ROVER (1) SPi + E.R.I.C.

3005650O

ACR
SYSTEMS TESTER

Sykes-Pickavant®
Guaranteed product

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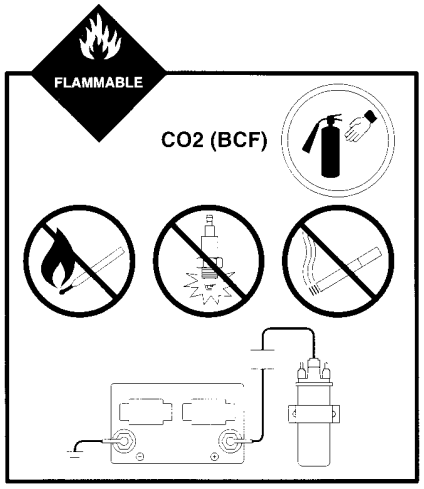
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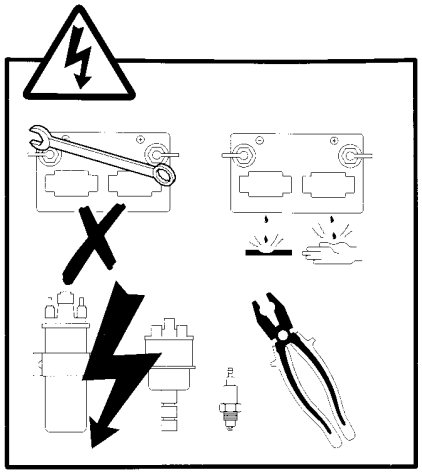

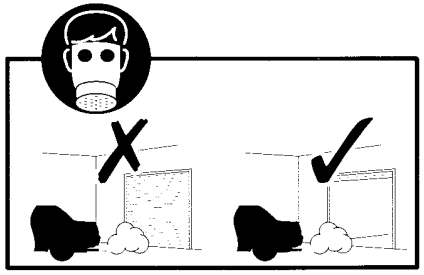

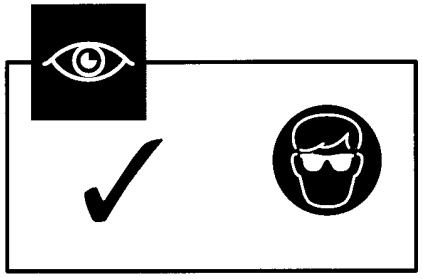

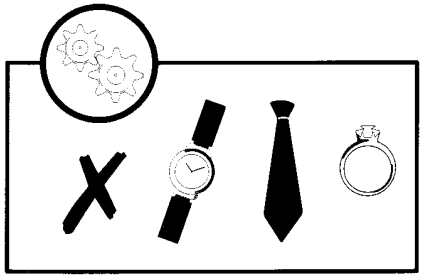

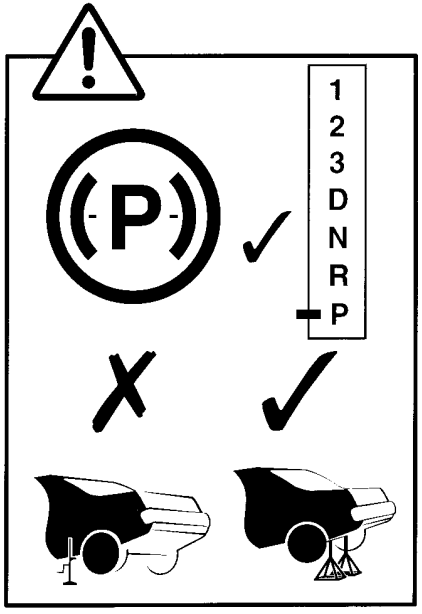
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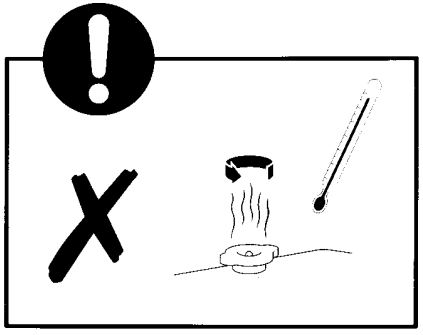


SYKES-PICKAVANT Advanced Code-Reader

Applications for ROVER 1 SPI + E.R.I.C. Pod: Model 300565

INDEX

Note: This system has been developed completely independently of Rover. It incorporates all known safeguards for tuning Rover vehicles provided it is used correctly.
Sykes-Pickavant will not accept responsibility for the misuse of either the equipment or the vehicle

1.0 INTRODUCTION

The Advanced Code-Reader, when fitted with Applications Pod 1 for Rover will enable you to perform a comprehensive range of tests on the vehicles with the following E.C.U types:

E.R.I.C Systems

M.E.M.S Single Point Injection

These two systems represent the first and second generations of Rover engine management systems.

This applications pod has been designed to have compatibility with future versions of M.E.M.S SPi (also referred to as T.B.i or throttle body injection) encompassing 1993 model 'ear vehicles.

Note:

The third generation of Rover engine management systems, namely M.E.M.S Multi-Point and Sequential Injection E.C.U's are covered by a separate Applications Pod, 300566 Applications Pod/Harness for Rover (2) MPI.

2.0 VEHICLE APPLICATIONS LIST (* Denotes Cat/Mems optional fit.)

VEHICLES	YEAR		SYSTEM	POD
Mini Cooper 1.3i Cat	Nov 1991 - on		Mems SPi	1
Mini Cabrio' Conv 1.3i Cat	Jan 1993 - on		Mems SPi	1
Metro 1.1 8v *	Dec 1990 - Sept 1992		Mems SPi	1
Metro 1.4 8v *	Dec 1990-on (Cat. std Sep 1992 - on)		Mems SPi	1
Metro 1.4 Li 8v Auto Cat	May 1992 - on		Mems SPi	1
Metro 1.4 Si/GSi Cat	Dec 1992 - on		Mems SPi	1
Metro 1.4 GTa 8v *	Dec 1990 - Sep 1992		Mems SPi	1
Metro 1.4 GTa 16v	Jun 1991 - Dec 1992		Mems SPi	1
Metro 1.4 GTi 16v *	May 1990 - Jun 1991		Mems SPi	1
Metro 1.4 GTi 16v Cat	June 1991- on		Mems MPi	2
Rover 214 i Cat	1993 - on		Mems SPi	1
Rover 214 Si/SLi/GSi 16v *	Oct 89 - Oct 92 (Cat opt Sep '90)		Mems SPi	1
Rover 214 Cabrio' 16v Cat	Apr 1992 - Oct 1992		Mems SPi	1
Rover 214 Si/SLi/GSi 16v Cat	Oct 1992 - on		Mems MPi	2
Rover 214 Cabrio' 16v Cat	Oct 1992 - on		Mems MPi	2
Rover 220 GTi 16v Cat	Jun 1992 - on		Mems MPi	2
Rover 220 GTi 16v Turbo Cat	Oct 1992 - on	(Sequential)	Mems MPi	2
Rover 220 Coupe 16v Cat	Oct 1992 - on		Mems MPi	2
Rover 220 Coupe Turbo 16v Cat	Oct 1992 - on	(Sequential)	Mems MPi	2
Montego 2.0i (See note)	June 1989 - Nov 1991		Mems MPi	2
Rover 414 Si/SLi 16v *	Mar 1990- Oct 1992		Mems SPi	1
Rover 414 Si/SLi 16v Cat	Oct 1992 - on		Mems MPi	2
Rover 420 SLi/GSi 16v Cat	Nov 1991 - on		Mems MPi	2
Rover 420 GSi Sport Turbo 16v Cat	Oct 1992 - on	(Sequential)	Mems MPi	2
Rover 820i/Si/SLi 16v Cat	May 1991 - on		Mems MPi	2
Rover 820 Turbo 16v Cat	Apr 1991 - Aug 1991	(Sequential)	Mems MPi	2
Rover 820 Vitesse 16v Turbo Cat	Dec 1991 - on	(Sequential)	Mems MPi	2
ROVER CARS E.R.I.C. SYSTEM APPLICATION LIST.				
Montego 1.6	Jan 1989 - Sept 1992		E.R.I.C. 1	
Montego 2.0	Jan 1989 - Nov 1991		E.R.I.C. 1	
Montego 2.0 Turbo	Jan 1989 - Nov 1991		E.R.I.C. 1	
MG Maestro 2.0 Turbo	Jan 1989 - Jul 1991		E.R.I.C. 1	

(NOTE: Montego 2.0i - Service adjustments not available.)

Pod 1 : 300564, referred to in these instructions

Pod 2 : 300566, optional extra

3.0 ADVANCED CODE-READER : PROCEDURES

Rover Diagnostic Connector Location and Hook-up

The Rover diagnostic connector is usually located in the engine compartment within approximately 12 inches of the E.C.U, and is cylindrical with 3 wires brought out from the wiring harness. On earlier vehicles the connector has a blanking mating connector, replaced with a black protective hood on some later models.

The connector has a polarising key unique to the diagnostic port and carries communication and earth connections from the E.C.U. Battery. Positive is not provided by the connector and hence a separate red lead is provided, to deliver the positive feed to the Advanced Code-Reader.

The following section details the use of the application :

Initialisation and Start Up

1. Ensure the ignition is switched off.
2. Connect the harness to the diagnostic connector on the vehicle to be tested and the red flying lead and battery clip to the positive terminal of the vehicle.
3. The unit will power-up automatically, displaying the following screen:

   TESTING..
   PLEASE WAIT

   Whilst this screen is being displayed the Advanced Code-Reader is performing diagnostic self tests on its internal software and electronics. Should any error messages appear at this stage contact your supplier for service advice.

   On completion of its self-test the Reader will display the following screens:

   SYKES-PICKAVANT
   DIAGNOSTICS

   POD FOR ROVER
   SPi + E.R.I.C
4. Switch on the vehicle ignition.
5. The unit will now try to 'talk' with the ECU. The following screen will be displayed whilst this is happening:

   ATTEMPTING COMMS
   LINK WITH ECU

   If the vehicle ignition is not switched on within the 10 second time limit the following message will be displayed on the screen:

ECU NOT TALKING
SERIAL ERROR..

The Reader will attempt to establish a communications link indefinitely if either the vehicle ignition is not switched on or the harness is connected incorrectly.

6. Once communication has been made with the ECU, the Reader will automatically identify the type of ECU used in the vehicle automatically. A screen will be displayed with the system detected for example:

MEMS SPi NON-CAT
PRESS OK

Other screens may be displayed relating to MEMS SPi WITH CAT and E.R.I.C according to the system fitted to the vehicle you are testing. Always check the ECU type with the Vehicle Reference Chart in Section 2.0 before pressing the OK button.

On some vehicles you may be required to select the appropriate ECU type after referring to the Vehicle Reference Chart in Section 2.0. The system selection options are shown by the following screens:

SELECT SYSTEM
1) E.R.I.C

SELECT SYSTEM
2) SPi NON CAT

SELECT SYSTEM
3) SPi WITH CAT

The appropriate selection can be made using the "Up" arrow, "Down" arrow and "OK" keys. (The "ESC" key has no effect in this menu .)

7. After the selection of the correct ECU type the Reader will proceed to the Main Menu and display the following screen:

SELECT TEST
1) READ ERRORS

The appropriate selection can be made using the "Up" arrow, "Down" arrow and "OK" keys. (The "ESC" key has no effect in this menu .) The options available on the Main Menu are dependant upon which ECU type has been selected, each system is outlined in the following sections 3.1,3.2 and 3.3.

3.1 Electronically Regulated Ignition and Carburation (E.R.I.C.)

3.1.1 E.R.I.C Systems Introduction

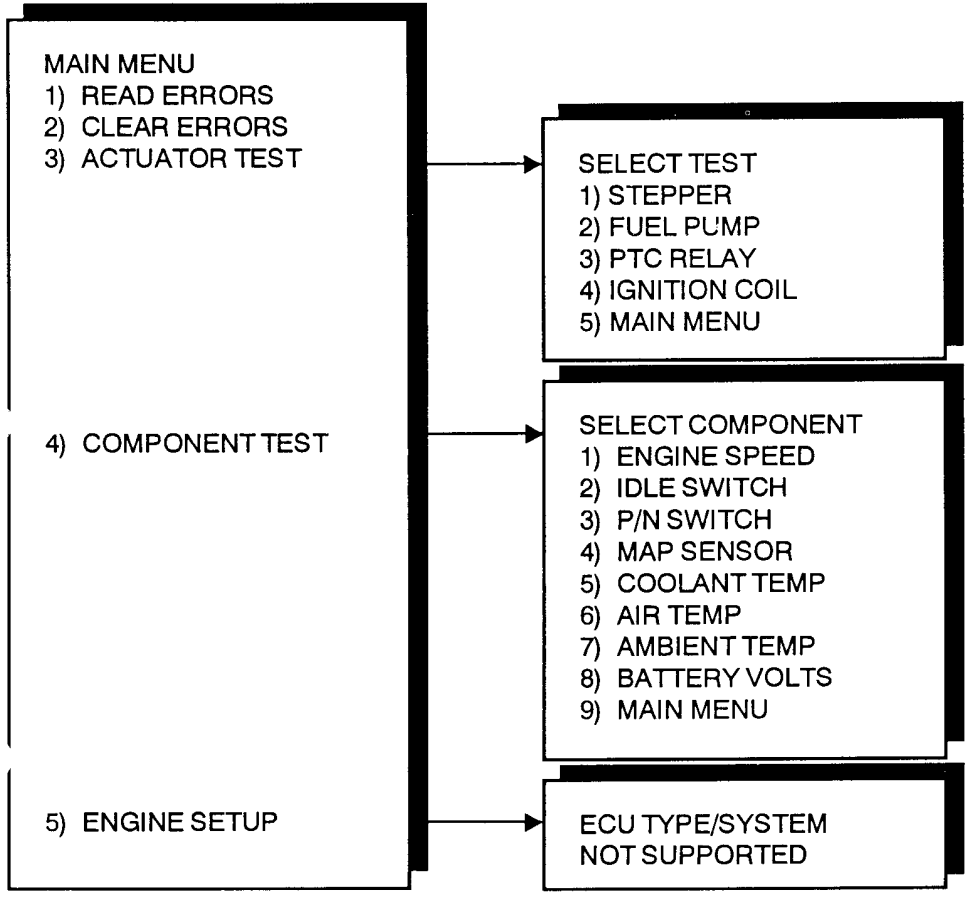
The Electronically Regulated Ignition and Carburation system (E.R.I.C.) was the forerunner to the Mems injection system and has many operational similarities to its' more sophisticated relative . Eric is a complete engine management system that combines the engines' fuel and ignition requirements into one ECU. The system has

the same type of sensors and actuators as fitted to the previous Lucas based system although the SU carburettor used is slightly different. These sensors include an ambient air temperature sensor (near the horns), coolant temperature sensor (near thermostat), crankshaft sensor (next to flywheel), knock sensor (front of block), and inlet air temperature sensor (in air filter case). Engine load is sensed by a Map sensor, located within the ECU, and is connected (via a fuel trap) to the inlet manifold.

The ECU, as with Mems, can still operate the engine with many of its' sensors inoperative. In "limp home" mode the ECU will substitute approximate values for those sensors that may have failed. The engine will still run, but obviously, not quite as well.

Some Eric equipped vehicles were also available with a catalytic converter. This system is of the "open loop" type and there is no information feedback to the engine management system. There is a fuel system purge valve which uses a pressure system to operate.

3.1.2 E.R.I.C Code Reader Functions



3.2 Modular Engine Management Systems (M.E.M.S)

3.2.1 M.E.M.S Single Point Injection (Catalyst and Non-Catalyst) Introduction

The fuel system includes a fuel tank, with swirl pot and a submerged fuel pump . As the ignition is switched on the fuel pump relay is energised and fuel is fed through a non-return valve and fuel filter to the throttle body injector. Fuel pressure is controlled by the pressure regulator and is located within the throttle body next to the injector.

The air metering system includes an inlet air temperature sensor (located within the air filter case), throttle potentiometer (on the throttle body), stepper motor (also on the throttle body), and a hose (with fuel trap) from the throttle body to the manifold absolute pressure sensor which is located within the ECU. Other sensors include a crankshaft sensor (next to the flywheel), throttle switch (on the pedal), and coolant sensor (on the water heated inlet manifold).

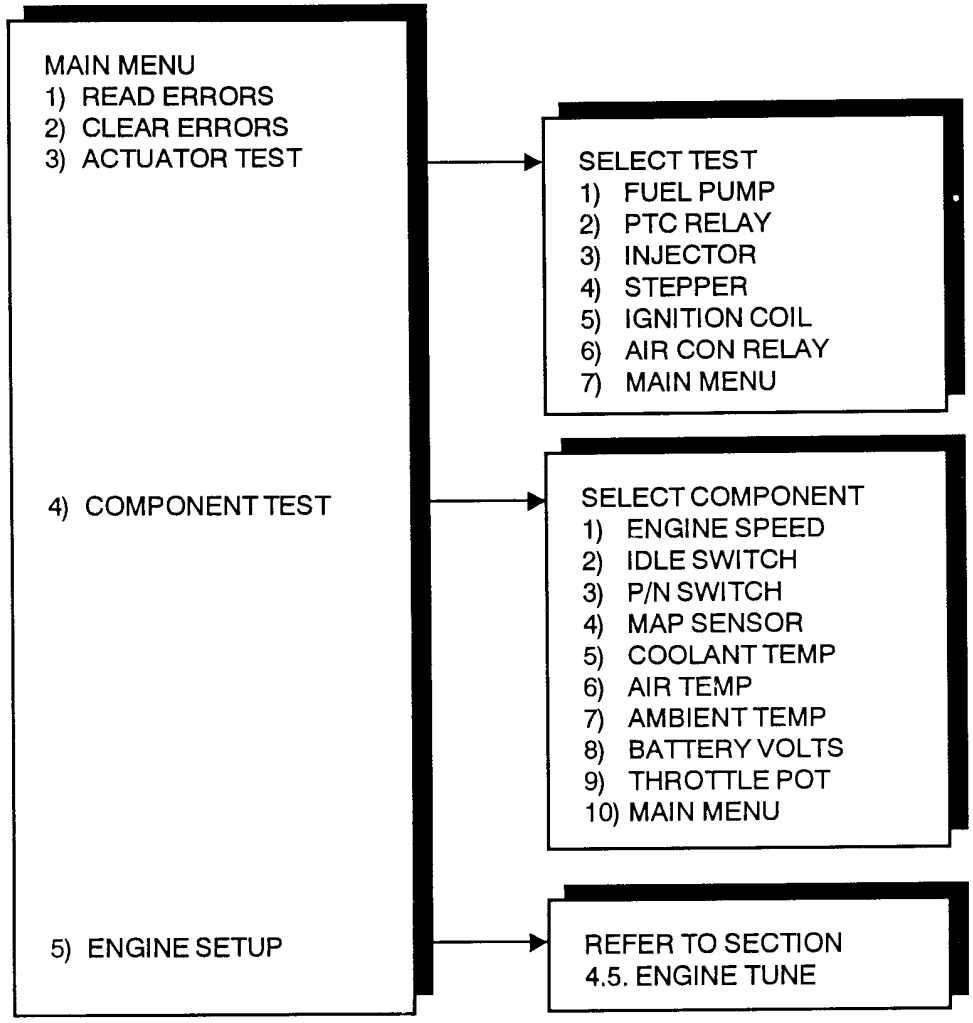
The heart of the system is the ECU and it is usually located under the bonnet next to the engine. The ECU can still operate the engine with most of its' sensors removed. If a sensor fails the ECU will implement "limp home mode" and substitute approximate values for those sensors which are not performing correctly. The crankshaft sensor is the only one the system cannot do without and complete failure of this will certainly prevent the engine from running. Additionally the ECU is also capable of detecting battery voltage and adjusts system parameters if it varies too much.

The ECU's idle control characteristics are adaptive and are learned by the ECU for the particular vehicle it is fitted to. Consequently a replacement ECU will take some time to re-learn its' parameters and restore proper idle control.

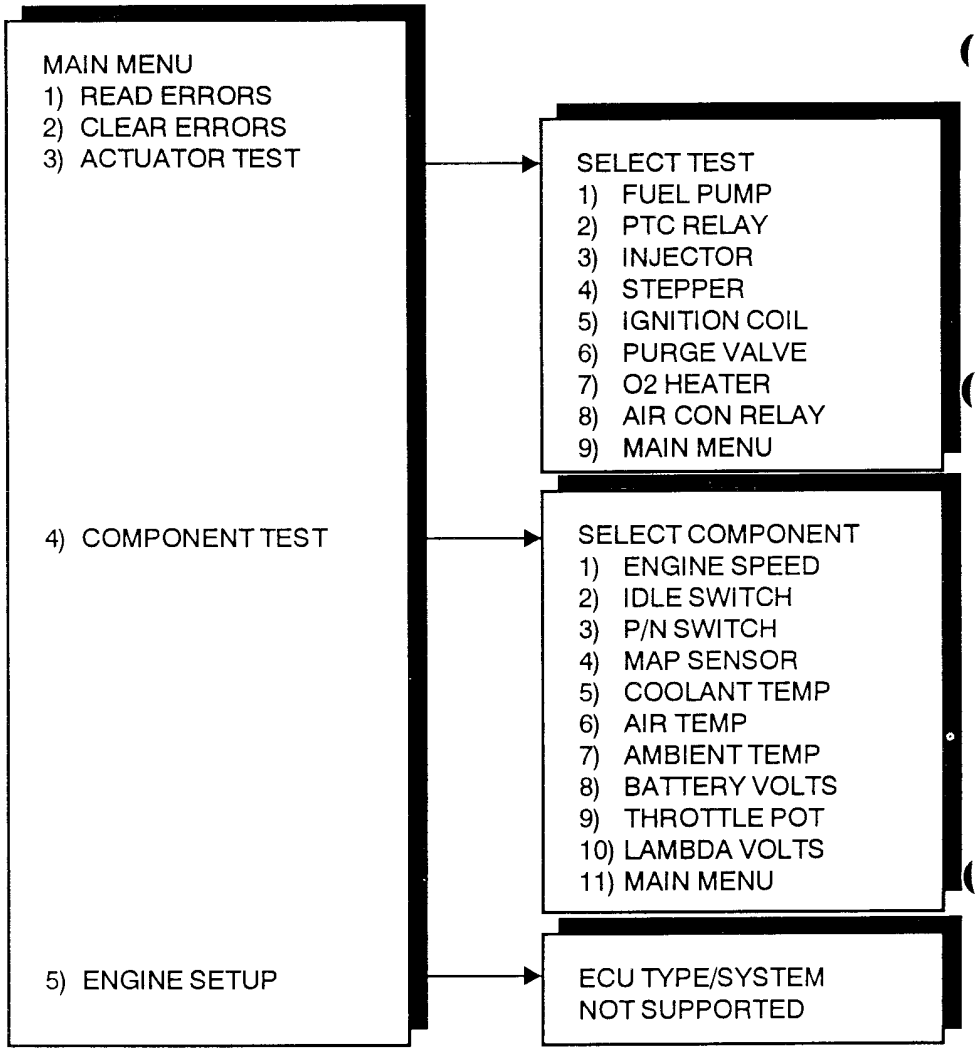
To adjust the fuel mixture with this system the technician must use a code reader, such as the S-P 300550, to modify the ECU's settings. It is not possible to do this by any other means.

From January 1993 all new cars were fitted with a catalyst as standard equipment, although certain models (see application list) were previously offered with an optional catalyst. The M.E.M.S injection system fitted to these vehicles is of the "closed loop" type. The "closed loop" system differs from the original "open loop" type in that the engines' fuelling requirements are continually modified by a Lambda or exhaust gas oxygen sensor. This sensor only produces a signal when the exhaust gas, or its' built- in (ECU operated) heating element, have increased the sensors' temperature to approximately 300 degrees centigrade. The catalyst system is also fitted with an ECU controlled purge valve. Later 1993 model year Mems equipped vehicles do not have a throttle pedal switch as this function has been taken over by the throttle potentiometer. Additionally it is not possible to adjust the C O. on the "closed loop" system.

3.2.2 M.E.M.S Single Point (Non-Cat) Code Reader Functions



3.2.3 M.E.M.S Single Point (With Cat) Code Reader Functions



4.0 TESTING FUNCTIONS

4.1 Read Errors

This function reads the errors from the ECU; you can display them one by one by pressing the "OK" key to continue onto the next error. If there are no errors available then a message is displayed saying no errors.

Note: On vehicles where sensors are not fitted (or fitted as options), the Read Errors Function will show corresponding error codes for the sensors not fitted and should be ignored. These codes will not be cleared by the Clear Codes Function.

4.2 Clear Errors

This function first checks if there are any errors; if there are the ACR will then send a command to the ECU to clear them. Once cleared the Read Errors function will display any errors that were not cleared.

Errors that are not cleared after sending the Clear Error command are usually still present because the fault is still on the vehicle. This fault must be rectified before the fault code can be cleared.

4.3 Actuator Tests

The actuator tests are provided to allow testing of the various outputs of the ECU. These are only available when the engine is not running as damage to the vehicle could occur. On some vehicles various actuators are not fitted. If a test is attempted on an actuator not fitted to the engine a "NOT USED" message may appear on the screen.

4.3.1 Actuators Tests on E.R.I.C Systems

1) **Fuel Pump** — Energises the fuel pump relay hence switching on the fuel pump for 2 seconds. **Note: Care should be taken when testing the fuelling system as the fuel line remains pressurised once the fuel pump has been energised.**

2) **P.T.C Relay** — Energises the manifold heater relay and heating element for one second. A multimeter should be used to verify that current is being delivered to the manifold heater.

3) **Stepper Motor** — Actuates the stepper motor under Code Reader control. The throttle disk can be seen to move whilst this test is being performed. **Note: Performing this test will result in the Code Reader "Freezing". The Code Reader must be restarted by momentarily removing the red lead from the battery positive.**

4) **Ignition Coil** — The ignition coil primary is pulsed 16 times. To perform a spark test the king lead should be removed from the distributor cap and connected to earth via a spark jumper to the engine block. When the test is performed HT sparks should be seen at the spark jumper. Note: **Care should be taken to be insulated from the king lead whilst performing this test in order to prevent possible electric shock. For safe testing use an HT Spark-Gap Tester such as the S-P 300703.**

4.3.2 Actuator Tests On M.E.M.S Single Point Injection Systems

1) **Fuel Pump** — Energises the fuel pump relay hence switching on the fuel pump for 2 seconds. **Note: Care should be taken when testing the fuelling system as the fuel line remains pressurised once the fuel pump has been energised.**

2) **P.T.C Relay** — Energises the manifold heater relay and heating element for one second. A multimeter should be used to verify that current is being delivered to the manifold heater.

3) **Stepper Motor** — Actuates the stepper motor through its maximum and minimum positions [0 to 180 steps] under Code Reader control. The throttle disk can be seen to move whilst this test is being performed. The stepper motor is returned to its original position on completion of the test.

4) **Injector** — The injector is pulsed 4 times. Note: **It is important that the engine is cranked between successive tests to prevent excess fuel being injected into the engine causing potential flooding or fluid locking. The fuel system is pressurised when the ignition is first switched on and also when the Fuel Pump actuator test has been performed. A maximum of four tests are allowed before the engine must be started.**

5) **Ignition Coil** — The ignition coil primary is pulsed 16 times. To perform a spark test the king lead should be removed from the distributor cap and connected to earth via a spark jumper to the engine block. When the test is performed HT sparks should be seen at the spark jumper. Note: **Care should be taken to be insulated from the king lead whilst performing this test in order to prevent possible electric shock. For safe testing use an HT Spark-Gap Tester such as the S-P 300703.**

6) **Air Con Relay** — Energises the main air conditioning relay for one second. (If Fitted.)

7) **Purge Valve** — Energises the charcoal tank purge valve for one second. (Only fitted to closed-loop catalytic converter equipped vehicles.)

8) **O_2 Heater** — Energises the oxygen sensor (Lambda Sensor) heater relay for one second. (Only fitted to closed loop catalytic converter equipped vehicles.)

4.4 Component Tests

The component tests are provided to allow testing of various sensor inputs to the ECU. The readings obtained are 'real-world' values read directly from the sensors as seen by the ECU allowing you to observe possible faulty wiring and sensors by comparing the readings to those published in data manuals.

Note: On vehicles fitted with a Throttle Pedal Switch (pre 93MY) it should be noted that increasing the engine speed from the engine compartment using the throttle disk may cause the ECU to enter overrun fuel cut-off thus limiting rpm. This is because an artificial condition is introduced due to the throttle pedal switch remaining closed as rpm is increased. To perform tests involving raising engine rpm it is recommended that this be done using the throttle pedal.

4.4.1 Component Tests On E.R.I.C Vehicles

1) **Engine Speed** — Engine speed displayed in RPM, giving a good indication that the crank angle sensor is operating correctly. **Note: If the crank angle sensor circuit is faulty the engine will not start. To diagnose a crank angle sensor fault select this test and crank the engine, a healthy sensor will show cranking RPM of around 300 RPM, a circuit fault will show no RPM reading.**

2) **Idle Switch** — Confirms the operation of the throttle idle switch, by displaying 'OPEN' or 'CLOSED' depending on throttle pedal position. A vehicle with a faulty throttle idle switch circuit will not run correctly at idle.

3) **P/N Switch** — Displays the state of the Park/Neutral Switch (labelled Starter Inhibitor Switch in some manuals.) The display will show either open or closed and is only applicable to automatic vehicles.

4) **MAP Sensor** — Displays the output of the Manifold Absolute Pressure sensor located within the ECU itself. Nominal values approx 30 KPa at idle, approx 100 KPa with engine off.

5) **Coolant Temp** — Displays the output of the Coolant Sensor in °C. In 'Limp Home' mode the ECU sets the coolant temperature to a default value of around 60°C.

6) **Inlet Air Temp** — Displays the output of the Inlet Air Temperature Sensor. In 'Limp Home' mode the ECU sets the inlet air temperature to a default value of around 35°C. (Only fitted to Turbo Models, otherwise a calculated value is substituted by the ECU.)

7) **Ambient Air Temp** — Displays the output of the Ambient Air Temperature Sensor.

8) **Battery Volts** — Displays the Battery Voltage as read by the ECU.

4.4.2 Component Tests On M.E.M.S Single Point Injection Vehicles

1) **Engine Speed** — Engine speed displayed in RPM, giving a good indication that the crank angle sensor is operating correctly. **Note: If the crank angle sensor circuit is faulty the engine will not start. To diagnose a crank angle sensor fault select this test and crank the engine, a healthy sensor will show cranking RPM of around 300 RPM, a circuit fault will show no RPM reading.**

2) **Idle Switch** — Confirms the operation of the throttle idle switch, by displaying 'OPEN' or 'CLOSED' depending on throttle pedal position. A vehicle with a faulty throttle idle switch circuit will not run correctly at idle. **Note : Not fitted to 93 MY, the throttle pedal switch position is calculated from the throttle pot position.**

3) **P/N Switch** Displays the state of the Park/Neutral Switch (labelled Inhibitor Switch in some manuals.) The display will show either open or closed and is only applicable to automatic vehicles.

4) **MAP Sensor** Displays the output of the Manifold Absolute Pressure sensor located within the ECU itself. Nominal values approx 30KPa at idle, approx 100 KPa with engine off.

5) **Coolant Temp** Displays the output of the Coolant Sensor in °C. It should be noted that engine hot idle is not reached until the coolant temperature is above around 82°C. In 'Limp Home' mode the ECU sets the coolant temperature to a default value of around 60°C.

6) **Inlet Air Temp** Displays the output of the Inlet Air Temperature Sensor in °C. In 'Limp Home' mode the ECU sets the inlet air temperature to a default value of around 35°C.

7) **Ambient Air Temp** Displays the Ambient Air Temperature. (This value is calculated from other engine parameters.)

8) **Battery Volts** Displays the Battery Voltage as read by the ECU. If the battery voltage falls below approx 11.8 volts the ECU compensates by increasing the injection duration.

9) **Throttle Pot** Displays the Throttle Potentiometer Voltage. This test is ideally performed with the engine stopped to enable the full travel of the potentiometer to be tested. A smooth increase in reading should be seen showing that no 'Flat Spots' are present. The range expected is approx: 0.5 to 4.0 Volts.

10) **Lambda Volts** Displays the output of the Exhaust Gas Oxygen Sensor (Lambda Sensor) . As the sensor warms up to 300 °C the voltage can be seen switching from lean to rich. A lean reading would be about 0.1 volts and a rich reading above 1.0 volts. The lambda switching threshold is around 0.6 volts. In 'Limp Home' mode the ECU substitutes a reading of 0.8 volts hence running the car permanently slightly rich. **Note: Lambda sensors are only fitted to vehicles with closed-loop emission control.**

4.5 Engine Tune Procedure

The Engine Tune facility is only available on M.E.M.S Single Point Injection equipped vehicles without catalytic convertor and closed loop emission control.

Before attempting to tune the engine it is important to ensure that all normal pre-tune checks are made on the engine including:

A clean air filter is fitted

The spark plugs are clean and have the correct gap set

The throttle cable is free to move

The throttle disk is not impeded and moves freely

All vacuum and bleeder pipes are secure

Failure to deal with any problems at this stage can affect the running of the engine and will cause incorrect adjustment of the engine. The functions performed by the Automatic Engine Tune Procedure are as follows:

Adjustment of idle CO emissions. (By Injection Duration Time)

Checking of Hot Idle Engine Speed

Adjustment of Hot Idle Engine Speed

The procedure for tuning the engine is very specific and has many safeguards and checks on the state of the engine, all of which have to be met before adjustments can be performed. The following engine conditions have to be satisfied:

No Fault Codes are logged by the ECU

Battery Voltage is greater than approx 11.8 volts

Coolant Temperature is greater than 82°C

Throttle Idle Switch is functioning correctly (If Fitted)

Engine Idle RPM is stable at less than 1000 RPM (ideally 850 RPM)

The Battery is not loaded by accessories

If any of the above conditions are not met an error message will be displayed and the engine tune process halted immediately with no adjustments being made. Adjustments will only be effective if the entire engine tune has been performed without any problems occurring.

Important:

A fully warmed-up calibrated Exhaust Gas Analyser (CO meter) is required prior to attempting the engine tune process.

If the cooling fan operates during the tune procedure, wait for it to turn off before continuing.

4.5.1 Performing the Engine Tune

The engine tune can only be performed by using the throttle pedal whilst seated in the drivers seat. The engine speed cannot be adjusted from the engine compartment as the throttle pedal switch has to be in the correct state in relation to engine RPM.

4.5.2 Stabilising Engine Running Conditions

Select the Engine Setup function from the main menu and press the 'OK' button. The following the screen will be displayed and you are required to raise the engine r.p.m to slightly higher than 3000 r.p.m (the current r.p.m is shown in brackets):

INCREASE R.P.M
>3000 (850 RPM)

When the proper r.p.m has been reached the following screen will be displayed:

HOLD R.P.M
5 SECS

Whilst the r.p.m is held steadily above 3000 r.p.m the time displayed will "countdown". If the r.p.m falls much below this level the count will stop and a bleep will sound until the r.p.m is brought up above 3000 again. After the time period has expired the following screen will be displayed:

RELEASE
THROTTLE..

The Code Reader waits for about 10 seconds for the throttle pedal switch to close indicating that the engine is at idle once more.

If the throttle pedal switch does not close in this time period the following error message may be displayed:

ERROR : IDLE SW
DID NOT CLOSE !

Should this happen the throttle pedal switch, wiring or linkage may require attention, rectify the fault and carry out the Engine Setup procedure again.

If all is functioning correctly the Code Reader proceeds to check that the engine idle speed is below 1000 r.p.m. If the idle speed rises above 1000 r.p.m then the following screen may be displayed:

ERROR: RPM TOO
HIGH DURING TEST

4.5.3 Adjustment Of The CO

If the procedure is correct and the engine is in an idle state then the Code Reader is ready to perform the CO adjustment procedure. The following screen is displayed as a reminder:

ENSURE CO METER
IS WARMED UP!

Make sure that the Exhaust Gas Analyser (CO meter) is warmed up and the probe is inserted into the exhaust pipe then press the 'OK' button.

The Code Reader will now enter the CO Setting Mode and the following screen will be displayed:

CO SETTING MODE
[UP /DN /OK /ESC]

The 'UP' arrow key: Pressing the 'UP' arrow key will increase the CO level, a beep will sound and the CO level will be increased by approximately 0.1% CO as read on the CO meter. The display will change indicating that the CO is being increased. It is important that time is allowed for the gas analyser to respond and the reading to stabilise.

The 'DN' arrow key: Pressing the 'DN' arrow key will decrease the CO level, a beep will sound and the CO level will be decreased by approximately 0.1% CO as read on the CO meter. The display will change indicating that the CO is being decreased. It is important that time is allowed for the gas analyser to respond and the reading to stabilise.

The 'OK' key: Pressing the 'OK' key will freeze the CO setting of the ECU and you will be required to follow screen prompts shown in the procedure above in section **4.5.2 Stabilising Engine Running Conditions** before the Engine Setup can be completed.

The 'ESC' key: Pressing the 'ESC' key will exit the test without storing the adjustments made to the CO setting. Any adjustments made will be lost when the ignition is turned off.

When the **Stabilising Engine Running Conditions** procedure has been completed satisfactorily the ECU memory will be updated and the CO adjustments stored. The following screen will be displayed indicating that the Engine Setup is complete:

CO SETTING MODE
ADJUSTMENT DONE

Press the 'OK' button to return to the main menu.

Note 1:

The CO reading should now be adjusted correctly. Should the CO level still be incorrect it may be necessary to repeat the procedure.

Note 2:

If it is not possible to decrease the CO level enough (the adjustment range is deliberately limited so as not to cause damage to the engine by incorrect adjustment), the engine is suffering from problems not associated with the ECU and its sensors and actuators. The source of these problems must be identified and corrected before the adjustment procedure attempted again.

4.6 Simulation Of Sensors

Using optional additional equipment (300735)

The sensors can be effectively simulated by the Sensor Simulator Tester 300735 from Sykes-Pickavant. This provides a fast means of diagnosing suspect sensors by eliminating guesswork and the need to substitute a known good sensor or removal of the suspected sensor for testing.

The Sensor Simulator Tester simulates the input from virtually all engine sensors, including variable voltage, variable resistance, voltage generating and frequency generating types. It can also be used to simulate wheel speed sensor inputs for antilock braking systems (ABS), and check the fuel injection computer's output response.

This can identify problems in the computer itself as well as output actuators, solenoids and other control devices.

5 SPARES

The following parts are available as spares:

ACR	**300550**
Bag	**300512**
Pod (1)	**300565**
Harness	**302116**
Instructions	**300565LL**