Vehicle Circuit Probe

Table of Contents

2.2 Tool Description

To prevent personal injury or damage to vehicles and/or the test Tool,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 enging 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.

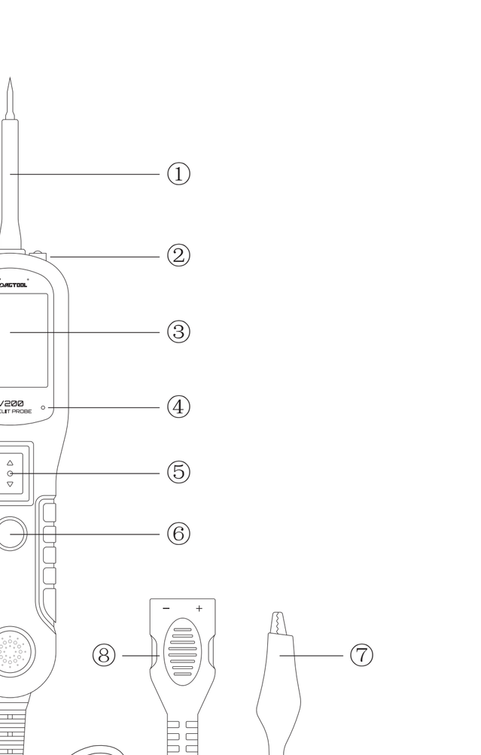
Use ectreme caution when working around the ignition coil, distributor cap, ignition wires and spark plugs. These component create Hazardous voltage when engine is running.
◆ Put the transmission in PARK (for automatic transmission) or NEUTRAL (for manual transmission) and make sure the parking brake is engaged.
◆ Keep a fire extinguisher suitable for gasoling/chemical/electrical fires nearby.
◆ Don't connect or disconnect any test equipment while the ignition is on or the enging 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 test tool, when necessary.
◆ When the power switch in the tool 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 Test Tool

2.1 Specifications

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 24.0 V power provided via vehicle battery
Dimensions (L × W × H)	178 × 47 × 28mm (7 × 1.85 ×0.09 in)
Net Weight	0.1Kg (0.22LB)

2.2 Tool 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 **Auxiliary Ground Lead -** Assists test as a ground lead.
⑧ **Adaptor -** Connects to the battery.
⑨ **Loudspeaker -** Alert prompt.

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

2.4 General Description

The tool 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

2.5 Power

The tool is powered via 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 is in good order by doing a quick self-test.
With the tool connected, 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)

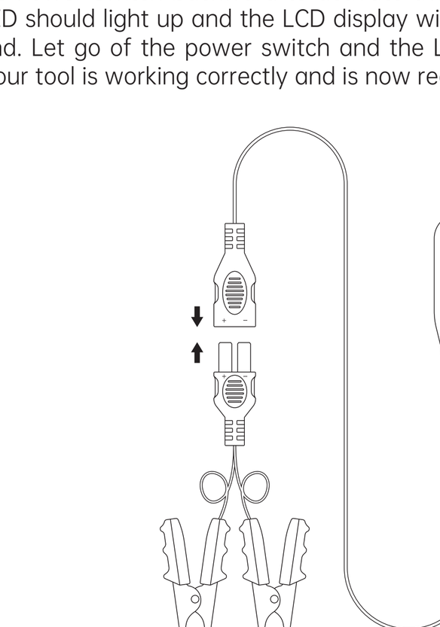


Figure 1

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 overload. 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

While the tool 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)

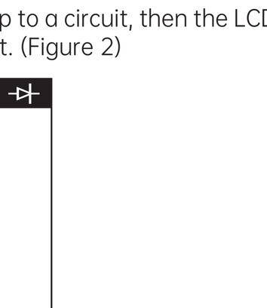


Figure 2

AC voltage

While the tool 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)

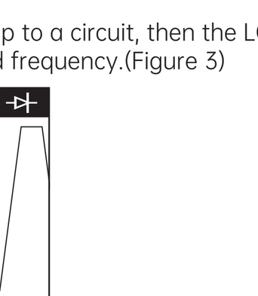


Figure 3

Resistance

While the tool 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)

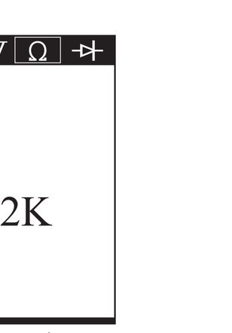


Figure 4

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.

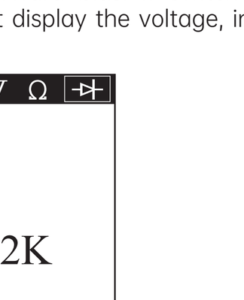


Figure 5

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)

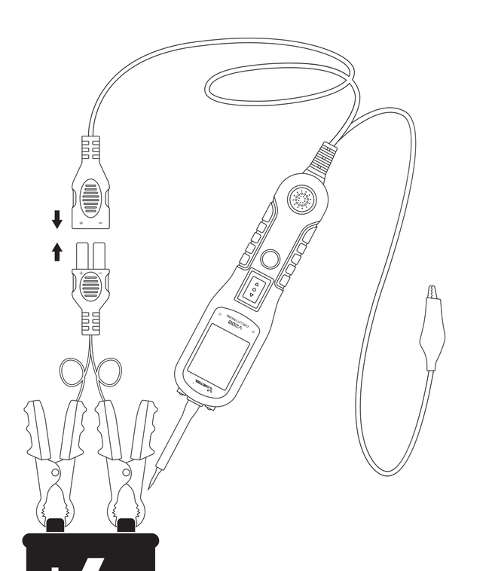


Figure 6

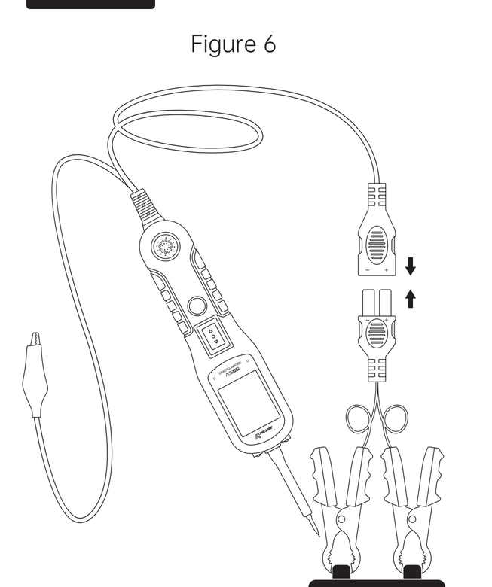


Figure 7

3.2 Continuity Testing

While the tool 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 vehide'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)

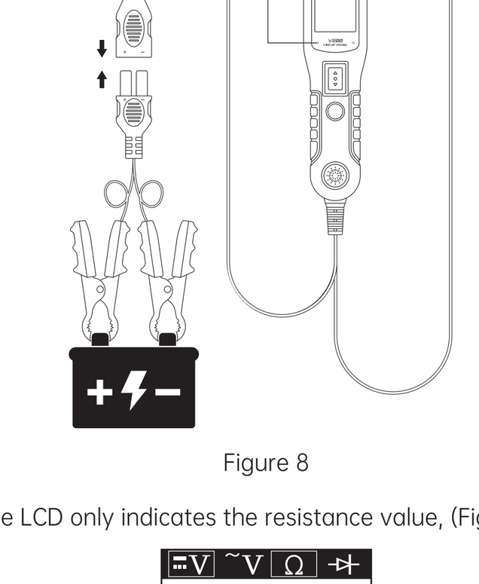


Figure 8

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

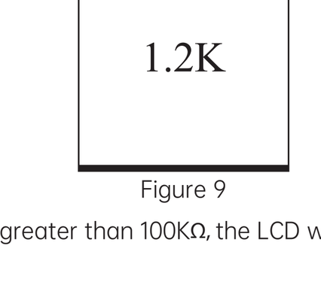


Figure 9

If the resistance value is greater than 100KΩ, 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)

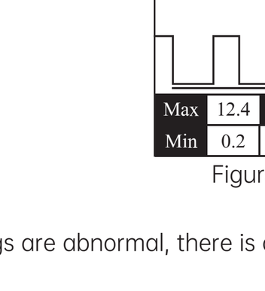


Figure 10

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

3.4 Activating Components in Your Hand

While the tool 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, 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.

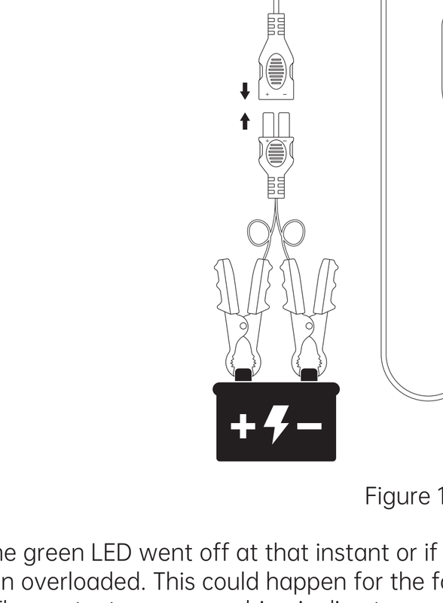


Figure 11

If the green LED went off at that instant or if the circuit breaker tripped, the tool 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

While the tool 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. (Figure 12) If the green LED went off at that instant or if the circuit breaker tripped, the tool 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.

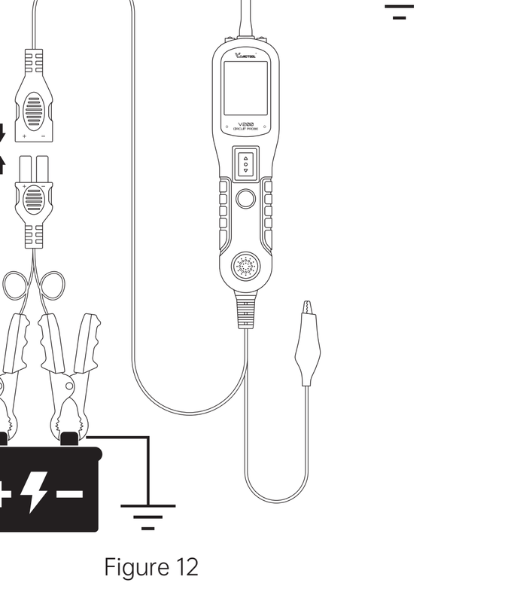


Figure 12

3.6 Testing Trailer Lights and Connections

When the tool in DC Voltage mode, clip the auxiliary ground lead to the trailer ground, probe the contacts at the jack and 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.

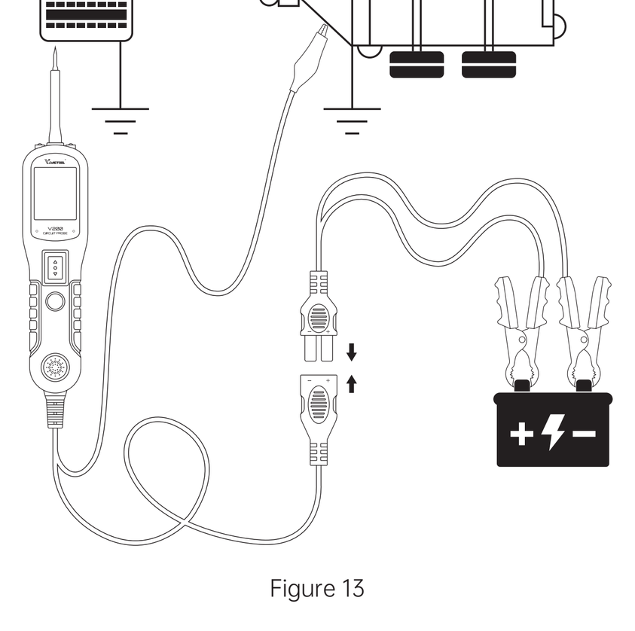


Figure 13

3.7 Activating Components W/Ground

While the tool 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 tool 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.)

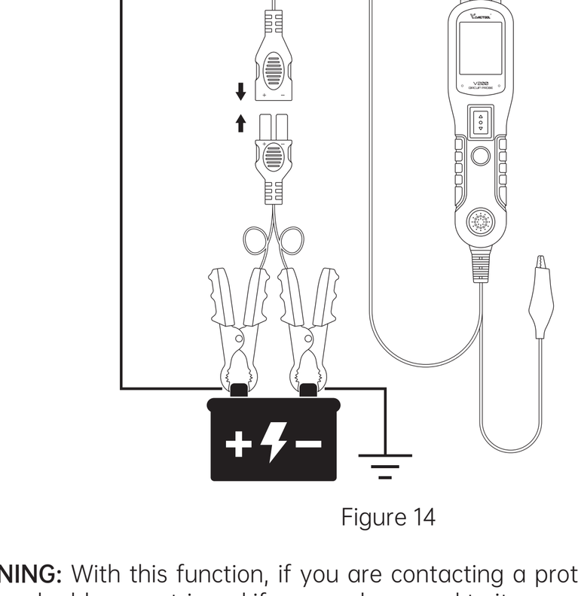


Figure 14

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 tool has.

3.9 Following & Locating Short Circuits

In most cases a short circuit wil 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 blow 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 for 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

◆ DC voltage range: 0-65V + 1 digit
◆ Resistance range: 0-100 kΩ
◆ Frequency response of tone pass through OHz to 10Khz
◆ Circuit Breaker
◆ Rating current: 1-10 Amp
◆ Testing Standard:
100% current: Hold > 1 hour
150% current: trip in one hour
200% current: trip in 3-30 seconds.
300% current: trip in 0.5-4.0 seconds.

5.Test Tool Knowledge

Is the tool computer and air bag safe?
The tool 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 tool 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, simple press the reset button and you are ready to power up again.

6. Warranty and Service

6.1 Limited One Year Warranty

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

VDIAGTOOL V200 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.

6.2 Service Procedures

Trademaks
VDIAGTOOL is the trademark of SHENZHEN CHUANG XIN HONG TECHNOLOGY CO., LTD
All other marks are trademarks or registered trademarks of the respective holder.

Disclaimer
The information, specifications and illustrations in this user manual are based on the latest information available at the time of printing.
VDIAGTOOL reserves the right to make changes at any time without notice.

Visit our official website via
www.vdiagtool.com

For technical support
Please contact your dealer directly to get fast response or send us e-mail at
support@vdiagtool.com

For wholesale business, send us e-mail at
support@vdiagtool.com