

Snap-on Vantage kV Module

We first introduced the Snap-on Vantage in an earlier *Test Bench* (May 1998). In that article, Randy Bernklau explained why the Vantage is a unique tool that fits between two tools you may already own. It's not quite a digital storage oscilloscope (DSO), but it's more than a digital Multimeter (DMM).

The Vantage belongs in a category separate from these tools because it is a graphing Multimeter. A graphing Multimeter samples the signal, converts it to digital numbers, then plots the numbers versus time. As time passes, the Vantage produces a pattern on its LCD screen that looks something like a DSO pattern, but the pattern is more accurately described as a *histograph*. Each point on the histogram represents the actual min/max reading of a signal at a specific time.

The Vantage can be used to test a wide variety of vehicle components. The tool is menu-driven, so quickly drill down to the information for the vehicle you're working on. Suppose you need to check an EGR temperature sensor on a 1994 Volkswagen Golf. After selecting the year and model, a built-in database automatically configures the Vantage for sensor testing, as



well as explaining the operation of the sensor, its location, a diagram of the sensor connector with back-probe information and a series of sensor tests.

The Vantage Version 3.0 software update offers expanded coverage of Asian, European and domestic models through 1999. Two additional manufacturers, Audi and Isuzu, have also been added. A more in-depth (year/make/model) vehicle ID provides more specific component testing information and component location help. Best test locations, an A to Z index, as well as fuel pressure tests, are also included with the Version 3.0 update. For current Vantage owners, the software update is easily accomplished by replacing the memory card located under the left handgrip.

While these are certainly useful Vantage improvements, probably the most important feature of the Version 3.0 software update is the addition of a secondary-ignition analysis capability. A newly introduced kV module (shown above)

piggybacks onto the Vantage, allowing the display to focus on one part of the secondary ignition waveform — the firing section. Individual characteristics of that, including firing kV, spark kV, waste kV and burn-time, can be displayed in histogram or digital format on the Vantage LCD.

A clip-on spark plug wire adapter and a GM HEI adapter are provided with the kV Module. These two adapters permit the Vantage to connect to most conventional ignition systems, as well as DIS. An assortment of system-specific adapters is also available for coil-on-plug, and import coil-in-cap systems. We tried out the kV module and Vantage on a conventional ignition system. In the photos and text that follow, we'll describe the results. **Circle Number 120** on the Reader Service Card to receive additional information about the Snap-on Vantage kV Module. ■

—By Karl Seyfert



1

The dark gray RPM probe senses current in the spark plug wire you wish to trigger on. When triggered, a "T" is shown on the screen and you view measurements for the selected cylinder. If the "T" is not present, you are viewing measurements for all cylinders. The black capacitive probe clamps around the coil wire.



2

This doesn't look like a conventional oscilloscope ignition pattern, does it? The Vantage focuses on a specific section of the secondary ignition waveform, then presents it in histogrammic form. This graph represents burn-time. The graph should be uniform and between 1 and 3 milliseconds. If not, there's a problem.



3

This is a peak power kV graph. The engine was running properly, so there's not much variation in the graph points. For example, high secondary resistance (an open plug wire) produces upward spikes. To isolate the problem, move the RPM probe to individual spark plug wires while viewing the measurements.



4

This is a spark kV graph, representing the voltage required to maintain the spark for the duration of the burn-time. Rather than looking for subtle changes in an oscilloscope secondary ignition waveform, the Vantage graphing capabilities allow you to identify abnormalities represented by high or low readings.



5

The tool's dual-screen capability allows simultaneous display of two secondary readings. On waste-spark systems, power and waste kV can be selected, for example. Or on a coil-on-plug system, you may wish to examine power kV and burn-time simultaneously. Readings may be stored for later study or printing.



6

The dual screen capability can also display two readings in digital form. Here we simultaneously see digital spark kV and burn-time readings. The Vantage has a five screen internal graph memory, and the Vantage PC Link software allows you to download stored graphs from the Vantage to a PC.