Checking Procedure

General Information

This Checking Procedure contains the diagnosis of the following electronic system:

• GMPT-E15, Z 22 SE

Vehicle Diagnostic Concept:

The main purpose of a vehicle diagnostic concept is locating and eliminating faults in the shortest time possible. Therefore, the following diagnostic strategy has been developed as a guideline that leads technicians straight to the source fault:

Starting point is the vehicle that contains a certain number of electronic systems, e.g. engine management system, airbag, and ABS system.

Each of these electronic systems consists of so - called "functional groups" that are functionally related to each other. A Coolant Temperature Sensor Circuit for example represents such a functional group.

Each of the functional groups consists of several components, such as switches, sensors, wires etc. A Coolant Temperature Sensor Circuit for example is made up of a sensor, a wiring harness, a control unit, and the software of the control unit.

Based on this structure, the first diagnostic step should be the identification and localisation of the defective electronic system, next comes the diagnosis of the corresponding defective functional group, and finally, locate and repair of the defective component within that group.

The Diagnostic System Check (described in table A, Diagnostic System Check) of this checking procedure follows that diagnostic path. Diagnosis of an electronic system according to the above described concept always starts with this Main Check.

The instructions described in the Diagnostic System Check section must be followed closely. Every time a test or test step is passed without fault, the Diagnostic System Check continues with the next step. Some of the tests include references to related functional groups (tables B-x). When there is a fault, the corresponding functional group tests are performed in order to detect the defective functional group. When that group has been identified, the troubleshooting tables (C-x) are used to locate the faulty component. After repair of the fault, the affected functional group (tables B-x) must be rechecked to continue after this test at the appropriate position of the Diagnostic System Check (table A).

When all test steps of the Diagnostic System Check have been completed successfully, the system is fully operational.

Safety Measures

Please take notice of any relevant safety measures for each work operation / step.

The safety measures can be found in the following area of TIS 2000:

- Service Information
- Standard Information
- Select: Model
- Select: Model year
- Select: One or more assembly groups
- Application: Warnings, disclaimers, safety

Electronic System Specific Information

• Trouble Code Features In a few cases, the diagnostic tester may display a trouble code status or description that looks unfamiliar:

Trouble Code Status:

Instead of the known PRESENT, NOT PRESENT (and INTERMITTENT) message, you may read UNKNOWN DTC in the tester display. This tells you that the diagnostic software or control unit contains a piece of incorrect information that is unknown to the diagnostic tester and that it is unable to read or evaluate. Both the trouble code number and the trouble code text are not changed in this case.

The above mentioned special cases can not be removed by means of a diagnostic tester function.

Data List Parameter

Depending on the vehicle/system configuration it is possible that some data list parameters or test steps, although they are listed in this checking procedure, are not shown on the diagnostic tester display. In that case, these data list parameters are not valid for this vehicle/system configuration.

Electronic System Picture Information

Block Diagram



B21 Sensor - Absolute Pressure, Intake Manifold	Y5 Solenoid Valve - Tank Ventilation
B30 Sensor - Knocking Control 1	Y9 Injection Valve - Fuel
B34 Impulse Sensor - Crankshaft	Y29 Throttle Valve Positioner



Components

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No.	Legend	No.	Legend
1	B13 Sensor - Temperature, Intake Air	4	Y29 Throttle Valve Positioner
2	A4 Control Unit - Multec	5	B30 Sensor - Knocking Control 1
3	Y5 Solenoid Valve - Tank Ventilation	6	T1 Ignition Coil - Direct Ignition

Parts Location



A13 Control Unit - Anti Theft Warning Unit	ДЗН	ВЗН	behind instrument panel
A14 Radio	D3G	B3G	instrument panel
A17 Control Unit - Immobiliser	B3G	D3G	behind instrument panel
B12 Sensor - Temperature, Coolant	B6G	B6G	at engine
B13 Sensor - Temperature, Intake Air	B6H	B6H	at engine
B19 Sensor - Pedal Position	B3G	D3G	above foot compartment, driver side
B21 Sensor - Absolute Pressure, Intake Manifold	C6H	C6H	at engine
B30 Sensor - Knocking Control 1	B6F	B6F	at engine
B34 Impulse Sensor - Crankshaft	B6F	B6F	at engine
B117 Sensor - Oxygen, Exhaust, Heated 1	B6G	B6G	at exhaust system
B118 Sensor - Oxygen, Exhaust, Heated 2	A6G	A6G	at exhaust system
C1 Capacitor - Ignition Coil	B6H	B6H	at engine
G1 Battery	D2G	B2G	Body, front
G2 Alternator	D6G	D6G	at engine
H1 Instrument	ВЗН	D3H	instrument panel
H1.1 Charging Indicator Lamp	ВЗН	D3H	in the instrument
H1.4 Telltale - Airbag	ВЗН	D3H	in the instrument
H1.5 Telltale - Anti Lock Brake System	ВЗН	D3H	in the instrument
H1.6 Telltale - Engine	ВЗН	D3H	in the instrument
H1.22 Temperature Indicator - Coolant	ВЗН	D3H	in the instrument
H1.24 Tachometer	ВЗН	D3H	in the instrument
K13 Relay - Blower, Radiator	D2H	B2H	relay box
K16 Relay - Fuel pump	A7H	A7H	relay box, wheelhouse
K18 Relay - Engine Control Unit	A7H	A7H	relay box, wheelhouse

K24 Relay - Starter	A7H	A7H	relay box, wheelhouse
M1 Starter	C6G	C6G	at engine
M19 Motor - Blower, Radiator	C1F	C1F	radiator, left
M21 Pump - Fuel	B5G	B5G	in fuel tank
S1 Switch - Starter	ВЗН	D3H	at steering column
S4 Switch - Parking Lamp	ВЗН	D3H	instrument panel
S94 Shock Switch - Fuel Cut-Off	B7G	B7G	at cross member
S124 Switch - Starter Button	СЗН	СЗН	instrument panel
T1 Ignition Coil - Direct Ignition	B6H	B6H	at engine
X13 Diagnostic Link	D3G	B3G	above foot compartment, front passenger side
Y4 Solenoid Valve - Exhaust Gas Recirculation	B6H	B6H	at engine
Y5 Solenoid Valve - Tank Ventilation	B6H	B6H	at engine
Y9 Injection Valve - Fuel	B6H	B6H	at engine
Y29 Throttle Valve Positioner	B6H	B6H	at engine

Rated Fuse Current of the Fused Jumper Wire

Wire gauge given in mm^2	Rated Fuse Current of the Fused Jumper Wire
0,35	3
0,5	5
0,75	7,5
1,0	10
1,5	15
2,5	2,5
4,0	30
6,0	30



Terminal Assignment Control Unit Wiring Harness Plug X21 (J1)

Multimeter MKM-587-A

Test Lamp KM-602-1



M 0817

No.	Legend	No.	Legend
9	H1.24 Tachometer	30	K18 Relay - Engine Control Unit
13	K13 Relay - Blower, Radiator	31	B19 Sensor - Pedal Position
18	A2 Control Unit - Anti Lock Brake System	49	B19 Sensor - Pedal Position
19	S1 Switch - Starter	53	B19 Sensor - Pedal Position
20	G1 Battery	59	A17 Control Unit - Immobiliser
21	B19 Sensor - Pedal Position	61	B19 Sensor - Pedal Position
25	H1.22 Temperature Indicator - Coolant	63	H1.6 Telltale - Engine
29	K16 Relay - Fuel pump	64	B19 Sensor - Pedal Position

Terminal Assignment Control Unit Wiring Harness Plug X22 (J2)



M 0818

No.	Legend	No.	Legend
1	B34 Impulse Sensor - Crankshaft	35	B21 Sensor - Absolute Pressure, Intake Manifold
2	B34 Impulse Sensor - Crankshaft	36	Y29 Throttle Valve Positioner
3	Y9.4 Injection Valve Cylinder - 4	38	B12 Sensor - Temperature, Coolant
7	Y9.1 Injection Valve - Cylinder - 1	39	B13 Sensor - Temperature, Intake Air
9	Y5 Solenoid Valve - Tank Ventilation	40	Y4 Solenoid Valve - Exhaust Gas Recirculation
10	Y9.3 Injection Valve Cylinder - 3	41	B12 Sensor - Temperature, Coolant
11	Y4 Solenoid Valve - Exhaust Gas Recirculation	43	Y29 Throttle Valve Positioner
12	B21 Sensor - Absolute Pressure, Intake Manifold	44	B118 Sensor - Oxygen, Exhaust, Heated 2
13	Y29 Throttle Valve Positioner	45	Y29 Throttle Valve Positioner
14	Y29 Throttle Valve Positioner	46	Y4 Solenoid Valve - Exhaust Gas Recirculation
15	Y29 Throttle Valve Positioner	49	B117 Sensor - Oxygen, Exhaust, Heated 1
16	Y29 Throttle Valve Positioner	50	B117 Sensor - Oxygen, Exhaust, Heated 1

17	T1 Ignition Coil - Direct Ignition	51	B118 Sensor - Oxygen, Exhaust, Heated 2
18	B30 Sensor - Knocking Control 1	52	B118 Sensor - Oxygen, Exhaust, Heated 2
19	B13 Sensor - Temperature, Intake Air	54	T1 Ignition Coil - Direct Ignition
21	B117 Sensor - Oxygen, Exhaust, Heated 1	55	Y29 Throttle Valve Positioner
22	B30 Sensor - Knocking Control 1	56	T1 Ignition Coil - Direct Ignition
26	Y29 Throttle Valve Positioner	57	Y29 Throttle Valve Positioner
27	T1 Ignition Coil - Direct Ignition	58	B21 Sensor - Absolute Pressure, Intake Manifold
32	Y4 Solenoid Valve - Exhaust Gas Recirculation	63	K18 Relay - Engine Control Unit (power supply)
33	Shielding of signal leads	64	K18 Relay - Engine Control Unit (power supply)
34	Y9.2 Injection Valve - Cylinder - 2		

Wiring Schematic Diagram 1



M 0925

Legend	Legend
A4 Control Unit - Multec	B13 Sensor - Temperature, Intake Air
B12 Sensor - Temperature, Coolant	B21 Sensor - Absolute Pressure, Intake Manifold
Abbreviations:	
IMO = Immobiliser	MK = Engine Cooling
	Î Î

INS = Instrument	STA = Ignition switch signal (position II)
KSP = Fuel Pump	WEG = Distance Signal (Impulse from ABS)



Legend	Legend
A4 Control Unit - Multec	K18 Relay - Engine Control Unit
B19 Sensor - Pedal Position	Y4 Solenoid Valve - Exhaust Gas Recirculation
B30 Sensor - Knocking Control 1	Y5 Solenoid Valve - Tank Ventilation
B34 Impulse Sensor - Crankshaft	Y9 Injection Valve - Fuel
Abbreviations:	
KSP = Fuel Pump	SM = Control Unit Engine

Wiring Schematic Diagram 3



Legend	Legend
A4 Control Unit - Multec	B118 Sensor - Oxygen, Exhaust, Heated 2
B117 Sensor - Oxygen, Exhaust, Heated 1	Y29 Throttle Valve Positioner
Abbreviations:	
SM = Control Unit Engine	

M 0927

A - Diagnostic System Check				
Work Order Description		Nominal Value		
GMPT-E15, Z 22 SE				
This Checking Procedure is valid for the following vehicles:				
Opel/Vauxhall Speedster/VX220 200				
Production dependent vehicle modification other model years are not covered by this Checking Procedure. This might lead to improper diagnosis.				
Yes:T)2			
T02 - Customer Complaint Validation				
Work Order Description		Nominal Value		
 Record customer complaint for later use Verify, validate and understand the customer complaint 		Is the malfunction reproducible?		
Note:				
Record the information by using the Protocol- Function of the TIS 2000 Checking Procedure Application.				
Yes:T03		No:T12		
T03 - System Operation as Designed				
Work Order Description		Nominal Value		
 Check if the customer complaint is a normal system behaviour and if the customer operates the system properly. 		System okay?		
Note:				
Refer to the operating manual of the system / the vehicle				
Yes:T04		No:T05		
Yes:				

T04 - Inform the Customer

T04 - Inform the Customer				
Work Order Description	Nominal Value			
 Please inform the customer, that the system behaviour is normal system operation respectively that the complaint can not be reproduced. 				
T05 - Preliminary Diagnostic Check (Visual Insp	ection)			
Work Order Description	Nominal Value			
 Perform a visual check of all accessible components of the concerned system using the recorded customer complaint (this should take a maximum of 2 minutes) All consumers turned off Verify battery condition Check the following fuses for proper operation: FL1, FL4, FB7, FB8 Fuse Check if all ground connections are clean, tight and installed properly Check if all connections and plugs of the concerned system are clean, tight / correctly installed and have no damages. Check vacuum hoses and connectors for condition, leaking and secure fitting. Check hose connectors and fittings on intake system / vacuum system After successful test/fault repair proceed to the next test step 				
Note:				
The battery must not be disconnected at this point of the Diagnostic System Check, as the control units of the vehicle could otherwise lose stored diagnostic information.				
If the system operates correctly after replacing a defective fuse, the switched circuits, which are supplied by this fuse, should be checked for short circuit to ground.				
Yes:T06				
T06 - Check: Other system				
Work Order Description	Nominal Value			

Check the following system / signal for proper operation:				
 Immobiliser Signal <u>Refer to Table B-04 Immobiliser Check</u> After successful test/fault repair proceed to the next test step 				
Yes:T07				
T07 - Connect Diagnostic Tester and Establish Communication Work Order Description				
Before connecting the diagnostic tester, observe the instructions of the diagnostic tester operators manual				
 Connect diagnostic tester, select concerned Electronic System, establish communication and verify, that the correct control unit is installed: <u>Refer to Table B-05 Connect Diagnostic Tester and Establish Communication</u> Check the following system / signal for proper operation: <u>Refer to Table B-06 Immobiliser Signal Check</u> Verify programming of the control unit: <u>Refer to Table B-07 PROGRAMMING</u> After successful test/fault repair proceed to the next test step 				
Yes:T08				
T08 - Diagnostic Trouble Codes	Na walio a Li Madava			
Important:				
Trouble codes are only a reference on faults in a subgroup of the system. Trouble codes are not a direct reference on a defective component.				
Trouble codes are not updated as long as the diagnostic tester communicates with the control unit.				
 Read and record diagnostic trouble codes including status 				

 Delete trouble codes The trouble code status PRESENT only exists under certain conditions. Operate the vehicle over an appropriate distance at various engine speed / load conditions, until the trouble code is PRESENT. If a trouble code with status present is stored: <u>Refer to Table B-01 DIAGNOSTIC TROUBLE CODE</u> After successful test/fault repair proceed to the next test step Note:				
code before proceeding with the diagnostic procedure.				
Yes:T09				
109 - Check: Symptom/Customer Complaint				
Work Order Description	Nominal Value			
If a defect has been found in previous test steps, the following test can be skipped (follow result "YES").				
 Evaluate customer complaint: <u>Refer to Table B-08 Symptom</u> <u>Chart/Customer Complaints</u> After successful test/fault repair proceed to the next test step 				
Note:				
Refer to the newest Technical Information TI regarding the symptom/customer complaint before proceeding with the diagnostic procedure.				
Yes:T10	Yes:T10			
T10 - No Matching Customer Complaint				
Work Order Description	Nominal Value			
If a defect has been found in providue test stops				

"YES").				
 Perform the following evaluation: <u>Refer to Table B-12 No Matching Customer</u> <u>Complaint</u> After successful test/fault repair proceed to the next test step 				
Yes:T11				
Yes: T11 - System / Function End Test				
Work Order Description	Nominal Value			
 Check if the customer complaint is repaired and the concerned system is fully operational. Note: Drive the vehicle in different driving conditions (engine speed and engine load conditions) over a considerable distance. Pay attention to unusual noise and other system irregularities. Turn ignition OFF and ON Delete trouble codes 				
Note:				
Read the trouble codes again after the test drive and check for symptoms / customer complaints. If a complaint still exists, restart the diagnostic session for a second time. If the problem can not be solved in the second diagnostic session, contact the local support centre.				
T12 - Intermittent System Operation				
Work Order Description	Nominal Value			
Most intermittent problems are caused by faulty electrical connectors, faulty ground connections, broken wiring, temperature problems or radio interference.				
INTERMITTENT/NOT PRESENT trouble codes or the snapshot function of the diagnostic tester in combination with the following tests:				

- Perform the following evaluation: <u>Refer to Table B-16 Check: Intermittent</u> <u>Faults</u>
- After successful test/fault repair proceed to the next test step

Yes:T11

B-01 - DIAGNOSTIC TROUBLE CODE

P0105 - Manifold absolute pressure/barometric pressure circuit range/performance problem

• The control unit recognises the malfunction of the circuit via an internal evaluation logic.

Concerned Terminals:

X22: 12, 35, 58

Refer to test step :C-08

Refer to test step :C-08

P0107 - Manifold absolute pressure/barometric pressure circuit low input

- Engine speed is less than 1000 rpm
- Intake manifold absolute pressure sensor voltage is less than 0.08 V

or

- Engine speed is greater than 1000 rpm
- Throttle valve opening is greater than 21.9 %
- Intake manifold absolute pressure sensor voltage is less than 0.08 V

Concerned Terminals:

X22: 12, 35, 58

Refer to test step :C-08

P0108 - Manifold absolute pressure/barometric pressure circuit high input

- 40 s elapsed time since engine start
- Throttle valve opening is less than 12 %
- Vehicle speed is less than 2 km/h (1 mph)
- Intake manifold absolute pressure sensor voltage is greater than 3.80 V

Concerned Terminals:

X22: 12, 35, 58

P0112 - Intake Air Temperature Sensor Circuit Low Input

- 320 s elapsed time since engine start
- Intake air temperature is greater than 128 ℃ (262 °F) (Short circuit to ground)

Concerned Terminals:

X22: 19, 39

Refer to test step :C-10 Refer to test step :C-10 P0113 - Intake Air temperature Sensor Circuit High Input 320 s elapsed time since engine start • Coolant temperature is greater than -40 °C (-40 °F) • Intake air temperature is less than -57 $^{\circ}$ C (-71 $^{\circ}$ F) **Concerned Terminals:** X22: 19. 39 P0117 - Engine Coolant Temperature Circuit Low Input • Coolant temperature is greater than 142 °C (288 °F) Above condition must be fulfilled for at least 0.5 s. Concerned Terminals: X22: 38, 41 Refer to test step :C-09 Refer to test step :C-09 P0118 - Engine Coolant Temperature Circuit High Input • Coolant temperature is less than -71 ℃ (-96 °F) Above condition must be fulfilled for at least 0.5 s. Concerned Terminals: X22: 38, 41 P0122 - Throttle Position Sensor Circuit Low Input • The voltage at control unit terminal 49 (X22) is less than 0.10 V (Short circuit to ground or circuit interruption) **Concerned Terminals:** X22: 13,14,15,16, 26, 36, 43, 45, 55, 57, 63, 64 Refer to test step :C-07 Refer to test step :C-07 P0123 - Throttle Position Sensor Circuit High Input • The voltage at the control unit input (terminal 49 (X22)) is greater than 3.91 ν. (Short circuit to voltage) Concerned Terminals: X22: 13,14,15,16, 26, 36, 43, 45, 55, 57, 63, 64 P0125 - Insufficient coolant temperature for closed loop fuel control • The control unit recognises the malfunction of the circuit via an internal evaluation logic. **Concerned Terminals:** Refer to test step :C-25

Refer to test step :C-09

P0128 - Engine Coolant Temperature Below Thermostat Regulating Temperature

• The control unit recognises the malfunction of the circuit via an internal evaluation logic.

Concerned Terminals:

X22: 38, 41

P0130 - O2 sensor circuit malfunction (Bank 1 Sensor 1)

• The control unit recognises the malfunction of the circuit via an internal evaluation logic.

Concerned Terminals:

X22: 49, 50

Refer to test step :C-19 Refer to test step :C-19

P0131 - O2 sensor lean exhaust or power enrichment lean (Bank 1 Sensor 1)

- Coolant temperature is greater than 70 °C (158 °F)
- Mass air flow sensor signal is greater than 10.8 kg/h
- Throttle valve angle between 10.2 % and 50.2 %
- Above conditions must be fulfilled for at least 10 s .
- Oxygen sensor voltage is less than 8.6 mV

Concerned Terminals:

X22: 49, 50

Refer to test step :C-19

P0132 - O2 sensor rich exhaust or deceleration fuel cutoff rich (Bank 1 Sensor 1)

- Coolant temperature is greater than 70 °C (158 °F)
- Mass air flow sensor signal is greater than 10.8 kg/h
- Throttle valve angle between 10.2 % and 50.2 %
- Above conditions must be fulfilled for at least 10 s .
- Oxygen sensor voltage is greater than 0.951 V

Concerned Terminals:

X22: 49, 50

P0133 - O2 Sensor Circuit Slow Response (Bank 1 Sensor 1)

• The control unit recognises the malfunction of the circuit via an internal evaluation logic.

Concerned Terminals:

X22: 49, 50

Refer to test step :C-19

P0134 - O2 Sensor Circuit Open (Bank 1 Sensor 1)

• The control unit recognises the malfunction of the circuit via an internal evaluation logic.

Concerned Terminals:

X22: 49, 50

Refer to test step :C-19

P0135 - O2 sensor heater circuit malfunction (Bank 1 Sensor 1)

• The control unit recognises the malfunction of the circuit via an internal evaluation logic.

Concerned Terminals:

X22: 21

Refer to test step :C-18

P0137 - O2 Sensor 2 Lean Exhaust

- Coolant temperature is greater than 40 °C (104 °F)
- Mass air flow sensor signal is greater than 19.8 kg/h
- Throttle valve angle between 10.2 % and 50.2 %
- Above conditions must be fulfilled for at least 140 s .
- Oxygen sensor voltage is less than 34.7 mV

Concerned Terminals:

X22: 51, 52

Refer to test step :C-21

Refer to test step :C-21

P0138 - O2 Sensor 2 Rich Exhaust

- Coolant temperature is greater than 40 ℃ (104 °F)
- Mass air flow sensor signal is greater than 19.8 kg/h
- Throttle valve angle between 10.2 % and 50.2 %
- Above conditions must be fulfilled for at least 140 s .
- Oxygen sensor voltage is greater than 0.900 V

Concerned Terminals:

X22: 51, 52

Refer to test step :C-21

P0140 - O2 Sensor Circuit Open (Bank 1 Sensor 2)

- Coolant temperature is greater than 40 ℃ (104 °F)
- Mass air flow sensor signal is greater than 19.8 kg/h
- Throttle valve angle between 8 % and 56 %
- Above conditions must be fulfilled for at least 140 s .
- Oxygen sensor voltage is in the range of 425 mV to 460 mV (Circuit interruption, oxygen sensor defective)

Concerned Terminals:

X22: 51, 52

P0141 - O2 sensor heater circuit malfunction (Bank 1 Sensor 2)

• The control unit recognises the malfunction of the circuit via an internal evaluation logic.

Concerned Terminals:

X22: 44

Refer to test step :C-20

P0171 - System too lean (Bank 1)

• The control unit recognises the malfunction of the circuit via an internal evaluation logic.

Concerned Terminals:

X22: 49, 50

Refer to test step :C-19

P0172 - System too rich (Bank 1)

• The control unit recognises the malfunction of the circuit via an internal evaluation logic.

Concerned Terminals:

X22: 49, 50

Refer to test step :C-19

P0201 - Cylinder 1 - injector circuit malfunction

- Engine running
- Final stage diagnosis in control unit

Concerned Terminals:

X22: 7

Refer to test step :C-11

P0202 - Cylinder 2 - injector circuit malfunction

- Engine running
- Final stage diagnosis in control unit

Concerned Terminals:

X22: 34

Refer to test step :C-12

P0203 - Cylinder 3 - injector circuit malfunction

- Engine running
- Final stage diagnosis in control unit

Concerned Terminals:

X22: 10

Refer to test step :C-13

P0204 - Cylinder 4 - injector circuit malfunction

- Engine running
- Final stage diagnosis in control unit

Concerned Terminals:

X22: 3

Refer to test step :C-14 Refer to test step :C-09

P0217 - Engine overtemperature condition

• The control unit recognises the malfunction of the circuit via an internal evaluation logic.

Concerned Terminals:

X22: 38, 41

P0300 - Random/multiple cylinder misfire detected

• The control unit recognises the malfunction of the circuit via an internal evaluation logic.

Concerned Terminals:

X22: 17, 27, 54, 56

Refer to test step :C-26

P0301 - Random/multiple cylinder misfire detected

• The control unit recognises the malfunction of the circuit via an internal evaluation logic.

Concerned Terminals:

X22: 17, 27, 54, 56

Refer to test step :C-26

P0302 - Random/multiple cylinder misfire detected

• The control unit recognises the malfunction of the circuit via an internal evaluation logic.

Concerned Terminals:

X22: 17, 27, 54, 56

Refer to test step :C-26

P0303 - Random/multiple cylinder misfire detected

• The control unit recognises the malfunction of the circuit via an internal evaluation logic.

Concerned Terminals:

X22: 17, 27, 54, 56

Refer to test step :C-26

P0304 - Random/multiple cylinder misfire detected

• The control unit recognises the malfunction of the circuit via an internal evaluation logic.

Concerned Terminals:

X22: 17, 27, 54, 56

Refer to test step :C-26

P0325 - Knock sensor 1 circuit malfunction (Bank 1 or single sensor)

 Knock sensor voltage is evaluated and produces an implausible resulting value.

Concerned Terminals:

X22: 18, 22, 33

Refer to test step :C-15

P0336 - Crankshaft position sensor "A" circuit range/performance

• The control unit recognises the malfunction of the circuit via an internal evaluation logic.

Concerned Terminals:

X22: 1, 2

Refer to test step :C-04

P0340 - Camshaft position sensor circuit malfunction

• The control unit recognises the malfunction of the circuit via an internal evaluation logic.

Concerned Terminals:

X22: 17, 27, 54, 56

Refer to test step :C-26

P0341 - Camshaft Position Sensor Circuit Range/Performance

• The control unit recognises the malfunction of the circuit via an internal evaluation logic.

Concerned Terminals:

X22: 17, 27, 54, 56

Refer to test step :C-26

P0404 - Exhaust Gas Recirculation Circuit Range/Performance (Open Valve)

• The control unit recognises the malfunction of the circuit via an internal evaluation logic.

Concerned Terminals:

X22: 11, 32, 40, 46

Refer to test step :C-16

P0405 - Exhaust gas recirculation sensor "A" circuit low

• The control unit recognises the malfunction of the circuit via an internal evaluation logic.

Concerned Terminals:

X22: 11, 32, 40, 46

Refer to test step :C-16

Refer to test step :C-21

P0420 - Catalyst System Efficiency Below Threshold (Bank 1)

• The control unit recognises the malfunction of the circuit via an internal evaluation logic.

Concerned Terminals:

X22: 51, 52

P0443 - Evaporative emission control system purge control valve circuit malfunction

• The control unit recognises the malfunction of the circuit via an internal evaluation logic.

Concerned Terminals:

X22: 9

Refer to test step :C-17

P0480 - Cooling fan 1 control circuit malfunction

• The control unit recognises the malfunction of the circuit via an internal evaluation logic.

Concerned Terminals:

X21: 13

Refer to test step :C-22

Refer to test step :C-07

P0506 - Idle control system RPM lower than expected

 The desired idle speed is not in nominal range; the deviation is more than 100 rpm.

Concerned Terminals:

X22: 13,14,15,16, 26, 36, 43, 45, 55, 57, 63, 64

Refer to test step :C-07

P0507 - Idle control system RPM higher than expected

• The desired idle speed is not in nominal range; the deviation is more than 60 rpm.

Concerned Terminals:

X22: 13,14,15,16, 26, 36, 43, 45, 55, 57, 63, 64

P0562 - System Voltage Low

• The control unit recognises the malfunction of the circuit via an internal evaluation logic.

Concerned Terminals:

X21: 19, 30

Refer to test step :C-03

P0563 - System Voltage High

• The control unit recognises the malfunction of the circuit via an internal evaluation logic.

Concerned Terminals:

X21: 19, 30

Refer to test step :C-03

- P0601 Internal Control Module Memory Checksum Error
 - Self-test of program memory: The check sum calculated by the control unit and the number stored in the program memory (EPROM) do not match. or The program memory identification number read by the control unit is not
 - The fault is stored directly on recognition.

Effect:

• The engine does not start.

Concerned Terminals:

Refer to test step :C-02

P0602 - Control Module Programming Error

Control unit recognises programming error

or

• Control unit not programmed

Concerned Terminals:

Refer to test step :C-02

P0604 - Internal control module random access memory (RAM) error

• Control unit hardware failure (EPROM, EEPROM, RAM, ROM defective)

Concerned Terminals:

Refer to test step :C-02

P0606 - Powertrain control module processor fault

Control unit hardware failure

Concerned Terminals:

Refer to test step :C-02
Refer to test step :C-07

P0607 - Electronic Throttle Control Motor Failure

• The control unit recognises the malfunction of the circuit via an internal evaluation logic.

Concerned Terminals:

X22: 13,14,15,16, 26, 36, 43, 45, 55, 57, 63, 64

Refer to test step :C-07

P1120 - Throttle Position Sensor

• The control unit recognises the malfunction of the circuit via an internal evaluation logic.

Concerned Terminals:

X22: 13,14,15,16, 26, 36, 43, 45, 55, 57, 63, 64

P1125 - Accelerator Sensor

• The control unit recognises the malfunction of the circuit via an internal evaluation logic.

Concerned Terminals:

X21: 21, 31, 49, 53, 61, 64

Refer to test step :C-06

P1133 - O2 Sensor - Transition Switch Time Ratio (Bank 1 Sensor 1)

• The control unit recognises the malfunction of the circuit via an internal evaluation logic.

Concerned Terminals:

X22: 49, 50

Refer to test step :C-19

Refer to test step :C-21

P1137 - O2 sensor power enrichment lean (Bank 1 Sensor 2)

• The control unit recognises the malfunction of the circuit via an internal evaluation logic.

Concerned Terminals:

X22: 51, 52

Refer to test step :C-21

P1138 - O2 sensor deceleration fuel cutoff rich (Bank 1 Sensor 2)

• The control unit recognises the malfunction of the circuit via an internal evaluation logic.

Concerned Terminals:

X22: 51, 52

P1171 - Fuel Supply System Lean During Power Enrichment

• The control unit recognises the malfunction of the circuit via an internal evaluation logic.

Concerned Terminals:

X21: 29

Refer	to	test	step	:C-05
Refer	to	test	step	:C-07

P1220 - Throttle Position Sensor 2 Circuit

• The control unit recognises the malfunction of the circuit via an internal evaluation logic.

Concerned Terminals:

X22: 13,14,15,16, 26, 36, 43, 45, 55, 57, 63, 64

Refer to test step :C-07

P1221 - Throttle Position Sensor 1-2 Circuit Performance

• The control unit recognises the malfunction of the circuit via an internal evaluation logic.

Concerned Terminals:

X22: 13,14,15,16, 26, 36, 43, 45, 55, 57, 63, 64

P1271 - Accelerator Pedal Position Sensor 1-2 Correlation

• The control unit recognises the malfunction of the circuit via an internal evaluation logic.

Concerned Terminals:

X21: 21, 31, 49, 53, 61, 64

Refer to test step :C-06

P1275 - Accelerator Pedal Position Sensor 1 Circuit

• The control unit recognises the malfunction of the circuit via an internal evaluation logic.

Concerned Terminals:

X21: 21, 31, 49, 53, 61, 64

Refer to test step :C-06

P1276 - Accelerator Pedal Position Sensor 1-3 Correlation

• The control unit recognises the malfunction of the circuit via an internal evaluation logic.

Concerned Terminals:

X21: 21, 31, 49, 53, 61, 64

Refer to test step :C-06

P1280 - Accelerator Pedal Position Sensor 2 Circuit

• The control unit recognises the malfunction of the circuit via an internal evaluation logic.

Concerned Terminals:

X21: 21, 31, 49, 53, 61, 64

Refer to test step :C-06

P1336 - Crankshaft Position System Variation Not Learned

• The control unit recognises the malfunction of the circuit via an internal evaluation logic.

Concerned Terminals:

Refer to test step :C-02

P1345 - Crankshaft/Camshaft Correlation

• The control unit recognises the malfunction of the circuit via an internal evaluation logic.

Concerned Terminals:

X22: 1, 2

Refer to test step :C-04

P1380 - ABS Rough Road/Misfire Diagnostic Prevented

• The control unit recognises the malfunction of the circuit via an internal evaluation logic.

Concerned Terminals:

Refer to test step :C-25

P1404 - Exhaust Gas Recirculation Circuit Range/Performance (Closed Valve)

• The control unit recognises the malfunction of the circuit via an internal evaluation logic.

Concerned Terminals:

X22: 11, 32, 40, 46

Refer to test step :C-16

Refer to test step :C-07

P1512 - Throttle Position Adaption Error

• The control unit recognises the malfunction of the circuit via an internal evaluation logic.

Concerned Terminals:

X22: 13,14,15,16, 26, 36, 43, 45, 55, 57, 63, 64

P1514 - Electronic Throttle Control Malfunction

• The control unit recognises the malfunction of the circuit via an internal evaluation logic.

Concerned Terminals:

X22: 12, 35, 58

Refer to test step :C-08

Refer to test step :C-07

P1515 - Commanded versus Actual Throttle Position Correlation

• The control unit recognises the malfunction of the circuit via an internal evaluation logic.

Concerned Terminals:

X22: 13,14,15,16, 26, 36, 43, 45, 55, 57, 63, 64

Refer to test step :C-07

P1516 - Throttle Actuator Control Position Performance

• The control unit recognises the malfunction of the circuit via an internal evaluation logic.

Concerned Terminals:

X22: 13,14,15,16, 26, 36, 43, 45, 55, 57, 63, 64

Refer to test step :C-07

P1523 - Throttle Actuator Control Return Performance

• The control unit recognises the malfunction of the circuit via an internal evaluation logic.

Concerned Terminals:

X22: 13,14,15,16, 26, 36, 43, 45, 55, 57, 63, 64

P1599 - Engine Stall Detected

• The control unit recognises the malfunction of the circuit via an internal evaluation logic.

Concerned Terminals:

Refer to test step :C-25

P1610 - Immobiliser Function not Programmed

• The engine control unit is in reset state.

Effect:

- The engine telltale is triggered (flashing).
- Approximately 5 s after ignition ON, the injection function is blocked and the fuel pump is switched off.

Concerned Terminals:

X21: 59

Refer to test step :Immobiliser C-02 Refer to test step :Immobiliser C-02

P1611 - Wrong Security Code Entered

• Entered security code is not valid for the actual vehicle

Effect:

- The engine telltale is triggered (flashing).
- Approximately 5 s after ignition ON, the injection function is blocked and the fuel pump is switched off.

Concerned Terminals:

X21: 59

P1612 - Immobiliser No Or Wrong Signal

 Communication error between immobiliser control unit and engine control unit.

Effect:

- The engine telltale is triggered (flashing).
- Approximately 5 s after ignition ON, the injection function is blocked and the fuel pump is switched off.

Concerned Terminals:

X21: 59

Refer to test step :Immobiliser C-05

P1613 - Immobiliser No Or Wrong Signal

 Communication error between immobiliser control unit and engine control unit.

Effect:

- The engine telltale is triggered (flashing).
- Approximately 5 s after ignition ON, the injection function is blocked and the fuel pump is switched off.

Concerned Terminals:

X21: 59

Refer to test step :Immobiliser C-05

P1614 - Wrong Transponder Key

• Wrong transponder response received.

Effect:

- The engine telltale is triggered (flashing).
- Approximately 5 s after ignition ON, the injection function is blocked and the fuel pump is switched off.

Concerned Terminals:

X21: 59

Refer to test step :Immobiliser C-06

P1621 - EEPROM Failure

• Control unit hardware failure (EPROM, EEPROM, RAM, ROM defective)

Concerned Terminals:

Refer to test step :C-02

P1633 - Ignition Circuit

• The control unit recognises the malfunction of the circuit via an internal evaluation logic.

Concerned Terminals:

X22: 17, 27, 54, 56

Refer to test step :C-26

P1635 - 5V Reference #1 Circuit

• The control unit recognises the malfunction of the circuit via an internal evaluation logic.

Concerned Terminals:

X21: 21, 31, 49, 53, 61, 64

Refer to test step :C-06

P1639 - 5V Reference #2 Circuit

• The control unit recognises the malfunction of the circuit via an internal evaluation logic.

Concerned Terminals:

X21: 21, 31, 49, 53, 61, 64

Refer to test step :C-06

P1680 - Accelerator Sensor Voltage Low

• The control unit recognises the malfunction of the circuit via an internal evaluation logic.

Concerned Terminals:

X21: 21, 31, 49, 53, 61, 64

Refer to test step :C-06

Refer to test step :C-07

P1681 - TPS Monitoring Fault (Throttle Position Sensor)

• The control unit recognises the malfunction of the circuit via an internal evaluation logic.

Concerned Terminals:

X22: 13,14,15,16, 26, 36, 43, 45, 55, 57, 63, 64

Refer to test step :C-07

P1682 - Electronic Throttle Control Malfunction

• The control unit recognises the malfunction of the circuit via an internal evaluation logic.

Concerned Terminals:
X22: 13,14,15,16, 26, 36, 43, 45, 55, 57, 63, 64

B-02 - DATA LIST

TO1 TOOLOW Diaml Dettem

Work Order Description	Nominal Value
Ignition ONEngine OFFAll consumers turned off	11 13.5 V
 Engine starting 	greater than 8 V
 Engine running at idle speed, operative All consumers turned off Accelerator pedal not actuated 	ating 12 15 V
Concerned Terminals: X21: 19, 30	
Yes:T02	No:C-03
02 - Tester Display Main Relay	
Work Order Description	Nominal Value
 Ignition ON Engine OFF All consumers turned off 	Active
Concerned Terminals: X21: 19, 30	
Yes:T03	No:C-03
03 - Tester Display Fuel Pump Relay	
Work Order Description	Nominal Value
Ignition ONEngine OFFAll consumers turned off	Inactive
 Engine running at idle speed, operative Accelerator pedal not actuated 	ating Active
Concerned Terminals: X21: 29	
Yes:T04	No:C-05
	celerator Pedal Position)
04 - Tester Display APP Sensor 1 (Ac	celerator Pedal Position)

Work Order Description		Nominal Value
 Ignition ON Engine OFF All consumers turned off Accelerator pedal not actuated 		less than 1 V
Accelerator pedal slightly actuated		1 3.8 V
Accelerator pedal actuated to full lo	bad stop	greater than 3.8 V
Concerned Terminals: X21: 21, 31, 49, 53, 61, 64		
Yes:T05		No:C-06
T05 - Tester Display APP Sensor 2 (Ac	celerator	Pedal Position)
Work Order Description		Nominal Value
 Ignition ON Engine OFF All consumers turned off Accelerator pedal not actuated 		greater than 4.2 V
Accelerator pedal slightly actuated		3.2 4.2 V
Accelerator pedal actuated to full lo	bad stop	less than 3.2 V
Concerned Terminals: X21: 21, 31, 49, 53, 61, 64		
Yes:T06		No:C-06
T06 - Tester Display Calculated Pedal	Position	
Work Order Description		Nominal Value
 Ignition ON Engine OFF All consumers turned off Accelerator pedal not actuated 		0 %
Accelerator pedal actuated to full lo	bad stop	greater than 95 %
Concerned Terminals: X21: 21, 31, 49, 53, 61, 64		
Yes:T07		No:C-06
		110:0 00
T07 - Tester Display APP at Idle Positi	on (Accel	erator Pedal Position)
T07 - Tester Display APP at Idle Positi Work Order Description	on (Accel	erator Pedal Position) Nominal Value

 Engine OFF All consumers turned off Accelerator pedal not actuated 	
Accelerator pedal slightly actuated	Inactive
Concerned Terminals: X21: 21, 31, 49, 53, 61, 64	
Yes:T08	No:C-06
T08 - Tester Display TP Sensor 1 (Throi	tle Position)
Work Order Description	Nominal Value
 Ignition ON Engine OFF All consumers turned off Accelerator pedal not actuated Wait time: minimum 10 s 	greater than 3.0 V
Accelerator pedal actuated to full load	ad stop less than 0.7 V
Concerned Terminals: X22: 13,14,15,16, 26, 36, 43, 45, 55, 57,	63, 64
Yes:T09	No:C-07
T09 - Tester Display TP Sensor 2 (Throt	tle Position)
T09 - Tester Display TP Sensor 2 (Throt Work Order Description	ttle Position) Nominal Value
 T09 - Tester Display TP Sensor 2 (Throt Work Order Description Ignition ON Engine OFF All consumers turned off Accelerator pedal not actuated Wait time: minimum 10 s 	ttle Position) Nominal Value less than 2.0 V
T09 - Tester Display TP Sensor 2 (ThrotWork Order DescriptionIgnition ONEngine OFFAll consumers turned offAccelerator pedal not actuatedWait time: minimum 10 sAccelerator pedal actuated to full load	Itele Position) Nominal Value less than 2.0 V ad stop greater than 4.2 V
 T09 - Tester Display TP Sensor 2 (Throt Work Order Description Ignition ON Engine OFF All consumers turned off Accelerator pedal not actuated Wait time: minimum 10 s Accelerator pedal actuated to full load Concerned Terminals: X22: 13,14,15,16, 26, 36, 43, 45, 55, 57, 	tile Position)Nominal Valueless than 2.0 Vad stopgreater than 4.2 V63, 64
T09 - Tester Display TP Sensor 2 (ThrotWork Order DescriptionIgnition ONEngine OFFAll consumers turned offAccelerator pedal not actuatedWait time: minimum 10 sAccelerator pedal actuated to full loaConcerned Terminals:X22: 13,14,15,16, 26, 36, 43, 45, 55, 57,Yes:T10	tile Position) Nominal Value less than 2.0 V ad stop greater than 4.2 V 63, 64 No:C-07
T09 - Tester Display TP Sensor 2 (ThrotWork Order DescriptionIgnition ONEngine OFFAll consumers turned offAccelerator pedal not actuatedWait time: minimum 10 sAccelerator pedal actuated to full loaConcerned Terminals:X22: 13,14,15,16, 26, 36, 43, 45, 55, 57,Yes:T10T10 - Tester Display Calculated Throttle	title Position) Nominal Value Iess than 2.0 V ad stop greater than 4.2 V 63, 64 No:C-07 Position
T09 - Tester Display TP Sensor 2 (ThrotWork Order DescriptionIgnition ONEngine OFFAll consumers turned offAccelerator pedal not actuatedWait time: minimum 10 sAccelerator pedal actuated to full loaConcerned Terminals:X22: 13,14,15,16, 26, 36, 43, 45, 55, 57,Yes:T10T10 - Tester Display Calculated ThrottleWork Order Description	title Position) Nominal Value Iess than 2.0 V ad stop greater than 4.2 V 63, 64 No:C-07 Position Nominal Value
T09 - Tester Display TP Sensor 2 (ThrotWork Order Description• Ignition ON• Engine OFF• All consumers turned off• Accelerator pedal not actuated• Wait time: minimum 10 s• Accelerator pedal actuated to full loatConcerned Terminals:X22: 13,14,15,16, 26, 36, 43, 45, 55, 57,Yes:T10T10 - Tester Display Calculated ThrottleWork Order Description• Ignition ON• Engine OFF• All consumers turned off• Accelerator pedal not actuated	Itele Position) Nominal Value Iess than 2.0 V ad stop greater than 4.2 V 63, 64 No:C-07 Position Nominal Value Iess than 30 % Iess than 30 %

 Accelerator pedal actuated to full log 	oad stop	100 %
Concerned Terminals: X22: 13,14,15,16, 26, 36, 43, 45, 55, 57	7, 63, 64	
Yes:T11		No:C-07
T11 - Tester Display Throttle Position		
Work Order Description		Nominal Value
 Ignition ON Engine OFF All consumers turned off Accelerator pedal not actuated 		Idle
 Accelerator pedal slightly actuated 		Partial Load
 Accelerator pedal actuated to full log 	oad stop	Full Load
Concerned Terminals: X22: 13,14,15,16, 26, 36, 43, 45, 55, 57	7, 63, 64	
Yes:T12		No:C-07
T12 - Tester Display Engine Speed		
Work Order Description		Nominal Value
 Engine starting 		greater than 60 RPM.
Concerned Terminals: X22: 1, 2		
Yes:T13		No:C-04
T13 - Tester Display MAP Sensor (Mar	nifold Abso	olute Pressure)
Work Order Description		Nominal Value
 Ignition ON Engine OFF All consumers turned off 		100 kPa 4.8 V Diagnostic tester display is nearly identical to outside- air pressure
 Engine running at idle speed, oper temperature Accelerator pedal not actuated 	ating	greater than 30 kPa greater than 1.15 V
Concerned Terminals: X22: 12, 35, 58		
Yes:T14		No:C-08
T14 - Tester Display Coolant Tempera	ture	

Work Order Description	Nominal Value
 Engine running at idle speed, operative All consumers turned off Accelerator pedal not actuated 	ating greater than 80 ℃ greater than 176 ℉ less than 2.4 V
Concerned Terminals: X22: 38, 41	
Yes:T15	No:C-09
T15 - Tester Display Intake Air Temper	ature
Work Order Description	Nominal Value
 Engine running at idle speed, operative All consumers turned off Accelerator pedal not actuated 	ating 10 40 ℃ 50 104 ℉ 2.9 1.4 V
Concerned Terminals: X22: 19, 39	
Yes:T16	No:C-10
T16 - Tester Display Vehicle Speed	
Work Order Description	Nominal Value
 Vehicle travelling (constant speed, approximately 30 km/h (19 mph)) 	30 km/h 19 mph Diagnostic tester display converges to speedometer display
Concerned Terminals: X21: 18	
Yes:T17	No:B-17
T17 - Tester Display EGR Valve (Exhau	st-Gas Recirculation)
Work Order Description	Nominal Value
 Engine running at idle speed, operative All consumers turned off Accelerator pedal not actuated 	ating Inactive
 Vehicle travelling (constant speed, approximately 30 km/h (19 mph)) 	Active
Concerned Terminals:	

X22: 11, 32, 40, 46	
Yes:T18	No:C-16
T18 - Tester Display EGR Position Co	mmand (Exhaust- Gas Recirculation)
Work Order Description	Nominal Value
 Engine running at idle speed, oper temperature All consumers turned off Accelerator pedal not actuated 	ating 0 %
 Vehicle travelling (constant speed, approximately 30 km/h (19 mph)) 	greater than 0 %
Concerned Terminals: X22: 11, 32, 40, 46	
Yes:T19	No:C-16
T19 - Tester Display EGR Position Fee	edback (Exhaust Gas Recirculation)
Work Order Description	Nominal Value
 Engine running at idle speed, oper temperature All consumers turned off Accelerator pedal not actuated 	ating less than 1.2 V
 Vehicle travelling (constant speed, approximately 30 km/h (19 mph)) 	greater than 2.0 V
Concerned Terminals: X22: 11, 32, 40, 46	
Yes:T20	No:C-16
T20 - Tester Display Fuel Tank Ventila	tion Valve
Work Order Description	Nominal Value
 Ignition ON Engine OFF All consumers turned off Accelerator pedal not actuated 	0 %
 Engine running at idle speed, oper temperature Accelerator pedal briefly actuated load stop 	ating greater than 0 % to full
NOLE:	

Even if the instructions given in the check procedure are followed closely, the diag	cking jnostic	
 Vehicle travelling (constant speed, approximately 30 km/h (19 mph)) 		greater than 0 %
Concerned Terminals: X22: 9		
Yes:T21		No:C-17
T21 - Tester Display Knock Control		
Work Order Description		Nominal Value
 Ignition ON Engine OFF All consumers turned off 		Inactive
 Engine running at idle speed, oper temperature Accelerator pedal not actuated 	ating	Inactive
 Accelerator pedal briefly actuated to load stop 	to full	Active Value changing briefly
Note:		
Even if the instructions given in the chec procedure are followed closely, the diag tester may not indicate a signal change.	cking jnostic	
Concerned Terminals: X22: 18, 22, 33		
Yes:T22	<u>`</u>	No:C-15
T22 - Tester Display B1S1 O2 Sensor	Heater (Ba	ank 1 Sensor 1)
Work Order Description		Nominal Value
 Vehicle travelling (constant speed, approximately 30 km/h (19 mph)) 		Active
		Value changing briefly
Concerned Terminals: X22: 21		
Yes:T23	'	No:C-18
T23 - Tester Display B1S1 O2 Sensor	(Bank 1 Se	ensor 1)

Work Order Description	Nominal Value
 Vehicle travelling (constant speed, approximately 30 km/h (19 mph)) 	50 950 mV
Concerned Terminals: X22: 49, 50	
Yes:T24	No:C-19
T24 - Tester Display B1S1 Air/Fuel Ratio (Bank 1 Sensor 1)
Work Order Description	Nominal Value
 Vehicle travelling (constant speed, approximately 30 km/h (19 mph)) 	LEAN and RICH Value changing briefly
Concerned Terminals: X22: 49, 50	
Yes:T25	No:C-19
T25 - Tester Display B1S2 O2 Sensor Heat	ter (Bank 1 Sensor 2)
Work Order Description	Nominal Value
 Vehicle travelling (constant speed, approximately 30 km/h (19 mph)) 	Active
	Value changing briefly
Concerned Terminals: X22: 44	
Yes:T26	No:C-20
T26 - Tester Display B1S2 O2 Sensor (Bar	nk 1 Sensor 2)
Work Order Description	Nominal Value
 Vehicle travelling (constant speed, approximately 30 km/h (19 mph)) 	50 950 mV
Concerned Terminals: X22: 51, 52	
Yes:T27	No:C-21
T27 - Tester Display B1S2 Air/Fuel Ratio (Bank 1 Sensor 2)
Work Order Description	Nominal Value
 Vehicle travelling (constant speed, approximately 30 km/h (19 mph)) 	Lean
Concerned Terminals: X22: 51, 52	

Yes:T28	No:C-21
T28 - Tester Display Long Term Fuel Trim	
Work Order Description	Nominal Value
 Vehicle travelling (constant speed, approximately 30 km/h (19 mph)) 	-12 12 %
Concerned Terminals: X22: 49, 50	
Yes:T29	No:C-19
T29 - Tester Display B1 Short Term Fuel Trim (B	Bank 1)
Work Order Description	Nominal Value
 Vehicle travelling (constant speed, approximately 30 km/h (19 mph)) 	-12 12 %
Concerned Terminals: X22: 49, 50	
Yes:T30	No:C-19
T30 - Tester Display Fan Relay 1	
Work Order Description	Nominal Value
 Ignition ON Engine OFF All consumers turned off Coolant temperature is less than 60 °C (140 °F) 	Inactive
 Engine running Coolant temperature is greater than 110 °C (230 °F) 	Active
Concerned Terminals: X21: 13	
Yes:T31	No:C-22
T31 - Tester Display Malfunction Indicator (MI)	
Work Order Description	Nominal Value
 Ignition ON Engine OFF All consumers turned off 	On
 Engine running at idle speed, operating temperature Accelerator pedal not actuated 	Off

Concerned Terminals:

X21:63		
No:(C-24	
B-03 - EXHAUST GAS TEST		
T14 - Tester Display Coolant Tempera	ture	
Work Order Description		Nominal Value
 Engine running at idle speed, oper temperature All consumers turned off Accelerator pedal not actuated 	ating	greater than 80 ℃ greater than 176 ℉ less than 2.4 V
Concerned Terminals: X22: 38, 41		
Yes:T23		No:C-09
T23 - Tester Display B1S1 O2 Sensor	(Bank 1 Se	ensor 1)
Work Order Description		Nominal Value
 Vehicle travelling (constant speed, approximately 30 km/h (19 mph)) 		50 950 mV
Concerned Terminals: X22: 49, 50		
Yes:T24		No:C-19
T24 - Tester Display B1S1 Air/Fuel Ra	tio (Bank 1	I Sensor 1)
Work Order Description		Nominal Value
 Vehicle travelling (constant speed, approximately 30 km/h (19 mph)) 		LEAN and RICH Value changing briefly
Concerned Terminals: X22: 49, 50		
Yes:T26		No:C-19
T26 - Tester Display B1S2 O2 Sensor	(Bank 1 Se	ensor 2)
Work Order Description		Nominal Value
 Vehicle travelling (constant speed, approximately 30 km/h (19 mph)) 		50 950 mV
Concerned Terminals: X22: 51, 52		
Yes:T27		No:C-21

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T27 - Tester Display B1S2 Air/Fuel Ratio (Bank	1 Sensor 2)
Work Order Description	Nominal Value
 Vehicle travelling (constant speed, approximately 30 km/h (19 mph)) 	Lean
Concerned Terminals: X22: 51, 52	
No:C-21	
Yes:	
B-04 - Immobiliser Check	
T01 - Check: Other system	
Work Order Description	Nominal Value
Before connecting the diagnostic tester, observe the instructions of the diagnostic tester operators manual	
 Connect diagnostic tester, select concerned Electronic System, establish communication and verify, that the correct control unit is installed: Immobiliser Refer to Immobiliser Table B-03 Connect Diagnostic Tester and Establish Communication If a trouble code with status present is stored: Refer to Immobiliser Table B-05 Trouble Codes Check the following Data List Parameters: Refer to Immobiliser Table B-02 DATA LIST T01 Ignition Status Refer to Immobiliser Table B-02 DATA LIST T09 Immobiliser Signal After successful test/fault repair proceed to the next test step 	
o-00 - Connect Diagnostic Tester and Establish	Communication
T01 - Connect Diagnostic Tester and Establish	Communication
Work Order Description	Nominal Value
Before connecting the diagnostic tester, observe the instructions of the diagnostic tester operators	Communication established?

H-97_ nlay B192 Air/Eugl Batia (Bank 1 Sensor 2) Tastan

manual	
Connect diagnostic tester:	
 Ignition OFF Connect the diagnostic tester with the required adapter to the diagnostic link Ignition ON 	
Select concerned electronic system and establish communication:	
 Select diagnostics Select model year: 2001 Select model: Speedster/VX220 Select electronic system group: Electronic engine system Select electronic system or engine: GMPT-E15, Z 22 SE Diagnostic tester now establishes communication with the selected Electronic 	
System.	
Yes:	No:T02
Yes: T02 - Check: Fault Location	No:T02
Yes: T02 - Check: Fault Location Work Order Description	No:T02 Nominal Value
Yes: T02 - Check: Fault Location Work Order Description • Communication with control unit is interrupted • Does one of the following messages appear on the Diagnostic Tester display? Selected System Existing ECU Mismatch! or Mismatch between selected engine and existing engine ECU! or Unknown ECU!	No:T02 Nominal Value
Yes: T02 - Check: Fault Location Work Order Description • Communication with control unit is interrupted • Does one of the following messages appear on the Diagnostic Tester display? Selected System Existing ECU Mismatch! or Mismatch between selected engine and existing engine ECU! or Unknown ECU! Yes:T03	No:T02 Nominal Value - No:C-01
Yes: T02 - Check: Fault Location Work Order Description • Communication with control unit is interrupted • Does one of the following messages appear on the Diagnostic Tester display? Selected System Existing ECU Mismatch! or Mismatch between selected engine and existing engine ECU! or Unknown ECU! Yes:T03 T03 - Check: Programming	No:T02 Nominal Value - No:C-01
Yes: T02 - Check: Fault Location Work Order Description • Communication with control unit is interrupted • Does one of the following messages appear on the Diagnostic Tester display? Selected System Existing ECU Mismatch! or Mismatch between selected engine and existing engine ECU! or Unknown ECU! Yes:T03 T03 - Check: Programming Work Order Description	No:T02 Nominal Value

Note:	
Refer to information about the current software version in the menu point - TIS 2000 News	
Yes:T04	No:T05
Yes:	
T04 - Program Software	
Work Order Description	Nominal Value
 Perform service programming (SPS) to download the latest version of control unit software into the control unit. 	
Yes:	·
T05 - Program Software	
Work Order Description	Nominal Value
Program Software:	
B-06 - Immobiliser Signal Check	
B-06 - Immobiliser Signal Check T01 - Additional Functions Work Order Description	Nominal Value
 Download the latest version of diagnostic software into the diagnostic tester. B-06 - Immobiliser Signal Check T01 - Additional Functions Work Order Description Ignition ON Press corresponding key in the system main menu to call up Additional Functions, select the following test and confirm with ENTER : Additional Functions Display Immobiliser Status Follow the instructions in the diagnostic tester display and perform the following evaluation: Immobiliser Function Programmed After successful test/fault repair proceed to the next test step 	Nominal Value Parameter has to display the following nominal value: YES
Download the latest version of diagnostic software into the diagnostic tester. B-06 - Immobiliser Signal Check T01 - Additional Functions Work Order Description Ignition ON Press corresponding key in the system main menu to call up Additional Functions, select the following test and confirm with ENTER : Additional Functions Display Immobiliser Status Follow the instructions in the diagnostic tester display and perform the following evaluation: Immobiliser Function Programmed After successful test/fault repair proceed to the next test step Note:	Nominal Value Parameter has to display the following nominal value: YES

programmin on the numb new program time has exp	d. This results in a lock out of the g for a certain time, which depends per of wrong programming cycles. A mming is possible when the lock out pired.	
Yes:T02 No:Immobiliser B-09 T01		
102 - Additio	onal Functions	
Work Orde	er Description	Nominal Value
 Perforr Securit 	n the following evaluation: y Wait Time	Parameter has to display the following nominal value: INACTIVE
Note:		
If this param value, a pro control unit of the immo been entere programmin on the numb new program time has ex	neter deviates from the nominal gramming malfunction of the engine is present. During the programming biliser, a wrong security code has d. This results in a lock out of the g for a certain time, which depends ber of wrong programming cycles. A mming is possible when the lock out bired.	
Yes:	Yes: No:Immobiliser B-09 T01	
B-07 - PROGRAMMING T01 - Tester Display Program Variant Configuration		
B-07 - PROC T01 - Tester	BRAMMING Display Program Variant Configura	ation
B-07 - PROC T01 - Tester Work Orde	BRAMMING Display Program Variant Configurer or Description	ation Nominal Value
B-07 - PROC T01 - Tester Work Orde Ignitior Press of main m functio confirm instruc	ARAMMING Display Program Variant Configure or Description ON corresponding key in the system nenu to call up Programming ns, select the desired test and n with ENTER . Follow the tions in the diagnostic tester display.	ation Nominal Value Programming okay?
B-07 - PROC T01 - Tester Work Orde • Ignitior • Press of main m functio confirm instruc	ARAMMING Display Program Variant Configure or Description ON corresponding key in the system nenu to call up Programming ns, select the desired test and n with ENTER . Follow the tions in the diagnostic tester display.	ation Nominal Value Programming okay?
B-07 - PROC T01 - Tester Work Orde • Ignitior • Press of main m functio confirm instruc	ARAMMING Display Program Variant Configure or Description ON corresponding key in the system nenu to call up Programming ns, select the desired test and n with ENTER . Follow the tions in the diagnostic tester display. I Terminals: Yes:T02	A B-09 T01 A IVALUE Programming okay? No:C-02
B-07 - PROC T01 - Tester Work Orde • Ignitior • Press of main m functio confirm instruc - T02 - Tester	ARAMMING Display Program Variant Configure or Description ON corresponding key in the system nenu to call up Programming ns, select the desired test and n with ENTER . Follow the tions in the diagnostic tester display. I Terminals: Yes:T02 Display Program CAN Configuration	ation Nominal Value Programming okay? No:C-02 on
B-07 - PROC T01 - Tester Work Orde • Ignitior • Press of main m functio confirm instruc - T02 - Tester Work Orde	ARAMMING Display Program Variant Configure r Description ON Corresponding key in the system nenu to call up Programming ns, select the desired test and n with ENTER . Follow the tions in the diagnostic tester display. I Terminals: Yes:T02 Display Program CAN Configuration or Description	A B-09 T01 A IVALUE Programming okay? No:C-02 On Nominal Value

No:C-02 rn Map Nominal Value Adjustment okay?
No:C-02 rn Map Nominal Value Adjustment okay?
rn Map Nominal Value Adjustment okay?
Nominal Value Adjustment okay?
Adjustment okay?
No:C-02
ng Error
Nominal Value
Programming okay?
1
Match
Nominal Value

B-09 - Complaint: Engine Start

- Customer co	omplaint Remedy	/
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Customer complaint	Remedy
Engine does not start, starter runs normal	Perform the following tests in the given order until a defective component is found. • <u>Refer to Table B-10</u> <u>Fuel System</u> • <u>Refer to Table B-11</u> <u>Mechanical Function</u> <u>Check</u>
- Customer complaint Remedy	
Customer complaint	Remedy
Engine does not start, starter slow / does not turn	Refer to Table C-27 Starter Circuit
B-10 - Fuel System T01 - Check: Fuel Reserve	·
Work Order Description	Nominal Value
 Check fuel reserve Check fuel tank for correct fuel sort content 	
Note:	
The fuel reserve must be greater than 5 L	
Yes:T02	
T02 - Actuator Test	1
Work Order Description	Nominal Value
 Ignition ON Select and enable diagnostic tester actuator test: 	Test okay?
Actuator Test Fuel Pump Relay	
Yes:T03	No:C-05
T03 - Check: Fuel Pressure	
Work Order Description	Nominal Value

 Ignition OFF Connect fuel pressure manometer KM-J- 34730-91 to fuel feed line Ignition ON Select and enable diagnostic tester actuator test: Actuator Test Fuel Pump Relay Pressure value okay? 	3800 hPa (3.8 bar)
Yes:	No:T04
Yes:	
T04 - Check: Fuel Pipes and Fuel Filter	
Work Order Description	Nominal Value
 Check the following component for proper operation: Fuel pipes and fuel filter 	
Note:	
Plugging, leakage, air or water in fuel system	
B-11 - Mechanical Function Check	·
T01 - Mechanical Function Check	
Work Order Description	Nominal Value
 Check the following functional group for proper operation: Spark plugs 	
Yes:T02	
T02 - Mechanical Function Check	
Work Order Description	Nominal Value
 Check the following functional group for proper operation: Engine-compression 	
Yes:T03	
Yes:	
ITN2 Machanical Eurotian Chack	
Work Order Description	Nominal Value

Yes:		
B-12 - No Matching Customer Complaint		
T01 - No Matching Customer Complaint		
Work Order Description	Nominal Value	
The following test steps may or may not be helpful, they are only a proposal.		
Diagnostic Trouble Codes		
 Read and record diagnostic trouble codes including status Check for trouble codes with status INTERMITTENT or NOT PRESENT. If a trouble code is stored this may indicate the circuit which has the intermittent condition. Use the following table to obtain the concerned functional group and perform the following additional test steps, while performing the troubleshooting in the C-x tables. Refer to Table B-01 DIAGNOSTIC TROUBLE CODE Move the related connectors, wiring harness and components in order to find the failure. Switch on all electric consumers by turns, because this can cause an electromagnetic interference in a circuit. Use the TECH 31 or an oscilloscope to observe the wiring harness for disturbances. Operate the system under different conditions over a considerable time. 		
Quick Check		
Perform the following evaluation: <u>Refer to Table B-02 DATA LIST</u> <u>Refer to Table B-13 ACTUATOR TEST</u> <u>Refer to Table B-15 CONTROL TEST</u>		
Check Additional Information		
Refer to Table B-03 EXHAUST GAS TEST Refer to Table B-14 ADDITIONAL FUNCTIONS		

 Compare the SPS software number in the control unit with the version on TIS/TIS 2000. If there is a newer version on TIS/TIS 2000, perform the SPS programming. After successful test/fault repair proceed to the 	
next test step	
B-13 - ACTUATOR TEST	
T01 - Tester Display Fuel Pump Relay Test	
Work Order Description	Nominal Value
 Ignition ON Engine OFF Press corresponding key in the system main menu to call up Actuator-Test functions, select the desired test and confirm with ENTER . Follow the instructions in the diagnostic tester display. 	
Press soft key INACTIVE	
 Press soft key ACTIVE 	Clicking noise from the relay and Fuel pump running
Note:	
The test is completed after a maximum of 30 s .	
Concerned Terminals: X21: 29	
Yes:T02	No:C-05
T02 - Tester Display Fuel Tank Ventilation Valv	e Test
Work Order Description	Nominal Value
 Ignition ON Engine OFF Press corresponding key in the system main menu to call up Actuator-Test functions, select the desired test and confirm with ENTER . Follow the instructions in the diagnostic tester display. 	

Press soft key INACTIVE	Diagnostic tester display:
	Inactive
Press soft key ACTIVE	Diagnostic tester display:
	Active
	Noise check: Clicking noise from the valve and from the relay
Note:	
The test is completed after a maximum of 30 s	
Concerned Terminals: X22: 9	
Yes:T03	No:C-17
T03 - Tester Display Electronic Throttle Conti	rol Test
Work Order Description	Nominal Value
 Ignition OFF Remove intake hose from throttle valve positioner Ignition ON Engine OFF Press corresponding key in the system main menu to call up Actuator-Test 	
functions, select the desired test and confirm with ENTER . Follow the instructions in the diagnostic tester display	
 functions, select the desired test and confirm with ENTER . Follow the instructions in the diagnostic tester display Press soft key INACTIVE 	Throttle valve closed
 functions, select the desired test and confirm with ENTER . Follow the instructions in the diagnostic tester display Press soft key INACTIVE Press soft key ACTIVE 	 Throttle valve closed Throttle valve completely open
 Inall file to call up Actuator rest functions, select the desired test and confirm with ENTER . Follow the instructions in the diagnostic tester display Press soft key INACTIVE Press soft key ACTIVE Concerned Terminals: X22: 13,14,15,16, 26, 36, 43, 45, 55, 57, 63, 64 	Throttle valve closed Throttle valve completely open
 functions, select the desired test and confirm with ENTER . Follow the instructions in the diagnostic tester display Press soft key INACTIVE Press soft key ACTIVE Concerned Terminals: X22: 13,14,15,16, 26, 36, 43, 45, 55, 57, 63, 64 Yes:T04 	Throttle valve closed Throttle valve completely open No:C-07
 functions, select the desired test and confirm with ENTER . Follow the instructions in the diagnostic tester display Press soft key INACTIVE Press soft key ACTIVE Concerned Terminals: X22: 13,14,15,16, 26, 36, 43, 45, 55, 57, 63, 64 Yes:T04 T04 - Tester Display Fan Relay 1 Test 	Throttle valve closed Throttle valve completely open No:C-07
 functions, select the desired test and confirm with ENTER . Follow the instructions in the diagnostic tester display Press soft key INACTIVE Press soft key ACTIVE Concerned Terminals: X22: 13,14,15,16, 26, 36, 43, 45, 55, 57, 63, 64 Yes:T04 T04 - Tester Display Fan Relay 1 Test Work Order Description 	. Throttle valve closed Throttle valve completely open . No:C-07 . Nominal Value

main menu to call up Actuator-Test functions, select the desired test and confirm with ENTER . Follow the instructions in the diagnostic tester display.	
 Press soft key INACTIVE 	All cooling fans are switched off
 Press soft key ACTIVE 	Following cooling fans run at low speed: M19 Motor - Blower, Radiator
Note:	
The test is completed after a maximum of 30 s .	
Concerned Terminals: X21: 13	
Yes:T05	No:C-22
T05 - Tester Display Malfunction Indicator (MI)	Test
Work Order Description	Nominal Value
 Ignition ON Engine OFF Press corresponding key in the system main menu to call up Actuator-Test 	
functions, select the desired test and confirm with ENTER . Follow the instructions in the diagnostic tester display.	
 functions, select the desired test and confirm with ENTER . Follow the instructions in the diagnostic tester display. Press soft key INACTIVE 	System telltale OFF
 functions, select the desired test and confirm with ENTER . Follow the instructions in the diagnostic tester display. Press soft key INACTIVE Press soft key ACTIVE 	System telltale OFF System telltale ON
functions, select the desired test and confirm with ENTER . Follow the instructions in the diagnostic tester display. • Press soft key INACTIVE • Press soft key ACTIVE Note:	System telltale OFF System telltale ON
functions, select the desired test and confirm with ENTER . Follow the instructions in the diagnostic tester display. • Press soft key INACTIVE • Press soft key ACTIVE Note: The test is completed after a maximum of 30 s .	System telltale OFF System telltale ON
functions, select the desired test and confirm with ENTER . Follow the instructions in the diagnostic tester display. • Press soft key INACTIVE • Press soft key ACTIVE Note: The test is completed after a maximum of 30 s . Concerned Terminals: X21: 63	System telltale OFF System telltale ON
functions, select the desired test and confirm with ENTER . Follow the instructions in the diagnostic tester display. Press soft key INACTIVE Press soft key ACTIVE Note: The test is completed after a maximum of 30 s . Concerned Terminals: X21: 63 No:C-24	System telltale OFF System telltale ON

Work Order Description	Nominal Value
 Ignition ON Press corresponding key in the system main menu to call up Additional Functions, select the desired test and confirm with ENTER . Follow the instructions in the diagnostic tester display. 	Displayed value okay?
Concerned Terminals:	
No:C-02	
B-15 - CONTROL TEST	
T01 - Tester Display EGR Control	
Work Order Description	Nominal Value
 Engine running at idle speed, operating temperature Accelerator pedal not actuated Vehicle stationary Press corresponding key in the system main menu to call up ECU Control Tests, select the desired test and confirm with ENTER . Follow the instructions in the diagnostic tester display. After the test is started, the corresponding component can be actuated using the soft keys. 	Test okay?
Note:	
The behaviour of the engine at various different exhaust gas recirculation rates may tell you if the exhaust gas recirculation valve is working properly. Depending on the opening of the exhaust gas recirculation valve a certain amount of exhaust gas flows back into the intake system, enters the cylinders with the next opening of the intake valve, and is included in the next combustion cycle. If a high amount of exhaust gas is recirculated, the engine will not have enough oxygen for proper combustion (the oxygen sensor recognises lean combustion, injection time is increased). The engine will start to jerk. Recirculation rates of more than 15 % will cause clearly noticeable engine jerk which	

will increase in proportion to the amoun recirculated exhaust gas. The engine w the recirculation rate is greater than 75	t of ill stall if % .	
Concerned Terminals: X22: 11, 32, 40, 46		
Yes:T02		No:C-16
Work Order Description	tion Conti	
work Order Description		Nominal value
 Engine running at idle speed, oper temperature Accelerator pedal not actuated Vehicle stationary Press corresponding key in the sys main menu to call up ECU Control select the desired test and confirm ENTER . Follow the instructions in diagnostic tester display. After the test is started, the correspondence of the started using keys. 	ating Tests, with the conding the soft	Test okay?
X22: 9		
Yes:T03 T03 - Tester Display Electronic Thrott	e Control	No:C-17
Work Order Description		Nominal Value
 Ignition ON Engine OFF Press corresponding key in the sys main menu to call up ECU Control select the desired test and confirm ENTER . Follow the instructions in diagnostic tester display. After the test is started, the corresp component can be actuated using 	stem Tests, with the ponding	Test okay?
keys.	the soft	
keys. Concerned Terminals: X22: 13,14,15,16, 26, 36, 43, 45, 55, 57	the soft 7, 63, 64	
keys. Concerned Terminals: X22: 13,14,15,16, 26, 36, 43, 45, 55, 57 No:0	the soft 7, 63, 64 C-07	
keys. Concerned Terminals: X22: 13,14,15,16, 26, 36, 43, 45, 55, 57 No:0 Ye	the soft 7, 63, 64 C-07	

B-16 - Check: Intermittent Faults

Vork Order Description	Nominal Value
he following test steps may or may not be elpful, they are only a proposal.	
heck Additional Information	
• Check the newest Technical Information TI for tips regarding the appeared intermittent problems before proceeding with the diagnostic procedure.	
reliminary diagnostic check (visual inspection)	
 Check all sensors, actuators and the wiring harness of the system for corrosion and damages. Check all connectors of the system for corrosion and for damaged terminals. Check all ground connections of the system for corrosion and damages Check if the fault was recognised in an area of strong electromagnetic sources e.g. near radio stations 	
iagnostic Trouble Codes	
 Read and record trouble codes Check for trouble codes with status INTERMITTENT or NOT PRESENT. If a trouble code is stored this may indicate the circuit which has the intermittent condition. 	
ITERMITTENT and NOT PRESENT trouble odes are leading to an intermittent problem. his trouble codes refer to a related functional roup. To find the defective component the llowing test steps may be helpful.	
Use the following table to obtain the concerned functional group and perform the following additional test steps, while performing the troubleshooting in the C-x tables. <u>Refer to Table B-01 DIAGNOSTIC</u>	

Move the related connectors, wiring harness and components in order to find the failure. Switch on all electric consumers by turns, because this can cause an electromagnetic interference in a circuit. Use the TECH 31 or an oscilloscope to observe the wiring harness for disturbances. Operate the system under different conditions over a considerable time.

Snapshot function of the Diagnostic tester and TIS 2000

 Select the snapshot function of the Diagnostic Tester. Set the Diagnostic Tester to trigger on ANY CODE/CENTER and try to recreate the conditions that may cause the intermittent trouble code to be set (use the customer complaint information). Use the Diagnostic tester or TIS/TIS 2000 application to analyse the related data list parameters.

The disturbances in the signal can be observed at the trigger point where the trouble code is set.

• Use the following table to obtain the concerned functional group and perform the following additional test steps, while performing the troubleshooting in the C-x tables.

Refer to Table B-01 DIAGNOSTIC TROUBLE CODE

Refer to Table B-02 DATA LIST

Move the related connectors, wiring harness and components in order to find the failure. Switch on all electric consumers by turns, because this can cause an electromagnetic interference in a circuit. Use the TECH 31 or an oscilloscope to observe the wiring harness for disturbances. Operate the system under different conditions over a considerable time.

Symptoms / Customer Complaints

 Check if one of the symptoms in the following table match the previously recorded customer complaint and perform the following additional test steps, while performing the troubleshooting in the C-x tables. Refer to Table B-08 Symptom Chart/Customer Complaints Move the related connectors, wiring harness and components in order to find the failure. Switch on all electric consumers by turns, because this can cause an electromagnetic interference in a circuit. Use the TECH 31 or an oscilloscope to observe the wiring harness for disturbances. Operate the system under different conditions over a considerable time. 	
After successful test/fault repair proceed to the next test step	
Yes:	
B-17 - Distance Signal Check	
101 - Check: Other system	
Work Order Description	Nominal Value
IO1 - Check: Other system Work Order Description Perform the following tests in the given order until a defective component is found.	Nominal Value
Work Order Description Perform the following tests in the given order until a defective component is found. Before connecting the diagnostic tester, observe the instructions of the diagnostic tester operators manual	Nominal Value

 <u>CODE</u> Check the following parameters for correct status: Diagnostic Tester Data List Parameter <u>Refer to ABS 430 Anti-Lock Brake System</u> <u>Table B-02 DATA LIST T03 RL Wheel</u> <u>Speed (Rear Left)</u> <u>Refer to Table C-23 Vehicle Speed Input</u> <u>Signal Circuit</u> C-01 - No Communication between Diagnostic 	c Tester and Control Unit
T01 - Check: Short to Ground/Interruption of V	Voltage Supply Circuit
Work Order Description	Nominal Value
 Ignition OFF Detach diagnostic tester from diagnostic connector. All consumers turned off Disconnect wiring harness connector from: A4 Control Unit - Multec Measure voltage between the following terminals: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 20 (X21) & Ground 	greater than 11 V
Yes:T02	No:T18
T02 - Check: Short to Voltage of Voltage Supp	bly Circuit
Work Order Description	Nominal Value
 Measure voltage between the following terminals: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 19 (X21) & Ground 	less than 0.3 V
Yes:T03	No:T14
103 - Check: Short to Ground/Interruption of	Voltage Supply Circuit
Work Order Description	Nominal Value
 Ignition ON Measure voltage between the following 	greater than 11 V

terminals: A4 Control Unit - Multec Wiring harness connector (wiring har side) terminal 19 (X21) & Ground	ness	
Yes:T04		No:T06
Work Order Description	rouna C	Nominal Value
 Check all ground connections of the solution for corrosion and damages 	system	Is the ground connection okay?
Yes:T05		No:E03
T05 - Check: Short to Ground/Interruptic	on of Sig	gnal Circuit
Work Order Description		Nominal Value
 Measure voltage between the following terminals: A4 Control Unit - Multec Wiring harness connector (wiring harness connector (wiring harness) side) terminal 59 (X21) & Ground 	ng ness	greater than 11 V
Yes:E01		No:E02
T06 - Check: Short to Ground of Voltage	e Supply	[/] Circuit
Work Order Description		Nominal Value
 Ignition OFF Remove electrical component from s FL1 Fuse Check the following component for properation: FL1 Fuse 	ocket: roper	Test okay?
Yes:T07		No:T12
T07 - Check: Interruption of Voltage Sup	oply Circ	;uit
Work Order Description		Nominal Value
 Ignition OFF Measure voltage between the following terminals: FL1 Fuse Input contact 	ng	greater than 11 V

Ground	
Yes:T08	No:E09
T08 - Check: Interruption of Voltage Supply Ci	rcuit
Work Order Description	Nominal Value
 Disconnect wiring harness connector from: S1 Switch - Starter Connect fused jumper wire to: S1 Switch - Starter Wiring harness connector (wiring harness side) terminal 15 & Battery voltage Measure voltage between the following terminals: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 19 (X21) & Ground 	greater than 11 V
Yes:E04	No:T09
T09 - Check: Short to Ground/Interruption of V	oltage Supply Circuit
Work Order Description	Nominal Value
 Work Order Description Remove electrical component from socket: FB7 Fuse Check the following component for proper operation: FB7 Fuse 	Nominal Value Test okay?
 Work Order Description Remove electrical component from socket: FB7 Fuse Check the following component for proper operation: FB7 Fuse Yes:E05 	Nominal Value Test okay? No:T10
Work Order Description • Remove electrical component from socket: FB7 Fuse • Check the following component for proper operation: FB7 Fuse Yes:E05 T10 - Check: Component	Nominal Value Test okay? No:T10
Work Order Description • Remove electrical component from socket: FB7 Fuse • Check the following component for proper operation: FB7 Fuse Yes:E05 T10 - Check: Component Work Order Description	Nominal Value Test okay? No:T10 Nominal Value
Work Order Description• Remove electrical component from socket: FB7 Fuse• Check the following component for proper operation: FB7 FuseYes:E05T10 - Check: ComponentWork Order Description• Remove fused jumper wire • Connect fused jumper wire to: FB7 Fuse Output contact & Battery voltage • Check the following component for proper operation: • Fuse of the fused jumper wire	Nominal Value Test okay? No:T10 Nominal Value Test okay?
Work Order Description • Remove electrical component from socket: FB7 Fuse • Check the following component for proper operation: FB7 Fuse Yes:E05 T10 - Check: Component Work Order Description • Remove fused jumper wire • Connect fused jumper wire to: FB7 Fuse Output contact & Battery voltage • Check the following component for proper operation: • Fuse of the fused jumper wire	Nominal Value Test okay? No:T10 Nominal Value Test okay? Test okay?

T11 - Check: Short to Ground of Voltage Supply Circuit		
Work Order Description		Nominal Value
 Disconnect wiring harness connector A17 Control Unit - Immobiliser Insert new fuse into the socket of the jumper wire and then check this fuse proper operation. Disconnect each of the following components/control units from the wir harness consecutively and check the of the fused jumper wire for proper operation each time: A14 Radio S4 Switch - Parking Lamp K24 Relay - Starter H1 Instrument 	from: fused for ing fuse	Test okay?
Yes:E07		No:E08
T12 - Check: Short to Ground of Voltage	Supply	Circuit
Work Order Description		Nominal Value
 Disconnect wiring harness connector S1 Switch - Starter Connect fused jumper wire to: S1 Switch - Starter Wiring harness connector (wiring harn side) terminal 15A & Battery voltage Check the following component for pr operation: Fuse of the fused jumper wire 	from: ness oper	Test okay?
Yes:T13		No:E12
T13 - Check: Component	r	
Work Order Description		Nominal Value
 Remove fused jumper wire Connect fused jumper wire to: S1 Switch - Starter Wiring harness connector (wiring harn side) terminal 15 & Battery voltage Check the following component for pr operation: 	ness oper	Test okay?

L

Fuse of the fused jumper wire	
Yes:E10	No:E11
T14 - Check: Short to Voltage of Voltage Sup	oly Circuit
Work Order Description	Nominal Value
 Remove electrical component from socket FB2 Fuse Measure voltage between the following terminals: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 19 (X21) & Ground Disconnect each of the following components/control units consecutively from the wiring harness and repeat the measurement each time: FB5 Fuse FB6 Fuse FB6 Fuse FB22 Fuse 	less than 0.3 V
Yes:E13	No:T15
1115 - Check: Short to Voltade of Voltade Sub	
Work Order Description	Nominal Value
 Work Order Description Remove electrical component from socket FB7 Fuse Measure voltage between the following terminals: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 19 (X21) & Ground 	Nominal Value less than 0.3 V
 Work Order Description Remove electrical component from socket FB7 Fuse Measure voltage between the following terminals: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 19 (X21) & Ground 	Nominal Value less than 0.3 V No:T17
 Work Order Description Remove electrical component from socket FB7 Fuse Measure voltage between the following terminals: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 19 (X21) & Ground Yes:T16 T16 - Check: Short to Voltage of Voltage Sup 	Nominal Value Iless than 0.3 V No:T17 Div Circuit
Work Order Description • Remove electrical component from socket FB7 Fuse • Measure voltage between the following terminals: • A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 19 (X21) & Ground Yes:T16 T16 - Check: Short to Voltage of Voltage Sup Work Order Description	Nominal Value less than 0.3 V No:T17 oly Circuit Nominal Value

unit has discharged. Disconnect wiring harness connector A1 Control Unit - Airbag Connect battery negative terminal Measure voltage between the followi terminals: FB7 Fuse Input contact & Ground	[.] from: ng	
Yes:E14	Supply	No:E15
Work Order Description	Juppiy	Nominal Value
 Disconnect wiring harness connector A17 Control Unit - Immobiliser Measure voltage between the following terminals: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 19 (X21) & Ground Disconnect each of the following components/control units consecutive from the wiring harness and repeat the measurement each time: S4 Switch - Parking Lamp K24 Relay - Starter A14 Radio H1 Instrument 	r from: ng ness ely ne	less than 0.3 V
Yes:E16		No:E17
The Check: Short to Ground/Interruptic	on of Vo	
Work Order Description		Nominal Value
 Remove electrical component from s FB8 Fuse Check the following component for p operation: FB8 Fuse 	ocket: roper	Test okay?
Yes:E18		No:T19
119 - Check: Short to Ground of Voltage	Supply	
Work Order Description		Nominal Value
l		

 Connect fused jumper wire to: FB8 Fuse Output contact & Battery voltage Check the following component for p operation: Fuse of the fused jumper wire 	Test okay? roper
Yes:E19	No:T20
120 - Check: Short to Ground of Voltage	e Supply Circuit
Work Order Description	Nominal Value
 Disconnect wiring harness connector A17 Control Unit - Immobiliser Insert new fuse into the socket of the jumper wire and then check this fuse proper operation. Disconnect each of the following components/control units from the wi harness consecutively and check the of the fused jumper wire for proper operation each time: A13 Control Unit - Anti Theft Warning H1 Instrument 	r from: Test okay? e fused e for iring e fuse g Unit
Yes:E20	No:E21
E01 - Result: Short to Ground	
 Short circuit to voltage between: A4 Control Unit - Multec Wiring harness connector (wiring harn & A17 Control Unit - Immobiliser Wiring harness connector (wiring harn 	ness side) terminal 59 (X21) ness side) terminal 7
or	
 Defective component: A4 Control Unit - Multec 	
Important:	
Reset concerned control unit (engine or immobiliser control unit) with diagnostic tester before replacing. Select immobiliser in the diagnostic tester and call up the corresponding test in the menu ADDITIONAL FUNCTIONS. Ensure that both control units are never reset and replaced at the same time.	
IEU2 - Result: Short to Ground/Interruption	on

 Short circuit to ground/interruption of circuit between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 59 (X21) & A17 Control Unit - Immobiliser Wiring harness connector (wiring harness side) terminal 7

or

 Defective component: A17 Control Unit - Immobiliser

Note:

Reset concerned control unit (engine or immobiliser control unit) with diagnostic tester before replacing. Select immobiliser in the diagnostic tester and call up the corresponding test in the menu ADDITIONAL FUNCTIONS. Ensure that both control units are never reset and replaced at the same time.

E03 - Result: Interruption Bad ground connection E04 - Result: Interruption Circuit interruption between: FL1 Fuse Output contact & S1 Switch - Starter Wiring harness connector (wiring harness side) terminal 30 or Defective component: S1 Switch - Starter E05 - Result: Interruption Circuit interruption between: S1 Switch - Starter Wiring harness connector (wiring harness side) terminal 15 & FB7 Fuse Input contact or Circuit interruption between: FB7 Fuse Output contact & A4 Control Unit - Multec

Wiring harness connector (wiring harness side) terminal 19 (X21)

E06 - Result: Defective Component

 Defective component: A4 Control Unit - Multec

Important:

Reset concerned control unit (engine or immobiliser control unit) with diagnostic tester before replacing. Select immobiliser in the diagnostic tester and call up the corresponding test in the menu ADDITIONAL FUNCTIONS. Ensure that both control units are never reset and replaced at the same time.

E07 - Result: Defective Component

 If the nominal value is reached during one of the measurements, the component/control unit that has been disconnected immediately before that measurement is defective.

E08 - Result: Short to Ground

 Short circuit to ground between:
FB7 Fuse
Output contact
&
A4 Control Unit - Multec
Wiring harness connector (wiring harness side) terminal 19 (X21)
A14 Radio
Wiring harness connector (wiring harness side) terminal 8 &
A17 Control Unit - Immobiliser
Wiring harness connector (wiring harness side) terminal 5
&
H1 Instrument
Wiring harness connector (wiring harness side) terminal A3
&
K24 Relay - Starter
Socket connector colour GN
S4 Switch - Parking Lamp
Wiring harness connector (wiring harness side) terminal 4
Note:
Wiring colours: BK-Black BN-Brown BU-Blue GD-Gold GN-Green
GY-Grev OG-Orange PK-Pink BD-Bed SB-Silver TO-Turquoise
VT=Violet WH=White YF=Yellow
I = I ight. D = Dark
E09 - Besult: Interruption

• Circuit interruption between:

	G1 Battery
	Wiring harness connector (wiring harness side) terminal 30
	& FL1 Fuse
	Input contact
E10	- Result: Short to Ground
٠	Short circuit to ground between:
	FL1 Fuse
	&
	S1 Switch - Starter
	Wiring harness connector (wiring harness side) terminal 30
~r	
or	
•	Defective component:
	S1 Switch - Starter
E11	- Result: Short to Ground
•	Short circuit to ground between:
	Wiring harness connector (wiring harness side) terminal 15
	&
	A1 Control Unit - Airbag
	Wiring harness connector (wiring harness side) terminal 5
	∝ FB2/FB5/FB6/FB7/FB22 Fuse
	Input contact
or	
•	Defective component:
	A1 Control Unit - Airbag
E12	- Result: Short to Ground
٠	Short circuit to ground between:
	S1 Switch - Starter
	FB3/FB4 Fuse
	Input contact
E13	- Result: Short to Voltage
٠	If the nominal value is reached during one of the measurements, the circuit
C1/	- Posult: Defective Component
c 14	- nesult. Delective component Defective component:
•	A1 Control Unit - Airbag
E15	- Result: Short to Voltage
	<u>v</u>
Short circuit to voltage between: S1 Switch - Starter Wiring harness connector (wiring harness side) terminal 15 & A1 Control Unit - Airbag Wiring harness connector (wiring harness side) terminal 5 & FB2/FB5/FB6/FB7/FB22 Fuse Input contact

or

 Defective component: S1 Switch - Starter

E16 - Result: Defective Component

 If the nominal value is reached during one of the measurements, the component/control unit that has been disconnected immediately before that measurement is defective.

Note:

Reset concerned control unit (engine or immobiliser control unit) with diagnostic tester before replacing. Select immobiliser in the diagnostic tester and call up the corresponding test in the menu ADDITIONAL FUNCTIONS. Ensure that both control units are never reset and replaced at the same time.

E17 - Result: Short to Voltage

 Short circuit to voltage between: FB7 Fuse Output contact & A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 19 (X21) & A14 Radio Wiring harness connector (wiring harness side) terminal 8 & A17 Control Unit - Immobiliser Wiring harness connector (wiring harness side) terminal 5 & H1 Instrument Wiring harness connector (wiring harness side) terminal A3 & K24 Relay - Starter Socket connector colour GN & S4 Switch - Parking Lamp Wiring harness connector (wiring harness side) terminal 4

Note:

Note:
Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark
E18 - Result: Interruption
 Circuit interruption between: G1 Battery Wiring harness connector (wiring harness side) terminal 30 & FB8 Fuse Input contact
or
 Circuit interruption between: FB8 Fuse Output contact & A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 20 (X21)
E19 - Result: Defective Component
 Defective component: Diagnostic tester or A4 Control Unit - Multec
Note:
Reset concerned control unit (engine or immobiliser control unit) with diagnostic tester before replacing. Select immobiliser in the diagnostic tester and call up the corresponding test in the menu ADDITIONAL FUNCTIONS. Ensure that both control units are never reset and replaced at the same time.
E20 - Result: Defective Component
 If the nominal value is reached during one of the measurements, the component/control unit that has been disconnected immediately before that measurement is defective.
E21 - Result: Defective Component
 Short circuit to ground between: FB8 Fuse Output contact & A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 20 (X21) &

A13 Control Unit - Anti Theft Warning Unit Wiring harness connector (wiring harness side) terminal 7 (X23) & A17 Control Unit - Immobiliser Wiring harness connector (wiring harness side) terminal 9 & H1 Instrument Wiring harness connector (wiring harness side) terminal A1 & X13 Diagnostic Link Wiring harness connector (wiring harness side) terminal 16

C-02 - Control Unit Hard- and Software

T01 - Check: Diagnostic Trouble Code stored

Work Order Description	Nom	inal Value
Is the following Diagnostic Trouble Code st	ored?	
P0601		
Internal Control Module Memory Checksun Error		
P0604		
Internal control module random access me (RAM) error	nory	
P1621		
EEPROM Failure		
Yes:E01		No:T02
T02 - Check: Component		
Work Order Description	Nom	inal Value
Ignition ONRepeat programming	Prog	ramming okay?
Yes:E02		No:E01
E01 - Result: Defective Component		
 Defective component: A4 Control Unit - Multec 		

Note:

Reset concerned control unit (engine or immobiliser control unit) with diagnostic tester before replacing. Select immobiliser in the diagnostic tester and call up the

corresponding test in the menu ADDITIONAL FUNCTIONS. Ensure that both control units are never reset and replaced at the same time.

E00 Desult: Dreamming	
Euz - Result: Programming	
Previous programming was faulty	
C-03 - Power Supply Circuit	
T01 - Check: Short to Ground/Interruption	of Voltage Supply Circuit
Work Order Description	Nominal Value
 Ignition OFF Disconnect wiring harness connector for Diagnostic tester Engine running Increase engine speed to 3000 rpm Measure voltage between the following terminals: G1 Battery Wiring harness connector (component terminal 30 & Ground 	rom: 13 15 V side)
Yes:T02	No:E05
T02 - Check: Short to Ground/Interruption	of Voltage Supply Circuit
Work Order Description	Nominal Value
Ignition OFF Measure voltage between the following	greater than 11 V
 Measure voltage between the following terminals: G1 Battery Wiring harness connector (component terminal 30 & Ground 	side)
 Measure voltage between the following terminals: G1 Battery Wiring harness connector (component terminal 30 & Ground 	side)
 Measure voltage between the following terminals: G1 Battery Wiring harness connector (component terminal 30 & Ground Yes:T03 T03 - Check: Transition Resistance of Vol 	side) No:E04 tage Supply Circuit
 Measure voltage between the following terminals: G1 Battery Wiring harness connector (component terminal 30 & Ground Yes:T03 T03 - Check: Transition Resistance of Vol Work Order Description 	side) No:E04 tage Supply Circuit Nominal Value

A4 Control Unit - Multec Wiring harness connector (wiring har side) terminal 19 (X21) &	ness	
Ground		
Yes:T04		No:E03
T04 - Check: Transition Resistance of V	oltage S	upply Circuit
Work Order Description		Nominal Value
 Connect test lamp (10 W) and multi in parallel and measure voltage betw the following terminals: Battery voltage & 	meter een	greater than 11 V
A4 Control Unit - Multec		
Yes:E01		No:E02
E01 - Result: Defective Component	Į	
 Defective component: A4 Control Unit - Multec Important: Reset concerned control unit (engine or immobiliser control unit) with diagnostic testor before replacing. Select immobiliser in the diagnostic testor and call up the 		
corresponding test in the menu ADDITION	AL FUN	CTIONS. Ensure that both
F02 - Result: High Transition Resistance		
 E02 - Result: High Transition Resistance High transition resistance between: G1 Battery Wiring harness connector (wiring harness side) terminal 31 & A4 Control Unit - Multec Ground 		
E03 - Result: High Transition Resistance	e	
 High transition resistance between: G1 Battery Wiring harness connector (wiring harness side) terminal 30 & A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 19 (X21) F04 - Besult: Defective Component 		
Check the following component for proper operation: G1 Battery		

and/or G2 Alternator and/or M1 Starter	
and/or	
 Check the following circuit for proper Terminal 31/30/15 	operation:
E05 - Result: Defective Component	
Defective component: G2 Alternator	
C-04 - Crankshaft Sensor Circuit	
T01 - Check: Short to Voltage of Signal	Circuit
Work Order Description	Nominal Value
 Ignition OFF Disconnect wiring harness connector A4 Control Unit - Multec (Wiring Harness Connector X22) Ignition ON Measure voltage between the followiterminals: A4 Control Unit - Multec Wiring harness connector (wiring harside) terminal 1 (X22) & Ground 	r from: ng rness
Yes:T02	No:E07
T02 - Check: Short to Ground of Signal	Circuit
Work Order Description	Nominal Value
 Ignition OFF Measure resistance between the follotterminals: A4 Control Unit - Multec Wiring harness connector (wiring har side) terminal 1 (X22) & Ground 	owing greater than 500 kOhm
Yes:T03	No:E06
T03 - Check: Interruption of Signal Circo	uit
Work Order Description	Nominal Value
	I

 Measure resistance between the follo terminals: A4 Control Unit - Multec Wiring harness connector (wiring harn side) terminal 2 (X22) & A4 Control Unit - Multec Wiring harness connector (wiring harn side) terminal 1 (X22) 	owing ness ness	600 800 Ohm
Yes:T04		No:T06
T04 - Check: Component		
Work Order Description		Nominal Value
 Engine starting Switch multimeter to alternating-currer voltage measurement. Measure voltage between the followint terminals: A4 Control Unit - Multec Wiring harness connector (wiring harnes))))))))))))))))))))))))))))))))))))	ent ng ness ness	greater than 0.8 V
Yes:T05		No:E03
T05 - Check: Adjustment		
Work Order Description		Nominal Value
 Check the following component for properation: B34 Impulse Sensor - Crankshaft (intermittent problems, missing teeth, reference point, incorrect gap position) 	roper wrong n, etc.)	Test okay?
Yes:E01		No:E02
T06 - Check: Interruption of Signal Circu	ıit	
Work Order Description		Nominal Value
Measure resistance between the follo	wina	greater than 800 Ohm

A4 Control Unit - Multec Wiring harness connector (wiring harn side) terminal 1 (X22)	ness		
Yes:E04	No:E05		
E01 - Result: Defective Component			
 Defective component: A4 Control Unit - Multec 			
Important:			
Reset concerned control unit (engine or immobiliser control unit) with diagnostic tester before replacing. Select immobiliser in the diagnostic tester and call up the corresponding test in the menu ADDITIONAL FUNCTIONS. Ensure that both control units are never reset and replaced at the same time.			
E02 - Result: Repair other system			
Repair the concerned circuit/componer	nt.		
E03 - Result: Defective Component			
 Defective component: B34 Impulse Sensor - Crankshaft 			
E04 - Result: Interruption			
 Circuit interruption between: A4 Control Unit - Multec Wiring harness connector (wiring harnes & B34 Impulse Sensor - Crankshaft Wiring harness connector (wiring harnes or A4 Control Unit - Multec Wiring harness connector (wiring harnes & B34 Impulse Sensor - Crankshaft Wiring harness connector (wiring harnes) 	ess side) terminal 1 (X22) ess side) terminal B ess side) terminal 2 (X22) ess side) terminal A		
or			
 Defective component: B34 Impulse Sensor - Crankshaft 			
E05 - Result: Short Circuit in Wiring Harr	iess		
 Short circuit in wiring harness between A4 Control Unit - Multec Wiring harness connector (wiring harnes & A4 Control Unit - Multec Wiring harness connector (wiring harnes) 	i: ess side) terminal 2 (X22) ess side) terminal 1 (X22)		

or		
Defective component: Defective component:		
B34 Impulse Sensor - Grankshalt		
Short circuit to ground between:		
A4 Control Unit - Multec		
Wiring harness connector (wiring harness side	e) terminal 1 (X22)	
Wiring harness connector (wiring harness side	e) terminal B	
A4 Control Unit - Multec		
Wiring harness connector (wiring harness side	e) terminal 2 (X22)	
B34 Impulse Sensor - Crankshaft		
Wiring harness connector (wiring harness side	e) terminal A	
or		
Defective component:		
B34 Impulse Sensor - Crankshaft		
E07 - Result: Short to Voltage		
Short circuit to voltage between:		
A4 Control Unit - Multec Wiring harness connector (wiring harness side	e) terminal 1 (X22)	
&		
B34 Impulse Sensor - Crankshatt Wiring harness connector (wiring harness side	a) terminal B	
or		
A4 Control Unit - Multec		
Wiring harness connector (wiring harness side) terminal 2 (X22)		
B34 Impulse Sensor - Crankshaft		
Wiring harness connector (wiring harness side	e) terminal A	
or		
 Defective component: 		
B34 Impulse Sensor - Crankshaft		
C-05 - Fuel Pump Circuit		
T01 - Check: Interruption of Signal Circuit		
Work Order Description	Nominal Value	
Ignition OFF	greater than 11 V	

 Remove electrical component from socket: K18 Relay - Engine Control Unit Measure voltage between the following terminals: K18 Relay - Engine Control Unit Socket connector colour BN Wire gauge: 3 mm² & Ground 	
Note:	
Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark	
Yes:T02	No:T21
T02 - Check: Interruption of Voltage Supply Circ	cuit
Work Order Description	Nominal Value
 Measure voltage between the following terminals: K18 Relay - Engine Control Unit Socket connector colour BN Wire gauge: 0.5 mm² & Ground 	greater than 11 V
Note:	
Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark	
Yes:T03	No:E20
T03 - Check: Short to Voltage of Voltage Supply	Circuit
Work Order Description	Nominal Value

Wire gauge: 2 mm^2 & Ground	
Note:	
Wiring colours: BK=Black, BN=Brown, BU=B GD=Gold, GN=Green, GY=Grey, OG=Orang PK=Pink, RD=Red, SR=Silver, TQ=Turquois VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark	lue, e, e,
Yes:T04	No:T19
T04 - Check: Short to Voltage of Signal Cir	cuit
Work Order Description	Nominal Value
 Measure voltage between the following terminals: K18 Relay - Engine Control Unit Socket connector colour GNGY & Ground 	less than 0.3 V
Note:	
Wiring colours: BK=Black, BN=Brown, BU=B GD=Gold, GN=Green, GY=Grey, OG=Orang PK=Pink, RD=Red, SR=Silver, TQ=Turquois VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark	lue, e, e,
Yes:T05	No:E16
T05 - Check: Circuit Interruption of Ground	l Circuit
Work Order Description	Nominal Value
 Ignition OFF Remove electrical component from sock K16 Relay - Fuel pump Measure resistance between the followi terminals: K16 Relay - Fuel pump Socket connector colour BK & Ground Note: 	ng

Wiring colours: BK=Black, BN=Brown, BL GD=Gold, GN=Green, GY=Grey, OG=Ora PK=Pink, RD=Red, SR=Silver, TQ=Turqu VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark	I=Blue, ange, oise,	
Yes:T06	Oiversit	No:E15
106 - Check: Short to Ground of Signal	Circuit	
Work Order Description		Nominal Value
 Connect test light to: K16 Relay - Fuel pump Socket connector colour WHVT Wire gauge: 0.5 mm^2 & K16 Relay - Fuel pump Socket connector colour BK Ignition ON Select and enable diagnostic tester a test: Fuel Pump Relay Test Press soft key INACTIVE Note: Wiring colours: BK=Black, BN=Brown, BL GD=Gold, GN=Green, GY=Grey, OG=Ora PK=Pink, RD=Red, SR=Silver, TQ=Turqu VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark	actuator I=Blue, ange, oise,	Test light OFF?
Yes:T07		No:E14
T07 - Check: Component	·	
Work Order Description		Nominal Value
Press soft key ACTIVE		Test light ON?
Yes:T08		No:E13
T08 - Check: Short to Ground of Voltage	e Supply	Circuit
Work Order Description		Nominal Value
 Ignition OFF Remove electrical component from s FR2 Fuse Check the following component for p operation: FR2 Fuse 	ocket: roper	Test okay?

Yes:109		No:T16	
T09 - Check: Short to Voltage of Voltage Supply Circuit			
Work Order Description		Nominal Value	
 Ignition ON Measure voltage between the followi terminals: K16 Relay - Fuel pump Socket connector colour BNGY & Ground 	ng	less than 0.3 V	
Note:			
Wiring colours: BK=Black, BN=Brown, BU GD=Gold, GN=Green, GY=Grey, OG=Ora PK=Pink, RD=Red, SR=Silver, TQ=Turqu VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark	I=Blue, ange, oise,		
Yes:T10		No:E08	
T10 - Check: Component			
Work Order Description		Nominal Value	
 Connect fused jumper wire to: K16 Relay - Fuel pump Socket connector colour BNGY & Battery voltage 		Is the fuel pump running?	
Note:			
Wiring colours: BK=Black, BN=Brown, BU GD=Gold, GN=Green, GY=Grey, OG=Ora PK=Pink, RD=Red, SR=Silver, TQ=Turqu VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark	I=Blue, ange, oise,		
Wiring colours: BK=Black, BN=Brown, BU GD=Gold, GN=Green, GY=Grey, OG=Ora PK=Pink, RD=Red, SR=Silver, TQ=Turqu VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark Yes:T11	I=Blue, ange, oise,	No:T15	
Wiring colours: BK=Black, BN=Brown, BU GD=Gold, GN=Green, GY=Grey, OG=Ora PK=Pink, RD=Red, SR=Silver, TQ=Turqu VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark Yes:T11 T11 - Check: Interruption of Voltage Sup	I=Blue, ange, oise,	No:T15	
Wiring colours: BK=Black, BN=Brown, BU GD=Gold, GN=Green, GY=Grey, OG=Ora PK=Pink, RD=Red, SR=Silver, TQ=Turqu VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark Yes:T11 T11 - Check: Interruption of Voltage Sup Work Order Description	l=Blue, ange, oise,	No:T15 cuit Nominal Value	

Wire gauge: 2 mm ² & FR2 Fuse Output contact Note:		
Wiring colours: BK=Black, BN=Brown, BU= GD=Gold, GN=Green, GY=Grey, OG=Ora PK=Pink, RD=Red, SR=Silver, TQ=Turquo VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark	=Blue, nge, bise,	
Yes:T12 T12 Chook: Short to Ground/Interruptio	n of Sid	No:T14
Work Order Description		Nominal Valua
 Disconnect wiring harness connector A4 Control Unit - Multec Connect fused jumper wire to: K18 Relay - Engine Control Unit Socket connector colour GNGY & Battery voltage Measure voltage between the followin terminals: A4 Control Unit - Multec Wiring harness connector (wiring harn side) terminal 30 (X21) & Ground 	from: ng ness	greater than 11 V
Note: Wiring colours: BK=Black, BN=Brown, BU=	=Blue,	
PK=Pink, RD=Red, SR=Silver, TQ=Turquo VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark	nge, bise,	
Yes:T13		No:E03
T13 - Check: Interruption of Voltage Sup	ply Circ	cuit
Work Order Description		Nominal Value
 Remove fused jumper wire Insert electrical component in socket: K18 Relay - Engine Control Unit 		greater than 11 V

 Connect fused jumper wire to: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 30 (X21) & Ground Ignition ON Measure voltage between the following terminals: FR2 Fuse Input contact & Ground 	No:E02
T14 - Check: Interruption of Voltage Supply Cire	
Work Order Description	Nominal Value
 Disconnect wiring harness connector from: S94 Shock Switch - Fuel Cut-Off Measure resistance between the following terminals: S94 Shock Switch - Fuel Cut-Off Wiring harness connector (wiring harness side) terminal 1 & K16 Relay - Fuel pump Socket connector colour WHVT Wire gauge: 2 mm² Note: Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark 	less than 5 Ohm
Yes:E04	No:E05
T15 - Check: Interruption of Voltage Supply Cire	cuit
Work Order Description	Nominal Value
 Disconnect wiring harness connector from: M21 Pump - Fuel Measure voltage between the following terminals: M21 Pump - Fuel 	greater than 11 V

Wiring harness connector (wiring har side) terminal A	ness	
Ground		
Yes:E06		No:E07
T16 - Check: Short to Ground of Voltage	Supply	Circuit
Work Order Description		Nominal Value
Insert new fuse FR2 and then check fuse for proper operation.	the	Test okay?
Yes:T17		No:T18
T17 - Check: Short to Ground of Voltage	Supply	Circuit
Work Order Description		Nominal Value
 Connect fused jumper wire to: K16 Relay - Fuel pump Socket connector colour BNGY & Battery voltage Check the following component for p operation: Fuse of the fused jumper wire 	roper	Test okay?
Note:		
Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark		
Yes:E09		No:E10
T18 - Check: Short to Ground of Voltage Supply Circuit		
Work Order Description		Nominal Value
 Disconnect wiring harness connector S94 Shock Switch - Fuel Cut-Off Insert new fuse FR2 and then check fuse for proper operation. 	from: the	Test okay?
Yes:E11		No:E12
T19 - Check: Short to Voltage of Voltage	Supply	Circuit
Work Order Description		Nominal Value
Remove electrical component from socket:		less than 0.3 V

 FR2 Fuse Measure voltage between the following terminals: K18 Relay - Engine Control Unit Socket connector colour BN Wire gauge: 2 mm² & Ground 	ng	
Note:		
Wiring colours: BK=Black, BN=Brown, BL GD=Gold, GN=Green, GY=Grey, OG=Ora PK=Pink, RD=Red, SR=Silver, TQ=Turqu VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark	J=Blue, ange, ioise,	
Yes:T20		No:E19
		N · · · · · ·
Work Order Description		Nominal Value
 Ignition OFF Disconnect wiring harness connector from: S94 Shock Switch - Fuel Cut-Off Ignition ON Measure voltage between the following terminals: S94 Shock Switch - Fuel Cut-Off Wiring harness connector (wiring harness side) terminal 3 & Ground 		less than 0.3 V
Yes:E17		No:E18
T21 - Check: Component		
Work Order Description		Nominal Value
 Remove electrical component from socket: FL4 Fuse Check the following component for proper operation: FL4 Fuse 		Test okay?
Yes:E21		No:T22
T22 - Check: Short to Ground of Voltage Supply Circuit		
Work Order Description		Nominal Value

 Insert new fuse FL4 and then check the fuse for proper operation. 	e Test okay?
Yes:T23	No:E26
T23 - Check: Short to Ground of Voltage S	Supply Circuit
Work Order Description	Nominal Value
 Connect fused jumper wire to: K18 Relay - Engine Control Unit Socket connector colour BN Wire gauge: 2 mm² & Battery voltage Check the following component for pro operation: Fuse of the fused jumper wire 	Test okay?
Note:	
Wiring colours: BK=Black, BN=Brown, BU=I GD=Gold, GN=Green, GY=Grey, OG=Oran PK=Pink, RD=Red, SR=Silver, TQ=Turquois VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark	Blue, nge, ise,
Yes:T24	No:E25
T24 - Check: Short to Ground of Voltage S	Supply Circuit
Work Order Description	Nominal Value
 Remove fused jumper wire Connect fused jumper wire to: K18 Relay - Engine Control Unit Socket connector colour BNPK & Battery voltage Check the following component for pro operation: Fuse of the fused jumper wire Note: 	Test okay?
Wiring colours: BK=Black, BN=Brown, BU=I	Blue,
PK=Pink, RD=Red, SR=Silver, TQ=Turquois VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark	ise,

T25 - Check: Component

T25 - Check: Component		
Work Order Description	Nominal Value	
 Disconnect wiring harness connector from A4 Control Unit - Multec Insert new fuse into the socket of the fused jumper wire and then check this fuse for proper operation. Disconnect each of the following components/control units consecutively from the wiring harness and repeat the check each time: B117 Sensor - Oxygen, Exhaust, Heated 1 B118 Sensor - Oxygen, Exhaust, Heated 2 C1 Capacitor - Ignition Coil T1 Ignition Coil - Direct Ignition Y5 Solenoid Valve - Tank Ventilation Y9.1 Injection Valve - Cylinder - 1 Y9.2 Injection Valve - Cylinder - 3 Y9.4 Injection Valve Cylinder - 4 	Test okay?	
Yes:E23	No:E24	
 Defective component: A4 Control Unit - Multec or K16 Relay - Fuel pump Important: 		
Reset concerned control unit (engine or immobiliser control unit) with diagnostic tester before replacing. Select immobiliser in the diagnostic tester and call up the corresponding test in the menu ADDITIONAL FUNCTIONS. Ensure that both control units are never reset and replaced at the same time.		
E02 - Result: Interruption		
 Circuit interruption between: K18 Relay - Engine Control Unit Socket connector colour BN Wire gauge: 2 mm² & FR2 Fuse Input contact 		
or		
Defective component:		

K18 Relay - Engine Control Unit

Note:

Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark

E03 - Result: Short to Ground/Interruption

 Short circuit to ground/interruption of circuit between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 30 (X21) & K18 Relay - Engine Control Unit Socket connector colour GNGY

Note:

Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow,

L=Light, D=Dark

E04 - Result: Defective Component

 Circuit interruption between: FR2 Fuse Output contact & S94 Shock Switch - Fuel Cut-Off Wiring harness connector (wiring harness side) terminal 3

or

 Defective component: S94 Shock Switch - Fuel Cut-Off

E05 - Result: Interruption

 Circuit interruption between: S94 Shock Switch - Fuel Cut-Off Wiring harness connector (wiring harness side) terminal 1 & K16 Relay - Fuel pump Socket connector colour WHVT Wire gauge: 2 mm²

Note:

Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise,

VT=Violet, WH=White, YE=Yellow,
L=Light, D=Dark
EV6 - Result: Defective Component
M21 Pump - Fuel
Wiring harness connector (wiring harness side) terminal B
& Cround
Ground
or
Defective component:
M21 Pump - Fuel
EU7 - Result: Interruption
• Circuit interruption between. K16 Relay - Fuel pump
Socket connector colour BNGY
& Mot Duran Fuel
Wizi Pump - Fuei Wiring harness connector (wiring harness side) terminal A
Note:
Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green,
GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise,
V I = VIOIET, WH=WNITE, YE=YEIIOW, I =Light_D=Dark
E08 - Result: Short to Voltage
Short circuit to voltage between:
K16 Relay - Fuel pump
Socket connector colour BNGY
& M21 Pump - Fuel
Wiring harness connector (wiring harness side) terminal A
or
Of
Defective component:
M21 Pump - Fuel
Note:
Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green,
GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise,
VT=Violet, WH=White, YE=Yellow,
Eligni, Debain F09 - Result: Defective Component

Defective component: K16 Belay - Fuel nump
E10 - Result: Defective Component
 Short circuit to ground between: K16 Relay - Fuel pump Socket connector colour BNGY & M21 Pump - Fuel Wiring harness connector (wiring harness side) terminal A
or
 Defective component: M21 Pump - Fuel
Note:
Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark
E11 - Result: Short to Ground
 Short circuit to ground between: K16 Relay - Fuel pump Socket connector colour WHVT Wire gauge: 2 mm²
S94 Shock Switch - Fuel Cut-Off Wiring harness connector (wiring harness side) terminal 1
or
 Defective component: S94 Shock Switch - Fuel Cut-Off
Note:
Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark
E12 - Result: Short to Ground
 Short circuit to ground between: FR2 Fuse Output contact & S94 Shock Switch - Fuel Cut-Off
S94 Shock Switch - Fuel Cut-Off

Wiring harness connector (wiring harness side) terminal 3 E13 - Result: Interruption • Short circuit to ground/interruption of circuit between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 29 (X21) & K16 Relay - Fuel pump Socket connector colour WHVT Wire gauge: 0.5 mm² or • Defective component: A4 Control Unit - Multec Important: Reset concerned control unit (engine or immobiliser control unit) with diagnostic tester before replacing. Select immobiliser in the diagnostic tester and call up the corresponding test in the menu ADDITIONAL FUNCTIONS. Ensure that both control units are never reset and replaced at the same time. Note: Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow. L=Light, D=Dark E14 - Result: Short to Ground Short circuit to voltage between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 29 (X21) & K16 Relay - Fuel pump Socket connector colour WHVT Wire gauge: 0.5 mm² or

 Defective component: A4 Control Unit - Multec

Important:

Reset concerned control unit (engine or immobiliser control unit) with diagnostic tester before replacing. Select immobiliser in the diagnostic tester and call up the corresponding test in the menu ADDITIONAL FUNCTIONS. Ensure that both control units are never reset and replaced at the same time.

Note:

Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green,
GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise,
VT=Violet, WH=White, YE=Yellow,
L=Light, D=Dark

E15 - Result: Interruption

 Circuit interruption between: K16 Relay - Fuel pump Socket connector colour BK & Ground

Note:

Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow,

L=Light, D=Dark

E16 - Result: Short to Voltage

 Short circuit to voltage between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 30 (X21) & K18 Relay - Engine Control Unit Socket connector colour GNGY

or

 Defective component: A4 Control Unit - Multec

Important:

Reset concerned control unit (engine or immobiliser control unit) with diagnostic tester before replacing. Select immobiliser in the diagnostic tester and call up the corresponding test in the menu ADDITIONAL FUNCTIONS. Ensure that both control units are never reset and replaced at the same time.

Note:

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Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green,
GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise,
VT=Violet, WH=White, YE=Yellow,
L=Light, D=Dark
E17 - Result: Short to Voltage
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 Short circuit to voltage between: S94 Shock Switch - Fuel Cut-Off Wiring harness connector (wiring harness side) terminal 1
& K16 Relay - Fuel pump Socket connector colour WHVT
or
 Defective component: K16 Relay - Fuel pump
Note:
Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark
E18 - Result: Defective Component
 Short circuit to voltage between: FR2 Fuse Output contact
α S94 Shock Switch - Fuel Cut-Off Wiring harness connector (wiring harness side) terminal 3
or
Defective component: S94 Shock Switch - Fuel Cut-Off
E19 - Result: Short to Voltage
 Short circuit to voltage between. K18 Relay - Engine Control Unit Socket connector colour BN Wire gauge: 2 mm² & EP2 Euco
Input contact
Note:
Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark
E20 - Result: Interruption
Circuit interruption between:

FL4 Fuse Output contact & K18 Relay - Engine Control Unit Socket connector colour BN Wire gauge: 0.5 mm²

Note:

Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark

E21 - Result: Interruption

 Circuit interruption between: G1 Battery Wiring harness connector (wiring harness side) terminal 30 & FL4 Fuse Input contact

or

 Circuit interruption between: FL4 Fuse Output contact & K18 Relay - Engine Control Unit Socket connector colour BN Wire gauge: 3 mm²

Note:

Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark

E22 - Result: Short to Ground

 Short circuit to ground between: K24 Relay - Starter Socket connector colour BNRD & M1 Starter Wiring harness connector (wiring harness side) terminal 50

or

 Defective component: M1 Starter or K18 Relay - Engine Control Unit

Note:

Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow,

L=Light, D=Dark

E23 - Result: Defective Component

 If the nominal value is reached during one of the measurements, the component/control unit that has been disconnected immediately before that measurement is defective.

E24 - Result: Short to Ground

 Short circuit to ground between: K18 Relay - Engine Control Unit Socket connector colour BNPK & A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 63 (X22), 64 (X22) & B117 Sensor - Oxygen, Exhaust, Heated 1 Wiring harness connector (wiring harness side) terminal D & B118 Sensor - Oxygen, Exhaust, Heated 2 Wiring harness connector (wiring harness side) terminal 4 & C1 Capacitor - Ignition Coil Wiring harness connector (wiring harness side) wiring colour BNPK & T1 Ignition Coil - Direct Ignition Wiring harness connector (wiring harness side) terminal A & Y5 Solenoid Valve - Tank Ventilation Wiring harness connector (wiring harness side) terminal A Y9.1 Injection Valve - Cylinder - 1 Wiring harness connector (wiring harness side) terminal A Y9.2 Injection Valve - Cylinder - 2 Wiring harness connector (wiring harness side) terminal A Y9.3 Injection Valve Cylinder - 3 Wiring harness connector (wiring harness side) terminal A &

Y9.4 Injection Valve Cylinder - 4 Wiring harness connector (wiring harness side) terminal A

Note:

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Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green,
GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise,
VT=Violet, WH=White, YE=Yellow,
L=Light, D=Dark
```

E25 - Result: Short to Ground

 Short circuit to ground between: K18 Relay - Engine Control Unit Socket connector colour BN Wire gauge: 2 mm²
 & FR2 Fuse Input contact

Note:

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Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green,
GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise,
VT=Violet, WH=White, YE=Yellow,
L=Light, D=Dark
```

E26 - Result: Short to Ground

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    Short circuit to ground between:

  FL4 Fuse
  Output contact
  &
  K18 Relay - Engine Control Unit
  Socket connector colour BN
  Wire gauge: 0.5 mm<sup>2</sup>
  &
  K18 Relay - Engine Control Unit
  Socket connector colour BN
  Wire gauge: 3 mm<sup>2</sup>
  &
  K24 Relay - Starter
  Socket connector colour BN
  Wire gauge: 3 mm<sup>2</sup>
  &
  FR1 Fuse
  Input contact
```

or

• Defective component:

K24 Relay - Starter

Note:

Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark

C-06 - Pedal Position Sensor Circuit

T01 - Check: Short to Voltage/Ground/Interruption of Voltage Supply

Work Order Description	Nominal Value	
 Ignition OFF Disconnect wiring harness connector from B19 Sensor - Pedal Position Ignition ON Measure voltage between the following terminals: B19 Sensor - Pedal Position Wiring harness connector (wiring harness side) wiring colour WH & Ground 	n: 4.8 5.2 V	
Note:		
Wiring colours: BK=Black, BN=Brown, BU=Blu GD=Gold, GN=Green, GY=Grey, OG=Orange PK=Pink, RD=Red, SR=Silver, TQ=Turquoise VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark	IE, ,	
Yes:T02	No:T30	
T02 - Check: Short to Voltage of Signal Circuit		
Work Order Description	Nominal Value	
 Diagnostic Tester Data List Parameter APP Sensor 2 (Accelerator Pedal Positio 	less than 0.3 V n)	
Yes:T03	No:E28	
T03 - Check: Short to Ground/Interruption o	f Signal Circuit	
Work Order Description	Nominal Value	
 Connect fused jumper wire to: B19 Sensor - Pedal Position Wiring harness connector (wiring harness 	4.8 5.2 V	

side) wiring colour WH & B19 Sensor - Pedal Position Wiring harness connector (wiring harness side) wiring colour BN • Diagnostic Tester Data List Parameter APP Sensor 2 (Accelerator Pedal Position) Note:	
Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark	
Yes:T04	No:E27
T04 - Check: Short to Voltage of Ground Circuit	
Work Order Description	Nominal Value
 Remove fused jumper wire Connect fused jumper wire to: B19 Sensor - Pedal Position Wiring harness connector (wiring harness side) wiring colour BN & B19 Sensor - Pedal Position Wiring harness connector (wiring harness side) wiring colour YE Diagnostic Tester Data List Parameter APP Sensor 2 (Accelerator Pedal Position) 	less than 0.3 V
Note:	
Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark	
Yes:T05	No:E26
T05 - Check: Short to Ground of Voltage Supply	/ Circuit
Work Order Description	Nominal Value
 Ignition OFF Remove fused jumper wire Disconnect wiring harness connector from: 	greater than 500 kOhm

A4 Control Unit - Multec • Measure resistance between the following terminals: B19 Sensor - Pedal Position Wiring harness connector (wiring harness side) wiring colour YE & Ground				
Note:				
Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark				
Yes:T06		No:E25		
106 - Check: Circuit Interruption of Ground Circuit				
Work Order Description		Nominal Value		
 Measure resistance between the following terminals: B19 Sensor - Pedal Position Wiring harness connector (wiring harness side) wiring colour YE & A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 53 (X21) 		less than 5 Ohm		
Note:				
Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark				
Yes:T07		No:E24		
T07 - Check: Short to Voltage/Ground/In	terrupti	on of Voltage Supply		
Work Order Description		Nominal Value		
 Connect wiring harness connector to: A4 Control Unit - Multec Ignition ON Measure voltage between the following 		4.8 5.2 V		

terminals: B19 Sensor - Pedal Position Wiring harness connector (wiring har side) wiring colour GN & Ground	ness			
Note:	Note:			
Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark				
Yes:T08		No:T16		
T08 - Check: Short to Voltage of Signal Circuit				
Work Order Description		Nominal Value		
 Ignition OFF Disconnect wiring harness connector from: A4 Control Unit - Multec Ignition ON Measure voltage between the following terminals: B19 Sensor - Pedal Position Wiring harness connector (wiring harness side) wiring colour BU & Ground 		less than 0.3 V		
Note:				
Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark				
Yes:T09		No:E08		
T09 - Check: Short to Voltage of Ground	I Circuit			
Work Order Description		Nominal Value		

side) wiring colour BK & Ground	
Note:	
Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark	
Yes:T10	No:E07
T10 - Check: Short to Ground of Voltage Supply	/ Circuit
Work Order Description	Nominal Value
 Ignition OFF Measure resistance between the following terminals: B19 Sensor - Pedal Position Wiring harness connector (wiring harness side) wiring colour BK & Ground 	greater than 500 kOhm
Note:	
Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark	
Yes:T11	No:E06
T11 - Check: Short to Ground of Signal Circuit	
Work Order Description	Nominal Value
 Measure resistance between the following terminals: B19 Sensor - Pedal Position Wiring harness connector (wiring harness side) wiring colour BU & Ground 	greater than 500 kOhm
Note:	

Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark	
Yes:T12	No:E05
Work Order Description	Nominal Value
 Measure resistance between the following terminals: B19 Sensor - Pedal Position Wiring harness connector (wiring harness side) wiring colour BU & A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 49 (X21) Note: Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark 	less than 5 Ohm
Yes:T13	No:E04
T13 - Check: Circuit Interruption of Ground Cir	cuit
Work Order Description	Nominal Value
 Measure resistance between the following terminals: B19 Sensor - Pedal Position Wiring harness connector (wiring harness side) wiring colour BK 	less than 5 Ohm
& A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 64 (X21)	
& A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 64 (X21) Note:	

VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark		
Yes:T14		No:E03
T14 - Check: Component		
Work Order Description		Nominal Value
 Connect wiring harness connector to: A4 Control Unit - Multec Connect fused jumper wire to: B19 Sensor - Pedal Position Wiring harness connector (wiring harness side) wiring colour BK & B19 Sensor - Pedal Position Wiring harness connector (wiring harness side) wiring colour BU Ignition ON Diagnostic Tester Data List Parameter APP Sensor 1 (Accelerator Pedal Position) 		less than 0.3 V
Note:		
Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark		
Yes:T15		No:E02
T15 - Check: Component	2	
Work Order Description		Nominal Value
 Remove fused jumper wire Connect fused jumper wire to: B19 Sensor - Pedal Position Wiring harness connector (wiring harness side) wiring colour BU & B19 Sensor - Pedal Position Wiring harness connector (wiring harness side) wiring colour GN Diagnostic Tester Data List Parameter APP Sensor 2 (Accelerator Pedal Position) Note: 		4.8 5.2 V

Wiring colours: BK=Black, BN=Brown, BU GD=Gold, GN=Green, GY=Grey, OG=Ora PK=Pink, RD=Red, SR=Silver, TQ=Turque VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark	=Blue, ange, oise,	
Yes:E01		No:E02
T16 - Check: Short to Voltage/Ground/Interrupti		Neminal Value
 Connect wiring harness connector to: A4 Control Unit - Multec Ignition ON Measure voltage between the following terminals: 		less than 4.8 V
B19 Sensor - Pedal Position Wiring harness connector (wiring harness side) wiring colour GN & Ground		
Note:		
Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark		
Yes:T17		No:T22
T17 - Check: Component		
Work Order Description		Nominal Value
 Ignition OFF Disconnect wiring harness connector from: Y29 Throttle Valve Positioner Ignition ON Measure voltage between the following terminals: B19 Sensor - Pedal Position Wiring harness connector (wiring harness side) wiring colour GN & Ground 		4.8 5.2 V
Note:		
Wiring colours: BK=Black, BN=Brown, BU GD=Gold, GN=Green, GY=Grey, OG=Ora PK=Pink, RD=Red, SR=Silver, TQ=Turquo VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark	=Blue, nge, bise,	
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Yes:E09		No:T18
118 - Check: Component		Newskiest Males
work Order Description		Nominal value
 Ignition OFF Disconnect wiring harness connector Y4 Solenoid Valve - Exhaust Gas Recirculation Ignition ON Measure voltage between the followir terminals: B19 Sensor - Pedal Position Wiring harness connector (wiring harn side) wiring colour GN & Ground 	from: ng ness	4.8 5.2 V
Note:		
Wiring colours: BK=Black, BN=Brown, BU GD=Gold, GN=Green, GY=Grey, OG=Ora PK=Pink, RD=Red, SR=Silver, TQ=Turquo VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark	=Blue, nge, bise,	
Yes:E10		No:T19
T19 - Check: Short to Ground of Voltage	Supply	/ Circuit
Work Order Description		Nominal Value
 Ignition OFF Disconnect wiring harness connector A4 Control Unit - Multec Measure resistance between the follo terminals: B19 Sensor - Pedal Position Wiring harness connector (wiring harn side) wiring colour GN & Ground 	from: wing ness	greater than 500 kOhm
Note:		

Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark	
Yes:T20	No:E14
T20 - Check: Interruption of Voltage Supply Ci	rcuit
Work Order Description	Nominal Value
 Measure resistance between the following terminals: B19 Sensor - Pedal Position Wiring harness connector (wiring harness side) wiring colour GN & A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 21 (X21) Note: Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark 	less than 5 Ohm
Yes:T21	No:E13
T21 - Check: Short to Ground of Voltage Supply Circuit	
Work Order Description	Nominal Value
 Measure resistance between the following terminals: Y29 Throttle Valve Positioner Wiring harness connector (wiring harness side) terminal C & Ground 	greater than 500 kOhm
Yes:E11	No:E12
T22 - Check: Component	
Work Order Description	Nominal Value
 Ignition OFF Disconnect wiring harness connector from: Y29 Throttle Valve Positioner 	4.8 5.2 V

 Ignition ON Measure voltage between the following terminals: B19 Sensor - Pedal Position Wiring harness connector (wiring harness connector (wiring harness) wiring colour GN & Ground 	ng ness	
Note:		
Wiring colours: BK=Black, BN=Brown, BU GD=Gold, GN=Green, GY=Grey, OG=Ora PK=Pink, RD=Red, SR=Silver, TQ=Turqu VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark	=Blue, ange, oise,	
Yes:T23		No:T25
123 - Check: Short to Voltage of Signal		
Work Order Description		Nominal Value
 Measure voltage between the following terminals: Y29 Throttle Valve Positioner Wiring harness connector (wiring harness connector (wiring harness) terminal A & Ground 	ng mess	less than 0.3 V
Yes:T24		No:E17
T24 - Check: Short to Voltage of Ground Circuit		
Work Order Description		Nominal Value
 Measure voltage between the following terminals: Y29 Throttle Valve Positioner Wiring harness connector (wiring harness connector (wiring harness) terminal G & Ground 	ng ness	less than 0.3 V
Yes:E15		No:E16
T25 - Check: Component		
Work Order Description		Nominal Value
Ignition OFF		48 52V

 Y4 Solenoid Valve - Exhaust Gas Recirculation Ignition ON Measure voltage between the followi terminals: B19 Sensor - Pedal Position Wiring harness connector (wiring har side) wiring colour GN & Ground 	ng ness	
Note:		
Wiring colours: BK=Black, BN=Brown, BU GD=Gold, GN=Green, GY=Grey, OG=Ora PK=Pink, RD=Red, SR=Silver, TQ=Turqu VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark	=Blue, ange, oise,	
Yes:T26 T26 - Chaok: Short to Voltago of Signal (Cirouit	No:T28
Work Order Description	Circuit	Nominal Value
 Ignition OFF Disconnect wiring harness connector A4 Control Unit - Multec Ignition ON Measure voltage between the following 	from:	less than 0.3 V
terminals: Y4 Solenoid Valve - Exhaust Gas Recirculation Wiring harness connector (wiring har side) terminal B & Ground	ng ness	
terminals: Y4 Solenoid Valve - Exhaust Gas Recirculation Wiring harness connector (wiring har side) terminal B & Ground Yes:T27	ng ness	No:E20
terminals: Y4 Solenoid Valve - Exhaust Gas Recirculation Wiring harness connector (wiring har side) terminal B & Ground Yes:T27 T27 - Check: Short to Voltage of Ground	ng ness I Circuit	No:E20
terminals: Y4 Solenoid Valve - Exhaust Gas Recirculation Wiring harness connector (wiring har side) terminal B & Ground Yes:T27 T27 - Check: Short to Voltage of Ground Work Order Description	ng ness I Circuit	No:E20 Nominal Value

Ground			
Yes:E18	No:E19		
T28 - Check: Short to Voltage of Voltage Supply Circuit			
Work Order Description	Nominal Value		
 Ignition OFF Disconnect wiring harness connector from A4 Control Unit - Multec Ignition ON Measure voltage between the following terminals: B19 Sensor - Pedal Position Wiring harness connector (wiring harness connector (wiring harness connector (wiring harness connector (wiring harness) wiring colour GN & Ground 	om: ss		
Note:			
Wiring colours: BK=Black, BN=Brown, BU=B GD=Gold, GN=Green, GY=Grey, OG=Orang PK=Pink, RD=Red, SR=Silver, TQ=Turquois VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark	Blue, ge, se,		
Yes:T29	No:E23		
T29 - Check: Short to Voltage of Voltage S	upply Circuit		
Work Order Description	Nominal Value		
 Measure voltage between the following terminals: Y4 Solenoid Valve - Exhaust Gas Recirculation Wiring harness connector (wiring harne side) terminal D & Ground 	less than 0.3 V ss		
Yes:E21	No:E22		
T30 - Check: Short to Voltage/Ground/Inter	rruption of Voltage Supply		
Work Order Description	Nominal Value		
 Ignition OFF Disconnect wiring harness connector from B19 Sensor - Pedal Position Ignition ON 	less than 4.8 V om:		

 Measure voltage between the following terminals: B19 Sensor - Pedal Position Wiring harness connector (wiring harness side) wiring colour WH & Ground 	
Note:	
Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark	
Yes:T31	No:T36
T31 - Check: Component	1
Work Order Description	Nominal Value
 Ignition OFF Disconnect wiring harness connector from: Y29 Throttle Valve Positioner Ignition ON Measure voltage between the following terminals: B19 Sensor - Pedal Position Wiring harness connector (wiring harness side) wiring colour WH & Ground 	4.8 5.2 V
Note:	
Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark	
Yes:E29	No:T32
T32 - Check: Component	1
Work Order Description	Nominal Value
Ignition OFFDisconnect wiring harness connector from:	4.8 5.2 V

Manifold Ignition ON Measure voltage between the following terminals: B19 Sensor - Pedal Position Wiring harness connector (wiring harness side) wiring colour WH & Ground	
Note:	
Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark	
Yes:E30	No:T33
T33 - Check: Short to Ground of Voltage Supply	/ Circuit
Work Order Description	Nominal Value
 Ignition OFF Disconnect wiring harness connector from: A4 Control Unit - Multec 	greater than 500 kOhm
 Measure resistance between the following terminals: B19 Sensor - Pedal Position Wiring harness connector (wiring harness side) wiring colour WH & Ground 	
 Measure resistance between the following terminals: B19 Sensor - Pedal Position Wiring harness connector (wiring harness side) wiring colour WH & Ground Note: 	
 Measure resistance between the following terminals: B19 Sensor - Pedal Position Wiring harness connector (wiring harness side) wiring colour WH & Ground Note: Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark 	
 Measure resistance between the following terminals: B19 Sensor - Pedal Position Wiring harness connector (wiring harness side) wiring colour WH & Ground Note: Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark Yes:T34 	No:E34
 Measure resistance between the following terminals: B19 Sensor - Pedal Position Wiring harness connector (wiring harness side) wiring colour WH & Ground Note: Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark Yes:T34 T34 - Check: Interruption of Voltage Supply Circles 	No:E34
 Measure resistance between the following terminals: B19 Sensor - Pedal Position Wiring harness connector (wiring harness side) wiring colour WH & Ground Note: Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark Yes:T34 T34 - Check: Interruption of Voltage Supply Circle Work Order Description 	No:E34 cuit Nominal Value

B19 Sensor - Pedal Position Wiring harness connector (wiring harr side) wiring colour WH & A4 Control Unit - Multec Wiring harness connector (wiring harr side) terminal 31 (X21)	ness	
Note:		
Wiring colours: BK=Black, BN=Brown, BU GD=Gold, GN=Green, GY=Grey, OG=Ora PK=Pink, RD=Red, SR=Silver, TQ=Turquo VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark	=Blue, inge, bise,	
Yes:T35		No:E33
T35 - Check: Short to Ground of Voltage	Supply	⁷ Circuit
Work Order Description		Nominal Value
 Measure resistance between the follo terminals: Y29 Throttle Valve Positioner Wiring barness connector (wiring barn 	owing	greater than 500 kOhm
side) terminal H & Ground		
side) terminal H & Ground Yes:E31		No:E32
side) terminal H & Ground Yes:E31 T36 - Check: Component		No:E32
Side) terminal H & Ground Yes:E31 T36 - Check: Component Work Order Description		No:E32 Nominal Value
 side) terminal H & Ground Yes:E31 T36 - Check: Component Work Order Description Ignition OFF Disconnect wiring harness connector Y29 Throttle Valve Positioner Ignition ON Measure voltage between the followir terminals: B19 Sensor - Pedal Position Wiring harness connector (wiring harnes))) 	from: ng ness	No:E32 Nominal Value 4.8 5.2 V
side) terminal H & Ground Yes:E31 T36 - Check: Component Work Order Description • Ignition OFF • Disconnect wiring harness connector Y29 Throttle Valve Positioner • Ignition ON • Measure voltage between the followir terminals: B19 Sensor - Pedal Position Wiring harness connector (wiring harr side) wiring colour WH & Ground Note:	from: ng ness	No:E32 Nominal Value 4.8 5.2 V

GD=Gold, GN=Green, GY=Grey, OG=Ora PK=Pink, RD=Red, SR=Silver, TQ=Turqu VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark	ange, ioise,	
Yes:T37		No:T39
T37 - Check: Short to Voltage of Signal	Circuit	
Work Order Description		Nominal Value
 Ignition OFF Disconnect wiring harness connector A4 Control Unit - Multec Ignition ON Measure voltage between the followit terminals: Y29 Throttle Valve Positioner Wiring harness connector (wiring har side) terminal D & Ground 	r from: ing rness	less than 0.3 V
Yes:T38		No:E37
T38 - Check: Short to Voltage of Ground	d Circuit	
Work Order Description		Nominal Value
 Measure voltage between the following terminals: Y29 Throttle Valve Positioner Wiring harness connector (wiring harness connector (wiring harness) side) terminal B & Ground 	rness	less than 0.3 V
Ves:E35		No:E36
T39 - Check: Component		
Work Order Description		Nominal Value
 Ignition OFF Disconnect wiring harness connector B21 Sensor - Absolute Pressure, International S	r from:	4.8 5.2 V

& Ground		
Note:		
Wiring colours: BK=Black, BN=Brown, BU GD=Gold, GN=Green, GY=Grey, OG=Ora PK=Pink, RD=Red, SR=Silver, TQ=Turqu VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark	=Blue, inge, oise,	
Yes:T40	Dirauit	No:T42
140 - Check: Short to Voltage of Signal		
Work Order Description		Nominal Value
 Ignition OFF Disconnect wiring harness connector A4 Control Unit - Multec Ignition ON Measure voltage between the following terminals: B21 Sensor - Absolute Pressure, Inta Manifold Wiring harness connector (wiring harness side) terminal B & Ground 	from:	ess than 0.3 V
Yes:T41	·	No:E40
T41 - Check: Short to Voltage of Ground	Circuit	
Work Order Description	N	Nominal Value
 Measure voltage between the following terminals: B21 Sensor - Absolute Pressure, Interminal description Wiring harness connector (wiring harness connector (wiring harness connector (wiring harness) terminal A & & Ground 	ng le ike ness	ess than 0.3 V
Yes:E38		No:E39
T42 - Check: Short to Voltage of Voltage	Supply C	ircuit
Work Order Description	N	Nominal Value
Ignition OFFDisconnect wiring harness connector	from:	ess than 0.3 V

 A4 Control Unit - Multec Ignition ON Measure voltage between the followin terminals: B19 Sensor - Pedal Position Wiring harness connector (wiring harness connector (wiring harness connector (wiring harness connector & Ground) 	ng ness	
Note:		
Wiring colours: BK=Black, BN=Brown, BU GD=Gold, GN=Green, GY=Grey, OG=Ora PK=Pink, RD=Red, SR=Silver, TQ=Turque VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark	=Blue, inge, oise,	
Yes:T43		No:E43
T43 - Check: Short to Voltage of Voltage	Supply	Circuit
Work Order Description		Nominal Value
 Measure voltage between the followin terminals: B21 Sensor - Absolute Pressure, Inta Manifold Wiring harness connector (wiring harn side) terminal C & Ground 	ng .ke ness	less than 0.3 V
Yes:E41		No:E42
 E01 - Result: Defective Component Defective component: B19 Sensor - Pedal Position 		
 Defective component: A4 Control Unit - Multec 		
Important:		
Reset concerned control unit (engine or impletester before replacing. Select immobiliser corresponding test in the menu ADDITION control units are never reset and replaced a	mobilise in the dia AL FUNC at the sa	r control unit) with diagnostic agnostic tester and call up the CTIONS. Ensure that both me time.
E03 - Result: Interruption		
Circuit interruption between:	·	

A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 64 (X21) & B19 Sensor - Pedal Position Wiring harness connector (wiring harness side) wiring colour BK

Note:

Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow,

L=Light, D=Dark

E04 - Result: Interruption

 Circuit interruption between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 49 (X21) & B19 Sensor - Pedal Position

Wiring harness connector (wiring harness side) wiring colour BU

Note:

Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow,

L=Light, D=Dark

E05 - Result: Short to Ground

 Short circuit to ground between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 49 (X21) & B19 Sensor - Pedal Position Wiring harness connector (wiring harness side) wiring colour BU

Note:

Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark

E06 - Result: Short to Ground

 Short circuit to ground between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 64 (X21) & B19 Sensor - Pedal Position Wiring harness connector (wiring harness side) wiring colour BK

Note:

Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark

E07 - Result: Short to Voltage

• Short circuit to voltage between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 64 (X21) & **B19 Sensor - Pedal Position** Wiring harness connector (wiring harness side) wiring colour BK

Note:

Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turguoise, VT=Violet, WH=White, YE=Yellow,

L=Light, D=Dark

E08 - Result: Short to Voltage

 Short circuit to voltage between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 49 (X21) & **B19 Sensor - Pedal Position** Wiring harness connector (wiring harness side) wiring colour BU

Note:

Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turguoise, VT=Violet, WH=White, YE=Yellow,

L=Light, D=Dark

E09 - Result: Defective Component

• Defective component: Y29 Throttle Valve Positioner

E10 - Result: Defective Component

• Defective component: Y4 Solenoid Valve - Exhaust Gas Recirculation

E11 - Result: Short to Ground

 Short circuit to ground between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 46 (X22) &

Y4 Solenoid Valve - Exhaust Gas Recirculation

Wiring harness connector (wiring harness side) terminal D

or

 Defective component: A4 Control Unit - Multec

Important:

Reset concerned control unit (engine or immobiliser control unit) with diagnostic tester before replacing. Select immobiliser in the diagnostic tester and call up the corresponding test in the menu ADDITIONAL FUNCTIONS. Ensure that both control units are never reset and replaced at the same time.

E12 - Result: Short to Ground
Short circuit to ground:
A4 Control Unit - Multec
Wiring harness connector (wiring harness side) terminal 45 (X22)
& V20 Throttle Value Regitioner
Wiring harness connector (wiring harness side) terminal C
F13 - Result: Interruntion
Circuit interruption between:
A4 Control Unit - Multec
Wiring harness connector (wiring harness side) terminal 21 (X21)
B19 Sensor - Pedal Position
Wiring harness connector (wiring harness side) wiring colour GN
Note:
Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark
E14 - Result: Short to Ground
 Short circuit to ground between: A4 Control Unit - Multec Wiring barpage connector (wiring barpage side) torminal 21 (X21)
B19 Sensor - Pedal Position Wiring harness connector (wiring harness side) wiring colour GN
Note:
Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow,

L=Light, D=Dark

E15 - Result: Defective Component

 Defective component: Y29 Throttle Valve Positioner or A4 Control Unit - Multec

Important:

Reset concerned control unit (engine or immobiliser control unit) with diagnostic tester before replacing. Select immobiliser in the diagnostic tester and call up the corresponding test in the menu ADDITIONAL FUNCTIONS. Ensure that both control units are never reset and replaced at the same time.

E16 - Result: Short to Voltage

 Short circuit to voltage between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 43 (X22) & Y29 Throttle Valve Positioner
 Wiring harness connector (wiring harness side) terminal C

Wiring harness connector (wiring harness side) terminal G

E17 - Result: Short to Voltage

 Short circuit to voltage between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 55 (X22) & Y29 Throttle Valve Positioner Wiring harness connector (wiring harness side) terminal A

E18 - Result: Defective Component

- Defective component:
 - Y4 Solenoid Valve Exhaust Gas Recirculation
 - or

A4 Control Unit - Multec

Important:

Reset concerned control unit (engine or immobiliser control unit) with diagnostic tester before replacing. Select immobiliser in the diagnostic tester and call up the corresponding test in the menu ADDITIONAL FUNCTIONS. Ensure that both control units are never reset and replaced at the same time.

E19 - Result: Short to Voltage

 Short circuit to voltage between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 32 (X22) & Y4 Solenoid Valve - Exhaust Gas Recirculation Wiring harness connector (wiring harness side) terminal C

E20 - Result: Short to Voltage
 Short circuit to voltage between:
A4 Control Unit - Multec
Wiring harness connector (wiring harness side) terminal 40 (X22)
Y4 Solenoid Valve - Exhaust Gas Recirculation Wiring barpage connector (wiring barpage side) terminal P
For Desults Chart to Valteria
E21 - Result: Short to voltage
Short circuit to voltage between:
A4 Control Unit - Mullec Wiring harnoos connector (wiring harnoos side) terminal 45 (X22)
Y29 Throttle Valve Positioner
Wiring harness connector (wiring harness side) terminal C
or
Defective component:
A4 Control Unit - Multec
Important:
Reset concerned control unit (engine or immobiliser control unit) with diagnostic tester before replacing. Select immobiliser in the diagnostic tester and call up the corresponding test in the menu ADDITIONAL FUNCTIONS. Ensure that both control units are never reset and replaced at the same time.
E22 - Result: Short to Voltage
Short circuit to voltage between:
A4 Control Unit - Multec
Wiring harness connector (wiring harness side) terminal 46 (X78)
&
Y4 Solenoid Valve - Exhaust Gas Recirculation
Wiring harness connector (wiring harness side) terminal D
E23 - Result: Short to Voltage
Short circuit to voltage between:
A4 Control Unit - Multec
winng harness connector (winng harness side) terminal 21 (X21)
B19 Sensor - Pedal Position
Wiring harness connector (wiring harness side) wiring colour GN
Note:
Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow, L=Light. D=Dark

E24 - Result: Interruption

 Circuit interruption between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 53 (X21) & B19 Sensor - Pedal Position Wiring harness connector (wiring harness side) wiring colour YE

Note:

Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow,

L=Light, D=Dark

E25 - Result: Short to Ground

 Short circuit to ground between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 53 (X21) & B19 Sensor - Pedal Position

Wiring harness connector (wiring harness side) wiring colour YE

Note:

Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow,

L=Light, D=Dark

E26 - Result: Short to Voltage

 Short circuit to voltage between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 53 (X21) & B19 Sensor - Pedal Position Wiring harness connector (wiring harness side) wiring colour YE

or

 Defective component: A4 Control Unit - Multec

Important:

Reset concerned control unit (engine or immobiliser control unit) with diagnostic tester before replacing. Select immobiliser in the diagnostic tester and call up the corresponding test in the menu ADDITIONAL FUNCTIONS. Ensure that both control units are never reset and replaced at the same time.

Note:

Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark

E27 - Result: Short to Ground/Interruption

• Short circuit to ground/interruption of circuit between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 61 (X21) & **B19 Sensor - Pedal Position** Wiring harness connector (wiring harness side) wiring colour BN

or

 Defective component: A4 Control Unit - Multec

Important:

Reset concerned control unit (engine or immobiliser control unit) with diagnostic tester before replacing. Select immobiliser in the diagnostic tester and call up the corresponding test in the menu ADDITIONAL FUNCTIONS. Ensure that both control units are never reset and replaced at the same time.

Note:

Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow,

L=Light, D=Dark

E28 - Result: Short to Voltage

 Short circuit to voltage between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 61 (X21) & **B19 Sensor - Pedal Position** Wiring harness connector (wiring harness side) wiring colour BN

or

 Defective component: A4 Control Unit - Multec

Important:

Reset concerned control unit (engine or immobiliser control unit) with diagnostic

tester before replacing. Select immobiliser in the diagnostic tester and call up the corresponding test in the menu ADDITIONAL FUNCTIONS. Ensure that both control units are never reset and replaced at the same time.

Note:

Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow,

L=Light, D=Dark

E29 - Result: Defective Component

 Defective component: Y29 Throttle Valve Positioner

E30 - Result: Defective Component

 Defective component: B21 Sensor - Absolute Pressure, Intake Manifold

E31 - Result: Short to Ground

 Short circuit to ground between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 58 (X22) & B21 Sensor - Absolute Pressure, Intake Manifold Wiring harness connector (wiring harness side) terminal C

or

 Defective component: A4 Control Unit - Multec

Important:

Reset concerned control unit (engine or immobiliser control unit) with diagnostic tester before replacing. Select immobiliser in the diagnostic tester and call up the corresponding test in the menu ADDITIONAL FUNCTIONS. Ensure that both control units are never reset and replaced at the same time.

E32 - Result: Short to Ground

 Short circuit to ground between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 57 (X22) & Y29 Throttle Valve Positioner Wiring harness connector (wiring harness side) terminal H

E33 - Result: Interruption

 Circuit interruption between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 31 (X21) & B19 Sensor - Pedal Position Wiring harness connector (wiring harness side) wiring colour WH

Note:

Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turguoise, VT=Violet, WH=White, YE=Yellow,

L=Light, D=Dark

E34 - Result: Short to Ground

 Short circuit to ground between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 31(X21) & B19 Sensor - Pedal Position Wiring harness connector (wiring harness side) wiring colour WH

Note:

Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow,

L=Light, D=Dark

E35 - Result: Defective Component

• Defective component: Y29 Throttle Valve Positioner or A4 Control Unit - Multec

Important:

Reset concerned control unit (engine or immobiliser control unit) with diagnostic tester before replacing. Select immobiliser in the diagnostic tester and call up the corresponding test in the menu ADDITIONAL FUNCTIONS. Ensure that both control units are never reset and replaced at the same time.

E36 - Result: Short to Voltage • Short circuit to voltage between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 36 (X22) & Y29 Throttle Valve Positioner Wiring harness connector (wiring harness side) terminal B

E37 - Result: Short to Voltage

• Short circuit to voltage between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 26 (X22)

&
Y29 Throttle Valve Positioner
Wiring harness connector (wiring harness side) terminal D
E38 - Result: Defective Component
 Defective component: B21 Sensor - Absolute Pressure, Intake Manifold or
A4 Control Unit - Multec
Important:
Reset concerned control unit (engine or immobiliser control unit) with diagnostic tester before replacing. Select immobiliser in the diagnostic tester and call up the corresponding test in the menu ADDITIONAL FUNCTIONS. Ensure that both control units are never reset and replaced at the same time.
E39 - Result: Short to Voltage
 Short circuit to voltage between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 12 (X22)
& B21 Sensor - Absolute Pressure, Intake Manifold Wiring harness connector (wiring harness side) terminal A
E40 - Result: Short to Voltage
 Short circuit to voltage between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 35 (X22) & B21 Sensor - Absolute Pressure, Intake Manifold Wiring harness connector (wiring harness side) terminal B
E41 - Result: Short to Voltage
 Short circuit to voltage between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 57 (X22) & Y29 Throttle Valve Positioner Wiring harness connector (wiring harness side) terminal H
or
Defective component: A4 Control Unit - Multec
Important:
Reset concerned control unit (engine or immobiliser control unit) with diagnostic tester before replacing. Select immobiliser in the diagnostic tester and call up the corresponding test in the menu ADDITIONAL FUNCTIONS. Ensure that both

control units are never reset and replaced at the same time.

E42 - Result: Short to Voltage

• Short circuit to voltage between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 58 (X22) & B21 Sensor - Absolute Pressure, Intake Manifold

Wiring harness connector (wiring harness side) terminal C

E43 - Result: Short to Voltage

• Short circuit to voltage between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 31 (X21) & B19 Sensor - Pedal Position Wiring harness connector (wiring harness side) wiring colour WH

Note:

Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turguoise, VT=Violet, WH=White, YE=Yellow,

L=Light, D=Dark

C-07 - Throttle Valve Positioner Circuit

T01 - Check: Short to Ground/Interruption of Voltage Supply Circuit

Work Order Description	Nominal Value
 Ignition OFF All consumers turned off Remove electrical component from sc K18 Relay - Engine Control Unit Measure voltage between the followin terminals: K18 Relay - Engine Control Unit Socket connector colour BN Wire gauge: 3 mm² & Ground 	greater than 11 V ocket: g
Note:	
Wiring colours: BK=Black, BN=Brown, BU= GD=Gold, GN=Green, GY=Grey, OG=Orat PK=Pink, RD=Red, SR=Silver, TQ=Turquo VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark	=Blue, nge, vise,

Yes:T02	No:T23	
T02 - Check: Interruption of Voltage Supply Circuit		
Work Order Description	Nominal Value	
 Measure voltage between the followin terminals: K18 Relay - Engine Control Unit Socket connector colour BN Wire gauge: 0.5 mm² & Ground 	ing greater than 11 V	
Note:		
Wiring colours: BK=Black, BN=Brown, BU= GD=Gold, GN=Green, GY=Grey, OG=Ora PK=Pink, RD=Red, SR=Silver, TQ=Turquo VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark	J=Blue, ange, ioise,	
Yes:T03	No:E21	
T03 - Check: Interruption of Voltage Sup	pply Circuit	
Work Order Description	Nominal Value	
 Ignition OFF Disconnect wiring harness connector A4 Control Unit - Multec Measure resistance between the follo terminals: K18 Relay - Engine Control Unit Socket connector colour BNPK & A4 Control Unit - Multec Wiring harness connector (wiring here 	r from: owing	
side) terminal 63 (X22), 64 (X22)	rness	
side) terminal 63 (X22), 64 (X22)	rness	
 Note: Wiring colours: BK=Black, BN=Brown, BU=GD=Gold, GN=Green, GY=Grey, OG=Ora PK=Pink, RD=Red, SR=Silver, TQ=Turque VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark 	rness J=Blue, ange, ioise,	
Note: Wiring colours: BK=Black, BN=Brown, BU: GD=Gold, GN=Green, GY=Grey, OG=Ora PK=Pink, RD=Red, SR=Silver, TQ=Turque VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark Yes:T04	rness J=Blue, ange, ioise, No:E20	
Note: Wiring colours: BK=Black, BN=Brown, BU: GD=Gold, GN=Green, GY=Grey, OG=Ora PK=Pink, RD=Red, SR=Silver, TQ=Turque VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark Yes:T04 T04 - Check: Short to Voltage of Voltage	rness J=Blue, ange, ioise, No:E20 e Supply Circuit	

 Ignition ON Measure voltage between the followi terminals: A4 Control Unit - Multec Wiring harness connector (wiring har side) terminal 30 (X21) & Ground 	ng rness
Yes:T05	No:E19
T05 - Check: Short to Ground/Interruptic	on of Voltage Supply Circuit
Work Order Description	Nominal Value
 Ignition OFF Install following component: K18 Relay - Engine Control Unit Connect fused jumper wire to: A4 Control Unit - Multec Wiring harness connector (wiring har side) terminal 30 (X21) & Ground Ignition ON Measure voltage between the followi terminals: A4 Control Unit - Multec Wiring harness connector (wiring har side) terminal 63 (X22), 64 (X22) & Ground 	rness ng ness
Yes:T06	No:E18
106 - Check: Short to Voltage of Voltage	e Supply Circuit
Work Order Description	Nominal Value
 Remove fused jumper wire Measure voltage between the followi terminals: A4 Control Unit - Multec Wiring harness connector (wiring har side) terminal 13 (X22) & Ground 	ng mess
Yes:T07	No:T22
T07 - Check: Short to Ground of Voltage	e Supply Circuit
Work Order Description	Nominal Value

 Ignition OFF Measure resistance between the follo terminals: A4 Control Unit - Multec Wiring harness connector (wiring har side) terminal 13 (X22) & Ground 	owing greater than 500 kOhm
Yes:T08	No:T21
T08 - Check: Interruption of Voltage Sup	oply Circuit
Work Order Description	Nominal Value
 Disconnect wiring harness connector Y29 Throttle Valve Positioner Measure resistance between the follo terminals: A4 Control Unit - Multec Wiring harness connector (wiring har side) terminal 13 (X22), 14 (X22) & Y29 Throttle Valve Positioner Wiring harness connector (wiring har side) terminal E 	r from: less than 5 Ohm owing rness
Yes:T09	No:E13
Yes:T09 T09 - Check: Interruption of Voltage Sup	No:E13
Yes:T09 T09 - Check: Interruption of Voltage Sup Work Order Description	No:E13 oply Circuit Nominal Value
Yes:T09 T09 - Check: Interruption of Voltage Sup Work Order Description Measure resistance between the follo terminals: A4 Control Unit - Multec Wiring harness connector (wiring har side) terminal 15 (X22), 16 (X22) & Y29 Throttle Valve Positioner Wiring harness connector (wiring har side) terminal F	No:E13 Poply Circuit Nominal Value owing less than 5 Ohm rness rness
Yes:T09 T09 - Check: Interruption of Voltage Sup Work Order Description Measure resistance between the follo terminals: A4 Control Unit - Multec Wiring harness connector (wiring har side) terminal 15 (X22), 16 (X22) & Y29 Throttle Valve Positioner Wiring harness connector (wiring har side) terminal F Yes:T10	No:E13 oply Circuit Nominal Value owing less than 5 Ohm rness rness No:E12
Yes:T09 T09 - Check: Interruption of Voltage Sup Work Order Description Measure resistance between the follo terminals: A4 Control Unit - Multec Wiring harness connector (wiring har side) terminal 15 (X22), 16 (X22) & Y29 Throttle Valve Positioner Wiring harness connector (wiring har side) terminal F Yes:T10 T10 - Check: Short to Voltage of Voltage	No:E13 Nominal Value Nominal Value owing less than 5 Ohm rness ness No:E12 Supply Circuit
Yes:T09 T09 - Check: Interruption of Voltage Sup Work Order Description Measure resistance between the follo terminals: A4 Control Unit - Multec Wiring harness connector (wiring har side) terminal 15 (X22), 16 (X22) & Y29 Throttle Valve Positioner Wiring harness connector (wiring har side) terminal F Yes:T10 T10 - Check: Short to Voltage of Voltage Work Order Description	No:E13 Nominal Value owing less than 5 Ohm rness Iless than 5 Ohm rness No:E12 Supply Circuit Nominal Value Nominal Value Iless

Wiring harness connector (wiring ha side) terminal 36 (X22) & Ground	rness	
	1	
Yes: 111 T11 - Check: Circuit Interruption of Gro		NO:E11
Work Order Description		Nominal Value
 Measure resistance between the foll terminals: A4 Control Unit - Multec Wiring harness connector (wiring har side) terminal 36 (X22) & 	owing rness	less than 5 Ohm
Y29 Throttle Valve Positioner Wiring harness connector (wiring ha side) terminal B	rness	
Yes:T12		No:E10
T12 - Check: Short to Ground of Voltage	e Supply	/ Circuit
Work Order Description		Nominal Value
 Ignition OFF Measure resistance between the foll terminals: A4 Control Unit - Multec Wiring harness connector (wiring harside) terminal 36 (X22) & Ground 	owing rness	greater than 500 kOhm
Yes:T13		No:E09
T13 - Check: Circuit Interruption of Gro	und Circ	uit
Work Order Description		Nominal Value
 Measure resistance between the foll terminals: A4 Control Unit - Multec Wiring harness connector (wiring harside) terminal 43 (X22) & Y29 Throttle Valve Positioner Wiring harness connector (wiring harses) 	owing rness	less than 5 Ohm
side) terminal G		
Yes:T14		No:E08

I 14 - Check: Short to Ground of Voltage Supply Circuit			
Work Order Description	Nominal Value		
 Measure resistance between the follow terminals: A4 Control Unit - Multec Wiring harness connector (wiring harnes side) terminal 43 (X22) & Ground 	ring greater than 500 kOhm		
Ves·T15	No:E07		
T15 - Check: Short to Voltage of Voltage S	Supply Circuit		
Work Order Description	Nominal Value		
 Connect wiring harness connector to: A4 Control Unit - Multec Ignition ON Measure voltage between the following terminals: Y29 Throttle Valve Positioner Wiring harness connector (wiring harnes side) terminal H & Ground 	4.8 5.2 V		
Yes:T16	No:E06		
T16 - Check: Interruption of Voltage Supp	ly Circuit		
Work Order Description	Nominal Value		
 Measure voltage between the following terminals: Y29 Throttle Valve Positioner Wiring harness connector (wiring harnes side) terminal C & Ground 	4.8 5.2 V		
Yes:T17	No:E05		
T17 - Check: Short to Ground/Interruption of Signal Circuit			
Work Order Description	Nominal Value		
Connect fused jumper wire to: Y29 Throttle Valve Positioner Wiring harness connector (wiring harness ide) terminal C	4.8 5.2 V		

round of Voltage Supply Circuit **T** 4 A Chook Chart to

 Y29 Throttle Valve Positioner Wiring harness connector (wiring harness side) terminal A Diagnostic Tester Data List Parameter TP Sensor 1 (Throttle Position) 			
Yes:T18		No:E04	
118 - Check: Short to Ground/Interruptic	on of Sig		
Work Order Description		Nominal value	
 Remove fused jumper wire Connect fused jumper wire to: Y29 Throttle Valve Positioner Wiring harness connector (wiring harness side) terminal H 		4.8 5.2 V	
 A Y29 Throttle Valve Positioner Wiring harness connector (wiring harness side) terminal D Diagnostic Tester Data List Parameter TP Sensor 2 (Throttle Position) 			
Yes:T19		No:E03	
T19 - Check: Component	T19 - Check: Component		
	,		
Work Order Description		Nominal Value	
 Work Order Description Remove fused jumper wire Connect fused jumper wire to: Y29 Throttle Valve Positioner Wiring harness connector (wiring har side) terminal B & 	mess	Nominal Value less than 0.3 V	
 Work Order Description Remove fused jumper wire Connect fused jumper wire to: Y29 Throttle Valve Positioner Wiring harness connector (wiring har side) terminal B Y29 Throttle Valve Positioner Wiring harness connector (wiring har side) terminal D Diagnostic Tester Data List Parameter TP Sensor 2 (Throttle Position) 	rness rness er	Nominal Value less than 0.3 V	
 Work Order Description Remove fused jumper wire Connect fused jumper wire to: Y29 Throttle Valve Positioner Wiring harness connector (wiring har side) terminal B & Y29 Throttle Valve Positioner Wiring harness connector (wiring har side) terminal D Diagnostic Tester Data List Parameter TP Sensor 2 (Throttle Position) 	rness rness er	Nominal Value less than 0.3 V No:E02	
 Work Order Description Remove fused jumper wire Connect fused jumper wire to: Y29 Throttle Valve Positioner Wiring harness connector (wiring har side) terminal B Y29 Throttle Valve Positioner Wiring harness connector (wiring har side) terminal D Diagnostic Tester Data List Paramete TP Sensor 2 (Throttle Position) Yes:T20 T20 - Check: Component 	rness rness er	Nominal Value less than 0.3 V No:E02	
 Work Order Description Remove fused jumper wire Connect fused jumper wire to: Y29 Throttle Valve Positioner Wiring harness connector (wiring har side) terminal B Y29 Throttle Valve Positioner Wiring harness connector (wiring har side) terminal D Diagnostic Tester Data List Paramete TP Sensor 2 (Throttle Position) Yes:T20 T20 - Check: Component Work Order Description 	rness er	Nominal Value less than 0.3 V No:E02 Nominal Value	

 & Y29 Throttle Valve Positioner Wiring harness connector (wiring har side) terminal G Diagnostic Tester Data List Paramete TP Sensor 1 (Throttle Position) 	ness er	
Yes:E01		No:E02
T21 - Check: Short to Ground of Voltage Supply		
Work Order Description	Work Order Description	
 Disconnect wiring harness connector from: Y29 Throttle Valve Positioner Measure resistance between the following terminals: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 13 (X22) & 		greater than 500 kOhm
		No.515
Yes:E14 No:E15		
Work Order Description		Nominal Value
 Ignition OFF Disconnect wiring harness connector Y29 Throttle Valve Positioner Ignition ON Measure voltage between the followi terminals: A4 Control Unit - Multec Wiring harness connector (wiring har side) terminal 13 (X22) & Ground 	from: ng ness	less than 0.3 V
Yes:E16		No:E17
T23 - Check: Component		
Work Order Description		Nominal Value
 Remove electrical component from socket: FL4 Fuse Check the following component for proper operation: FL4 Fuse 		Test okay?
res:E22	1	INU: 1 24

T24 - Check: Short to Ground of Voltage Supply Circuit			
Work Order Description	Nominal Value		
 Connect fused jumper wire to: FL4 Fuse Output contact & Battery voltage Check the following component for proper operation: Fuse of the fused jumper wire 	Test okay?		
Yes:T25	No:E27		
T25 - Check: Short to Ground of Voltage Sup	ply Circuit		
Work Order Description	Nominal Value		
 Remove fused jumper wire Connect fused jumper wire to: K18 Relay - Engine Control Unit Socket connector colour BNPK & Ground Check the following component for proper operation: Fuse of the fused jumper wire 	Test okay?		
Note:			
Wiring colours: BK=Black, BN=Brown, BU=Blu GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark	e,		
Yes:T26	No:T27		
T26 - Check: Short to Ground of Voltage Sup	ply Circuit		
Work Order Description	Nominal Value		
 Remove fused jumper wire Connect fused jumper wire to: K18 Relay - Engine Control Unit Socket connector colour BN Wire gauge: 2 mm² & Battery voltage Check the following component for proper operation: 	Test okay?		

-04 ---• •

Fuse of the fused jumper wire		
Note:		
Wiring colours: BK=Black, BN=Brown, BU GD=Gold, GN=Green, GY=Grey, OG=Ora PK=Pink, RD=Red, SR=Silver, TQ=Turqu VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark	=Blue, ange, oise,	
Yes:E23		No:E24
T27 - Check: Short to Ground of Voltage	Supply	Circuit
Work Order Description		Nominal Value
 Disconnect wiring harness connector A4 Control Unit - Multec Insert new fuse into the socket of the jumper wire and then check this fuse proper operation. Disconnect each of the following components/control units consecutive from the wiring harness and repeat th measurement each time: B117 Sensor - Oxygen, Exhaust, Hea B118 Sensor - Oxygen, Exhaust, Hea C1 Capacitor - Ignition Coil T1 Ignition Coil - Direct Ignition Y5 Solenoid Valve - Tank Ventilation Y9.1 Injection Valve - Cylinder - 1 Y9.2 Injection Valve - Cylinder - 2 Y9.3 Injection Valve Cylinder - 3 Y9.4 Injection Valve Cylinder - 4 	from: fused for ely ne ated 1 ated 2	Test okay?
Yes:E25	I	No:E26
E01 - Result: Defective Component		-
 Defective component: Y29 Throttle Valve Positioner 		
E02 - Result: Defective Component		
Defective component: A4 Control Unit - Multec		
Important:		
Reset concerned control unit (engine or immobiliser control unit) with diagnostic tester before replacing. Select immobiliser in the diagnostic tester and call up the corresponding test in the menu ADDITIONAL FUNCTIONS. Ensure that both control units are never reset and replaced at the same time.		

E03 - Result: Short to Ground/Interruption

 Short circuit to ground/interruption of circuit between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 26 (X22) & Y29 Throttle Valve Positioner Wiring harness connector (wiring harness side) terminal D

or

 Defective component: A4 Control Unit - Multec

Important:

Reset concerned control unit (engine or immobiliser control unit) with diagnostic tester before replacing. Select immobiliser in the diagnostic tester and call up the corresponding test in the menu ADDITIONAL FUNCTIONS. Ensure that both control units are never reset and replaced at the same time.

E04 - Result: Short to Ground/Interruption Short circuit to ground/interruption of circuit between:

 Short circuit to ground/interruption of circuit between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 55 (X22) & Y29 Throttle Valve Positioner Wiring harness connector (wiring harness side) terminal A

or

 Defective component: A4 Control Unit - Multec

Important:

Reset concerned control unit (engine or immobiliser control unit) with diagnostic tester before replacing. Select immobiliser in the diagnostic tester and call up the corresponding test in the menu ADDITIONAL FUNCTIONS. Ensure that both control units are never reset and replaced at the same time.

E05 - Result: Interruption

 Circuit interruption between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 45 (X22) & Y29 Throttle Valve Positioner Wiring harness connector (wiring harness side) terminal C

E06 - Result: Interruption

• Circuit interruption between:

Y29 Throttle Valve Positioner	
Wiring harness connector (wiring harness side) terminal F	
E13 - Result: Interruption	
Circuit interruption between:	
A4 Control Unit - Muttec Wiring harness connector (wiring harness side) terminal 13 (X22)	14 (822)
Y29 Throttle Valve Positioner	
Wiring harness connector (wiring harness side) terminal E	
E14 - Result: Short to Ground	
Short circuit to ground between:	
A4 Control Unit - Multec	
Wiring harness connector (wiring harness side) terminal 15 (X22),	16 (X22)
α Y29 Throttle Valve Positioner	
Wiring harness connector (wiring harness side) terminal F	
or	
Defective component:	
Y29 Throttle Valve Positioner	
E15 - Result: Short to Ground	
Short circuit to ground between:	
A4 Control Unit - Multec	
Wiring harness connector (wiring harness side) terminal 13 (X22),	14 (X22)
& V20 Throttle Velve Resitioner	
Wiring harness connector (wiring harness side) terminal F	
E16 - Result: Short to Voltage	
Short circuit to voltage between:	
A4 Control Unit - Multec	
Wiring harness connector (wiring harness side) terminal 15 (X22),	16 (X22)
Y29 Inrottle Valve Positioner Wiring harposs connector (wiring harposs side) terminal E	
Winng harness connector (winng harness side) terminar	
or	
Defective component: Y20 Throttle Velve Resitioner	
F17 Populty Short to Voltage	
Short circuit to voltage between:	
A4 Control Unit - Multec	14 (200)
vining namess connector (wining namess side) terminal 13 (X22),	14 (AZZ)
Y29 Throttle Valve Positioner	
	I

Wiring harness connector (wiring harness side) terminal E
E18 - Result: Short to Ground/Interruption
 Short circuit to ground/interruption of circuit between: K18 Relay - Engine Control Unit Socket connector colour GNGY & A4 Control Unit - Multec
Wiring harness connector (wiring harness side) terminal 30 (X21)
or
 Defective component: K18 Relay - Engine Control Unit
Note:
Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark
E19 - Result: Short to Voltage
 Short circuit to voltage between: K18 Relay - Engine Control Unit Socket connector colour GNGY & A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 30 (X21)
Note:
Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark
E20 - Result: Interruption
 Circuit interruption between: K18 Relay - Engine Control Unit Socket connector colour BNPK & A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 63 (X22), 64 (X22)
Note:
Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow,

L=Light, D=Dark

E21 - Result: Interruption

 Circuit interruption between: FL4 Fuse Output contact & K18 Relay - Engine Control Unit Socket connector colour BN Wire gauge: 0.5 mm²

Note:

Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow,

L=Light, D=Dark

E22 - Result: Interruption

 Circuit interruption between: G1 Battery Wiring harness connector (wiring harness side) terminal 30 & FL4 Fuse Input contact or FL4 Fuse Output contact & K18 Relay - Engine Control Unit Socket connector colour BN Wire gauge: 3 mm²

Note:

Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark

E23 - Result: Defective Component

 Short circuit to ground between: K24 Relay - Starter Socket connector colour BNRD & M1 Starter Wiring harness connector (wiring harness side) terminal 50

or
Defective component: M1 Starter

Note:

Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark

E24 - Result: Short to Ground

 Short circuit to ground between: K18 Relay - Engine Control Unit Socket connector colour BN Wire gauge: 2 mm²
 FR2 Fuse Input contact

Note:

Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark

E25 - Result: Defective Component

 If the nominal value is reached during one of the measurements, the component/control unit that has been disconnected immediately before that measurement is defective.

Important:

Reset concerned control unit (engine or immobiliser control unit) with diagnostic tester before replacing. Select immobiliser in the diagnostic tester and call up the corresponding test in the menu ADDITIONAL FUNCTIONS. Ensure that both control units are never reset and replaced at the same time.

E26 - Result: Short to Ground

•	Short circuit to ground between: K18 Relay - Engine Control Unit Socket connector colour BNPK
	& A4 Control Unit - Multec
	Wiring harness connector (wiring harness side) terminal 63 (X22), 64 (X22) &
	B117 Sensor - Oxygen, Exhaust, Heated 1 Wiring harness connector (wiring harness side) terminal D
	& B110 Career, Owner, Evbauet, Hested O
	Bi to Sensor - Oxygen, Exhausi, Heated 2

Wiring harness connector (wiring harness side) terminal 4 & C1 Capacitor - Ignition Coil Wiring harness connector (wiring harness side) wiring colour BNPK & T1 Ignition Coil - Direct Ignition Wiring harness connector (wiring harness side) terminal A & Y5 Solenoid Valve - Tank Ventilation Wiring harness connector (wiring harness side) terminal A & Y9.1 Injection Valve - Cylinder - 1 Wiring harness connector (wiring harness side) terminal A & Y9.2 Injection Valve - Cylinder - 2 Wiring harness connector (wiring harness side) terminal A Y9.3 Injection Valve Cylinder - 3 Wiring harness connector (wiring harness side) terminal A Y9.4 Injection Valve Cylinder - 4 Wiring harness connector (wiring harness side) terminal A

Note:

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Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green,
GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise,
VT=Violet, WH=White, YE=Yellow,
L=Light, D=Dark
```

E27 - Result: Short to Ground

 Short circuit to ground between: FL4 Fuse Output contact & K18 Relay - Engine Control Unit Socket connector colour BN Wire gauge: 0.5 mm² & K18 Relay - Engine Control Unit Socket connector colour BN Wire gauge: 3 mm² & K24 Relay - Starter Socket connector colour BN & FR1 Fuse Input contact

or

 Defective component: K24 Relay - Starter

Note:

Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow,

L=Light, D=Dark

C-08 - Manifold Absolute Pressure Sensor Circuit

Work Order Description	Nominal Value
 Ignition OFF Disconnect wiring harness connector fr B21 Sensor - Absolute Pressure, Intake Manifold Ignition ON Measure voltage between the following terminals: B21 Sensor - Absolute Pressure, Intake Manifold Wiring harness connector (wiring harnes side) terminal C & Ground 	om: e e ess
Yes:T02	No:E08
102 - Check: Short to Voltage of Ground C	Circuit
Work Order Description	Nominal Value
 Work Order Description Measure voltage between the following terminals: B21 Sensor - Absolute Pressure, Intake Manifold Wiring harness connector (wiring harnes side) terminal A & Ground 	Nominal Value less than 0.3 V e ess
 Work Order Description Measure voltage between the following terminals: B21 Sensor - Absolute Pressure, Intake Manifold Wiring harness connector (wiring harnes side) terminal A & Ground 	Nominal Value less than 0.3 V e ess No:E07
Work Order Description • Measure voltage between the following terminals: B21 Sensor - Absolute Pressure, Intake Manifold Wiring harness connector (wiring harnes side) terminal A & Ground Yes:T03	Nominal Value Iess than 0.3 V e ess No:E07 rruption of Signal Circuit
 Work Order Description Measure voltage between the following terminals: B21 Sensor - Absolute Pressure, Intake Manifold Wiring harness connector (wiring harnes side) terminal A & Ground Yes:T03 T03 - Check: Short to Voltage/Ground/Interview 	Nominal Value Iess than 0.3 V e ess No:E07 rruption of Signal Circuit Nominal Value

 Measure voltage between the following terminals: B21 Sensor - Absolute Pressure, Intake Manifold Wiring harness connector (wiring harness side) terminal B & Ground 	less than 0.3 V
Yes:T04	No:E06
T04 - Check: Circuit Interruption of Ground Circ	uit
Work Order Description	Nominal Value
 Ignition OFF Disconnect wiring harness connector from: A4 Control Unit - Multec Measure resistance between the following terminals: B21 Sensor - Absolute Pressure, Intake Manifold Wiring harness connector (wiring harness side) terminal A & A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 12 (X22) 	less than 5 Ohm
Yes:T05	No:E05
T05 - Check: Short to Ground of Voltage Supply	/ Circuit
Work Order Description	Nominal Value
 Measure resistance between the following terminals: B21 Sensor - Absolute Pressure, Intake Manifold Wiring harness connector (wiring harness side) terminal A & Ground 	greater than 500 kOhm
Yes:T06	No:E04
T06 - Check: Short to Ground of Signal Circuit	
Work Order Description	Nominal Value

Manifold Wiring harness connector (wiring har side) terminal B & Ground	rness	
Yes:T07	No:E03	
T07 - Check: Interruption of Signal Circu		
Work Order Description	Nominal Value	
 Measure resistance between the follo terminals: A4 Control Unit - Multec Wiring harness connector (wiring har side) terminal 35 (X22) & 	owing less than 5 Ohm rness	
B21 Sensor - Absolute Pressure, Inta	ake	
Wanifold Wiring harness connector (wiring har side) terminal B	rness	
Yes:E01	No:E02	
E01 - Result: Defective Component		
 Defective component: B21 Sensor - Absolute Pressure, Intal or A4 Control Unit - Multec 	ike Manifold	
Important:		
Reset concerned control unit (engine or im tester before replacing. Select immobiliser corresponding test in the menu ADDITION control units are never reset and replaced	mobiliser control unit) with diagnost in the diagnostic tester and call up t IAL FUNCTIONS. Ensure that both at the same time.	ic the
E02 - Result: Interruption		
Circuit Interruption between: A4 Control Unit - Multec Wiring harness connector (wiring harn & B21 Sonsor - Absolute Pressure, Intel	ness side) terminal 35 (X22)	
Wiring harness connector (wiring harn	ness side) terminal B	
E03 - Result: Short to Ground	· · · · · · · · · · · · · · · · · · ·	
 Short circuit to ground between: A4 Control Unit - Multec Wiring harness connector (wiring harn & B21 Sensor - Absolute Pressure, Intal 	ness side) terminal 35 (X22) Ike Manifold	
, , , , , , , , , , , , , , , , , , ,		

Wiring harness connector (wiring harness side) terminal B
E04 - Result: Short to Ground
Short circuit to ground between:
A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 12 (X22)
&
B21 Sensor - Absolute Pressure, Intake Manifold
Wiring harness connector (wiring harness side) terminal A
E05 - Result: Interruption
Circuit interruption between:
A4 Control Unit - Multec Wiring barness connector (wiring barness side) terminal 12 (X22)
&
B21 Sensor - Absolute Pressure, Intake Manifold
Wiring harness connector (wiring harness side) terminal A
E06 - Result: Short to Voltage
Short circuit to voltage between:
A4 Control Unit - Multec Wiring barness connector (wiring barness side) terminal 25 (X22)
&
B21 Sensor - Absolute Pressure, Intake Manifold
Wiring harness connector (wiring harness side) terminal B
or
Defective component:
A4 Control Unit - Multec
Important:
Reset concerned control unit (engine or immobiliser control unit) with diagnostic
tester before replacing. Select immobiliser in the diagnostic tester and call up the
corresponding test in the menu ADDITIONAL FUNCTIONS. Ensure that both
EOR - Result: Short to Voltage
Lor - Result. Short to Voltage
 Short circuit to voltage between:
A4 Control Unit - Multec
Wiring harness connector (wiring harness side) terminal 12 (X22)
& B21 Sonsor - Absoluto Prossuro, Intako Manifold
Wiring harness connector (wiring harness side) terminal A
or
- Defective component:
A4 Control Unit - Multec

Reset concerned control unit (engine or immobiliser control unit) with diagnostic tester before replacing. Select immobiliser in the diagnostic tester and call up the corresponding test in the menu ADDITIONAL FUNCTIONS. Ensure that both control units are never reset and replaced at the same time.

E08 - Result: Interruption	
Circuit interruption between:	
A4 Control Unit - Multec	
Wiring harness connector (wiring harness side) terminal 58 (X22)	
&	
B21 Sensor - Absolute Pressure, Intake Manifold	
Wiring harness connector (wiring harness side) terminal C	

or

 Defective component: A4 Control Unit - Multec

Important:

Reset concerned control unit (engine or immobiliser control unit) with diagnostic tester before replacing. Select immobiliser in the diagnostic tester and call up the corresponding test in the menu ADDITIONAL FUNCTIONS. Ensure that both control units are never reset and replaced at the same time.

C-09 - Engine Coolant Temperature Sensor Circuit

T01 - Check: Short to Voltage/Ground/Interruption of Signal Circuit

Work Order Description	Nominal Value
 Ignition OFF Disconnect wiring harness connector B12 Sensor - Temperature, Coolant Ignition ON Measure voltage between the followin terminals: B12 Sensor - Temperature, Coolant Wiring harness connector (wiring harn side) terminal B & Ground 	from: 4.8 5.2 V ng ness
Yes:T02	No:T04
T02 - Check: Component	
Work Order Description	Nominal Value
Diagnostic Tester Data List Parameter	er greater than 4.8 V

Coolant Temperature	
Yes:T03	No:E03
T03 - Check: Interruption of Signal Circu	lit
Work Order Description	Nominal Value
 Ignition OFF Connect fused jumper wire to: B12 Sensor - Temperature, Coolant Wiring harness connector (wiring har side) terminal A & 	less than 0.3 V ness
 B12 Sensor - Temperature, Coolant Wiring harness connector (wiring har side) terminal B Ignition ON Diagnostic Tester Data List Paramete Coolant Temperature 	ness er
Yes:E01	No:E02
T04 - Check: Short to Voltage/Ground/In	terruption of Signal Circuit
Work Order Description	Nominal Value
 Ignition OFF Disconnect wiring harness connector B12 Sensor - Temperature, Coolant Ignition ON Measure voltage between the followint terminals: B12 Sensor - Temperature, Coolant Wiring harness connector (wiring har side) terminal B & Ground 	from: ng ness
Yes:E04	No:E05
E01 - Result: Defective Component	
Defective component: B12 Sensor - Temperature, Coolant	
F02 - Result: Interruption	
 Short circuit to voltage/interruption of A4 Control Unit - Multec Wiring harness connector (wiring harn & B12 Sensor Temperature Coolent 	circuit between: less side) terminal 38 (X22)

or

 Defective component: A4 Control Unit - Multec

Important:

Reset concerned control unit (engine or immobiliser control unit) with diagnostic tester before replacing. Select immobiliser in the diagnostic tester and call up the corresponding test in the menu ADDITIONAL FUNCTIONS. Ensure that both control units are never reset and replaced at the same time.

EUS - RESULT DETECTIVE Component

 Defective component: A4 Control Unit - Multec

Important:

Reset concerned control unit (engine or immobiliser control unit) with diagnostic tester before replacing. Select immobiliser in the diagnostic tester and call up the corresponding test in the menu ADDITIONAL FUNCTIONS. Ensure that both control units are never reset and replaced at the same time.

E04 - Result: Short to Voltage

 Short circuit to voltage between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 41 (X22) & B12 Sensor - Temperature, Coolant Wiring harness connector (wiring harness side) terminal B

or

 Defective component: A4 Control Unit - Multec

Important:

Reset concerned control unit (engine or immobiliser control unit) with diagnostic tester before replacing. Select immobiliser in the diagnostic tester and call up the corresponding test in the menu ADDITIONAL FUNCTIONS. Ensure that both control units are never reset and replaced at the same time.

E05 - Result: Short to Ground/Interruption

 Short circuit to ground/interruption of circuit between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 41 (X22) & B12 Sensor - Temperature, Coolant Wiring harness connector (wiring harness side) terminal B

or

 Defective component: A4 Control Unit - Multec

Important:

Reset concerned control unit (engine or immobiliser control unit) with diagnostic tester before replacing. Select immobiliser in the diagnostic tester and call up the corresponding test in the menu ADDITIONAL FUNCTIONS. Ensure that both control units are never reset and replaced at the same time.

C-10 - Intake Air Temperature Sensor Circuit T01 - Check: Short to Voltage/Ground/Interruption of Signal Circuit

Work Order Description	Nominal Value
 Ignition OFF Disconnect wiring harness connector B13 Sensor - Temperature, Intake Ai Ignition ON Measure voltage between the following terminals: B13 Sensor - Temperature, Intake Ai Wiring harness connector (wiring harness connector (wiring harness connector (wiring harness kar) terminal B & Ground 	4.8 5.2 V r ng r mess
Yes:T02	No:T04
T02 - Check: Component	
Work Order Description	Nominal Value
 Diagnostic Tester Data List Paramete Intake Air Temperature 	er greater than 4.8 V
Yes:T03	No:E03
T03 - Check: Interruption of Signal Circu	uit
Work Order Description	Nominal Value
 Ignition OFF Connect fused jumper wire to: B13 Sensor - Temperature, Intake Ai Wiring harness connector (wiring har side) terminal A & B13 Sensor - Temperature, Intake Ai Wiring harness connector (wiring har 	r ness r ness

side) terminal B Ignition ON Diagnostic Tester Data List Parameter Intake Air Temperature 	ər	
Yes:E01		No:E02
T04 - Check: Short to Voltage/Ground/In	terrupti	on of Signal Circuit
Work Order Description		Nominal Value
 Ignition OFF Disconnect wiring harness connector B13 Sensor - Temperature, Intake Ai Ignition ON Measure voltage between the followi terminals: B13 Sensor - Temperature, Intake Ai Wiring harness connector (wiring har side) terminal B & Ground 	r from: r ng r ness	greater than 5.2 V
Yes:E04		No:E05
E01 - Result: Defective Component	°	
 Defective component: B13 Sensor - Temperature, Intake Air 		
E02 - Result: Interruption		
 Short circuit to voltage/interruption of circuit between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 39 (X22) & B13 Sensor - Temperature, Intake Air Wiring harness connector (wiring harness side) terminal A 		
or		
 Defective component: A4 Control Unit - Multec 		
Important:		
Reset concerned control unit (engine or im tester before replacing. Select immobiliser corresponding test in the menu ADDITION control units are never reset and replaced a	mobilise in the dia AL FUN at the sa	r control unit) with diagnostic agnostic tester and call up the CTIONS. Ensure that both me time.
E03 - Result: Defective Component		
Defective component: A4 Control Unit - Multec		

Reset concerned control unit (engine or immobiliser control unit) with diagnostic tester before replacing. Select immobiliser in the diagnostic tester and call up the corresponding test in the menu ADDITIONAL FUNCTIONS. Ensure that both control units are never reset and replaced at the same time.

E04 - Result: Short to Voltage

 Short circuit to voltage between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 19 (X22) & B13 Sensor - Temperature, Intake Air Wiring harness connector (wiring harness side) terminal B

or

 Defective component: A4 Control Unit - Multec

Important:

Reset concerned control unit (engine or immobiliser control unit) with diagnostic tester before replacing. Select immobiliser in the diagnostic tester and call up the corresponding test in the menu ADDITIONAL FUNCTIONS. Ensure that both control units are never reset and replaced at the same time.

E05 - Result: Short to Ground/Interruption

 Short circuit to ground/interruption of circuit between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 19 (X22) & B13 Sensor - Temperature, Intake Air Wiring harness connector (wiring harness side) terminal B

or

 Defective component: A4 Control Unit - Multec

Important:

Reset concerned control unit (engine or immobiliser control unit) with diagnostic tester before replacing. Select immobiliser in the diagnostic tester and call up the corresponding test in the menu ADDITIONAL FUNCTIONS. Ensure that both control units are never reset and replaced at the same time.

C-11 - Cylinder 1 Injector Circuit

Work Order Description	Nominal Value
 Ignition OFF All consumers turned off Disconnect wiring harness connector from: Y9.1 Injection Valve - Cylinder - 1 Ignition ON Measure voltage between the following terminals: Y9.1 Injection Valve - Cylinder - 1 Wiring harness connector (wiring harness side) wiring colour BNRD & Ground 	less than 0.3 V
Note:	
Wiring colours: BK=Black, BN=Brown, BU=Blue GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark	,
Yes:T02	No:E06
T02 - Check: Short to Ground of Signal Circui	t
Work Order Description	Nominal Value
 Ignition OFF Disconnect wiring harness connector from: A4 Control Unit - Multec (Wiring Harness Connector X22) Measure resistance between the following terminals: Y9.1 Injection Valve - Cylinder - 1 Wiring harness connector (wiring harness side) wiring colour BNRD & Ground 	greater than 500 kOhm
 Ignition OFF Disconnect wiring harness connector from: A4 Control Unit - Multec (Wiring Harness Connector X22) Measure resistance between the following terminals: Y9.1 Injection Valve - Cylinder - 1 Wiring harness connector (wiring harness side) wiring colour BNRD & Ground Note: 	greater than 500 kOhm
 Ignition OFF Disconnect wiring harness connector from: A4 Control Unit - Multec (Wiring Harness Connector X22) Measure resistance between the following terminals: Y9.1 Injection Valve - Cylinder - 1 Wiring harness connector (wiring harness side) wiring colour BNRD & Ground Note: Wiring colours: BK=Black, BN=Brown, BU=Blue GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark 	greater than 500 kOhm

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Work Order Description	Nominal Value
 Measure resistance between the following terminals: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 7 (X22) & Y9.1 Injection Valve - Cylinder - 1 Wiring harness connector (wiring harness side) wiring colour BNRD 	less than 5 Ohm
Note:	
Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark	
Yes:T04	No:E04
T04 - Check: Interruption of Voltage Supply Circ	cuit
Work Order Description	Nominal Value
 Remove electrical component from socket: K18 Relay - Engine Control Unit Connect fused jumper wire to: K18 Relay - Engine Control Unit Socket connector colour BN Wire gauge: 3 mm² & K18 Relay - Engine Control Unit Socket connector colour BNPK Measure voltage between the following terminals: Y9.1 Injection Valve - Cylinder - 1 Wiring harness connector (wiring harness side) wiring colour BNPK & Ground 	greater than 11 V
Note:	
Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise,	

VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark		
Yes:T05	No:E03	
T05 - Check: Component		
Work Order Description	Nominal Value	
 Connect wiring harness connector to: Y9.1 Injection Valve - Cylinder - 1 Ignition ON Contact fused jumper wire once to: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 7 (X22) & Ground 	Clicking noise from the valve	
Yes:E01	No:E02	
E01 - Result: Defective Component		
Defective component: A4 Control Unit - Multec		
Important:		
Reset concerned control unit (engine or immobiliser control unit) with diagnostic tester before replacing. Select immobiliser in the diagnostic tester and call up the corresponding test in the menu ADDITIONAL FUNCTIONS. Ensure that both control units are never reset and replaced at the same time.		
E02 - Result: Defective Component		
 Defective component: Y9.1 Injection Valve - Cylinder - 1 		
E03 - Result: Interruption		
 Circuit interruption between: K18 Relay - Engine Control Unit Socket connector colour BNPK & Y9.1 Injection Valve - Cylinder - 1 Wiring harness connector (wiring harness side) wiring colour BNPK 		
Note:		
Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark		
E04 - Result: Interruption		

 Circuit interruption between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 7 (X22) & Y9.1 Injection Valve - Cylinder - 1

Wiring harness connector (wiring harness side) wiring colour BNRD

Note:

Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow,

L=Light, D=Dark

E05 - Result: Short to Ground

 Short circuit to ground between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 7 (X22) & Y9.1 Injection Valve - Cylinder - 1 Wiring harness connector (wiring harness side) wiring colour BNRD

Note:

Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow,

L=Light, D=Dark

E06 - Result: Short to Voltage

 Short circuit to voltage between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 7 (X22) & Y9.1 Injection Valve - Cylinder - 1 Wiring harness connector (wiring harness side) wiring colour BNRD

or

 Defective component: A4 Control Unit - Multec

Important:

Reset concerned control unit (engine or immobiliser control unit) with diagnostic tester before replacing. Select immobiliser in the diagnostic tester and call up the corresponding test in the menu ADDITIONAL FUNCTIONS. Ensure that both control units are never reset and replaced at the same time.

Note:

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Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green,
GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise,
VT=Violet, WH=White, YE=Yellow,
L=Light, D=Dark
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C-12 - Cylinder 2 Injector Circuit

work Order Description	Nominal Value
 Ignition OFF All consumers turned off Disconnect wiring harness connector from Y9.2 Injection Valve - Cylinder - 2 Ignition ON Measure voltage between the following terminals: Y9.2 Injection Valve - Cylinder - 2 Wiring harness connector (wiring harness side) wiring colour BNBU & Ground 	less than 0.3 V
Note:	
Wiring colours: BK=Black, BN=Brown, BU=Blu GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow,	e,
L=Light, D=Dark	
L=Light, D=Dark Yes:T02	No:E06
L=Light, D=Dark Yes:T02 T02 - Check: Short to Ground of Signal Circu	No:E06 lit
L=Light, D=Dark Yes:T02 T02 - Check: Short to Ground of Signal Circu Work Order Description	No:E06 Iit Nominal Value

Wiring colours: BK=Black, BN=Brown, BU GD=Gold, GN=Green, GY=Grey, OG=Ora PK=Pink, RD=Red, SR=Silver, TQ=Turqu VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark	l=Blue, ange, oise,	
Yes:T03		No:E05
T03 - Check: Interruption of Signal Circu	uit	
Work Order Description		Nominal Value
 Measure resistance between the follo terminals: A4 Control Unit - Multec Wiring harness connector (wiring har side) terminal 34 (X22) & Y9.2 Injection Valve - Cylinder - 2 Wiring harness connector (wiring har side) wiring colour BNBU Note: Wiring colours: BK=Black, BN=Brown, BU GD=Gold, GN=Green, GY=Grey, OG=Ora 	owing ness ness I=Blue,	less than 5 Ohm
PK=Pink, RD=Red, SR=Silver, TQ=Turqu VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark	oise,	
PK=Pink, RD=Red, SR=Silver, TQ=Turqu VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark Yes:T04	oise,	No:E04
PK=Pink, RD=Red, SR=Silver, TQ=Turqu VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark Yes:T04 T04 - Check: Interruption of Voltage Sup	oise,	No:E04
PK=Pink, RD=Red, SR=Silver, TQ=Turqu VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark Yes:T04 T04 - Check: Interruption of Voltage Sup Work Order Description	oise,	No:E04 cuit Nominal Value

side) wiring colour BNPK & Ground		
Note:		
Wiring colours: BK=Black, BN=Brown, BU GD=Gold, GN=Green, GY=Grey, OG=Ora PK=Pink, RD=Red, SR=Silver, TQ=Turquo VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark	=Blue, inge, oise,	
Yes:T05		No:E03
T05 - Check: Component		
Work Order Description		Nominal Value
 Connect wiring harness connector to: Y9.2 Injection Valve - Cylinder - 2 Ignition ON Contact fused jumper wire once to: A4 Control Unit - Multec Wiring harness connector (wiring harn side) terminal 34 (X22) & 	ness	Clicking noise from the valve
Ground		
Ground Yes:E01		No:E02
Ground Yes:E01 E01 - Result: Defective Component • Defective component: A4 Control Unit - Multec		No:E02
Ground Yes:E01 E01 - Result: Defective Component Defective component: A4 Control Unit - Multec Important:		No:E02
Ground Yes:E01 E01 - Result: Defective Component Defective component: A4 Control Unit - Multec Important: Reset concerned control unit (engine or imr tester before replacing. Select immobiliser i corresponding test in the menu ADDITIONA control units are never reset and replaced a	mobilise in the dia AL FUN at the sa	No:E02 r control unit) with diagnostic agnostic tester and call up the CTIONS. Ensure that both me time.
Ground Yes:E01 E01 - Result: Defective Component Defective component: A4 Control Unit - Multec Important: Reset concerned control unit (engine or imr tester before replacing. Select immobiliser i corresponding test in the menu ADDITIONA control units are never reset and replaced a E02 - Result: Defective Component	mobilise in the dia AL FUN at the sa	No:E02 r control unit) with diagnostic agnostic tester and call up the CTIONS. Ensure that both me time.
Ground Yes:E01 E01 - Result: Defective Component Defective component: A4 Control Unit - Multec Important: Reset concerned control unit (engine or imr tester before replacing. Select immobiliser i corresponding test in the menu ADDITIONA control units are never reset and replaced a E02 - Result: Defective Component Defective component: Y9.2 Injection Valve - Cylinder - 2	mobilise in the dia AL FUN at the sa	No:E02 r control unit) with diagnostic agnostic tester and call up the CTIONS. Ensure that both me time.
Ground Yes:E01 E01 - Result: Defective Component Defective component: A4 Control Unit - Multec Important: Reset concerned control unit (engine or imr tester before replacing. Select immobiliser i corresponding test in the menu ADDITIONA control units are never reset and replaced a E02 - Result: Defective Component Defective component: Y9.2 Injection Valve - Cylinder - 2 E03 - Result: Interruption	mobilise in the dia AL FUN at the sa	No:E02 r control unit) with diagnostic agnostic tester and call up the CTIONS. Ensure that both me time.
Ground Yes:E01 E01 - Result: Defective Component • Defective component: A4 Control Unit - Multec Important: Reset concerned control unit (engine or immostiliser is corresponding test in the menu ADDITIONA control units are never reset and replaced a E02 - Result: Defective Component • Defective component: Y9.2 Injection Valve - Cylinder - 2 E03 - Result: Interruption • Circuit interruption between: K18 Relay - Engine Control Unit Socket connector colour BNPK & Y9.2 Injection Valve - Cylinder - 2	mobilise in the dia AL FUN at the sa	No:E02

Note:

Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark

E04 - Result: Interruption

 Circuit interruption between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 34 (X22) & Y9.2 Injection Valve - Cylinder - 2

Wiring harness connector (wiring harness side) wiring colour BNBU

Note:

Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow,

L=Light, D=Dark

E05 - Result: Short to Ground

 Short circuit to ground between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 34 (X22) & Y9.2 Injection Valve - Cylinder - 2 Wiring harness connector (wiring harness side) wiring colour BNBU

Note:

Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow,

L=Light, D=Dark

E06 - Result: Short to Voltage

 Short circuit to voltage between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 34 (X22) & Y9.2 Injection Valve - Cylinder - 2 Wiring harness connector (wiring harness side) wiring colour BNBU

or

 Defective component: A4 Control Unit - Multec

Reset concerned control unit (engine or immobiliser control unit) with diagnostic tester before replacing. Select immobiliser in the diagnostic tester and call up the corresponding test in the menu ADDITIONAL FUNCTIONS. Ensure that both control units are never reset and replaced at the same time.

Note:

Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow,

L=Light, D=Dark

C-13 - Cylinder 3 Injector Circuit

Work Order Description	Nominal Value
 Ignition OFF All consumers turned off Disconnect wiring harness connector Y9.3 Injection Valve Cylinder - 3 Ignition ON Measure voltage between the following terminals: Y9.3 Injection Valve Cylinder - 3 Wiring harness connector (wiring harness side) wiring colour BNGN & Ground 	r from: ng mess
Note:	
Wiring colours: BK=Black, BN=Brown, BL GD=Gold, GN=Green, GY=Grey, OG=Ora PK=Pink, RD=Red, SR=Silver, TQ=Turqu VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark	I=Blue, ange, oise,
Yes:T02	No:E06
102 - Check: Short to Ground of Signal	
Work Order Description	Nominal Value
 Ignition OFF Disconnect wiring harness connector A4 Control Unit - Multec (Wiring Harness Connector X22) 	from: greater than 500 kOhm

 Measure resistance between the following terminals: Y9.3 Injection Valve Cylinder - 3 Wiring harness connector (wiring harness side) wiring colour BNGN & Ground 	
Note:	
Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark	
Yes:T03	No:E05
T03 - Check: Interruption of Signal Circuit	
Work Order Description	Nominal Value
 Measure resistance between the following terminals: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 10 (X22) & Y9.3 Injection Valve Cylinder - 3 Wiring harness connector (wiring harness side) wiring colour BNGN 	less than 5 Ohm
Note:	
Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark	
Yes:T04	No:E04
T04 - Check: Interruption of Voltage Supply Circ	cuit
Work Order Description	Nominal Value
 Remove electrical component from socket: K18 Relay - Engine Control Unit Connect fused jumper wire to: K18 Relay - Engine Control Unit Socket connector colour BN 	greater than 11 V

 Wire gauge: 3 mm² & K18 Relay - Engine Control Unit Socket connector colour BNPK Measure voltage between the followin terminals: Y9.3 Injection Valve Cylinder - 3 Wiring harness connector (wiring har side) wiring colour BNPK & Ground 	ng ness	
Note:		
Wiring colours: BK=Black, BN=Brown, BU GD=Gold, GN=Green, GY=Grey, OG=Ora PK=Pink, RD=Red, SR=Silver, TQ=Turque VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark	=Blue, ange, oise,	
Yes:T05		No:E03
Г05 - Check: Component		
Work Order Description		Nominal Value
 Connect wiring harness connector to Y9.3 Injection Valve Cylinder - 3 Ignition ON Contact fused jumper wire once to: A4 Control Unit - Multec Wiring harness connector (wiring har side) terminal 10 (X22) & Ground 	ness	Clicking noise from the valve
Yes:E01		No:E02
E01 - Result: Defective Component Defective component: A4 Control Unit - Multec mportant: Reset concerned control unit (engine or immobiliser control unit) with diagnostic ester before replacing. Select immobiliser in the diagnostic tester and call up the corresponding test in the menu ADDITIONAL FUNCTIONS. Ensure that both control units are never reset and replaced at the same time. E02. Result: Defective Component		
Reset concerned control unit (engine or impester before replacing. Select immobiliser corresponding test in the menu ADDITION control units are never reset and replaced a	mobilise in the dia AL FUN at the sa	r control unit) with diagnostic agnostic tester and call up the CTIONS. Ensure that both me time.

Y9.3 Injection Valve Cylinder - 3	5
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Y9.3 Injection Valve Cylinder - 3
E03 - Result: Interruption
 Circuit interruption between: K18 Relay - Engine Control Unit Socket connector colour BNPK & Y9.3 Injection Valve Cylinder - 3 Wiring harness connector (wiring harness side) wiring colour BNPK
Note:
Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark
E04 - Result: Interruption
 Circuit interruption between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 10 (X22) & Y9.3 Injection Valve Cylinder - 3 Wiring harness connector (wiring harness side) wiring colour BNGN
Note:
Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark
E05 - Result: Short to Ground
Short circuit to ground between:
A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 10 (X22) & Y9.3 Injection Valve Cylinder - 3 Wiring harness connector (wiring harness side) wiring colour BNGN
Note:
Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark
E06 - Result: Short to Voltage
 Short circuit to voltage between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 10 (X22)

& Y9.3 Injection Valve Cylinder - 3 Wiring harness connector (wiring harness side) wiring colour BNGN

or

 Defective component: A4 Control Unit - Multec

Important:

Reset concerned control unit (engine or immobiliser control unit) with diagnostic tester before replacing. Select immobiliser in the diagnostic tester and call up the corresponding test in the menu ADDITIONAL FUNCTIONS. Ensure that both control units are never reset and replaced at the same time.

Note:

Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark

C-14 - Cylinder 4 Injector Circuit

Work Order Description	Nominal Value
 Ignition OFF All consumers turned off Disconnect wiring harness connector Y9.4 Injection Valve Cylinder - 4 Ignition ON Measure voltage between the followin terminals: Y9.4 Injection Valve Cylinder - 4 Wiring harness connector (wiring harn side) wiring colour BNYE & Ground 	less than 0.3 V from: ng ness
Note:	
Wiring colours: BK=Black, BN=Brown, BU= GD=Gold, GN=Green, GY=Grey, OG=Ora PK=Pink, RD=Red, SR=Silver, TQ=Turquo VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark	=Blue, nge, bise,

Yes:T02 No:E06			
T02 - Check: Short to Ground of Signal Circuit			
Work Order Description		Nominal Value	
 Ignition OFF Disconnect wiring harness connector A4 Control Unit - Multec (Wiring Harness Connector X22) Measure resistance between the follo terminals: Y9.4 Injection Valve Cylinder - 4 Wiring harness connector (wiring harn side) wiring colour BNYE & Ground 	from: wing ness	greater than 500 kOhm	
Note:			
Wiring colours: BK=Black, BN=Brown, BU= GD=Gold, GN=Green, GY=Grey, OG=Ora PK=Pink, RD=Red, SR=Silver, TQ=Turquo VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark	=Blue, nge, bise,		
Yes:T03		No:E05	
T03 - Check: Interruption of Signal Circu	it		
Work Order Description		Nominal Value	
 Measure resistance between the follo terminals: A4 Control Unit - Multec Wiring harness connector (wiring harn side) terminal 3 (X22) & Y9 4 Injection Valve Cylinder - 4 	wing ness	less than 5 Ohm	
Wiring harness connector (wiring harr side) wiring colour BNYE	ness		
Wiring harness connector (wiring harn side) wiring colour BNYE Note:	ness		
 Wiring harness connector (wiring harn side) wiring colour BNYE Note: Wiring colours: BK=Black, BN=Brown, BU= GD=Gold, GN=Green, GY=Grey, OG=Ora PK=Pink, RD=Red, SR=Silver, TQ=Turque VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark 	ness =Blue, nge, pise,		
Wiring harness connector (wiring harn side) wiring colour BNYE Note: Wiring colours: BK=Black, BN=Brown, BU= GD=Gold, GN=Green, GY=Grey, OG=Ora PK=Pink, RD=Red, SR=Silver, TQ=Turque VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark	ness =Blue, nge, pise,	No:E04	

Work Order Description	Nominal Value
 Remove electrical component from s K18 Relay - Engine Control Unit Connect fused jumper wire to: K18 Relay - Engine Control Unit Socket connector colour BN Wire gauge: 3 mm^2 & K18 Relay - Engine Control Unit Socket connector colour BNPK Measure voltage between the followi terminals: Y9.4 Injection Valve Cylinder - 4 Wiring harness connector (wiring har side) wiring colour BNPK & Ground 	ocket: greater than 11 V ng ness
Note:	
Wiring colours: BK=Black, BN=Brown, BU GD=Gold, GN=Green, GY=Grey, OG=Ora PK=Pink, RD=Red, SR=Silver, TQ=Turqu VT=Violet, WH=White, YE=Yellow,	=Blue, ange, oise,
L=Ligni, D=Dark Yes:T05	No:E03
T05 - Check: Component	No:E03
Yes:T05 T05 - Check: Component Work Order Description	No:E03 Nominal Value
Yes:T05 T05 - Check: Component Work Order Description • Connect wiring harness connector to Y9.4 Injection Valve Cylinder - 4 • Ignition ON • Contact fused jumper wire once to: A4 Control Unit - Multec Wiring harness connector (wiring har side) terminal 3 (X22) & Ground	No:E03 Nominal Value : Clicking noise from the valve ness Image: Clicking noise from the valve
Yes:T05 T05 - Check: Component Work Order Description • Connect wiring harness connector to Y9.4 Injection Valve Cylinder - 4 • Ignition ON • Contact fused jumper wire once to: A4 Control Unit - Multec Wiring harness connector (wiring har side) terminal 3 (X22) & Ground Yes:E01	No:E03 Nominal Value : Clicking noise from the valve ness No:E02
Yes:T05 Yes:T05 T05 - Check: Component Work Order Description • Connect wiring harness connector to Y9.4 Injection Valve Cylinder - 4 • Ignition ON • Contact fused jumper wire once to: A4 Control Unit - Multec Wiring harness connector (wiring harn	No:E03 Nominal Value : Clicking noise from the valve ness Voie No:E02 Voie

Reset concerned control unit (engine or immobiliser control unit) with diagnostic tester before replacing. Select immobiliser in the diagnostic tester and call up the corresponding test in the menu ADDITIONAL FUNCTIONS. Ensure that both control units are never reset and replaced at the same time.

E02 - Result: Defective Component
Defective component:
Y9.4 Injection Valve Cylinder - 4
E03 - Result: Interruption
Circuit interruption between: K10 Delays Engine Control Unit
K 18 Relay - Engine Control Unit Socket connector colour BNPK
&
Y9.4 Injection Valve Cylinder - 4
Wiring harness connector (wiring harness side) wiring colour BNPK
Note:
Wining colours, RK, Risch, RN, Rrown, RH, Rhus, CR, Cald, CN, Croon
GY-Grey OG-Orange PK-Pink RD-Red SR-Silver TO-Turquoise
VT=Violet. WH=White. YE=Yellow.
L=Light, D=Dark
E04 - Result: Interruption
Circuit interruption between:
A4 Control Unit - Multec
Wiring harness connector (wiring harness side) terminal 3 (X22)
α Y9.4 Injection Valve Cylinder - 4
Wiring harness connector (wiring harness side) wiring colour BNYE
Note:
Wiring colours: BK=Black_BN=Brown_BU=Blue_GD=Gold_GN=Green
GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise,
VT=Violet, WH=White, YE=Yellow,
L=Light, D=Dark
E05 - Result: Short to Ground
Short circuit to ground between:
A4 CONTROL UNIT - MUITEC Wiring harmone connector (wiring harmone cide) terminal 2 (X22)
&
Y9.4 Injection Valve Cylinder - 4
Wiring harness connector (wiring harness side) wiring colour BNYE
Note:

Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise,

VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark

E06 - Result: Short to Voltage

 Short circuit to voltage between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 3 (X22) & Y9.4 Injection Valve Cylinder - 4 Wiring harness connector (wiring harness side) wiring colour BNYE

or

 Defective component: A4 Control Unit - Multec

Important:

Reset concerned control unit (engine or immobiliser control unit) with diagnostic tester before replacing. Select immobiliser in the diagnostic tester and call up the corresponding test in the menu ADDITIONAL FUNCTIONS. Ensure that both control units are never reset and replaced at the same time.

Note:

Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow,

L=Light, D=Dark

C-15 - Knock Sensor Signal Circuit

T01 - Check: Component

Work Order Description	Nominal Value
 Check cable shielding of following component: B30 Sensor - Knocking Control 1 	Test okay?
Yes:T02	No:E09
T02 - Check: Short to Voltage of Signal C	Circuit
Work Order Description	Nominal Value

 Measure voltage between the following terminals: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 18 (X22) & Ground 	
Yes:T03	No:E08
103 - Check: Short to Voltage of Signal Circuit	,
Work Order Description	Nominal Value
 Measure voltage between the following terminals: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 22 (X22) & Ground 	less than 0.3 V
Yes:T04	No:E07
T04 - Check: Interruption of Signal Circuit	
Work Order Description	Nominal Value
 Measure resistance between the following terminals: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 22 (X22) & B30 Sensor - Knocking Control 1 Wiring harness connector (wiring harness side) terminal B 	less than 5 Ohm
Yes:T05	No:E06
T05 - Check: Interruption of Signal Circuit	
Work Order Description	Nominal Value
 Ignition OFF Measure resistance between the following terminals: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 18 (X22) & B30 Sensor - Knocking Control 1 	less than 5 Ohm

side) terminal A	
Yes:T06	No:E05
T06 - Check: Short Circuit in Wiring Harr	ness
Work Order Description	Nominal Value
 Measure resistance between the follo terminals: A4 Control Unit - Multec Wiring harness connector (wiring harn side) terminal 18 (X22) & A4 Control Unit - Multec Wiring harness connector (wiring harn side) terminal 22 (X22) 	ness
Yes:T07	No:E04
T07 - Check: Short to Ground of Signal (Circuit
Work Order Description	Nominal Value
 Measure resistance between the follo terminals: A4 Control Unit - Multec Wiring harness connector (wiring harn side) terminal 18 (X22) & Ground 	ness
Yes:T08	No:E03
T08 - Check: Short to Ground of Signal (Circuit
Work Order Description	Nominal Value
 Measure resistance between the follo terminals: A4 Control Unit - Multec Wiring harness connector (wiring harn side) terminal 22 (X22) & Ground 	owing greater than 500 kOhm
Yes:E01	No:E02
E01 - Result: Defective Component	
 Defective component: 	

Reset concerned control unit (engine or immobiliser control unit) with diagnostic tester before replacing. Select immobiliser in the diagnostic tester and call up the corresponding test in the menu ADDITIONAL FUNCTIONS. Ensure that both control units are never reset and replaced at the same time.

COILL	of units are never reset and replaced at the same time.
E02	- Result: Short to Ground
•	Short circuit to ground between:
	A4 Control Unit - Multec
	Wiring harness connector (wiring harness side) terminal 22 (X22)
	& Dealers and Kanadian Operated A
	B30 Sensor - Knocking Control 1 Wiring harpage connector (wiring harpage cide) terminal P
	Provide Chart to Crowned
	- Result: Short to Ground
•	Short circuit to ground between:
	Miring harness connector (wiring harness side) terminal 18 (X22)
	&
	B30 Sensor - Knocking Control 1
	Wiring harness connector (wiring harness side) terminal A
E04	- Result: Short Circuit in Wiring Harness
•	Short circuit in wiring harness between:
	A4 Control Unit - Multec
	Wiring harness connector (wiring harness side) terminal 18 (X22)
	&
	A4 Control Unit - Multec
	Wiring harness connector (wiring harness side) terminal 22 (X22)
E05	- Result: Interruption
•	Circuit interruption between:
	A4 Control Unit - Multec Wiring barnage connector (wiring barnage side) terminal 18 (X22)
	winnig namess connector (winnig namess side) terminal To ($\lambda 22$)
	B30 Sensor - Knocking Control 1
	Wiring harness connector (wiring harness side) terminal A
E06 -	- Result: Interruption
	Circuit interruption between:
	A4 Control Unit - Multec
	Wiring harness connector (wiring harness side) terminal 22 (X22)
	&
	B30 Sensor - Knocking Control 1
	Wiring harness connector (wiring harness side) terminal B
E07 ·	- Result: Short to Voltage
•	Short circuit to voltage between:
	A4 Control Unit - Multec
	winng namess connector (wiring namess side) terminal 22 (X22)

& B30 Sensor - Knocking Control 1 Wiring harness connector (wiring harne	ess side) terminal B	
E08 - Result: Short to Voltage		
 Short circuit to voltage between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 18 (X22) & B30 Sensor - Knocking Control 1 Wiring harness connector (wiring harness side) terminal A E09 - Besult: Defective Component 		
Defective component: Shielding of signal leads		
C-16 - Linear Exhaust Gas Recirculation	System Circuit	
T01 - Check: Interruption of Voltage Supp	bly Circuit	
Work Order Description	Nominal Value	
 Ignition OFF Disconnect wiring harness connector for Y4 Solenoid Valve - Exhaust Gas Recirculation Ignition ON Measure voltage between the following terminals: Y4 Solenoid Valve - Exhaust Gas Recirculation Wiring harness connector (wiring harn side) terminal E & Ground 	g ess	
Yes:T02	No:E10	
T02 - Check: Circuit Interruption of Grou	nd Circuit	
Work Order Description	Nominal Value	
 Measure voltage between the following terminals: 	g greater than 11 V	

side) terminal A		
Yes:T03	N	o:E09
T03 - Check: Interruption of Signal Circu	it	
Work Order Description	Nomir	al Value
 Measure voltage between the followi terminals: Y4 Solenoid Valve - Exhaust Gas Recirculation Wiring harness connector (wiring har side) terminal D & Ground 	g 4.8 s	5.2 V
Yes:T04	'N	o:E08
T04 - Check: Short to Voltage of Signal	ircuit	
Work Order Description	Nomir	al Value
 Diagnostic Tester Data List Paramete EGR Position Feedback (Exhaust Ga Recirculation) 	r OV s	
Yes:T05	N	o:E07
T05 - Check: Short to Ground/Interruptic	n of Signal Cir	cuit
Work Order Description	Nomir	al Value
 Ignition OFF Connect fused jumper wire to: Y4 Solenoid Valve - Exhaust Gas Recirculation Wiring harness connector (wiring harness side) terminal D & Y4 Solenoid Valve - Exhaust Gas Recirculation Wiring harness connector (wiring harness side) terminal B Ignition ON Diagnostic Tester Data List Parameter EGR Position Feedback (Exhaust Gas Recirculation) 		
 Connect fused jumper wire to: Y4 Solenoid Valve - Exhaust Gas Recirculation Wiring harness connector (wiring har side) terminal D & Y4 Solenoid Valve - Exhaust Gas Recirculation Wiring harness connector (wiring har side) terminal B Ignition ON Diagnostic Tester Data List Paramete EGR Position Feedback (Exhaust Ga Recirculation) 	4.8 s ness ness r s	5.2 V
 Connect fused jumper wire to: Y4 Solenoid Valve - Exhaust Gas Recirculation Wiring harness connector (wiring har side) terminal D & Y4 Solenoid Valve - Exhaust Gas Recirculation Wiring harness connector (wiring har side) terminal B Ignition ON Diagnostic Tester Data List Paramete EGR Position Feedback (Exhaust Ga Recirculation) 	ess ress r s	5.2 V o:E06
 Connect fused jumper wire to: Y4 Solenoid Valve - Exhaust Gas Recirculation Wiring harness connector (wiring har side) terminal D & Y4 Solenoid Valve - Exhaust Gas Recirculation Wiring harness connector (wiring har side) terminal B Ignition ON Diagnostic Tester Data List Paramete EGR Position Feedback (Exhaust Ga Recirculation) 	ness ness r s N Circuit	5.2 V o:E06
 Connect fused jumper wire to: Y4 Solenoid Valve - Exhaust Gas Recirculation Wiring harness connector (wiring har side) terminal D & Y4 Solenoid Valve - Exhaust Gas Recirculation Wiring harness connector (wiring har side) terminal B Ignition ON Diagnostic Tester Data List Paramete EGR Position Feedback (Exhaust Ga Recirculation) 	ess r s Circuit	5.2 V o:E06

 Ignition OFF Remove fused jumper wire Disconnect wiring harness connector A4 Control Unit - Multec Ignition ON Measure voltage between the followin terminals: Y4 Solenoid Valve - Exhaust Gas Recirculation Wiring harness connector (wiring harn side) terminal C & Ground 	Iess than 0.3 V from: g less
Yes:T07	No:E05
T07 - Check: Short to Voltage of Voltage	Supply Circuit
Work Order Description	Nominal Value
 Measure voltage between the followin terminals: Y4 Solenoid Valve - Exhaust Gas Recirculation Wiring harness connector (wiring harn side) terminal E & Ground 	g less than 0.3 V less
Yes:T08	No:E04
T08 - Check: Short to Ground of Voltage	Supply Circuit
Work Order Description	Nominal Value
 Measure resistance between the follow terminals: Y4 Solenoid Valve - Exhaust Gas Recirculation Wiring harness connector (wiring harn side) terminal C & Ground 	wing greater than 500 kOhm
Yes:T09	No:E03
T09 - Check: Circuit Interruption of Grou	nd Circuit
Work Order Description	Nominal Value
 Measure resistance between the follow terminals: A4 Control Unit - Multec 	wing less than 5 Ohm

Wiring harness connector (wiring har side) terminal 32 (X22) &	ness		
Y4 Solenoid Valve - Exhaust Gas Recirculation			
side) terminal C	ness		
Yes:E01		No:E02	
E01 - Result: Defective Component			
 Defective component: A4 Control Unit - Multec or 			
Y4 Solenoid Valve - Exhaust Gas Rec	Y4 Solenoid Valve - Exhaust Gas Recirculation		
Important:			
Reset concerned control unit (engine or immobiliser control unit) with diagnostic tester before replacing. Select immobiliser in the diagnostic tester and call up the corresponding test in the menu ADDITIONAL FUNCTIONS. Ensure that both control units are never reset and replaced at the same time.			
E02 - Result: Interruption			
 Circuit interruption between: A4 Control Unit - Multec Wiring harness connector (wiring harn & X4 Colonaid Value - Exhaust Coo Dec 	iess side	e) terminal 32 (X22)	
Wiring harness connector (wiring harn	iess side	e) terminal C	
E03 - Result: Short to Ground			
 Short circuit to ground between: A4 Control Unit - Multec Wiring harness connector (wiring harn 	iess side	e) terminal 32 (X22)	
& Y4 Solenoid Valve - Exhaust Gas Recirculation Wiring harness connector (wiring harness side) terminal C			
E04 - Result: Short to Voltage			
 Short circuit to voltage between: A4 Control Unit - Multec 			
Wiring harness connector (wiring harn &	iess side	e) terminal 46 (X22)	
Y4 Solenoid Valve - Exhaust Gas Rec Wiring harness connector (wiring harn	irculatio ess side	n e) terminal D	
E05 - Result: Short to Voltage			
 Short circuit to voltage between: A4 Control Unit - Multec Wiring harness connector (wiring harn 	iess side	e) terminal 32 (X22)	
Y4 Solenoid Valve - Exhaust Gas Recirculation			

Wiring harness connector (wiring harness side) terminal C			
E06 - Result: Short to Ground/Interruption			
 Short circuit to ground/interruption of circuit between: A4 Control Unit - Multec 			
Wiring harness connector (wiring harness side) terminal 40 (X22) &			
Y4 Solenoid Valve - Exhaust Gas Recirculation Wiring harness connector (wiring harness side) terminal B			
or			
Defective component: A4 Control Unit - Multec			
Important:			
Reset concerned control unit (engine or immobiliser control unit) with diagnostic tester before replacing. Select immobiliser in the diagnostic tester and call up the corresponding test in the menu ADDITIONAL FUNCTIONS. Ensure that both control units are never reset and replaced at the same time.			
E07 - Result: Short to Voltage			
Short circuit to voltage between:			
Wiring harness connector (wiring harness side) terminal 40 (X22)			
Y4 Solenoid Valve - Exhaust Gas Recirculation Wiring harness connector (wiring harness side) terminal B			
or			
Defective component: A4 Control Unit - Multec			
Important:			
Reset concerned control unit (engine or immobiliser control unit) with diagnostic tester before replacing. Select immobiliser in the diagnostic tester and call up the corresponding test in the menu ADDITIONAL FUNCTIONS. Ensure that both control units are never reset and replaced at the same time.			
E08 - Result: Interruption			

 Circuit interruption between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 46 (X22) & Y4 Solenoid Valve - Exhaust Gas Recirculation

Wiring harness connector (wiring harness side) terminal D		
E09 - Result: Interruption		
 Circuit interruption between: Y4 Solenoid Valve - Exhaust Gas Recirculation Wiring harness connector (wiring harness side) terminal A & 		
Ground		
E10 - Result: Short to Ground/Interrupti	on	
 Short circuit to ground/interruption of circuit between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 11 (X22) & Y4 Solenoid Valve - Exhaust Gas Recirculation 		
or		
 Defective component: A4 Control Unit - Multec 		
Important:		
Reset concerned control unit (engine or immobiliser control unit) with diagnostic tester before replacing. Select immobiliser in the diagnostic tester and call up the corresponding test in the menu ADDITIONAL FUNCTIONS. Ensure that both control units are never reset and replaced at the same time.		
T01 - Check: Interruption of Voltage Sur	oply Circuit	
Work Order Description	Nominal Value	
 Ignition OFF Disconnect wiring harness connector Y5 Solenoid Valve - Tank Ventilation Ignition ON Measure voltage between the followi terminals: Y5 Solenoid Valve - Tank Ventilation Wiring harness connector (wiring har side) terminal A 	from: greater than 11 V	
& Ground	ness	
Ground Yes:T02	No:E06	
& Ground Yes:T02 T02 - Check: Short to Voltage of Signal	No:E06	
& Ground Yes:T02 T02 - Check: Short to Voltage of Signal Work Order Description	No:E06 Circuit Nominal Value	

 Ignition ON Measure voltage between the following terminals: Y5 Solenoid Valve - Tank Ventilation Wiring harness connector (wiring harness connector (wiring harness connector (wiring harness) terminal B & & Ground 	ng mess	less than 0.3 V
Yes:T03		No:E05
103 - Check: Short to Ground of Signal Circuit		
Work Order Description		Nominal Value
 Ignition OFF Disconnect wiring harness connector from: A4 Control Unit - Multec (Wiring Harness Connector X22) Measure resistance between the following terminals: Y5 Solenoid Valve - Tank Ventilation Wiring harness connector (wiring harness side) terminal B & Ground 		greater than 500 kOhm
Ground		
Ground Yes:T04		No:E04
Ground Yes:T04 T04 - Check: Interruption of Signal Circ	uit	No:E04
Ground Yes:T04 T04 - Check: Interruption of Signal Circ Work Order Description	uit	No:E04 Nominal Value
Ground Yes:T04 T04 - Check: Interruption of Signal Circa Work Order Description • Measure resistance between the following terminals: A4 Control Unit - Multec Wiring harness connector (wiring harness connector (wiring harness ide) terminal 9 (X22) & Y5 Solenoid Valve - Tank Ventilation Wiring harness connector (wiring harness ide) terminal B	uit owing mess	No:E04 Nominal Value less than 5 Ohm
Ground Yes:T04 T04 - Check: Interruption of Signal Circa Work Order Description Measure resistance between the following terminals: A4 Control Unit - Multec Wiring harness connector (wiring harnes)))))))))))))	uit owing mess	No:E04 Nominal Value less than 5 Ohm No:E03
Ground Yes:T04 T04 - Check: Interruption of Signal Circa Work Order Description • Measure resistance between the following terminals: A4 Control Unit - Multec Wiring harness connector (wiring harnes)))))))))))))))))	uit owing mess	No:E04 Nominal Value less than 5 Ohm No:E03
Ground Yes:T04 T04 - Check: Interruption of Signal Circe Work Order Description Measure resistance between the foll- terminals: A4 Control Unit - Multec Wiring harness connector (wiring har- side) terminal 9 (X22) & Y5 Solenoid Valve - Tank Ventilation Wiring harness connector (wiring har- side) terminal B Yes:T05 T05 - Check: Component Work Order Description	uit owing mess	No:E04 Nominal Value less than 5 Ohm No:E03 No:E03

 Y5 Solenoid Valve - Tank Ventilation Wiring harness connector (wiring har side) terminal B & Y5 Solenoid Valve - Tank Ventilation Wiring harness connector (wiring har side) terminal A Ignition ON Select and enable diagnostic tester a test: Fuel Tank Ventilation Valve Test Press soft key INACTIVE 	mess mess actuator	
Yes:T06 T06 - Check: Component		No:E02
Work Order Description		Nominal Value
 Press soft key ACTIVE 		Test light ON?
Yes:E01		No:E02
Defective component: Y5 Solenoid Valve - Tank Ventilation		
Defective component: A4 Control Unit - Multec Important:		
Reset concerned control unit (engine or immobiliser control unit) with diagnostic tester before replacing. Select immobiliser in the diagnostic tester and call up the corresponding test in the menu ADDITIONAL FUNCTIONS. Ensure that both control units are never reset and replaced at the same time.		
E03 - Result: Interruption		
 Circuit interruption between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 9 (X22) & Y5 Solenoid Valve - Tank Ventilation Wiring harness connector (wiring harness side) terminal B 		
E04 - Result: Short to Ground		
 Short circuit to ground between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 9 (X22) & Y5 Solenoid Valve - Tank Ventilation 		

Wiring harness connector (wiring harness side) terminal B			
E05 - Result: Short to Voltage			
 Short circuit to voltage between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 9 (X22) 			
& Y5 Solenoid Valve - Tank Ventilation Wiring harness connector (wiring harness side) terminal B			
or			
 Defective component: A4 Control Unit - Multec 			
Important:			
Reset concerned control unit (engine or immobiliser control unit) with diagnostic tester before replacing. Select immobiliser in the diagnostic tester and call up the corresponding test in the menu ADDITIONAL FUNCTIONS. Ensure that both control units are never reset and replaced at the same time.			
E06 - Result: Interruption			
 Circuit interruption between: K18 Relay - Engine Control Unit Socket connector colour BNPK & Y5 Solenoid Valve - Tank Ventilation Wiring harness connector (wiring harness side) terminal A 			
Note:			
Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark			
C-18 - O2 Sensor Heater Circuit (Before Catalyst)			
T01 - Check: Interruption of Voltage Supply Circ	cuit		
Work Order Description	Nominal Value		
 Ignition OFF Disconnect wiring harness connector from: B117 Sensor - Oxygen, Exhaust, Heated 1 Remove electrical component from socket: K18 Relay - Engine Control Unit Connect fused jumper wire to: K18 Relay - Engine Control Unit 	greater than 11 V		

 Socket connector colour BNPK & Battery voltage Measure voltage between the following terminals: B117 Sensor - Oxygen, Exhaust, He Wiring harness connector (wiring harness side) terminal D & Ground 	ng ated 1 rness	
Note:		
Wiring colours: BK=Black, BN=Brown, BL GD=Gold, GN=Green, GY=Grey, OG=Ora PK=Pink, RD=Red, SR=Silver, TQ=Turqu VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark	J=Blue, ange, ioise,	
Yes:T02 T02 - Check: Short to Voltage of Groups	 1 Circuit	No:E06
Work Order Description		Nominal Value
 Remove fused jumper wire Disconnect wiring harness connecto A4 Control Unit - Multec (Wiring Harness Connector X22) 	r from:	less than 0.3 V
 Measure voltage between the following terminals: B117 Sensor - Oxygen, Exhaust, He Wiring harness connector (wiring harness connector (wiring harness connector (wiring harness) terminal C & Ground 	ng ated 1 mess	
 Measure voltage between the following terminals: B117 Sensor - Oxygen, Exhaust, He Wiring harness connector (wiring harness connector (wiring harnest connector (wiring harnest connector) (wiring harnest connector) Wiring harnest connector (wiring harnest connector) Wiring harnest connector) Wiring harnest connector (wiring harnest connector) Wiring harnest connector) Wiring harnest connector (wiring harnest connector) Wiring harne	ng ated 1 mess	No:E05
 Measure voltage between the following terminals: B117 Sensor - Oxygen, Exhaust, He Wiring harness connector (wiring harness connector (wiring harness ide) terminal C & Ground Yes:T03 T03 - Check: Component	ng ated 1 mess	No:E05
 Measure voltage between the following terminals: B117 Sensor - Oxygen, Exhaust, He Wiring harness connector (wiring har side) terminal C & Ground Yes:T03 T03 - Check: Component Work Order Description 	ng ated 1 rness	No:E05 Nominal Value

B117 Sensor - Oxygen, Exhaust, Hea Wiring harness connector (componer terminal C	ated 1 nt side)	
Yes:T04		No:T05
T04 - Check: Component		
Work Order Description		Nominal Value
 Measure resistance between the following terminals: B117 Sensor - Oxygen, Exhaust, Heated 1 Wiring harness connector (component side) terminal D & Ground 		greater than 500 kOhm
Yes:E01		No:E02
T05 - Check: Component		
Work Order Description		Nominal Value
 Ignition OFF Measure resistance between the following terminals: B117 Sensor - Oxygen, Exhaust, Heated 1 Wiring harness connector (component side) terminal D & B117 Sensor - Oxygen, Exhaust, Heated 1 Wiring harness connector (component side) terminal C 		greater than 20 Ohm
Yes:E03		No:E04
 E01 - Result: Short to Ground/Interruption Short circuit to ground/interruption of circuit between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 21 (X22) & B117 Sensor - Oxygen, Exhaust, Heated 1 Wiring harness connector (wiring harness side) terminal C 		
or • Defective component: A4 Control Unit - Multec		
Important:		
Reset concerned control unit (engine or immobiliser control unit) with diagnostic		

tester before replacing. Select immobiliser in the diagnostic tester and call up the corresponding test in the menu ADDITIONAL FUNCTIONS. Ensure that both control units are never reset and replaced at the same time.

E02	- Result: Short to Ground
•	Short circuit to ground between: B117 Sensor - Oxygen, Exhaust, Heated 1 Wiring harness connector (component side) terminal D & B117 Sensor - Oxygen, Exhaust, Heated 1 Wiring harness connector (component side) terminal C
or	
•	Defective component: B117 Sensor - Oxygen, Exhaust, Heated 1
E03	- Result: Interruption
•	Circuit interruption between: B117 Sensor - Oxygen, Exhaust, Heated 1 Wiring harness connector (component side) terminal D & B117 Sensor - Oxygen, Exhaust, Heated 1 Wiring harness connector (component side) terminal C
or	
•	Defective component: B117 Sensor - Oxygen, Exhaust, Heated 1
E04	- Result: Short Circuit in Wiring Harness
•	Short circuit in wiring harness between: B117 Sensor - Oxygen, Exhaust, Heated 1 Wiring harness connector (component side) terminal D & B117 Sensor - Oxygen, Exhaust, Heated 1 Wiring harness connector (component side) terminal C
or	
•	Defective component: B117 Sensor - Oxygen, Exhaust, Heated 1
E05	- Result: Short to Voltage
•	Short circuit to voltage between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 21 (X22) & B117 Sensor - Oxygen, Exhaust, Heated 1 Wiring harness connector (wiring harness side) terminal C

E06 - Result: Interruption			
Circuit interruption between: K18 Relay - Engine Control Unit Socket connector colour BNPK & Bot table			
B117 Sensor - Oxygen, Exhaust, Heated 1 Wiring harness connector (wiring harness side) terminal D			
Note:	Note:		
Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark			
C-19 - O2 Sensor Circuit (Before Catalys	st)		
T01 - Check: Short to Voltage/Interruptic	on of Gr	ound Circuit	
Work Order Description		Nominal Value	
 Ignition OFF Disconnect wiring harness connector A4 Control Unit - Multec (Wiring Harness Connector X22) B117 Sensor - Oxygen, Exhaust, He Ignition ON Measure voltage between the followit terminals: B117 Sensor - Oxygen, Exhaust, He Wiring harness connector (wiring har side) terminal A & Ground 	r from: ated 1 ing ated 1 rness	less than 0.3 V	
Yes:T02		No:E07	
T02 - Check: Short to Ground of Signal	Circuit		
Work Order Description		Nominal Value	
 Ignition OFF Measure resistance between the follotterminals: B117 Sensor - Oxygen, Exhaust, He Wiring harness connector (wiring har side) terminal A & Ground 	owing ated 1 rness	greater than 500 kOhm	
Yes:T03		No:E06	

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103 - Check: Circuit Interruption of Grou	ina Circ	uit
Work Order Description		Nominal Value
 Measure resistance between the follo terminals: B117 Sensor - Oxygen, Exhaust, Hea Wiring harness connector (wiring har side) terminal A & A4 Control Unit - Multec Wiring harness connector (wiring har side) terminal 50 (X22) 	owing ated 1 mess	less than 5 Ohm
Yes:T04		No:E05
T04 - Check: Short to Voltage/Ground/In	terrupti	on of Signal Circuit
Work Order Description		Nominal Value
 Ignition OFF Connect wiring harness connector to A4 Control Unit - Multec Ignition ON Measure voltage between the following terminals: B117 Sensor - Oxygen, Exhaust, Heat Wiring harness connector (wiring harness side) terminal B & B117 Sensor - Oxygen, Exhaust, Heat wiring harness connector (wiring harness bide) terminal A 	: ated 1 ness ated 1 ness	350 550 mV
Yes:T05		No:T06
T05 - Check: Mechanical Functionality		
Work Order Description		Nominal Value
 Check mechanical functionality of the following components and all attached parts: Exhaust system Intake system Injection valves Fuel pressure 		Test okay?
Yes:E01		No:E02
T06 - Check: Short to Voltage/Ground/In	terrupti	on of Signal Circuit
Work Order Description		Nominal Value

T03 - Check: Circuit Interruption of Ground Circuit

 Ignition OFF Connect wiring harness connector to A4 Control Unit - Multec Ignition ON Measure voltage between the followint terminals: B117 Sensor - Oxygen, Exhaust, Heat Wiring harness connector (wiring har side) terminal B & B117 Sensor - Oxygen, Exhaust, Heat Wiring harness connector (wiring har side) terminal A 	ng ated 1 ness ated 1 ness	less than 350 mV
Yes:E03		No:E04
EU1 - Result: Defective Component		
A4 Control Unit - Multec		
or		
B117 Sensor - Oxygen, Exhaust, Hea	ted 1	
Important:		
Reset concerned control unit (engine or im tester before replacing. Select immobiliser corresponding test in the menu ADDITION control units are never reset and replaced a	mobilise in the dia AL FUN at the sa	r control unit) with diagnostic agnostic tester and call up the CTIONS. Ensure that both me time.
E02 - Result: Defective Component		
 Repair the concerned circuit/compone 	ent.	
E03 - Result: Short to Ground/Interruptic	on	
 Short circuit to ground/interruption of circuit between: B117 Sensor - Oxygen, Exhaust, Heated 1 Wiring harness connector (wiring harness side) terminal B & 		
A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 49 (X22)		
or		
 Defective component: A4 Control Unit - Multec 		
Important:		
Reset concerned control unit (engine or immobiliser control unit) with diagnostic		

tester before replacing. Select immobiliser in the diagnostic tester and call up the corresponding test in the menu ADDITIONAL FUNCTIONS. Ensure that both

control units are never reset and replaced at the same time.

E04 - Result: Short to Voltage			
 Short circuit to voltage between: 			
B117 Sensor - Oxygen, Exhaust, Heated 1			
Wiring harness connector (wiring harness side) terminal B			
X A Constral Linit Multan			
A4 Control Unit - Multec	λ terminal 40 (X22)		
wining namess connector (wining namess side	e) terminal 49 (λ 22)		
or			
Defective component:			
A4 Control Unit - Multec			
Important:			
Reset concerned control unit (engine or immobilise	r control unit) with diagnostic		
tester before replacing. Select immobiliser in the dia	agnostic tester and call up the		
corresponding test in the menu ADDITIONAL FUN	CTIONS. Ensure that both		
control units are never reset and replaced at the sa	me time.		
E05 - Result: Interruption			
Circuit interruption between:			
B117 Sensor - Oxygen, Exhaust, Heated 1			
Wiring harness connector (wiring harness side	e) terminal A		
&			
A4 Control Unit - Multec			
Wiring harness connector (wiring harness side	e) terminal 50 (X22)		
E06 - Result: Short to Ground			
 Short circuit to ground between: 			
B117 Sensor - Oxygen, Exhaust, Heated 1	、 .		
Wiring harness connector (wiring harness side	e) terminal A		
X A Constral Linit Multan			
A4 Control Unit - Multec	λ terminal EQ (X22)		
Wiring namess connector (wiring namess side) terminal 50 (X22)			
EU7 - Result: Short to Voltage			
Short circuit to voltage between:			
BIT/ Sensor - Oxygen, Exnaust, Heated T			
Wiring harness connector (wiring harness side) terminal A			
A4 Control Unit - Multec			
Wiring harness connector (wiring harness side	a) terminal 50 ($X22$)		
C-20 - O2 Sensor Heater Circuit (Behind Catalys	(/////		
T01 - Check: Interruption of Voltage Supply Circ	cuit		
Work Order Description	Nominal Value		

 Ignition OFF Disconnect wiring harness connector from B118 Sensor - Oxygen, Exhaust, Heated Remove electrical component from socker K18 Relay - Engine Control Unit Connect fused jumper wire to: K18 Relay - Engine Control Unit Socket connector colour BNPK & Battery voltage Measure voltage between the following terminals: B118 Sensor - Oxygen, Exhaust, Heated Wiring harness connector (wiring harness side) terminal 4 & Ground 	greater than 11 V 2 et: 2 s
Note:	
Wiring colours: BK=Black, BN=Brown, BU=Blu GD=Gold, GN=Green, GY=Grey, OG=Orange PK=Pink, RD=Red, SR=Silver, TQ=Turquoise VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark	JE, ;, ,
Yes:T02	No:E06
Yes:T02 T02 - Check: Short to Voltage of Ground Cir	No:E06
Yes:T02 T02 - Check: Short to Voltage of Ground Cir Work Order Description	No:E06 Cuit Nominal Value
Yes:T02 T02 - Check: Short to Voltage of Ground Cir Work Order Description Disconnect wiring harness connector from A4 Control Unit - Multec (Wiring Harness Connector X22) Ignition ON Measure voltage between the following terminals: B118 Sensor - Oxygen, Exhaust, Heated Wiring harness connector (wiring harness side) terminal 3 & Ground	No:E06 Nominal Value m: less than 0.3 V 2 s
Yes:T02 T02 - Check: Short to Voltage of Ground Cir Work Order Description Disconnect wiring harness connector from A4 Control Unit - Multec (Wiring Harness Connector X22) Ignition ON Measure voltage between the following terminals: B118 Sensor - Oxygen, Exhaust, Heated Wiring harness connector (wiring harness side) terminal 3 & Ground Yes:T03	No:E06 Prime Nominal Value n: less than 0.3 V 2 s S No:E05
Yes:T02 T02 - Check: Short to Voltage of Ground Cir Work Order Description Disconnect wiring harness connector from A4 Control Unit - Multec (Wiring Harness Connector X22) Ignition ON Measure voltage between the following terminals: B118 Sensor - Oxygen, Exhaust, Heated Wiring harness connector (wiring harness side) terminal 3 & Ground Yes:T03 T03 - Check: Component	No:E06 rcuit Nominal Value m: less than 0.3 V 2 S S No:E05
Yes:T02 T02 - Check: Short to Voltage of Ground Cir Work Order Description • Disconnect wiring harness connector from A4 Control Unit - Multec (Wiring Harness Connector X22) • Ignition ON • Measure voltage between the following terminals: B118 Sensor - Oxygen, Exhaust, Heated Wiring harness connector (wiring harness side) terminal 3 & Ground Yes:T03 T03 - Check: Component Work Order Description	No:E06 rcuit Nominal Value m: less than 0.3 V 2 S S No:E05 No:E05 Nominal Value

 Measure resistance between the follo terminals: B118 Sensor - Oxygen, Exhaust, He Wiring harness connector (component terminal 4 & B118 Sensor - Oxygen, Exhaust, He Wiring harness connector (component terminal 3 	owing ated 2 nt side) ated 2 nt side)	
Yes:T04		No:T05
T04 - Check: Component		
Work Order Description		Nominal Value
 Measure resistance between the follo terminals: B118 Sensor - Oxygen, Exhaust, He Wiring harness connector (component terminal 4 & Ground 	owing ated 2 nt side)	greater than 500 kOhm
Yes:E01		No:E02
T05 - Check: Component		
Work Order Description		Nominal Value
 Ignition OFF Measure resistance between the follo terminals: B118 Sensor - Oxygen, Exhaust, He Wiring harness connector (component terminal 4 & B118 Sensor - Oxygen, Exhaust, He Wiring harness connector (component terminal 3 	owing ated 2 nt side) ated 2 nt side)	greater than 20 Ohm
 Ignition OFF Measure resistance between the follo terminals: B118 Sensor - Oxygen, Exhaust, He Wiring harness connector (component terminal 4 & B118 Sensor - Oxygen, Exhaust, He Wiring harness connector (component terminal 3 	owing ated 2 nt side) ated 2 nt side)	greater than 20 Ohm No:E04
 Ignition OFF Measure resistance between the follotterminals: B118 Sensor - Oxygen, Exhaust, Hewiring harness connector (componenterminal 4 & B118 Sensor - Oxygen, Exhaust, Hewiring harness connector (componenterminal 3 Yes:E03 E01 - Result: Short to Ground/Interruptic 	owing ated 2 nt side) ated 2 nt side) on	greater than 20 Ohm No:E04

 Defective component: A4 Control Unit - Multec

Important:

Reset concerned control unit (engine or immobiliser control unit) with diagnostic tester before replacing. Select immobiliser in the diagnostic tester and call up the corresponding test in the menu ADDITIONAL FUNCTIONS. Ensure that both control units are never reset and replaced at the same time.

E02	- Result: Short to Ground
•	Short circuit to ground between: B118 Sensor - Oxygen, Exhaust, Heated 2 Wiring harness connector (component side) terminal 4 &
	B118 Sensor - Oxygen, Exhaust, Heated 2 Wiring harness connector (component side) terminal 3
or	
•	Defective component: B118 Sensor - Oxygen, Exhaust, Heated 2
E03	- Result: Interruption
•	Circuit interruption between: B118 Sensor - Oxygen, Exhaust, Heated 2 Wiring harness connector (component side) terminal 4 & B118 Sensor - Oxygen, Exhaust, Heated 2 Wiring harness connector (component side) terminal 3
or	
•	Defective component: B118 Sensor - Oxygen, Exhaust, Heated 2
E04	- Result: Short Circuit in Wiring Harness
•	Short circuit in wiring harness between: B118 Sensor - Oxygen, Exhaust, Heated 2 Wiring harness connector (component side) terminal 4 & B118 Sensor - Oxygen, Exhaust, Heated 2 Wiring harness connector (component side) terminal 3
or	
•	Defective component: B118 Sensor - Oxygen, Exhaust, Heated 2
E05	- Result: Short to Voltage
•	Short circuit to voltage between:

A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 44 (X22) & B118 Sensor - Oxygen, Exhaust, Heated 2

Wiring harness connector (wiring harness side) terminal 3

E06 - Result: Interruption

 Circuit interruption between: K18 Relay - Engine Control Unit Socket connector colour BNPK & B118 Sensor - Oxygen, Exhaust, Heated 2 Wiring harness connector (wiring harness side) terminal 4

Note:

Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow,

L=Light, D=Dark

C-21 - O2 Sensor Circuit (Behind Catalyst)

T01 - Check: Short to Voltage/Interruption of Ground Circuit

Work Order Description	Nominal Val	lue
 Ignition OFF Disconnect wiring harness connector A4 Control Unit - Multec (Wiring Harness Connector X22) B118 Sensor - Oxygen, Exhaust, Here Ignition ON Measure voltage between the following terminals: B118 Sensor - Oxygen, Exhaust, Here Wiring harness connector (wiring harness side) terminal 1 & Ground 	from: less than 0.3 ated 2 ated 2 ness	V
Yes:T02	No:E09	
T02 - Check: Short to Ground of Signal	Circuit	
Work Order Description	Nominal Val	lue
 Ignition OFF Measure resistance between the follo terminals: B118 Sensor - Oxygen, Exhaust, Hea Wiring harness connector (wiring har 	wing ated 2 ness	500 kOhm

side) terminal 1		
Ground		
Yes:T03		No:E08
T03 - Check: Circuit Interruption of Gro	und Circ	cuit
Work Order Description		Nominal Value
 Measure resistance between the follotterminals: B118 Sensor - Oxygen, Exhaust, He Wiring harness connector (wiring har side) terminal 1 & A4 Control Unit - Multec Wiring harness connector (wiring har side) terminal 52 (X22) 	owing ated 2 rness rness	less than 5 Ohm
Yes:T04		Νο·F07
T04 - Check: Short to Voltage/Ground/Ir	nterrupti	on of Signal Circuit
Work Order Description		Nominal Value
 Ignition OFF Connect wiring harness connector to A4 Control Unit - Multec Ignition ON Measure voltage between the followit terminals: B118 Sensor - Oxygen, Exhaust, He Wiring harness connector (wiring har side) terminal 2 & B118 Sensor - Oxygen, Exhaust, He Wiring harness connector (wiring har side) terminal 1 	ng ated 2 rness ated 2 rness	350 550 mV
Yes:T05		No:T08
T05 - Check: Mechanical Functionality		
Work Order Description		Nominal Value
 Check mechanical functionality of the following components and all attache parts: Intake system Injection valves Fuel pressure 	e ed	Test okay?
I Yes:T06		No:E04

T06 - Check: Tightness

T06 - Check: Tightness		
Work Order Description		Nominal Value
 Check the following components for tightness: Exhaust system 		Test okay?
Yes:T07		No:E03
T07 - Check: Mechanical Functionality		
Work Order Description		Nominal Value
 Check the catalytic converter for mechanical damages (Tears in the outer case, damages of internal catalyst bed) 	fthe	Test okay?
Yes:E01		No:E02
T08 - Check: Short to Voltage/Ground/Ir	terrupti	on of Signal Circuit
Work Order Description		Nominal Value
 Ignition OFF Connect wiring harness connector to A4 Control Unit - Multec Ignition ON Measure voltage between the followi terminals: B118 Sensor - Oxygen, Exhaust, He Wiring harness connector (wiring har side) terminal 2 & B118 Sensor - Oxygen, Exhaust, He Wiring harness connector (wiring har side) terminal 1 	: ng ated 2 ness ated 2 ness	less than 350 mV
Yes:E05		No:E06
 E01 - Result: Defective Component Defective component: A4 Control Unit - Multec or B118 Sensor - Oxygen, Exhaust, Hea Important: Reset concerned control unit (engine or imtegrate before replacing Select immediate or imtegrated or i	ted 2 mobilise	r control unit) with diagnostic
corresponding test in the menu ADDITION control units are never reset and replaced	AL FUN	CTIONS. Ensure that both me time.

E02 - Result: Mechanical Fault

 Defective component: Catalytic Converter

E03 - Result: Defective Component

 Following system/component is faulty: Exhaust system

E04 - Result: Defective Component

• Repair the concerned circuit/component.

E05 - Result: Short to Ground/Interruption

 Short circuit to ground/interruption of circuit between: B118 Sensor - Oxygen, Exhaust, Heated 2 Wiring harness connector (wiring harness side) terminal 2 & A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 51 (X22)

or

 Defective component: A4 Control Unit - Multec

Important:

Reset concerned control unit (engine or immobiliser control unit) with diagnostic tester before replacing. Select immobiliser in the diagnostic tester and call up the corresponding test in the menu ADDITIONAL FUNCTIONS. Ensure that both control units are never reset and replaced at the same time.

- E06 Result: Short to Voltage
 - Short circuit to voltage between: B118 Sensor - Oxygen, Exhaust, Heated 2 Wiring harness connector (wiring harness side) terminal 2 & A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 51 (X22)

or

 Defective component: A4 Control Unit - Multec

Important:

Reset concerned control unit (engine or immobiliser control unit) with diagnostic tester before replacing. Select immobiliser in the diagnostic tester and call up the corresponding test in the menu ADDITIONAL FUNCTIONS. Ensure that both control units are never reset and replaced at the same time.

E07 - Result: Interruption	
Circuit interruption between:	
B118 Sensor - Oxygen, Exhaust, Heated 2	
Wiring harness connector (wiring harness side	e) terminal 1
&	
A4 Control Unit - Multec	
Wiring harness connector (wiring harness side	e) terminal 52 (X22)
E08 - Result: Short to Ground	
Short circuit to ground between:	
B118 Sensor - Öxygen, Exhaust, Heated 2	
Wiring harness connector (wiring harness side	e) terminal 1
&	,
A4 Control Unit - Multec	
Wiring harness connector (wiring harness side	e) terminal 52 (X22)
E09 - Result: Short to Voltage	
Short circuit to voltage between:	
B118 Sensor - Oxygen Exhaust Heated 2	
Wiring harness connector (wiring harness side	e) terminal 1
A4 Control Unit - Multec	
Wiring harness connector (wiring harness side	e) terminal 52 (X22)
C-22 - Ean Circuit	
1101 - Check: Short to Voltade/Ground/Interrubti	on of Voltage Supply
Work Order Description	on of Voltage Supply Nominal Value
Work Order Description	on of Voltage Supply Nominal Value
• Ignition OFF	on of Voltage Supply Nominal Value greater than 11 V
Work Order Description Ignition OFF Remove electrical component from socket:	on of Voltage Supply Nominal Value greater than 11 V
 Work Order Description Ignition OFF Remove electrical component from socket: K13 Relay - Blower, Radiator 	on of Voltage Supply Nominal Value greater than 11 V
 Work Order Description Ignition OFF Remove electrical component from socket: K13 Relay - Blower, Radiator Measure voltage between the following 	on of Voltage Supply Nominal Value greater than 11 V
 Work Order Description Ignition OFF Remove electrical component from socket: K13 Relay - Blower, Radiator Measure voltage between the following terminals: 	on of Voltage Supply Nominal Value greater than 11 V
 Work Order Description Ignition OFF Remove electrical component from socket: K13 Relay - Blower, Radiator Measure voltage between the following terminals: K13 Relay - Blower, Radiator 	on of Voltage Supply Nominal Value greater than 11 V
 Work Order Description Ignition OFF Remove electrical component from socket: K13 Relay - Blower, Radiator Measure voltage between the following terminals: K13 Relay - Blower, Radiator Socket connector colour BKBN 	on of Voltage Supply Nominal Value greater than 11 V
 Work Order Description Ignition OFF Remove electrical component from socket: K13 Relay - Blower, Radiator Measure voltage between the following terminals: K13 Relay - Blower, Radiator Socket connector colour BKBN Wire gauge: 0.5 mm² 	on of Voltage Supply Nominal Value greater than 11 V
 Work Order Description Ignition OFF Remove electrical component from socket: K13 Relay - Blower, Radiator Measure voltage between the following terminals: K13 Relay - Blower, Radiator Socket connector colour BKBN Wire gauge: 0.5 mm² & 	on of Voltage Supply Nominal Value greater than 11 V
 Work Order Description Ignition OFF Remove electrical component from socket: K13 Relay - Blower, Radiator Measure voltage between the following terminals: K13 Relay - Blower, Radiator Socket connector colour BKBN Wire gauge: 0.5 mm² & Ground 	on of Voltage Supply Nominal Value greater than 11 V
 Work Order Description Ignition OFF Remove electrical component from socket: K13 Relay - Blower, Radiator Measure voltage between the following terminals: K13 Relay - Blower, Radiator Socket connector colour BKBN Wire gauge: 0.5 mm² & Ground 	on of Voltage Supply Nominal Value greater than 11 V
 Work Order Description Ignition OFF Remove electrical component from socket: K13 Relay - Blower, Radiator Measure voltage between the following terminals: K13 Relay - Blower, Radiator Socket connector colour BKBN Wire gauge: 0.5 mm² & Ground Note: 	on of Voltage Supply Nominal Value greater than 11 V
 Work Order Description Ignition OFF Remove electrical component from socket: K13 Relay - Blower, Radiator Measure voltage between the following terminals: K13 Relay - Blower, Radiator Socket connector colour BKBN Wire gauge: 0.5 mm² & Ground Note: 	on of Voltage Supply Nominal Value greater than 11 V
 Work Order Description Ignition OFF Remove electrical component from socket: K13 Relay - Blower, Radiator Measure voltage between the following terminals: K13 Relay - Blower, Radiator Socket connector colour BKBN Wire gauge: 0.5 mm^2 & Ground Note: Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GX=Grev, QG=Orange 	on of Voltage Supply Nominal Value greater than 11 V
 Work Order Description Ignition OFF Remove electrical component from socket: K13 Relay - Blower, Radiator Measure voltage between the following terminals: K13 Relay - Blower, Radiator Socket connector colour BKBN Wire gauge: 0.5 mm² & Ground Note: Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink_BD=Bed_SB=Silver_TO=Turquoise 	on of Voltage Supply Nominal Value greater than 11 V
 Work Order Description Ignition OFF Remove electrical component from socket: K13 Relay - Blower, Radiator Measure voltage between the following terminals: K13 Relay - Blower, Radiator Socket connector colour BKBN Wire gauge: 0.5 mm^2 & Ground Note: Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet_WH=White_YE=Yellow 	on of Voltage Supply Nominal Value greater than 11 V
 Work Order Description Ignition OFF Remove electrical component from socket: K13 Relay - Blower, Radiator Measure voltage between the following terminals: K13 Relay - Blower, Radiator Socket connector colour BKBN Wire gauge: 0.5 mm^2 & Ground Note: Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow, 	on of Voltage Supply Nominal Value greater than 11 V
 Work Order Description Ignition OFF Remove electrical component from socket: K13 Relay - Blower, Radiator Measure voltage between the following terminals: K13 Relay - Blower, Radiator Socket connector colour BKBN Wire gauge: 0.5 mm^2 & Ground Note: Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark 	on of Voltage Supply Nominal Value greater than 11 V
 Work Order Description Ignition OFF Remove electrical component from socket: K13 Relay - Blower, Radiator Measure voltage between the following terminals: K13 Relay - Blower, Radiator Socket connector colour BKBN Wire gauge: 0.5 mm^2 & Ground Note: Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark 	on of Voltage Supply Nominal Value greater than 11 V No:T11

Work Order Description	Nominal Value
 Measure voltage between the following terminals: K13 Relay - Blower, Radiator Socket connector colour BKBN Wire gauge: 3 mm² & Ground 	greater than 11 V
Note:	
Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark	
Yes:T03	No:E10
T03 - Check: Short to Voltage of Signal Circuit	
Work Order Description	Nominal Value
 Ignition ON Measure voltage between the following terminals: K13 Relay - Blower, Radiator Socket connector colour BKGN & Ground 	less than 0.3 V
Note:	
Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark	
Yes:T04	No:E09
T04 - Check: Short to Voltage of Signal Circuit	1
Work Order Description	Nominal Value
 Measure voltage between the following terminals: K13 Relay - Blower, Radiator Socket connector colour BUGY & 	less than 0.3 V

Ground	
Note:	
Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark	
Yes:T05	No:E08
T05 - Check: Short to Ground of Signal Circuit	
Work Order Description	Nominal Value
 Ignition OFF Disconnect wiring harness connector from: A4 Control Unit - Multec Measure resistance between the following terminals: K13 Relay - Blower, Radiator Socket connector colour BUGY & Ground 	greater than 500 kOhm
Note:	
Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark	
Yes:T06	No:E07
T06 - Check: Interruption of Signal Circuit	
Work Order Description	Nominal Value
 Measure resistance between the following terminals: K13 Relay - Blower, Radiator Socket connector colour BUGY & A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 13 (X21) 	less than 5 Ohm
Note:	

Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow, _=Light, D=Dark		
Yes:T07	.:.	No:E06
Work Order Description	un	Nominal Value
 Disconnect wiring harness connector M19 Motor - Blower, Radiator Connect fused jumper wire to: K13 Relay - Blower, Radiator Socket connector colour BKGN & Battery voltage Measure voltage between the followi terminals: M19 Motor - Blower, Radiator Wiring harness connector (wiring har side) terminal A & Ground 	r from: ng	greater than 11 V
Note:		
Wiring colours: BK=Black, BN=Brown, BL GD=Gold, GN=Green, GY=Grey, OG=Ora PK=Pink, RD=Red, SR=Silver, TQ=Turqu VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark	I=Blue, ange, oise,	
Yes:T08		No:E05
T08 - Check: Circuit Interruption of Grou	und Circ	uit
Work Order Description		Nominal Value
 Measure resistance between the follo terminals: M19 Motor - Blower, Radiator Wiring harness connector (wiring har side) terminal B & Ground 	owing	less than 5 Ohm
Yes:T09		No:E04
T09 - Check: Component		

Work Order Description		Nominal Value
 Remove fused jumper wire Insert electrical component in socket: K13 Relay - Blower, Radiator Connect wiring harness connector to M19 Motor - Blower, Radiator Ignition ON 	:	Is cooling fan M19 running at low speed?
Yes:E01		No:T10
T10 - Check: Component		r
Work Order Description		Nominal Value
 Connect fused jumper wire to: A4 Control Unit - Multec Wiring harness connector (wiring harn side) terminal 13 (X21) & Ground 	ness	Is cooling fan M19 running at high speed? and Clicking noise from the relay
Yes:E02		No:E03
T11 - Check: Component		
Work Order Description		Nominal Value
 Remove electrical component from set FB12 Fuse Check the following component for properation: FB12 Fuse 	ocket: roper	Test okay?
Yes:T12		No:T13
T12 - Check: Interruption of Voltage Sup	oply Circ	cuit
Work Order Description		Nominal Value
 Measure voltage between the following terminals: FB12 Fuse Input contact & Ground 	ng	greater than 11 V
Yes:E11		No:E12
T13 - Check: Short to Ground of Signal (Circuit	
T13 - Check: Short to Ground of Signal (Work Order Description	Circuit	Nominal Value

Socket connector colour BKGN & Battery voltage • Check the following component for pr operation: Fuse of the fused jumper wire	roper	
Note:		
Wiring colours: BK=Black, BN=Brown, BU GD=Gold, GN=Green, GY=Grey, OG=Ora PK=Pink, RD=Red, SR=Silver, TQ=Turque VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark	l=Blue, ange, oise,	
Yes:E13	No:E14	
Defective component: K13 Relay - Blower, Radiator		
Defective component: A4 Control Unit - Multec		
Important:		
Reset concerned control unit (engine or implester before replacing. Select immobiliser in corresponding test in the menu ADDITION control units are never reset and replaced a	mobiliser control unit) with diagr in the diagnostic tester and call AL FUNCTIONS. Ensure that bo at the same time.	nostic up the oth
E03 - Result: Defective Component		
Defective component: M19 Motor - Blower, Radiator or K12 Below Blower Bediator		
E04 - Result: Interruption		
 Circuit interruption between: M19 Motor - Blower, Radiator Wiring harness connector (wiring harn & Ground 	ness side) terminal B	
E05 - Result: Interruption		
 Circuit interruption between: K13 Relay - Blower, Radiator Socket connector colour BKGN & M19 Motor - Blower, Radiator 		

Wiring harness connector (wiring harness side) terminal A

Note:

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Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green,
GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise,
VT=Violet, WH=White, YE=Yellow,
L=Light, D=Dark
```

E06 - Result: Interruption

•	Circuit interruption between:
	K13 Relay - Blower, Radiator
	Socket connector colour BUGY
	&
	A4 Control Unit - Multec
	Wiring harness connector (wiring harness side) terminal 13 (X21)

Note:

Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow,

L=Light, D=Dark

E07 - Result: Short to Ground

 Short circuit to ground between: K13 Relay - Blower, Radiator Socket connector colour BUGY & A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 13 (X21)

Note:

Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow,

L=Light, D=Dark

E08 - Result: Short to Voltage

 Short circuit to voltage between: K13 Relay - Blower, Radiator Socket connector colour BUGY & A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 13 (X21)

or

Defective component:

A4 Control Unit - Multec

Important:

Reset concerned control unit (engine or immobiliser control unit) with diagnostic tester before replacing. Select immobiliser in the diagnostic tester and call up the corresponding test in the menu ADDITIONAL FUNCTIONS. Ensure that both control units are never reset and replaced at the same time.

Note:

Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow,

L=Light, D=Dark

E09 - Result: Short to Voltage

 Short circuit to voltage between: K13 Relay - Blower, Radiator Socket connector colour BKGN & M19 Motor - Blower, Radiator Wiring harness connector (wiring harness side) terminal A

or

or

 Defective component: M19 Motor - Blower, Radiator

Note:

Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow,

L=Light, D=Dark

E10 - Result: Interruption

 Circuit interruption between: FB12 Fuse Output contact & K13 Relay - Blower, Radiator Socket connector colour BKBN Wire gauge: 3 mm²

Note:

Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise,

VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark
E11 - Result: Interruption
 Circuit interruption between: Output contact FB12 Fuse & K13 Relay - Blower, Radiator Socket connector colour BKBN Wire gauge: 0.5 mm²
Note:
Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark
E12 - Result: Interruption
 Circuit interruption between: G1 Battery Wiring harness connector (wiring harness side) terminal 30 & FB12 Fuse Input contact
E13 - Result: Short to Ground
 Short circuit to ground between: FB12 Fuse Output contact & K13 Relay - Blower, Radiator Socket connector colour BKBN Wire gauge: 0.5; 3 mm²
or
 Defective component: K13 Relay - Blower, Radiator
Note:
Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark
E14 - Result: Short to Ground

Socket connector colour BKGN & M19 Motor - Blower, Radiator Wiring harness connector (wiring harness side) terminal A

or

 Defective component: M19 Motor - Blower, Radiator

Note:

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Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green,
GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise,
VT=Violet, WH=White, YE=Yellow,
L=Light, D=Dark
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C-23 - Vehicle Speed Input Signal Circuit

T01 - Check: Component

Work Order Description	Nominal Value
 Ignition OFF Disconnect wiring harness connector A4 Control Unit - Multec Vehicle jacked-up and rear left wheel turned by hand Ignition ON Measure voltage between the followin terminals: A4 Control Unit - Multec Wiring harness connector (wiring harn side) terminal 18 (X21) & Battery voltage Disconnect each of the following components/control units consecutive from the wiring harness and repeat th measurement each time: H1 Instrument 	from: The value alternates between less than 6 V and greater than 10 V ng ness ly e
Yes:E01	No:T02
T02 - Check: Short to Voltage of Signal C	Circuit
Work Order Description	Nominal Value
 Ignition OFF Disconnect wiring harness connector A2 Control Unit - Anti Lock Brake Sys 	from: tem

 Ignition ON Measure voltage between the followi terminals: A4 Control Unit - Multec Wiring harness connector (wiring harness connector (wiring harness connector (wiring har side) terminal 18 (X21) & Ground 	ng mess
Yes:T03	No:E04
Work Order Description of Signal Circl	
Work Order Description	Nominal Value
 Ignition OFF Measure resistance between the follo terminals: A4 Control Unit - Multec Wiring harness connector (wiring har side) terminal 18 (X21) & Ground 	greater than 500 kOhm owing
Yes:E02	No:E03
 If the nominal value is reached during component/control unit that has been measurement is defective. Important: Reset concerned control unit (engine or im tester before replacing. Select immobiliser corresponding test in the menu ADDITION control units are never reset and replaced Reset control unit D3, D4 with diagnostic tests system of the master control unit A14 in the corresponding function from the PROGRA 	one of the measurements, the disconnected immediately before that mobiliser control unit) with diagnostic in the diagnostic tester and call up the AL FUNCTIONS. Ensure that both at the same time. ester before replacing. Select the e diagnostic tester and call up the MMING menu.
E02 - Result: Interruption	
 Circuit interruption between: A4 Control Unit - Multec Wiring harness connector (wiring harn & A2 Control Unit - Anti Lock Brake Sys Wiring harness connector (wiring harn or 	ness side) terminal 18 (X21) tem ness side) terminal 3

Defective component: A2 Control Unit - Anti Lock Brake System	
E03 - Result: Short to Ground	
 Short circuit to ground between: A4 Control Unit - Multec Wiring harness connector (wiring harness s & H1 Instrument Wiring harness connector (wiring harness s & A2 Control Unit - Anti Lock Brake System Wiring harness connector (wiring harness s E04 - Result: Short to Voltage Short circuit to voltage between: A4 Control Unit - Multec Wiring harness connector (wiring harness s & A2 Control Unit - Multec Wiring harness connector (wiring harness s & H1 Instrument Wiring harness connector (wiring harness s & H1 Instrument C-24 - Malfunction Indication Lamp (MI) Circu 	ide) terminal 18 (X21) ide) terminal A5 ide) terminal 3 ide) terminal 18 (X21) ide) terminal 3 ide) terminal A5 it
Work Order Description	Nominal Value
 Ignition OFF Ignition ON Is at least one of the following telltales ON H1.4 Telltale - Airbag H1.5 Telltale - Anti Lock Brake System 	Test okay?
Yes:T02	No:E06
T02 - Check: Short to Ground of Signal Circu	t
Work Order Description	
	Nominal Value
 Ignition OFF Disconnect wiring harness connector from A4 Control Unit - Multec Ignition ON Is the following telltale OFF? H1.6 Telltale - Engine 	Nominal Value Test okay?
 Ignition OFF Disconnect wiring harness connector from A4 Control Unit - Multec Ignition ON Is the following telltale OFF? H1.6 Telltale - Engine 	Nominal Value Test okay? No:T06
 Ignition OFF Disconnect wiring harness connector from A4 Control Unit - Multec Ignition ON Is the following telltale OFF? H1.6 Telltale - Engine Yes:T03 T03 - Check: Short to Voltage of Signal Circu 	Nominal Value Test okay? No:T06 t

Work Order Description	Nominal Value
 Remove electrical component from so FB7 Fuse Measure voltage between the followin terminals: A4 Control Unit - Multec Wiring harness connector (wiring harness connector (wiring harness connector (wiring harness connector) & Ground 	ocket: less than 0.3 V ng ness
Yes:T04	No:T05
T04 - Check: Interruption of Signal Circu	iit
Work Order Description	Nominal Value
 Ignition OFF Insert electrical component in socket: FB7 Fuse Connect fused jumper wire to: A4 Control Unit - Multec Wiring harness connector (wiring harn side) terminal 63 (X21) & Ground Ignition ON Is the following telltale ON? H1.6 Telltale - Engine 	ness
Yes:E01	No:E02
T05 - Check: Short to Voltage of Signal (Circuit
Work Order Description	Nominal Value
 Ignition OFF Disconnect wiring harness connector A17 Control Unit - Immobiliser Ignition ON Measure voltage between the followir terminals: A4 Control Unit - Multec Wiring harness connector (wiring harn side) terminal 63 (X21) & Ground 	from: Iess than 0.3 V ng ness
Yes:E03	No:E04
T06 - Check: Short to Ground of Signal (Circuit

Work Order Description		Nominal Value
 Ignition OFF Disconnect wiring harness connector A17 Control Unit - Immobiliser Ignition ON Is the following telltale OFF? H1.6 Telltale - Engine 	from:	Test okay?
Yes:E03		No:E05
E01 - Result: Defective Component		
 Defective component: A4 Control Unit - Multec 		
Important:		
Reset concerned control unit (engine or im tester before replacing. Select immobiliser corresponding test in the menu ADDITION control units are never reset and replaced a	mobilise in the dia AL FUN(at the sa	r control unit) with diagnostic agnostic tester and call up the CTIONS. Ensure that both me time.
E02 - Result: Interruption		
 Defective component: H1 Instrument or H1.6 Telltale - Engine 		
or		
 Circuit interruption between: A4 Control Unit - Multec Wiring harness connector (wiring harn & H1 Instrument Wiring harness connector (wiring harn 	iess side	e) terminal 63 (X21) e) terminal B5
E03 - Result: Defective Component		,
Defective component: A17 Control Unit - Immobiliser		
Important:		
Reset concerned control unit (engine or impletester before replacing. Select immobiliser corresponding test in the menu ADDITION control units are never reset and replaced a	mobilise in the dia AL FUN(at the sa	r control unit) with diagnostic agnostic tester and call up the CTIONS. Ensure that both me time.
E04 - Result: Short to Voltage		

 Short circuit to voltage between: A4 Control Unit - Multec

	Wiring harness connector (wiring harness side) terminal 63 (X21)
	H1 Instrument Wiring harposs connector (wiring harposs side) terminal R5
	&
	A17 Control Unit - Immobiliser Wiring harness connector (wiring harness side) terminal 2
٦r	
51	
•	H1 Instrument
E05	- Result: Short to Ground
•	Short circuit to ground between:
	Wiring harness connector (wiring harness side) terminal 63 (X21)
	A H1 Instrument
	Wiring harness connector (wiring harness side) terminal B5
	A17 Control Unit - Immobiliser
	winng namess connector (winng namess side) terminal 2
or	
•	Defective component: H1 Instrument
E06	- Result: Interruption
•	Circuit interruption between:
	Output contact
	&
	Wiring harness connector (wiring harness side) terminal A3
or	
•	Defective component:
<u> </u>	H1 Instrument
J-20	- System Status information
E01	- Result: Defective Component
٠	functional group are internal values of the system and are listed for
	information only. If all remaining diagnostic tests are passed and there are
	in agreement with the customer.

C-26 - Misfire Detection T01 - Check: Interruption of Voltage Supply Circuit **Nominal Value** Work Order Description Ignition OFF greater than 11 V All consumers turned off Disconnect wiring harness connector from: T1 Ignition Coil - Direct Ignition Ignition ON Measure voltage between the following terminals: T1 Ignition Coil - Direct Ignition Wiring harness connector (wiring harness side) terminal A & Ground Yes:T02 No:E16 T02 - Check: Circuit Interruption of Ground Circuit Work Order Description **Nominal Value** Measure voltage between the following greater than 11 V terminals: T1 Ignition Coil - Direct Ignition Wiring harness connector (wiring harness side) terminal A & T1 Ignition Coil - Direct Ignition Wiring harness connector (wiring harness side) terminal E Yes:T03 No:E15 T03 - Check: Short to Voltage of Signal Circuit **Work Order Description Nominal Value** Disconnect wiring harness connector from: less than 0.3 V A4 Control Unit - Multec (Wiring Harness Connector X22) Ignition ON Measure voltage between the following terminals: T1 Ignition Coil - Direct Ignition Wiring harness connector (wiring harness side) terminal B & Ground

Yes:104	No:E14
T04 - Check: Short to Voltage of Signal (Circuit
Work Order Description	Nominal Value
 Measure voltage between the following terminals: T1 Ignition Coil - Direct Ignition Wiring harness connector (wiring harness side) terminal D & 	ng less than 0.3 V ness
Ground	
Yes:T05	No:E13
T05 - Check: Short to Voltage of Signal (Circuit
Work Order Description	Nominal Value
 Measure voltage between the following terminals: T1 Ignition Coil - Direct Ignition Wiring harness connector (wiring harn side) terminal F & Ground 	ng less than 0.3 V ness
Yes:T06	No:E12
T06 - Check: Short to Voltage of Signal (Circuit
Work Order Description	Nominal Value
Measure voltage between the following terminals:	ng loop than 0.2 V
T1 Ignition Coil - Direct Ignition Wiring harness connector (wiring harn side) terminal G & Ground	ness
T1 Ignition Coil - Direct Ignition Wiring harness connector (wiring harn side) terminal G & Ground Yes:T07	ness than 0.5 V
T1 Ignition Coil - Direct Ignition Wiring harness connector (wiring harn side) terminal G & Ground Yes:T07 T07 - Check: Short to Ground of Signal (ness than 0.3 V ness No:E11 Circuit
T1 Ignition Coil - Direct Ignition Wiring harness connector (wiring harness side) terminal G & Ground Yes:T07 T07 - Check: Short to Ground of Signal (Work Order Description	ness inan 0.3 v ness No:E11 Circuit Nominal Value
Ground	
--	-----------------------
Yes:T08	No:E10
T08 - Check: Short to Ground of Signal Circuit	
Work Order Description	Nominal Value
 Measure resistance between the following terminals: T1 Ignition Coil - Direct Ignition Wiring harness connector (wiring harness side) terminal F & Ground 	greater than 500 kOhm
Yes:T09	No:E09
T09 - Check: Short to Ground of Signal Circuit	
Work Order Description	Nominal Value
 Measure resistance between the following terminals: T1 Ignition Coil - Direct Ignition Wiring harness connector (wiring harness side) terminal D & Ground 	greater than 500 kOhm
Yes:T10	No:E08
T10 - Check: Short to Ground of Signal Circuit	
Work Order Description	Nominal Value
 Measure resistance between the following terminals: T1 Ignition Coil - Direct Ignition Wiring harness connector (wiring harness side) terminal B & Ground 	greater than 500 kOhm
Yes:T11	NO:EU/
Yes:T11 T11 - Check: Interruption of Signal Circuit	NO:EU7
Yes:T11 T11 - Check: Interruption of Signal Circuit Work Order Description	No:E07

& A4 Control Unit - Multec Wiring harness connector (wiring har side) terminal 27 (X22)	rness	
Yes:T12	,	No:E06
T12 - Check: Interruption of Signal Circu	uit	
Work Order Description		Nominal Value
 Measure resistance between the follo terminals: T1 Ignition Coil - Direct Ignition Wiring harness connector (wiring har side) terminal D & 	owing mess	less than 5 Ohm
A4 Control Unit - Multec Wiring harness connector (wiring har side) terminal 17 (X22)	rness	
Yes:T13		No:E05
T13 - Check: Interruption of Signal Circu	uit	
Work Order Description		Nominal Value
 Measure resistance between the follo terminals: T1 Ignition Coil - Direct Ignition Wiring harness connector (wiring har side) terminal F & A4 Control Unit - Multec Wiring harness connector (wiring har side) terminal 54 (X22) 	owing mess mess	less than 5 Ohm
Yes:T14		No:E04
T14 - Check: Interruption of Signal Circu	uit	
Work Order Description		Nominal Value
 Measure resistance between the follo terminals: T1 Ignition Coil - Direct Ignition Wiring harness connector (wiring har side) terminal G & A4 Control Unit - Multec Wiring harness connector (wiring har side) terminal 56 (X22) 	owing mess mess	less than 5 Ohm
Yes:T15		No:E03

T15 - Check: Component

Work Order Description	Nominal Value
 Check the following component for proper operation: Engine-compression Fuel pressure Fuel pipes and fuel filter Plugging, leakage, air or water in fuel system Spark plugs Spark plug connectors Check intake system/charge air hoses for leaks (secondary air, porosity and blockages) Tightness of the line connections Check vacuum hoses for splits, kinks, leak and proper connections. Perform visual check of all exhaust related components for completeness, leakage an damage. Check the exhaust system for leakage, installation and the condition of the rubber suspension. 	s Test okay?
Yes:E01	No:E02
E01 - Result: Defective Component	
 Defective component: A4 Control Unit - Multec or T1 Ignition Coil - Direct Ignition 	
Important:	
Reset concerned control unit (engine or immobil tester before replacing. Select immobiliser in the corresponding test in the menu ADDITIONAL FL control units are never reset and replaced at the	ser control unit) with diagnostic diagnostic tester and call up the JNCTIONS. Ensure that both same time.
E02 - Result: Repair other system	
 Repair the concerned circuit/component. 	
E03 - Result: Interruption	
 Circuit interruption between: A4 Control Unit - Multec Wiring harness connector (wiring harness s & 	ide) terminal 56 (X22)

Circuit interruption between:
A4 Control Unit - Multec
Wiring harness connector (wiring harness side) terminal 54 (X22)
&
T1 Ignition Coil - Direct Ignition
Wiring harness connector (wiring harness side) terminal F
E05 - Result: Interruption
Circuit interruption between:
A4 Control Unit - Multec
Wiring harness connector (wiring harness side) terminal 17 (X22)
X T1 Invition Coll. Direct Invition
Wiring harpose connector (wiring harpose side) terminal D
EU6 - Result: Interruption
Circuit Interruption between: A4 Control Unit Multon
A4 Control Onit - Mullec Wiring harposs connector (wiring harposs side) terminal 27 (X22)
T1 Janition Coil - Direct Janition
Wiring harness connector (wiring harness side) terminal B
E07 - Besult: Short to Ground
Short circuit to around between:
A4 Control Init - Multec
Wiring harness connector (wiring harness side) terminal 27 (X22)
&
T1 Ignition Coil - Direct Ignition
Wiring harness connector (wiring harness side) terminal B
E08 - Result: Short to Ground
 E08 - Result: Short to Ground Short circuit to ground between:
 E08 - Result: Short to Ground Short circuit to ground between: A4 Control Unit - Multec
 E08 - Result: Short to Ground Short circuit to ground between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 17 (X22)
 E08 - Result: Short to Ground Short circuit to ground between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 17 (X22) &
 E08 - Result: Short to Ground Short circuit to ground between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 17 (X22) & T1 Ignition Coil - Direct Ignition
 E08 - Result: Short to Ground Short circuit to ground between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 17 (X22) & T1 Ignition Coil - Direct Ignition Wiring harness connector (wiring harness side) terminal D
 E08 - Result: Short to Ground Short circuit to ground between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 17 (X22) & T1 Ignition Coil - Direct Ignition Wiring harness connector (wiring harness side) terminal D E09 - Result: Short to Ground
 E08 - Result: Short to Ground Short circuit to ground between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 17 (X22) & T1 Ignition Coil - Direct Ignition Wiring harness connector (wiring harness side) terminal D E09 - Result: Short to Ground Short circuit to ground between:
 E08 - Result: Short to Ground Short circuit to ground between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 17 (X22) & T1 Ignition Coil - Direct Ignition Wiring harness connector (wiring harness side) terminal D E09 - Result: Short to Ground Short circuit to ground between: A4 Control Unit - Multec Wiring harness ester (wiring harness side) terminal 54 (X22)
 E08 - Result: Short to Ground Short circuit to ground between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 17 (X22) & T1 Ignition Coil - Direct Ignition Wiring harness connector (wiring harness side) terminal D E09 - Result: Short to Ground Short circuit to ground between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 54 (X22)
 E08 - Result: Short to Ground Short circuit to ground between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 17 (X22) & T1 Ignition Coil - Direct Ignition Wiring harness connector (wiring harness side) terminal D E09 - Result: Short to Ground Short circuit to ground between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 54 (X22) & T1 Ignition Coil - Direct Ignition
 E08 - Result: Short to Ground Short circuit to ground between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 17 (X22) & T1 Ignition Coil - Direct Ignition Wiring harness connector (wiring harness side) terminal D E09 - Result: Short to Ground Short circuit to ground between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 54 (X22) & T1 Ignition Coil - Direct Ignition Wiring harness connector (wiring harness side) terminal 54 (X22)
 E08 - Result: Short to Ground Short circuit to ground between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 17 (X22) & T1 Ignition Coil - Direct Ignition Wiring harness connector (wiring harness side) terminal D E09 - Result: Short to Ground Short circuit to ground between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 54 (X22) & T1 Ignition Coil - Direct Ignition Wiring harness connector (wiring harness side) terminal 54 (X22) T1 Ignition Coil - Direct Ignition Wiring harness connector (wiring harness side) terminal F
 E08 - Result: Short to Ground Short circuit to ground between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 17 (X22) & T1 Ignition Coil - Direct Ignition Wiring harness connector (wiring harness side) terminal D E09 - Result: Short to Ground Short circuit to ground between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 54 (X22) & T1 Ignition Coil - Direct Ignition Wiring harness connector (wiring harness side) terminal 54 (X22) T1 Ignition Coil - Direct Ignition Wiring harness connector (wiring harness side) terminal F
 E08 - Result: Short to Ground Short circuit to ground between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 17 (X22) & T1 Ignition Coil - Direct Ignition Wiring harness connector (wiring harness side) terminal D E09 - Result: Short to Ground Short circuit to ground between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 54 (X22) & T1 Ignition Coil - Direct Ignition Wiring harness connector (wiring harness side) terminal 54 (X22) T1 Ignition Coil - Direct Ignition Wiring harness connector (wiring harness side) terminal F E10 - Result: Short to Ground Short circuit to ground between:

	Wiring harness connector (wiring harness side) terminal 56 (X22)
	& Tillersition Coil Direct Insition
	Wiring harness connector (wiring harness side) terminal G
F11	- Result: Short to Voltage
	Short circuit to voltage between:
•	A4 Control Unit - Multec
	Wiring harness connector (wiring harness side) terminal 56 (X22)
	&
	T1 Ignition Coil - Direct Ignition
F 40	Winng harness connector (winng harness side) terminal G
EIZ	- Result: Short to voltage
•	Short circuit to voltage between:
	Wiring harness connector (wiring harness side) terminal 54 (X22)
	&
	T1 Ignition Coil - Direct Ignition
	Wiring harness connector (wiring harness side) terminal F
E13	- Result: Short to Voltage
•	Short circuit to voltage between:
	A4 Control Unit - Multec
	wiring namess connector (wiring namess side) terminal 17 (X22)
	T1 Ignition Coil - Direct Ignition
	Wiring harness connector (wiring harness side) terminal D
E14	Wiring harness connector (wiring harness side) terminal D - Result: Short to Voltage
E14	Wiring harness connector (wiring harness side) terminal D - Result: Short to Voltage Short circuit to voltage between:
E14 •	 Wiring harness connector (wiring harness side) terminal D - Result: Short to Voltage Short circuit to voltage between: A4 Control Unit - Multec
<u>E14</u> •	Wiring harness connector (wiring harness side) terminal D - Result: Short to Voltage Short circuit to voltage between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 27 (X22)
<u>E14</u> •	 Wiring harness connector (wiring harness side) terminal D - Result: Short to Voltage Short circuit to voltage between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 27 (X22) & T1 Ignition Coil - Direct Ignition
<u>E14</u>	 Wiring harness connector (wiring harness side) terminal D - Result: Short to Voltage Short circuit to voltage between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 27 (X22) & T1 Ignition Coil - Direct Ignition Wiring harness connector (wiring harness side) terminal B
E14 • E15	Wiring harness connector (wiring harness side) terminal D - Result: Short to Voltage Short circuit to voltage between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 27 (X22) & T1 Ignition Coil - Direct Ignition Wiring harness connector (wiring harness side) terminal B - Result: Interruption
E14 • E15	 Wiring harness connector (wiring harness side) terminal D - Result: Short to Voltage Short circuit to voltage between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 27 (X22) & T1 Ignition Coil - Direct Ignition Wiring harness connector (wiring harness side) terminal B - Result: Interruption Circuit interruption between:
E14 • E15 •	 Wiring harness connector (wiring harness side) terminal D - Result: Short to Voltage Short circuit to voltage between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 27 (X22) & T1 Ignition Coil - Direct Ignition Wiring harness connector (wiring harness side) terminal B - Result: Interruption Circuit interruption between: T1 Ignition Coil - Direct Ignition
E14 • E15	 Wiring harness connector (wiring harness side) terminal D - Result: Short to Voltage Short circuit to voltage between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 27 (X22) & T1 Ignition Coil - Direct Ignition Wiring harness connector (wiring harness side) terminal B - Result: Interruption Circuit interruption between: T1 Ignition Coil - Direct Ignition Wiring harness connector (wiring harness side) terminal B
E14 • E15	 Wiring harness connector (wiring harness side) terminal D - Result: Short to Voltage Short circuit to voltage between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 27 (X22) & T1 Ignition Coil - Direct Ignition Wiring harness connector (wiring harness side) terminal B - Result: Interruption Circuit interruption between: T1 Ignition Coil - Direct Ignition Wiring harness connector (wiring harness side) terminal B - Result: Interruption Circuit interruption between: T1 Ignition Coil - Direct Ignition Wiring harness connector (wiring harness side) terminal E &
E14 • E15 •	 Wiring harness connector (wiring harness side) terminal D - Result: Short to Voltage Short circuit to voltage between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 27 (X22) & T1 Ignition Coil - Direct Ignition Wiring harness connector (wiring harness side) terminal B - Result: Interruption Circuit interruption between: T1 Ignition Coil - Direct Ignition Wiring harness connector (wiring harness side) terminal B - Result: Interruption Circuit interruption between: T1 Ignition Coil - Direct Ignition Wiring harness connector (wiring harness side) terminal E & & & Ground
E14 • E15 •	 Wiring harness connector (wiring harness side) terminal D - Result: Short to Voltage Short circuit to voltage between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 27 (X22) & T1 Ignition Coil - Direct Ignition Wiring harness connector (wiring harness side) terminal B - Result: Interruption Circuit interruption between: T1 Ignition Coil - Direct Ignition Wiring harness connector (wiring harness side) terminal B - Result: Interruption Circuit interruption between: T1 Ignition Coil - Direct Ignition Wiring harness connector (wiring harness side) terminal E & Ground - Result: Interruption
E14 • E15 • E16	 Wiring harness connector (wiring harness side) terminal D - Result: Short to Voltage Short circuit to voltage between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 27 (X22) & T1 Ignition Coil - Direct Ignition Wiring harness connector (wiring harness side) terminal B - Result: Interruption Circuit interruption between: T1 Ignition Coil - Direct Ignition Wiring harness connector (wiring harness side) terminal B - Result: Interruption Circuit interruption between: T1 Ignition Coil - Direct Ignition Wiring harness connector (wiring harness side) terminal E & & Ground - Result: Interruption Circuit interruption between:
E14 • E15 •	 Wiring harness connector (wiring harness side) terminal D - Result: Short to Voltage Short circuit to voltage between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 27 (X22) & T1 Ignition Coil - Direct Ignition Wiring harness connector (wiring harness side) terminal B - Result: Interruption Circuit interruption between: T1 Ignition Coil - Direct Ignition Wiring harness connector (wiring harness side) terminal B - Result: Interruption Circuit interruption between: T1 Ignition Coil - Direct Ignition Wiring harness connector (wiring harness side) terminal E & Ground - Result: Interruption Circuit interruption between: K18 Relay - Engine Control Unit
E14 • E15 • E16	Wiring harness connector (wiring harness side) terminal D - Result: Short to Voltage Short circuit to voltage between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 27 (X22) & T1 Ignition Coil - Direct Ignition Wiring harness connector (wiring harness side) terminal B - Result: Interruption Circuit interruption between: T1 Ignition Coil - Direct Ignition Wiring harness connector (wiring harness side) terminal B - Result: Interruption Circuit interruption between: T1 Ignition Coil - Direct Ignition Wiring harness connector (wiring harness side) terminal E & Ground - Result: Interruption Circuit interruption between: K18 Relay - Engine Control Unit Socket connector colour BNPK
E14 • E15 •	Wiring harness connector (wiring harness side) terminal D - Result: Short to Voltage Short circuit to voltage between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 27 (X22) & T1 Ignition Coil - Direct Ignition Wiring harness connector (wiring harness side) terminal 27 (X22) & T1 Ignition Coil - Direct Ignition Wiring harness connector (wiring harness side) terminal B - Result: Interruption Circuit interruption between: T1 Ignition Coil - Direct Ignition Wiring harness connector (wiring harness side) terminal B - Result: Interruption Circuit interruption between: T1 Ignition Coil - Direct Ignition Wiring harness connector (wiring harness side) terminal E & Ground - Result: Interruption between: K18 Relay - Engine Control Unit Socket connector colour BNPK & T1 Wiring O if Direct Prime Direct Prime
E14 • E15 •	Wiring harness connector (wiring harness side) terminal D - Result: Short to Voltage Short circuit to voltage between: A4 Control Unit - Multec Wiring harness connector (wiring harness side) terminal 27 (X22) & T1 Ignition Coil - Direct Ignition Wiring harness connector (wiring harness side) terminal 27 (X22) & T1 Ignition Coil - Direct Ignition Wiring harness connector (wiring harness side) terminal B - Result: Interruption Circuit interruption between: T1 Ignition Coil - Direct Ignition Wiring harness connector (wiring harness side) terminal E & Ground - Result: Interruption Circuit interruption between: K18 Relay - Engine Control Unit Socket connector colour BNPK & T1 Ignition Coil - Direct Ignition Wiring harness connector (wiring harness side) terminal A

Note:

Wiring colours: BK=Black, BN=Brown, BU=I GY=Grey, OG=Orange, PK=Pink, RD=Red, VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark	Blue, GD=Gold, GN=Green, SR=Silver, TQ=Turquoise,
C-27 - Starter Circuit T01 - Check: Component	
Work Order Description	Nominal Value
 Ignition OFF Connect loaded battery parallel to the battery in the vehicle Ignition ON Actuate the following component: S124 Switch - Starter Button 	Does the starter crank?
Yes:T02	No:T13
T02 - Check: Component	
Work Order Description	Nominal Value
 Start engine 	Does the engine start?
Yes:T03	NO:109
Yes:T03 T03 - Check: Wiring Harness	NO:109
Yes:T03 T03 - Check: Wiring Harness Work Order Description	No:109 Nominal Value
Yes:T03 T03 - Check: Wiring Harness Work Order Description Ignition OFF All consumers turned off Charge or replace battery Disconnect wiring harness connector if G1 Battery Terminal 31 Measure current between the following terminals: G1 Battery Wiring harness connector (component terminal 31) & G1 Battery Wiring harness connector (wiring harness connector sciel) terminal 31	No: 109 Nominal Value less than 60 mA irom: side) ess
Yes:T03 T03 - Check: Wiring Harness Work Order Description • Ignition OFF • All consumers turned off • Charge or replace battery • Disconnect wiring harness connector if G1 Battery Terminal 31 • Measure current between the following terminals: G1 Battery Wiring harness connector (component terminal 31) & G1 Battery Wiring harness connector (wiring harnest connector sciel) terminal 31 Note:	No: 109 Nominal Value less than 60 mA irom: side) ess

these tests. Doors and trunk / tailgate must closed, engine compartment lighting must disconnected.	st be be	
Yes:T04		No:E06
T04 - Check: Battery Voltage		
Work Order Description		Nominal Value
 Connect wiring harness connector to G1 Battery Terminal 31 Engine running Turn all electrical consumers ON Increase engine speed to 3000 rpm Measure voltage between the followi terminals: G1 Battery Wiring harness connector (wiring har side) terminal 30 & G1 Battery Wiring harness connector (wiring har side) terminal 31 	rness rness	greater than 12.5 V
Yes:E01		No:T05
T05 - Check: Charging Indicator Lamp C	Circuit	
Work Order Description		Nominal Value
Ignition OFFIgnition ON		Is the following telltale ON? H1.1 Charging Indicator Lamp
Yes:T06		No:T08
T06 - Check: Charging Indicator Lamp C	Circuit	
Work Order Description		Nominal Value
Ignition OFF		<i>i</i>
 Disconnect wining namess connector G2 Alternator Terminal 61 Ignition ON 	r from:	Is the following telltale OFF? H1.1 Charging Indicator Lamp
 Disconnect wining namess connector G2 Alternator Terminal 61 Ignition ON Yes:T07 	r from:	Is the following telltale OFF? H1.1 Charging Indicator Lamp No:E04
 Disconnect wining namess connector G2 Alternator Terminal 61 Ignition ON Yes:T07 T07 - Check: Interruption of Voltage Sup 	r from:	Is the following telltale OFF? H1.1 Charging Indicator Lamp No:E04
Office twining namess connector G2 Alternator Terminal 61 Ignition ON Yes:T07 T07 - Check: Interruption of Voltage Sup Work Order Description	r from: oply Circ	Is the following telltale OFF? H1.1 Charging Indicator Lamp No:E04 cuit Nominal Value

 Ignition OFF Measure voltage between the followi terminals: G2 Alternator Wiring harness connector (wiring har side) terminal B+ & Ground 	ng mess	greater than 11 V
Yes:E02		No:E03
108 - Check: Charging Indicator Lamp C	Fircuit	
Work Order Description		Nominal Value
 Ignition OFF Disconnect wiring harness connector G2 Alternator Connect fused jumper wire to: G2 Alternator Wiring harness connector (wiring har side) terminal D+ & Ground Ignition ON 	r from: mess	Is the following telltale ON? H1.1 Charging Indicator Lamp
Yes:E05		No:E04
T09 - Check: Interruption of Signal Circu	uit	
Work Order Description		Nominal Value
 Start engine Measure voltage between the followiterminals: 	na	greater than 11 V
M1 Starter Wiring harness connector (component terminal 50 & G1 Battery Wiring harness connector (wiring har side) terminal 31	nt side) mess	
M1 Starter Wiring harness connector (component terminal 50 & G1 Battery Wiring harness connector (wiring har side) terminal 31 Yes:T10	nt side) mess	No:E11
M1 Starter Wiring harness connector (component terminal 50 & G1 Battery Wiring harness connector (wiring har side) terminal 31 Yes:T10 T10 - Check: Transition Resistance of V	nt side) ness oltage S	No:E11 Supply Circuit
M1 Starter Wiring harness connector (component terminal 50 & G1 Battery Wiring harness connector (wiring har side) terminal 31 Yes:T10 T10 - Check: Transition Resistance of V Work Order Description	nt side) ness oltage S	No:E11 Supply Circuit Nominal Value

Wiring harness connector (component terminal 30 & G1 Battery Wiring harness connector (wiring har side) terminal 30	nt side) mess		
Yes:T11		No:E10	
T11 - Check: Transition Resistance of G	iround Ci	ircuit	
Work Order Description		Nominal Value	
 Start engine Measure voltage between the followi terminals: M1 Starter Wiring harness connector (componenterminal 31 & G1 Battery Wiring harness connector (wiring harness connector (wiring harness connector (wiring harness)) 	ng nt side) mess	less than 0.75 V	
Yes:T12		No:E09	
112 - Check: Component			
Work Order Description		Nominal Value	
Work Order Description Ignition OFF Check engine mechanic		Nominal Value Test okay?	
Work Order Description Ignition OFF Check engine mechanic Yes:E07		Nominal Value Test okay? No:E08	
Work Order Description Ignition OFF Check engine mechanic Yes:E07 T13 - Check: Interruption of Voltage Sup	oply Circ	Nominal Value Test okay? No:E08 uit	
Work Order Description Ignition OFF Check engine mechanic Yes:E07 T13 - Check: Interruption of Voltage Sup Work Order Description	oply Circ	Nominal Value Test okay? No:E08 uit Nominal Value	
Work Order Description • Ignition OFF • Check engine mechanic Yes:E07 T13 - Check: Interruption of Voltage Sup Work Order Description • Ignition OFF • All consumers turned off • Remove electrical component from s K24 Relay - Starter • Measure voltage between the followi terminals: K24 Relay - Starter • Measure voltage between the followi terminals: K24 Relay - Starter Socket connector colour BN & Ground	oply Circ	Nominal Value Test okay? No:E08 uit Nominal Value greater than 11 V	
Work Order Description • Ignition OFF • Check engine mechanic Yes:E07 T13 - Check: Interruption of Voltage Sup Work Order Description • Ignition OFF • All consumers turned off • Remove electrical component from s K24 Relay - Starter • Measure voltage between the followi terminals: K24 Relay - Starter Socket connector colour BN & Ground	oply Circ	Nominal Value Test okay? No:E08 uit Nominal Value greater than 11 V	

GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark	
Yes:T14	No:E23
T14 - Check: Interruption of Voltage Supply (Circuit
Work Order Description	Nominal Value
 Ignition ON Measure voltage between the following terminals: K24 Relay - Starter Socket connector colour GN & Ground 	greater than 11 V
Note:	
Note:	
Wiring colours: BK=Black, BN=Brown, BU=Blue GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow,	Э,
L=Light, D=Dark	
L=Light, D=Dark Yes:T15	No:E22
L=Light, D=Dark Yes:T15 T15 - Check: Component	No:E22
L=Light, D=Dark Yes:T15 T15 - Check: Component Work Order Description	No:E22 Nominal Value
L=Light, D=Dark Yes:T15 T15 - Check: Component Work Order Description • Ignition OFF • Connect fused jumper wire to: K24 Relay - Starter Socket connector colour BNRD & Battery voltage	No:E22 Nominal Value Does the starter crank?
L=Light, D=Dark Yes:T15 T15 - Check: Component Work Order Description • Ignition OFF • Connect fused jumper wire to: K24 Relay - Starter Socket connector colour BNRD & Battery voltage Note:	No:E22 Nominal Value Does the starter crank?
Yes:T15 T15 - Check: Component Work Order Description • Ignition OFF • Connect fused jumper wire to: K24 Relay - Starter Socket connector colour BNRD & Battery voltage Note: Wiring colours: BK=Black, BN=Brown, BU=Blue GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark	No:E22 Nominal Value Does the starter crank?
L=Light, D=Dark Yes:T15 T15 - Check: Component Work Order Description Ignition OFF Connect fused jumper wire to: K24 Relay - Starter Socket connector colour BNRD & Battery voltage Note: Wiring colours: BK=Black, BN=Brown, BU=Blue GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark Yes:T16	No:E22 No:E22 Noes the starter crank? e, No:E21

Work Order Description	Nominal Value
 Remove fused jumper wire Ignition ON Measure voltage between the followint terminals: K24 Relay - Starter Socket connector colour WHRD & Ground 	less than 0.3 V
Note:	
Wiring colours: BK=Black, BN=Brown, BU GD=Gold, GN=Green, GY=Grey, OG=Ora PK=Pink, RD=Red, SR=Silver, TQ=Turque VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark	=Blue, inge, oise,
Yes:T17	No:E20
T17 - Check: Short to Ground of Signal (Circuit
Work Order Description	Nominal Value
 Ignition OFF Connect test light to: K24 Relay - Starter Socket connector colour WHRD & Battery voltage 	Test light OFF?
Note:	
Wiring colours: BK=Black, BN=Brown, BU GD=Gold, GN=Green, GY=Grey, OG=Ora PK=Pink, RD=Red, SR=Silver, TQ=Turque VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark	=Blue, inge, bise,
Yes:T18	No:E19
T18 - Check: Interruption of Signal Circu	lit
Work Order Description	Nominal Value
Actuate the following component:	Test light ON2
S124 Switch - Starter Button	
• Actuate the following component: S124 Switch - Starter Button Yes:T19	No:T23
• Actuate the following component: S124 Switch - Starter Button Yes:T19 T19 - Check: Short to Voltage of Signal (No:T23 Circuit

Work Order Description	Nominal Value
 Remove test light Disconnect wiring harness connector from: A4 Control Unit - Multec H1 Instrument Ignition ON Measure voltage between the following terminals: K24 Relay - Starter Socket connector colour WHBK & Ground Note: 	less than 0.3 V
Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turguoise,	
VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark	
Yes:T20	No:E16
T20 - Check: Short to Ground of Signal Circuit	
Work Order Description	Nominal Value
 Work Order Description Ignition OFF Measure resistance between the following terminals: K24 Relay - Starter Socket connector colour WHBK & Ground 	Nominal Value greater than 500 kOhm
 Work Order Description Ignition OFF Measure resistance between the following terminals: K24 Relay - Starter Socket connector colour WHBK & Ground Note: 	Nominal Value greater than 500 kOhm
 Work Order Description Ignition OFF Measure resistance between the following terminals: K24 Relay - Starter Socket connector colour WHBK & Ground Note: Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark 	Nominal Value greater than 500 kOhm
 Work Order Description Ignition OFF Measure resistance between the following terminals: K24 Relay - Starter Socket connector colour WHBK & Ground Note: Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark 	Nominal Value greater than 500 kOhm No:E15
 Work Order Description Ignition OFF Measure resistance between the following terminals: K24 Relay - Starter Socket connector colour WHBK & Ground Note: Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark Yes:T21 T21 - Check: Interruption of Signal Circuit 	Nominal Value greater than 500 kOhm No:E15
 Work Order Description Ignition OFF Measure resistance between the following terminals: K24 Relay - Starter Socket connector colour WHBK & Ground Note: Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark Yes:T21 T21 - Check: Interruption of Signal Circuit Work Order Description 	Nominal Value greater than 500 kOhm No:E15 Nominal Value

terminals: K24 Relay - Starter Socket connector colour WHBK & A4 Control Unit - Multec Wiring harness connector (wiring harn side) terminal 9 (X21)	ess	
Note:		
Wiring colours: BK=Black, BN=Brown, BU= GD=Gold, GN=Green, GY=Grey, OG=Oran PK=Pink, RD=Red, SR=Silver, TQ=Turquot VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark	Blue, ige, ise,	
Yes:T22		No:E14
T22 - Check: Component		
Work Order Description		Nominal Value
 Insert electrical component in socket: K24 Relay - Starter Connect wiring harness connector to: A4 Control Unit - Multec Ignition ON Actuate the following component: S124 Switch - Starter Button 		Does the starter crank?
Yes:E12	ň	No:E13
T23 - Check: Interruption of Signal Circui	t	
Work Order Description		Nominal Value
 Disconnect wiring harness connector f S124 Switch - Starter Button Measure voltage between the following terminals: S124 Switch - Starter Button Wiring harness connector (wiring harn side) wiring colour WHRD & Ground 	rom: g ess	greater than 11 V
Note:		
Wiring colours: BK=Black, BN=Brown, BU=	Blue,	

VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark	
Yes:E17	No:E18
E01 - Result: Defective Component	
 Defective component: G1 Battery 	
E02 - Result: Defective Component	
 High transition resistance between: G2 Alternator Wiring harness connector (wiring harn & G1 Battery Wiring harness connector (wiring harn 	ness side) terminal B+ ness side) terminal 30
or	
 Defective component: G2 Alternator 	
E03 - Result: Interruption	
 Circuit interruption between: G2 Alternator Wiring harness connector (wiring harn & G1 Battery Wiring harness connector (wiring harn 	ness side) terminal B+ ness side) terminal 30
Check the following component for pro H1 Instrument	oper operation:
and/or	
 Check the following circuit for proper of Terminal D+ 	operation:
E05 - Result: Defective Component	
Defective component: G2 Alternator	
E06 - Result: Defective Component	
 Stall current of one or more consumer 	rs is too high
Note:	
During fault searching in the wiring harness can be separated at the assigned connector the permissible value after separating a set	s, the sections of the wiring harness ors. When the stall current changes to ection, the fault is located in the

concerning section of the wiring harness.

E07 - Result: Defective Component

 Defective component: 	
M1 Starter	

E08 - Result: Defective Component

Repair the concerned mechanical component

E09 - Result: High Transition Resistance

 High transition resistance between: M1 Starter Wiring harness connector (component side) terminal 31 & G1 Battery

Wiring harness connector (wiring harness side) terminal 31

Note:

Check if all ground connections are clean, tight and installed properly

E10 - Result: High Transition Resistance

 High transition resistance between: M1 Starter Wiring harness connector (component side) terminal 30 & G1 Battery Wiring harness connector (wiring harness side) terminal 30

E11 - Result: Short to Ground/Interruption

 Check the following component for proper operation: S1 Switch - Starter

and/or

 Check the following circuit for proper operation: Terminal 50

E12 - Result: Defective Component

 Defective component: H1 Instrument

E13 - Result: Defective Component

 Defective component: A4 Control Unit - Multec or K24 Relay - Starter

Important:

Reset concerned control unit (engine or immobiliser control unit) with diagnostic tester before replacing. Select immobiliser in the diagnostic tester and call up the corresponding test in the menu ADDITIONAL FUNCTIONS. Ensure that both control units are never reset and replaced at the same time.

E14 - Result: Interruption	
Circuit interruption between:	
K24 Relay - Starter	
a A4 Control Unit - Multec	
Wiring harness connector (wiring harness side) terminal 9 (X21)	
Note:	
Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark	
E15 - Result: Short to Ground	
Short circuit to ground between:	
A4 Control Unit - Multec	
wiring namess connector (wiring namess side) terminal 9 (X21)	
K24 Relay - Starter	
Socket connector colour WHBK	
&	
H1 Instrument	
Wiring harness connector (wiring harness side) terminal A4	
Note:	
Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green,	
GY=Grey, OG=Orange, PK=PINK, RD=Red, SR=SIIVer, TQ=Turquoise,	
I = I ight D = Dark	
F16 - Besult: Short to Voltage	
Short circuit to voltage between:	
A4 Control Unit - Multec	
winng harness connector (winng harness side) terminal 9 (X21)	
K24 Belay - Starter	
Socket connector colour WHBK	
&	
H1 Instrument	
Wiring harness connector (wiring harness side) terminal A4	
Note:	
Wiring colours: RK Block RN Brown RL Blue CD Cold CN Cross	
GY=Grev. OG=Orange. PK=Pink. RD=Red. SR=Silver TO=Turquoise	
VT=Violet, WH=White, YE=Yellow,	
K24 Relay - Starter Socket connector colour WHBK & H1 Instrument Wiring harness connector (wiring harness side) terminal A4 Note: Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise,	

L=Light, D=Dark
E17 - Result: Defective Component
 Circuit interruption between: S124 Switch - Starter Button Wiring harness connector (wiring harness side) wiring colour BK & Ground
or
 Defective component: S124 Switch - Starter Button
Note:
Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark
E18 - Result: Interruption
 Circuit interruption between: K24 Relay - Starter Socket connector colour WHRD & S124 Switch - Starter Button Wiring harness connector (wiring harness side) wiring colour WHRD
Note:
Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark
E19 - Result: Short to Ground
 Short circuit to ground between: K24 Relay - Starter Socket connector colour WHRD & S124 Switch - Starter Button Wiring harness connector (wiring harness side) wiring colour WHRD
or
Defective component: S124 Switch - Starter Button
Note:

Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark

E20 - Result: Short to Voltage

 Short circuit to voltage between: K24 Relay - Starter Socket connector colour WHRD & S124 Switch - Starter Button Wiring harness connector (wiring harness side) wiring colour WHRD

or

 Defective component: S124 Switch - Starter Button

Note:

Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow,

L=Light, D=Dark

E21 - Result: Interruption • Circuit interruption between: K24 Relay - Starter Socket connector colour BNRD & M1 Starter

Wiring harness connector (wiring harness side) terminal 50

or

 Defective component: M1 Starter

Note:

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Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green,
GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise,
VT=Violet, WH=White, YE=Yellow,
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L=Light, D=Dark

E22 - Result: Interruption

 Circuit interruption between: FB7 Fuse Output contact & K24 Relay - Starter Socket connector colour GN

Note:

Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green, GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise, VT=Violet, WH=White, YE=Yellow, L=Light, D=Dark

E23 - Result: Interruption

 Circuit interruption between: FL4 Fuse Output contact & K24 Relay - Starter Socket connector colour BN

Note:

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Wiring colours: BK=Black, BN=Brown, BU=Blue, GD=Gold, GN=Green,
GY=Grey, OG=Orange, PK=Pink, RD=Red, SR=Silver, TQ=Turquoise,
VT=Violet, WH=White, YE=Yellow,
L=Light, D=Dark
```