Foreword

The Multi-Tester pro software cassette is the component that gives the diagnostic equipment its unique test characteristics: All data required to make the test system operate are stored on the software cassette.

The software cassette can easily be replaced enabling the Multi-Tester pro to be rapidly adapted to the trouble-shooting job at hand.

This Trouble-Shooting instruction describes the serial application for Trouble-Shooting via the diagnostics socket on Volvo cars.

Contents

Introduction

Presentation of the manual

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

Presentation of the serial application
Brief presentation of the functions, displays and keys of the program.

Connection
Brief instruction for connecting the Multi-Tester pro hand unit to a vehicle.

Trouble shooting
Step-by-step 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 all 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 delete the trouble codes.

Reading the ECU version
The application can read and display the identity of the ECU.

Component activation
The application can activate components connected to the ECU.

Display Data Parameters (data stream)

The application can continually read out and display measurement values from the ECU. The measurement values can be stored in the instrument for later use.

The application can also read out single measurement values.

Alter adaption values

The application can change programmable values in the ECU. These values could be service interval, idle speed etc.

The application can also reset the adaption values in the ECU.

Set service interval

The application can set a new service interval, and turn off the service indications on the instrument panel.

Code ECU

The application can re-code a ECU. There is a code for each ECU. The code configures the ECU for different variants of vehicles, such as transmission type and the number of cylinders.

Cars with SRS (airbag)/SIPS-bag

NOTE!

Cars fitted with SRS (Supplemental Restraint System)/SIPS-bag must be treated with extra care during repair work. This is to avoid the following:

1. Injury occurring during repair work.
2. Damage to or malfunction of the systems for SRS/SIPS bag.

If in doubt, read the SRS and SIPS bag-service manual.

Does the car have an SRS/SIPS bag?
The easiest way to identify cars with SRS is by the letters SRS on the central boss of the steering wheel. If the car also has an airbag on the passenger side, the letters SRS are embossed on the dash above the glovebox. From year models 1993, SRS cars also have pyrotechnic belt tensioners in the B-posts.

A SIPS bag is only fitted to SRS cars from 1995 onwards. There is a SIPS bag decal on the windscreen and on the seat bay.

Instrument panel or around the steering column cover
Take care that SRS wires do not get trapped, chafed or punctured by screws when working on sound insulation bulkhead, knee protection, ignition lock, steering column covers, glovebox, instrument panel, sills and B-post.

Tunnel console
The SRS collision sensor is located between the handbrake and the gear lever, in the central console. Never mount accessories near the sensor. On the 1992 year model, the collision sensor connected must never be unplugged.

Work on steering and front suspension
When working with the steering wheel, steering column or steering gear, certain operations must be carried out using methods in the SRS service manual. Read the relevant sections! If the steering wheel is turned more than three turns in either direction, the contact roller will be damaged.

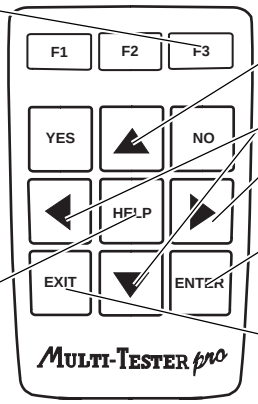
Seats
The SIPS bag sensor unit is located in the front part of the seat bay. The SIPS can be triggered by impacts or by pressure against the seat bay when the door is closed. Before doing any work involving a seat, see the service manual about SIPS bag.

The display and keys

```
3. ELECTRICAL
4. TRANSMISSION
5. BRAKES
8. BODY
```

List of menu choices, the selected alternative is marked.

Press **F3** to see a snapshot of the information for transfer to PC



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.

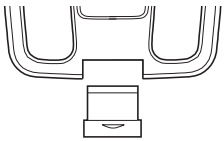
Use **HELP** to get diagnostic help, i.e. a description of the faults which the Multi-Tester pro has discovered.

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

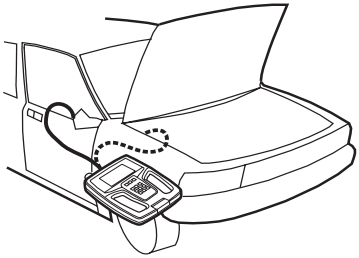
Connection

1. **Locate the diagnostic connector on the vehicle**
   Some cars are fitted with a 6-way connector (DLC connector) in the engine compartment, whilst others have a 16-way connector (CARB connector) in the passenger compartment.

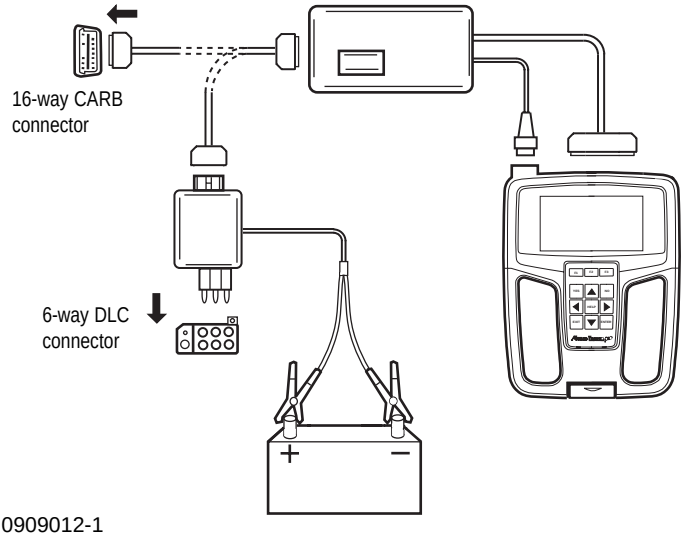
   Some common locations for these are described in an appendix to this document. See also the vehicle manual for information.



2. **Insert the program cassette into the instrument**
   Choose the right cassette for the cat model and language.



3. **Connect Multi-Tester pro via the diagnostics socket adapter**
   Choose the correct adapter for the car model and type of socket. See appendix to this document.



Trouble-Shooting

Start

The program is re-started each time the power supply is interrupted and re-connected.

The Multi-Tester pro executes a self-diagnosis routine when it boots up, then displays the current versions of hardware and software in use.

NOTE!

The ignition must be switched on to allow the instrument to contact the ECU. Some ECU:s power down after a while when the engine is not running.

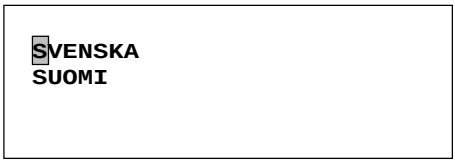
NOTE!

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

Working procedure

1. Choose language
Each cassette contains two languages.

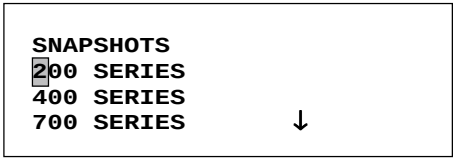
Use ↑ and ↓ to move the cursor between menu choices, then press ENTER.



2. Choose car model
Depending on the cabling connected, different menu options appear.

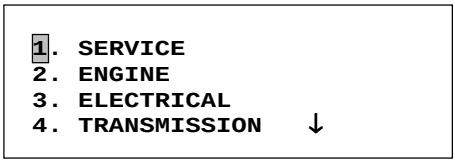
Connected to 16-way CARB connector: 800, 900, S/V/70, S/V/90, C70.
Connected to 6-way connector via adapter: 200, 400, 700, 800, 900.

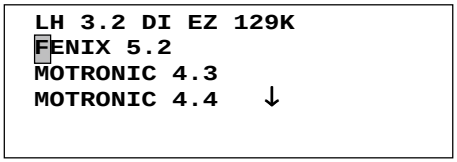
Use ↑ and ↓ to move the cursor between menu choices, then press ENTER.



3. Choose function group
Depending on the chosen car model, Multi-Tester pro shows a list of function groups.

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





4. Choose controller

Depending on the chosen car model, Multi-Tester pro shows a list of controllers.

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

The function groups are described in separate sections below.

5. Choose test

Depending on the chosen car model, Multi-Tester pro shows a list of tests and actions.

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

In some cases, Multi-Tester pro states that an action must be performed, eg “Start engine” or “Wait”. Perform the action and press ENTER.

Snapshot

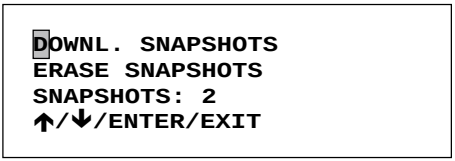
Snapshot works in all menus when a controller has been chosen.

Save values

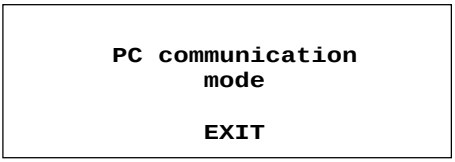
Press **F3** to save readings in Multi-Tester pro.

Transfer readings to PC

1. **Connect Multi-Tester pro to a PC**
   See the manual for the PC program for more information.
2. **Use ↑ and ↓ to move the cursor between menu choices, then press ENTER.**



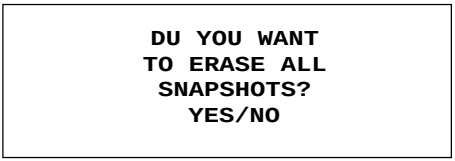
3. **Transfer the information**
   See the manual for the PC program for more information.



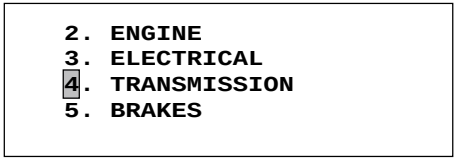
Erase snapshots

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

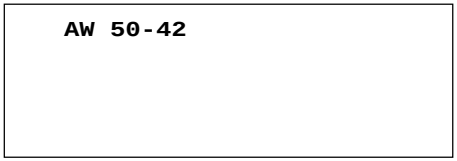
2. **Confirm by pressing ENTER**



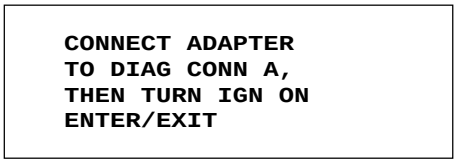
Common functions, Volvo Diagnos, first and second versions



1. **Move the cursor with ↑ and ↓ to the correct function group and press ENTER.**

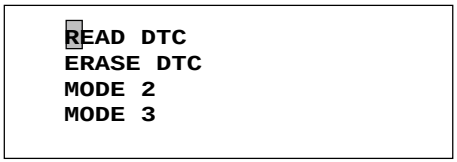


2. **Move the cursor with ↑ and ↓ to the correct system and press ENTER.**

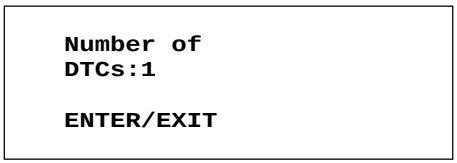


3. **The instrument tells you which diagnostics socket to use. Connect the instrument and press ENTER**

Read DTC:s



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

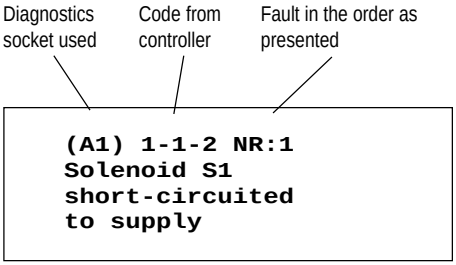


2. **Press ENTER to see the fault description.**

TROUBLE-SHOOTING

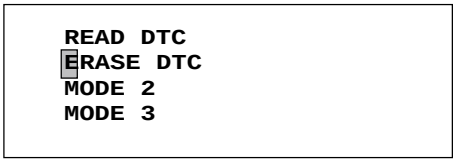
3. Press ENTER and EXIT to scroll through the fault codes.

Press EXIT to return when the first fault code is displayed.

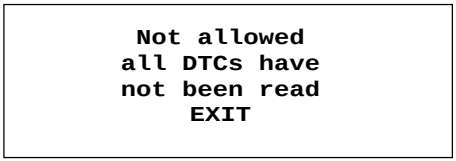


Erase Trouble Codes

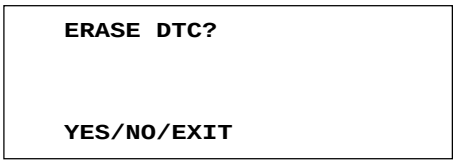
1. Use ↑ and ↓ to move the cursor between menu choices, then press ENTER.



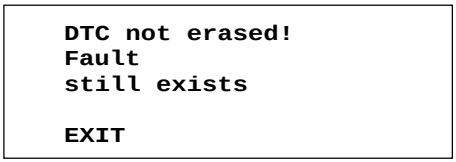
2. If the fault codes have not been read they cannot be deleted. Press ENTER to return.



3. Press YES to confirm deletion.



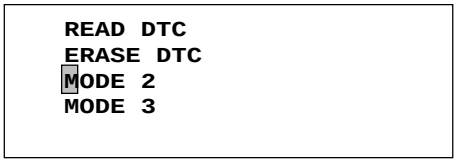
4.1 If the error codes remain, press EXIT to return.
Read the error codes again to see which error code still remains.



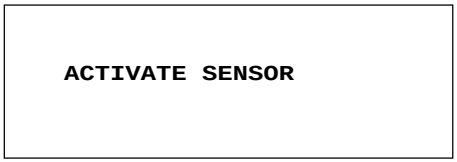
4.2 Press EXIT to return.

Mode 2

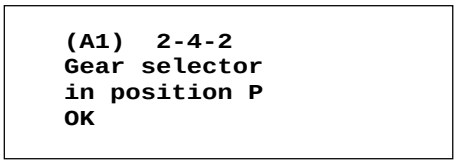
Mode 2 involves confirmation of the activation of components and functions (input signals to controller).



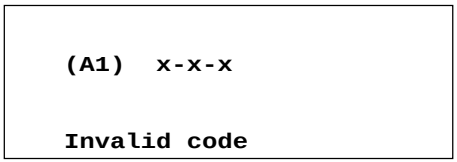
1. **Move the cursor with ↑ and ↓ to MODE 2 and press ENTER.**



2. **Activate the sensor and press ENTER**



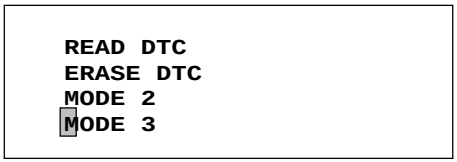
3. **The function is confirmed. Press ENTER**



4. **If there is an error, "INVALID CODE" appears. Press ENTER**

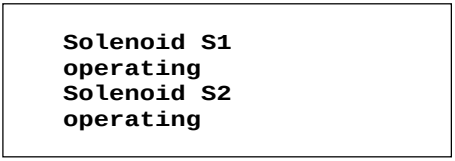
Mode 3

Mode 3 involves cyclic activation of components and functions.



1. **Move the cursor with ↑ and ↓ to MODE 3 and press ENTER.**

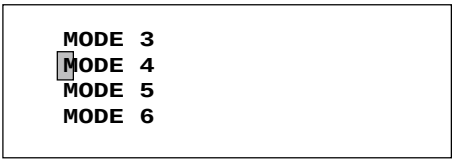
2. **The components that are activated are displayed. Use ↑ and ↓ to scroll through the lines. Press EXIT to quit.**



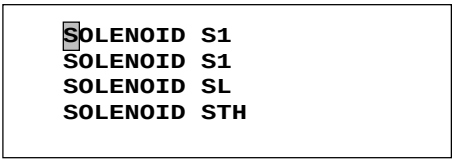
Mode 4

Mode 4 involves individual activation of components and functions.

1. **Move the cursor with ↑ and ↓ to MODE 4 and press ENTER.**



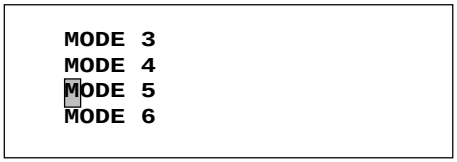
2. **Use ↑ and ↓ to choose a component and press ENTER.**



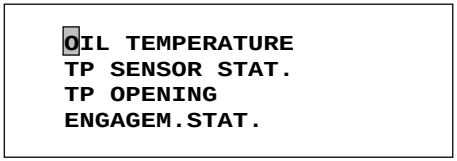
3. **Press EXIT to return.**

Mode 5

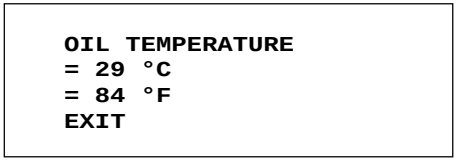
Mode 5 is used to read input and output signals (data).



1. **Move the cursor with ↑ and ↓ to MODE 5 and press ENTER.**



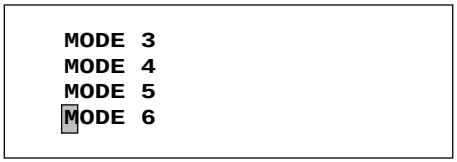
2. **Use ↑ and ↓ to choose a component and press ENTER.**



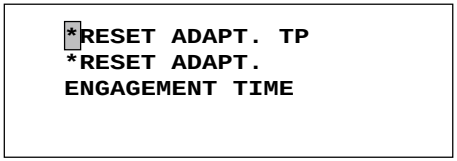
3. **Press EXIT to return.**

Mode 6

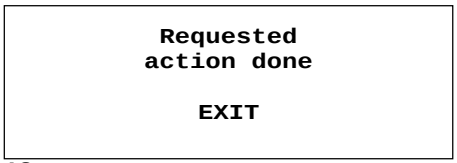
Mode 6 is used to enter data.



1. **Move the cursor with ↑ and ↓ to MODE 6 and press ENTER.**



2. **Use ↑ and ↓ to choose a component and press ENTER.**

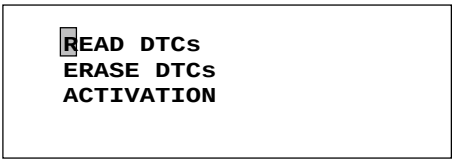


3. **Press EXIT to return.**

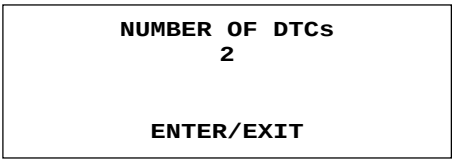
Common functions, Volvo Diagnos, third version

Read Trouble Codes

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

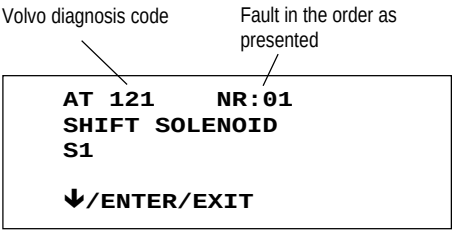


2. **Press ENTER to reach the fault code menu.**

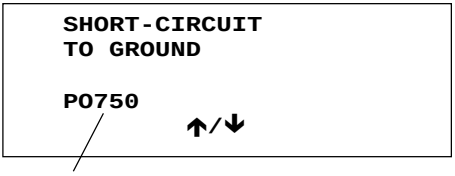


3. **Press ENTER to see the next fault code.**

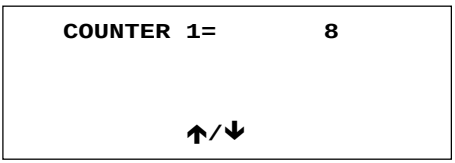
   Press ↓ to see a status message.

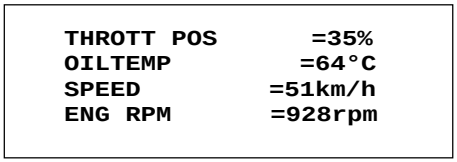


4. **Press ↓ to see counters. Press ↑ to return to fault code.**



5. **Press ↓ to see freeze frame. Press ↑ to return to status.**

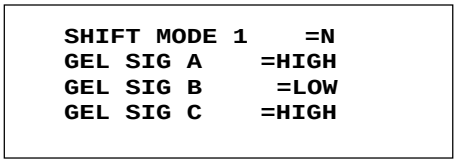




6. Press ↓ to see rolling readings.

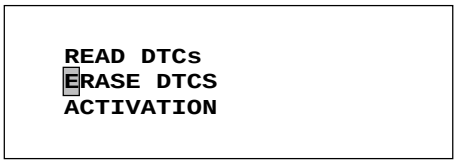
Press EXIT to return to counter.

Use ↑/↓ to see next/previous parameter.

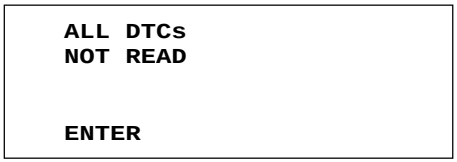


7. Press EXIT to return to freeze frame. Use ↑/↓ to see next/previous parameter.

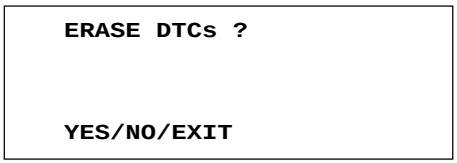
Erase Trouble Codes



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



2. If the fault codes have not been read they cannot be deleted. Press ENTER to return.



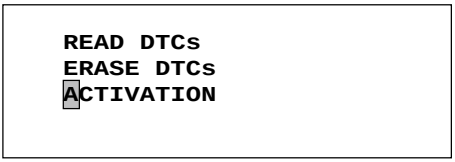
3. Press YES to confirm deletion.

4.1 If error codes remain, press ENTER to return.
Read the error codes again to see which error code still remains.

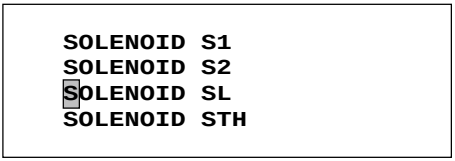
4.2 If the error codes have been deleted, press ENTER to return.

Component activation

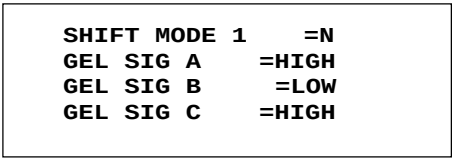
1. **Use ↑ and ↓ to move the cursor between menu choices, then press ENTER.**



2. **Move the cursor to the correct option with ↑ and ↓, then press YES to activate and NO to stop activation.**



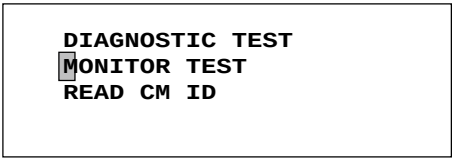
3. **When activation has started, press HELP to switch to rolling reading.**
   This is only possible in certain systems.



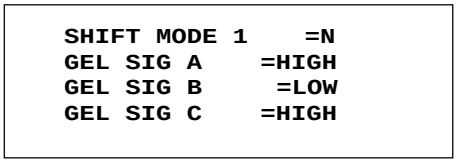
4. **Press EXIT to return.**

Monitor test

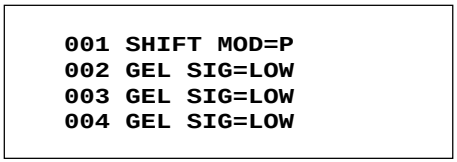
1. **Use ↑ and ↓ to move the cursor between menu choices, then press ENTER.**



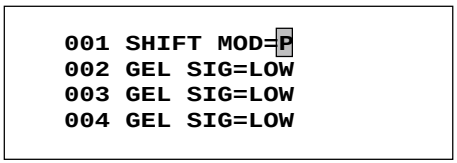
2. **Move the cursor with ↑ and ↓ to the correct sub-function and press ENTER.**



3. Press ENTER to switch to rolling readings.

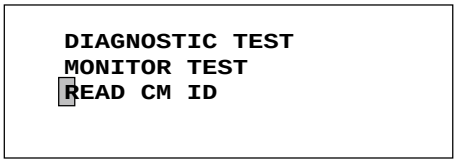


4. Press ↑/↓ to see next/ previous parameter. Press ← and → to show/hide parameter numbers.

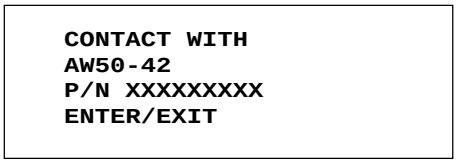


5. Press YES to lock the top line and NO to unlock the last locked line.
A locked line stays in the window when other lines are scrolled up and down. The cursor at the equals sign indicates that a line is locked. Three lines can be locked.

Read controller ID



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



TROUBLE-SHOOTING

Service

This menu option is only available on cars with combi instruments and trip computer.

Press ENTER to reset the service indication.

Engine

CRUISE CONTROL

See appendix for information as to which cars have this controller.

```
READ DTC
ERASE DTC
MODE 2
MODE 4
MODE 5
```

For a description of the functions, see the workshop manual for the vehicle.

DIESEL MSA 15.7

See appendix for information as to which cars have this controller.

```
DIAGNOSTIC TEST ─┬─ READ DTCs
                 ├─ ERASE DTCs
                 ├─ ACTIVATION
                 ├─ PROGRAM
                 ├─ PUMP TEST
                 ├─ EGR TEST
                 └─ ADJUST LOW IDLE
MONITOR TEST ──────── SCROLL LIST
READ CM ID
```

For a description of the functions, see the workshop manual for the vehicle.

DSA

See appendix for information as to which cars have this controller.

```
DIAGNOSTIC TEST ─┬─ READ DTCs
                 ├─ ERASE DTCsR
                 ├─ AKTIVATION
                 └─ RESET ADAPTION
MONITOR TEST ──────── SCROLL LIST
READ CM ID
```

For a description of the functions, see the workshop manual for the vehicle.

EMS 2000

See appendix for information as to which cars have this controller.

```
DIAGNOSTIC TEST ──┬── READ DTCs
                  ├── ERASE DTCs
                  ├── ACTIVATION
                  └── RESET ADAPTION
MONITOR TEST ──────── SCROLL LIST
READ CM ID
PROGRAM (Only displayed when control unit is new)
```

For a description of the functions, see the workshop manual for the vehicle.

EZ 116K

See appendix for information as to which cars have this controller.

```
READ DTC
ERASE DTC
MODE 2
MODE 3
```

For a description of the functions, see the workshop manual for the vehicle.

FENIX 5.1

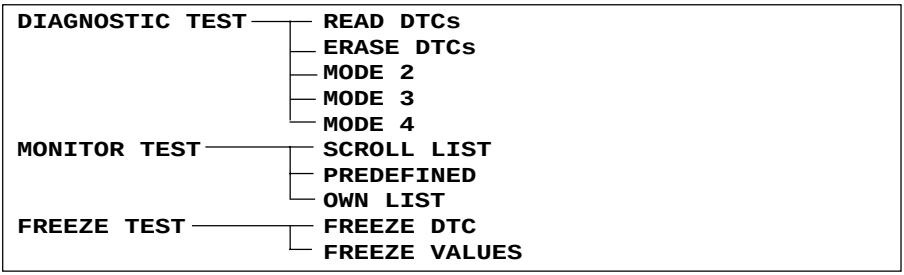
See appendix for information as to which cars have this controller.

```
DIAGNOSTIC TEST ──┬── READ DTCs
                  ├── ERASE DTCs
                  └── ACTIVATION
MONITOR TEST ──────── SCROLL LIST
READ CM ID
PROGRAM ECM
```

For a description of the functions, see the workshop manual for the vehicle.

FENIX 5.2

See appendix for information as to which cars have this controller.



For a description of the functions, see the workshop manual for the vehicle.

FENIX 3B up to and including 1992

See appendix for information as to which cars have this controller.

For a description of the functions, see the workshop manual for the vehicle.

FENIX 3B 1993–

See appendix for information as to which cars have this controller.

For a description of the functions, see the workshop manual for the vehicle.

LH 2.4

See appendix for information as to which cars have this controller.

For a description of the functions, see the workshop manual for the vehicle.

LH 3.1

See appendix for information as to which cars have this controller.

```
READ DTC
ERASE DTC
MODE 2
MODE 3
```

For a description of the functions, see the workshop manual for the vehicle.

LH 3.2 /EZ 129K

See appendix for information as to which cars have this controller.

```
DIAGNOSTIC TEST ─┬─ READ DTCs
                ├─ READ DTCs
                ├─ MODE 2
                └─ MODE 3
MONITOR TEST ────┬─ SCROLL LIST
                ├─ PREDEFINED
                └─ OWN LIST
FREEZE TEST ─────┬─ FREEZE DTC
                └─ FREEZE VALUES
```

For a description of the functions, see the workshop manual for the vehicle.

LUCAS

See appendix for information as to which cars have this controller.

```
DIAGNOSTIC TEST ─┬─ READ DTCs
                ├─ READ DTCs
                └─ ACTIVATION
MONITOR TEST ────── SCROLL LIST
READ CM ID
```

For a description of the functions, see the workshop manual for the vehicle.

MELCO 1

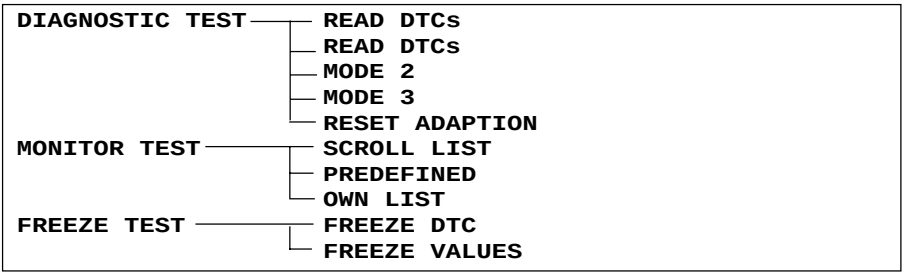
See appendix for information as to which cars have this controller.

```
DIAGNOSTIC TEST ─┬─ READ DTCs
                ├─ READ DTCs
                └─ ACTIVATION
MONITOR TEST ────── SCROLL LIST
READ CM ID
```

For a description of the functions, see the workshop manual for the vehicle.

MOTRONIC 1.8

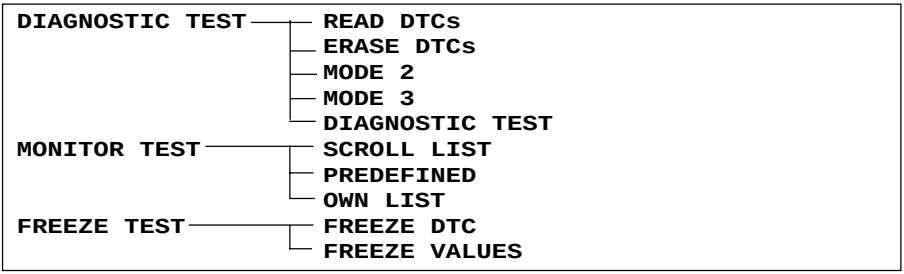
See appendix for information as to which cars have this controller.



For a description of the functions, see the workshop manual for the vehicle.

MOTRONIC 4.3

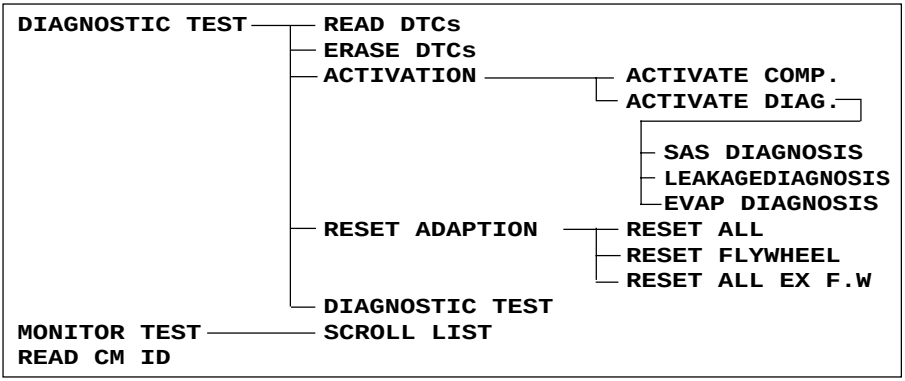
See appendix for information as to which cars have this controller.



For a description of the functions, see the workshop manual for the vehicle.

MOTRONIC 4.4

See appendix for information as to which cars have this controller.



For a description of the functions, see the workshop manual for the vehicle.

REGINA

See appendix for information as to which cars have this controller.

```
READ DTC
ERASE DTC
MODE 2
MODE 3
```

REX-I

See appendix for information as to which cars have this controller.

```
READ DTC
READ DTC
MODE 2
```

For a description of the functions, see the workshop manual for the vehicle.

TURBO CONTROL

See appendix for information as to which cars have this controller.

```
READ DTC
ERASE DTC
MODE 3
```

For a description of the functions, see the workshop manual for the vehicle.

Electrical

CEM III

See appendix for information as to which cars have this controller.

```
READ DTC
ERASE DTC
MODE 2
MODE 3
MODE 4
```

For a description of the functions, see the workshop manual for the vehicle.

IMMOBILIZER 2

See appendix for information as to which cars have this controller.

```
DIAGNOSTIC TEST ──┬── READ DTCs
                  └── ERASE DTCs
MONITOR TEST ──────── SCROLL LIST
READ CM ID
PROGRAM IMMO ──┬──── ADD KEY
               ├──── ERASE/NEW KEYS
               ├──── BLANK VERL. CODE
               └──── PROGRAM NEW IMMO
```

For a description of the functions, see the workshop manual for the vehicle.

IMMOBILIZER 2, S/V/40

See appendix for information as to which cars have this controller.

```
DIAGNOSTIC TEST ──┬── READ DTCs
                  ├── ERASE DTCs
                  └── ACTIVATION
MONITOR TEST ──────── SCROLL LIST
READ CM ID
PROGRAM IMMO ──┬──── ADD KEY
               ├──── ERASE/NEW KEYS
               ├──── BLANK VIN-CODE
               └──── PROGRAM NEW IMMO
```

For a description of the functions, see the workshop manual for the vehicle.

IMMOBILIZER 3

See appendix for information as to which cars have this controller.

```
DIAGNOSTIC TEST ──┬── READ DTCs
                  ├── ERASE DTCs
                  └── ACTIVATION
MONITOR TEST ──────── SCROLL LIST
READ CM ID
PROGRAM IMMO ──┬──── ADD KEY
               ├──── ERASE/NEW KEYS
               ├──── BLANK VIN-KOD/BLANK VERL. CODE
               └──── PROGRAM NEW IMMO
```

For a description of the functions, see the workshop manual for the vehicle.

COMBI VDO/YASAKI

See appendix for information as to which cars have this controller.

```
DIAGNOSTIC TEST ──┬── READ DTCs
                  ├── ERASE DTCs
                  └── ACTIVATION

MONITOR TEST ──────── SCROLL LIST
READ CM ID
CLEAR SRL
PROGRAM COMBI ─┬──── READ COMBI
               ├──── PROGRAM COMBI
               └──── PROG. TRIP COMP.
FUEL IND. UPDATE
```

For a description of the functions, see the workshop manual for the vehicle.

COMBI, S/V/40

See appendix for information as to which cars have this controller.

```
DIAGNOSTIC TEST ──┬── READ DTCs
                  ├── ERASE DTCs
                  ├── ACTIVATION
                  └── CM TEST
MONITOR TEST ──────── SCROLL LIST
READ CM ID
PROGRAM COMBI
CLEAR SRL
```

For a description of the functions, see the workshop manual for the vehicle.

COMBI 800 up to and including 1995

See appendix for information as to which cars have this controller.

```
READ DTC
ERASE DTC
MODE 3
MODE 4
MODE 5
MODE 6
```

For a description of the functions, see the workshop manual for the vehicle.

TBH IMMO

See appendix for information as to which cars have this controller.

```
READ DTC
ERASE DTC
```

For a description of the functions, see the workshop manual for the vehicle.

RTI

See appendix for information as to which cars have this controller.

```
DIAGNOSTIC TEST ──┬── READ DTCs
                  ├── ERASE DTCs
                  ├── ACTIVATION
                  └── SYSTEM TEST
MONITOR TEST ──────── SCROLL LIST
READ CM ID
```

For a description of the functions, see the workshop manual for the vehicle.

Transmission

AW 30-40 / 30-43, 900 up to and including 1995

See appendix for information as to which cars have this controller.

```
READ DTC
ERASE DTC
MODE 2
MODE 3
MODE 4
MODE 5
MODE 6
```

For a description of the functions, see the workshop manual for the vehicle.

AW 30-40 / 30-43, 900 1996–, S/V/90

See appendix for information as to which cars have this controller.

```
DIAGNOSTIC TEST ──┬── READ DTCs
                  ├── ERASE DTCs
                  └── ACTIVATION
MONITOR TEST ──────── SCROLL LIST
READ CM ID
```

For a description of the functions, see the workshop manual for the vehicle.

AW 50-42 / AW 50-42T, 800 up to and including 1995

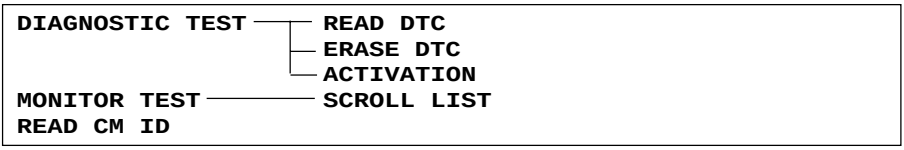
See appendix for information as to which cars have this controller.

```
READ DTC
ERASE DTC
MODE 2
MODE 3
MODE 4
MODE 5
MODE 6
```

For a description of the functions, see the workshop manual for the vehicle.

AW 50-42 / AW 50-42 TDI, 800 1996–, S/V/C/70, S/V/40

See appendix for information as to which cars have this controller.



For a description of the functions, see the workshop manual for the vehicle.

TROUBLE-SHOOTING

Brakes

ABS, 400, 700, 800 up to and including 1995, 900

See appendix for information as to which cars have this controller.

```
READ DTC
ERASE DTC
MODE 4
```

For a description of the functions, see the workshop manual for the vehicle.

ABS, S/V/40

See appendix for information as to which cars have this controller.

```
DIAGNOSTIC TEST ──┬── READ DTCs
                  ├── ERASE DTCs
                  └── ACTIVATION
MONITOR TEST ──────── SCROLL LIST
READ CM ID
```

For a description of the functions, see the workshop manual for the vehicle.

ABS, 800 1996–, S/V/C/70, S/V/90, S/V/40

See appendix for information as to which cars have this controller.

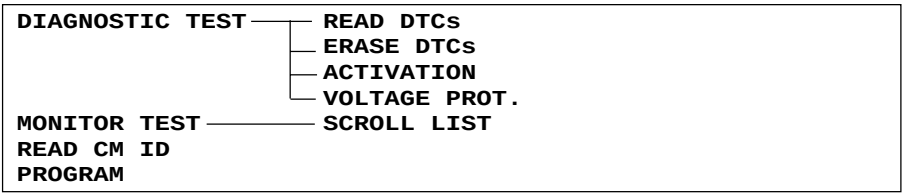
```
DIAGNOSTIC TEST ──┬── READ DTCs
                  ├── ERASE DTCs
                  └── ACTIVATION
MONITOR TEST ──────── SCROLL LIST
READ CM ID
```

For a description of the functions, see the workshop manual for the vehicle.

Body

ADD HEATER 912-D

See appendix for information as to which cars have this controller.



For a description of the functions, see the workshop manual for the vehicle.

AIRBAG 2.2/2.3, 800 up to and including 1995, 900 up to and including 1995

See appendix for information as to which cars have this controller.

For a description of the functions, see the workshop manual for the vehicle.

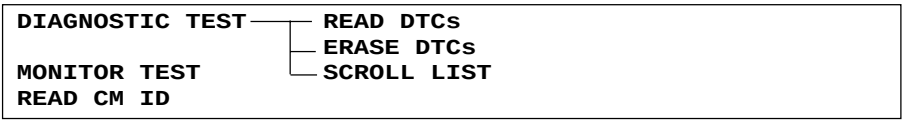
AIRBAG, 400

See appendix for information as to which cars have this controller.

For a description of the functions, see the workshop manual for the vehicle.

AIRBAG 6.2

See appendix for information as to which cars have this controller.



For a description of the functions, see the workshop manual for the vehicle.

CLIMATE CONTROL, 800

See appendix for information as to which cars have this controller.

```
READ DTC
ERASE DTC
MODE 2
MODE 4
```

For a description of the functions, see the workshop manual for the vehicle.

CLIMATE CONTROL, S/V/40

See appendix for information as to which cars have this controller.

```
DIAGNOSTIC TEST ─┬─ READ DTCs
                └─ ERASE DTCs
MONITOR TEST ──── SCROLL LIST
READ CM ID
PROGRAM
ADJUST MOTORS
```

For a description of the functions, see the workshop manual for the vehicle.

CLIMATE CONTROL, S/V/C/70

See appendix for information as to which cars have this controller.

```
DIAGNOSTIC TEST ─┬─ READ DTCs
                ├─ ERASE DTCs
MONITOR TEST    └─ SCROLL LIST
READ CM ID
PROGRAM
ADJUST MOTORS
```

For a description of the functions, see the workshop manual for the vehicle.

KEYLESS ENTRY, 400

See appendix for information as to which cars have this controller.

```
READ DTC
ERASE DTC
MODE 2
MODE 4
MODE 5
MODE 6
```

For a description of the functions, see the workshop manual for the vehicle.

TIMER TYPE 4

See appendix for information as to which cars have this controller.

```
READ DTC
ERASE DTC
```

For a description of the functions, see the workshop manual for the vehicle.

SRS CAB

See appendix for information as to which cars have this controller.

```
DIAGNOSTIC TEST ──┬── READ DTCs
                  ├── ERASE DTCs
                  └── ACTIVATION
MONITOR TEST ──────── SCROLL LIST
READ CM ID
```

For a description of the functions, see the workshop manual for the vehicle.

ROPS

See appendix for information as to which cars have this controller.

```
DIAGNOSTIC TEST ──┬── READ DTCs
                  ├── ERASE DTCs
                  └── ACTIVATION
MONITOR TEST ──────── SCROLL LIST
READ CM ID
```

For a description of the functions, see the workshop manual for the vehicle.

CCU

See appendix for information as to which cars have this controller.

```
DIAGNOSTIC TEST ──┬── READ DTCs
                  ├── ERASE DTCs
                  └── ACTIVATION
MONITOR TEST ──────── SCROLL LIST
READ CM ID
PROGRAM
READ CM ID
```

For a description of the functions, see the workshop manual for the vehicle.

POWER SEAT, 800 up to and including 1995, 900 up to and including 1995

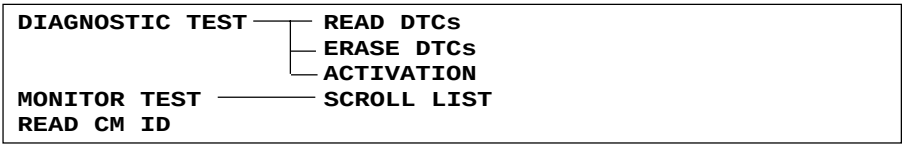
See appendix for information as to which cars have this controller.

```
READ DTC
ERASE DTC
MODE 4
```

For a description of the functions, see the workshop manual for the vehicle.

LEFT SEAT, RIGHT SEAT

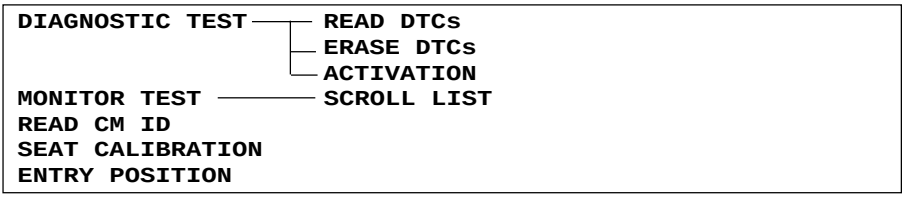
See appendix for information as to which cars have this controller.



For a description of the functions, see the workshop manual for the vehicle.

LEFT SEAT, RIGHT SEAT, C70

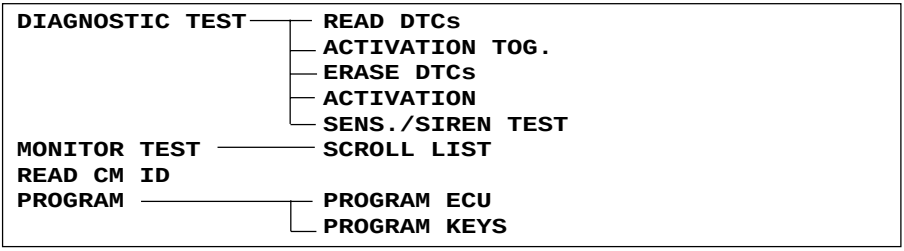
See appendix for information as to which cars have this controller.



For a description of the functions, see the workshop manual for the vehicle.

KEYLESS ENTRY, S/V/40

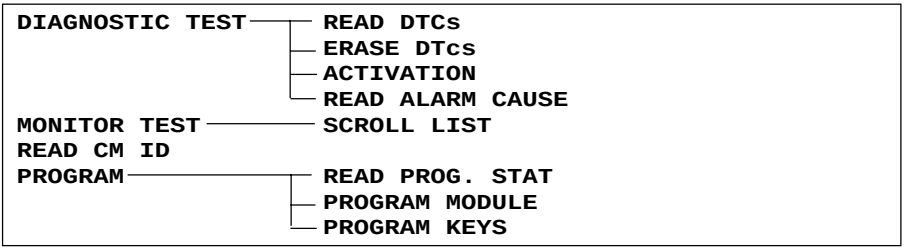
See appendix for information as to which cars have this controller.



For a description of the functions, see the workshop manual for the vehicle.

VGLA

See appendix for information as to which cars have this controller.



For a description of the functions, see the workshop manual for the vehicle.

Faultmessages

Wrong cabling connected

Press HELP for more information.

```
Please use a
Volvo Interface
and Serial Cable

ENTER/HELP
```

Press ENTER to continue.

```
If a Volvo
Interface is
connected, send
the Inteface
for repair or
continue
↑/↓/ENTER/EXIT
```

Communication error

Check that the cabling is correctly connected and that the ignition is on.

```
INITIALIZING
FAILURE !

ENTER/EXIT
```

Switch the ignition off and on

It is important to switch off the ignition within three seconds of the text being displayed and that it remains switched off for three seconds.

```
TURN IGNITION
OFF FOR 3 SEC.
THEN ON AGAIN
```

Appendix – Controllers in different car models

This appendix briefly describes the type of controller in different car models. The list is an excerpt and is therefore incomplete. For detailed information about the relevant car model and information about car models not listed, see the relevant service manual.

Model	Function group	Engine type	Model year	Control unit	Note
200					
	2: Engine				
		B200F	1989-	LH 2.4 / EZ 116K	
		B230F	1989-	LH 2.4 / EZ 116K	
		B230F US	1990-	LH 3.1 / EZ 116K	
		B230FD	1993	LH 2.4 / EZ 116K	
		B230FX	1992-	LH 2.4 / EZ 116K	
	3: El				
				Immobilizer 1	
400					
	2: Engine				
		B16F	1990-	Fenix 3.B -92	
		B18EP	1990-	Fenix 3.B -92	
		B18FP	1990-	Fenix 3.B -92	
		B18U	1992-	Fenix 3.B -92	
		B20F	1993-	Fenix 3.B 93-	
		B20U	1993-	Fenix 3.B 93-	
				Cruise control	
	3: Electrical				
				CEM III	
				(Central Electronic Module)	
				Immobilizer 1	
	5: Brakes				
				ABS	

Model	Function group	Engine type	Model year	Control unit	Note
	8: Body				
				Keyless entry	
				Airbag	
				Timer, type 4	
700					
	2: Engine				
		B200F	1989-	LH 2.4 / EZ 116K	
		B200FT	1989-	LH 2.4 / EZ 116K	
		B200G	1992-	LH 2.4 / EZ 116K	
		B204E	1989-	LH 2.4 / EZ 116K	
		B204FT	1991-	LH 2.4 / EZ 116K	
		B204GT	1990-	LH 2.4 / EZ 116K	
		B230F	1989-	LH 2.4 / EZ 116K	
		B230F	1989- US	Regina / Rex-I	
		B230FB	1991-	LH 2.4 / EZ 116K	
		B230FD	1993-	LH 2.4 / EZ 116K	
		B230FT	1990-	LH 2.4 / EZ 116K	
		B230G	1992-	LH 2.4 / EZ 116K	
		B230GT	1990-	LH 2.4 / EZ 116K	
		B234F	1998-	LH 2.4 / EZ 116K	
		B234G	1991-	LH 2.4 / EZ 116K	
	3: Electrical				
				Immobilizer 1	
	5: Brakes				
				ABS	
	8: Body				
				Timer, type 4	
800 -> 1995					
	2: Engine				
		B5204S	1992-	LH 3.2 / EZ 129K	
		B5254S	1992-	LH 3.2 / EZ 129K	

Model	Function group	Engine type	Model year	Control unit	Note
		B5252S	1993-	Fenix 5.2	
		B5234T	1994-	Motronic 4.3	
		B5202S		Fenix 5.2	
		B5252S		Fenix 5.2	
		D5252T	-1998	MSA 15.7	
				Cruise control	
	3: Electrical				
				Combi	
				Immobilizer 1	
	4: Transmission				
				AW 50-42	
	5: Brakes				
				ABS	
	8: Body				
				Power seat	
				Airbag 2.2/2.3	
				Climate control	
				Timer, type 4	
800 1996->					
	1: Service				
				Combi	
	2: Engine				
		B5204S	1992-	LH 3.2 / EZ 129K	
		B5254S	1992-	LH 3.2 / EZ 129K	
		B5252S	1993-	Fenix 5.2	
		B5234T	1994-	Motronic 4.3	
		B5202S		Fenix 5.2	
		B5252S		Fenix 5.2	
		B5234S	-1998	Motronic 4.4	
		B5254S	-1998	Motronic 4.4	
		B5204T2		Motronic 4.4	

Model	Function group	Engine type	Model year	Control unit	Note
		B5204T3	-1998	Motronic 4.4	
		B5234T2		Motronic 4.4	
		B5234T3	-1998	Motronic 4.4	
		B5234T4		Motronic 4.4	
		B5234T6		Motronic 4.4	
		B5234T7	-1998	Motronic 4.4	
		B5254T	-1998	Motronic 4.4	
		GB5252S		Fenix 5.2	
		GB5252S2		Fenix 5.2	
		D5252T	-1998	MSA 15.7	
				Cruise control	
	3: Electrical				
				Combi	
				Immobilizer 1	
				Immobilizer 2	
	4: Transmission				
				AW 50-42	
				AW 50-42 TDI	
	5: Brakes				
				ABS	
	8: Body				
				Left seat	
				Right seat	
				Airbag 6.2	
				Climate control	
				Timer, type 4	
900 -> 1995					
	2: Engine				
		B200F		LH 2.4 / EZ 116K	
		B200T		LH 2.4 / EZ 116K	
		B230FB		LH 2.4 / EZ 116K	

Model	Function group	Engine type	Model year	Control unit	Note
		B234F		LH 2.4 / EZ 116K	
		B230FK		LH 2.4 / EZ 116K	
		B230FT		LH 2.4 / EZ 116K	
		B6254F		Motronic 1.8	
		B6304F	1991-	Motronic 1.8	
		B6304G	1992-	Motronic 1.8	
				Turbo control	
				Cruise control	
	3: Electrical				
				Immobilizer 1	
	4: Transmission				
				AW 30-40/30-43	
	5: Brakes				
				ABS	
	8: Body				
				Power seat	
				Airbag 2.2/2.3	
				Timer, type 4	
900 1996->					
	2: Engine				
				Motronic 4.4	
				Cruise control	
	3: Electrical				
				Immobilizer 1	
				Immobilizer 2	
	4: Transmission				
				AW 30-40/30-43	
	5: Brakes				
				ABS	

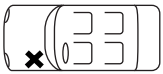
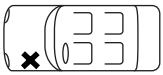
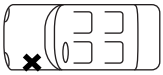
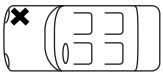
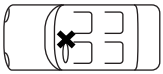
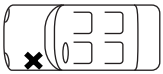
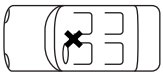
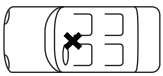
Model	Function group	Engine type	Model year	Control unit	Note
	8: Body				
				Left seat	
				Right seat	
				Airbag 6.2	
				Timer, type 4	
S/V/C70					
	1: Service				
				Combi	
	2: Engine				
		B5202S		Fenix 5.2	
		B5252S		Fenix 5.2	
		GB5252S		Fenix 5.2	Bifuel
		GB5252S2		Fenix 5.2	Bifuel
		B5234S	-> 1998	Motronic 4.4	
		B5254S	-> 1998	Motronic 4.4	
		B5254T	-> 1998	Motronic 4.4	
		B5204T2		Motronic 4.4	
		B5204T3	-> 1998	Motronic 4.4	
		B5234T2		Motronic 4.4	
		B5234T3	-> 1998	Motronic 4.4	
		B5234T4		Motronic 4.4	
		B5234T3		Motronic 4.4	
		B5234T6		Motronic 4.4	
		B5234T7	-> 1998	Motronic 4.4	
		D5252T	-> 1999	MSA 15.7	
				Cruise control	
	3: Electrical				
				Combi	
				Immobilizer 2	
				Immobilizer 3	
				RTI	
				(Road and Traffic Information)	

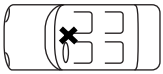
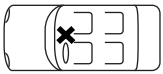
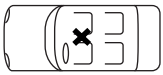
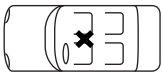
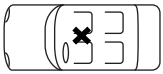
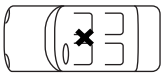
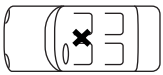
Model	Function group Engine type	Model year	Control unit	Note
	4: Transmission			
			AW 50-42	
			AW 50-42 TDI	Not C70
	5: Brakes			
			ABS	
	8: Body			
			Left seat	
			Right seat	
			Airbag 6.2	
			Climate control	
			VGLA (Volvo Guard Lock and Alarm system	
			Add heater 912-D	
			Timer, type 4	
			SRS Cabriolet	C70
			ROPS (Roll Over Protection System)	C70
			CCU (Cab Control Unit)	C70
S/V90				
	2: Engine			
			Motronic 4.4	
			Cruise control	
	3: Electrical			
			Immobilizer 2	
			RTI (Road and Throttle Information)	
	4: Transmission			
			AW 30-40/30-43	
	5: Brakes			
			ABS	

Model	Function group Engine type	Model year	Control unit	Note
	8: Body			
			Left seat	
			Right seat	
			Airbag 6.2	
			Timer, type 4	
S/V40				
	1: Service			
			Combi	
	2: Engine			
			Fenix 5.1	
			Lucas	
			EMS 2000	
			Melco 1	
			DSA	
			(Dynamic Stability Assistance)	
			Cruise control	
	3: Electrical			
			Combi	
			Immobilizer 2	
			Immobilizer 3	
			RTI	
	4: Transmission			
			AW 50-42	
	5: Brakes			
			ABS	
	8: Body			
			Keyless entry	
			Airbag 6.2	
			Climate controll	
			Timer, type 4	
			Add heater 912-D	

Appendix – Diagnostic connector location

This appendix briefly describes the location of the diagnostic connector in various models of cars. The list is an extract, and is therefore not complete. Please refer to the appropriate service manual for detailed information about each car model and information about cars which are not on this list.

Make	Model year	Type	Diagnostic connector location
200	-1995	6-way	In the engine compartment 
400	-1995	6-way	In the engine compartment 
700	-1995	6-way	In the engine compartment 
800	-1995	6-way	In the engine compartment (on some markets there is also a 16-way CARB connector which must not be used) 
800	1996-	16-way CARB	In the passenger compartment, in front of the gear lever 
900	-1995	6-way	In the engine compartment 
940	1996-	16-way CARB	In the passenger compartment, central console tunnel pocket 
960	1996-	16-way CARB	In the passenger compartment, in the central console near the handbrake 

Make	Model year	Type	Diagnostic connector location
S40		16-way CARB	In the passenger compartment, on the right-hand side of the central console. For right-hand-drive cars, on the left side of the console. 
V40		16-way CARB	In the passenger compartment, under the armrest 
S70		16-way CARB	In the passenger compartment, under the armrest 
V70		16-way CARB	In the passenger compartment, under the armrest 
C70		16-way CARB	In the passenger compartment, under the armrest 
S90		16-way CARB	In the passenger compartment, under the armrest 
V90		16-way CARB	In the passenger compartment, under the armrest 

Appendix – Monitor List Abbrevations

12 PULSE	12 pulses/rev speed output signal
15 SUPPLY	15 Supply
48 PULSE	48 pulsees/rev speed output signal
A/C APPROVED	A/C approved by control module
A/C COMPR	A/C compressor running status
A/C P SENS	A/C pressure sensor signal
A/C PR	A/C pressure, high-pressure side
A/C PRESS	A/C pressure
A/C RELAY	A/C relay signal
A/C REQ.	A/C requested by ECC or MCC
A/C REQUEST	Air conditioning requested by the ECC control module or by MCC
A/C STANDBY	Engine speed change delay when air conditioning is disengaged
A/C SWITCH	A/C switch signal
ABS LAMP	ABS warning lamp, output signal
ABV DUTY	ABV duty cycle
ABV STATUS	ABV status
AC	A/C output signal to engine control module
AC SET	Air conditioning switch position
ACC LF	Wheel acceleration/retardation left front wheel
ACC LR	Wheel acceleration/retardation left rear wheel
ACC POS	Accelerator pedal position
ACC RF	Wheel acceleration/retardation right front wheel
ACC RR	Wheel acceleration/retardation right rear wheel
ACC VEH	Vehicle reference acceleration/retardation
ACCEL	Car's vertical accelerometer
ACCEL SENS	DC signal from car's vertical accelerometer
ACT SOL S1	Activation of shift solenoid S1
ACT SOL S2	Activation of shift solenoid S2

ACT SOL SL	Activation of shift solenoid SL
AFTERBLOW	Afterblow, ECC runs blower fan a few minutes after ignition off
AIR COND.	A/C output signal
AIR PUMP	Pulsed secondary air injection system pump status
AIR TEMP	Intake air temperature
AIRFL.RESET	Air flow sensor reset pulse
AIRFLOW	Air flow sensor
AIRPUMP RELAY	Pulsed secondary air injection system pump relay status
ALT. LOAD	Alternator load
AM AC	Air mass actual value
AM DE	Air mass nominal value
AMB T SENS	Ambient temperature sensor signal
AMB.TEMP	Ambient temperature sensor signal
ANGLE SWITCH	Angle switch for the backrest in C70
BACKREST SW.	Backrest switch in C70
BARO	Atmospheric pressure
BARO SENS	Atmospheric pressure sensor signal
BAROMETER	Atmospheric pressure
BATT	Battery voltage
BATTERY	Battery voltage
BLOWER	Blower fan output signal
BRAKE	Brake switch
BRAKE L.SW	Brake light switch
BRAKE LAMP	Brake light indicator output signal
BRAKE P.SW	Brake pedal switch
BRAKE PRESS	Brake force sensor
C.FAN DE	Combustion fan desired operating speed
C.LOCK FUEL	Central lock fuel lid motor output signal
C.LOCK MOT	Central lock motor output signal
C.LOCK SW	Central lock switch signal
C.LOCK TRNK	Central lock trunk motor output signal

C.UNLOCKSW	Central unlock switch signal
C/R NO. 1	Immobilizer challenge response transponder number 1
CAB TEMP FAN	Cabin temperature sensor fan
CAB. TEMP	Passenger compartment temperature
CAN STATUS	CAN bus status, transmission control module and engine control module
CAN.VALVE	EVAP canister shut off valve
CLOCK KNOB	Digital clock adjustment knob
CLUTCH P.SW	Clutch pedal switch
CMP SIGNAL	Camshaft position sensor signal
CO POT	Signal from CO potentiometer
CODE STORED	Immobilizer transponder in key code stored status
COMB.FAN	Combustion fan actual operating speed
COMPART.FAN	Passenger compartment blower fan
CONTROL	Control status
CONV.T.MO.LH	Convertible top motor left hand output signal
CONV.T.MO.RH	Convertible top motor right hand output signal
COOL HEAT 1	Relay for engine coolant heater 1
COOL HEAT2/3	Relay for engine coolant heater 2 and 3
COOLANT PUMP	Coolant pump
COVERLOCK	Coverlock microswitch
COVERLOCK.MO	Coverlock motor output signal
CRANK SIGN	Cranking signal
CRASH	Indicates crash status
CRU OFF?	Cruise control disengangment reason
CRUISE M	Cruise control mode
D.CYCLE	Running (driving) cycle status
D.DOORLOCK	Driver door lock signal
D.DOORULOCK	Driver door unlock signal
D.LOCK MOT	Dead lock central lock motor output signal
D+	Alternator charge voltage
DATE	Date, GPS information

DIG.CLOCK	Digital clock
DIR.IND	Direction indicator output signal
DOOR SW	Door switch signal, except driver door
DR.AB.HI.CAP	Driver airbag capacitance too high
DR.AB.LO.CAP	Driver airbag capacitance too low
DR.AB.OP.CIR	Driver airbag open circuit
DR.AB.SH.CIR	Driver airbag short circuit
DR.AB.SH.GND	Driver airbag short circuit to ground
DR.AB.SH.PLS	Driver airbag short circuit to plus
DRIVE COMP P/N	Gear selector lever output signal to driving computer
DRVDOORSW	Driver door switch signal
DSA ACTIVE	Anti spin control status
DSA FUNC	Dynamic Stability Assistance funtion status
DSA SWITCH	Dynamic Stability Assistance switch status
DTEMP SHUTT	Driver temperature shutter position
EBD PRESS	EBD (Electrical Brake force Distribution) pressure switch position
ECM ANSWER	Electronic control module answer to immobilizer
ECM LOCKED	Electronic control module locked by immobilizer, status
ECM TEMP	Temperatue inside control module
ECT	Engine coolant temperature
ECT START	Engine coolant temperature, at start
ECTGAUGE	Engine coolant temperature gauge type
ECT-SENS	Engine coolant temperature sensor
EGR	EGR controller, pulse ratio
ENG FAN	Engine coolant fan
ENG FAN FULL	Engine cooling fan high speed
ENG FAN HALF	Engine cooling fan low speed
ENG FAN RELAY	Engine cooling fan relay status
ENG RPM	Engine speed RPM
ENGINE	Engine type
ENGINE RUN	Engine status

ERR PRESENT	Active fault, error present
ERROR HAND	Emergency programs
EVAP VALVE	Evaporator valve signal
EVAP. TEMP	Temperature after evaporator
EXT COUNT LF	Extrapolition counter left front wheel
EXT COUNT LR	Extrapolition counter left rear wheel
EXT COUNT RF	Extrapolition counter right front wheel
EXT COUNT RR	Extrapolition counter right rear wheel
F ADAP	Flywheel adaption status
F ADAP B	Flywheel adaption, segment B
F ADAP C	Flywheel adaption, segment C
F ADAP D	Flywheel adaption, segment D
F ADAP E	Flywheel adaption, segment E
F.C.OFF	Fuel consumption offset
F.CLOCK	Fault timer
F.L.OFF	Fuel level offset
F/PUMP RELAY	Fuel pump relay
F/TRIM	Long term fuel trim, operates quickly at idling
F/TRIM CONT	Long term fuel trim control mode
F/TRIM IDLE	Long term fuel trim at idling
F/TRIM PART	Long term fuel trim at part load
F/TRIMPART	Long term fuel trim, operates slowly at part load
FACIA LED	Cabriolet indicator LED output signal
FAN KNOB	Blower fan switch position
FAN UNIT	Blower fan unit
FAULTY VIN	Immobilizer VIN code status
FR.LOCK	Front lock microswitch for hood
FR.LOCK.MO.	Front lock motor output signal
FR.LT.FR	Front latch front lock microswitch
FR.LT.R	Front latch rear lock microswitch
FREQUENCY	Immobilizer antenna frequency when transponder is receiving
FU SHUT OFF	Fuel shut off status

FU TEMP	Fuel temperature
FUEL CONS	Fuel consumption
FUEL CUT-OUT	Fuel cut out at maximum engine speed
FUEL DA	Fuel level signal, damped. Signal to gauge needle
FUEL ENRICH	Fuel enrichment
FUEL FLOW	Fuel flow input signal, fuel consumption calculation
FUEL MIN	Lowest sampled fuel level
FUEL NDA	Fuel level signal, undamped. Signal output signal
FUEL OFF VALVE	Fuel shut off valve
FUEL OPEN SW	Fuel lid open switch signal
FUEL PRESS	Fuel pressure sensor
FUEL PUMP	Fuel pump status
FUEL SIGN	Fuel consumption signal
FUELCON	Fuel consumption
FUELGAUGE	Fuel gauge type
FUELNDA	Fuel level not damped
FUELST	Fuel level status
GAS PRESS	Gas pressure, BiFuel cars
GBS	Glass break sensor signal
GEAR A RATIO	Gear in relation to ration in transmission
GEAR A SOL	Gear in relation to activation of solenoids S1, S2, and SL
GEAR SEL	Gear selector lever position
GEARB. CONF.	Transmission confirmed
GEARBOX	Type of transmission
GL.WIRE	Glass wire sensor signal
GLOW IND.	Glow plug indicator lamp
GLOW INDICATOR	Glow plug indicator lamp
GLOWPLUG	Glow plug relay
GSEL POS	Gear shift lever position
GSEL SIG A	Gear position sensor signal A
GSEL SIG B	Gear position sensor signal B

GSEL SIG C	Gear position sensor signal C
GSEL SIG PA	Gear position sensor signal PA
HEAT HO2S1	Heated oxygen sensor preheater, front sensor
HEAT HO2S2	Heated oxygen sensor preheater, rear sensor
HIGH TEMP	High temp indicator status
HO2S	Heated oxygen sensor
HO2S TIME	Dual heated oxygen sensor compensation
HO2S1	Heated oxygen sensor voltage, front sensor
HO2S2	Heated oxygen sensor voltage, rear sensor
HOOD MAX	Convertible top (hood) max, programmed value
HOOD MIN	Convertible top (hood) min, programmed value
HOOD SW	Hood switch signal
HOUR	Hour, GPS information
IA/TRIM	Idle air trim
IAC ACTIVE	Idle air trim status
IAC INTEGR	Idle air trim integrator
IAC TRIM	Idle air trim
IAC VALVE	Idle air control valve opening
IAT	Intake air temperature
IC-RESET	Info Center reset switch
IC-UNIT	Info Center unit (Metric / Imperial)
IDLE ADAP	Adaption value at idle
IDLE ADAP AC	Adaption value for A/C compressor load
IDLE ADAP DR	Adaption value for driver input
IDLE CORR	Idling speed correction
IDLE SET	Idling speed nominal value
IDLE SWITCH	Idle switch in accelerator pedal position sensor
IGN ADV	Ignition timing advance
IGN ANGLE	Ignition timing advance
IGN CNT	Ignition on counter, resolution 10
IGN RET TCM	Ignition retardation requested by transmission control module (TCM)
IGNITION	Ignition status

ILL	Illumination
IMMO	Immobilizer status
IMMO CODE	Immobilizer code
IMMO PROG	Immobilizer programming status
IMMO REQUEST	Immobilizer request status
INCL.SENSOR	Inclination sensor signal
INFOCENTER	Info Center type
INIT ECM	Initiating engine control module
INJ ANG DE	Injection timimg, nominal value
INJ ANGLE	Injection timimg, actual value
INJ TIME	Injection timing
INJ TIME V	Control of injection timing valve
INJ TIME VALVE	Control of injection timing valve
INT.LIGHT	Interial light output signal
KD SWITCH	Kickdown switch position
KEY IN IG.	Key in ignition lock switch signal
KEY NO.	Immobilizer stored key number
KICK-DOWN	Kickdown position
KN IGN RET	Ignition retardation requested due to cylinder knock
KNOCK	Signal from knock sensor
KNOCK1	Signal from front knock sensor
KNOCK2	Signal from rear knock sensor
L.TEN.HI.CAP	Left seat belt tensioner capacitance too high
L.TEN.LO.CAP	Left seat belt tensioner capacitance too low
L.TEN.OP.CIR	Left seat belt tensioner open circuit
L.TEN.SH.CIR	Left seat belt tensioner short circuit
L.TEN.SH.GND	Left seat belt tensioner short circuit to ground
L.TEN.SH.PLS	Left seat belt tensioner short circuit to plus
LAMBDAINT	Lambda integrator
LAMP OUTPUT	Indicator lamp output signal
LATCH CATCH	Latch catch position, programmed value
LATCH LAY DOWN	Latch lay down position, programmed value

LATCH MAX	Latch max, programmed value
LATCH MIN	Latch min, programmed value
LED	Light emitting doide
LED OUTPUT	LED output signal
LOAD	Mass air flow sensor signal
LOAD SUPPLY	Load supply
LOAD TL	Internal load signal
LOAD TQ	Load signal
LOW FUEL	Low fuel level status signal
LTEMP KNOB	Left temperature knob
MAF	Mass air flow
MAF.TC REF	Mass air flow meter for turbocharger reference
MANIPUL.	Speed signal status when temp over 50 deg. celsius and RPM over 1500rpm
MAP	Manifold absolute pressure
MEM1	Control panel button activated for memory 1
MEM2	Control panel button activated for memory 2
MEM3	Control panel button activated for memory 3
MIL	Malfunction indicator lamp
MIL ECM	Malfunction indicator lamp lit
MIL REQ	Malfunction indicator lamp request to engine control module
MIL REQUEST	Malfuntion indicator lamp request to engine control module
MIL TCM	Malfunction indicator lamp request from transmission control module
MIN	Minute, GPS information
MISFI. CYL1	Missfire in cylinder 1
MISFI. CYL2	Missfire in cylinder 2
MISFI. CYL3	Missfire in cylinder 3
MISFI. CYL4	Missfire in cylinder 4
MISFI. CYL5	Missfire in cylinder 5
MO.GR.1.1	H-bridge 1 output 1 signal
MO.GR.1.2	H-bridge 1 output 2 signal

MO.GR.2.1	H-bridge 2 output 1 signal
MO.GR.2.2	H-bridge 2 output 2 signal
MODE KNOB	Air distribution switch position
MODE SHUTT.	Air distribution shutter position sensor
MONTH	Month, GPS information
MSEL E/S	Mode selector Economy/Sport
MSEL MS1	Mode selector sensor signal MS1
MSEL MS2	Mode selector sensor signal MS2
MSEL POS	Mode selector position
MSEL W	Mode selector Winter
MSS	Mass move sensor
NO.OF.TRIGG.	Number of Roll Over Protection System activations
OIL PRESSURE	Oil pressure in engine status signal
OILTEMP	Oil temperature
ON/OFF SW	ON / OFF switch
OTEMP SENS	Oil temperature sensor signal
OUTTEMP	Outside temperature
P.RET.KN	Turbocharger pressure retardation due to knock in cylinder
P/N POS	Constant idle speed compensation P/N position
P/N. TOR	Torque compensation P/N position
PA.AB.HI.CAP	Passenger airbag capacitance too high
PA.AB.LO.CAP	Passenger airbag capacitance too low
PA.AB.OP.CIR	Passenger airbag open circuit
PA.AB.SH.CIR	Passenger airbag short circuit
PA.AB.SH.GND	Passenger airbag short circuit to ground
PA.AB.SH.PLS	Passenger airbag short circuit to plus
PARK.HEAT	Parking heater
PARKBR.	Park brake switch input signal
POS	GPS position
POT M1	Motor 1 potentiometer reading
POT M2	Motor 2 potentiometer reading

POT M3	Motor 3 potentiometer reading
POT M4	Motor 4 potentiometer reading
POT x	Motor number x potentiometer reading
POW.STEERING	Power steering load signal
PREGLOW T.	Glowplug preglow timing
PTEMP SHUTT	Passenger temperature shutter position
PUMPMOTOR	Pumpmotor
Q ACT	Injected fuel volume, actual value
Q CRUI	Injected fuel volume, requested by cruise control
Q CYL1	Corrected injected fuel volume in cylinder 1 in relation to cylinder 4
Q CYL2	Corrected injected fuel volume in cylinder 2 in relation to cylinder 4
Q CYL3	Corrected injected fuel volume in cylinder 3 in relation to cylinder 4
Q CYL5	Corrected injected fuel volume in cylinder 5 in relation to cylinder 4
Q DRIV	Injected fuel volume, value with regard to driver's wishes (accelerator position)
Q IDLE	Injected fuel volume, at idle
Q LIM.	Injected fuel volume, limited value
Q S START	Injected fuel volume at start
Q S STOP	Injected fuel volume at stop
Q SENS DE	Fuel regulator position sensor output signal, nominal value
Q SENSOR	Fuel regulator position sensor output signal
Q SMOKE	Injected fuel volume, maximum permitted value for axhaust smoke limitation
Q STAR	Injected fuel volume, at start
Q TORQ	Injected fuel volume, limited value with regard to engine torque
QUEST.REC.	Immoblizer initialization signal from engine control module received status
R.TEN.HI.CAP	Right seat belt tensioner capacitance too high
R.TEN.LO.CAP	Right seat belt tensioner capacitance too low

R.TEN.OP.CIR	Right seat belt tensioner open circuit
R.TEN.SH.CIR	Right seat belt tensioner short circuit
R.TEN.SH.GND	Right seat belt tensioner short circuit to ground
R.TEN.SH.PLS	Right seat belt tensioner short circuit to plus
RE.LT.LH	Rear latch left hand lock microswitch
RE.LT.MO.	Rear latch motor output signal
RE.LT.RH	Rear latch right hand lock microswitch
RE.WIN.HEAT	Rear window heater switch
REC SET	Recirculation shutter switch position
REC SHUTT	Recirculation shutter position
RELAY 1	Immobilizer relay 1
RELAY 1-	Motor 1 relay, adjustment backwards
RELAY 1+	Motor 1 relay, adjustment forward
RELAY 2	Immobilizer relay 2
RELAY 2-	Motor 2 relay, adjustment backwards
RELAY 2+	Motor 2 relay, adjustment forward
RELAY 3-	Motor 3 relay, seat rear edge adjustment downwards
RELAY 3+	Motor 3 relay, seat rear edge adjustment upwards
RELAY 4-	Motor 3 relay, seat front edge adjustment downwards
RELAY 4+	Motor 3 relay, seat front edge adjustment upwards
RELAY OUT	Relay output signal
RESERVE	Standby power supply stored in the SRS sensor module
RESET	Erasing diagnostic trouble codes after the last time the ignition is switched off
RESPONSE	Immobilizer start signal to engine control module
RESUME SW	Cruise control resume switch signal
RPM	Engine speed
RPM 2	Alternative rpm signal
RPM SEC	Engine speed from needle lift sensor
RPMMETER	RPM gauge type
RTEMP KNOB	Right temperature knob

RUN TIME	Elapsed run time
S.SYS.T	Time elapsed with system in operation
S/T.F/TRIM	Short term fuel trim
SAS VALVE	Pulsed secondary air injection system valve status
SATELLITES	Number of GPS satellites
SEC	Second, GPS information
SEQ. TIMER	Immobilizer timer when PIN code is wrong
SET- SW	SET- switch
SET+ SW	SET+ switch
SHIFT MODE 1	Shifting program from shift position sensor
SHIFT MODE 2	Shift mode from mode selector position
SI.POT.C	Convertible top potentiometer value
SI.POT.L	Latch potentiometer value
SIREN	Sirén output signal
SMALL LAMP SW	Brake light switch
SOLENOID S1	Status shift solenoid S1
SOLENOID S2	Status shift solenoid S2
SOLENOID SL	Status shift solenoid SL
SOLENOID STH	Status shift solenoid STH
SPEED	Vehicle speed
SPEED INPUT	Vehicle speed input signal
SPEED M1	Speed reading, motor 1
SPEED M2	Speed reading, motor 2
SPEED M3	Speed reading, motor 3
SPEED M4	Speed reading, motor 4
SPEED SIGN.	Vehicle speed signal
SPEED x	Speed reading, motor number x
SPEEDOMETER	Speedometer type
SRL	Service reminder lamp
START.RELAY	Alarm starter motor relay output signal
STATUS	Status
STH CONTROL	Control of system pressure solenoid STH
STH CURR	Amperage, system pressure solenoid STH

STORE	Control panel button activated for memory programming
SU.POT.C	Supply voltage to convertible top potentiometer
SU.POT.L	Supply voltage to latch potentiometer
SUN INTEN	Sunlight intensity
SW.CONV.T.DN	Convertible top in down position microswitch
SW.CONV.T.DN.N	Convertible top in down position microswitch (new set)
SW.CONV.T.UP	Convertible top in up position microswitch
SW.CONV.T.UP.N	Convertible top in up position microswitch (new set)
SW.POS	Switch position
SWITCH M1-	Control panel button for seat adjustment backwards
SWITCH M1+	Control panel button for seat adjustment forward
SWITCH M2-	Control panel button for backrest inclination adjustment backwards
SWITCH M2+	Control panel button for backrest inclination adjustment forward
SWITCH M3-	Control panel button for seat rear edge adjustment downwards
SWITCH M3+	Control panel button for seat rear edge adjustment downwards
SWITCH M4-	Control panel button for seat front edge adjustment downwards
SWITCH M4+	Control panel button for seat front edge adjustment upwards
SYS.T.	Time elapsed with system in operation
SYSTEM RELAY	System relay status
TANK PRESSURE	Pressure in fuel tank
TB.MO.LH.R1	Tension bow motor left hand output 1 signal
TB.MO.LH.R2	Tension bow motor left hand output 2 signal
TB.MO.RH.R1	Tension bow motor right hand output 1 signal
TB.MO.RH.R2	Tension bow motor right hand output 2 signal
TB.UP	Tension bow up microswitch

TC VALVE	Turbocharger control valve status
TEMP KNOB	Temperature shutter switch position
TEMP SHUTT.	Temperature shutter position sensor
TEMP. DA	Temperature input signal, damped
TEMP. NDA	Temperature input signal, not damped
TEMP. WARN	Temparature warning indicator
THROT	Throttle position sensor position according to engine control module
THROT ANG	Throttle position sensor opening angle
THROT POS	Throttle position
THROT POT	Throttle position sensor signal
THROT SIG	Throttle position sensor signal
THROTTLE	Throttle position sensor
TIME	Elapsed time during present diagnostic session
TIMER	Timer
TO ACC TCM	Confirmation of torque limiting (TCM)
TO REDUC	Torque reduction, to engine control module
TO REDUC MAX	Maximun torque limiting
TO REDUC TC1	Torque reduction on shifting, TC1
TO REDUC TC1/2	Torque reduction on shifting TC1/2, to engine control module
TO REDUC TC2	Torque reduction on shifting, TC2
TO REDUC TCT	Torque reduction, turbocharger boost pressure, to engine control module
TOT.DIST	Total distance travelled
TR.OPEN SW	Trunk key switch signal
TRA RPM	Transmission input RPM after the torque converter
TRACS LAMP	TRACS warning lamp, output signal
TRACS SWITCH	TRACS switch
TRANSM	Gear selector lever position on cars with automatic transmission
TRANSP.COMM	Immobilizer transponder in key communication status

TRANSP.FUNC	Immobilizer transponder in key operating status
TRANSP.FUSE	Roll Over Protection System transport fuse status
TRIP	Trip status
TRIP.RESET	Trip meter value reset switch
TRIPMETER	Trip meter value
TRUNK HANDLE	Trunk handle switch signal
TRUNK SW	Trunk switch signal
TRUNKUNLOCK	Trunk unlock signal
TURBO ACT	Turbocharger boost pressure, actual value
TURBO CONT	Turbocharger control system
TURBO CONT VALVE	Turbocharger control valve
TURBO DE	Turbocharger boost pressure, nominal value
TYRE	Tyre size
UNLOCK DR	Driver central unlock motor output signal
UNLOCK MOT	Central lock unlock motor/s
USS	Ultrasonic sensor signal
W AD ALLOW	Wheel adaption permitted
W AD LF	Wheel adaption left front wheel
W AD LR	Wheel adaption left rear wheel
W AD RF	Wheel adaption right front wheel
W AD RR	Wheel adaption right rear wheel
W.CYCLE	Warming up cycle status
V.SPEED	Vehicle speed signal
VALVE RELAY	Valve relay
WARN LAMP	Indicator and warning lamp in the combined instrument panel, output signal
WARN.LA	Warning lamp indicator
WATER TEMP	Temperature in heat exchanger
VERL LEARNED	Immobilizer Verlog code learned
VERLOG SIGN.	Immobilizer Verlog signal output signal status
VGLA OUTPUT	Immobilizer output signal to Volvo Guard Lock and Alarm
VIN LEARNED	Immobilizer VIN code learned

WLAMP FLASH	Dynamic Stability Assistance warning lamp output signal
WLAMP.SH.GND	SRS warning lamp short circuit to ground
WLAMP.SH.PLS	SRS warning lamp short circuit to plus
VOLVO TRANSP	Indicates immobilizer transponder in key manufacturer status
WS LF	Wheel speed left front wheel
WS LR	Wheel speed left rear wheel
WS RF	Wheel speed right front wheel
WS RR	Wheel speed right rear wheel
YEAR	Year, GPS information

Monitor List Scaling Abbrevations

=12p	12 pulses/ rev. mode
=2L	Gear 2 with lock-up
=2STEP	2-step lock function mode
=3L	Gear 3 with lock-up
=48p	48 pulses/ rev. mode
=4D	4 door version
=4L	Gear 4 with lock-up
=5D	5 door version
=A/D LIM	Analog to digital converter limit reached
=ACT	Activated
=AUT	Automatic status
=AUTO	Automatic status
=BI-LEVEL	Bi-level mode
=BLINK	Blinking mode
=BLL	Blocked lock mode (deadlock)
=C.LEAN	Compression lean mode
=CAB	Cabriolet version
=CL	Closed loop
=CLOSE	Closed status
=COUPE	Coupé version
=CRU ERR	Cruise control error
=CTP	Closed throttle position
=CYCL	Cyclic
=D	Drive
=D,2,L,R	Drive/ gear 2/ low gear/ reverse gear
=DEC	Decrease mode
=DEFR	Defroster mode
=DETEC	Detecded
=DIESEL	Diesel version
=DIST	Elapsed distance
=DLOCKSIG	Dead lock signal

=E1	Emergency mode 1
=E2	Emergency mode 2
=E3	Emergency mode 3
=E	Economy
=EBD	Electronic Brake force Distribution
=EN	Enabled
=ENGINE	Engine temp mode
=ERR	Error status
=ES-1	Electronic speedometer type 1
=ES-2	Electronic speedometer type 2
=ESP	Electronic speedometer
=EX ERR	External error
=EX ERR1	External error type 1
=EX ERR2	External error type 2
=EXT	External temperature mode
=FAULT ST	Fault stored
=FL/DEFR	Floor/ defroster mode
=FLOOR	Floor mode
=FRESH	Fresh air mode
=FUEL AVG	Average fuel consumption mode
=FUEL INST	Instant fuel consumption mode
=GND	Ground
=HORN	Horn is enabled
=IC	Info center
=IMPERIAL	Imperial, UK/US, unit
=L	Low gear
=LEAN	Lean burn mode
=LH	Limp home mode
=LOCK	At locking
=LOCK SIGN	Lock signal
=LOWER	Lower tyre size
=MAN	Manual status
=METRIC	Metric unit

=MSP	Mechanical speedometer type
=N	Neutral
=N,P	Neutral/ park
=NA	Not applicable
=NACT	Not activated
=NEG	Negative status
=NODETEC	No detection
=NORM	Normal
=NOT ACT	Not activated
=NOT GND	Not grounded
=NOT POS	Not possible
=NOT PUSHED	Knob not pushed
=OIL	Oil temp mode
=OL	Open loop mode
=OPCIRCUIT	Open circuit
=P	Park
=P/N	Park/ neutral
=PART OPEN	Part open throttle
=PETROL	Petrol version
=POS	Positive status
=POS 0	Position 0
=PUSHED	Knob pushed
=R	Reverse
=R/D/3/L	Reverse/ drive/ gear 3/ low gear
=RANGE	Range mode
=REAR	Reverse gear engaged
=REC	Recirculation mode
=RPM HIG	Engine rpm too high
=RUN	Running
=S	Sport
=SHCIRCUIT	Short circuit
=SIREN A1	Siren type A1 is enabled

=SIREN B1	Siren type B1 is enabled
=SPEED AVG	Average speed mode
=STILL/ADV	Park/ neutral engaged
=STOI	Stoichiometric burn mode
=TRACS	TRACS mode
=TURBO	Turbo version
=UD	Undefined drive
=UDEF	Undefined
=UL	Undefined low gear
=ULOCKSIG	Unlock signal
=UN/LOCK	At unlocking and at locking
=UNDEF	Undefined
=UPPER	Upper tyre size
=UR	Undefined reverse
=W	Winter
=VENT	Ventilation mode
=WOT	Wide open throttle