



Engine Tester Road Tests

How do you repair automotive driveability problems? Do you fumble around aimlessly until you find the cause of the problem by accident? Do you rely on past experience and hope that it leads you in the right direction? Or do you use a systematic and organized method to collect the information you need to locate and repair the problem?

If you subscribe to the third approach, you're probably already familiar with automotive scan tools. In fact you may already be using one. Scan tools provide a quick and convenient way to recover valuable diagnostic information. This information can be used to solve complicated driveability and engine management system problems, without a lot of fumbling around.

Scan tools have been available for domestic cars for several years. But scanners for imports have lagged behind. One reason for this delay is the wide variety of engine management systems that are featured on imports. Instead of Detroit's Big Three, we're talking about at least twelve different systems from Asian manufacturers alone.

Another reason for the delay is the fundamental difference between most Asian systems and their domestic counterparts. Until very recently, most Asian systems could not send serial data from the control unit to a diagnostic scanner. The only things

that a scanner could retrieve from these systems were trouble codes. And not even trouble codes were available on some systems.

Whenever someone reminds me of this difference between domestic and Asian diagnostic ability, I always give the same answer. Asian systems might seem primitive without the domestic systems' sophisticated self-diagnostics. But you won't miss the self-diagnostics if the system never causes any problems.

Of course nothing electronic will ever be perfect, and problems are bound to occur. This becomes especially likely as the miles start to add up on the odometer. When Asian engine management system problems do develop, it's nice to have as much diagnostic information as possible, even if it's only trouble codes.

In the past we have road tested several pieces of diagnostic equipment designed or adapted for use on Asian import engine management systems. Snap-on has recently introduced a set of Asian import cartridges for their MT2500 Scanner. The MT2500 Scanner has been available for a couple of years with cartridges for domestic vehicles, and you may already be familiar with it. It was the introduction of the Asian cartridges that sparked our interest in the MT2500.

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Scan-a-Rama

We tried out the Snap-on Scanner and Asian cartridges on several cars to see what this package could do. While we can't demonstrate all of the scanner's capabilities in this article, we will try to point out what's different or especially helpful about this tool. We should also mention which manufacturers and years the Asian cartridges will service. They are:

- Acura (1986-90)
- Geo (1989-90)
- Honda (1985-90)
- Hyundai (1986-90)
- Isuzu (1984-90)
- Lexus (1990)
- Mazda (1983-90)
- Mitsubishi (1984-90)
- Nissan (1984-90)
- Subaru (1983-90)
- Toyota (1983-90)
- Chrysler Imports (1984-90)

The Asian cartridges are available in either of two different packages. If you already have a Snap-on MT2500 Scanner that you've been using on domestic cars, the Asian cartridges are available separately. If you don't have the scanner, it can also be purchased along with the Asian cartridges.

Either way, a complete set of harnesses is included to connect the scanner to any of the cars listed above. The Asian Imports Reference Manual and the Asian Imports Troubleshooter User Manual are also included with either purchase (more on the manuals later).

Quick ID

One of the most helpful scanner features is also the first one you should use. Finding the diagnostic connector can be a real struggle on some imports. If you specialize in just one car line, you might be familiar with where the diagnostic connectors are located. But if you're doing general repairs, there are just too many connectors to keep track of.

This is where the scanner's Quick ID button shows its worth. While holding down the button, the scanner uses internal battery power to take you through an identification process using the vehicle identification number (VIN).

After you've told the scanner the VIN information it needs, the scanner will tell you where the diagnostic connector is located and which harness adapter you need to use. The reference manual also provides more detailed hook up information. The Quick ID button can be released and the scanner will store the VIN information.

The Fast Track

Like all scanners, the MT2500 can collect trouble codes and tell you their meanings. But that's really just the beginning. As we mentioned, there are two cartridges that plug into the scanner for Asian vehicle diagnosis. The primary cartridge handles the VIN information and basic trouble code information. The second, "Fast Track Troubleshooter" cartridge is also included. Both cartridges work together as a team.

The Troubleshooter cartridge contains checklists of tips to help you identify the probable causes of problems, both by trouble code number and by driveability symptom. All of these tips are grouped according to the vehicle ID entered through the primary cartridge.

After you've collected the trouble codes from the vehicle, the Troubleshooter cartridge will give you a listing of probable causes related to each trouble code. If the vehicle can't send trouble codes to the scanner, probable causes are also grouped by symptom.

The Troubleshooter may also direct you to the Troubleshooter User's Manual for a more detailed explanation or other information. The manual also includes test and adjustment procedures, part numbers, and illustrations. Snap-on states that the information in the User's Manual was compiled from

factory service manuals and bulletins, as well as the experience of import driveability experts.

Serial Data

At this point, most Asian imports can't transmit serial data to diagnostic equipment. Geo and Isuzu models stand out as exceptions to the rule. The scanner can tap directly into these systems' data streams. This information is accessed through the "Codes and Data" section of the menu.

The scanner will display the ECU data list and information about trouble codes. The amount of serial data available will vary from one vehicle to the next. For some vehicles, the data list may be as short as 12 or 13 parameters. Other vehicles may have as many as 50 parameters.

The scanner also has a Movie capability. Movies collect up to 101 frames of serial data. Seventy-five frames of data are recorded before the trigger point, and 25 frames after the trigger point. The trigger point is called frame zero. The scanner can also hold a single data frame for review or printing with an optional printer.

For more information about the Snap-on MT2500 Scanner and Asian cartridges, **Circle No. 200** on the reader service card.

— By Karl Seyfert

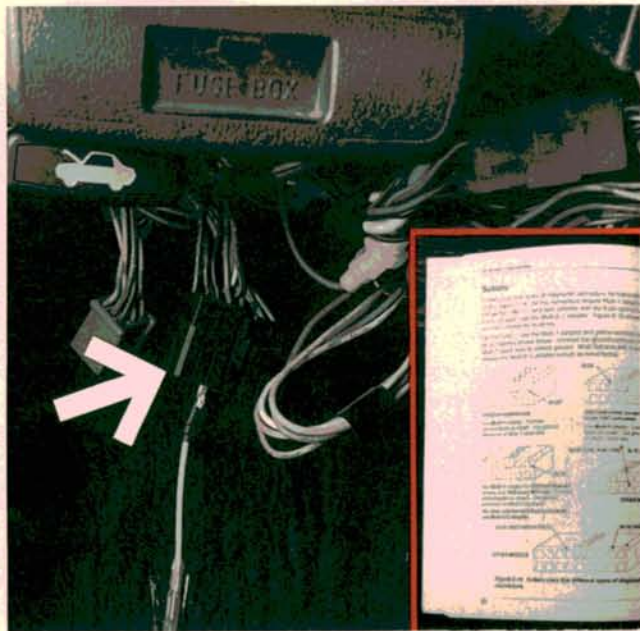


1 We'll run through a test procedure to show you how the Scanner works. If you don't know the location of the car's diagnostic connectors, start by pressing the Quick ID button (arrow). The scanner runs on internal battery power and takes you through a VIN check to identify the car before hooking up the scanner.



2 The last Quick ID screen gives the location of the diagnostic connector and tells you which adapter harness to use. The Quick ID button can be released now. The vehicle identification information is stored in the scanner's memory. Check the reference manual next for more harness connection information.

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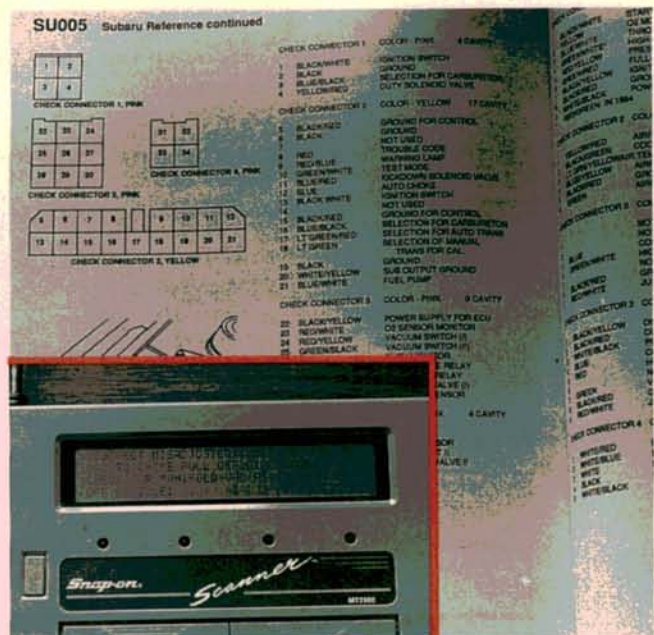
3 The manual shows the proper connections between the scanner and the diagnostic connector and recommends the Multi-1 adapter harness for our Subaru. We attached the blue lead to the connector and the black ground extension lead to ground, then plugged the power adapter into the cigarette lighter.



5 Read the scanner's "How To Get Codes" section if you're unfamiliar with the system. This section briefly explains Subaru's D-Check and U-Check procedures and points out special precautions. Roll the thumbwheel to scroll through the information. Press the "N" button to return to the previous screen.



4 After making our connections and turning on the ignition key, the scanner recalls the stored VIN and asks if we're still working on the same vehicle. We answered "Yes" and headed for the Main Menu. The menu lists the diagnostic functions available for our test car. We'll check Code Functions first.



6 The Troubleshooter cartridge packs a lot of useful troubleshooting information onto the scanner's LCD screen. Where necessary, the screen will refer you to the Troubleshooter User Manual for more detailed information about specific problems or repair techniques. This information will be updated yearly.