when the Probe Tip is contacting a positive circuit. The GREEN indicator lights up when the Probe Tip is contacting a negative circuit.
- ⑤ **Power Switch** - Allows you to conduct a positive or negative battery current to the tip for activating and testing the function of electrical components.
- ⑥ **Mode Button** - Selects the work mode: AC Voltage, DC Voltage, Resistance, Diode.
- ⑦ **Adaptor** - Connects to the battery.
- ⑧ **Auxiliary Ground Lead** - Assists test as a ground lead.

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- ⑨ **Red Positive Wire** - Used to deliver current.
- ⑩ **Loudspeaker** - Alert prompt.
- ⑪ **Tool Kit Working Mode Switch** - Switch between Circuit Probe(I) and Breaker Finder(II) working modes.
- ⑫ **Antenna** - Receive Data.
- ⑬ **Buzzer** - Sound prompt.
- ⑭ **Sensitivity Controller** - Control sensitivity.
- ⑮ **Test Button**- Press the test button to start testing.
- ⑯ **Headphone Port** - Port for external headphone.

2.3 Parts List

Part	Description	Qty
1	User's Manual	1
2	Cigarette lighter adapter	1
3	Battery hookup clips	1
4	Probe tip	1
5	Extension cable(20ft.)	1
6	Rugged blow molded case	1
7	Power assist cable	1
8	Breaker Finder	1

2.4 General Description

2.4.1 Circuit Probe

The circuit probe is the best electrical tester for reducing diagnostic time in all 6 to 30-volt vehicle electrical systems. After a simple hook-up of the tool to the vehicle's battery, you can:

- ◆ Determine at a glance if a circuit is positive, negative, or open without having to reconnect clips from one battery pole to another.
- ◆ Test for continuity with its built-in auxiliary ground lead.
- ◆ By depressing the power switch, conduct a positive or negative battery current to the probe tip for testing the function of an electrical component without the use of jumper wires.
- ◆ Test for poor ground contacts instantly without performing voltage drop tests. The tool is also short circuit protected; its internal circuit breaker will trip if it becomes overloaded.
- ◆ Follow and locate short circuits without wasting fuses. The tool's long cable allows you to test along the entire length of the vehicle without constantly searching for suitable vehicle grounds.

2.4.2 Circuit Breaker Finder

- ◆ The Circuit Breaker Finder detects and alerts you immediately where a circuit is open.
- ◆ You can quickly and easily locate open circuits, open connections, broken wires, current leaks, and even trace wires.
- ◆ Additionally, you can find intermittent circuit problems by flexing wires or connectors and listening for a change in the receiver tone, allowing you to either perform general tracing or pinpoint the problem location.
- ◆ This professional circuit breaker finder tool will work on all kinds of circuits with voltages between 6 and 42 volts DC, such as those found in automobiles, trucks, tractors, boats, RVs, etc., thanks to its wide working voltage range.

2.5 Power

The tool kit is powered by connecting to the vehicle battery. Connect the RED battery clamp to the POSITIVE terminal of the vehicle's battery, and the BLACK clamp to the NEGATIVE terminal. When the tool is first connected to a battery (power source), it will sound a beep and the Head Lights will be on to illuminate the test area of the probe tip.

2.6 Quick Self-Test

Before you test a circuit or component, be sure your tool kit is in good order by doing a quick self-test.

With the tool kit connected, select Mode I on the tool kit mode switch button, perform a quick self-test. The power switch is a momentary rocker switch located on the tool's body. Flanking the switch are positive and negative markings.

Press the Power Switch forward to activate the tip with a positive voltage. The Red LED should light up and LCD display will read the battery voltage. A beep tone will sound. Let go of the power switch and the LED will turn off and the tone will cease. Press the Power Switch backward to activate the tip with a negative voltage. The green LED should light up and the LCD display will read 0.0V (ground). A beep tone will sound. Let go of the power switch and the LED will turn off and the tone will cease. Your tool is working correctly and is now ready for use. (Figure 1)

Note: If you accidentally pressed the power switch forward and released it shortly after, it will show voltage changing from around 12volt to zero volt which is normal as it indicates testing result of the battery voltage and then the voltage of the components that's not connected yet respectively.

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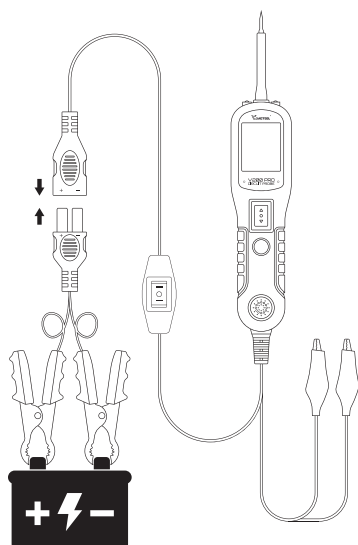


Figure 1

IMPORTANT: When powering-up components, you can increase the life of power switch in the tool if you first press the switch, then contact the tip to the component. The arcing will take place at the tip instead of the contacts of the switch.

2.7 Auto Circuit Breaker

The tool is short-circuit protected. Its internal circuit breaker will trip if it becomes overloaded.

The circuit breaker is a valuable test tool as well as a safety measure to protect the tool from overload.

When circuit breaker tripped, all other functions of the tool are still active, which means you can still probe a circuit and observe the voltage reading. When the circuit breaker is tripped, the tool will NOT be able to conduct battery current test to the tip even when the power switch is pressed. Intentionally tripping the breaker and using the tool to probe can be considered an added precaution against accidental pressing of the power switch.

2.8 Work Mode

There are four modes to diagnose the electrical systems, which can be accessed by depressing the Mode Button and cycling through each one.

DC voltage

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While the circuit probe in this mode, contact the probe tip to a circuit, then the LCD display will read the DC voltage with a resolution of 0.1 volt. (Figure 2)

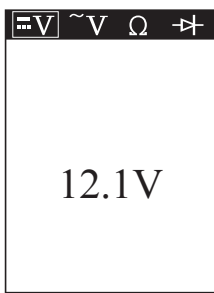


Figure 2

AC voltage

While the circuit probe in this mode, contact the probe tip to a circuit, then the LCD display will read the Max. Voltage, the Min. Voltage and frequency.(Figure 3)

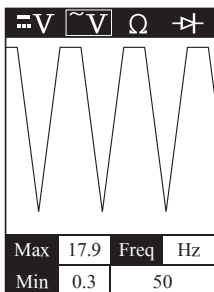


Figure 3

Resistance

While the circuit probe in this mode, contact the probe tip to a circuit, then the LCD display will read the resistance between the tip and auxiliary ground lead. (Figure 4)

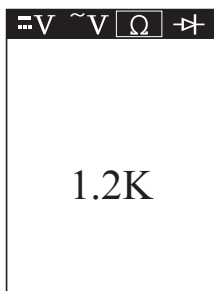


Figure 4

Diode

In this mode, the probe tip contact the positive terminal of the diode, connect the auxiliary ground lead to the negative terminal of the diode, the screen will display the forward voltage drop, indicates the forward bias. If switch the probe tip and auxiliary ground lead, the screen will not display the voltage, indicates the reverse bias. (Figure 5)

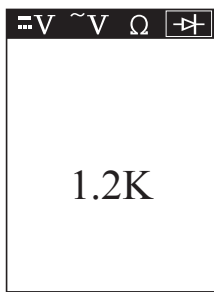


Figure 5

3. Operating Instructions

3.1 Voltage & Polarity Testing

While the tool is in DC Voltage mode, contact the probe tip to a POSITIVE circuit. The red LED will light up and the LCD displays the voltage with a resolution of 0.1V. A beep tone will sound.

If contact the probe tip to a NEGATIVE circuit, the green LED will light up and the LCD displays the voltage with a resolution of 0.1V. A beep tone will sound.

If contact the probe tip to an OPEN circuit. Neither of the LED will light up. (Figure 6 / 7)

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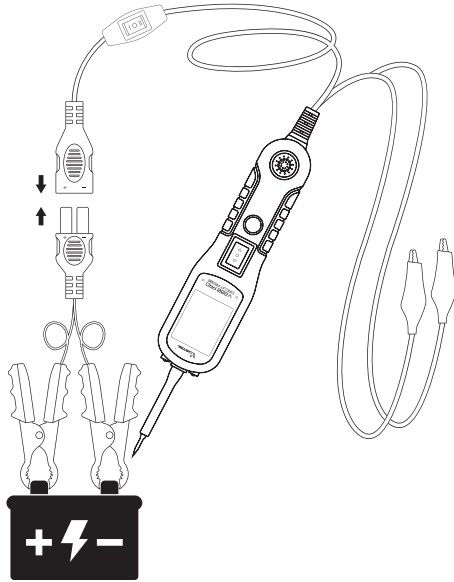


Figure 6

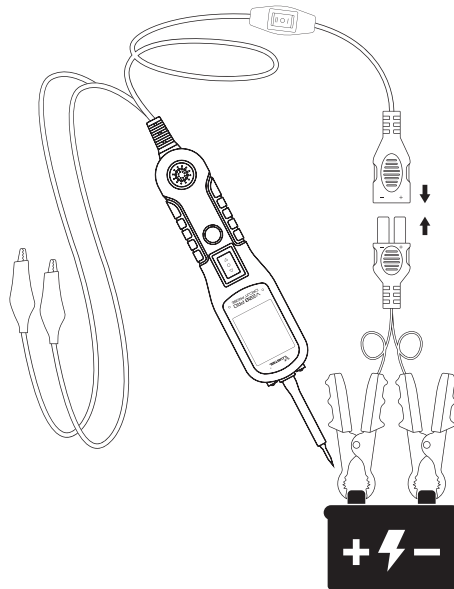


Figure 7

3.2 Continuity Testing

While the circuit probe is in Resistance mode, using the probe tip and the auxiliary ground lead, continuity can be tested on wires and components attached or disconnected from the vehicle's electrical system.

When the probe tip is contacting a good ground, the LCD will indicate "0.0Ω" and green LED will be on. A beep tone will sound (Figure 8)

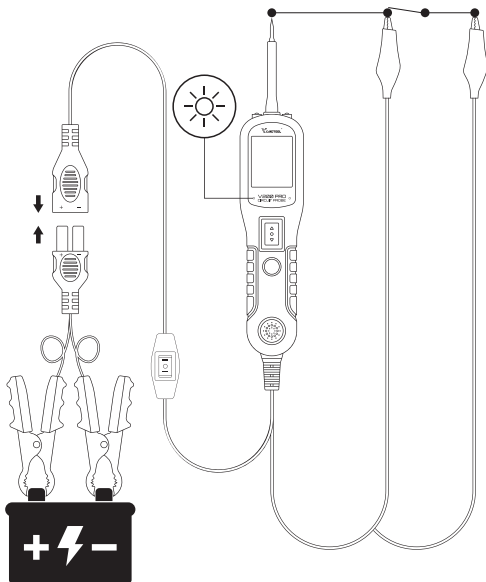


Figure 8

In other cases, the LCD only indicates the resistance value, (Figure 9)

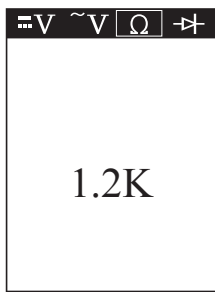


Figure 9

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If the resistance value is greater than 100K Ω , the LCD will show "0L".

There is also another way to prove continuity of connections to ground or battery. Power up the connection using the power switch. If the circuit breaker trips, you have a good solid low resistance connection.

Note: You can use the probe tip to pierce the plastic insulation on a wire. This means that you can test the circuit without disconnecting anything.

3.3 Signal Circuit Testing

Once you extract a DTC from the vehicle and realize that troubleshooting begins with some kind of sensor circuit, there is a quick test you can perform to verify the code. Testing your sensor is easy while using the tool.

For example, you suspect there is a problem with your M.A.P. sensor circuit, then follow the procedure below to test this sensor:

- ◆ Set the tool in AC Voltage mode, using the probe tip and the auxiliary ground lead.
- ◆ Connect vacuum pump to MAP sensor.
- ◆ Contact the probe tip to the MAP sensor positive terminal and observe the LCD readings which should be a sine wave in normal condition.
- ◆ Apply vacuum.
- ◆ Release vacuum and observe the LCD readings. (Figure 10)

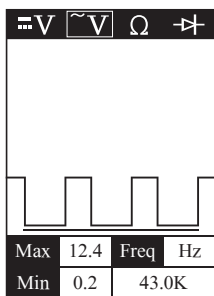


Figure 10

If the LCD readings are abnormal, there is a problem with this sensor.

3.4 Activating Components in Your Hand

While the circuit probe is in DC voltage mode, by using the probe tip in connection with the auxiliary ground lead, components can be activated right in your hand, thereby testing their functions.

Connect the auxiliary ground lead to the negative terminal or ground side of the component being tested. Then contact the probe tip to the positive terminal of the component,

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the green LED should light up, indicating continuity through the component. While keeping an eye on the green LED, quickly press and release the power switch forward. If the green LED went out and the red LED came on, you may proceed with further activation. Push the power switch forward and hold it down to provide power to your component. With the power switch pushed forward, power will flow from the positive lead on the battery to the probe tip, then to the component's positive terminal, through the component, through the auxiliary ground lead, then back to the tool, and all the way back to the vehicle's battery's ground. (Figure 11)

- (1) Press the power switch forward to activate the bulb.
- (2) Contact the tip to the positive terminal of the bulb.
- (3) Connect the negative auxiliary clip.

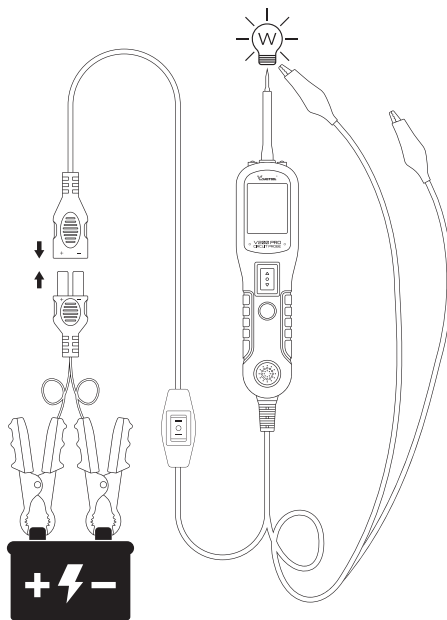


Figure 11

If the green LED went off at that instant or if the circuit breaker tripped, the circuit probe has been overloaded. This could happen for the following reasons:

- ◆ The contact you are probing is direct ground or negative voltage.
- ◆ The component you are testing is short-circuited.
- ◆ The component is a very high current component (i.e., starter motor).

If the circuit breaker is tripped, reset it by waiting for it to cool down (15 sec.)

3.5 Activating Components in The Vehicle

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While the circuit probe in DC Voltage mode, contact the probe tip to the positive terminal of the component, the green LED should light up, indicating continuity to ground. While observing the green LED. Quickly press the power switch button forward and release, if the green LED went out and the red LED comes on, you may proceed with further activation. (Figure12) If the green LED went off at that instant or if the circuit breaker tripped, the circuit probe has been overloaded. This could happen for the following reasons:

- (1) The contact you are probing is a direct ground
- (2) The component you are testing is short-circuited
- (3) The component is a very high current component (i.e., starter motor).

If the circuit breaker is tripped, reset it by waiting for it to cool down (15 sec.)

WARNING: Haphazardly applying voltage to certain circuits can cause damage to a vehicle's electronic components. Therefore, it is strongly advised to use the vehicle manufacturer's diagram and diagnosing procedure while testing.

NOTE: When powering up components, you can increase the life of power switch if you first press the switch, then contact the tip to the component. The arcing will take place at the tip instead of the contacts of the switch.

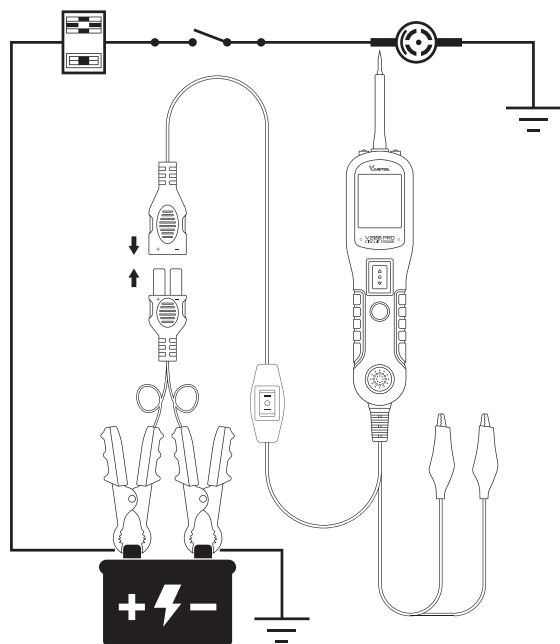


Figure 12

3.6 Testing Trailer Lights and Connections

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When the tool in DC Voltage mode, clip the auxiliary ground lead to the trailer ground, probe the contacts at the jack, then apply voltage to the probe tip. This allows you check the function and orientation of the connector and trailer lights. (Figure 13)

If the circuit breaker tripped, that contact is likely a ground. Reset the circuit breaker by letting it cool down for 15 seconds.

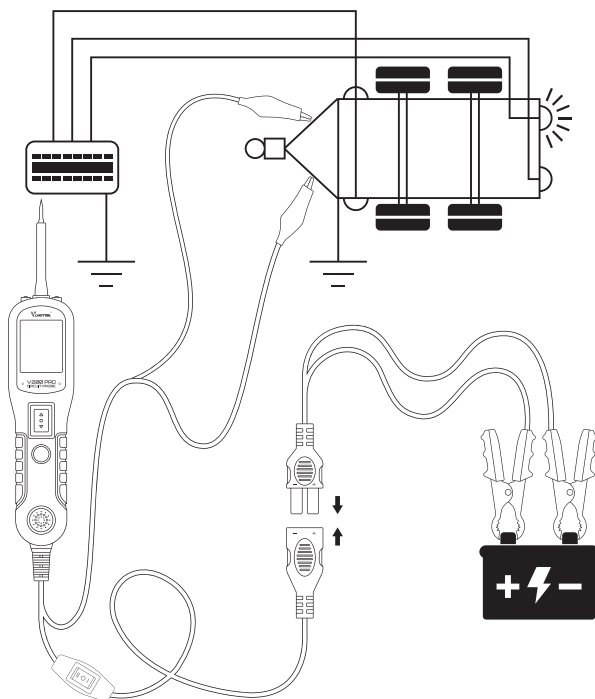


Figure 13

3.7 Activating Components W/Ground

While the circuit probe in DC Voltage mode, contact the probe tip to the negative terminal of the component, the red LED should light up. While observing the red LED, quickly press the power switch backward and release the button. If the red LED went out and the green LED came on, you may proceed with further activation. (Figure 14) If the green LED went off at that instant or if the circuit breaker tripped, the circuit probe has been overloaded. This could happen for the following reasons:

- (1) The contact you are probing is a direct positive voltage.
- (2) The component you are testing is short-circuited.
- (3) The component is a very high current component (i.e., starter motor).

If the circuit breaker is tripped, reset it by waiting for it to cool down (15 sec.)

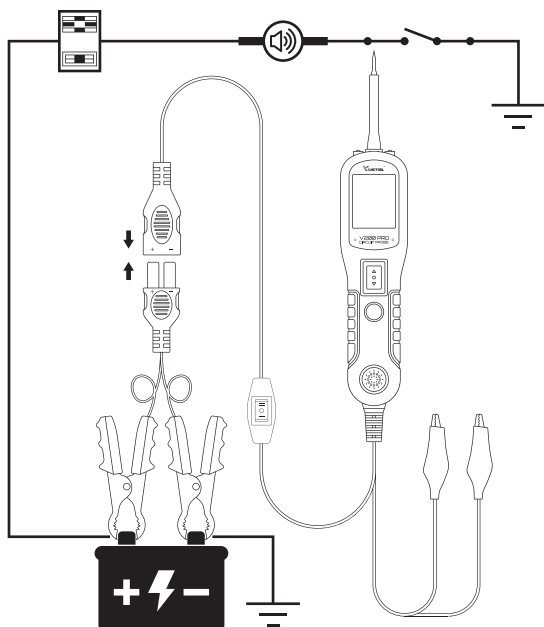


Figure 14

WARNING: With this function, if you are contacting a protected circuit, a vehicle's fuse can be blown or tripped if you apply ground to it.

3.8 Red/Green Polarity LED

The Red/Green Polarity LED lights up when the probe tip voltage matches the battery within ± 0.4 volts. It is added information that could be valuable to the technician.

If the circuit you are testing is not within a 0.4 volt (plus or minus) of supply voltage, you will see the voltage reading on the LCD but you will not hear a tone or see a red or green LED. This tells you either you have a voltage drop in excess of 0.8 volt from battery voltage or you are probing a circuit that has an increase of a 0.8 volt or more over battery voltage. To determine battery voltage, simply remove the tip from the circuit and press the power switch forward. Battery voltage will then be displayed on the LCD. The difference between the battery voltage and what is read on the circuit is either voltage drop or voltage increase. This allows you to determine a voltage drop without running back to check the battery. It's just another one of time saving feature the circuit probe has.

3.9 Following & Locating Short Circuits

In most cases a short circuit will appear by a fuse or a fusible link blowing or an electrical protection device tripping (i.e., a circuit breaker). This is the best place to begin the search. Remove the blown fuse from the fuse box.

Use the probe tip to activate and energize each of the fuse contacts. The contact which trips the circuit breaker is the shorted circuit. Take note of this wire's identification code or color. Follow the wire as far as you can along the wiring harness.

Here is an example of this application.

If you are following a short in the brake light circuit, you may know that the wire must pass through the wiring harness at the door sill. Locate the color-coded wire in the harness and expose it.

Probe through the insulation with the probe tip, and depress the power switch forward to activate and energize the wire.

If the circuit breaker tripped, you have verified the shorted wire. Cut the wire and energize each end with the probe tip. The wire end which trips the circuit breaker again is the shorted circuit and it will lead you to the shorted area.

Follow the wire in the shorted direction and repeat this process until the short is located.

3.10 Checking for Bad Ground Contacts

Probe the suspected ground wire or contact with the probe tip.

Observe the green LED. Depress the power switch forward then release. If the green LED went out and the red LED came on, a beep will sound, this is not a true ground. If the circuit breaker tripped, this circuit is more than likely a good ground: Keep in mind that high current components such as starter motors will also trip the circuit breaker.

4. Test Tool Specifications

- ◆ Circuit Probe:
 - DC voltage range: 0-65V + 1 digit
 - Resistance range: 0-100 kΩ
 - Frequency response of tone pass through 0Hz to 10Khz
- ◆ Circuit Breaker
 - Rating current: 1-10 Amp
- ◆ Breaker Finder:
 - DC voltage range: 6-24V
 - Special features: short cable finder

5. Circuit Breaker Finder Knowledge

Is circuit breaker finder computer and air bag safe?

The circuit breaker finder LED and LCD pull no more than 1 millamp of current, therefore when using it as a test light or multimeter it is computer and airbag safe. However, pressing the power switch is a different story. When you press the switch forward, you are conducting full battery current to the tip of the probe. There is a nice safety feature built into the tool. Simply connect the extra ground lead to the circuit breaker finder and press the power switch forward until it trips the circuit breaker. This will prevent power from going to the tip but still allow you to use the tool as a multimeter. When you are away from computer components, simply press the reset button and you are ready to power up again.

6. Locating Open Circuit

6.1 How To Use The Circuit Breaker Finder

The probe of the breaker finder is built of coiled steel and may be bent as needed. In order to reach wires in congested or difficult areas. Depending on the circuit characteristic and sensitivity settings, the probe will pick up the signal from the wire in a range of positions. However, for the best possible range, the Breaker Finder's probe tip (black cap) should be positioned perpendicular(at 90°)to the wire being traced and either above or below it.

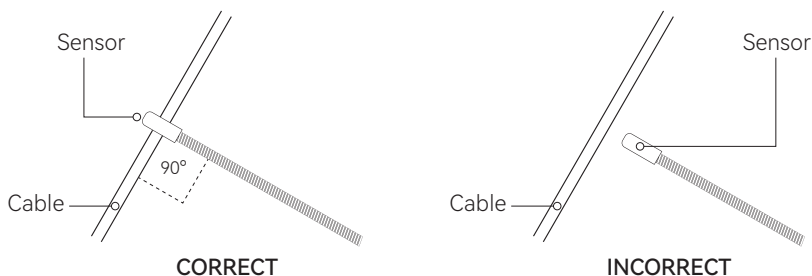


Figure 15

6.2 Setting Sensitivity Level

To increase sensitivity, turn the rotary switch of the circuit breaker finder clockwise. To decrease sensitivity, turn the rotary switch anticlockwise.

6.3 Breaker Finder Operation Guide

With the probe kit connected to power, select Mode II on the tool kit working mode switch button.

Switch on the breaker finder and set the rotary switch to the middle position. Press and hold the TEST button, and move the black probe tip along the wire you want to test. The breaker finder detects the signal and sound the loudspeaker which means the unit is working correctly.

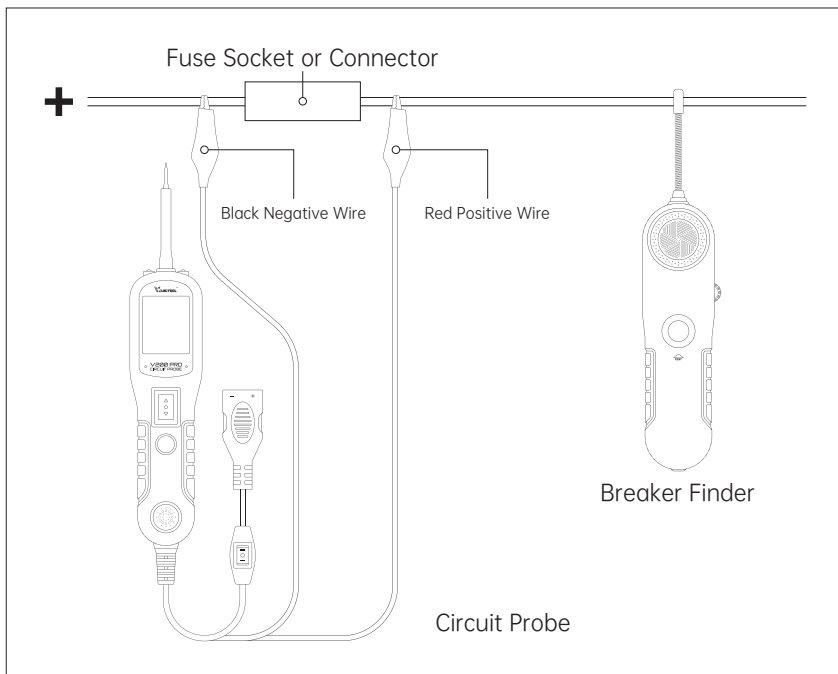
Connect the black test lead to the negative supply(ground) and red test lead to the positive supply(or a fuse socket, connector for more convenient connection). Switch on the breaker finder probe and set its rotary switch to the middle position, press and hold the TEST button and slowly sweep the wire with the probe point above or below perpendicularly and as close as possible. Check at different points of the wire to narrow it down first or tracing the wire all along, moving towards the end with load.

Observe the tone signal. Where the tone signal stops, it's the location of the open, break or bad connection of the circuit.

If it's difficult or impossible for the breaker finder to pick up any tone signal, please try increase the sensitivity by turning the rotary switch of the breaker finder clockwise and test again.

When you have finished locating open circuit, disconnect the test leads and let go of the TEST button.

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7. Warranty and Service

7.1 Limited One Year Warranty

This warranty is expressly limited to buyer who purchase VDIAGTOOL V200 Pro product for purposes of resale or use in the ordinary course of the buyer's business.

VDIAGTOOL V200 Pro is warranted against defects in materials and workmanship for one year (12 months) from date of delivery to the buyer. This warranty does not cover any part that has been abused, altered, used for a purpose other than for which it was intended, or used in a manner inconsistent with instructions regarding use. The exclusive remedy for any tool found to be defective is repair or replacement, and it shall not be liable for any consequential or incidental damages.

7.2 Service Procedures

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