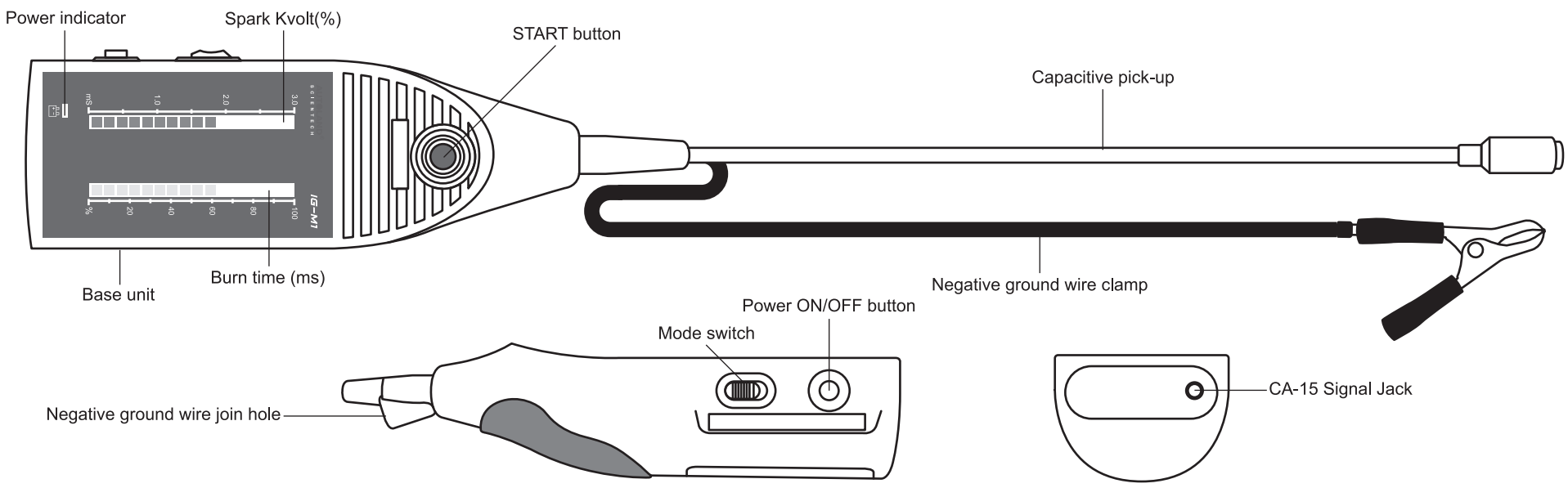
IG-M1 Instruction Manual

Product Introduction

The IG-M1 has specifically dedicated modes for the purpose of the ignition systems diagnostic. It easily measures ignition coil and sparking plug which includes Single and Dual Ignition System. It also offers testing of Spark burn time and Spark Kvolt.

Instrument Description



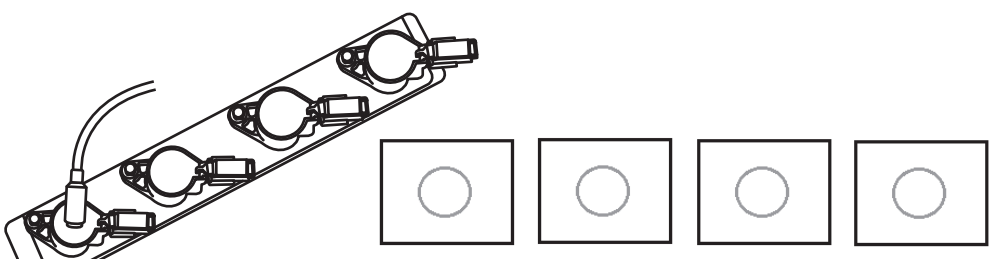
Introducing new features

CRANKING Mode If the vechicle can not be started, use CRANKING Mode to measure. Touch the iginition coil with the Capacitive pick-up, and then press "Start". Please make sure to contact same spot on the coil of each cylinder during the measurement. Under CRANKING Mode, only Spark Kvolt% is measured.

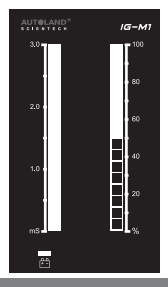
RUNNING Mode If the vichecle can be started, use RUNNING mode to measure. Touch the iginition coil with the Capacitive pick-up, and then press "Start". Please make sure to contact same spot on the coil of each cylinder during the measurement.

Single Ignition Measurement

Check whether the vehicle can be started or not before measurement. If negative, please switch to CRANKING mode for measurement. If the vehicle can be started, then use RUNNING mode.

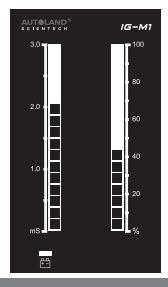


Contact exact same position on the coil of each cylinder during the meansurement. See illustration above.



Cranking Mode

Switch to CRANKING mode if the vehicle can not be started. Touch the iginition coil with the Capacitive pick-up, then press START to measure Spark Kvolt%.



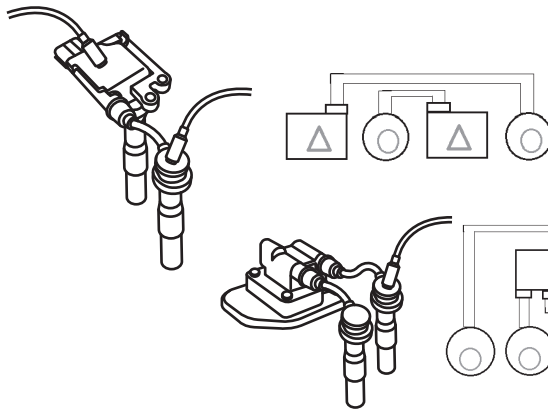
Running Mode

Switch to RUNNING mode when the vehicle can be started. Touch the iginition coil with the Capacitive pick-up, then press START to measure Spark KV and Spark Burn Time. Use this Spark Kvolt% and Spark Burn Time to compare with other cylinders.

Attention: the capacitive pick-up needs to be contacting the coil before pressting START. Inaccurate measurement may occure if failed to follow the instruction.

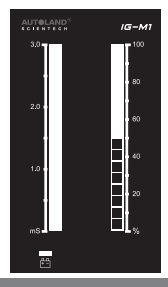
Dual Direct Ignition Measurement

Check whether the vehicle can be started or not before measurement. If negative, please switch to CRANKING mode for measurement. If the vehicle can be started, then use RUNNING mode.



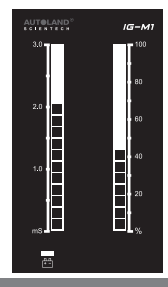
Contact exact same position on the coil of each cylinder during the measurement. Same shape coil pairs with each other to compare. See illustration on the left.

Contact exact same position on the coil of each cylinder during the meansurement. See illustration on the left.



Cranking Mode

Switch to CRANKING mode if the vehicle can not be started. Touch the iginition coil with the Capacitive pick-up, then press START to measure Spark Kvolt%.



Running Mode

Switch to RUNNING mode when the vehicle can be started. Touch the iginition coil with the Capacitive pick-up, then press START to measure Spark KV and Spark Burn Time. Use this Spark Kvolt% and Spark Burn Time to compare with other cylinders.

Attention: the capacitive pick-up needs to be contacting the coil before pressting START. Inaccurate measurement may occure if failed to follow the instruction.

Direct Ignition System

There are two types of direct ignition system: Single direct ignition and Dual direct ignition. The measured burn time of each type may slightly differ. The burn time of single direct ignition is 1.5-2.4ms and the burn time of dual direct ignition is 1.2-1.5ms. The burn time and spark voltage are closely linked. Ignition voltage is the vaoltage created when the fire jump across the spark gap.

It is easier to ignite if the ignition voltage is low, but the fire is weak with longer burn time.
On the contrary, it is harder to ignite when the ignition voltage is high. The fire will be stronger with shorter burn time.

Common causes affect Spark Kvolt are:

1. Spark gap 2. Engine RPM 3. Ignition Timing 4. Cylinder Compressive Ratio 5. Mixture Ratio

Understanding the Kvolt readings

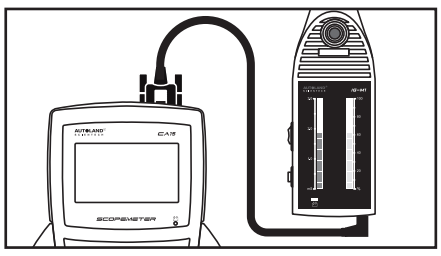
Common causes of low Spark Kvolt readings

1. Spark plug gap too small
2. Broken injector and the mixture is coming out too thick
3. A breakdown of machinery

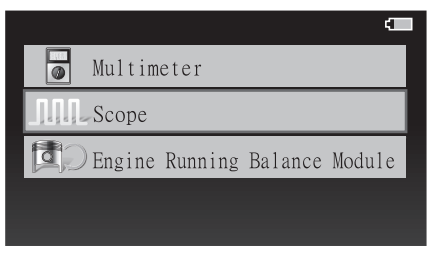
Common causes of high Spark Kvolt readings

1. Spark plug gap too wide
2. Broken injector and the mixture is coming out too thin

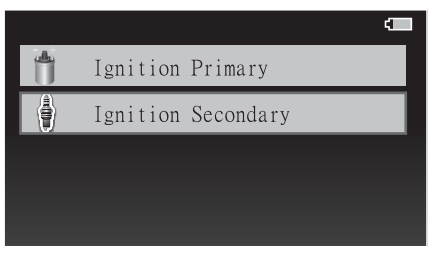
Connection of IG-M1 and CA-15



1. Connect RS232 of CA15 to the IG-M via DL-C cable.

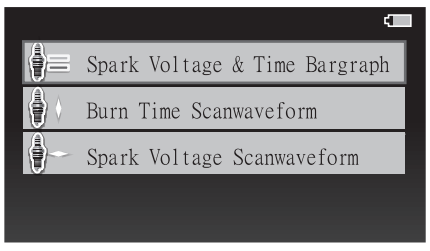


2. Power on CA-15, select Scope

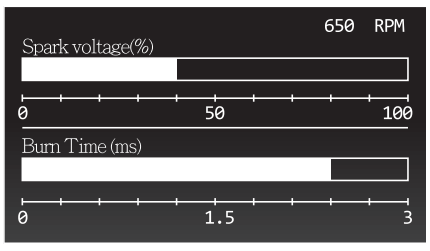


3. Select Ignition Secondary

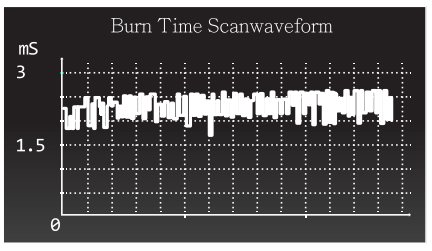
4. Connect IG-M1, press Enter.



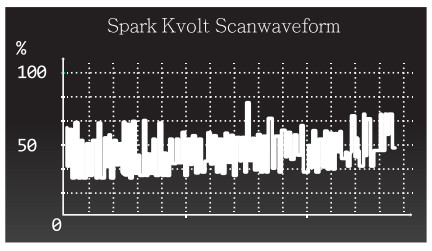
5. Measure Spark Voltage & Time Bargraph, Burn Time Scanwaveform, and Spark Voltage Scanwaveform.



6. Enter Ignition Secondary bargraph to measure Spark voltage, Burn Time (ms) bargraph, and RPM



7. Enter Burn Time Scanwaveform to measure burn time status.



8. Enter Spark Kvolt Scanwaveform to measure Spark Kvolt(%)