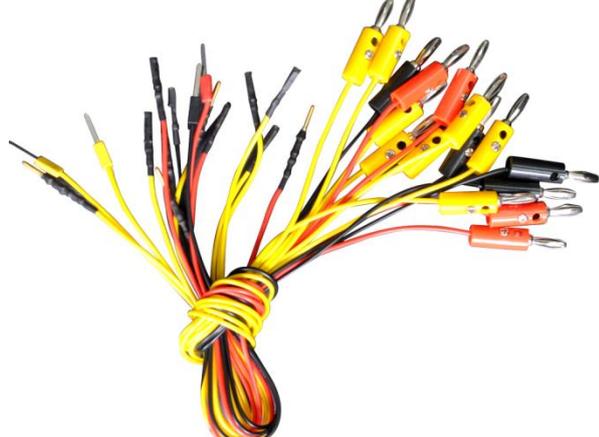


# How to Use Jumper Box to Test a Car?

Car Trouble Diagnostic Instrument is equipped with various shapes of pin diagnostic connector of vast majority of cars, but for some models, the connection mode of diagnostic base is not uniform or car diagnostic seat was artificially damaged, modified or wrongly connected, therefore even using an appropriate diagnostic connector, it's still unable to connect. At this moment you can use the jumper box for jumper connection.

## Introduction to Jumper Boxes and Jumpers

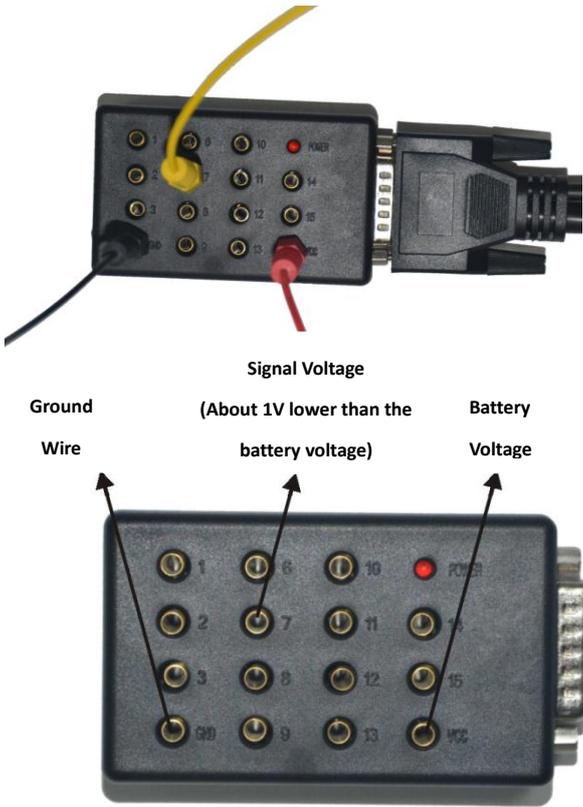
	<p><b>Introduction to Jumper Box:</b></p> <p>There are 15 jacks on the jumper box, namely 1, 2, 3, GND, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, VCC.</p>
	<p><b>Introduction to Jumper:</b></p> <p>The assembly box is equipped with red, black, yellow three colors of jumper, total 16. For easy recognition, the red is typically used for connecting the positive pole of power supply, the black for negative pole, and the yellow for connecting the signal line.</p> <p>Jumper pins are divided into four kinds, namely the needle, cylinder, square hole, round hole, which are applied to various pin shapes of diagnostic interface. When using, please select a proper one according to the car diagnostic connector pin.</p>

## Various Communication Protocols

Protocol Name	Communication Line Name	Reference Voltage Range	Select Jumper Box Hole No.
K-Line Communication	K	Battery Voltage low 1V	7
CAN Communication	CAN - H	2.5V + 0.25V	6
	CAN - L	2.5V - 0.25V	14
J1708 Communication	J1708 - A	3V - 5V	7
	J1708 - B	0V - 2V	15
RS232 Communication	RS232 - TD	(-9V) - (-5V)	7
	RS232 - RD	0V - 0.7V	15

Take the following most commonly used K-line communication and CAN line communication as an example to give a detailed description for the connection method steps.

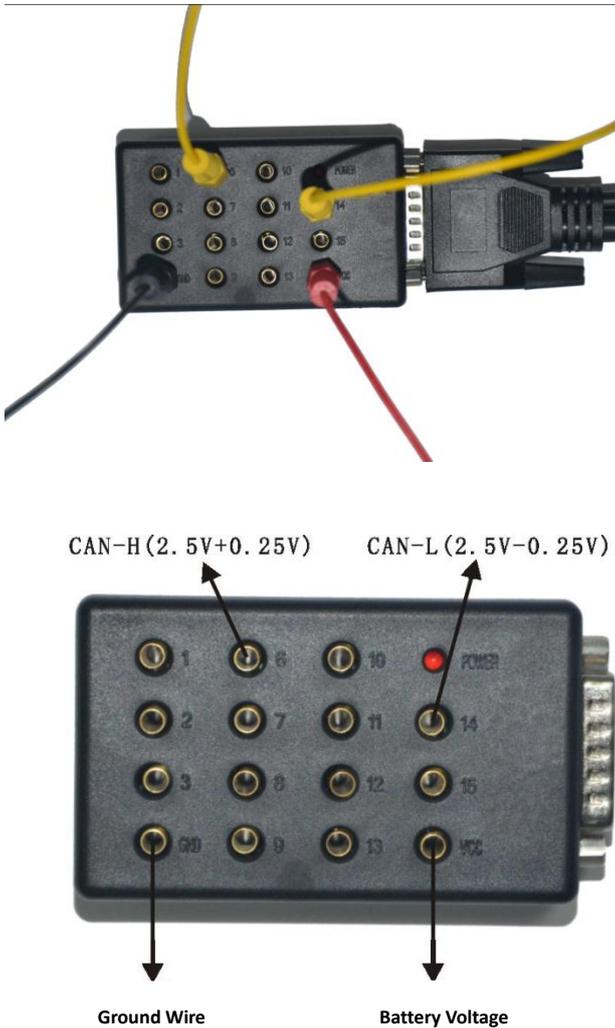
**1. K-line Diagnostic Connection Mode**



K-line signal voltage is about 1V lower than the battery voltage, such as battery 12V, the signal line voltage about 11V, battery 24V, the signal voltage about 23V. The actual measured voltage of car diagnostic pin may be biased, but the deviation is about  $\pm 0.25V$ .

The connection method of K-line communication and jumper box is as shown in the figure, signal line connected to the 7th hole, power line (battery voltage) connected to VCC hole, and the ground wire connected to GND.

**2. CAN Line Communication Diagnostic Connection Mode**



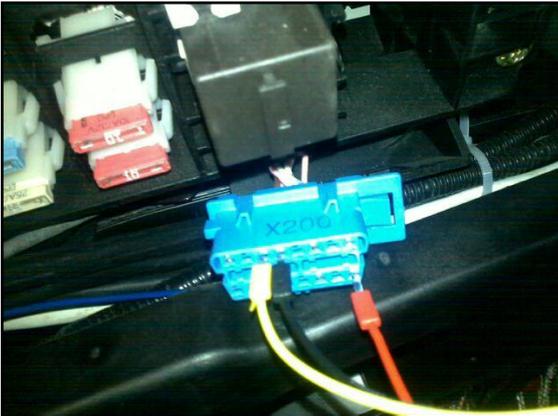
CAN line communication uses dual-signal line. The two diagnostic lines use the multimeter to measure the ground wire voltage when the ignition switch is turned on. The sum of the two voltages is 5V, CAN-H line voltage  $2.5 + 0.25 V$ , and CAN -L line voltage  $2.5 - 0.25V$ . There may be a deviation, but the deviation is about  $\pm 0.25V$ .

As for CAN line communication, diagnostic base connection with the jumper box is as shown in the figure, CAN-H is connected to hole 6, CAN-L connected to hole 14, the power supply line (battery voltage) connected to VCC hole and ground wire connected to GND.

Note: the actual measured voltage of car diagnostic pin may be biased, but the deviation is about  $\pm 0.25V$ .



Connect the jumper box to the main test leads and tighten the fastening bolts as shown on the left. In the jumper box you can see 15 jumper connection holes, respectively marked with numbers, the numbers of these connection holes corresponding to the car OBD interface pins, as shown in Figure 4.2.3.2.



Please connect the jumper box diagnostic interface according to the diagnostic information of the car.

When the connection is completed, turn the ignition switch to ON, and then the power indicator on the jumper box lights up. Press the host switch, when the host is working properly, and then you can choose an appropriate system for diagnosis.

**Note: If lack car electrical knowledge or cannot confirm the electrical power supply, do not perform jumper operation. The wrong jumper operation may lead to electrical failure or host and cable failure.**

#### **Car Diagnostic Base Related Information Confirmation and Tools:**

1. Digital high impedance multimeter (you must use high impedance meter, otherwise the computer board may be damaged).
2. When the ignition is switched to the ON position, the diagnosis base will have the car supply voltage. The voltage difference between the diagnosis base and car battery cannot exceed 2.5V.
3. If the signal line used in the diagnosis is single-wire communication (K-line), the signal line voltage is 1V lower than the battery voltage, (if the car supply voltage is 12V, the signal line voltage will be  $11V \pm 0.25V$ ; if the car supply voltage is 24V, the signal line voltage will be  $23V \pm 0.25V$ ).
4. If the dual-signal line communication uses CAN communication, the two diagnostic lines will use the multimeter to measure the ground wire voltage when the ignition switch is turned on. The sum of the two voltages is 5V, CAN-H line voltage  $2.5 + 0.25 V$ , and CAN -L line voltage  $2.5 - 0.25V$ . There may be a deviation, but the deviation is about  $\pm 0.25V$ .