

MacInspect



User Manual



MacInspect **Hand-Held Tester**

User Manual

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Overview

Nearly every new road vehicle, and many older vehicles, have multiple control modules that monitor and control different aspects of the vehicle (e.g. Engine, Transmission, Body, Suspension, etc.). The MacInspect hand-held tester has been specifically designed to connect to, and communicate with, a number of these control modules and allow the user to extract information (e.g. Diagnostic Trouble Codes) which may aid in the diagnosis of system problems.



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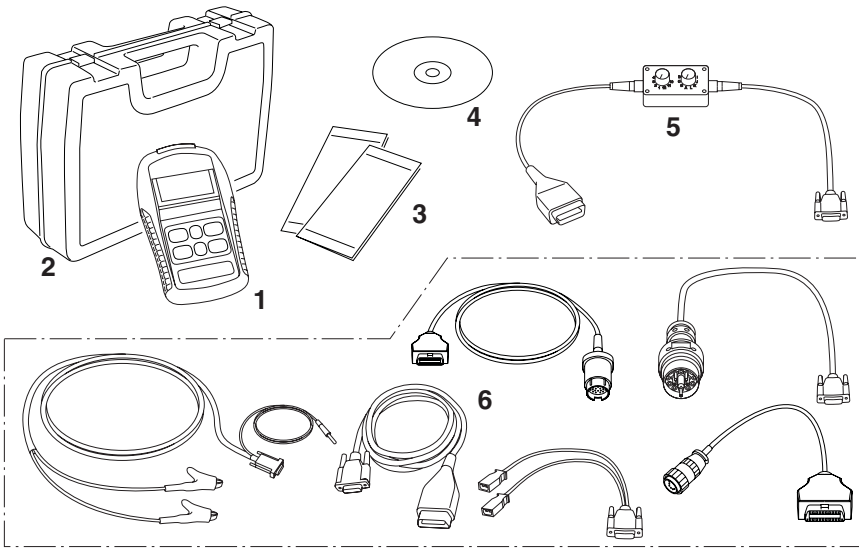
The hand-held tester is supplied with software to communicate with vehicle systems that conform to OBD-II standards. Emissions related information held by the vehicle's control module(s) is accessed via the vehicle's J1962 socket.

Dependent on the specification of hand-held tester, additional 'FastCheck' applications may be available. These applications allow the hand-held tester to communicate with other control modules on the vehicle (e.g. ABS, Airbag) via special interface cables.

If you are using the hand-held tester for the first time, it is recommended that you read these instructions and safety guidelines fully, prior to commencing any testing on a vehicle.

Introduction

Kit Contents



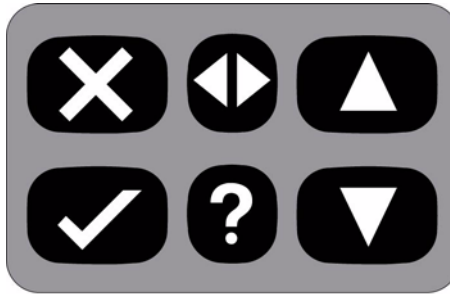
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1. Hand-held tester
2. Carry case
3. Quick reference guide
4. User manuals CD
5. OBD-II cable with J1962 connector
6. Up to 6 x FastCheck vehicle interface cables

Display Screen

The hand-held tester screen is a backlit LCD capable of displaying four rows of text containing up to twenty characters.

Keypad



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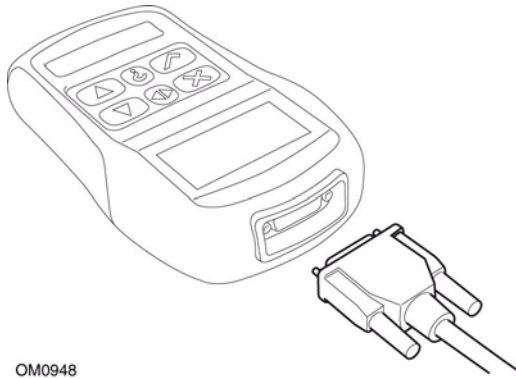
The hand-held tester is operated via the 6-button keypad.

The table below details the keypad buttons and their functionality.

Key	Function
✓	Select a menu option, Continue or Yes.
✗	Exit a menu or No.
▲	Scroll up within a menu or text.
▼	Scroll down within a menu or text.
◀▶	Scroll left and right.
?	Provide context sensitive help (where available).

Introduction

Connection



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The hand-held tester has a 15-way connector through which it can communicate to the vehicle via various interface cables. Refer to the system specific instructions to determine the correct cable to be used and the corresponding connection on the vehicle.

When connecting the cable to the hand-held tester, always secure the cable with the fixing screws to prevent accidental disconnection of the tester during use.

Safety Precautions

The following guidelines are intended to ensure the safety of the operator whilst preventing damage to the electrical and electronic components fitted to the vehicle.

Equipment - prior to commencing any test procedure on the vehicle, ensure that the tester, its harnesses and connectors are in good condition.

Polarity - always observe the correct polarity when connecting the tester to the vehicle battery

Before carrying out testing on a vehicle, the following procedure should always be observed:

- Check the handbrake/parking brake is on.
- Check that neutral or park is selected.
- Keep test equipment and harnesses away from HT leads.
- Be aware of moving engine parts.
- Do not run engine in a confined space without adequate ventilation.

Communication Problems

If communications cannot be established with the vehicle, follow the procedure below:

1. Ensure that the diagnostic cable is securely connected to the hand-held tester and vehicle diagnostic socket.
2. Reset the vehicle control modules by turning the ignition switch to the 'OFF' position for 30 seconds and then back 'ON'. Reconnect the hand-held tester and try again.
3. Check the correct system was selected from the menu.
4. Confirm that the vehicle and required application are covered by consulting the application list.
5. Confirm the correct cable is being used for the required application.

NOTE: For BMW vehicles equipped with a 20-pin connector and an OBD-II connector, you must use only the 20-pin connector. For Mercedes vehicles equipped with a 38-pin connector and an OBD-II connector, you must use only the 38-pin connector.

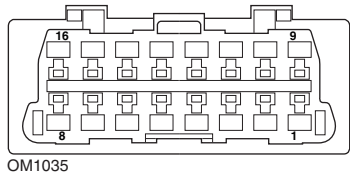
6. If using the pin-switchable cable, ensure the settings on the switch box correspond to the settings listed in the application list.
7. Disconnect both ends of the cable and ensure that no pins are bent or snapped.

If communications still cannot be established, contact the technical support desk for further assistance.

Using the hand-held tester

Connection and basic operation

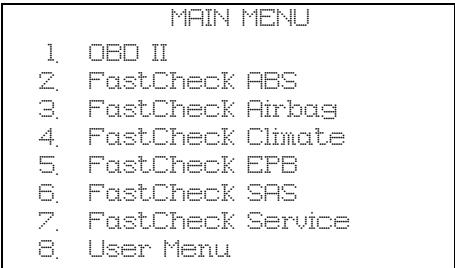
1. Connect cable (EST300-7) to the hand-held tester and secure the fixing screws.
2. Ensure the vehicle's ignition switch is in the 'OFF' position.



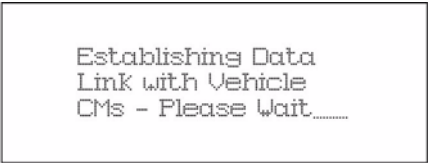
J1962 Diagnostic socket

3. Connect the hand-held tester to the vehicle via the J1962 diagnostic socket. This socket is usually located inside the passenger compartment in the vicinity of the driver's footwell. Refer to vehicle manufacturer's information for the exact location.

Power for the hand-held tester is provided by the diagnostic socket. When connected to the diagnostic socket, the hand-held tester will perform an internal self test and then the screen will display the date of the current software version before displaying the main menu.



4. Use the ▲ and ▼ keys to select the OBD-II menu function. Press ✓ to confirm the selection.



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5. Turn the ignition on when prompted, then press the ✓ key to confirm. The hand-held tester will then attempt to establish communication with the vehicle's

On-Board Diagnostics.

If the vehicle system is not OBD-II compliant or there is a connection problem, the "Please Wait" screen will be replaced with help screens.

NOTE: The vehicle's ignition MUST be on for successful communication with the vehicle control modules.

6. The hand-held tester will give you the option of viewing the status of the IM Readiness tests performed on the emissions systems and their components.

Press the **✓** key to check and display the IM Readiness results.

Press the **✕** key to bypass the results and go to the OBD-II Operations menu.

NOTE: The hand-held tester will always check the status of the IM Readiness tests before displaying the OBD-II Operations menu.



7. Use the **▲** and **▼** keys to select the required function and press **✓** to confirm the selection.

Easy reset facility

To reset the hand-held tester without disconnecting from the vehicle, hold down the **✕**, **✓**, **▲** & **▼** keys simultaneously.

Menu Options

Not all vehicle control modules will support all of the options available from the menu. If an option is not supported the hand-held tester will display either “Not supported” or “Not available”. This is a limitation of the software on the vehicle control modules and **NOT** a fault with the hand-held tester.

MIL Status/MI Status

'MIL Status' or 'MI Status' displays the status of the malfunction indicator lamp for each emissions related control module (CM). If the status of the MIL is set to 'ON', one or more DTCs will be stored in the vehicle's CMs and the instrument panel MIL will be illuminated.

To view the current status of the MIL as registered by each control module:

1. With the ignition switch in the 'ON' position and the engine not running, select 'MIL Status' from the OBD-II Operations menu.
2. A screen stating that the MIL status will be displayed for each CM will be displayed. The ✓ icon blinking in the lower-right area of the screen indicates you must press the ✓ button to continue.
3. Press ✓ to display a screen listing each of the CMs that responded to the request for MIL status information.
4. If the MIL is illuminated, one or more CM will display a status of ON, indicating it has registered a OBD-II DTC.

NOTE: If the status of the MIL is set to 'ON', but the MIL is not illuminated, then a problem with the wiring or the lamp itself should be suspected. Most vehicles perform a MIL test when the ignition switch is turned to the 'ON' position.

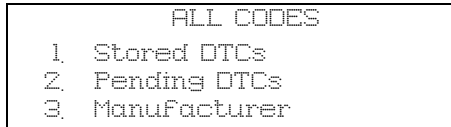
5. Press ✓ to return to the OBD-II Operations menu to select another diagnostic function.

View DTCs

This option allows any 'Hard' or 'Pending' emission related DTCs (Diagnostic Trouble Codes) to be viewed.

To view information for any DTC registered by a CM:

1. With the ignition switch in the 'ON' position and the engine not running, select 'View DTCs' from the OBD-II Operations menu.



2. Using the ▲ and ▼ keys select the required option and press ✓ to confirm. For a description of types of DTC codes, see 'Hard and Pending codes', page 28.
3. The hand-held tester will attempt to establish communication with the vehicle's On-Board Diagnostics and retrieve any DTCs. If any DTCs are found, a screen advising you to 'Write Down DTCs for future reference' will be displayed.

NOTE: If the hand-held tester is unable to establish communication with the CMs, it may be necessary to reset the CMs by turning the ignition switch to the 'OFF' position for 30 seconds and then back 'ON'.

4. Press ✓ to display the DTC along with the identity of the Control Module (CM) that registered the fault. If more than one DTC is displayed, the required DTC can be selected by using the ▲ and ▼ keys. Press ✓ to select the DTC and display the description of the code.
5. Dependant upon the DTC and the vehicle manufacturer, it may be necessary to select the manufacturer and possibly also the model of the vehicle to enable the correct description to be displayed. This setting will be retained while the hand-held tester is being used for OBD-II operations but can be redefined or cleared under the 'Manufacturer' menu option.
6. Once you have finished reviewing the information for a specific DTC, press ✕ to return to the previous screen. Either select another DTC to review the information or press ✕ to return to the OBD-II Operations menu.

OBD-II

Erase DTCs

This option will clear **all** 'Stored' and 'Pending' emission related DTCs, clear 'Freeze Frame' DTCs and associated data, clear Oxygen Sensor test data, clear 'Non-Continuous' test results and reset the status of the 'IM Readiness' tests on the control modules on the vehicle.

To erase all stored DTCs and other OBD-II test data:

1. With the ignition switch in the 'ON' position and the engine not running, select 'Erase DTCs' from the OBD-II Operations menu.
2. You will be prompted to confirm that you want all DTCs and Freeze Frame data permanently erased. That data will be erased from the internal memory of all the CMs the hand-held tester is able to communicate with.

NOTE: If this prompt is not displayed, it may be necessary to reset the CMs by turning the ignition switch to the 'OFF' position for 30 seconds and then back to the 'ON' position.

3. Press ✓ to confirm that you wish to erase all currently stored data.
4. A message confirming that the DTCs are being erased will be displayed.
When complete, the hand-held tester will automatically perform a read DTCs operation to verify if any DTCs are still present in the CMs memory. A message will be displayed to confirm that either the DTCs were successfully erased, or that DTCs are still present.

NOTE: If your repair did not solve the problem that caused the DTC to be set, the CM will set the same DTC the next time it detects the same component or vehicle system fault condition.

Live Data

This option allows the user to view the current status of the emission system components on the vehicle and can provide a quick way of telling if a component is working correctly.

The list of components monitored under 'Live Data' can vary between manufacturers and even between model.

You will find the Live Data option very useful for diagnosing driveability problems, particularly intermittent problems that can be found only by observing live parameter data while driving the vehicle. You can view live sensor data and the On/Off state of actuators like solenoids, switches and relays under different driving conditions.

To view Live Data:

1. With the engine running, select 'Live Data' from the OBD-II Operations menu.
2. You will see the data parameter readings change as the engine's operating conditions change.

3. Press ▲ and ▼ keys to scroll through the list of available data parameters. If necessary, consult the vehicle manufacturer's information for definitions and explanations of the PIDs (Parameter Identifications) displayed.
4. When you have finished viewing live data, press ✕ to return to the OBD-II Operations menu to select another diagnostic function.

O2 Sensor Tests

The OBD-II regulations stipulate that the vehicle's On-Board Diagnostic system must monitor and test the performance of all O2 sensors. This is handled by one or more O2 sensor monitors, depending on the number of O2 sensors the vehicle has fitted. The O2 monitors run only when the vehicle meets specific drive conditions, which can vary between each vehicle manufacturer and even between different models.

There are two different types of O2 test values, constant and calculated. Constant values are direct voltage readings, while calculated values are derived from the sensor data. The tester will display the supported tests and the data associated with those tests e.g. Maximum sensor voltage for test cycle (calculated).

To view the O2 sensor test data:

1. With the ignition switch in the 'ON' position and the engine not running, select 'O2 Sensor Tests' from the OBD-II Operations menu.
2. A message confirming the hand-held tester is querying the CM to determine which O2 sensors it supports.
3. If no O2 sensor test data is found for the vehicle, you will receive a message telling you the O2 sensor monitoring tests have not been completed, and there is no stored test data.

NOTE: To confirm this is correct, reset the CMs by turning the ignition switch to the 'OFF' position for 30 seconds and then back 'ON'. You can confirm whether the O2 sensor monitor tests were actually run by using the IM Readiness menu option, see 'IM Readiness', page 17.

4. If the hand-held tester successfully finds O2 sensor data, it will list all the emission related CMs and identify those which support O2 sensor test monitors.
5. Use the ▲ and ▼ keys to select the required CM and press ✓ to confirm.
6. The hand-held tester will display a list of the O2 sensor tests run by the CM. This list will vary between vehicle manufacturers and even between models.
7. Use the ▲ and ▼ keys to select the required sensor test and press ✓ to display the data.
8. When you have finished viewing the test results, press ✕ to select and view other O2 test results. Pressing ✕ again returns you to the menu from which you selected the O2 sensor test for which you are viewing test data.

NOTE: The O2 sensors located before and after the catalytic converter(s) may perform differently, and will return different test results accordingly.

9. When you have finished viewing the O2 sensor data, press ✕ to return to the OBD-II Operations menu.

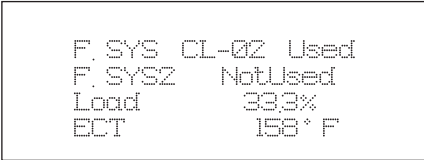
View Freeze Frame

Freeze frame data is a snap-shot of live data that was stored in the control module at the moment a Diagnostic Trouble Code was recognised. If a number of faults occurred, then the freeze frame data stored is associated with the last fault to occur. The DTC that generated the freeze frame data is also displayed in the data.

To view Freeze Frame Data:

1. With the ignition switch in the 'ON' position and the engine not running, select 'View Freeze Frame' from the OBD-II Operations menu.
2. The hand-held tester will query the CMs for freeze frame data and report whether any data was found.
3. If there is freeze frame data stored, a screen will be displayed showing which CM stored the data and the DTC that caused it to be recorded.
4. Press ✓ to view a description of the DTC.

NOTE: If the DTC is a manufacturer specific DTC, you will receive a message telling you there is no text available for it. Text descriptions for manufacturer specific codes will only be visible if the appropriate vehicle make has been selected using the Set Manufacturer menu option.



```
F. SYS CL-02 Used
F. SYS2 NotUsed
Load 33.3%
ECT 158° F
```

OM1024

Typical example of Freeze Frame data

5. Press ✓ to view the first screen of the stored freeze frame data.
6. Press ▼ to review the next screen of data.
7. When you have finished viewing the freeze frame data, press ✕ to return to the OBD-II Operations menu.

Non-Continuous

Some vehicle systems are only monitored once per drive cycle during normal running conditions, e.g. catalysts and evaporative systems. These tests are manufacturer specific.

The hand-held tester supports the following non-continuous OBD-II monitors:

- Catalyst
- Heated Catalyst
- Evaporative System
- Secondary Air System
- A/C System Refrigerant
- Oxygen Sensor
- Oxygen Sensor Heater
- EGR System

You will find the Non-Continuous test function useful for confirming that a repair has solved a driveability problem.

To view the test data stored for non-continuously monitored emission related components and systems:

1. With the ignition switch in the 'ON' position and the engine not running, select 'Non-Continuous' from the OBD-II Operations menu.
2. The hand-held tester will display a list non-continuous monitor tests supported by the vehicle.

NOTE: If the hand-held tester is unable to retrieve a list of supported monitor tests, it may be necessary to reset the CMs by turning the ignition switch to the 'OFF' position for 30 seconds and then back 'ON'.

3. Use the ▲ and ▼ keys to select the required test and press ✓ to display the test results.

NOTE: The monitor tests are identified by a hexadecimal identifier. These identifiers (IDs) are manufacturer-defined and vary with each manufacturer. Refer to the vehicle manufacturer's service information to identify the type of monitor test.

TEST ID 03				
CID	LIVE	SPEC	STATUS	
\$01	01CD	0000!	PASS	
\$02	01CD	0000!	PASS	

OM1025

Typical example of data seen for a monitor test

- 4. In the example above, the ID of the monitor test selected appears at the top of the screen. The test results are listed below it. All IDs and test results are displayed in hexadecimal.
The column labelled 'CID' lists the test or component ID of the monitor test, to confirm the CM responded to the hand-held testers request for the test result data for that monitor test. The second column displays the test measurement value recorded. The third column displays the minimum or maximum test limit specifications for that value. The last column displays a PASS, FAIL, LOW or HIGH status value, calculated based on the measurement and specification data.
- 5. Use the ▲ and ▼ keys to scroll through the test data. When you have finished viewing the data for a particular test, press ✕ to return to monitor test selection screen.
- 6. When you have finished viewing the Non-Continuous data, press ✕ to return to the OBD-II Operations menu.

Pending Codes

Also referred to as Continuous Codes, this function lets you view the test results for emission-related components and systems that are monitored and tested continuously. The OBD-II regulations stipulate that certain components and systems must be monitored and tested continuously when the vehicle is being driven under normal driving conditions.

When the 'continuous monitor' detects a failure condition in an emission-related component or system, only once in a drive cycle, it stores a 'pending code' in the control module's memory. If the continuous monitor detects the same failure condition during the next drive cycle, it registers a 'Hard' DTC and illuminates the MIL.

To view any Pending Codes

1. With the ignition switch in the 'ON' position and the engine not running, select 'Pending Codes' from the OBD-II Operations menu.
2. If any DTCs have been registered by the continuous monitors, a screen will be displayed informing you of the number of DTCs (if any) that were found.
3. Press ✓ to view a list of pending DTCs found.
4. Select a DTC to view information on it.
5. Press the ▼ key to scroll through the information. When you have finished viewing the information, press ✕ to return to the previous screen.
6. Press ✕ to return to the OBD-II Operations menu.

Evaporative System Leak Test

Components on the vehicle may be turned on and off, or pulsed to test their operation.

Some vehicle manufacturers provide system, test and component control functions whilst other manufacturers don't allow any independent control of their vehicle systems.

Currently the only generic OBD-II control function that is supported is the evaporative system leak test. This control function does not actually run the test but closes the EVAP system valve so the system can be pressurized to allow you to perform leak testing.

WARNING: Serious damage to vehicle systems can be caused by entering a wrong value into a test field. Always consult the vehicle manufacturer's service information for a list of the control functions available for the vehicle under test and how to run them.

Vehicle Info

Supported by some vehicles manufactured during 2000 and 2001, and all vehicles manufactured since 2002, this option lets you display the Vehicle ID (VIN), Calibration ID, Calibration Number and Performance Data.

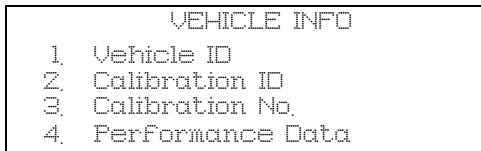
OBD-II

A Calibration ID or CIN (Calibration Identification Number), is a unique identifier that identifies the software programmed into a CM. It may have up to 16 characters to identify the software's originator, type and version number, as well as other information. The OBD-II regulations stipulate that all software programmed into the CM have a unique identifier, including software from aftermarket sources. To verify whether the software in a CM is correct or has been overwritten at some point, you must refer to the vehicle manufacturer's information.

The Calibration No. or CVN (Calibration Verification Number) are calculated values required by the OBD-II regulations to determine whether the calibration of any emission-related components have been altered.

To view the Vehicle Info:

1. With the ignition switch in the 'ON' position and the engine not running, select 'Vehicle Info' from the OBD-II Operations menu.



2. Use the ▲ and ▼ keys to select the required option and press ✓ to confirm.

NOTE: The engine must be off in order for the hand-held tester to retrieve the information from the CM.

3. If the vehicle supports the information type requested it will be displayed on the screen. If the information type is not supported then a message to that effect will be displayed.
 - If you select the Vehicle ID option the vehicle's VIN number will be displayed.
 - If you select Calibration ID the CM calibration ID will be displayed. Multiple calibration IDs may be reported by the CM, depending on its software architecture.
 - If you select Calibration No. the CVNs (Calibration Verification Numbers), will be displayed in hexadecimal. To determine whether any emission-related calibrations have been altered, you must compare these values with the CVNs provided by the vehicle manufacturer for the vehicle under test.
 - If you select Performance Data the counts associated with In-use Performance Tracking will be shown. Some regulatory requirements stipulate that manufacturers must track the number of times certain conditions happen for Catalyst Bank 1, Catalyst Bank 2, Primary Oxygen Sensor Bank 1, Primary Oxygen Sensor Bank 2, EGR System, Evaporative Leak Detection System, and the Secondary Air System.
 4. Press ✓ to return to the Vehicle Info menu.
 5. Press ✕ to return to the OBD-II Operations menu.
-

OBD Status

Informs the user to which OBD requirements the vehicle was designed for.

NOTE: Not all vehicles support this.

IM Readiness

Also known as System Readiness, this option lets you know which of the vehicle's IM Readiness tests (OBD-II monitors) have run and completed their testing and diagnosis of their respective emission-related system or component. If the conditions are not correct for the controller to perform the test e.g. if the engine is too cold, a "Not Ready" status will be reported. Readiness test status is also offered for inspection after communications have been established. These may be reviewed or ignored until later.

To pass the state emissions inspection, all OBD-II monitors available on the vehicle must have run and completed their testing and diagnosis functions. If you find that one or more of the monitors are not ready and active, you may need to test drive the vehicle so the drive conditions required to set them are present.

NOTE: A complete test of the OBD-II system can not be carried out unless all the monitors are ready and active.

To view the status of the IM Readiness tests as a list:

1. With the ignition switch in the 'ON' position and the engine not running, select 'IM Readiness' from the OBD-II Operations menu.

```
IM READINESS
1. Show As A List
2. All On One Screen
```

2. Use the ▲ and ▼ keys to select 'Show As A List' and press ✓ to confirm.
3. A message will be displayed informing you the hand-held tester is checking to see which IM Readiness tests have run and completed their testing and diagnosis.
4. When you receive the message confirming whether all the system readiness tests have been completed, press ✓ to view the status of each IM Readiness.

```
1. Misfire Mon.   OK
2. Fuel System   OK
3. Component      OK
4. Catalyst       WAIT
```

OM1026

Typical example of data shown

OBD-II

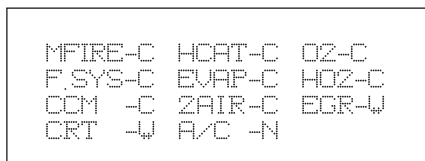
5. The screen will display the status of each IM readiness test that was run and it's status as stored in memory. The test status reported will either be **OK** (Completed), **WAIT** (Waiting to Complete) or **NS** (Not Supported).

NOTE: If the engine is now started, the status of the IM Readiness test will change in real time as the engine's operating conditions change.

6. Use the ▲ and ▼ keys to move up and down the list of tests. Press ✕ to return to the IM Readiness menu.
7. Press ✕ to return to the OBD-II Operations menu.

To view the status of the IM Readiness tests updated in real time while the vehicle's engine is running:

1. With the ignition switch in the 'ON' position and the engine not running, select 'IM Readiness' from the OBD-II Operations menu.
2. Use the ▲ and ▼ keys to select 'All On One Screen' and press ✓ to confirm.



OM1027

Typical example of data shown

3. The test status of each IM Readiness test supported by the vehicle is listed to the right of its abbreviation, either **C** (Completed), **N** (Not Supported) or **W** (Wait).
4. Start the vehicle's engine. Depending on the IM Readiness test, you will see its status change in real time as the engine's operating conditions change. With some IM Readiness tests, you may have to take the vehicle on the road to meet the criteria necessary to see a change. In addition, some require more than one drive cycle before their status changes.

WARNING: If it is required to drive the vehicle to set the IM Readiness status of a monitor, ALWAYS have an assistant drive while you observe the readings.

5. Press ✕ to return to the OBD-II Operations menu.

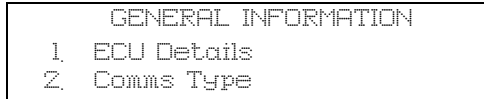
General Info

This will allow the user to view information for the OBD compliant CMs fitted to the vehicle and the communications protocol being used.

When selected, the 'CM Details' menu option will show list of all CMs that store OBD information. The CMs are identified by a hexadecimal ID number followed by it's type (e.g. Engine, Transmission) if the hand-held tester has been able to determine it.

To view the General Info:

1. With the ignition switch in the 'ON' position and the engine not running, select 'General Info' from the OBD-II Operations menu.



2. Use the ▲ and ▼ keys to select required option and press ✓ to confirm.
3. Press ✕ to return to the OBD-II Operations menu.

Tester Setup

This allows the user to select the units displayed in Live Data and Freeze Frame from either metric or imperial. The user may also select from abbreviated text or full text phrases. For more information, see '*Tester Setup*', page 64.

Strategy for Diagnosing DTCs

To aid in the diagnosis of the root cause of one or more DTCs, follow this basic procedure:

1. Examine the status of the vehicle's IM Readiness tests to determine which have actually run and completed their testing and diagnosis of their respective emission-related component, system or subsystem and which haven't.
2. Scan the vehicle's CMs for DTCs.
3. Make certain you have a clear understanding of the reason for and possible causes of the DTCs found. If you need more information, refer to the vehicle manufacturer's service information. Never condemn a part based solely on the definition of a DTC found. DTCs are designed only to provide guidance on the location of the failure conditions detected. Always consult the vehicle manufacturer's service information for instructions on how to properly diagnose the location and precise cause of a DTC. That information should contain a diagnostic tree to guide you through the procedure required.
4. View and analyse the Freeze Frame data stored in the CM. It will provide you with a snapshot of the engine operating conditions at the time the DTCs were set.
5. View the live datastream for the PIDs pertinent to the DTCs you are diagnosing. If necessary, take the vehicle out on the road with an assistant to view the data with the vehicle under load. Make certain you have a clear understanding of each of the available data parameters (PIDs, or "Parameter Identifications"). If necessary, consult the vehicle manufacturer's service information for PID definitions and explanations.
6. Perform a thorough visual check of the vehicle's engine compartment for possible problems with the engine management system's wiring, vacuum hoses, etc.
7. Check to see if any technical service bulletins have been issued for the particular problem being encountered.
8. Perform the necessary vehicle repair.
9. Erase all DTCs and freeze frame data from the CMs memory.
10. Rescan the vehicle's CMs for DTCs and double-check the stored test results for the OBD-II monitors by re-running the IM Readiness, Non-continuous and Pending functions.

Of course to view the test results of all the OBD-II monitors will require your driving the vehicle to ensure the necessary vehicle operating conditions are present to run the monitors and record new data. You should have a predetermined driving route near your workshop that simulates the driving conditions required to set and invoke the monitors on the vehicles you routinely service. Generally, doing some stop-and-go driving at speeds up to 30 mph followed by five to seven minutes of 55 mph-plus of highway driving will usually set most or all of the monitors (the converter and the EVAP system readiness monitors are the most difficult to set).

What is OBD-II?

The American Environmental Protection Agency have set targets for reducing the levels of pollution produced by passenger and commercial vehicles. In order to ensure that these targets can be met, manufacturers are required to build new vehicles which meet increasingly stiff emissions standards. The manufacturers must further maintain these emission standards for the useful life of the vehicle. In order to meet and maintain these standards the vehicles are fitted with On-Board Diagnostic systems which monitor the integrity and effectiveness of all emission related components.

As vehicles are becoming more and more complex, many of the systems fitted to them are being controlled by electronic control modules. Most vehicles now have multiple control modules (e.g. Engine, Transmission, Body, Suspension, etc.) located at different locations on the vehicle. The On-Board Diagnostic systems are integrated into the vehicle control modules.

With so many different vehicle and component manufacturers, a common interface was required to communicate with these control modules (CMs). In 1988, the SAE (Society of Automotive Engineers) created a standard that defined a standard diagnostic socket (J1962) and a set of diagnostic test signals.

With the diagnostic socket and diagnostic signals agreed, another standard was produced that defined a universal inspection and diagnosis method to ensure that a vehicle is performing to Original Equipment Manufacturer (OEM) specifications. This standard is known as OBD-II.

The fundamental requirement for an OBD-II system is that in the event of an emissions related component fault, a DTC (Diagnostic Trouble Code) will be stored in the memory of the control module responsible for that component, and a Malfunction Indicator Lamp (MIL) will illuminate on the vehicle's instrument pack to alert the driver. The DTC can then be retrieved using diagnostic equipment to determine the type and status of the fault.

Identifying compliant vehicles

All gasoline engine vehicles manufactured since January 1st 1996 should be OBD-II compliant. Some manufacturers began incorporating On-Board Diagnostic systems as early as 1994, however not all are 100% compliant. This means that diagnostic information, related to vehicle emissions, may be extracted from the vehicle via the J1962 diagnostic socket using the hand-held tester.

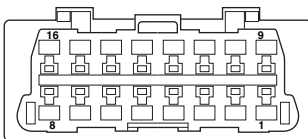
NOTE: To confirm that a vehicle is definitely OBD-II compliant, check the Vehicle Emissions Control Information (VECI) label located in the engine compartment. If the vehicle is OBD-II compliant, you will find the words "OBD-II CERTIFIED" on the label.

The hand-held tester can communicate with any OBD-II compliant vehicle using one of the five diagnostic communication protocols defined in the standard.

These are

- ISO 9141.
- Keyword 2000 (originally a European protocol).
- J1850 PWM (pulse width modulated) protocol used by Ford.
- J1850 VPW (variable pulse width modulated) used by General Motors in USA designed vehicles.
- CAN (controller area network) currently being legislated for and likely to be a principle diagnostic communication system in the future.

It is normally possible to tell which is used on a specific vehicle by examining the diagnostic socket (as below), however the hand-held tester's software will automatically detect the protocol used on the vehicle to which it is connected.



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- If the diagnostic socket has a pin in the '7' or '15' position, then the vehicle uses either the ISO 9141 or Keyword 2000 protocol.
- If the diagnostic socket has a pin in the '2' or '10' position, then the vehicle uses one of the SAE J1850 protocols.
- If the diagnostic socket has a pin in the '6' or '14' position, then the vehicle uses the CAN protocol.

NOTE: Although there are different OBD-II electrical connection protocols, the command set is fixed according to the SAE J1979 standard.

Monitors

Software procedures (monitors) programmed into the vehicles control modules (CMs) determine whether the emission-related components and systems being monitored are operating correctly and within the vehicle manufacturer's specifications.

These monitors fall into one of two categories:

- Non-continuous: The monitor is run only once per drive cycle.
- Continuous: The system/component is monitored constantly.

The running of a monitor can vary from 1ms to several days dependant upon the type of monitor and driving conditions. Most monitors will only run if a pre-determined set of conditions has been met.

Once a monitor has completed testing of the respective component or system, the results are compared against stored information to determine whether it is operating correctly and within the manufacturer's specification. If any failure or deviance from the manufacturer's specification is detected, the monitor will set a DTC in the respective CM memory. Dependent upon the type of DTC being set the MIL may also illuminate.

OBD-II monitors

The following is a brief description of the most commonly implemented OBD-II monitors used by vehicle manufacturers. Many actually comprise of several monitors, each testing a component or subsystem to determine whether the respective emission-related system is operating correctly.

NOTE: The actual monitors implemented on individual vehicles can vary. Some vehicles may not support all the following monitors or have other monitors not mentioned. Consult the vehicle manufacturer for further information.

1. Comprehensive component monitor.

This monitor continuously tests various sensors and solenoids to ensure they are operating correctly. Through comprehensive component monitoring, the On-Board Diagnostics can detect a faulty sensor and apply functional and rationality tests to determine if the data returned by the sensors is valid. Each vehicle manufacturer designs its own method for comprehensive component monitoring, but most employ similar strategies.

2. Misfire monitor.

This monitor detects whether the fuel and air mixture in one or more of the engine cylinders has failed to ignite. A severe engine misfire can damage the vehicle's catalytic converter(s). Because of the serious nature of an engine misfire, the MIL will illuminate or flash to indicate a need to reduce speed and seek qualified assistance.

3. Fuel Systems monitor.

This monitor evaluates the engine management systems ability to properly manage the fuel delivery to the engine. Engine management systems are designed to adapt to long and short term driving behaviours, and newer vehicles can actually "learn" how to deliver fuel more efficiently over the course of normal driving. When a malfunction is detected in the fuel system a DTC will be stored in the CM memory and the MIL will illuminate.

4. Oxygen Sensor monitor.

This monitor tests that all the oxygen sensors fitted to the vehicle are functioning within the manufacturer's specifications. If any oxygen sensor is not operating within expected specifications, or has been disconnected, a DTC will be stored in the in CM memory and the MIL will illuminate.

5. Oxygen Sensor Heater monitor.

The oxygen sensors fitted to some vehicles have integral heating elements to ensure they reach normal operating temperature faster. The sooner an oxygen sensor reaches normal operating temperature, the sooner the CM can use the data from it to manage fuel delivery in a more efficient manner. If an oxygen sensor's heating element is damaged or inoperative, a DTC will be stored in the CM memory and the MIL will illuminate.

6. Exhaust Gas Recirculation (EGR) monitor.

Vehicle manufacturers employ a variety of methods to monitor the performance of the EGR system. Most require a sustained or fluctuating highway driving speeds to set the EGR monitor to a "ready" state. If the EGR monitor detects that the EGR system is not functioning correctly, a DTC will be stored in the CM memory and the MIL will illuminate.

7. Evaporative System monitor.

The monitor evaluates the vehicle's ability to control, store and properly dispose of fuel vapour (hydrocarbons) from the fuel tank and fuel delivery system. In addition to being able to detect hydrocarbon evaporative losses, such as a leaking hose or a loose gas cap, the evaporative monitors can also determine if the vehicle can purge stored evaporative hydrocarbons by introducing them back into the engine. If the evaporative system is damaged or inoperative, the evaporative system monitor(s) will detect the fault, a DTC will be stored in the CM memory and the MIL will illuminate.

8. Catalyst monitor.

This monitor evaluates the effectiveness of the vehicle's catalytic converter. Oxygen sensors mounted before and after the catalytic converter determine it's efficiency by measuring the differential of oxygen between the two sensors. If the monitor detects that the catalytic converter is not operating correctly, a DTC will be stored in the CM memory and the MIL will illuminate.

9. Heated Catalyst monitor.

A vehicle's catalytic converter must reach a specific operating temperature before it begins to reduce exhaust emissions. Newer designs of catalytic converter have an electric heating element to allow it to reach its operating temperature faster and therefore start reducing exhaust emissions. If the monitor detects that the heater is not working correctly, a DTC will be stored in the CM memory and the MIL will illuminate.

10. Secondary Air Injection monitor.

If an air injection system is fitted to the vehicle, this monitor will evaluate whether the system is operating within the manufacturer's specifications. If a fault is detected in the system, a DTC will be stored in the CM memory and the MIL will illuminate.

11. Thermostat monitor.

This type of monitor is scheduled to be introduced with newer versions of the OBD-II regulations. The thermostat regulates engine coolant flow to allow the engine to warm up faster during "cold-start" operation and to provide increased coolant flow when the engine is at normal operating temperature. Once the vehicle reaches normal operating temperature, the CM makes adjustments to increase running efficiency according to inputs from various sensors. If the thermostat is not operating correctly, a DTC will be stored in the CM memory and the MIL will illuminate.

12. Positive Crankcase Ventilation (PCV) System monitor.

During combustion, some of the hydrocarbon gases escape past the pistons into the crankcase. These are known as "blow-by" gases. PCV systems are designed to capture these gases and route them to the air intake system to be combined with the air/fuel mixture and burned, instead of being released into the atmosphere. If the PCV system is not operating correctly, a DTC will be stored in the CM memory and the MIL will illuminate.

13. Air Conditioning System refrigerant monitor.

If a vehicle's air conditioning system uses R-12 refrigerant, the OBD-II system is required to monitor the system for refrigerant leaks. If a leak is detected, a DTC will be stored in the CM memory and the MIL will illuminate.

Manufacturer specific monitors

Vehicle manufacturers in addition to the required OBD-II monitors include vehicle specific monitors into their CMs to handle self-testing and self-diagnosing tasks. When these detect a failure condition in the respective component or system, the DTC they store in the CM memory is called a "manufacturer specific" or "enhanced" DTC.

OBD-II

Legislative requirements

OBD-II regulations require that:

1. The vehicles On-Board Diagnostics must test and diagnose any emissions related systems present on the vehicle.
2. To pass a state emissions inspection, vehicles manufactured between 1996 and 2000 cannot have any more than *two* of the OBD-II monitors listed previously report as "not ready" during an inspection.
3. Vehicles manufactured since 2001 cannot have any more than *one* of the OBD-II monitors listed previously report as "not ready" during an inspection.
4. If an OBD-II monitor detects a failure condition in a component or system being tested, it will store in the respective CMs memory a "generic" DTC, so-called because the code is one common to all makes and models of vehicles.

Drive cycles

A Drive Cycle (also called a Drive Trip) is the specific sequence of vehicle start-up, warm-up and drive conditions criteria that must be met to enable a monitor to run and complete its testing and diagnosis. Different for each monitor type, it typically begins when the vehicle's ignition switch is turned to the 'ON' position and ends when all the enabling criteria for its respective monitor have been met, allowing the monitor to perform its testing and diagnostics tasks, and the ignition switch is turned 'OFF'.

An OBD-II Drive Cycle, by comparison, begins when the vehicle is started (cold) and ends when all the enabling criteria for all the OBD-II monitors have been met, allowing all of them to run and complete their testing and diagnostic tasks, and the vehicle's ignition switch is then turned 'OFF'.

Diagnostic Trouble Codes

Diagnostic Trouble Codes (DTCs) are divided into "generic" and "manufacturer specific" codes. Generic codes are allocated by the ISO (International Standards Organisation) / SAE (Society of Automotive Engineers). Manufacturer specific codes are allocated by the various vehicle manufacturers and are unique to that manufacturer and in some instances a particular vehicle.

ISO/SAE controlled diagnostic trouble codes are those codes where industry uniformity has been achieved. These codes were felt to be generic enough across most manufacturer's applications that a common number and fault message could be assigned. All unspecified numbers in each grouping have been reserved for future growth. Although service procedures may differ widely amongst manufacturers, the fault being indicated is common enough to be assigned a particular fault code. Codes in this area are not to be used by manufacturers until they have been approved by ISO/SAE.

Areas within each of the fault code blocks have been allocated for manufacturer controlled DTCs. These are fault codes that will not generally be used by the majority of the manufacturers due to basic system differences, implementation differences, or diagnostic strategy differences.

Interpreting OBD-II fault codes

Use the following rules to determine the basic meaning of an OBD-II fault code.

P	Powertrain
B	Body
C	Chassis
U	Network

The first character indicates which area of the vehicle the code applies to.

0	Standard (SAE) code
1	Manufacturer's own code

The second character specifies the type of code:

1	Fuel and air metering
2	Fuel and air metering, specifically injector circuit
3	Ignition system and misfire detection
4	Auxiliary emission controls
5	Vehicle speed control and idle control system
6	Computer output circuit
7	Transmission related faults
8	Transmission related faults

If the first character was 'P' (Powertrain) then the third character identifies the specific Powertrain system concerned:

The last two characters identify the specific fault as seen by the on-board systems.

Depending on the fault detected, the DTC will either be set as a “Hard” code in the CM memory or as a “Pending” code. The type of code set is determined by the number of consecutive drive cycles a fault is allowed to be present before being registered as a “Hard” code.

Hard and Pending codes

When the on-board diagnostics detect a component or system failure that warrants setting a “Hard” code, it:

- Registers a “Hard” code in the CM memory.
- Illuminates the MIL. If the detected fault causes a misfire condition severe enough to damage the catalytic converter, the MIL will flash on and off once per second as long as the misfire condition exists.
- Stores Freeze Frame data for the engine operating conditions present when the monitor detected the fault.

When the on-board diagnostics detect a failure that warrants setting a “Pending” code, it:

- Registers a “Pending” code in the CM memory but does not illuminate the MIL. In addition, no Freeze Frame data is recorded.
- Starts retesting the suspect component or system. If the monitor detects the same failure conditions during the second consecutive drive cycle, it registers a “Hard” code in the CMs memory, records and stores Freeze Frame data, and illuminates the MIL.

NOTE: The monitor will erase the pending code from the CM memory if it doesn't detect the failure conditions during the second consecutive drive cycle.

Turning the MIL Off

Once a monitor illuminates the MIL, indicating it has stored a “Hard” code in the memory of a CM, the MIL will remain on until:

1. The DTC is erased from the CM memory via a diagnostic tool.
2. The monitor doesn't detect the component or system failure conditions during the next three consecutive drive cycles. In this event, the CM will automatically turn the MIL off. The code stored in the CM memory will remain there for up to 40 warm-up cycles (80 warm-up cycles for a fuel or misfire fault) and will automatically be erased by the CM if the component or system failure conditions are not detected again during that time period.
3. In the case of a Misfire Monitor or Fuel System DTC, the monitor will turn off the MIL if it doesn't detect the system failure during three drive cycles where the engine load, speed and coolant temperature were similar to the conditions when the system failure was first detected.

Introduction

The 'FastCheck' applications allow the hand-held tester to communicate with other system control modules on the vehicle in addition to the standard emission related On-Board Diagnostic (OBD) functionality.

There are currently five applications that can be selected from the main menu.

- FastCheck ABS
- FastCheck Airbag
- FastCheck Climate
- FastCheck EPB
- FastCheck SAS
- FastCheck Service

The 'ABS', 'Airbag' and 'Climate' applications allow you to read and clear any fault codes stored by the selected system.

The 'EPB' (Electronic Parking Brake) function allows you to read and clear any fault codes stored by the selected system and in addition can be used during brake operation checks or brake pad replacement.

The 'SAS' (Steering Angle Sensor) function allows you to read and clear any fault codes stored by the system and in addition can be used to calibrate the Steering Angle Sensor.

The 'Service' application allows you to reset, dependant upon vehicle, the oil service interval indicator, service and inspection warning lights.

Connection to the specific system is via either the vehicle's J1962 diagnostic socket or by a system specific connector. Refer to the 'Vehicle Application List' to determine the correct connection point and interface cable.

Safety Instructions

WARNING: General Safety

- *All operations must be carried out in a well ventilated area away from open flame and heat sources.*
- *Ensure the vehicle is stationary and the handbrake (parking brake) is applied before carrying out any maintenance/diagnostic work.*

WARNING: Air Conditioning Safety

- *Servicing must only be carried out if you are familiar with both the vehicle system and the test equipment.*
- *Air conditioning refrigerant is a hazardous liquid and when handled incorrectly can cause serious injury. Suitable protective clothing, consisting of face protection, heat proof gloves, rubber boots and rubber apron or waterproof overalls, must be worn when carrying out operations on the air conditioning system.*
- *Danger of asphyxiation, refrigerant gas is heavier than air and will collect in vehicle inspection pits or confined spaces, always recover all refrigerant from a damaged system before commencing work.*

WARNING: Airbag Safety

- *All work on vehicle restraint systems should be carried out by trained personnel. NEVER install accessories in the vicinity of driver, passenger or side airbags.*
- *Observe component manufacturers instructions for safety, handling and installation of components.*
- *Airbags are classed as explosive devices and as such are subject to national laws which must be followed. This includes storage and transportation.*
- *ALWAYS store removed airbags in a secure area away from other hazardous materials.*
- *DO NOT connect or disconnect any wiring with the ignition ON. ALWAYS turn the ignition switch to the 'OFF' position and allow at least 1 minute for the system to discharge.*
- *NEVER expose system components to temperatures above 176°F (80°C).*
- *ONLY use approved diagnostic testers to diagnose faults, NEVER use multi-meters or test lamps etc.*
- *ALWAYS disconnect all airbags and seat belt pre-tensioners before using a multi-meter to check the wiring.*

WARNING: EPB (Electronic Parking Brake) safety

- ***Ensure that you are fully familiar with the braking system and its operation before commencing any work.***
- ***The Electronic Parking Brake Control system may be required to be deactivated before carrying out any maintenance/diagnostic work on the brake system. This can be done from the hand-held tester menu.***
- ***Only carry out maintenance work when the vehicle is stationary and on level ground.***
- ***Ensure that the Electronic Parking Brake Control system is reactivated after the maintenance work has been completed.***

FastCheck ABS

IMPORTANT INFORMATION
<p>Mercedes vehicles with Sensotronic Brake Control</p> <ul style="list-style-type: none">• Ensure that you are fully familiar with the braking system and its operation before commencing any work.• The Sensotronic Brake Control system must be deactivated before carrying out any maintenance/diagnostic work on the brake system. This can be done from the hand-held tester menu.• Only commence work after the system has been deactivated. Upon deactivation, a warning message should appear in the instrument panel accompanied by an audible warning signal until the system is reactivated. If the warning signals do not occur, assume that the system is not fully deactivated and DO NOT commence work.• Ensure that the Sensotronic Brake Control system is reactivated after the maintenance work has been completed. <p><i>NOTE: The manufacturer of the hand-held tester accepts no responsibility for any accident or injury arising from the maintenance of the Sensotronic Brake Control system.</i></p>

Connection

Using the Vehicle Application List, identify the required interface cable for the vehicle system to be tested.

NOTE: For BMW vehicles equipped with a 20-pin connector and an OBD-II connector, you must use only the 20-pin connector.

NOTE: The iMUX harness must be used for any diagnostics on the following vehicles:

BMW 1 series (E81/E87)

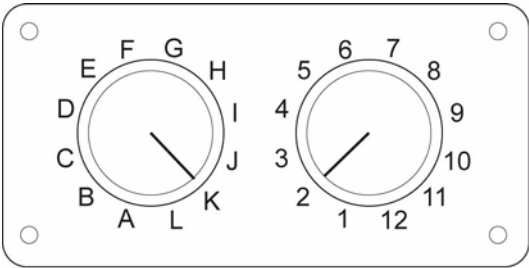
BMW 3 series (E90/E91/E92/E93)

BMW 5 series (E60/E61)

BMW 6 series (E63/E64)

BMW 7 series (E65)

NOTE: For Mercedes vehicles equipped with a 38-pin connector and an OBD-II connector, you must use only the 38-pin connector.



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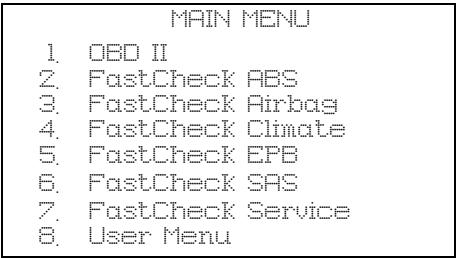
If using the J1962 pin-switchable cable, ensure the settings on the switch box correspond to the settings listed for the vehicle and system being tested.

WARNING: Incorrect settings on the switch box may cause irreparable damage to the vehicle's electrical system.

Ensure the vehicle's ignition is OFF.

Connect the hand-held tester to the required vehicle connector, refer to 'Diagnostic Connector Locations', page 60 for further information.

Power for the hand-held tester is provided by the vehicle connector. Once connected, the hand-held tester will perform an internal self test and then the screen will display the date of the current software version before displaying the main menu.



Use the ▲ and ▼ keys to select the 'FastCheck ABS' application and press ✓ to confirm the selection. To return to the previous menu, press the ✕ key.

Turn the vehicle's ignition ON.

Use the ▲ and ▼ keys to select the vehicle manufacturer and press ✓ to confirm the selection.

Dependant upon the vehicle and application being run, you may be asked to choose the particular system fitted to the vehicle. Select the correct system using the ▲ and ▼ keys and press ✓ to confirm.

FastCheck

1. Read DTCs
 2. Clear DTCs

Select the required menu option using the ▲ and ▼ keys and press ✓ to confirm.

The hand-held tester will attempt to establish communication with the vehicle system. If communication is unsuccessful, refer to 'Communication Problems', page 5.

Read DTCs

If any DTC codes are present in the system, a screen will be displayed informing you how many codes were found. This will then be replaced by the first DTC code. DTC codes are generated according to the vehicle and system manufacturer.

DTC 1 - 38 Right Low
Pressure Sensor
Circuit Signal High()

A typical DTC code

The fault number is displayed first, followed by the DTC code. In this example the fault displayed is DTC number 38 - Right Low Pressure Sensor Circuit Signal High or Open Circuit. If the description text is too long to fit on the display, '[...]' appears in the bottom right corner of the screen. This indicates that the text can be scrolled using the ▲ and ▼ keys to view the rest of the description.

To view the next DTC (if more than 1 was found), scroll to the end of the text and press the ✓ key.

To return to the menu, scroll to the end of the text and press the ✕ key.

Clear DTCs

Diagnostic trouble codes can be cleared using the 'Clear DTCs' option. When using the option you will be prompted to turn the ignition off. Wait until prompted before switching the ignition back on.

Start the engine to force the control module to run a system check. Verify that the code(s) have been cleared by selecting 'Read DTCs'.

NOTE: Reading DTC(s) without first starting the engine will only confirm that the stored DTC(s) have been cleared. Faults may still be present in the system causing a DTC to be stored next time the engine is started.

BMW Vehicles

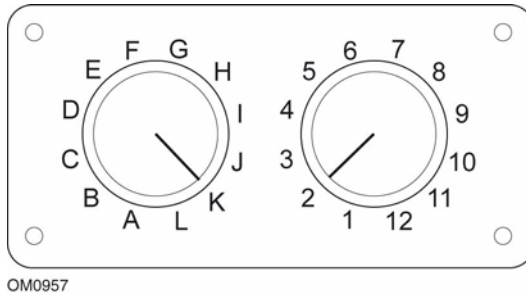
NOTE: To switch the ignition ON for vehicles fitted with a start/stop button, insert the remote key-fob fully into the ignition slot then press the start/stop button once (without any foot pedals depressed).

FastCheck

FastCheck Airbag

Connection

Using the Vehicle Application List, identify the required interface cable for the vehicle system to be tested.



If using the J1962 pin-switchable cable, ensure the settings on the switch box correspond to the settings listed for the vehicle and system being tested.

WARNING: Incorrect settings on the switch box may cause irreparable damage to the vehicle's electrical system.

NOTE: The iMUX harness must be used for any diagnostics on the following vehicles:

BMW 1 series (E81/E87)

BMW 3 series (E90/E91/E92/E93)

BMW 5 series (E60/E61)

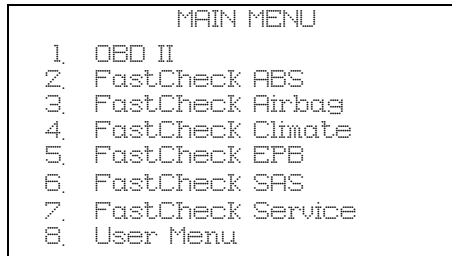
BMW 6 series (E63/E64)

BMW 7 series (E65)

Ensure the vehicle's ignition is OFF.

Connect the hand-held tester to the required vehicle connector, refer to 'Diagnostic Connector Locations', page 60 for further information.

Power for the hand-held tester is provided by the vehicle connector. Once connected, the hand-held tester will perform an internal self test and then the screen will display the date of the current software version before displaying the main menu.

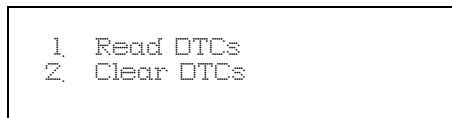


Use the ▲ and ▼ keys to select the 'FastCheck Airbag' application and press ✓ to confirm the selection. To return to the previous menu, press the ✕ key.

Turn the vehicle's ignition ON.

Use the ▲ and ▼ keys to select the vehicle manufacturer and press ✓ to confirm the selection.

Dependant upon the vehicle and application being run, you may be asked to choose the particular system fitted to the vehicle. Select the correct system using the ▲ and ▼ keys and press ✓ to confirm.



Select the required menu option using the ▲ and ▼ keys and press ✓ to confirm.

The hand-held tester will attempt to establish communication with the vehicle system. If communication is unsuccessful, refer to '*Communication Problems*', page 5.

Read DTCs

If any DTC codes are present in the system, a screen will be displayed informing you how many codes were found. This will then be replaced by the first DTC code. DTC codes are generated according to the vehicle and system manufacturer.

The fault number is displayed first, followed by the DTC code. If the description text is too long to fit on the display, '[...]' appears in the bottom right corner of the screen. This indicates that the text can be scrolled using the ▲ and ▼ keys to view the rest of the description.

To view the next DTC (if more than 1 was found), scroll to the end of the text and press the ✓ key.

To return to the menu, scroll to the end of the text and press the ✕ key.

FastCheck

Clear DTCs

Diagnostic trouble codes can be cleared using the 'Clear DTCs' option. When using the option you will be prompted to turn the ignition off. Wait until prompted before switching the ignition back on.

Verify that the code(s) have been cleared by selecting 'Read DTCs'.

BMW Vehicles

NOTE: To switch the ignition ON for vehicles fitted with a start/stop button, insert the remote key-fob fully into the ignition slot then press the start/stop button once (without any foot pedals depressed).

Some BMW vehicles are equipped with multiple airbag systems, one for each airbag fitted to the vehicle.

Applicable Vehicles:

- BMW 3 series (E90/E91/E92/E93)
- BMW 5 series (E60/E61)
- BMW 6 series (E63/E64)
- BMW 7 series (E65)
- BMW Z4 (E85)

If on selecting the Read DTCs or Clear DTCs and a multiple airbag system is detected, then a menu containing a list of airbag systems fitted to the vehicle will be displayed.

Use the ▲ and ▼ keys to select the required system from the menu shown. Press the ✓ key to select the system required the Read DTCs or Clear DTCs will be performed. Press the ✕ key while the system menu is displayed to return back to the Read DTCs and Clear DTCs menu.

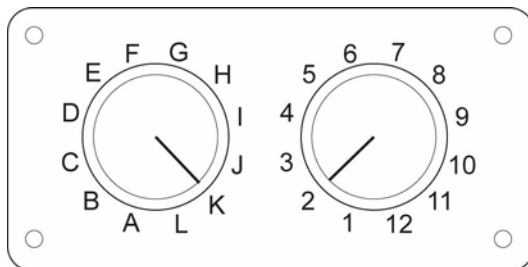
All airbag ECU's

If the All airbag ECU's was selected then the Read DTCs or Clear DTCs function will be performed on **ALL** detected airbag systems on the vehicle.

FastCheck Climate

Connection

Using the Vehicle Application List, identify the required interface cable for the vehicle system to be tested.



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If using the J1962 pin-switchable cable, ensure the settings on the switch box correspond to the settings listed for the vehicle and system being tested.

WARNING: Incorrect settings on the switch box may cause irreparable damage to the vehicle's electrical system.

NOTE: The iMUX harness must be used for any diagnostics on the following vehicles:

BMW 1 series (E81/E87)

BMW 3 series (E90/E91/E92/E93)

BMW 5 series (E60/E61)

BMW 6 series (E63/E64)

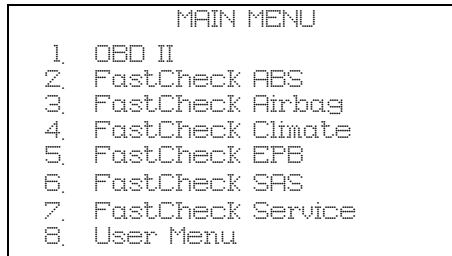
BMW 7 series (E65)

Ensure the vehicle's ignition is OFF.

Connect the hand-held tester to the required vehicle connector, refer to '*Diagnostic Connector Locations*', page 60 for further information.

Power for the hand-held tester is provided by the vehicle connector. Once connected, the hand-held tester will perform an internal self test and then the screen will display the date of the current software version before displaying the main menu.

FastCheck

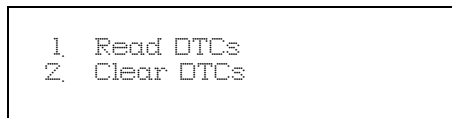


Use the ▲ and ▼ keys to select the 'FastCheck Climate' application and press ✓ to confirm the selection. To return to the previous menu, press the ✕ key.

Turn the vehicle's ignition ON.

Use the ▲ and ▼ keys to select the vehicle manufacturer and press ✓ to confirm the selection.

Dependant upon the vehicle and application being run, you may be asked to choose the particular system fitted to the vehicle. Select the correct system using the ▲ and ▼ keys and press ✓ to confirm.



Select the required menu option using the ▲ and ▼ keys and press ✓ to confirm.

The hand-held tester will attempt to establish communication with the vehicle system. If communication is unsuccessful, refer to '*Communication Problems*', page 5.

Read DTCs

If any DTC codes are present in the system, a screen will be displayed informing you how many codes were found. This will then be replaced by the first DTC code. DTC codes are generated according to the vehicle and system manufacturer.

The fault number is displayed first, followed by the DTC code. If the description text is too long to fit on the display, '[...]' appears in the bottom right corner of the screen. This indicates that the text can be scrolled using the ▲ and ▼ keys to view the rest of the description.

To view the next DTC (if more than 1 was found), scroll to the end of the text and press the ✓ key.

To return to the menu, scroll to the end of the text and press the ✕ key.

Clear DTCs

Diagnostic trouble codes can be cleared using the 'Clear DTCs' option. When using the option you will be prompted to turn the ignition off. Wait until prompted before switching the ignition back on.

Start the engine to force the control module to run a system check. Verify that the code(s) have been cleared by selecting 'Read DTCs'.

NOTE: Reading DTC(s) without first starting the engine will only confirm that the stored DTC(s) have been cleared. Faults may still be present in the system causing a DTC to be stored next time the engine is started.

BMW Vehicles

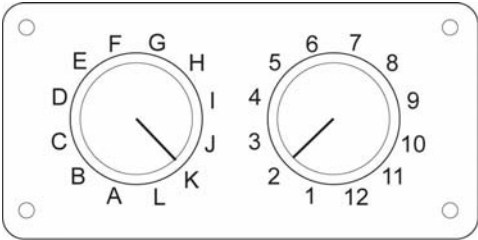
NOTE: To switch the ignition ON for vehicles fitted with a start/stop button, insert the remote key-fob fully into the ignition slot then press the start/stop button once (without any foot pedals depressed).

FastCheck

FastCheck EPB (Electronic Parking Brake)

Connection

Using the Vehicle Application List, identify the required interface cable for the vehicle system to be tested. Connect the cable to the hand-held tester and secure the fixing screws.



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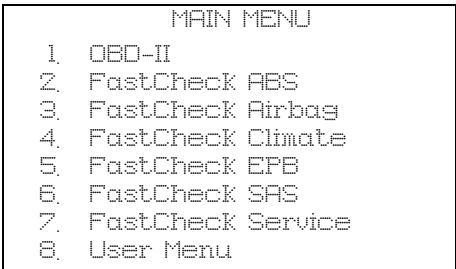
If using the J1962 pin-switchable cable, ensure the settings on the switch box correspond to the settings listed for the vehicle and system being tested.

WARNING: Incorrect settings on the switch box may cause irreparable damage to the vehicle's electrical system.

Ensure the vehicle's ignition is OFF.

Connect the hand-held tester to the required vehicle connector, refer to 'Diagnostic Connector Locations', page 60, for further information.

Power for the hand-held tester is provided by the vehicle connector. Once connected, the hand-held tester will perform an internal self test and then the screen will display the date of the current software version before displaying the main menu.



Use the ▲ and ▼ keys to select the 'FastCheck EPB' application and press ✓ to confirm the selection. To return to the previous menu, press the ✕ key.

Turn the vehicle's ignition ON.

Use the ▲ and ▼ keys to select the vehicle manufacturer and press ✓ to confirm the selection.

Dependant upon the vehicle manufacturer and model different menu options will then be available. Function such as read and Clear DTCs will be available along with service functions.

VAG – Electro-mechanic Parking Brake (EPB) system

VW/Audi EPB system integrates two electro-mechanical actuators (right and left parking brake motors) into the rear disc brake callipers. The EPB system replaces the traditional handbrake system.

When the vehicle is stationary or when the EPB/Auto hold button is pressed the EPB control module activates the parking brake motors on the rear wheels holding the vehicle in place.

Pre-test conditions:

- The vehicle must be stationary
- The vehicle must be on level ground
- The brake fluid level is correct
- The parking brake is off

NOTE: During the process of releasing and resetting the brake pistons the ECM may store DTCs in the EPB or ABS control modules. After completing the calibration procedure the EPB and ABS DTC memory must be cleared.

EPB for Audi A4/A5/A6 & VW Passat/Tiguan

Select the required option from the Maintenance menu either 'Replace Pads' or 'Service Brakes' then follow described sequence.

Brake pad replacement/service sequence

The EPB system must be deactivated and completely released and the ignition must be on.

NOTE: The sequence must be performed in the correct order else the braking system maybe left in a non-operational state.

Release brakes

Select the 'Release Brakes' option from the menu. The brake pistons will now be moved to their released position. Wait until the hand held tester displays the release brakes now complete message before continuing.

Replace/service the brake pads

The brake pads can now be replaced or serviced following the manufacturer's instructions.

FastCheck

Close brakes

Select the 'Close Brakes' option from the menu. The brake pistons will now be moved to their reset position. Wait until the hand held tester displays the close brakes now complete message before continuing.

Calibrate brakes

Select the 'Calibrate Brakes' option from the menu. The brake pistons will now be moved in and out to calibrate their position. Wait until the hand held tester displays the calibrate brakes now complete message before continuing.

EPB for Audi A8

Select the required option from the Maintenance menu either 'Replace Pads' or 'Service Brakes' then follow the required sequence.

Brake pad replacement sequence (only)

The EPB system must be deactivated and completely released and the ignition must be on then follow the sequence described below.

NOTE: The sequence must be performed in the correct order otherwise the braking system maybe left in a non-operational state.

Replace pads

Select the 'Replace Pads' option from the 'Replace Pads' menu. The brake pistons will now be moved to their released position. Wait until the hand held tester displays the release brakes now open for pad change message before continuing.

Replace the brake pads

Make a note of the new pad thickness (3-14mm) it is required for the next stage. The brake pads can now be replaced following the manufacturer's instructions.

Pad thickness

The brake pad thickness must now be entered by selecting Pad Thickness from the Replace Pads menu. The current value is displayed on screen. Press the ✓ key to change value then enter the new value between 3-14mm. Press the ✓ key to test the new value message will be displayed. Press the ✓ key to move to the store new value screen. Now press the ✓ key again to store the new value to the control module.

Close brakes

Select the 'Close Brakes' option from the Replace Pads menu. The brake pistons will now be moved to their reset position. Wait until the hand held tester displays the close brakes now complete message before continuing.

Calibrate brakes

Select the 'Calibrate Brakes' option from the Replace Pads menu. The brake pistons will now be moved in and out to calibrate their position. Wait until the hand held tester displays the calibrate brakes now complete message before continuing.

Brakes service sequence (only)

The EPB system must be deactivated and completely released and the ignition must be on then follow the sequence described below.

NOTE: The sequence must be performed in the correct order else the braking system maybe left in a non-operational state.

Release brakes

Select the 'Release Brakes' option from the Service Brakes menu. The brake pistons will now be moved to their released position. Wait until the hand held tester displays the release brakes now complete message before continuing.

Service the brakes

The brakes can now be serviced following the manufacturer's instructions.

Close brakes

Select the 'Close Brakes' option from the Service Brakes menu. The brake pistons will now be moved to their reset position. Wait until the hand held tester displays the close brakes now complete message before continuing.

Calibrate brakes

Select the 'Calibrate Brakes' option from the Service Brakes menu. The brake pistons will now be moved in and out to calibrate their position. Wait until the hand held tester displays the calibrate brakes now complete message before continuing.

FastCheck SAS

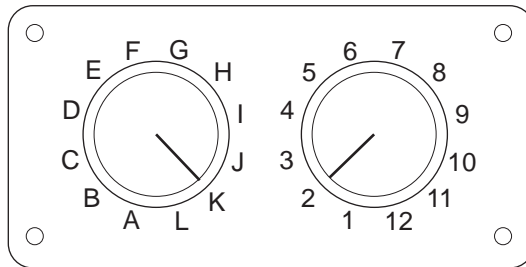
Connection

Using the Vehicle Application List on the CD-ROM, identify the required interface cable for the vehicle system to be tested. Connect the cable to the hand held tester and secure the fixing screws.

NOTE: If the vehicle being tested is a BMW with a 20 pin connector and an EOBD (J1962) connector, you must only use the 20 pin connector.

NOTE: The iMUX harness must be used for any diagnostics on the following vehicles:

- BMW 1 series (E81/E87)
- BMW 3 series (E90/E91/E92/E93)
- BMW 5 series (E60/E61)
- BMW 6 series (E63/E64)
- BMW 7 series (E65)



CON0017

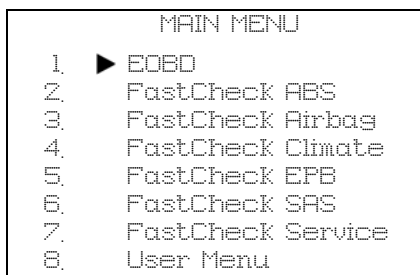
If using the J1962 pin-switchable cable, ensure the settings on the switch box correspond to the settings listed for the vehicle and system being tested.

WARNING: Incorrect settings on the switch box may cause irreparable damage to the vehicle's electrical system.

Ensure the vehicle's ignition is OFF.

Connect the hand held tester to the required vehicle connector, refer to 'Diagnostic Connector Locations', page 60, for further information.

Power for the hand held tester is provided by the vehicle connector. Once connected, the hand held tester will perform an internal self test and then the screen will display the version of the current software before displaying the main menu.

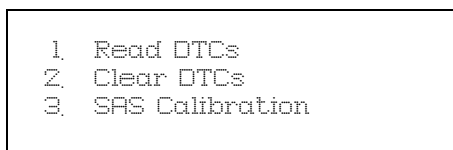


Use the ▲ and ▼ keys to select the 'FastCheck SAS' application and press ✓ to confirm the selection. To return to the previous menu, press the ✕ key.

Turn the vehicle's ignition ON.

Use the ▲ and ▼ keys to select the vehicle manufacturer and press ✓ to confirm the selection.

Dependent upon the vehicle and application being run, you may be asked to choose the particular system fitted to the vehicle. Select the correct system using the ▲ and ▼ keys and press ✓ to confirm.



Select the required menu option using the ▲ and ▼ keys and press ✓ to confirm.

The hand held tester will attempt to establish communication with the vehicle system. If communication is unsuccessful, refer to '*Communication Problems*', page 5.

Read DTCs

If any DTC codes are present in the system, a screen will be displayed informing you how many codes were found. This will then be replaced by the first DTC code. DTC codes are generated according to the vehicle and system manufacturer.



A typical DTC code

The fault number is displayed first, followed by the DTC code. In this example the fault displayed is DTC number 38 - Right Low Pressure Sensor Circuit Signal High or Open Circuit. If the description text is too long to fit on the display, '[...]' appears in the

FastCheck

bottom right corner of the screen. This indicates that the text can be scrolled using the ▲ and ▼ keys to view the rest of the description.

To view the next DTC (if more than 1 was found), scroll to the end of the text and press ✓ key.

To return to the menu, scroll to the end of the text and press the ✕ key.

Clear DTCs

Diagnostic trouble codes can be cleared using the 'Clear DTCs' option. When using the option you will be prompted to turn the ignition off. Wait until prompted before switching the ignition back on.

Start the engine to force the control module to run a system check. Verify that the code(s) have been cleared by selecting 'Read DTCs'.

NOTE: Reading DTC(s) without first starting the engine will only confirm that the stored DTC(s) have been cleared. Faults may still be present in the system causing a DTC to be stored next time the engine is started.

SAS (Steering Angle Sensor) Calibration

The steering angle sensor can be calibrated using the 'SAS Calibration' option. The on screen instructions must be performed to ensure the calibration process is correctly completed.

NOTE: The steering angle sensor should be calibrated after performing the wheel alignment or suspension adjustments.

BMW vehicles

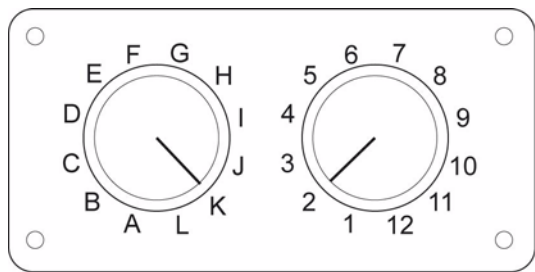
NOTE: To switch the ignition ON for vehicles fitted with a start/stop button, insert the remote key-fob fully into the ignition slot then press the start/stop button once (without any foot pedals depressed).

FastCheck Service

Connection

Using the Vehicle Application List, identify the required interface cable for the vehicle system to be tested.

NOTE: For BMW vehicles equipped with a 20-pin connector and an OBD-II connector, you must use only the 20-pin connector. For Mercedes vehicles equipped with a 38-pin connector and an OBD-II connector, you must use only the 38-pin connector.



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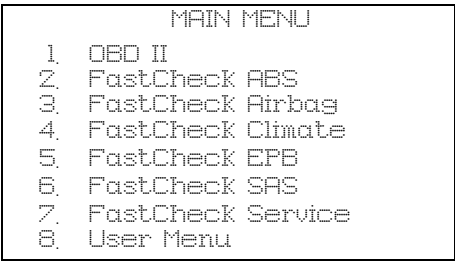
If using the J1962 pin-switchable cable, ensure the settings on the switch box correspond to the settings listed for the vehicle and system being tested.

WARNING: Incorrect settings on the switch box may cause irreparable damage to the vehicle's electrical system.

Ensure the vehicle's ignition is OFF.

Connect the hand-held tester to the required vehicle connector, refer to 'Diagnostic Connector Locations', page 60 for further information.

Power for the hand-held tester is provided by the vehicle connector. Once connected, the hand-held tester will perform an internal self test and then the screen will display the date of the current software version before displaying the main menu.



Use the ▲ and ▼ keys to select the 'FastCheck Service' application and press ✓ to confirm the selection. To return to the previous menu, press the ✕ key.

FastCheck

Turn the vehicle's ignition ON.

Use the ▲ and ▼ keys to select the vehicle manufacturer and press ✓ to confirm the selection.

Dependant upon the vehicle manufacturer and model different menu options will then be available.

BMW vehicles

NOTE: To switch the ignition ON for vehicles fitted with a start/stop button, insert the remote key-fob fully into the ignition slot then press the start/stop button once (without any foot pedals depressed).

Manufacturer	Option 1	Option 2
BMW	CBS	Service options
	Digital reset	Oil reset
		Distance reset
		Time reset
	Analogue reset	Oil
		Inspection service

Use the ▲ and ▼ keys to select the required menu option and press ✓ to confirm the selection. To return to a previous menu, press the ✕ key.

The screen will display the message “BMW Reset” to confirm the reset process was completed successfully.

Select ‘Condition Based Service’ (CBS):

NOTE: All required work must be carried out before service indicators are reset. Failure to do so may result in incorrect service values and cause DTCs to be stored by the relevant control module.

NOTE: The DSC module will not recognise the replacement of the brake pad wear sensor before a terminal change has taken place. As such the DSC module will not allow reset of the brake pad service items.

It is recommended that the brake pads are replaced with genuine BMW parts. The DSC module may not recognise a terminal change if using non-genuine brake pads.

Select CBS for vehicles only fitted with a J1962 16 pin connector and support CBS.

Applicable vehicles:

BMW 1 series (E81/E87)

BMW 3 series (E90/E91/E92/E93)

BMW 5 series (E60/E61)

BMW 6 series (E63/E64)

BMW 7 series (E65)

NOTE: The iMux harness must be used for CBS.

CBS is a system in which the vehicle calculates and monitors the status of serviced components and fluid levels as well as time and mileage based services.

The following table displays possible service options together with the control module used to reset each option.

Service option	Control module
Engine oil	Engine (DME/DDE)
Particulate filter	Engine (DDE)
Front brake pads	Dynamic stability control (DSC)
Rear brake pads	Dynamic stability control (DSC)
Micro filter	Climate control (IHKA)
Brake fluid	Instrument cluster (INSTR)
Coolant	Instrument cluster (INSTR)
Spark plugs	Instrument cluster (INSTR)
Vehicle check	Instrument cluster (INSTR)
Statutory vehicle inspection	Instrument cluster (INSTR)
Statutory exhaust emission inspection	Instrument cluster (INSTR)

The hand held tester will automatically identify all control modules required during the reset process. If an unknown control module is found or communications cannot be established, the operator is prompted to either continue or abort.

NOTE: If the process is continued service options applicable to the unknown control module will not be available (see service option table).

The current date and time information will be displayed by the hand held tester. Press the ✓ key if the information is correct and continue or press ✗ key to correct the information.

NOTE: If date and time used during the reset process is incorrect, this will result in incorrect service intervals.

To change the date and time:

FastCheck

Use the ▲ and ▼ keys to change the value of the selected information indicated by '/'\.

Use the ⬅➡ key to change the selected date/time field.

Use the ✓ key to complete the information entry.

The screen will display a final confirmation of the new data entered. Press the ✓ key to program the new information to the vehicle.

Pressing the ✕ key at any point during the date and time change to will return to the initial date and time confirmation screen. No information will have been changed.

The service options available on the vehicle are displayed as a list. Each option is displayed with the service data:

1. The percentage reset value.
2. The estimated distance to, or the next service date.
3. The service counter.

NOTE: The vehicle inspection and exhaust emission inspection only display the date of the next service.

The service option list is displayed in priority order, with the most urgent first.

To reset an option scroll to the required option using the ▲ and ▼ keys. The current option will be indicated by the ➡. Press the ✓ key to confirm the selection.

Two possible options may be displayed on the lower half of the display:-

1. Reset option
2. Correct option

Use the ▲ and ▼ keys to select the required menu option

Use the ✓ key to confirm the selection.

Use the ✕ key to cancel the selection and return to the service option list.

Reset option:

The 'Reset' option is used to set the selected service option's reset value to 100%. The estimated distance or date of next service and the service counter are updated.

The vehicle inspection and exhaust emission inspection service options are statutory inspections that store the date of the next inspection.

Upon selecting either of these options the hand held tester will display the screen to change the next service date.

Use the ▲ and ▼ keys to change the value of the selected information indicated by '>' or '<'.

Use the ⬅➡ key to change the selected field.

Use the ✓ key to complete and store the information.

Use the ✕ key to cancel the reset and return to the service option list.

Correct Option:

The 'Correct' option is used to correct a service option which has been reset in error.

NOTE: Reset correction is only available for service options with service counter not zero, and is not available for vehicle and exhaust emission inspections. The original service option values are lost during reset.

Use the ▲ and ▼ keys to change the reset value.

Use the ✓ key to complete the information entry.

A final confirmation of the new data entered is displayed. Press the ✓ key to store the new information. To cancel the correction and return to the service option list press the ✕ key.

NOTE: The maximum reset value will be the current value of the selected service option. The service counter will be decremented by 1.

Digital Reset:

Select 'Digital Reset' for vehicles only fitted with a J1962 16 pin connector that do not support Condition Based Service (CBS).

The hand held tester will display a message to confirm the reset process was successful.

Applicable vehicles:

BMW 3 Series (E46)

BMW 5 Series (E39)

BMW 7 Series (E38)

BMW X3 (E83)

BMW X5 (E53)

BMW Z4 (E85)

NOTE: A manual procedure for service reset is possible for some Digital Reset applicable vehicles. Refer to Manual Service Reset section for instructions.

FastCheck

Analogue reset:

Select 'Analogue Reset' for vehicles fitted with a 20 pin round diagnostic connector within the engine bay.

The hand held tester will display the message 'Reset Complete' to confirm the reset process was completed.

NOTE: The hand held tester indicates the completion of the process only. Visual confirmation via the Service Interval Indicator (SIA) located on the vehicle's dash panel is required.

Annual distance:

The average annual distance travelled is required for the calculation of various Condition Based Service (CBS) functions.

The annual distance is based on the distance travelled after approximately six to eight weeks from being reset. It is advised to reset the annual distance after any changes in the driving pattern of the vehicle.

NOTE: Incorrect annual distance will affect the CBS intervals.

The value will be set to a default (approximately 30,000 km / 18,640 miles) until the new value has been calculated.

Applicable vehicles:

BMW 1 series (E81/E87)

BMW 3 series (E90/E91/E92/E93)

BMW 5 series (E60/E61)

BMW 6 series (E63/E64)

BMW 7 series (E65)

NOTE: The iMUX harness must be used.

Battery change:

After fitting a new battery, the battery change function should be run. The battery change function registers the replacement of a battery with the power management system. Failure to do so may cause the power management system to operate incorrectly.

The battery change function determines the required battery capacity and type from the Car Access System (CAS) module. The replacement battery must be same capacity and type as displayed.

NOTE: Certain vehicles require the use of an Absorbent Glass Mat (AGM) battery.

Applicable vehicles:

BMW 1 series (E81/E87)

BMW 3 series (E90/E91/E92/E93)

BMW 5 series (E60/E61)

BMW 6 series (E63/E64)

BMW 7 series (E65)

NOTE: The iMUX harness must be used.

Mercedes vehicles

There are two different types of servicing for Mercedes: Assyst Plus and Flexible Service System. The service type will automatically be determined from the vehicle.

Assyst Plus:

NOTE: Any DTCs (Diagnostic trouble codes) present on the Assyst Plus control module may lead to incorrect servicing information and services to be preformed incorrectly. Different variants of Assyst Plus have different service functions available.

Assyst Plus service functions

- *Reset indicator*
- *Additional work*
- *Service status*
- *Service history*
- *Undo reset*
- *Undo additional*
- *Read DTCs*
- *Clear DTCs*

Reset Indicator

This function is used to reset the overall maintenance of the vehicle. The current service status information will be displayed.

To abort the reset, press the **✕** key. Confirmation of the service being aborted will be displayed, press any key at this point to return to the 'Assyst Plus' menu. To proceed with the reset press **✓**.

The oil quality must be selected before the reset can be completed. To abort the reset, press the **✕** key. Confirmation the reset has aborted will be displayed, press any key to return to the 'Assyst Plus' menu. To select the oil quality used for the service from the menu use the **▲** and **▼** keys and press to confirm the selection.

The result of the reset will be displayed, press any key to return to the 'Assyst Plus'

menu.

Additional Work

This function is used to record additional work carried out during the latest service in the vehicle's service memory.

The function will display a menu of all available additional work options applicable for the vehicle.

Press the ▲ and ▼ keys to scroll through the available list.

Press the ◀ key to select/deselect an item. Multiple items can be selected and any items selected are highlighted by > .

Press the ✕ key to abort and return to the 'Assyst Plus' menu. Press ✓ to add these selected options to the last service memory. The result of the reset will be displayed, press any key to return to the 'Assyst Plus' menu.

Service Status

This function displays the current service status information.

Use the ▲ and ▼ keys to scroll through the status information. Press the ✕ key to exit and return to the 'Assyst Plus' menu.

NOTE: It can take some time for the control unit to update the service status information after a change in state (e.g. Resetting the service indicator).

Service History

This function allows the operator to review the entries held within the service memory. The function will display the number of service entries currently stored within the service memory.

Press the ✕ key to return to the 'Assyst Plus' menu. Select the desired entry using the ▲ and ▼ keys and press ✓ to confirm the selection.

Press the ✕ key to return to the 'Assyst Plus' menu. Press ▲ and ▼ keys to scroll through the service information stored in memory.

Undo Reset

This function cancels the latest service stored in the service history (i.e. the last performed service).

A warning will be displayed before the undo process is performed. This option is only intended for resetting a service that has accidentally been reset.

Press ✕ to return to the 'Assyst Plus' menu. Press ✓ to cancel the last service. Confirmation of the cancellation will be displayed. Press any key at this point to return to the 'Assyst Plus' menu.

NOTE: Services which have been cancelled remain in the service history. The entry will be marked as irrelevant and the data held within will be reset. The Undo Reset is only possible if there is an existing service held within the service memory.

Undo Additional

This function cancels any additional work records stored in the latest service history.

A warning will be displayed before the undo process is performed. This option is only intended for resetting an additional service option that has accidentally been reset.

A menu of all the additional work available from the vehicle's latest service is displayed.

Press ▲ and ▼ keys to scroll through the available list.

Press the ◀▶ key to select/deselect an item. Multiple items can be selected and any items selected are highlighted by > .

Press ✕ to return to the 'Assyst Plus' menu. Press ✓ to remove the selected options from the service memory. The result of the undo will be displayed, press any key to return to the 'Assyst Plus' menu.

NOTE: Undo is only possible if there is an existing service held within the service memory and the selected service options are applicable to the latest service.

Flexible Service System:

Select 'Service Reset' and press ✓ to confirm the selection. To return to a previous menu, press the ✕ key.

When prompted to, check that all the vehicle's doors are closed, then press any button on the service tool to have the oil or service light reset.

Warning: Be sure to close all the vehicle's doors before sending the reset command. Not doing so can result in permanent damage to the vehicle's instrument panel.

You will receive the message "Mercedes Reset" to confirm the reset process was completed successfully.

Saab Vehicles

Select 'Interval and Oil' and press ✓ to confirm the selection. To return to a previous menu, press the ✕ key.

You will receive the message "Saab Reset" to confirm the reset process was completed successfully.

FastCheck

Volvo Vehicles

Select 'Service' and press ✓ to confirm the selection. To return to a previous menu, press the ✕ key.

You will receive the message "Volvo Reset" to confirm the reset process was completed successfully.

VAG (Volkswagen and Audi) Vehicles

Manufacturer	Option 1	Option 2	Option 3	Option 4	Option 5
		Adaptation - Refer to Variable Service Reset section			
VAG	Service Reset	Service Reset	Long Life Oil	Service Reset	N/A
				Set Oil Type	Diesel
					V6 TDI
					Petrol
					Non Long Life Oil
				View Oil Type	N/A
			Non Long Life Oil	Service Reset	N/A
			Service	Inspection 1	N/A
				Inspection 2	N/A

Use the ▲ and ▼ keys to select the required menu option and press ✓ to confirm the selection. To return to a previous menu, press the ✕ key.

You will receive the message "VAG Reset" to confirm the reset process was completed successfully.

Variable Service Reset (VAG)

For some VAG (Audi and VW) vehicles manufactured since 2000, the variable service reset option must be used. Refer to the Vehicle Application List.

WARNING: *Changing the baseline / learn values of any channel could have adverse effects on engine performance and running. If you have any doubt please consult somebody familiar with the system.*

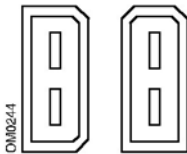
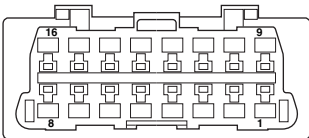
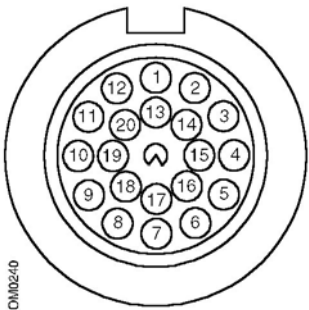
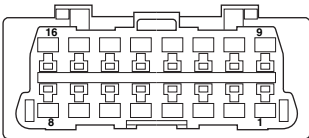
Service Type	Channel	Counter Contents	Value to Reset
Service	2	Reset service counters (distance and time)	00000
	40	Distance travelled since last service ÷ 100.	00000
	41	Time elapsed (in days) since last service	00000
	42	Lower limit for distance to next inspection	-----
	43	Upper limit for distance to next inspection	-----
	44	Upper limit for time to next inspection	-----
	45	Quality of engine oil	-----

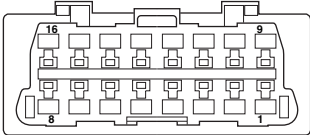
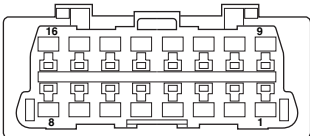

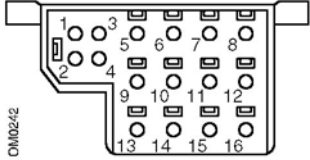
To reset the service interval, use the ▲ and ▼ keys to select channel 2 and press ✓ to confirm the selection.

Change the value of the channel to 00000 to reset the both the time and distance service counters. Use the ▲ and ▼ keys to change each digit to 0 and press ✓ to confirm.

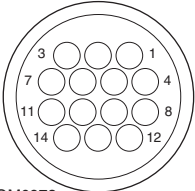
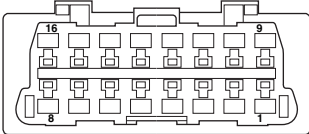
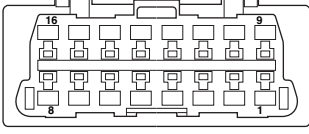
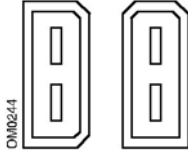
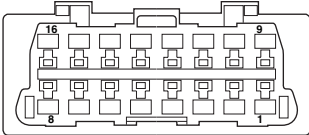
NOTE: Channels 40, 41, 42, 43, 44 and 45 are used when installing a new instrument pack. Values from the original instrument pack must be entered into the new instrument pack to ensure that vehicle servicing is carried out at the correct intervals.

Diagnostic Connector Locations

Audi	2-pin ISO 9141	Engine compartment relay box	
	J1962	Driver's footwell under the steering column or the centre console beneath a removable panel.	 OM1038
BMW	20-pin round connector	The vehicle's diagnostic connector (20-pin round connector) is always found in the engine compartment. <i>NOTE: If the BMW vehicle under test has both the round (20 pin) diagnostic connector and the J1962 (16 pin) connector, the round connector should always be used to access information via the BMW applications and the J1962 connector should be used to access data via the OBD-II application (ensure the cap is fitted to the 20-pin connector). If the cap is not fitted, the J1962 connector will not function correctly.</i>	 OM10240
	J1962	J1962 diagnostic connector, this can usually be located in the driver's footwell behind a cover.	 OM1038

Land Rover	J1962	Driver or passenger's footwell. Defender - centre console behind removable panel.	 <p>OM1038</p>
Mercedes	J1962	Driver's footwell, under the steering column.	 <p>OM1038</p>
Mercedes Benz	38-pin round connector	Engine compartment - usually along bulkhead, but the precise location may vary.	 <p>OM10239</p>
Mercedes OBD-1	16-pin connector block	Engine compartment - usually on the bulkhead adjacent to the fusebox.	 <p>OM10242</p>

FastCheck

Freightliner Sprinter CUV	14-pin round connector	<p>Passenger's footwell under fascia behind removable cover. Some Freightliner Sprinter vans have a 14-pin round connector which is located under the passenger side dashboard, other vehicles may have the 16-pin OBD II connector. The 14 pin round connector should always be used to retrieve data via the Mercedes application. It does not support OBD II.</p>	 <p>OM0973</p>
Saab	J1962	Driver's footwell, under the steering column.	 <p>OM1038</p>
Volvo	J1962	Driver's footwell, under the steering column. Next to hand brake or In front of gear lever.	 <p>OM1038</p>
VW	2-pin ISO 9141	Engine compartment relay box	 <p>OM0244</p>
	J1962	Driver's footwell under the steering column or the centre console beneath a removable panel.	 <p>OM1038</p>

Overview



Use the ▲ and ▼ keys to select the required function and press ✓ to confirm the selection.

NOTE: Press ✕ to return to the Main Menu.

OBD DTC Lookup

This option is used to look up a description of a known DTC.

1. Use the ◀ and ? keys to move the cursor under the required DTC character, then using the ▲ and ▼ keys, change the characters as required.
2. Press the ✓ key to confirm DTC.
3. Press ✕ to return to the User Menu.

If the unit recognises the DTC, the screen will display the full description. i.e. P0100 - Mass or Volume Air Flow 'A' Circuit.

Where more than one description is available, a separate menu will appear for you to select the appropriate option.

If a code is not recognised the message 'No Text Allocated for this Code' is displayed.

NOTE: Press ✕ to return to the User Menu.

Language Menu

The language menu allows you to change the software language if available.

1. Use the ▲ and ▼ keys to select the required language.
2. Press ✓ to confirm the selection.

NOTE: This menu is only enabled when more than one language is installed on the hand-held tester. If only one language is installed, the message 'Not Enabled' will be displayed when the Language Menu option is selected and the display will return to the User Menu.

User Menu

Tester Setup

The tester setup allows you to change the live data units, change the way live data is displayed and adjust the contrast of the screen.

1. Select 'Live Data Units' from the Tester Setup menu.

```
LIVE DATA UNITS
1. Metric Units
2. Imperial Units
3. American Units
```

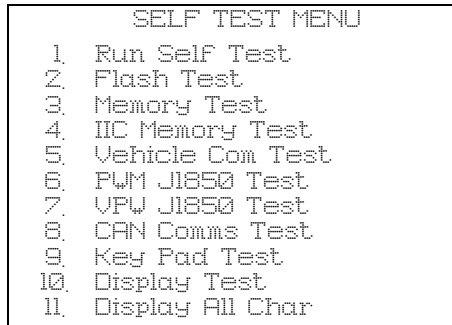
2. The currently selected live data units will be displayed on the screen. e.g. 'Metric Units set', before displaying the available options.
3. Use the ▲ and ▼ keys to select the preferred units of measurement and confirm by pressing the ✓ key. After updating, the unit returns to the Tester Setup menu.
4. Select 'Live Data Display' from the Tester Setup menu.

```
LIVE DATA DISPLAY
1. Normal Text
2. Abbreviations
```

5. The currently selected live data display option will appear on the screen. e.g. 'Normal Text Set', before displaying the available options.
6. Use the ▲ and ▼ keys to select the preferred display option and confirm by pressing the ✓ key. After updating, the unit returns to the Tester Setup menu.
7. Select 'Contrast' from the Tester Setup menu.
8. Use the ▲ and ▼ keys to adjust the contrast of the screen and confirm by pressing the ✓ key. After updating, the unit returns to the Tester Setup menu.

NOTE: Press ✕ to return to the 'Tester Setup' menu.

Self Test



1. Use the ▲ and ▼ keys to select the required test.
2. Press ✓ to confirm selection.
3. Follow on-screen instructions to carry out specified test.
4. Press the ✓ or ✕ key as appropriate, to return to the Self Test Menu.

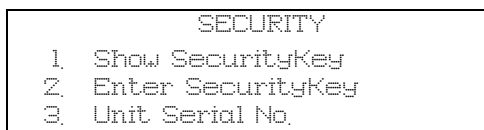
Software Version

1. Once selected, the MacInspect version number appears on the screen before displaying a list all software modules, including version numbers, currently loaded onto the hand-held tester.
2. Use the ▲ and ▼ keys to scroll through the software module list.
3. Press the ✓ or ✕ key to return to the Self Test Menu.

Security

All of the functions on the hand held tester are 'locked' by a security key. To unlock a particular function the appropriate security key must be obtained from the Product Support Team and entered into the hand held tester. If the expected functions are not displayed in the main menu it could be that the security key has not been entered, or is incorrect.

To examine or enter a security key, enter the 'Security' option. The following menu will be displayed:



User Menu

Show SecurityKey

1. Once selected, the security key is displayed on the screen as 25 characters. If it is incorrect the message 'Key is Invalid' will be displayed as well, and the ? key may be pressed for further information which may be asked for by product support.
2. Press the ✓ or ✕ key to return to the User Menu.

Enter SecurityKey

This option is used to enter the security key to unlock the functions on the hand held tester.

1. Select 'Enter SecurityKey' from the security menu.
2. Using the ▲ and ▼ keys, scroll through the alpha/numerical character list.
3. Confirm each character by pressing the ✓ key.
4. If you make a mistake use the ◀▶ key and enter the correct character. To re-enter the code from the beginning, press the ✕ key.
5. When prompted to verify the security key, press ✓ to confirm.
6. Restart the hand held tester either by disconnecting and reconnecting the power supply or by pressing the outer 4 buttons on the tester at the same time.

Note: The ? button displays on-screen instructions. The ✕ button may be used to cancel the operation and the original key will be retained.

Unit Serial No.

1. Once selected, the serial number of the hand held tester is displayed on the screen. This should match the number on the back of the unit. The serial number may be requested by product support when issuing security numbers. The user cannot change this number.
2. Press the ✓ key to return to the User Menu.

Cleaning

To maintain the condition and serviceability of the hand-held tester, it is advisable to follow the cleaning procedures below:

WARNING: Do not use solvents such as petroleum based cleaning agents, acetone, gasoline, trichlorethylene etc. These types of harsh solvent may seriously damage the plastic casing. Do not even spray or pour this type of cleaner onto a cleaning cloth.

WARNING: The hand-held tester is not waterproof. Always dry the unit thoroughly after cleaning or if it has been subject to accidental spillage.

The manufacturer recommends that you periodically inspect and clean the following parts of the hand-held tester:

- The case
- The display screen
- The keypad
- Adaptor cables and connectors

To clean the hand-held tester, or any of its cables or connectors, apply a mild detergent solution to a soft clean cloth that has been suitably dampened.

WARNING: Before cleaning, disconnect the hand-held tester from the vehicle.

Display Screen

During normal everyday use, the screen may become dusty or covered in grime. To clean the screen, always use a soft, clean, antistatic cloth. If any stubborn stains or marks remain, use a non-abrasive glass cleaner applied to a soft, clean cloth. Gently wipe the cloth across the display until the marks have been removed.

Software updates / New applications

New applications and software updates can be loaded onto the hand-held tester by connecting it to a PC. The cable to connect the hand-held tester to the PC will be supplied along with the upgrade CD.

Full instructions for loading new applications and software updates to the hand-held tester will be supplied along with upgrade CD.

General Information

Specification

MacInSpect complies with ISO/DIS 15031 Part 4 as an OBD-II scantool.

Voltage requirements - 8.0 volts to 16.0 volts DC

Current requirement - 750mA max.

Display - 20 characters by 4 lines LCD with LED back light

Operating Temperature range - 0°C to 50°C

Declaration of Conformity

The OmiNSpect is CE marked and complies with the following directives:

EN55022:1998 - ITE Emissions (Class A)

EN50082-1:1998 - Generic EMC Immunity

EN60950:1992 - Safety Requirements

FCC47 Part 15 - Radio Frequency Devices (Class A)

A copy of the Declaration of Conformity certificate is available on request from the manufacturer or your supplier.

Appendix A: Glossary

Glossary of terms

Term	Description
J1962	The SAE standard that defines the 16-pin connector used for OBD-II
4WAS	4 Wheel Air Suspension
4X4M	4X4 Control Module
AAG	Trailer Connection Unit
AAM	All Activity Module
ABS	Anti-Lock Brake / Traction Control Module
A/C	Air Conditioning
AC	Air Cleaner
ACM	Audio Control Module
AFCM	Alternative Fuel Control Module
AIR	Secondary Air Injection
ALWRM (Right)	Headlamp Range adjustment - Right
ALWRS (Left)	Headlamp Range adjustment - Left
ARC	Automatic Ride Control
ART	Intelligent cruise control
A/T	Automatic Transmission or Transaxle
SAP	Accelerator Pedal
B+	Battery positive voltage
BARO	Barometric Pressure
BNS	Vehicle Power Supply Control Module
CAC	Charge Air Cooler
CARB	Californian Air Resources Board
CCM_GEM	Generic electric module
CDP	Compact Disc Player
CFI	Continuous Fuel Injection or Central Fuel Injection
CL	Closed Loop
CKP	Crankshaft Position Sensor
CKP REF	Crankshaft Reference
CM	Control Module
CMP	Camshaft Position Sensor
CMP REF	Camshaft Reference
CO	Carbon Monoxide
CO ₂	Carbon Dioxide

Appendix A: Glossary

CPP	Clutch Pedal Position
CSM	Central Security Module
CTM	Central Timer Module
CTOX	Continuous Trap Oxidizer
CTP	Closed Throttle Position
DCSM	Driver Climate-Control Seat Module
DDM	Drivers Door Module
DEPS	Digital Engine Position Sensor
DFCO	Decel Fuel Cut-off Mode
DFDM	Driver Door Control Unit
DFI	Direct Fuel Injection
DFSM	Driver Front Seat Module
DLC	Data Link Connector
DRDM	Rear Left Door Control Unit
DSM	Drivers Seat Module
DTC	Diagnostic Trouble Code
DTM	Diagnostic Test Mode
EAMK	Extended Activity Module
EATC	Electronic Automatic Temperature Control
EBCM	Electronic Brake Control Module
EBTCM	Electronic Brake Traction Control Module
EC	Engine Control
ECM	Engine Control Module
ECL	Engine Coolant Level
ECT	Engine Coolant Temperature
EEPROM	Electrically Erasable Programmable Read only Memory
EFE	Early Fuel Evaporation
EGR	Exhaust Gas Re-circulation
EGRT	EGR Temperature
EGS	Electronic Transmission System
EI	Electronic Ignition
EM	Engine Modification
EOBD	European On-Board Diagnostics
EPB	Electric Parking Brake
EPROM	Erasable Programmable Read Only Memory
EPS	Electronic-Controlled Power Steering

Appendix A: Glossary

ESV (Driver)	Drivers Electronic Seat Adjustment
ESV (Passenger)	Passenger Electronic Seat Adjustment
EVAP	Evaporative Emission System
EWM	Electronic Gear Selection
FACM	Fuel Additive Control Module
FBM	Drive Authorization Module
FC	Fan Control
EEPROM	Flash Electrically Erasable Programmable Read Only Memory
FEM	Front Electronic Module
FF	Flexible Fuel
FFH	Fuel Fired Coolant Heating Module
FICM	Fuel Injection Control Module
FIM	Fuel Indication Module
FOH	Fuel Operated Heater
FP	Fuel Pump
FPROM	Flash Erasable Programmable Read Only Memory
FSSM	Fire Suppression System Module
FT	Fuel Trim
FTP	Federal Test Procedure
GCM	Governor Control Module
GDM	Generic Display Module
GEM	Generic Electronic Module
GEN	Generator
GND	Ground
Hand held tester	MacInspect
H ₂ O	Water
HO ₂ S	Heated Oxygen Sensor
HO ₂ S1	Upstream Heated Oxygen Sensor
HO ₂ S2	Up or Downstream Heated Oxygen Sensor
HO ₂ S3	Downstream Heated Oxygen Sensor
HC	Hydrocarbon
HCM	Headlamp Control Module
HEC	Hybrid Electronic Cluster
HVS	High Voltage Switch

Appendix A: Glossary

HVAC	Heating Ventilation and Air Conditioning system
IA	Intake Air
IABM	Integrated Air Bag Module
IAC	Idle Air Control
IAT	Intake Air Temperature
IC	Ignition Control Circuit
IC	Instrument Cluster (Ford)
ICM	Ignition Control Module
ICU	Injector Control Unit
IF1/IF2/FFZ	IR / RF Remote controlled central locking
IFI	Indirect Fuel Injection
IFS	Inertia Fuel Shut-off
I/M	Inspection/Maintenance
INST	Instrument cluster
IPC	Instrument Panel Cluster
ISC	Idle Speed Control
ISU	Central junction box
KFB	Convenience Feature
KI	Instrument Cluster
KOEC	Key On, Engine Cranking
KOEO	Key On, Engine Off
KOER	Key On, Engine Running
KS	Knock Sensor
KSM	Knock Sensor Module
LCM	Lighting Control Module
LHID	Left High Intensity Discharge Lamp
LPSDM	Left Power Sliding Door Module
LT	Long Term Fuel Trim
LWR	Headlamp Range adjustment
MAF	Mass Airflow Sensor
MAP	Manifold Absolute Pressure sensor
MC	Message Center Module
MC	Mixture Control (Ford)
MDP	Manifold Differential Pressure
MFI	Multi-port Fuel Injection
MFSW	Multifunction Steering Wheel

Appendix A: Glossary

MIL	Malfunction Indicator Lamp
MPH	miles per hour
MST	Manifold Surface Temperature
MVZ	Manifold Vacuum Zone
MY	Model Year
NAV	Navigation Controller
NGSC	Next Generation Speed Control Module
NVRAM	Non-Volatile Random Access Memory
NOX	Oxides of Nitrogen
O ₂ S	Oxygen Sensor
OBD	On-Board Diagnostics
OBD I	On-Board Diagnostics generation one
OBD-II	On-Board Diagnostics, second generation
OC	Oxidation Catalyst
OCS	Occupant Classification System Module
OTC	Overhead Trip Computer
OL	Open Loop
OSC	Oxygen Sensor Storage
PAIR	Pulsed Secondary Air Injection
PAM	Parking Aid Module
PARKTRONIC	Parking Aid / Parking Assist
PATS	Passive Anti-Theft System
PCM	Powertrain Control Module
PCSM	Passenger Climate-Control Seat Module
PCV	Positive Crankcase Ventilation
PDM	Passengers Door Control Unit
PNP	Park/Neutral switch
PRB	Power Running Board
PRDM	Rear Right Door Control Unit
PROM	Program Read Only Memory
PSA	Pressure Switch Assembly
PSE	Pneumatic Equipment System
PSP	Power Steering Pressure
PTOX	Periodic Trap Oxidizer
RAM	Random Access Memory
RAP	Remote Anti-Theft / Personality Module

Appendix A: Glossary

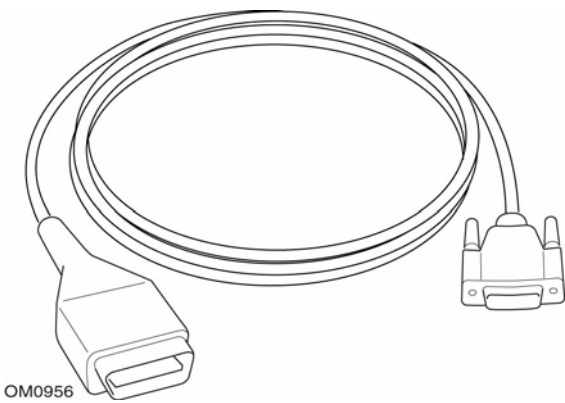
RASM	Rear Air Suspension Module
RCC	Remote Climate Control (Air Conditioning)
RCM	Restraint Control Module
REM	Rear Electronic Module
RETM	Rear Seat Entertainment Module
RHID	Right High Intensity Discharge Lamp
RKE	Remote Keyless Entry
RM	Relay Module
RPSDM	Right Power Sliding Door Module
ROM	Read Only Memory
RPM	revolutions per minute
SAMB	Signal Acquisition and Control module Passenger side
SAMF/SAMV	Signal Acquisition and Control module Front/Driver side
SAMH	Signal Acquisition and Control module Rear
SC	Supercharger
SCB	Supercharger Bypass
SDARS	Satellite Digital Audio Receiver System
SDM	Sensing Diagnostic Mode
SFI	Sequential Fuel Injection
SRI	Service Reminder Indicator
SRM	Speech Recognition Module
SRT	System Readiness Test
SSGB (Passenger)	Passengers Seat Position Memory
SSGF (Driver)	Drivers Seat Position Memory
ST	Short Term Fuel Trim
TB	Throttle Body
TBC	Trailer Brake Control Module
TBI	Throttle Body Injection
TC	Turbocharger
TCC	Torque Converter Clutch
TCM	Transmission or Transaxle Control Module
TFP	Throttle Fluid Pressure
TP	Throttle Position
TPM	Tire Pressure Monitor
TPS	Throttle Position Sensor

Appendix A: Glossary

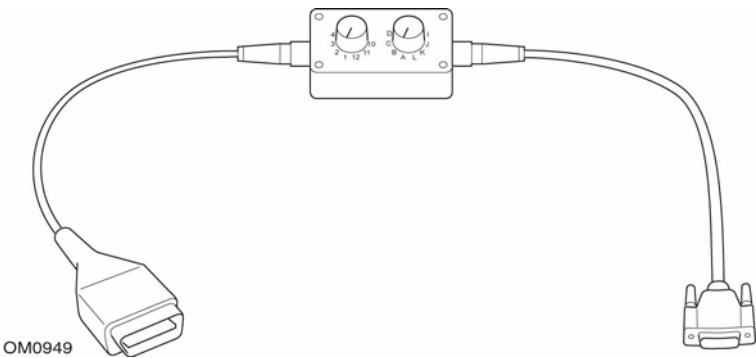
TVV	Thermal Vacuum Valve
TWC	Three Way Catalyst
TWC+OC	Three Way + Oxidation Catalytic Converter
VAF	Volume Airflow
VAPS	Variable Assist Power Steering
VCM	Vehicle Control Module
VDM	Vehicle Dynamics Module
VR	Voltage Regulator
VS	Vehicle Sensor
VSM	Vehicle Security Module
VSS	Vehicle Speed Sensor
WU-TWC	Warm Up Three Way Catalytic Converter
WOT	Wide Open Throttle

Appendix B: Cables

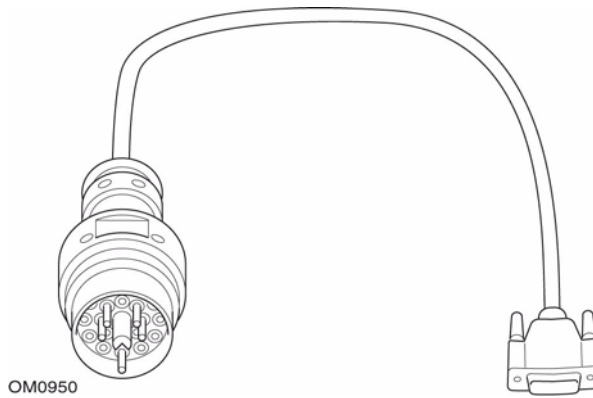
Cable Identification



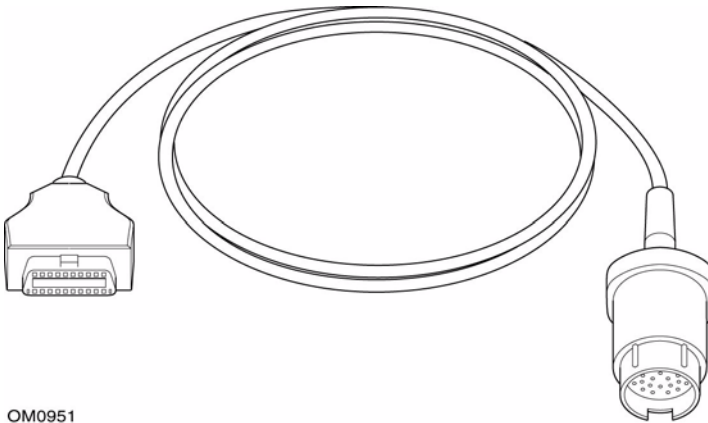
EST300-7 - J1962 / OBD-II cable



EST300-2 - J1962 Pin-switchable cable

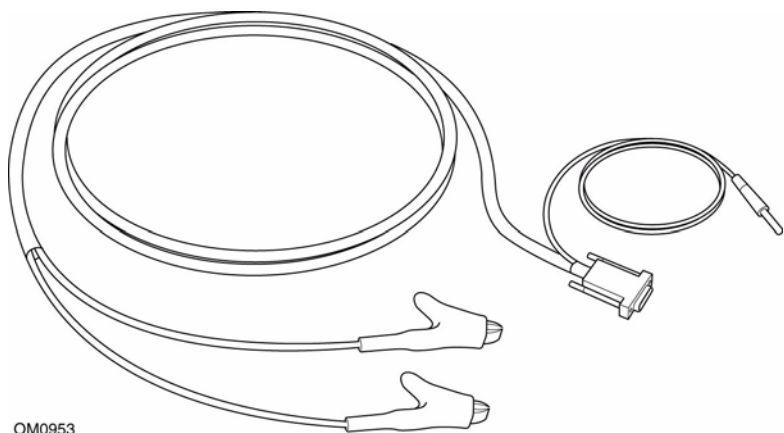


EST300-3 - BMW cable



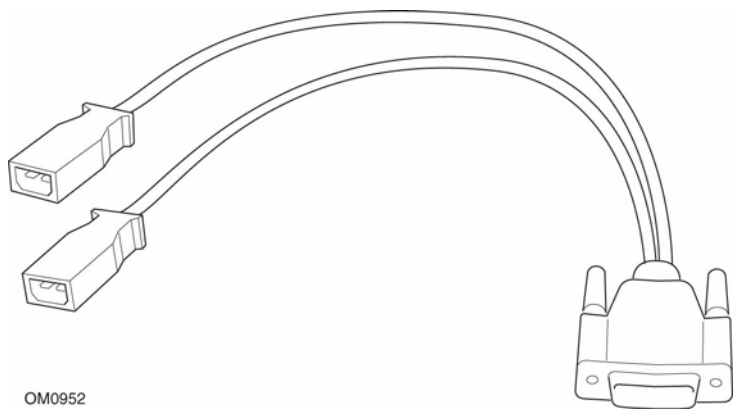
EST300-4 - Mercedes 38-pin cable

Appendix B: Cables



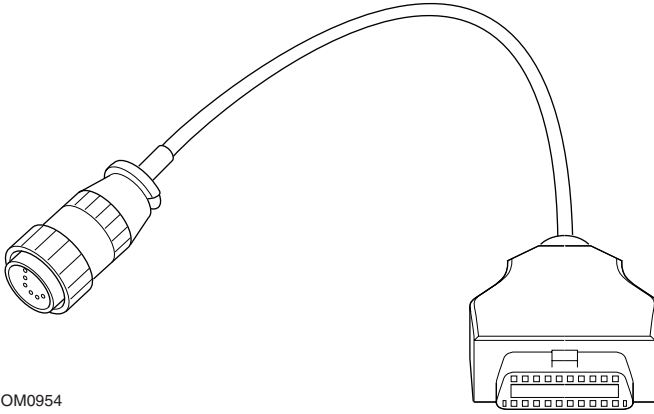
OM0953

EST300-5 - Mercedes 'flying leads' cable



OM0952

EST300-6 - VW/AUDI 2 x 2-pin cable



OM0954

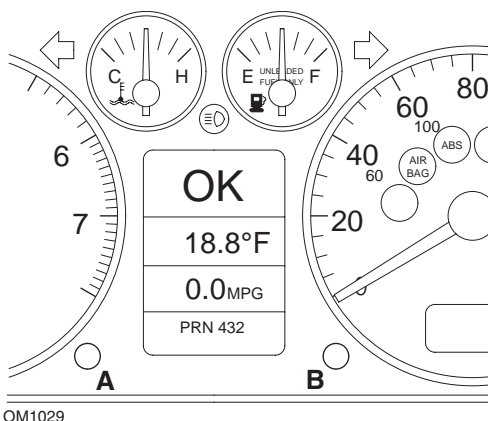
EST300-13 - Freightliner Sprinter cable

Service Reminder Indicator (SRI)

On some older vehicles it is not possible to reset the SRI by using the hand-held tester. The manufacturers of these vehicles generally have bespoke service reset tools specifically for this task. However on a number of vehicles, it is possible to reset the SRI via interfaces built into the vehicle. The following are some of the most common SRI manual reset procedures.

Audi

Audi A4 and A6 (1995 - 1999)



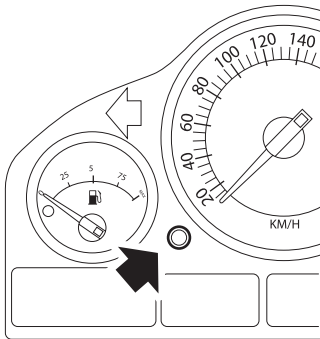
1. With the ignition switch in the 'OFF' position, press and hold button 'A' whilst turning the key to the 'ON' position.
2. The message "Service OIL" will appear. If the message does not display, repeat step 1.
3. Pull out the button 'B' until the message is extinguished.
4. The display should now show "Service ---", indicating that the SRI has been reset.

Appendix C: SRI - Manual Reset

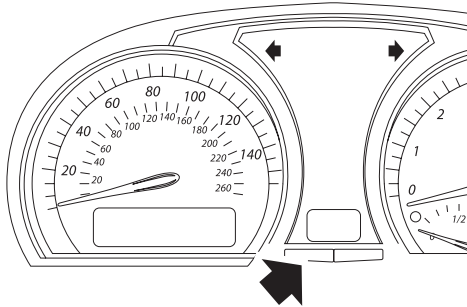
BMW

BMW 3 Series (E46), BMW 7 Series (E38), BMW 5 Series (E39) and BMW X5 (E53)

BMW X3 (E83) and BMW Z4 (E85)



OM1347s



Button A arrowed in illustrations

The Service Interval Display (SIA) can be reset using the reset button for the trip distance recorder on the instrument cluster

NOTE: The distance-based inspection can only be reset if approximately 10 litres of fuel have been used since the previous reset was performed. The time-based inspection can only be reset if approximately 20 days have passed since the previous reset was performed

1. Switch ignition OFF.
2. Press and hold button **A**.
3. Keep button depressed and switch the ignition to position I.
4. Keep button depressed for 5 seconds, until the service status is displayed.
5. The display will now indicate the remaining distance to service and the type of service required ('OIL SERVICE' or 'INSPECTION'). If the remaining distance is displayed with 'rSt' then the service interval can be reset.
6. To reset the distance to service limit press button **A** for 5 seconds. The 'rSt' (or reset) will flash on the display. If the reset is not required then wait until the 'rSt' (or reset) has stopped flashing before continuing. To reset press button **A** again before 'rSt' has flashed 5 times to reset the service distance limit. The new

Appendix C: SRI - Manual Reset

distance to service will be displayed for 5 seconds.

NOTE: For vehicles that do not include time-based inspection then 'End SIA' will be displayed with the remaining distance until the next service. For vehicles that do include time-based inspection then the time-based inspection status will be shown.

7. The display will now indicate the remaining time to service. If the remaining time is displayed with 'rSt' then the service interval can be reset.
8. To reset the time to service limit press button **A** for 5 seconds. The 'rSt' (or reset) will flash on the display. If the reset is not required then wait until the 'rSt' (or reset) has stopped flashing before continuing. To reset press button **A** again before 'rSt' has flashed 5 times to reset the service time limit. The new time to service will be displayed for 5 seconds.
9. The 'End SIA' will now be displayed with the remaining time until the next service.

Appendix C: SRI - Manual Reset

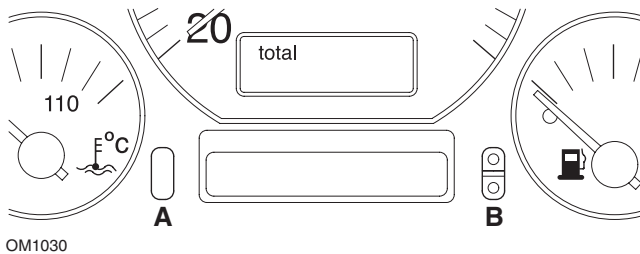
Volkswagen

Cabrio, Golf III, GTi, Jetta III (1993 - 1995) and Jetta (1996)

One of four service codes may be displayed on instrument panel according to distance travelled. Each service code displayed determines the type or level of maintenance required. The service code will flash for approximately 3 seconds in odometer display window as the ignition is turned on. When servicing becomes due (every 7,500 miles), the appropriate service code will flash for approximately 60 seconds. The four service codes available for display are as follows:

- IN 00 (No Service Necessary)
- OEL (Oil Change Service) - Every 7,500 Miles
- IN 01 (Inspection Service) - Every 15,000 Miles
- IN 02 (Additional Servicing Work) - Every 30,000 Miles

After performing the required maintenance, each effected service code displayed must be reset individually. For example, at 15,000 miles service codes OEL and IN 01 will both need to be reset.

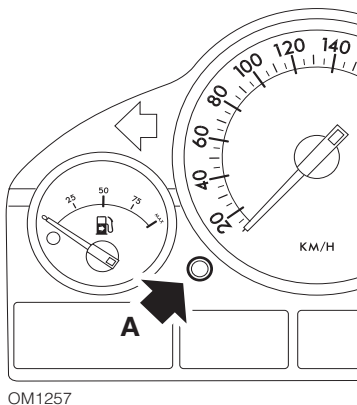


1. To reset the SRI, turn the ignition switch to the 'ON' position.
2. Press and hold the odometer reset button 'A'. Whilst holding button 'A', turn the ignition switch to the OFF position.
3. Service code "OEL" will be displayed. To reset this counter, press and hold button 'B' until 5 dashes appear on the display.
4. If necessary, press the button 'A' to display "IN 01". To reset this counter, press and hold button 'B' until 5 dashes appear on the display.
5. If necessary, press the button 'A' to display IN 02". To reset this counter, press and hold button 'B' until 5 dashes appear on the display.
6. To exit reset mode, turn the ignition switch to the 'ON' position.
7. When "IN 00" is displayed, turn the ignition switch to the 'OFF' position.

Appendix C: SRI - Manual Reset

Land Rover

Range Rover III 2002 onwards (All Except Japan and NAS)



1. Switch ignition OFF.
2. Press and hold button **A**.
3. Keep button depressed and switch the ignition to position I.
4. Keep button depressed for 5 seconds, until the 'SIA RESET' appears.
5. The display will now indicate the distance to service and the type of service required (OIL SERVICE or INSPECTION).
6. Check the distance to service has been reached.
 - a. If yes, proceed to step 9
 - b. If no, proceed to next step
7. Press button **A** once. The display will show the date to service.
8. Check the service date has been reached.
 - a. If yes, proceed to step 11
 - b. If no, proceed to step 10
9. When the distance to service limit has been reached, press button **A** for 5 seconds. 'RESET' will flash on the display. Press button **A** again before 'RESET' has flashed 5 times to reset the service distance limit. The new distance to service will be displayed for 5 seconds before the service date is displayed.
10. Press button **A** once to end the service interval check and reset.
11. When the date for service limit has been reached, press and hold button **A** for 5 seconds. 'RESET' will flash on the display. Press button **A** again before 'RESET' has flashed 5 times to reset the service date limit. The new date to service will be displayed for 5 seconds before end service is displayed.
12. Switch ignition OFF.

Appendix C: SRI - Manual Reset

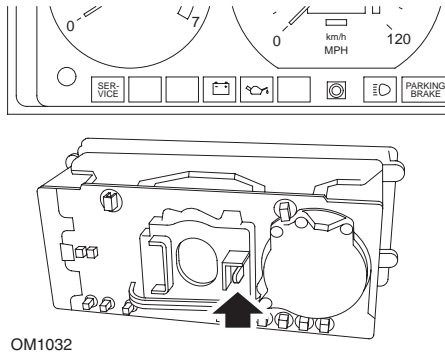
Mercedes

Mercedes (1998 - 2002) fitted with the Flexible Service System

1. Turn the ignition switch to the 'ON' position and then immediately press the button next to the digital display twice within one second.
The current status for days or distance will be displayed.
2. Turn the ignition switch to the 'OFF' position within 10 seconds.
3. Press and hold the button while turning the ignition switch to the 'ON' position.
The status for days or distance will be displayed again.
4. After approximately 10 seconds you will hear a confirmation chime and the display will show 10,000 miles (15,000 km). Release the button.

Volvo

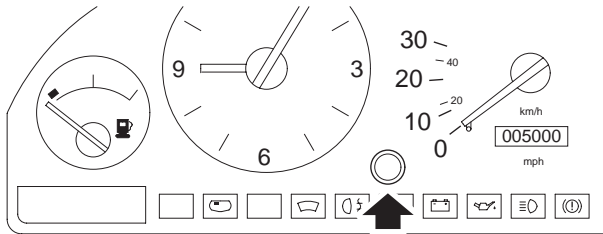
Volvo 240 (1986 - 1989)



1. Reach behind the instrument panel and push the lever located between the tachometer and the speedometer.

Appendix C: SRI - Manual Reset

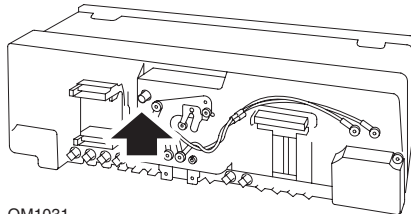
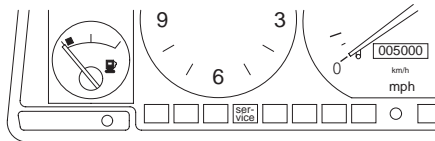
Volvo 240 (1990 - 1993)



OM1033

1. Remove the plug from the face of the instrument panel between the clock and the speedometer.
2. Insert a thin-bladed tool into the cavity and press the reset button.

Volvo 740 (1986 - 1988)

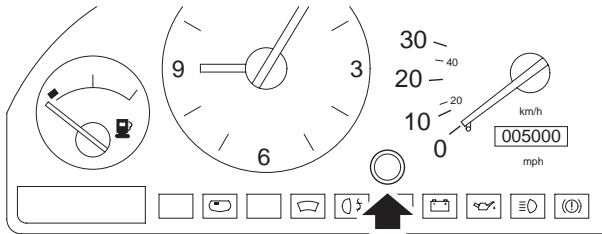


OM1031

1. Reach behind the instrument panel and push the button located to the left of the speedometer.

Appendix C: SRI - Manual Reset

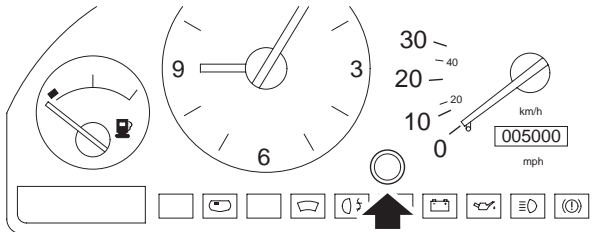
Volvo 740 (1989 - 1992)



OM1033

1. Remove the plug from the face of the instrument panel between the clock and the speedometer.
2. Insert a thin-bladed tool into the cavity and press the reset button.

Volvo 760 (1986 - 1990)

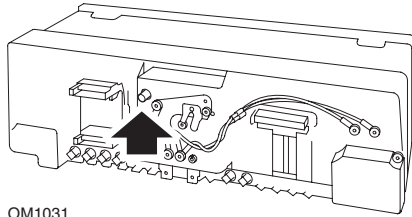
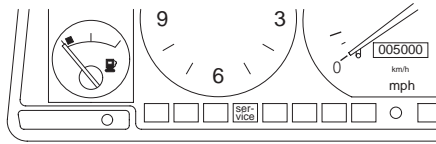


OM1033

1. Remove the plug from the face of the instrument panel between the clock and the speedometer.
2. Insert a thin-bladed tool into the cavity and press the reset button.

Appendix C: SRI - Manual Reset

Volvo 780 (1988 - 1990)

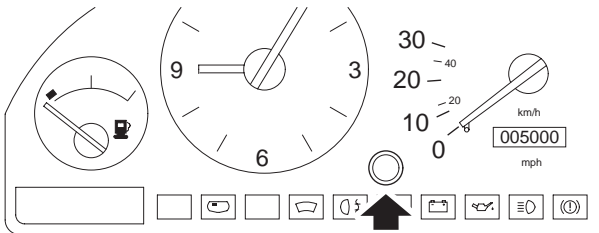


OM1031

1. Reach behind the instrument panel and push the button located to the left of the speedometer.

Volvo 850 (1993 - 1995) fitted with the Yazaki instrument panel

NOTE: This instrument panel has the odometer located above the speedometer needle.



OM1033

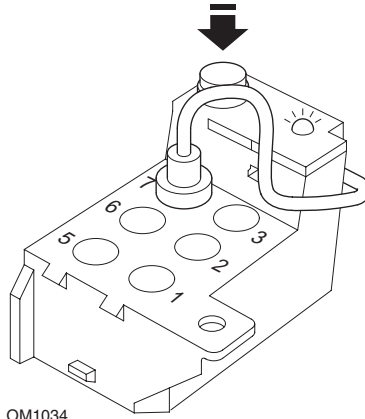
1. Remove the plug from the face of the instrument panel between the clock and the speedometer.
2. Insert a thin-bladed tool into the cavity and press the reset button.

Appendix C: SRI - Manual Reset

Volvo 850 (1993 - 1995) fitted with the VDO instrument panel

NOTE: This instrument panel has the odometer located below the speedometer needle.

1. With the ignition switch in the 'ON' position and the engine not running.

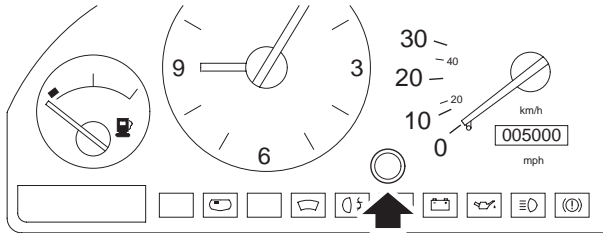


Diagnostic module located in engine compartment adjacent to LH suspension mount

2. Connect the diagnostic module test lead to terminal 7.
3. Press the reset button on the diagnostic module 4 times in quick succession.
4. When the LED on the diagnostic unit illuminates and stays illuminated, press the reset button once and release it.
5. When the LED illuminates and stays illuminated, press the button 5 times in quick succession.
6. When the LED illuminates again, press the button once.
7. The LED will flash several times to indicate that the sequence has been correctly entered and the SRI has been reset.
8. Unplug the test lead from terminal 7 and turn the ignition switch to the 'OFF' position.

Appendix C: SRI - Manual Reset

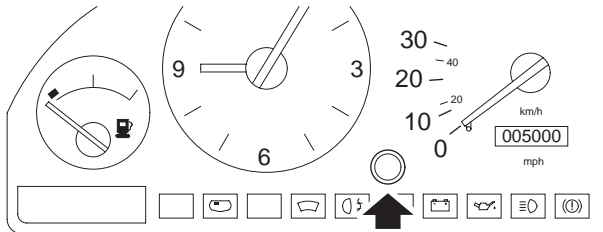
Volvo 940 (1991 - 1995)



OM1033

1. Remove the plug from the face of the instrument panel between the clock and the speedometer.
2. Insert a thin-bladed tool into the cavity and press the reset button.

Volvo 960 (1991 - 1995)



OM1033

1. Remove the plug from the face of the instrument panel between the clock and the speedometer.
2. Insert a thin-bladed tool into the cavity and press the reset button.

Appendix D: Vehicle Application List

OBD-II Application

The hand-held tester can communicate with any OBD-II compliant vehicle fitted with a J1962 diagnostic socket. The following should be used as a guide.

- All gasoline engine vehicles manufactured since January 1st 1996.

NOTE: Some manufacturers began incorporating On-Board Diagnostic systems as early as 1994, however not all are 100% compliant.

FastCheck Applications

The FastCheck applications currently support the following vehicle manufacturers.

	ABS	Airbag	Climate	EPB	SAS	Service
Audi	X	X	X	X	X	X
Bentley					X	
BMW	X	X	X		X	X
Land Rover	X	X	X	X	X	X
Mercedes	X	X	X	X		X
Mini	X	X	X		X	X
Saab						X
Volkswagen	X	X	X	X	X	X
Volvo	X	X	X			X

Refer to the application list to determine if a particular vehicle model is supported.

NOTE: If a particular model is not listed, and the vehicle has been manufactured since January 1st 1996, it may be possible to connect to the system via the vehicle's J1962 diagnostic socket.

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