Checking Procedure

General Information

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

- Airbag

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 and trouble code description are concerned:

  Trouble Code Status:
  Instead of the known PRESENT, NOT PRESENT and INTERMITTENT message, you may read UNKNOWN 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.

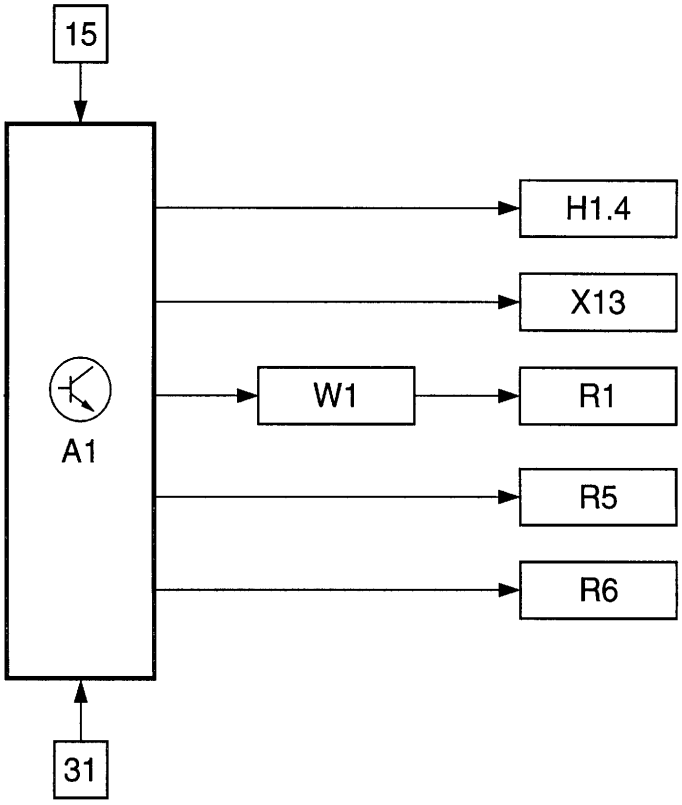
  Trouble Code Text:
  The diagnostic tester displays a trouble code number that is unknown to the diagnostic software, or the trouble code number and fault symptom do not lead to a plausible result when they are being diagnosed. In both cases, the diagnostic tester will display TROUBLE CODE NOT DEFINED.

  A combination of both above described messages is also possible. There are basically two reasons for this: the diagnostic program you are using is outdated, or there is a fault in the electronic control unit.

  All of the above mentioned special cases have one thing in common: The corresponding fault can not be removed by means of a diagnostic tester function.
- **Datalist Parameter**
  Depending on the vehicle/system configuration it is possible that some datalist parameters or test steps, although they are listed in this checking procedure, are not shown on the diagnostic tester display. In that case, these datalist parameters are not valid for this vehicle/system configuration.

Electronic System Picture Information

Block Diagram



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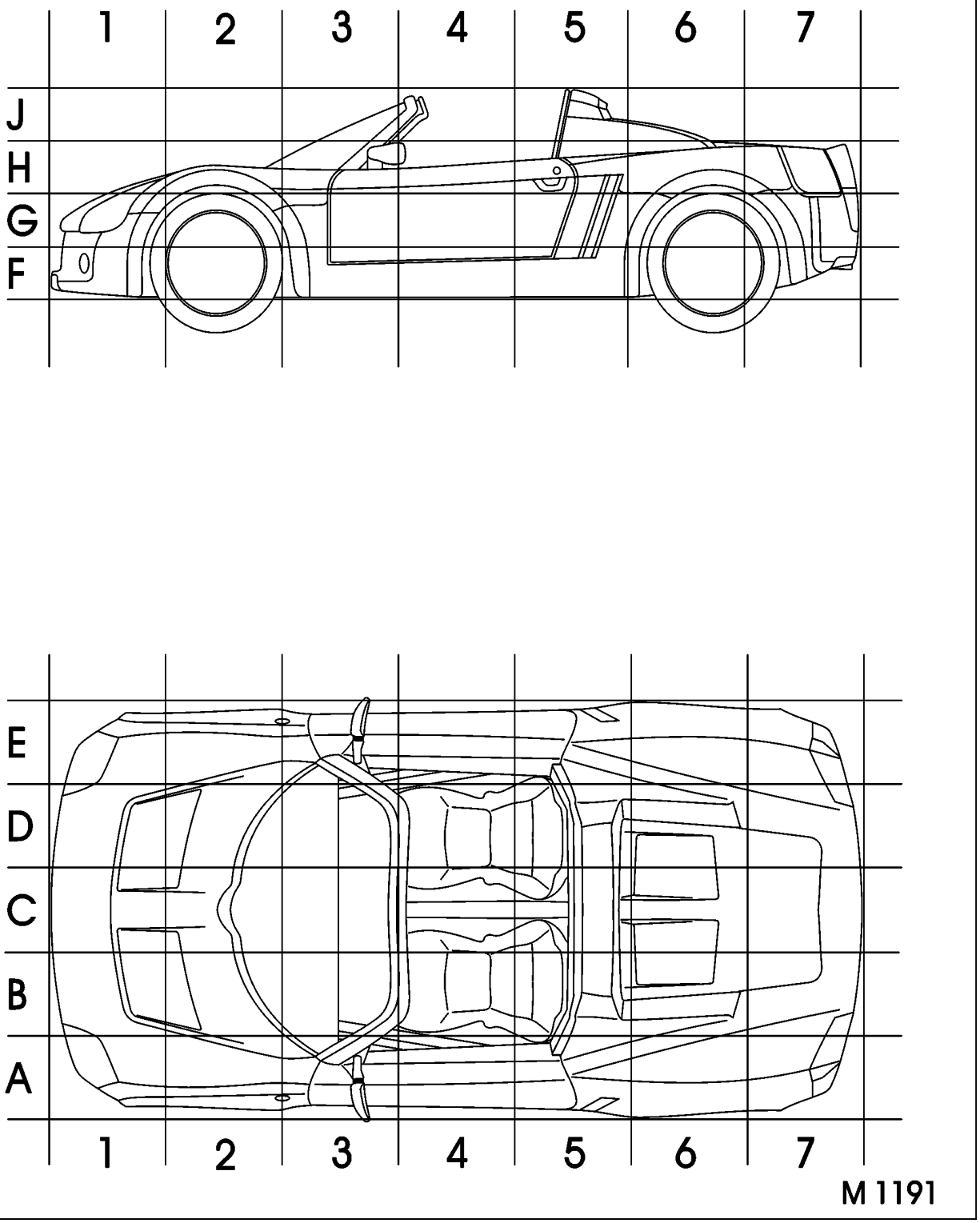
Legend	Legend
15 Ignition ON (terminal 15)	R5 Squib - Belt Pretensioner, Driver
31 Ground (terminal 31)	R6 Squib - Belt Pretensioner, Co-Driver
A1 Control Unit - Airbag	W1 Contact Unit
H1.4 Telltale - Airbag	X13 Diagnostic Link
R1 Squib - Airbag, Driver	

Parts Location



Component	LHD	RHD	Location
A1 Control Unit - Airbag	C3H	C3H	behind instrument panel
A2 Control Unit - Anti Lock Brake System	B2H	D2H	at ABS modulator
A4 Control Unit - Multec	D6H	D6H	at engine

A5 Control Unit - Motronic	D6H	D6H	at engine
A13 Control Unit - Anti Theft Warning Unit	D3H	B3H	behind instrument panel above foot compartment, front passenger side
A14 Radio	D3G	B3G	instrument panel
A17 Control Unit - Immobiliser	B3G	D3G	under steering-column covering
G1 Battery	D2G	B2G	Body, front
G2 Alternator	D6G	D6G	at engine
H1 Instrument	B3H	D3H	instrument panel
K18 Relay - Engine Control Unit	A7H	A7H	relay box, wheelhouse
K24 Relay - Starter	A7H	A7H	relay box, wheelhouse
M1 Starter	C6G	C6G	at engine
R1 Squib - Airbag, Driver	B3H	B3H	steering wheel
R5 Squib - Belt Pretensioner, Driver	A5G	E5G	seat belt lock, driver side
R6 Squib - Belt Pretensioner, Co-Driver	E5G	A5G	seat belt lock, front passenger side
S1 Switch - Starter	B3H	D3H	at steering column
S4 Switch - Parking Lamp	B3H	D3H	instrument panel A - pillar, driver side
W1 Contact Unit	B3H	D3H	steering wheel
X13 Diagnostic Link	D3G	B3G	leg room, front passenger; near centre console

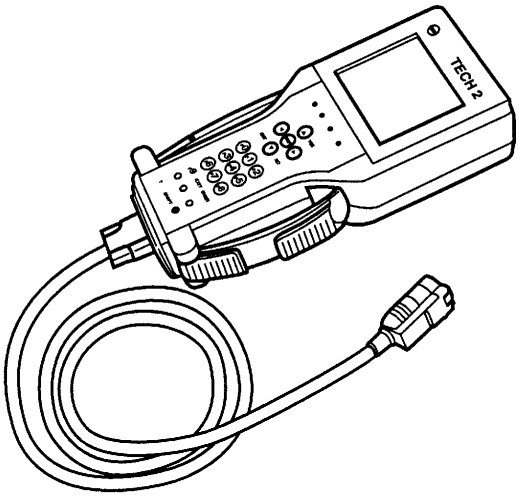
Rated Fuse Current of the Fused Jumper Wire

Wire gauge given in mm^2	Rated fuse current of the fused jumper wire given in A
0,5	5
0,75	7,5
1,5	15

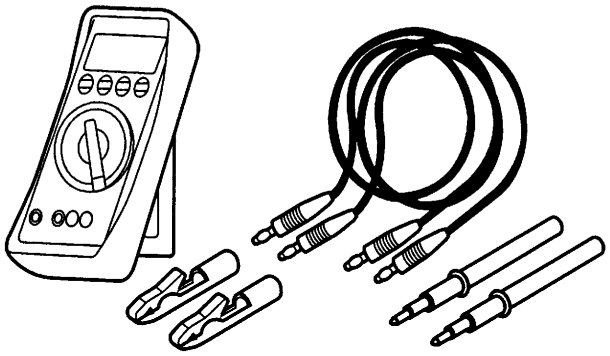
2,5	20
6	30

Standard Diagnostic Checking Equipment

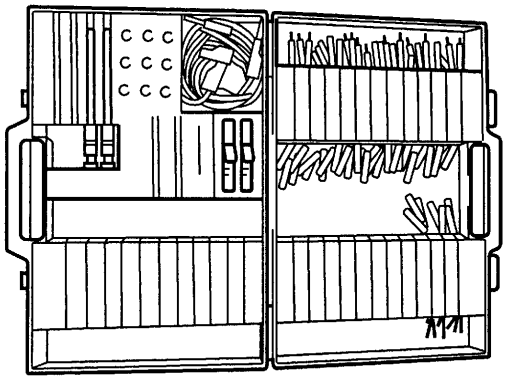
I



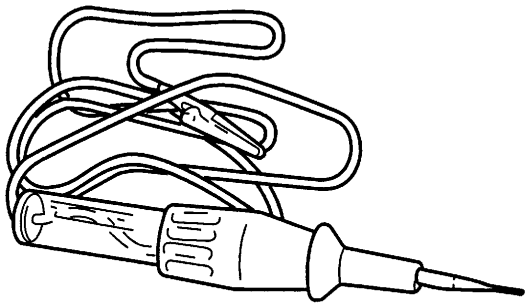
II



III



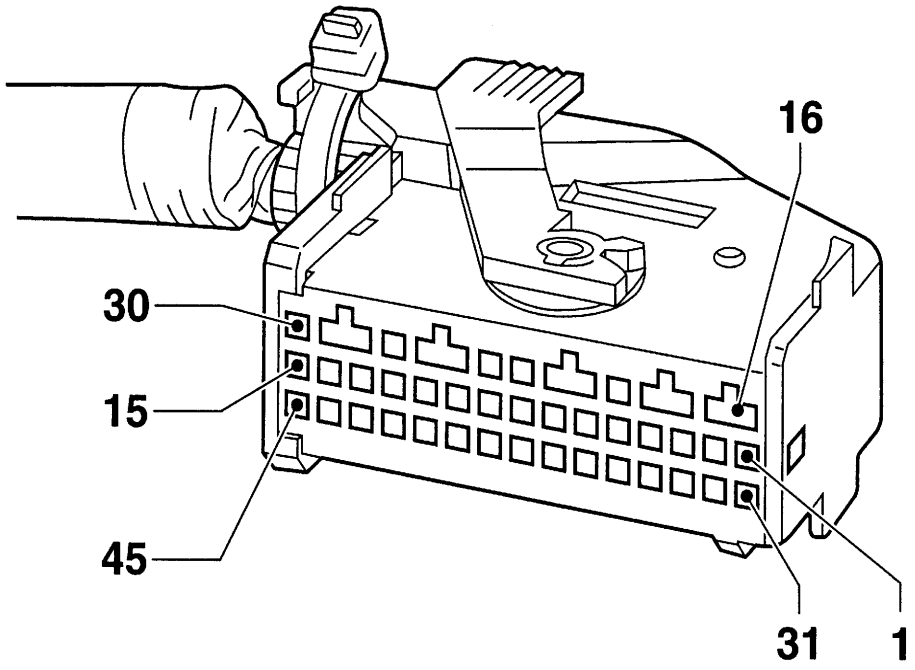
IV



G 2431

No.	Checking Equipment	No.	Checking Equipment
I	TECH 2 Basic Kit and Adapters	III	Electronic Kit I KM-609
II	Multimeter MKM-587-A or Multimeter MKM-874	IV	Test Lamp KM-J-34142-B or Test Lamp KM-602-1

Terminal Assignment Control Unit Wiring Harness Plug A1



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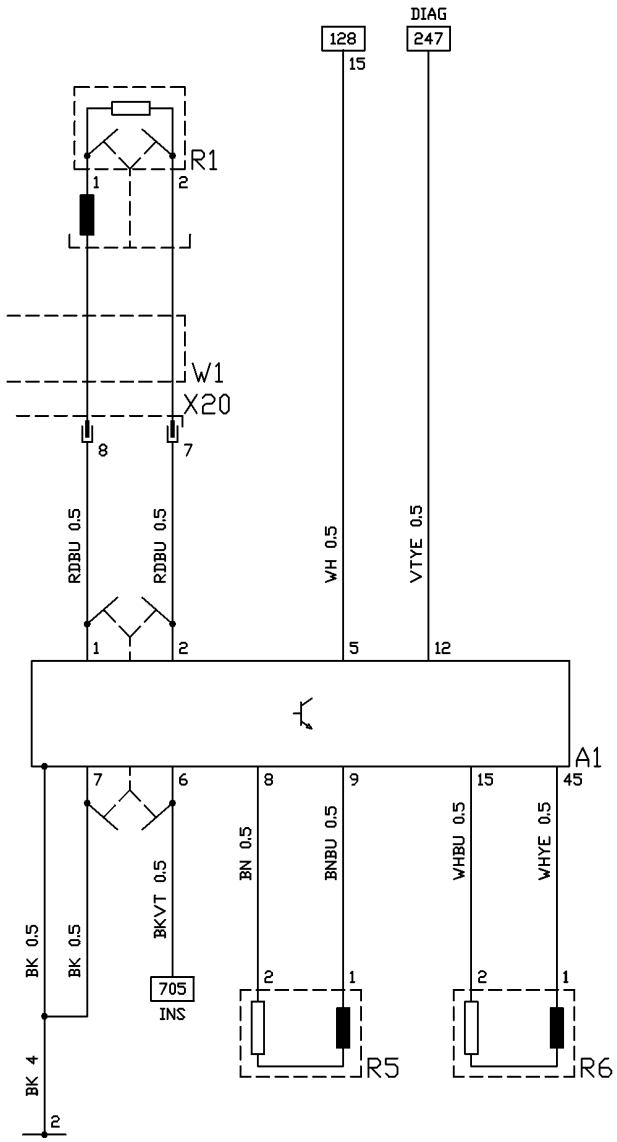
No.	Legend	No.	Legend
1	R1 Squib - Airbag, Driver	12	X13 Diagnostic Link
2	R1 Squib - Airbag, Driver	15	R6 Squib - Belt Pretensioner, Co-Driver
5	Switched system voltage (Terminal 15)	45	R6 Squib - Belt Pretensioner, Co-Driver
6	H1.4 Telltale - Airbag	6/7	Short circuit contact breaker of driver airbag squib circuit
7	Ground (terminal 31)		
8	R5 Squib - Belt Pretensioner, Driver		
9	R5 Squib - Belt Pretensioner, Driver		

Wiring Schematic Diagram



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Legend	Legend
15 Ignition ON (terminal 15)	R5 Squib - Belt Pretensioner, Driver
A1 Control Unit - Airbag	R6 Squib - Belt Pretensioner, Co-Driver
R1 Squib - Airbag, Driver	W1 Contact Unit
Abbreviations:	
DIAG = Diagnostic Link	INS = Instrument

A - Diagnostic System Check **T01 - Checking Procedure Validity**	
Work Order Description	**Nominal Value**

Airbag This Checking Procedure is valid for the following vehicles: • Opel Speedster 2001, 2002, 2003 • Vauxhall VX220 2001, 2002, 2003 Production dependent vehicle modifications of other model years are not covered by this Checking Procedure. This might lead to improper diagnosis.	

Yes:T02

T02 - Customer Complaint Validation

Work Order Description	Nominal Value
• Record customer complaint for later use • Verify and validate the recorded customer complaint **Note:** Record the information by using the Protocol-Function of the TIS 2000 Checking Procedure Application.	Is the malfunction reproducible?

Yes:T03	No:T10

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. **Note:** Refer to the operating manual of the system / the vehicle	System okay?

Yes:T04	No:T05

T04 - Inform the Customer

Work Order Description	Nominal Value
• Inform the customer, that the system behaviour is normal respectively how to operate the system correctly.	

Yes:

T05 - Preliminary Diagnostic Check (Visual Inspection)

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 Fuse • Check if all connections and plugs of the concerned system are clean, tight / correctly installed and have no damages. • Check if all ground connections are clean, tight and installed properly • Perform visual check of the concerned electronic system using recorded customer complaint information • 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 - Connect Diagnostic Tester and Establish Communication

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: Refer to Table B-03 Connect Diagnostic Tester and Establish Communication • After successful test/fault repair proceed to the next test step	
Yes:T07	

T07 - Diagnostic Trouble Codes

Work Order Description	Nominal Value
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. • Read and record diagnostic trouble codes including status • Delete trouble codes • The trouble code status PRESENT only exists under certain conditions. • Operate the system in different operating conditions until the trouble code is PRESENT. • If a trouble code with status present is stored: Refer to Table B-01 DIAGNOSTIC TROUBLE CODE • After successful test/fault repair proceed to the next test step **Note:** If a trouble code is set, check for newest Technical Information TI regarding the trouble code before proceeding with the diagnostic procedure.	
Yes:T08	

T08 - System Quick Check

Work Order Description	Nominal Value
If a defect has been found in previous test steps, the following test can be skipped (follow result "YES").	

• Perform the following quick checks: Refer to Table B-02 DATA LIST • After successful test/fault repair proceed to the next test step	
Yes:T09	
Yes:	

T09 - 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.	

T10 - 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 faults can be traced either by using INTERMITTENT/NOT PRESENT trouble codes or the snapshot function of the diagnostic tester in combination with the following tests: • Perform the following evaluation: Refer to Table B-05 Check: Intermittent Faults	

- After successful test/fault repair proceed to the next test step

Yes:T09

Refer to test step :C-04

B-01 - DIAGNOSTIC TROUBLE CODE

31 - Driver Airbag Squib Circuit High Resistance

- Resistance of driver squib circuit is greater than 5.4 Ohm
- Above condition must be fulfilled for at least 1 s .

Effect:

- The system telltale is switched on.

Concerned Terminals:
1,2

Refer to test step :C-04

32 - Driver Airbag Squib Circuit Low Resistance

- Resistance of driver squib circuit is less than 1.5 Ohm
- Above condition must be fulfilled for at least 1 s .

Effect:

- The system telltale is switched on.

Concerned Terminals:
1,2

Refer to test step :C-05

35 - Driver Pretensioner Circuit High Resistance

- Resistance of pretensioner circuit is greater than 4.9 Ohm
- Above condition must be fulfilled for at least 1 s .

Effect:

- The system telltale is switched on.

Concerned Terminals:
8,9

Refer to test step :C-05

36 - Driver Pretensioner Circuit Low Resistance

- Resistance of pretensioner circuit is less than 0.9 Ohm
- Above condition must be fulfilled for at least 1 s .

Effect:

- The system telltale is switched on.

Concerned Terminals:
8,9

Refer to test step :C-06

37 - Passenger Pretensioner Circuit High Resistance

- Resistance of pretensioner circuit is greater than 4.9 Ohm
- Above condition must be fulfilled for at least 1 s .

Effect:

- The system telltale is switched on.

Concerned Terminals:
15,45

Refer to test step :C-06

38 - Passenger Pretensioner Circuit Low Resistance

- Resistance of pretensioner circuit is less than 0.9 Ohm
- Above condition must be fulfilled for at least 1 s .

Effect:

- The system telltale is switched on.

Concerned Terminals:
15,45

4 - Driver Airbag Squib Circuit Malfunction

- Short to voltage/ground in circuit to control unit terminal 1,2
- Above condition must be fulfilled for at least 1 s .

Effect:

- The system telltale is switched on.

Concerned Terminals:
1,2

Refer to test step :C-04

43 - Telltale Signal High

- Short to voltage in circuit to control unit terminal 6
- Above condition must be fulfilled for at least 1 s .

Concerned Terminals:
6

Refer to test step :C-07

44 - Telltale Signal Low or Circuit Open

- Short to ground or interruption in circuit to control unit terminal 6

- Above condition must be fulfilled for at least 1 s .

Concerned Terminals:
6

Refer to test step :C-07

52 - Control Unit (Squib Code) not Programmed

- Squib code not programmed

Effect:

- The system telltale is switched on.

Note:

Trouble code 52 is only present before the control unit is programmed (delivery state). It does not indicate the presence of a fault, but ensures that the system telltale remains activated after the control unit is installed in a vehicle for the first time, and until the control unit has been programmed correctly.

Concerned Terminals:
-

Refer to test step :B-04

53 - Squib Circuit Code Mismatch

- The number of squib circuits recognised by the control unit does not match the programmed squib code.

Effect:

- The system telltale is switched on.

Concerned Terminals:
-

Refer to test step :B-04

55 - Replace Electronic Control Unit (ECU)

- The control unit recognises an internal control unit malfunction

Effect:

- The system telltale is switched on.

Concerned Terminals:
-

Refer to test step :C-02

56 - Electronic Control Unit Not Reusable

- The control unit has activated the pretensioners.
- Trouble code 67 has been deleted twice.

Effect:

- The system telltale is switched on.

Note:

If trouble code 56 is set, the control unit has to be replaced.

Concerned Terminals:
-

Refer to test step :C-02

6 - Driver Pretensioner Circuit Malfunction

- Short to voltage/ground in circuit to control unit terminal 8,9
- Above condition must be fulfilled for at least 1 s .

Effect:

- The system telltale is switched on.

Concerned Terminals:
8,9

Refer to test step :C-05

66 - Driver Airbag Activated

- The control unit has recognised a vehicle crash, which required airbag deployment.
- After trouble code 66 has been entered ("crash record"), trouble codes can no longer be deleted.
  Other trouble codes, which have not yet been recognised, will however still be stored in the control unit as they occur.

Effect:

- The system telltale is switched on.

Note:

Trouble codes can no longer be deleted. The airbag control unit only permits one deployment and must be replaced by a new control unit.

Concerned Terminals:
-

Refer to test step :C-02

67 - Pretensioning Devices Activated

- The control unit has activated the pretensioners.

Effect:

- The system telltale is switched on.

Note:

This trouble code can be deleted twice. Then trouble code 56 will be set.

Concerned Terminals:
-

Refer to test step :C-08

7 - Passenger Pretensioner Circuit Malfunction

- Short to voltage/ground in circuit to control unit terminal 15,45
- Above condition must be fulfilled for at least 1 s .

Effect:

- The system telltale is switched on.

Concerned Terminals:
15,45

Refer to test step :C-06

B-02 - DATA LIST

T01 - Tester Display System Voltage

Work Order Description	Nominal Value
• Ignition ON • Engine OFF • All consumers turned off	11 ... 13.5 V
Concerned Terminals: 5,7	

Yes:T02	No:C-03

T02 - Tester Display System Voltage Status

Work Order Description	Nominal Value
• Ignition ON • Engine OFF • All consumers turned off	Okay
Concerned Terminals: 5,7	

Yes:T03	No:C-03

T03 - Tester Display Driver Airbag Squib Circuit Resistance

Work Order Description	Nominal Value

• Ignition ON • Engine OFF • All consumers turned off	2.5 ... 4.8 Ohm
• Turn steering wheel very slowly to stop in both directions.	2.5 ... 4.8 Ohm
Concerned Terminals: 1,2	

Yes:T04	No:C-04

T04 - Tester Display Driver Pretensioner Circuit Resistance

Work Order Description	Nominal Value
• Ignition ON • Engine OFF • All consumers turned off	1.8 ... 3.4 Ohm
Concerned Terminals: 8,9	

Yes:T05	No:C-05

T05 - Tester Display Passenger Pretensioner Circuit Resistance

Work Order Description	Nominal Value
• Ignition ON • Engine OFF • All consumers turned off	1.8 ... 3.4 Ohm
Concerned Terminals: 15,45	

Yes:T06	No:C-06

T06 - Tester Display Reset Pretensioning Devices After Activation (DTC67)

Work Order Description	Nominal Value
• Ignition ON • Engine OFF • All consumers turned off **Note:** If trouble code 67 has been deleted once or twice, the diagnostic tester shows RESET ONCE or RESET TWICE.	Inactive
Concerned Terminals:	

-	

Yes:T07	No:C-02

T07 - Tester Display Telltale (Check Light)

Work Order Description	Nominal Value
• Ignition ON • Engine OFF • All consumers turned off	On 0V
Concerned Terminals: 6	

Yes:T08	No:C-07

T08 - Tester Display DTC set since

Work Order Description	Nominal Value
• Ignition ON • Engine OFF • All consumers turned off	00:00:00
Concerned Terminals: -	

No:C-08

B-03 - 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 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 **(2001)**2002 **(2002)**2003 **(2003)**	Communication established and selected system recognised?

• Select model: Speedster/VX220 • Select electronic system group: Electronic body system • Select electronic system or engine: Airbag • Diagnostic tester now establishes communication with the selected Electronic System.	

Yes:	No:T02

T02 - Check: Fault Location

Work Order Description	Nominal Value
• 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:T06

T03 - Check: Programming

Work Order Description	Nominal Value
• Is the used diagnostic tester software up to date? **Note:** Refer to information about the current software version in the menu point - TIS 2000 News	

Yes:T04	No:T05

T04 - Control Unit Information

Work Order Description	Nominal Value
• Replace the following component: A1 Control Unit - Airbag	

Yes:T01

T05 - Program Software

Work Order Description	Nominal Value

• Program Software: Download the latest version of diagnostic software into the diagnostic tester.	
Yes:T01	

T06 - Communication Establishment

Work Order Description	**Nominal Value**
• Perform the following test step: Refer to Table C-01 No Communication between Diagnostic Tester and Control Unit • After successful test/fault repair proceed to the next test step	
Yes:T01	

B-04 - Airbag

T01 - Programming

Work Order Description	**Nominal Value**
• Ignition ON Press corresponding key in the system main menu to call up Programming functions, select the desired test and confirm with ENTER . Follow the instructions in the diagnostic tester display. The CURSOR keys can be used to change the squib code selection. • Airbag Configuration • Pretensioner Configuration • Side Airbag Configuration • Seat Occupied Detection • If the following display appears during the test, programming has been completed successfully: **Note:** At the end of the programming, the actually existing Security-Systems are compared with the selected configuration. In case of a contradiction, trouble codes will be set and the programming must be repeated.	Airbag Configuration Programming successful!
Yes:	**No:T02**

T02 - Diagnostic Trouble Codes

Work Order Description	**Nominal Value**

If any of the following trouble codes are stored, perform the related actions. - • 4, 31, 32 Refer to Table C-04 Airbag Driver Circuit - • 6, 35, 36 Refer to Table C-05 Seat Belt Pretensioner Driver Circuit - • 7, 37, 38 Refer to Table C-06 Seat Belt Pretensioner Passenger Circuit - • 43, 44 Refer to Table C-07 Telltale Circuit **Note:** If the selected airbag configuration is correct the trouble codes indicate a defective squib circuit.	

Yes:T03

T03 - Programming

Work Order Description	Nominal Value
• Ignition ON • Press corresponding key in the system main menu to call up Programming functions, select the desired test and confirm with ENTER . Follow the instructions in the diagnostic tester display. • Airbag Configuration • Pretensioner Configuration • Side Airbag Configuration • Seat Occupied Detection • If the following display appears at the end of the test, the test has been completed successfully:	Airbag Configuration Programming successful!

Note: At the end of the programming, the actually existing Security-Systems are compared with the selected configuration. In case of a contradiction, trouble codes will be set and the programming must be repeated.	

Yes:	**No:C-02**

Yes:

B-05 - Check: Intermittent Faults

T01 - Intermittent System Operation

Work Order Description	Nominal Value
The following test steps may or may not be helpful, they are only a proposal. Check Additional Information • Check the newest Technical Information TI for tips regarding the appeared intermittent problems before proceeding with the diagnostic procedure. Preliminary diagnostic check (visual inspection) • Check all sensors, actuators and the wiring harness of the system for corrosion and damages. • Check all wiring and all connectors of this functional group for corrosion and damage. • 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 Diagnostic 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. INTERMITTENT and NOT PRESENT trouble codes are leading to an intermittent	

problem. This trouble codes refer to a related functional group. To find the defective component the following 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.
  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.

Snapshot function of the Diagnostic tester and TIS/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/TIS2000 application to analyse the related datalist 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. After successful test/fault repair proceed to the next test step	

C-01 - No Communication between Diagnostic Tester and Control Unit

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

Work Order Description	Nominal Value
• Disconnect wiring harness connector from: Diagnostic tester • Measure voltage between the following terminals: X13 Diagnostic Link Wiring harness connector (wiring harness side) terminal 16 & Ground	greater than 11 V

Yes:T02	No:T14

T02 - Check: Short to Voltage/Interruption of Ground Circuit

Work Order Description	Nominal Value
• Measure voltage between the following terminals: X13 Diagnostic Link Wiring harness connector (wiring harness side) terminal 16 & X13 Diagnostic Link Wiring harness connector (wiring harness side) terminal 4, 5	greater than 11 V

Yes:T03	No:E13

T03 - Check: Component

Work Order Description	Nominal Value
• Check the following component for proper operation:	Test okay?

Diagnostic tester	
Yes:T04	**No:E12**

T04 - Check: Short to Ground/Interruption of Voltage Supply Circuit

Work Order Description	Nominal Value
• Before working on the pyrotechnical system: Ignition off Disconnect and mask battery negative terminal Wait 1 min until the capacitor in the control unit has discharged. • Disconnect wiring harness connector from: A1 Control Unit - Airbag • Connect battery negative terminal • Ignition ON • Measure voltage between the following terminals: A1 Control Unit - Airbag Wiring harness connector (wiring harness side) terminal 5 & Ground **Note:** To avoid a Power Sounder activation, disconnect ground cable from battery within 15s after switching off ignition.	greater than 11 V
Yes:T05	**No:T09**

T05 - Check: Short to Voltage/Interruption of Ground Circuit

Work Order Description	Nominal Value
• Measure voltage between the following terminals: A1 Control Unit - Airbag Wiring harness connector (wiring harness side) terminal 5 & A1 Control Unit - Airbag Wiring harness connector (wiring harness side) terminal 7	greater than 11 V
Yes:T06	**No:E05**

T06 - Check: Short to Voltage/Ground of Signal Circuit

Work Order Description	Nominal Value
• Ignition OFF • Disconnect wiring harness connector from: A2 Control Unit - Anti Lock Brake System • Disconnect the ground cable from battery and mask the negative terminal. • Connect wiring harness connector to: A1 Control Unit - Airbag • Connect battery negative terminal • Ignition ON • Establish communication with following control unit: A1 Control Unit - Airbag	Communication established?

Yes:E01	No:T07

T07 - Check: Short to Voltage of Signal Circuit

Work Order Description	Nominal Value
• Before working on the pyrotechnical system: Ignition off Disconnect and mask battery negative terminal Wait 1 min until the capacitor in the control unit has discharged. • Disconnect wiring harness connector from: A1 Control Unit - Airbag • Connect battery negative terminal • Ignition ON • Measure voltage between the following terminals: X13 Diagnostic Link Wiring harness connector (wiring harness side) terminal 12 & Ground	less than 0.3 V

Yes:T08	No:E04

T08 - Check: Short to Ground of Signal Circuit

Work Order Description	Nominal Value
• Ignition OFF • Measure resistance between the following terminals: X13 Diagnostic Link Wiring harness connector (wiring harness	greater than 500 kOhm

side) terminal 12 & Ground	

Yes:E02	No:E03

T09 - Check: Short to Ground/Interruption of Voltage Supply Circuit

Work Order Description	Nominal Value
• Remove electrical component from socket: F L1 Fuse • Check the following component for proper operation: F L1 Fuse	Test okay?

Yes:T10	No:T12

T10 - Check: Interruption of Voltage Supply Circuit

Work Order Description	Nominal Value
• Measure voltage between the following terminals: F L1 Fuse Input contact & Ground	greater than 11 V

Yes:T11	No:E08

T11 - Check: Interruption of Voltage Supply Circuit

Work Order Description	Nominal Value
• Ignition OFF • Disconnect wiring harness connector from: S1 Switch - Starter • Insert electrical component in socket: FL1 Fuse • Measure voltage between the following terminals: S1 Switch - Starter Wiring harness connector (wiring harness side) terminal 30 & Ground	greater than 11 V

Yes:E06	No:E07

T12 - Check: Short to Ground of Voltage Supply Circuit

Work Order Description	Nominal Value
• Disconnect wiring harness connector from:	Test okay?

S1 Switch - Starter • Insert new fuse FL1 and then check the fuse for proper operation. • Check the following component for proper operation: Fuse of the fused jumper wire	

Yes:E09	No:T13

T13 - Check: Short to Ground of Voltage Supply Circuit

Work Order Description	Nominal Value
• Connect fused jumper wire to: S1 Switch - Starter Wiring harness connector (wiring harness side) terminal 30 & S1 Switch - Starter Wiring harness connector (wiring harness side) terminal 15 • Check the following component for proper operation: Fuse of the fused jumper wire	Test okay?

Yes:E10	No:E11

T14 - Check: Short to Ground of Voltage Supply Circuit

Work Order Description	Nominal Value
• Remove electrical component from socket: F B8 Fuse • Check the following component for proper operation: F B8 Fuse	Test okay?

Yes:T15	No:T16

T15 - Check: Interruption of Voltage Supply Circuit

Work Order Description	Nominal Value
• Measure voltage between the following terminals: F B8 Fuse Input contact & Ground	greater than 11 V

Yes:E14	No:E15

T16 - Check: Short to Ground of Voltage Supply Circuit

Work Order Description	Nominal Value

• Disconnect wiring harness connector from: A17 Control Unit - Immobiliser • Insert new fuse FB8 and then check the fuse for proper operation. • Disconnect each of the following components/control units consecutively from the wiring harness and repeat the check each time: A13 Control Unit - Anti Theft Warning Unit A5 **(Z 20 LET)**A4 **(Z 22 SE)** Control Unit - Engine H1 Instrument	Test okay?

Yes:E01	**No:E16**

E01 - 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.

Note:

If the defective component is a switching device (e.g. switch or relay) or a fuse, the cause for the fault may be located in the circuit behind that component.
In case of a switching device, the corresponding part of the circuit should be checked for short to ground/voltage before replacing the component.

E02 - Result: Interruption

- Circuit interruption between:
  A1 Control Unit - Airbag
  Wiring harness connector (wiring harness side) terminal 12
  &
  X13 Diagnostic Link
  Wiring harness connector (wiring harness side) terminal 12

E03 - Result: Short to Ground

- Short circuit to ground between:
  X13 Diagnostic Link
  Wiring harness connector (wiring harness side) terminal 12
  &
  A1 Control Unit - Airbag
  Wiring harness connector (wiring harness side) terminal 12
  &

Wiring harness connector terminals of all components (wiring harness side), which were disconnected from the wiring harness during this trouble shooting session

E04 - Result: Short to Voltage

- Short circuit to voltage between:
  X13 Diagnostic Link
  Wiring harness connector (wiring harness side) terminal 12
  &
  A1 Control Unit - Airbag
  Wiring harness connector (wiring harness side) terminal 12
  &
  Wiring harness connector terminals of all components (wiring harness side), which were disconnected from the wiring harness during this trouble shooting session

E05 - Result: Interruption

- Circuit interruption between:
  A1 Control Unit - Airbag
  Wiring harness connector (wiring harness side) terminal 7
  &
  Ground

E06 - Result: Interruption

- Circuit interruption between:
  S1 Switch - Starter
  Wiring harness connector (wiring harness side) terminal 15
  &
  A1 Control Unit - Airbag
  Wiring harness connector (wiring harness side) terminal 5

or

- Defective component:
  S1 Switch - Starter

E07 - Result: Interruption

- Circuit interruption between:
  F L1 Fuse
  Output contact
  &
  S1 Switch - Starter
  Wiring harness connector (wiring harness side) terminal 30

E08 - Result: Interruption

- Circuit interruption between:
  G1 Battery
  Wiring harness connector (wiring harness side) terminal 30
  &
  F L1 Fuse
  Input contact

E09 - Result: Short to Ground

- Short circuit to ground between:
  F L1 Fuse
  Output contact
  &
  S1 Switch - Starter
  Wiring harness connector (wiring harness side) terminal 30

E10 - Result: Defective Component

- Defective component:
  S1 Switch - Starter
  or
  A1 Control Unit - Airbag

or

- The error can also be caused by a short to ground in the following circuits:
  S1 Switch - Starter

E11 - Result: Short to Ground

- Short circuit to ground between:
  S1 Switch ASM - 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, FB20, FB22 **(Z 20 LET)**FB2, FB5, FB6, FB7, FB22 **(Z 22 SE)** Fuse
  Input contact

E12 - Result: Defective Component

- Defective component:
  Diagnostic tester

E13 - Result: Interruption

- Circuit interruption between:
  X13 Diagnostic Link
  Wiring harness connector (wiring harness side) terminal 4, 5
  &
  Ground

E14 - Result: Interruption

- Circuit interruption between:
  F B8 Fuse
  Output contact
  &
  X13 Diagnostic Link
  Wiring harness connector (wiring harness side) terminal 16

E15 - Result: Interruption

- Circuit interruption between:
  F B8 Fuse
  Input contact
  &
  Battery Voltage (Positive Terminal)
  or
  Battery (Negative Terminal)
  &
  Ground

or

- Defective component:
  G1 Battery
  or
  G2 Alternator
  or
  M1 Starter

E16 - Result: Short to Ground

- Short circuit to ground between:
  F B8 Fuse
  Output contact
  &
  X13 Diagnostic Link
  Wiring harness connector (wiring harness side) terminal 16
  &
  Wiring harness connector terminals of all components (wiring harness side), which were disconnected from the wiring harness during this trouble shooting session

C-02 - Control Unit Hard- and Software

E01 - Result: Defective Component

- Defective component:
  A1 Control Unit - Airbag

C-03 - System Voltage Circuit

T01 - Check: Component

Work Order Description	Nominal Value
• Ignition OFF • Disconnect wiring harness connector from: Diagnostic tester • Ignition ON • Engine running • Increase engine speed to 3000 rpm • Measure voltage between the following	13.0 ... 14.5 V

terminals: G1 Battery Wiring harness connector (wiring harness side) terminal 30 & Ground	

Yes:T02	No:E05

T02 - Check: Component

Work Order Description	Nominal Value
• Ignition OFF • All consumers turned off • Measure voltage between the following terminals: G1 Battery Wiring harness connector (wiring harness side) terminal 30 & Ground	greater than 11 V

Yes:T03	No:E04

T03 - Check: Transition Resistance of Voltage Supply Circuit

Work Order Description	Nominal Value
• **Important:** Before working on the pyrotechnical system: Ignition off Disconnect and mask battery negative terminal Wait 1 min until the capacitor in the control unit has discharged. • Disconnect wiring harness connector from: A1 Control Unit - Airbag • Connect battery negative terminal • Ignition ON • Connect test lamp (10 W) and multimeter in parallel and measure voltage between the following terminals: A1 Control Unit - Airbag Wiring harness connector (wiring harness side) terminal 5 & Ground **Note:**	greater than 11 V

To avoid a Power Sounder activation, disconnect ground cable from battery within 15s after switching off ignition.	

Yes:T04	No:E03

T04 - Check: Transition Resistance of Ground Circuit

Work Order Description	Nominal Value
• Connect test lamp (10 W) and multimeter in parallel and measure voltage between the following terminals: A1 Control Unit - Airbag Wiring harness connector (wiring harness side) terminal 7 & Battery voltage	greater than 11 V

Yes:E01	No:E02

E01 - Result: Defective Component

- Defective component:
  A1 Control Unit - Airbag

E02 - Result: High Transition Resistance

- High transition resistance between:
  A1 Control Unit - Airbag
  Wiring harness connector (wiring harness side) terminal 7
  &
  G1 Battery
  Wiring harness connector (wiring harness side) terminal 31

E03 - Result: High Transition Resistance

- High transition resistance between:
  G1 Battery
  Wiring harness connector (wiring harness side) terminal 30
  &
  A1 Control Unit - Airbag
  Wiring harness connector (wiring harness side) terminal 5

E04 - Result: 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 operation:
  Terminal 31
  Terminal 30
  Terminal 15

E05 - Result: Defective Component

- Defective component:
  G2 Alternator

or

- Bad ground connection

C-04 - Airbag Driver Circuit

T01 - Check: Short Circuit in Wiring Harness

Work Order Description	Nominal Value
• **Important:** Before working on the pyrotechnical system: Ignition off Disconnect and mask battery negative terminal Wait 1 min until the capacitor in the control unit has discharged. • Disconnect wiring harness connector from: R1 Squib - Airbag, Driver • Connect battery negative terminal • Ignition ON • Diagnostic Tester Data List Parameter Driver Airbag Squib Circuit Resistance **Note:** To avoid a Power Sounder activation, disconnect ground cable from battery within 15s after switching off ignition.	greater than 6 Ohm

Yes:T02	No:T05

T02 - Check: Interruption in Wiring Harness

Work Order Description	Nominal Value
• Ignition OFF • Connect fused jumper wire to: R1 Squib - Airbag, Driver Wiring harness connector (wiring harness side) terminal 1 &	less than 1 Ohm

R1 Squib - Airbag, Driver Wiring harness connector (wiring harness side) terminal 2 • Ignition ON • Diagnostic Tester Data List Parameter Driver Airbag Squib Circuit Resistance	

Yes:T03	No:E04

T03 - Check: Short to Voltage of Signal Circuit

Work Order Description	Nominal Value
• **Important:** Before working on the pyrotechnical system: Ignition off Disconnect and mask battery negative terminal Wait 1 min until the capacitor in the control unit has discharged. • Disconnect wiring harness connector from: A1 Control Unit - Airbag • Connect battery negative terminal • Ignition ON • Measure voltage between the following terminals: A1 Control Unit - Airbag Wiring harness connector (wiring harness side) terminal 1 & Ground **Note:** Do not remove fused jumper wire	less than 0.3 V

Yes:T04	No:E03

T04 - Check: Short to Ground of Signal Circuit

Work Order Description	Nominal Value
• Ignition OFF • Measure resistance between the following terminals: A1 Control Unit - Airbag Wiring harness connector (wiring harness side) terminal 1 & Ground	greater than 500 kOhm

Note: Do not remove fused jumper wire	
Yes:E01	**No:E02**

T05 - Check: Short Circuit in Wiring Harness

Work Order Description	**Nominal Value**
• **Important:** Before working on the pyrotechnical system: Ignition off Disconnect and mask battery negative terminal Wait 1 min until the capacitor in the control unit has discharged. Switching off the ignition is sufficient before working on the pyrotechnical seat belt pretensioners and removing seats. Refer to Service Manual • Disconnect wiring harness connector from: W1 Contact Unit (Wiring Harness Connector X20) • Connect battery negative terminal • Ignition ON • Diagnostic Tester Data List Parameter Driver Airbag Squib Circuit Resistance	greater than 6 Ohm
Yes:E05	**No:E06**

E01 - Result: Defective Component

- Defective component:
  R1 Squib - Airbag, Driver
  or
  A1 Control Unit - Airbag

E02 - Result: Short to Ground

- Short circuit to ground between:
  A1 Control Unit - Airbag
  Wiring harness connector (wiring harness side) terminal 1
  &
  R1 Squib - Airbag, Driver
  Wiring harness connector (wiring harness side) terminal 1
  or
  A1 Control Unit - Airbag
  Wiring harness connector (wiring harness side) terminal 2
  &
  R1 Squib - Airbag, Driver
  Wiring harness connector (wiring harness side) terminal 2

or

- Defective component:
  W1 Contact Unit

E03 - Result: Short to Voltage

- Short circuit to voltage between:
  A1 Control Unit - Airbag
  Wiring harness connector (wiring harness side) terminal 1
  &
  R1 Squib - Airbag, Driver
  Wiring harness connector (wiring harness side) terminal 1
  or
  A1 Control Unit - Airbag
  Wiring harness connector (wiring harness side) terminal 2
  &
  R1 Squib - Airbag, Driver
  Wiring harness connector (wiring harness side) terminal 2

or

- Defective component:
  W1 Contact Unit

E04 - Result: Interruption

- Circuit interruption between:
  A1 Control Unit - Airbag
  Wiring harness connector (wiring harness side) terminal 1
  &
  R1 Squib - Airbag, Driver
  Wiring harness connector (wiring harness side) terminal 1
  or
  A1 Control Unit - Airbag
  Wiring harness connector (wiring harness side) terminal 2
  &
  R1 Squib - Airbag, Driver
  Wiring harness connector (wiring harness side) terminal 2

or

- Defective component:
  A1 Control Unit - Airbag
  or
  W1 Contact Unit

E05 - Result: Short Circuit in Wiring Harness

- Short circuit in wiring harness between:
  W1 Contact Unit
  Wiring harness connector (wiring harness side) terminal 7
  &

R1 Squib - Airbag, Driver
Wiring harness connector (wiring harness side) terminal 2
and
W1 Contact Unit
Wiring harness connector (wiring harness side) terminal 8
&
R1 Squib - Airbag, Driver
Wiring harness connector (wiring harness side) terminal 1

or

- Defective component:
  W1 Contact Unit

E06 - Result: Short Circuit in Wiring Harness

- Short circuit in wiring harness between:
  A1 Control Unit - Airbag
  Wiring harness connector (wiring harness side) terminal 1
  &
  W1 Contact Unit
  Wiring harness connector (wiring harness side) terminal 7
  and
  W1 Contact Unit
  Wiring harness connector (wiring harness side) terminal 8
  &
  A1 Control Unit - Airbag
  Wiring harness connector (wiring harness side) terminal 2

or

- Defective component:
  A1 Control Unit - Airbag

C-05 - Seat Belt Pretensioner Driver Circuit

T01 - Check: Short Circuit in Wiring Harness

Work Order Description	Nominal Value
• Ignition OFF • Disconnect wiring harness connector from: G1 Battery • Disconnect wiring harness connector from: R5 Squib - Belt Pretensioner, Driver • Connect battery negative terminal • Ignition ON • Diagnostic Tester Data List Parameter Driver Pretensioner Circuit Resistance	greater than 6 Ohm
Yes:T02	**No:E05**

T02 - Check: Interruption in Wiring Harness

Work Order Description	Nominal Value
• Ignition OFF • Connect fused jumper wire to: R5 Squib - Belt Pretensioner, Driver Wiring harness connector (wiring harness side) terminal 1 & R5 Squib - Belt Pretensioner, Driver Wiring harness connector (wiring harness side) terminal 2 • Ignition ON • Diagnostic Tester Data List Parameter Driver Pretensioner Circuit Resistance	less than 1 Ohm

Yes:T03	No:E04

T03 - Check: Short to Voltage of Signal Circuit

Work Order Description	Nominal Value
• **Important:** Before working on the pyrotechnical system: Ignition off Disconnect and mask battery negative terminal Wait 1 min until the capacitor in the control unit has discharged. • Disconnect wiring harness connector from: A1 Control Unit - Airbag • Connect battery negative terminal • Ignition ON • Measure voltage between the following terminals: A1 Control Unit - Airbag Wiring harness connector (wiring harness side) terminal 1 & Ground **Note:** Do not remove fused jumper wire To avoid a Power Sounder activation, disconnect ground cable from battery within 15s after switching off ignition.	less than 0.3 V

Yes:T04	No:E03

T04 - Check: Short to Ground of Signal Circuit

Work Order Description	Nominal Value
• Ignition OFF • Measure resistance between the following terminals: A1 Control Unit - Airbag Wiring harness connector (wiring harness side) terminal 1 & Ground **Note:** Do not remove fused jumper wire	greater than 500 kOhm

Yes:E01	No:E02

E01 - Result: Defective Component

- Defective component:
  R5 Squib - Belt Pretensioner, Driver
  or
  A1 Control Unit - Airbag

E02 - Result: Short to Ground

- Short circuit to ground between:
  A1 Control Unit - Airbag
  Wiring harness connector (wiring harness side) terminal 8
  &
  R5 Squib - Belt Pretensioner, Driver
  Wiring harness connector (wiring harness side) terminal 2
  or
  A1 Control Unit - Airbag
  Wiring harness connector (wiring harness side) terminal 9
  &
  R5 Squib - Belt Pretensioner, Driver
  Wiring harness connector (wiring harness side) terminal 1

E03 - Result: Short to Voltage

- Short circuit to voltage between:
  A1 Control Unit - Airbag
  Wiring harness connector (wiring harness side) terminal 8
  &
  R5 Squib - Belt Pretensioner, Driver
  Wiring harness connector (wiring harness side) terminal 2
  or
  A1 Control Unit - Airbag
  Wiring harness connector (wiring harness side) terminal 9
  &

R5 Squib - Belt Pretensioner, Driver
Wiring harness connector (wiring harness side) terminal 1

E04 - Result: Interruption

- Circuit interruption between:
  A1 Control Unit - Airbag
  Wiring harness connector (wiring harness side) terminal 9
  &
  R5 Squib - Belt Pretensioner, Driver
  Wiring harness connector (wiring harness side) terminal 1
  or
  A1 Control Unit - Airbag
  Wiring harness connector (wiring harness side) terminal 8
  &
  R5 Squib - Belt Pretensioner, Driver
  Wiring harness connector (wiring harness side) terminal 2

or

- Defective component:
  A1 Control Unit - Airbag

E05 - Result: Short Circuit in Wiring Harness

- Short circuit in wiring harness between:
  A1 Control Unit - Airbag
  Wiring harness connector (wiring harness side) terminal 9
  &
  A1 Control Unit - Airbag
  Wiring harness connector (wiring harness side) terminal 8

or

- Defective component:
  A1 Control Unit - Airbag

C-06 - Seat Belt Pretensioner Passenger Circuit

T01 - Check: Short Circuit in Wiring Harness

Work Order Description	Nominal Value
• Ignition OFF • Disconnect wiring harness connector from: G1 Battery • Disconnect wiring harness connector from: R6 Squib - Belt Pretensioner, Co-Driver • Connect battery negative terminal • Ignition ON • Diagnostic Tester Data List Parameter Passenger Pretensioner Circuit Resistance	greater than 6 Ohm

Yes:T02	No:E05

T02 - Check: Interruption in Wiring Harness

Work Order Description	Nominal Value
• Ignition OFF • Connect fused jumper wire to: R6 Squib - Belt Pretensioner, Co-Driver Wiring harness connector (wiring harness side) terminal 1 & R6 Squib - Belt Pretensioner, Co-Driver Wiring harness connector (wiring harness side) terminal 2 • Ignition ON • Diagnostic Tester Data List Parameter Passenger Pretensioner Circuit Resistance	less than 1 Ohm

Yes:T03	No:E04

T03 - Check: Short to Voltage of Signal Circuit

Work Order Description	Nominal Value
• **Important:** Before working on the pyrotechnical system: Ignition off Disconnect and mask battery negative terminal Wait 1 min until the capacitor in the control unit has discharged. • Disconnect wiring harness connector from: A1 Control Unit - Airbag • Connect battery negative terminal • Ignition ON • Measure voltage between the following terminals: A1 Control Unit - Airbag Wiring harness connector (wiring harness side) terminal 15 & Ground **Note:** Do not remove fused jumper wire To avoid a Power Sounder activation, disconnect ground cable from battery within 15s	less than 0.3 V

after switching off ignition.	

Yes:T04	No:E03

T04 - Check: Short to Ground of Signal Circuit

Work Order Description	Nominal Value
• Ignition OFF • Measure resistance between the following terminals: A1 Control Unit - Airbag Wiring harness connector (wiring harness side) terminal 15 & Ground **Note:** Do not remove fused jumper wire	greater than 500 kOhm

Yes:E01	No:E02

E01 - Result: Defective Component

- Defective component:
  R6 Squib - Belt Pretensioner, Co-Driver
  or
  A1 Control Unit - Airbag

E02 - Result: Short to Ground

- Short circuit to ground between:
  A1 Control Unit - Airbag
  Wiring harness connector (wiring harness side) terminal 15
  &
  R6 Squib - Belt Pretensioner, Co-Driver
  Wiring harness connector (wiring harness side) terminal 2
  or
  A1 Control Unit - Airbag
  Wiring harness connector (wiring harness side) terminal 45
  &
  R6 Squib - Belt Pretensioner, Co-Driver
  Wiring harness connector (wiring harness side) terminal 1

E03 - Result: Short to Voltage

- Short circuit to voltage between:
  A1 Control Unit - Airbag
  Wiring harness connector (wiring harness side) terminal 15
  &
  R6 Squib - Belt Pretensioner, Co-Driver
  Wiring harness connector (wiring harness side) terminal 2
  or
  A1 Control Unit - Airbag

Wiring harness connector (wiring harness side) terminal 45
&
R6 Squib - Belt Pretensioner, Co-Driver
Wiring harness connector (wiring harness side) terminal 1

E04 - Result: Interruption

- Circuit interruption between:
  A1 Control Unit - Airbag
  Wiring harness connector (wiring harness side) terminal 45
  &
  R6 Squib - Belt Pretensioner, Co-Driver
  Wiring harness connector (wiring harness side) terminal 1
  or
  A1 Control Unit - Airbag
  Wiring harness connector (wiring harness side) terminal 15
  &
  R6 Squib - Belt Pretensioner, Co-Driver
  Wiring harness connector (wiring harness side) terminal 2

or

- Defective component:
  A1 Control Unit - Airbag

E05 - Result: Short Circuit in Wiring Harness

- Short circuit in wiring harness between:
  A1 Control Unit - Airbag
  Wiring harness connector (wiring harness side) terminal 45
  &
  A1 Control Unit - Airbag
  Wiring harness connector (wiring harness side) terminal 15

or

- Defective component:
  A1 Control Unit - Airbag

C-07 - Telltale Circuit

T01 - Check: Short to Ground of Voltage Supply Circuit

Work Order Description	Nominal Value
• Ignition ON	Is at least one of the following telltales ON? H1.2 Telltale - Oil Pressure H1.1 Charging Indicator Lamp

Yes:T02	No:T04

T02 - Check: Short to Ground of Signal Circuit

Work Order Description	Nominal Value
• **Important:** Before working on the pyrotechnical system: Ignition off Disconnect and mask battery negative terminal Wait 1 min until the capacitor in the control unit has discharged. • Disconnect wiring harness connector from: A1 Control Unit - Airbag • Connect wiring harness connector to: G1 Battery • Ignition ON **Note:** To avoid a Power Sounder activation, disconnect ground cable from battery within 15s after switching off ignition.	System telltale ON

Yes:T03	No:E03

T03 - Check: Short to Ground of Signal Circuit

Work Order Description	Nominal Value
• Open short circuit contacts in wiring harness connector terminals 6/7 with adapter KM- 609-9	System telltale OFF

Yes:E01	No:E02

T04 - Check: Short to Ground/Interruption of Voltage Supply Circuit

Work Order Description	Nominal Value
• Remove electrical component from socket: FB7 Fuse • Check the following component for proper operation: FB7 Fuse	Test okay?

Yes:T05	No:T06

T05 - Check: Interruption of Voltage Supply Circuit

Work Order Description	Nominal Value
• Measure voltage between the following terminals: FB7 Fuse	greater than 11 V

Input contact & Ground	

Yes:E04	No:E05

T06 - Check: Short to Ground of Voltage Supply Circuit

Work Order Description	Nominal Value
• Ignition OFF • Disconnect wiring harness connector from: K24 Relay - Starter • Ignition ON • Insert new fuse FB7 and then check the fuse for proper operation. • Disconnect each of the following components/control units consecutively from the wiring harness and repeat the check each time: S4 Switch - Parking Lamp S2 Switch Unit - Light A14 Radio A17 Control Unit - Immobiliser A5 **(Z 20 LET)**A4 **(Z 22 SE)** Control Unit - Engine H1 Instrument	Test okay?

Yes:E06	No:E07

E01 - Result: Defective Component

- Defective component:
  A1 Control Unit - Airbag

E02 - Result: Short to Ground

- Short circuit to ground between:
  H1 Instrument
  Wiring harness connector (wiring harness side) terminal B4
  &
  A1 Control Unit - Airbag
  Wiring harness connector (wiring harness side) terminal 6

E03 - Result: Short to Voltage/Interruption

- Short circuit to voltage/interruption of circuit between:
  H1 Instrument
  Wiring harness connector (wiring harness side) terminal B4
  &
  A1 Control Unit - Airbag
  Wiring harness connector (wiring harness side) terminal 6

or

- Defective component:
  H1 Instrument

E04 - Result: Interruption

- Circuit interruption between:
  FB7 Fuse
  Output contact
  &
  H1 Instrument
  Wiring harness connector (wiring harness side) terminal A3

or

- Defective component:
  H1 Instrument

E05 - Result: Interruption

- Circuit interruption between:
  S1 Switch - Starter
  Wiring harness connector (wiring harness side) terminal 15
  &
  FB7 Fuse
  Input contact

E06 - 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.

Note:

If the defective component is a switching device (e.g. switch or relay) or a fuse, the cause for the fault may be located in the circuit behind that component.
In case of a switching device, the corresponding part of the circuit should be checked for short to ground/voltage before replacing the component.

E07 - Result: Short to Ground

- Short circuit to ground between:
  FB7 Fuse
  Output contact
  &
  H1 Instrument
  Wiring harness connector (wiring harness side) terminal A3
  &

Wiring harness connector terminals of all components (wiring harness side), which were disconnected from the wiring harness during this trouble shooting session

or

- Defective component:
  H1 Instrument

C-08 - System Status Information

T01 - Check: Diagnostic Trouble Code stored

Work Order Description	Nominal Value
Is the following Diagnostic Trouble Code stored? 67 Pretensioning Devices Activated	

Yes:E01	No:T02

T02 - Check: Diagnostic Trouble Code stored

Work Order Description	Nominal Value
Is the following Diagnostic Trouble Code stored? 52 Control Unit (Squib Code) not Programmed 53 Squib Circuit Code Mismatch	

Yes:E02	No:E03

E01 - Control Unit Information

This trouble code can be deleted twice. Then trouble code 56 will be set.

E02 - Control Unit Information

- This trouble code refers to a critical system malfunction and is treated in the A test level of the checking procedure.
  Please go to the A test level to continue the fault isolation procedure.

To prevent this in the future, do not start in the trouble code level. It is necessary to follow the checking procedure structure from the A test level.

E03 - Result: Test okay

- This parameter is used for information only. The time is set back to the value 00:00:00 simultaneously with "clear diagnostic trouble codes".