

Preface

The program cassette in the Multi-Tester pro is the component which gives the diagnostic equipment its unique test performance. The program cassette can easily be changed to set the Multi-Tester pro up quickly for the diagnostic task at hand.

The Multi-Tester pro software is available in two levels of functionality, Plus line and Pro line. This manual covers the operation of the Pro line cartridge. Although operation and display screens are identical for each line, please be aware that some of the functions described are not available on Plus line cartridges.

The Plus line cartridge has the following functions: engine DTC:s and monitor list, airbag DTC:s, ABS DTC:s and service light resetting as well as snapshots.

This fault-finding instruction describes the serial application for trouble shooting via the diagnostic connector on Opel and Vauxhall.

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Introduction

Presentation of the manual

This user manual describes how the Multi-Tester pro is used for testing on Opel and Vauxhall. The manual contains the following sections:

Presentation of the serial application

Brief presentation of the functions, displays and keys of the program.

Connection

Brief instructions for connecting Multi-Tester pro hand unit to a vehicle.

Trouble shooting

Instructions for using the Multi-Tester pro hand unit together with the application.

Fault messages

Description of fault messages during faults in communication between the Multi-Tester pro hand unit and the vehicle.

Presentation of the serial application

The Multi-Tester pro hand unit can communicate with most electronic ECU:s (electronic control unit) in the vehicle via a diagnostic connector.

Diagnostic Trouble Codes (DTC)

The application can read diagnostic trouble codes DTC, present these in plain language and clear trouble codes.

Monitor list

Multi-Tester pro reads current data from the car's control unit. The values are updated continuously.

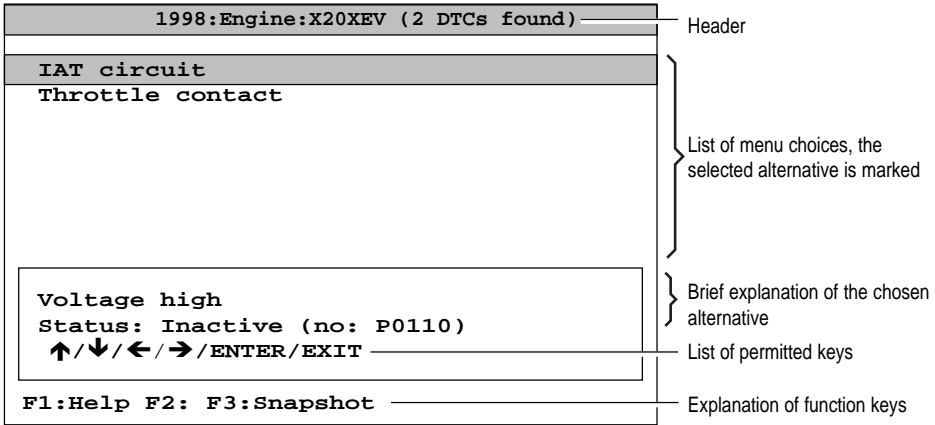
Actuators

On some ECUs, the application can force actuator functions to activate various valves and relays.

Programming

On Immobiliser ECUs, transponder keys can be erased and programmed.

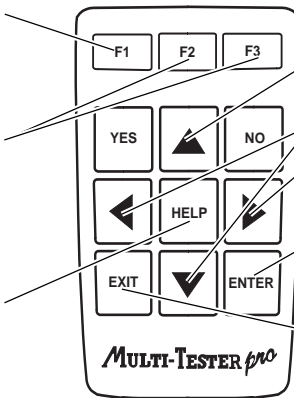
The display and the keys



Use **F1** to get general help about using the application, such as keyboard functions and screen information.

Use **F2 and F3** to carry out functions described on the screen.

Use **HELP** to get diagnostic help, i.e. a description of the faults which the Multi-Tester pro has discovered.



Use **↑** and **↓** to move the cursor between menu choices, or to update groups of figures.

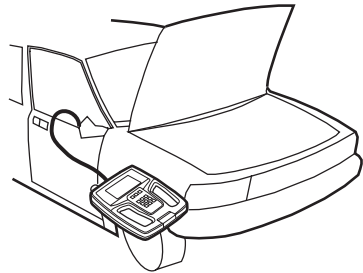
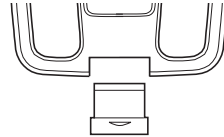
Use **←** and **→** to move the cursor between numbers when updating figures, or to move through long texts.

Use **ENTER** to activate your selection.

Use **EXIT** to leave a function and return to the previous menu.

Connection

- 1. Locate the diagnostic connector on the vehicle. See appendix B for common connector locations.**
- 2. Insert the program cassette into the instrument.**
- 3. Connect the serial cable to the diagnostic connector.**
- 4. Connect the serial cable to the Multi-Tester pro, if necessary using an extension cable included in the basic kit.**

**NOTE!**

Never connect the battery cable to the Multi-Tester pro when using serial applications. When the serial cable is used, power is supplied via the serial cable.

Trouble shooting

Start

The program starts automatically each time the tool is connected to the diagnostic socket.

The Multi-Tester pro executes a self-diagnosis routine when it boots up, then displays the current version of software.

NOTE!

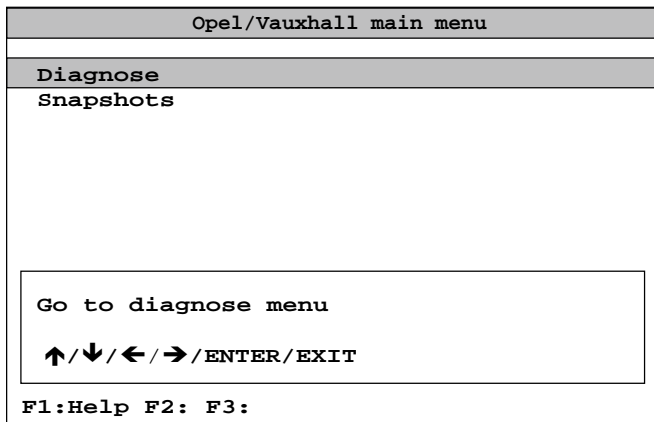
The ignition must be switched on to allow the instrument to contact the ECU.

NOTE!

If the instrument is used when driving, an assistant must operate the instrument.

1. Select “Diagnose” in the main menu

Use ↑ and ↓ to move the cursor between menu choices, then press ENTER.



2. Select car model

Use ↑ and ↓ to move the cursor between menu choices, then press ENTER.

Diagnose
CORSA-A/NOVA
CORSA-B
FRONTERA
KADETT/ASTRA/BELMONT
OMEGA-A/CARLTON
OMEGA-B
SENATOR
↓ SINTRA

Select model

↑/↓/←/→/ENTER/EXIT

F1:Help F2: F3:

3. Select year

Use ↑ and ↓ to move the cursor between menu choices, then press ENTER.

Diagnose:VECTRA-B
1996
1997
1998

Select year of manufacture

↑/↓/←/→/ENTER/EXIT

F1:Help F2: F3:

4. Select test area

Use ↑ and ↓ to move the cursor between menu choices, then press ENTER.

Diagnose:VECTRA-B:1998
Engine
Transmission Chassis Body
Select system type ↑/↓/←/→/ENTER/EXIT
F1:Help F2: F3:

5. Select system/engine code

Use ↑ and ↓ to move the cursor between menu choices, then press ENTER.

Diagnose:VECTRA-B:1998:Engine
16L22
X16SZR X16XEL X18XE 20NEJ C20SEL X20DTL ↓X20XEV
Select system ↑/↓/←/→/ENTER/EXIT
F1:Help F2: F3:

After the system/engine code has been selected, the application will attempt to connect to the selected ECU. When communication is established, a message similar to the following will be displayed.

```
Diagnose:ASTRA-0:1990:Engine

Identification

90569370
Simtec 70 - X18XE1
Variant Coding:
  Word = 803
ECU Id - 155 Selected

Press ENTER
```

This shows the system selected, and the details of the ECU found on the vehicle. It is important to check the details reported here are correct. If an engine code is selected which is different to the one actually in the car, you will see a message similar to the one below.

```
Diagnose:ASTRA-G:1998:Engine

Identification

90569370
Multec-F - X18XE1
Variant Coding:
  Word = 901
Warning Mismatched ECU!
ECU Id - 131 Selected

Press ENTER
```

In this example, you should reconnect with the correct engine type selected.

Monitor list

Multi-Tester pro reads current data from the car's control unit.
 The values are updated continuously.

1. Use **↑** and **↓** to move the cursor between parameters.
2. Press **ENTER** to show selected parameter in the description field.

ASTRA-F:1998:Engine:X14NZ:Monitor list	
Battery Voltage	11,9 V
Coolant Temp	146 °C
Map Sensor	0,53 bar
Throttle Position sensor sig.	0 %
Engine speed.	0 RPM
Idle air control	0 step
O2 Sensor loop	Open
O2 Sensor	548 mV
<div style="border: 1px solid black; padding: 5px; margin: 5px 0;"> Coolant Temp 146 °C </div> <div style="border: 1px solid black; padding: 5px; margin: 5px 0; text-align: center;"> ↑/↓/←/→/ENTER/EXIT </div>	
F1:Help F2: F3:Snapshot	

Data Parameter name

Description Field

F1: User help
F3: Snapshot

Read DTCs

All registered DTC:s (diagnostic trouble codes) in the relevant ECU are indicated on the display.

1. Use **↑** and **↓** to move the cursor for more information.

More information about the fault is then shown on the display. The numerical codes can be used if you want to look in the service literature for more information about the component or fault.

The screenshot shows a diagnostic menu with the following elements:

- Header:** 1998:Engine:X20XEV (2 DTCs found)
- Component List:** IAC circuit, Throttle contact
- Selected Component Detail:** Voltage high, Status:Inactive (no:P0110)
- Navigation:** ↑/↓/←/→/ENTER/EXIT
- Function Keys:** F1:Help, F2: F3:Snapshot

Annotations on the right side of the image explain the components:

- Year, Type, System and number of DTC:s found
- List of faulty components
- Fault description of the selected component
- Status of the selected component
- Numerical code for the fault type
- F1: User help
- F3: Save information

2. For some DTC:s, you can get information about the selected component. Press **HELP** or **ENTER**.

Further information about the component is shown on the display. Use **↑** and **↓** to scroll through the help text and use **←** and **→** to scroll one screen at a time.

The screenshot shows the following text:

IAT circuit

INTAKE MANIFOLD AIR TEMP SENSOR:
 This sensor consists of a temperature sensitive resistor located in the air intake system, or integrated in the air flow meter housing. Its resistance changes with the temperature, which influences the voltage to the electronic control unit.

↑/↓/←/→/ENTER/EXIT

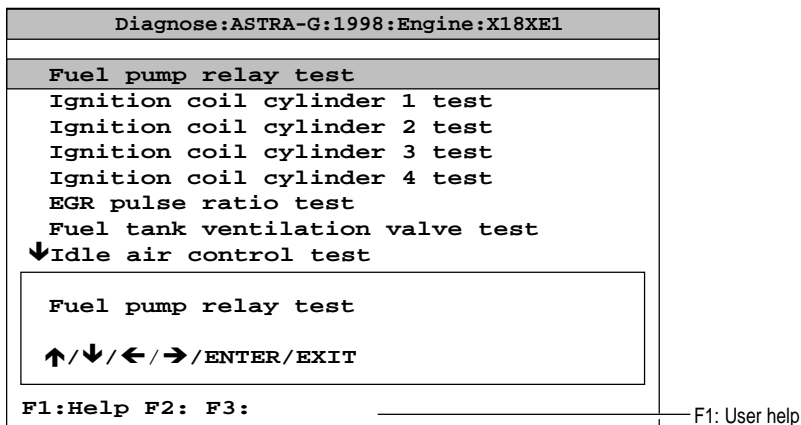
Clear DTCs

NOTE!

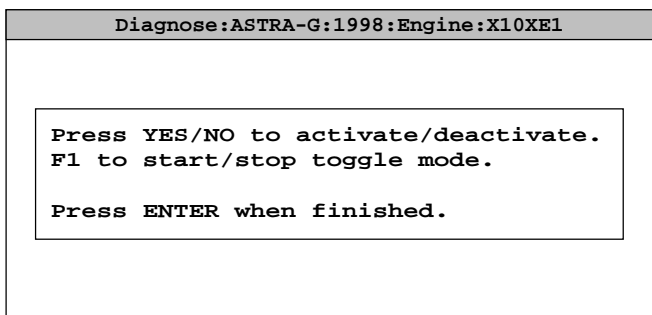
You can not delete the DTC memory before you have read the DTC memory.

- 1. Confirm deletion with YES or cancel the function with NO.**

Actuators



Select the actuator test you wish to perform, then follow the on-screen instructions. In most cases, the actuators can simply be switched on and off using the YES/NO buttons on the Multi-Tester pro. The F1 key can also be used to toggle the actuator automatically, leaving the operator free to inspect the system under test.



In some cases, the application will switch the actuator off for you after a few seconds to avoid damage to the vehicle. Actuators are also switched off automatically when you exit this mode.

Programming

This function is only available on Immobiliser, Central locking, and Anti-theft warning ECUs. It allows the transponder keys and remote-key fobs to be erased and/or programmed for the vehicle.

For Immobiliser systems, transponder keys can be programmed into the Immobiliser memory so that they may start the vehicle. For Central locking or Anti-theft warning systems, the remote-key fob can be programmed into the ECU so that it may be used to remotely operate the door locks.

For Immobilisers and Anti-theft warning systems a four-digit pass code must be entered before programming is allowed by the ECU. On entering the programming menu, you will be asked for the four-digit pass code for the car. This code can be found on the car pass supplied with the vehicle, and is used to prevent unauthorised access to the key programming functions. If the car pass is not available, the code can be obtained from a main dealer. The vehicle registration details will be required.

<p>Enter 4 digit vehicle pass code</p> <p style="text-align: center;">0000</p>
--

If an incorrect code is entered, you will be prompted to try again. It is important to enter the pass code carefully as the ECU will activate its security wait timer if an invalid pass code is entered. In this mode, it will be impossible to erase or program keys until the security wait time has expired.

Once the correct pass code is entered, the programming menu will be displayed. For Immobiliser systems the following options are available.

<p>Diagnose:ASTRA-G:2000:Body:IMMOBILISER</p> <hr/> <p>Erase transponder keys</p> <p>Program transponder key</p> <hr/> <p>Erase transponder keys</p> <p>↑/↓/←/→/ENTER/EXIT</p> <hr/> <p>F1:Help F2: F3:Snapshot</p>

F1: User help
F3: Save information

Erase transponder keys

This function will erase all programmed transponder keys from the Immobiliser memory. After this function has been used, none of the vehicle's keys will start the engine until they are re-programmed into the Immobiliser. If a key has been lost / stolen, it is recommended to erase all keys before programming the new keys, to ensure that the Immobiliser will only recognise the keys held by the vehicle owner.

Program transponder key

This function will program a new transponder key into the Immobiliser memory so that the key will be able to start the engine. You will be prompted to insert the key to be programmed into the ignition. Then follow the on-screen instructions to program the new key.

When communications have been established, you will be required to enter your authorisation code before being allowed to program keys. Your authorisation code is supplied to you by Autodiagnos when you register the application. See the section on Multi-Tester pro registration later in this manual for more details.

After entering the authorisation code, the following menu will be displayed.

Multi-Tester pro Registration

As a security feature, the Multi-Tester pro application must be registered before the key programming functions are available. To register your Multi-Tester pro application you must return the registration card supplied with the software to Autodiagnos. You will then be given an authorisation code, which you can use to enable the key programming functions of the software.

To register the Multi-Tester pro, use the “Multi-Tester pro Registration” option on the main menu. You will be prompted to enter the serial number of the tester, which can be found, on the back of the unit. You will then be prompted to enter the authorisation code supplied to you when you registered the product.

You will also be required to enter the authorisation code each time you use the application to erase or program transponder keys on a vehicle.

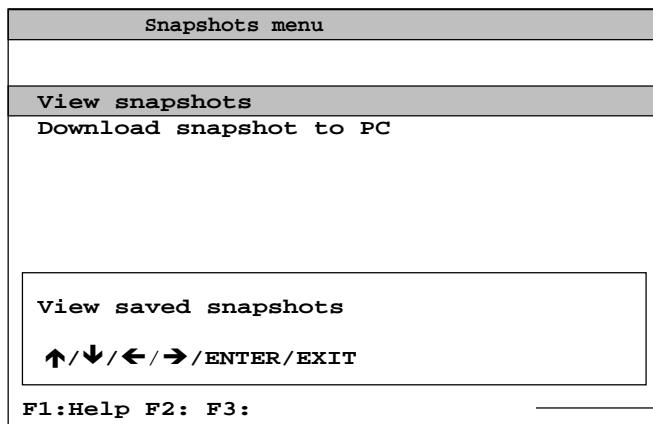
Snapshots

All screens that display data received from the vehicle can be saved as “snapshots” in Multi-Tester pro.

The Multi-Tester pro Opel/Vauxhall-application can store a maximum of 16 snapshots.

This menu lets you view the snapshots and download the snapshots to a PC.

1. Use **↑** and **↓** to move the cursor between menu choices, then press **ENTER**.



F1: User help

View snapshots

This function displays the saved snapshots.

1. Use **↑** and **↓** to move the cursor and press **ENTER** to view selected snapshot.

Select snapshot
Astra-F:C14NZ:Monitor list
Astra-F:C14NZ:DTCs Corsa-B:ABS5.3:DTCs
Astra-F:C14NZ:Monitor list
↑/↓/←/→/ENTER/EXIT
F1:Help F2:Delete F3:

F1: User help
F2: Delete highlighted information

Load snapshots to PC

Use this function for communication between Multi-Tester pro and a PC.
See the manual for the PC-program for more information.

Fault messages

Fault in data transmission

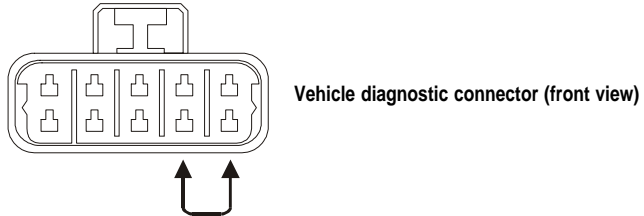
If the Multi-Tester pro loses contact with the ECU, the following message will be displayed.

<p>Com Error</p> <p>Press ENTER</p>

Blink code read-out

To read out DTC:s using the blink code method, do like this.

1. Bridge pin A and B in the diagnostic connector.

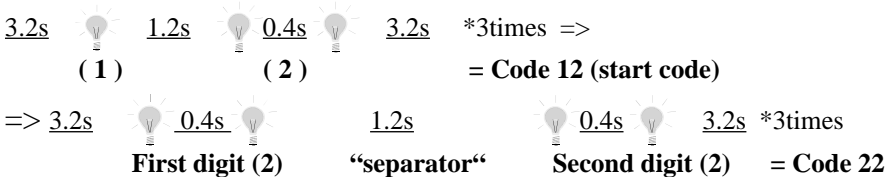


2. Turn ignition on.
3. Count the flashes on the “Check engine” lamp.
4. Translate them using the list below.
5. To erase the fault codes, disconnect battery for >20 seconds.

Blink Code interpretation

The code read out always starts with “Code 12” repeated three times, after this the fault codes are flashed. All codes are repeated three times, the first digit is flashed with a space of 0.4 seconds, then there is a 1.2 second delay until the second digit is flashed. The delay between codes is 3.2 seconds. Each code is repeated three times.

Example, Code 22 (Throttle potentiometer voltage low):



The sequence is ended by three times flashing of code 12.

Diagnostic Trouble Codes

Code Fault description

- 12** Start of code sequence, or no fault found.
- 13** Oxygen sensor not switching
- 14** Coolant temperature sensor voltage low
- 15** Coolant temperature sensor voltage high
- 21** Throttle potentiometer voltage high
- 22** Throttle potentiometer voltage low
- 24** Road speed sensor no signal
- 33** MAP sensor voltage high
- 34** MAP sensor voltage low
- 35** Idle speed control no function
- 42** Ignition adjustment no function
- 44** Oxygen sensor voltage low
- 45** Oxygen sensor voltage high
- 51** EPROM faulty
- 53** Battery voltage high
- 54** CO-potentiometer out of range
- 55** ECU faulty

Common diagnostic connector locations

Common diagnostic connector locations for recent Vauxhall/Opel models are listed below. For older vehicles, the diagnostic connector can often be found in the engine compartment.

Astra-F

16 pin OBD connector located in the fuse compartment to the right hand side of the steering wheel on RHD vehicles and to the left hand side of the steering wheel on LHD vehicles. Covering panel can be pulled off to reveal the complete fuse compartment and diagnostic connector.

Astra-G

16 pin OBD connector located in the central console between the handbrake and the gearstick. There is a plastic cover that needs to be removed to find the connector. This can be done with a medium sized flat-blade screwdriver inserted at the front of the panel (nearest to the gearstick).

Corsa-B/Tigra

16 pin OBD connector located in the fuse compartment to the right hand side of the steering wheel on RHD vehicles and to the left hand side of the steering wheel on LHD vehicles. Covering panel can be pulled off to reveal the complete fuse compartment and diagnostic connector.

Frontera

16 pin OBD connector mounted vertically just in front of the hinge of the driver side door.

Omega-B

16 pin OBD connector located in the fuse compartment. There is a large cover for this compartment directly below the steering wheel. A push button releases the cover and reveals the fuses and diagnostic connector.

Vectra-B

16 pin OBD connector located in the central console between the handbrake and the gearstick. Access is very similar to the Astra-G except that the covering panel is best removed by inserting a screwdriver at the rear of the cover (nearest to the handbrake).

Zafira

16 pin OBD connector located in the central console between the handbrake and the gearstick. There is a plastic cover that needs to be removed to find the connector. This can be done with a medium sized flat-blade screwdriver inserted at the front of the panel (nearest to the gearstick).