TWINGO

8 Electrical equipment

87F PARKING DISTANCE CONTROL

Vdiag No.: 04 08

V2 **Edition Anglaise**

1. SCOPE OF THIS DOCUMENT

This document presents the fault finding procedure applicable to all computers with the following specifications:

Vehicle(s): **New Twingo** *Function concerned:* **Parking distance control**	*Computer name:* **Parking proximity sensor** *Vdiag No.:* **04 08**

2. PREREQUISITES FOR FAULT FINDING

Documentation type

Fault finding procedures (this manual):
– Assisted fault finding (integrated into the **diagnostic tool**), Dialogys.
Wiring Diagrams:
– Visu-Schéma (CD-ROM), paper.

Type of diagnostic tools

– CLIP + multiplex line sensor

Special tooling required

Special tooling required	
	Multimeter
Elé. 1681	Universal bornier

3. RECAP

To run fault finding on the vehicle computers, switch on the ignition.

Depending on the type of vehicle equipment, proceed as follows:

For vehicles with radio frequency remote control/key,
switch on the ignition with the key.

To cut off the + after ignition feed, proceed as follows:

For vehicles with key/radio frequency remote control,use the key to switch off the ignition.

Faults

Faults are declared as either present or stored (depending on whether they appeared in a certain context and have disappeared since, or whether they remain present but have not been diagnosed within the current context).

The **present** or **stored** status of faults should be taken into consideration when the **diagnostic tool** is used following the + after ignition supply being switched on (without operating the system components).

For a **present fault**, apply the procedure described in the **Interpretation of faults** section.

For a **stored fault**, note the faults displayed and apply the instructions in the **Notes** section.

If the fault is **confirmed** when the instructions in the Notes section are applied, the fault is present. Deal with the fault

If the fault is **not confirmed**, check:
- the electrical lines which correspond to the fault,
- the connectors for these lines (for oxidation, bent pins, etc.),
- the resistance of the component detected as faulty,
- the condition of the wires (melted or split insulation, wear).

Conformity check

The aim of the conformity check is to check data that does not produce a fault on the **diagnostic tool** because the data is inconsistent. Therefore, this stage is used to:
- carry out fault finding on faults that do not have a fault display, and which may correspond to a customer complaint.
- check that the system is operating correctly and that there is no risk of a fault recurring after repairs.

This section gives the fault finding procedures for statuses and parameters and the conditions for checking them.

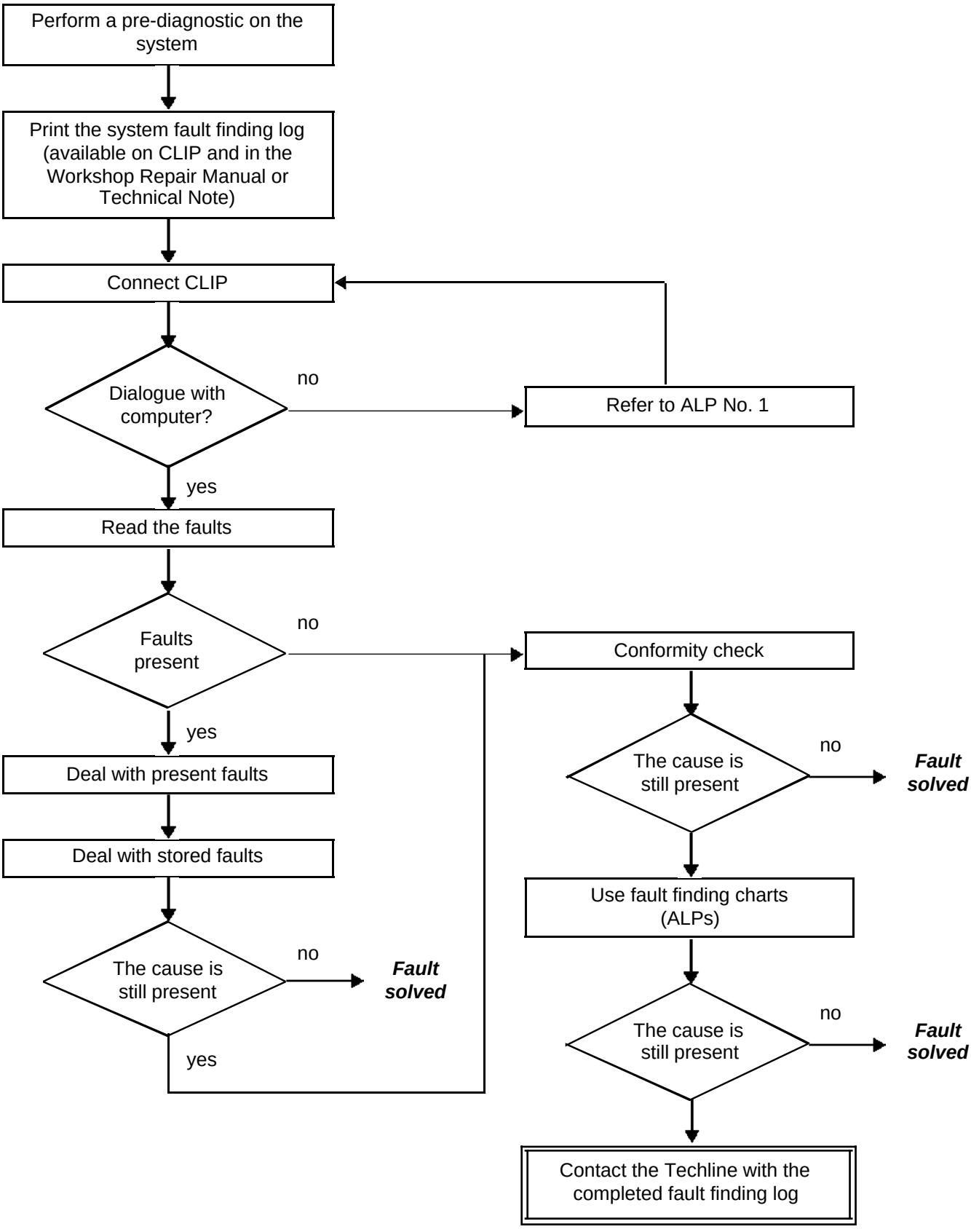
If a status is not behaving normally or a parameter is outside the permitted tolerance values, consult the corresponding fault finding page.

Customer complaints - Fault finding chart

If the test with the **diagnostic tool** is OK but the customer complaint is still present, the fault should be processed by **customer complaints**.

A synopsis of the general procedure to follow is provided on the following page in the form of a flow chart.

4. FAULT FINDING PROCEDURE



4. FAULT FINDING PROCEDURE (continued)

Wiring check

Fault finding problems
Disconnecting the connectors and/or manipulating the wiring harness may temporarily remove the cause of a fault.
Electrical measurements of voltage, resistance and insulation are generally correct, especially if the fault is not present when the analysis is made (stored fault).

Visual inspection
Look for damage under the bonnet and in the passenger compartment.
Carefully check the fuses, insulators and wiring harness routing.
Look for signs of oxidation.

Tactile inspection
While manipulating the wiring harness, use the **diagnostic tool** to note any change in fault status from stored to present.
Make sure that the connectors are properly locked.
Apply light pressure to the connectors.
Twist the wiring harness.
If there is a change in status, try to locate the source of the fault.

Inspection of each component
Disconnect the connectors and check the appearance of the clips and tabs, as well as the crimping (no crimping on the insulating section).
Make sure that the clips and tabs are properly locked in the sockets.
Check that no clips or tabs have been dislodged during connection.
Check the clip contact pressure using an appropriate model of tab.

Resistance check
Check the continuity of entire lines, then section by section.
Look for a short circuit to earth, to **+ 12 V** or to another wire.

If a fault is detected, repair or replace the wiring harness.

5. FAULT FINDING LOG

IMPORTANT

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Any fault on a complex system requires thorough fault finding with the appropriate tools. The FAULT FINDING LOG, which should be completed during the procedure, enables you to keep track of the procedure which is carried out. It is an essential document when consulting the manufacturer.

IT IS THEREFORE MANDATORY TO FILL OUT A FAULT FINDING LOG EACH TIME FAULT FINDING IS CARRIED OUT.

You will always be asked for this log:

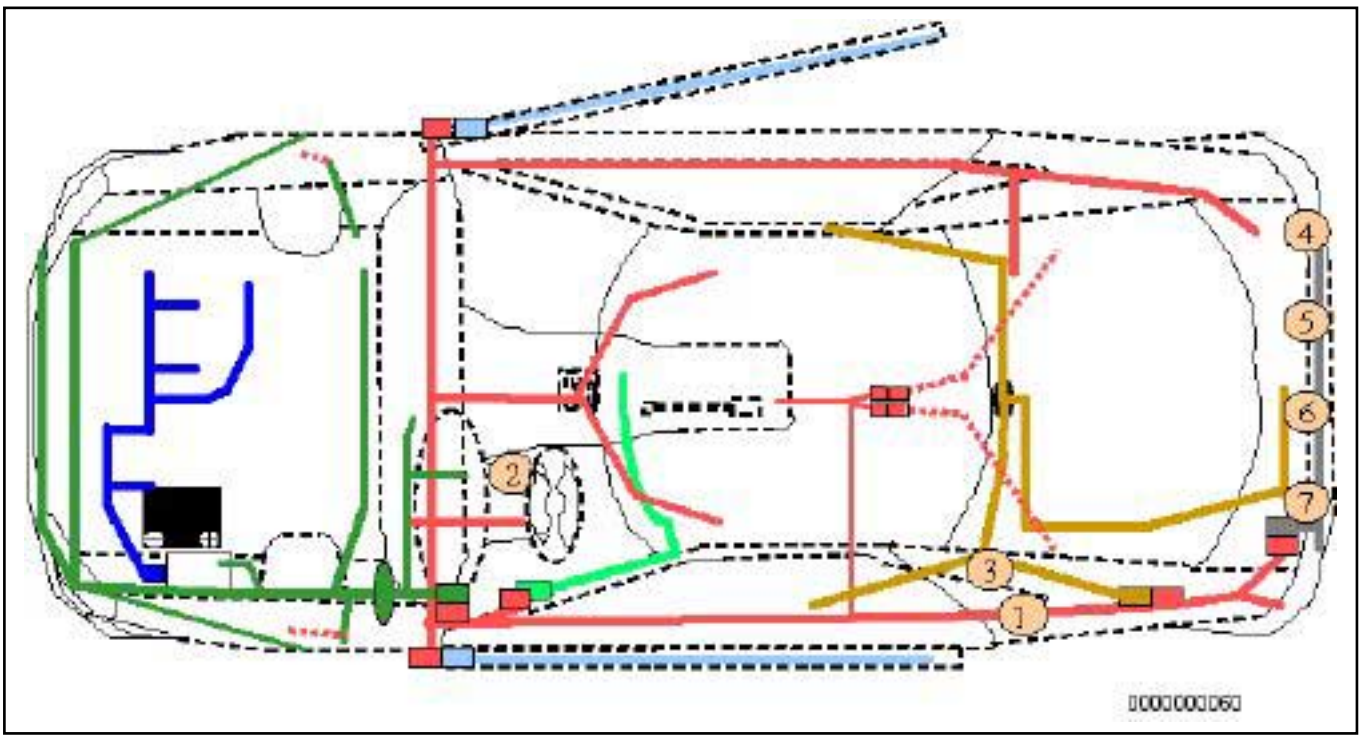
- when requesting technical assistance from Techline,
- for approval requests when replacing parts for which approval is mandatory,
- to be attached to monitored parts for which reimbursement is requested. The log is needed for warranty reimbursement, and enables better analysis of the parts removed.

6. SAFETY ADVICE

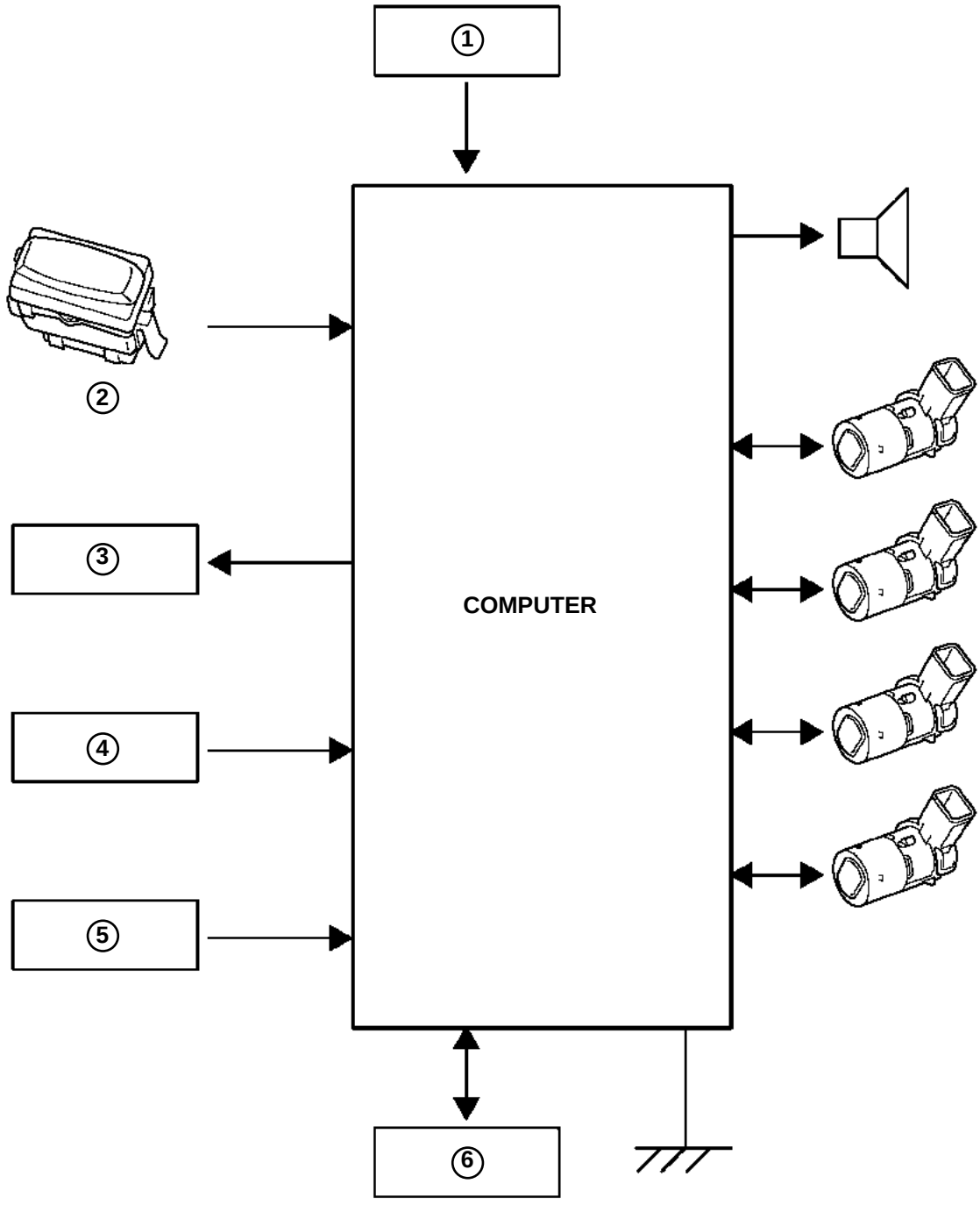
Safety rules must be observed during any work on a component to prevent any damage or injury:
– check the battery voltage to avoid incorrect operation of computer functions,
– use the appropriate tools,

PARKING DISTANCE CONTROL
Fault finding - Introduction

- ENGINE WIRING
- FRONT OF ENGINE & ADDITIONAL HEADLIGHTS WIRING
- DOOR WIRING
- INTERIOR LIGHTS WIRING
- PASSENGER COMPARTMENT WIRING
- REAR BUMPER WIRING
- TAILGATE WIRING



1 Parking distance control computer
2 Parking distance control switch
3 Buzzer
4 Rear right-hand exterior sensor
5 Rear right-hand interior sensor
6 Rear left-hand exterior sensor
7 Rear left-hand interior sensor



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1: + after ignition feed
2: switch
3: switch warning light
4: trailer attachment
5: reversing signal
6: K line

DEACTIVATING THE SYSTEM

– The parking proximity sensor system can be deactivated in two ways:
– **Temporary deactivation**: **briefly pressing (1 second)** the parking distance control switch on the instrument panel deactivates the system (the red warning light on the switch comes on). The function can be switched on again by pressing **briefly** for a second time (the red indicator light on the switch goes out) or by switching the ignition off and back on.

– **Permanent deactivation**: The parking distance control system can be deactivated **for a longer period** by **pressing and holding** (for approximately **3 seconds**) the parking distance control switch on the instrument panel (the red warning light on the switch comes on). The function can be switched on again only by **pressing and holding** the switch again (the red warning light on the switch goes out).

Note:
The **diagnostic tool** statuses can be used to determine the function status (ready, detecting, suspended or deactivated) by using status **ET003 Parking distance control function** (see **Conformity check** or **the relevant status interpretation**).

Fault finding:
In the event of a system fault, the driver will be alerted by a 5-second continuous warning sound with a different pitch to the detection signal.

Description of operation

The system consists of four sensors built into the rear bumper, a computer and a buzzer.
The system assists the driver during parking manoeuvres by warning of any obstacles to the rear of the vehicle.

The sensors and the computer calculate the distance between the vehicle and any obstacles.
The ultrasonic sensors are able to detect different obstacles such as:
– A wall.
– A post.
– A fence.
– A square section tube.
– Runner.

The sensors operate over a distance range from between **26 to 30 cm minimum and 150 cm maximum**. If an obstacle is less than **25 cm** away, the signal received (after coming into contact with the obstacle) will be disrupted by the signal emitted by the sensor, therefore, it is possible that measurements made at this distance will be incorrect

The driver is informed of the distances by a **buzzer**.
The system only works when the vehicle **is in reverse gear**. Activation is indicated by a **brief 0.5 second activation sound**.

The buzzer is activated when the vehicle is **150 cm** from the obstacle. As the distance diminishes, the frequency of the buzzer increases. When the distance reaches **20 - 30 cm**, the buzzer becomes continuous.
– The system can only be **activated** with **+ after ignition feed and reverse gear engaged**.

REPLACING THE PARKING PROXIMITY SENSOR COMPUTER

BEFORE REPLACING ANY COMPUTER IT IS ESSENTIAL THAT YOU CONTACT TECHLINE.

When replacing the computer, apply the following procedure:
– switch off the ignition,
– replace the computer,
– configure the vehicle identification using command **CF005 Vehicle identification** (refer to **Configurations and Programming),**
– if there is a caravan attachment, check that there is no inconsistent warning sound. If there is, adjust the detection distance with configuration **VP003 “Caravan towbar distance”.**
– enter the vehicle identification number with the **diagnostic tool** using command **VP001 “Enter VIN”**,
– check that the system is operating correctly and make sure that there are no faults.

CONFIGURATION AFTER REPLACING THE COMPUTER

After replacing the computer, configure the parking distance control computer with the vehicle type using configuration **CF005 Vehicle identification** (repair mode menu, **diagnostic tool** configuration function).
The configuration adapts the sensors' detection field to the type of body.
Activation of the parking proximity sensor is indicated by a **brief 0.5 second activation sound** (vehicle in reverse gear).

After having configured the computer, check that the configuration has taken effect by reading the configuration **LC005 Vehicle identification**.

SETTING OPTIONS

The volume and the tone of the buzzer can be changed if the customer desires.
Configuration **CF001** "**Buzzer volume**" is used to adjust the **volume** of the buzzer.
There are five selections:
– ZERO,
– LOW,
– MEDIUM,
– HIGH.
– MAXIMUM

Note:
The system must not be in "Detection" mode during this configuration as the buzzer will remain active until the next time the **+ after ignition feed** is cut off.

Configuration function **CF006 Pitch adjustment** is used to adjust the **pitch** of the buzzer.
There are three choices:
– 800 Hz,
– 1000 Hz,
– 2000 Hz (high pitch).

Note:
The system must not be in "Detection" mode during the configuration as the buzzer will remain active until the next time the **+ after ignition feed** is cut off.

After configuring the computer, check that these configurations have been registered correctly using configuration readings **LC001 "Buzzer volume"** and **LC006 "Tone adjustment"**.

Summary of components on which fault finding can be performed by the parking distance control computer (the associated DTC column corresponds to the Design Office codes)

Tool fault	Associated DTC	Diagnostic tool title
DF002	**9001**	Left-hand outer sensor
DF003	**9002**	Left-hand inner sensor
DF004	**9004**	Right-hand outer sensor
DF005	**9003**	Right-hand inner sensor
DF006	**9006**	Buzzer
DF007	**9007**	Sensor feed voltage
DF008	**9005**	Computer fault
DF012	**9010**	Parking proximity sensor switch indicator light

DF002 PRESENT OR STORED	LEFT-HAND OUTER SENSOR CC.1 : Short circuit to + 12 V CO.0 : Open circuit or short circuit to earth 1.DEF: Internal electronic fault

NOTES	**Conditions for applying the fault finding procedure to stored faults:** The fault is declared present following selection of reverse gear if the parking proximity sensor function is **ACTIVE (READY)**: the parking proximity sensor warning light is not lit, see the interpretation of status **ET003 Parking proximity sensor function**.
	Special notes: This fault is indicated by the buzzer (a **5 second** warning sound) and the system shuts down.

CC.1 ***CO.0***	***NOTES***	None

Remove the rear bumper and disconnect the **3-track** connector on the left-hand outer sensor.
Check for possible damage to the wiring harness, check the condition and connection of the **parking distance control computer** and **left-hand outer sensor** connectors (bent, oxidised or broken tabs).
If the connection is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Switch off the ignition and disconnect the computer's **16-track connector**.
Measure the internal resistances of computer component code **12022** between the following connections:

- Connection code **151C**,
- Connection code **151U**.

The resistance must be **215 kΩ ± 10 kΩ**.

- Connection code **151C**,
- Connection code **151V**.

The resistance must be **100 kΩ ± 5 kΩ**.

If the readings do not correspond to the above values or if there is a short circuit in the specified connections, contact Techline.

AFTER REPAIR	Clear the stored faults. Follow the instructions to confirm repair. Deal with any other faults.

DF002 CONTINUED	

Measure the resistance of component **1218** between the following connections:
- Connection code **151C**,
- Connection code **151U**.

If the resistance value is not infinite, replace the left-hand outer sensor.

- Connection code **151C**,
- Connection code **151V**.

If the resistance is not **40 kΩ ± 5 kΩ** (wait a few seconds for the reading to stabilise), replace the left-hand outer sensor.

If the fault is still present, contact the Techline.

With the ignition off, disconnect the parking distance control computer connector and check **the insulation, continuity and the absence of interference resistance** on the following connections:
- Connection code **151U**.
- Connection code **151C**.
- Connection code **151V**.

Between components **1222 and 1218**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, replace the left-hand outer detection sensor.

If the fault is still present, contact the Techline.

1.DEF	***NOTES***	None

Replace the left-hand outer sensor.

If the fault is still present, contact the Techline.

AFTER REPAIR	Clear the stored faults. Follow the instructions to confirm repair. Deal with any other faults.

DF003 PRESENT OR STORED	LEFT-HAND INNER SENSOR CC.1 : Short circuit to + 12 V CO.0 : Open circuit or short circuit to earth 1.DEF: Internal electronic fault

NOTES	**Conditions for applying the fault finding procedure to stored faults:** The fault is declared present following selection of reverse gear if the parking proximity sensor function is **ACTIVE (READY)**: the parking proximity sensor warning light is not lit, see the interpretation of status **ET003 Parking proximity sensor function**.
	Special notes: This fault is indicated by the buzzer (a **5 second** warning sound) and the system shuts down.

CC.1 ***CO.0***	***NOTES***	None

Remove the rear bumper and disconnect the **3-track** connector on the left-hand inner detection sensor.
Check for possible damage to the wiring harness, check the condition and connection of the **parking distance control computer** and **left hand inner sensor** connectors (bent, oxidised or broken tabs).
If the connection is faulty (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, or replace it.

Switch off the ignition and disconnect the computer's **16-track connector**.
Measure the internal resistances of the computer between the following connections:
- Connection code **151M**,
- Connection code **151U**.

The resistance must be **215 kΩ ± 10 kΩ**.

- Connection code **151M**,
- Connection code **151V**.

The resistance must be **100 kΩ ± 5 kΩ**.
If the readings do not correspond to the above values or if there is a short circuit in the specified connections, contact Techline.

Measure the resistance of component **1221** between the following connections:
- Connection code **151M**,
- Connection code **151U**.

If the resistance value is not infinite, replace the left-hand inner sensor.

- Connection code **151M**,
- Connection code **151V**.

If the resistance is not **40 kΩ ± 5 kΩ** (wait a few seconds for the reading to stabilise), replace the left-hand inner sensor.

AFTER REPAIR	Clear the stored faults. Follow the instructions to confirm repair. Deal with any other faults.

DF003 CONTINUED	

With the ignition off, disconnect the parking distance control computer connector and check **the insulation, continuity and the absence of interference resistance** on the following connections:
- Connection code **151U**,
- Connection code **151M**.
- Connection code **151V**.

Between components **1222 and 1221**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, replace the left-hand inner detection sensor.

If the fault is still present, contact the Techline.

1.DEF	***NOTES***	None

Replace the left-hand inner sensor.

If the fault is still present, contact the Techline.

AFTER REPAIR	Clear the stored faults. Follow the instructions to confirm repair. Deal with any other faults.

DF004 PRESENT OR STORED	RIGHT-HAND OUTER SENSOR CC.1 : Short circuit to + 12 V CO.0 : Open circuit or short circuit to earth 1.DEF: Internal electronic fault

NOTES	**Conditions for applying the fault finding procedure to stored faults:** The fault is declared present following selection of reverse gear if the parking proximity sensor function is **ACTIVE (READY)**: the parking proximity sensor warning light is not lit, see the interpretation of status **ET003 Parking proximity sensor function**.
	Special notes: This fault is indicated by the buzzer (a **5 second** warning sound) and the system shuts down.

CC.1 ***CO.0***	***NOTES***	None

Remove the rear bumper and disconnect the **3-track** connector on the right-hand outer detection sensor.
Check for possible damage to the wiring harness, check the condition and connection of the **parking distance control computer** and **right-hand outer sensor** connectors (bent, oxidised or broken tabs).
If the connection is faulty (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, or replace it.

Switch off the ignition and disconnect the computer's **16-track connector**.
Measure the internal resistances of the computer between the following connections:
Connection code **151H**,
- Connection code **151U**.

The resistance should be **215 kΩ ± 10 kΩ**.

- Connection code **151H**,
- Connection code **151V**.

The resistance should be **100 kΩ ± 5 kΩ**.
If the readings do not correspond to the above values or if there is a short circuit in the specified connections, contact Techline.

Measure the resistance of component **1219** between the following connections:
- Connection code **151H**,
- Connection code **151U**.

If the resistance value is not infinite, replace the right-hand outer sensor.

- Connection code **151H**,
- Connection code **151V**.

If the resistance is not **40 kΩ ± 5 kΩ** (wait a few seconds for the reading to stabilise), replace the right-hand outer sensor.

AFTER REPAIR	Clear the stored faults. Follow the instructions to confirm repair. Deal with any other faults.

DF004 CONTINUED	

With the ignition off, disconnect the parking distance control computer connector and check **the insulation, continuity and the absence of interference resistance** on the following connections:
Connection code **151U**,
Connection code **151H**.
Connection code **151V**.
Between components **1222 and 1219**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, replace the right-hand outer detection sensor.

1.DEF	***NOTES***	None

Replace the right-hand outer sensor.

If the fault is still present, contact the Techline.

AFTER REPAIR	Clear the stored faults. Follow the instructions to confirm repair. Deal with any other faults.

DF005 PRESENT OR STORED	RIGHT-HAND INNER SENSOR CC.1 : Short circuit to + 12 V CO.0 : Open circuit or short circuit to earth 1.DEF: Internal electronic fault

NOTES	**Conditions for applying the fault finding procedure to stored faults:** The fault is declared present following selection of reverse gear if the parking proximity sensor function is **ACTIVE (READY)**: the parking proximity sensor warning light is not lit, see the interpretation of status **ET003 Parking proximity sensor function**.
	Special notes: This fault is indicated by the buzzer (a **5 second** warning sound) and the system shuts down.

CC.1 ***CO.0***	***NOTES***	None

Remove the rear bumper and disconnect the **3-track** connector on the right-hand inner detection sensor.
Check for possible damage to the wiring harness, check the condition and connection of the **parking distance control computer** and the **right hand inner sensor** connectors (bent, oxidised or broken tabs).
If the connection is faulty (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, or replace it.

Switch off the ignition and disconnect the computer's **16-track connector**.
Measure the internal resistances of the computer between the following connections:
Connection code **151Q**,
- Connection code **151U**.

The resistance should be **215 kΩ ± 10 kΩ**.

- Connection code **151Q**,
- Connection code **151V**.

The resistance should be **100 kΩ ± 5 kΩ**.
If the readings do not correspond to the above values or if there is a short circuit in the specified connections, contact Techline.

Measure the resistance of component **1220** between the following connections:
- Connection code **151Q**,
- Connection code **151U**.

If the resistance value is not infinite, replace the right-hand inner sensor.

- Connection code **151Q**,
- Connection code **151V**.

If the resistance value is not **40 kΩ ± 5 kΩ** (wait a few seconds for the reading to stabilise), replace the right-hand inner sensor.

AFTER REPAIR	Clear the stored faults. Follow the instructions to confirm repair. Deal with any other faults.

DF005 CONTINUED	

With the ignition off, disconnect the parking distance control computer connector and check **the insulation, continuity and the absence of interference resistance** on the following connections:
Connection code **151U**,
Connection code **151Q**.
Connection code **151V**.
Between components **1222 and 1220**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, replace the right-hand inner detection sensor.

1.DEF	***NOTES***	None

Replace the right-hand inner sensor.

If the fault is still present, contact the Techline.

AFTER REPAIR	Clear the stored faults. Follow the instructions to confirm repair. Deal with any other faults.

DF006 PRESENT OR STORED	BUZZER CC.1 : Short circuit to + 12 V CO.0 : Open circuit or short circuit to earth

NOTES	**Conditions for applying the fault finding procedure to stored faults:** The fault is declared present following selection of reverse gear if the parking proximity sensor function is **ACTIVE (READY)**: the parking proximity sensor warning light is not lit, see the interpretation of status **ET003 Parking proximity sensor function**.
	Special notes: The fault is indicated by the absence of the **1-second** beep normally emitted by the buzzer when reverse gear is selected.

Check for possible damage to the wiring harness, check the condition and connection of the **parking distance control computer** and the **buzzer** connectors (bent, oxidised or broken tabs).
If the connection is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Switch off the ignition and disconnect the **16 track** connector from computer component code **1222**.
Measure the internal resistance of the computer between the following connections:
- Connection code **151R**.
- Connection code **151S**

Between **components 1222 and 1223**.
If the measured value is not **314 Ω ± 10 Ω** or if there is a short circuit on the specified connections, contact Techline.

Switch off the ignition, and disconnect the parking distance control computer to check the **insulation, continuity and the absence of interference resistance** on the following connections:
- Connection code **151R**,
- Connection code **151S**.

Between components **1222 and 1223**.

If the connection or connections are faulty and if there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring or replace it.

Measure the resistance value of component **1223** between the following connections:
Measure the resistance between the following connections:
- Connection code **151R**,
- Connection code **151S**.

Replace the buzzer if its resistance value is not approximately **48 Ω ± 5 Ω**.

If the fault is still present, replace the buzzer.

AFTER REPAIR	Clear the stored faults. Follow the instructions to confirm repair. Deal with any other faults.

DF007 PRESENT OR STORED	SENSOR SUPPLY VOLTAGE CC.0: Short circuit to earth

NOTES	**Conditions for applying the fault finding procedure to stored faults:** The fault reappears present or stored after its has been cleared, the ignition is switched on and off again and reverse gear is selected.
	Special notes: The sensors are directly supplied with **+ 12 V** by the computer.

With the parking proximity sensor computer **16-track** connector **connected** and with the **ignition on**, measure the sensor **power supply** coming from the computer. The voltage should be equal to the battery voltage (**± 0.5 V**) when measuring between connections **151U** (**+ 12 V**) and **151V** (earth).
If there is no **+ 12 V** supply between connections **151U and 151V**, remove the rear bumper to access the sensors.

Switch off the ignition, and disconnect the parking proximity sensor computer to check the **insulation and continuity and the absence of interference resistance** on the following connections:

- Connection code **151U**,
- Connection code **151V**.

Between components **1222 and 1218, 1219, 1220, 1221**.

If the connection or connections are faulty and if there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring or replace it.

If the sensor power supply is correct (no short circuit), reconnect the computer connector and four sensor connectors.
Turn on the ignition and disconnect the sensors, one at a time, to see if any of the sensors causes the power supply to drop. Replace the defective sensor.

If the sensor supply lines are not correct, check the presence and condition of fuse **F6 (15A)**; replace it if necessary. Check for the **+ 12 V** supply on connection **AP3** between components of component **1222** and **1016**. Check for **earth** on connection **MG** between components **1222** and **earth MG**.

If the fault is still present, contact the Techline.

AFTER REPAIR	Clear the stored faults. Follow the instructions to confirm repair. Deal with any other faults.

DF008 PRESENT OR STORED	COMPUTER FAULT 1.DEF: Internal electronic fault

NOTES	**Conditions for applying the fault finding procedure to stored faults:** The fault reappears present or stored after its has been cleared, the ignition is switched on and off again and reverse gear is selected.
	Special notes: If the fault is present and is represented by **1.DEF** or **2.DEF**, the system operates in defect mode (substitute values are used).

1.DEF	***NOTES***	None

After following the instructions, if the fault recurs, switch off the ignition and disconnect the supply fuse from the parking distance control computer **F6 (15A)**.
Reconnect the fuse, switch the ignition back on, and perform a fault reading.

If the fault recurs, check **the connections and condition** of the parking proximity sensor computer connector (no damage to the connections).
If the connection is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

With the ignition switched off, disconnect the parking proximity sensor computer connector to check the **conformity of the feeds** and to check the **insulation, continuity and the absence of interference resistance** on the following connections:
Connection code **AP3**,
Between components **1222 and 1016**.

Connection code **MG**.
Between component **1222 and the rear left-hand earth**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

AFTER REPAIR	Clear the stored faults. Follow the instructions to confirm repair. Deal with any other faults.

DF012 PRESENT OR STORED	PARKING DISTANCE CONTROL SWITCH INDICATOR LIGHT CC.0 : short circuit to earth or open circuit CC.1 : open circuit or short circuit to +12 volts

NOTES	**Conditions for applying the fault finding procedure to stored faults:** A fault is declared present after reverse gear is engaged and the parking distance control deactivation switch is pressed.

Check for fuse **F42 (10A)**, check its condition and replace it if necessary.

Remove the parking distance control switch and check the connection and condition of its connector.
Repair if necessary.

Check for earth on connection **MAN** of the connector of component **1440**.
If the connection is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

With the ignition off, disconnect the parking proximity sensor computer to check the **insulation, continuity and the absence of interference resistance** on the following connection:

- Connection code **151E** between components **1222 and 1440**.

If the connection is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check the presence and condition of fuse **F6** (**15A**); replace it if necessary.
Check the **+ 12 V** supply on connection **LPDAP3** between components **1440** and **1016**.
Check for **earth** on the connection **MG** between components **1222** and the **earth MG**.

If the fault is still present, replace the parking distance control switch.

AFTER REPAIR	Clear the stored faults. Follow the instructions to confirm repair. Deal with any other faults.

NOTES	Only perform this conformity check after a **complete check** with the **diagnostic tool**. **Conditions for applying the fault finding procedure**: ignition on.

MAIN SCREEN

Order	Function	Parameter or Status checked or Action		Display and Notes	Fault finding
1	Parking distance control system status	**ET003:**	Parking distance control function	**READY** (system operating and ready to detect)	For further information or, if there is a fault, consult the interpretation of status **ET003**.
				DETECTING (if the system is detecting)	
				SUSPENDED (if the system is temporarily switched off)	
				OFF (if the system is completely switched off)	
2	Parking proximity sensor deactivation switch.	**ET004:**	Parking distance control switch	**PRESS DETECTED** when the switch is pressed, **RELEASED** when released.	In the event of a fault, consult the interpretation of status **ET004**.
3	Feeds	**PR006:**	Sensor feed voltage	**10.5 V < X <14.4 V**	In the event of a fault, apply the fault finding procedure for **DF007 Sensor supply voltage**.
		PR020:	Computer feed voltage	**10.5 V < X <14.4 V**	In the event of a fault with this parameter, consult the interpretation of fault **DF008 "Computer fault"** If the fault is still present, run **fault finding on the charging circuit**.
4	Reverse gear selection	**ET001:**	Reverse gear engaged	**YES** or **NO**	If there is a fault, refer to the interpretation of status **ET001**.

NOTES	Only perform this conformity check after a thorough check with the **diagnostic tool**. **Conditions for applying the fault finding procedure:** ignition on.

MAIN SCREEN (CONTINUED)

Order	Function	Parameter or Status checked or Action	Display and Notes	Fault finding
5	Buzzer control	**ET002:** Buzzer control	**ACTIVE** when the buzzer sounds. **INACTIVE** if not.	In the event of a fault, consult the interpretation of status **ET002**.
6	Proximity sensors	**PR001:** Left-hand outer sensor distance	**26 cm < X < 150 cm** depending on the distance from the obstacle (“out of range” value: **0 cm**).	In the event of a fault, refer to the interpretation of the parameter **PR001**.
		PR002: Left-hand inner sensor distance	**26 cm < X < 150 cm** depending on the distance from the obstacle (“out of range” value: **0 cm**).	If there is a fault, refer to the interpretation of parameter **PR002**.
		PR003: Right-hand outer sensor distance	**26 cm < X < 150 cm** depending on the distance from the obstacle (“out of range” value: **0 cm**).	In the event of a fault, consult the interpretation of parameter **PR003**.
		PR004: Right-hand inner sensor distance	**26 cm < X < 150 cm** depending on the distance from the obstacle (“out of range” value: **0 cm**).	If there is a fault, refer to the interpretation of parameter **PR004**.
		PR005: Shortest distance calculated	**26 cm < X < 150 cm** depending on the distance from the obstacle (value out of range or less than 30 cm: **0 cm**).	If there is a fault, refer to the interpretation of parameter **PR005**.
7	Caravan towbar	**PR026**: Distance from the caravan attachment	**26 cm < X < 35 cm** This distance allows the threshold point (**0 cm**) from the rear of the vehicle to be redetermined according to the length of the caravan towbar	In the event of a permanent or erratic warning signal, check that no components are disrupting the measurement (sticker, mud, snow on the rear bumper, etc.) then increase the distance of the caravan towbar **cm** by **cm**, using configuration **VP003 “Caravan towbar distance”**.

Tool status	Diagnostic tool title
ET001	Reverse gear engaged
ET002	Buzzer control
ET003	Parking distance control function
ET004	Parking distance control switch

ET001	REVERSE GEAR ENGAGED

NOTES	**Special note:** Only carry out the checks if the YES and NO statuses are not consistent with the position of the gear lever.

Check that the reversing lights are working properly: they should come on when reverse gear is engaged and go out when shifting out of reverse
Check for the presence and condition of fuse **F6 (15A)**; replace it if necessary. Check for the **+ 12 V** supply on connection **AP3** between components **155** and **1016**.
If the reversing lights fail to function as specified: **With the ignition switched off**, disconnect the parking distance control computer connector to check the **insulation** (against **+ 12 V**), **the continuity and the absence of interference resistance** on the following connection: Connection code **H66P** between components **1222 and 172**. Connection code **H66P** between components **1222 and 173**. If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.
Check that the reverse gear switch is operating correctly.
If the fault is still present, replace the reverse gear switch.
If the lights come on and the connections are correct, contact the Techline.
If the fault is still present, contact Techline.

AFTER REPAIR	Repeat the conformity check from the start.

ET002	BUZZER CONTROL

NOTES	There must be no present or stored faults.

ET002 remains INACTIVE	Check that the parking distance control system is activated using status **ET003 "Parking distance control" function** (parking distance control switch indicator light off) and check that status **ET001 "Reverse gear engaged"** shows "YES". If the status displays "suspended" or "deactivated", restart the system by pressing for 1 or **3 seconds**, consult the interpretation of status **ET003 "Parking distance control function"**.
	Check, when the vehicle is close to an obstacle (between **26** and **150 cm**), that the distance evaluated corresponds to the distance displayed by the **diagnostic tool** (**PR001** to **PR004**). If the distance is inconsistent or if the distance parameters remain at **0 cm**, consult the interpretation of faults **DF002 "Left-hand outer sensor", DF003 "Left-hand inner sensor", DF004 "Right-hand outer sensor", DF005 "Right-hand inner sensor"**.
ET002 ON but buzzer does not sound	Check that status **ET001 "Reverse gear engaged"** is **"YES"**. Check that the buzzer volume is not at a zero setting (**LC001**: ZERO). If the configured volume is **ZERO**, reconfigure the computer using command **CF001 Buzzer volume**. Select the volume setting preferred by the customer (ZERO, MINIMUM, VERY LOW, LOW, MEDIUM, HIGH, MAXIMUM).
	Switch off the ignition, and disconnect the parking distance control computer to check the **insulation and continuity and the absence of interference resistance** on the following connections:
	Connection code **151R**, Connection code **151S**. Between components **1222 and 1016**. If the connection or connections are faulty and if there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring or replace it.
	Check the condition of the buzzer and that it is operating correctly. Measure the resistance between the buzzer's two tracks. Replace the buzzer if its resistance is not approximately **48 Ω**.
	If the fault is still present, replace the buzzer.

AFTER REPAIR	Repeat the conformity check from the start.

ET003	PARKING PROXIMITY SENSOR FUNCTION

NOTES	**Special notes:** If the parking proximity sensor system is suspended or deactivated, the parking proximity sensor switch indicator light comes on.

This status indicates whether the parking distance control system is on or off:

ET003: READY → This means that, when reversing, the parking distance control detects obstacles and the buzzer sounds (the parking distance control switch indicator light goes out).

ET003: DETECTING → This information is displayed when reverse gear is engaged.
This status indicates that the parking distance control system has detected an obstacle.

ET003: SUSPENDED → This means the parking distance control system is switched off (no detection possible). The suspension is **temporary** because the parking distance control system will come back on after the ignition is switched off and on. **Briefly pressing** the parking distance control switch enables the system to be suspended or reactivated manually.

ET003: DEACTIVATED → This means the parking distance control system is switched off (no detection possible). This suspension is **permanent** (switching the + after ignition off and on again will not reactivate the system). **Pressing and holding** (**3 seconds**) the parking distance control switch enables the system to be deactivated or reactivated.

Check the condition of the fuses **F6 (15A), F42 (10A)**, and replace them if necessary.

If the status does not function as described, check the **+ 12 V** supply on connection **LPD** between components **1440** and **1016**. Check for **earth** on connection **MAN** of the connector of component **1440**.
If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check for a **+ 12 V** supply on connection **AP3**. Check for an **earth** on connection **MG** of the connector of component **1222**.
If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

AFTER REPAIR	Repeat the conformity check from the start.

ET003 **CONTINUED**	

With the ignition off, disconnect the parking proximity sensor switch to check the **insulation** (against the **earth** and **+ 12 V**), **continuity and the absence of interference resistance** on the following connection:
- Connection code **151W**,

Between components **1222 and 1440**.

If the connection is faulty (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, or replace it.

If the connection just checked is correct (no open circuit or short circuit) and there is an **earth** on connection **MAN** of the switch but the fault is still present, check the switch operation with an ohmmeter.
Switch not pressed: **insulation** between connections **151W** and **MAN**.
After pressing the switch: **continuity** between connections **151W** and **MAN**.
Replace the parking proximity sensor switch if it fails to function as specified.

AFTER REPAIR	Repeat the conformity check from the start.

ET004	PARKING DISTANCE CONTROL SWITCH

NOTES	**Special notes:** Only apply the interpretation of this status if the position of the parking distance control switch is not consistent with the information supplied by status (**"Brief press" or "Released"**). There must be no present or stored faults.

Check the condition of fuses **F6** (**15A**), **F42** (**10A**) and replace them if necessary.
Check that there is a **+ 12 V** supply on connection **LPD** between components **1140** and **1016**. Check that there is an earth on connection **MAN** of the connector of component **1440**. If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.
Check for a **+ 12 V** supply on connection **AP3**. Check for **earth** on connection **MG** of the connector of component **1222**. If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.
With the ignition off, disconnect the parking distance control button connector to check the insulation (against **earth** and + **12 V**), **continuity and the absence of interference resistance** on the following connection: Connection code **151W** between components **1222** and **1440**. If the connection is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.
If the connection just checked is OK (no open or short circuit), and there is an **earth** on **track A2** of the switch but the fault is still present, check the switch operation with an ohmmeter. Switch not pressed: **insulation** between connections **151W** and **MAN**. After pressing the switch: **continuity** between connections **151W** and **MAN**. Replace the parking proximity sensor switch if it fails to function as specified.

AFTER REPAIR	Repeat the conformity check from the start.

Tool parameter	Diagnostic tool title
PR001	Left-hand outer sensor distance
PR002	Left-hand inner sensor distance
PR003	Right-hand outer sensor distance
PR004	Right-hand inner sensor distance
PR005	Shortest distance calculated

PR001 **PR002** **PR003** **PR004**	LEFT-HAND OUTER SENSOR DISTANCE LEFT-HAND INNER SENSOR DISTANCE RIGHT-HAND OUTER SENSOR DISTANCE RIGHT-HAND INNER SENSOR DISTANCE

NOTES	**Special notes:** Before searching for a fault with these parameters, make sure no fault is present or stored. If there is a fault, apply the interpretation for the fault detected by the **diagnostic tool**.
	Note: The ultrasonic sensors are very fragile. Therefore, when removing the rear bumper, be careful not to scratch them. If the distance displayed equals 0 cm, there are two possible reasons: 1 no obstacle has been detected (therefore this is the default value) 2 The sensor is malfunctioning, check that there are none of the following faults: DF002 “LEFT-HAND OUTER SENSOR”, DF003 “LEFT-HAND INNER SENSOR”, DF004 “RIGHT-HAND OUTER SENSOR”, DF005 '“RIGHT-HAND INNER SENSOR” and apply the relevant fault finding procedure

Wen the vehicle is close to an obstacle (between **26** and **150 cm**), check that the distance evaluated corresponds to the distance displayed by the **diagnostic tool** (**PR001** to **PR004**).
If the distance is inconsistent when there is an obstacle present, check that there is nothing interfering with the measurement (sticker, mud, snow on the rear bumper, etc.).

If the distances displayed by the sensors are inconsistent, check the condition of the sensor(s), check the condition of the button using status **ET003 “Parking distance control function”** and **ET004 “Parking distance control switch”**. There must be no scratches on the detection component (outer metal section) of the sensors.
Replace the defective sensor.

If the fault is still present, apply the fault finding procedure to the sensor whose distance parameter is incorrect (even if the **diagnostic tool** does not report a fault).

AFTER REPAIR	Repeat the conformity check from the start.

PR005	SHORTEST DISTANCE CALCULATED

NOTES	**Special notes:** Before searching for a fault with this parameter, make sure that no fault is present or stored. If there is a fault, apply the interpretation for the fault detected by the **diagnostic tool**.
	Note: The ultrasonic sensors are very fragile. Therefore, when removing the rear bumper, be careful not to scratch them. **This parameter is an average calculated by the computer when an obstacle is placed between two sensors.** When below **30 cm**, the estimated distance is displayed as **0 cm** (critical detection zone with constant warning sound).

With the vehicle close to an obstacle (between **0** and **150 cm**), check whether the calculated distance is consistent.
If the distance is inconsistent when there is an obstacle present, check that there is nothing interfering with the measurement (sticker, mud, snow on the rear bumper, etc.).

If the distance calculated is still inconsistent or if it is continuously displayed as 255 cm, check the condition of the sensors; the detection part (metallic outer part) must not have any scratches.
Replace the defective sensor.

If the fault is still present, apply the fault finding procedure to the sensor with the inconsistent distance parameter (even if the **diagnostic tool** does not detect a fault), consult interpretation of faults, **DF002 “Left-hand outer sensor”, DF003 “Left-hand inner sensor”, DF004 “Right-hand outer sensor”, DF005 “Right-hand inner sensor”**.

AFTER REPAIR	Repeat the conformity check from the start.

PARKING DISTANCE CONTROL
Fault finding - Customer complaints

NOTES	**Only consult this customer complaint after a complete check with the diagnostic tool.**

NO DIALOGUE WITH THE COMPUTER	**ALP1**
NO BUZZER	**ALP2**
WARNING SOUND EMITTED CONTINUOUSLY (NO OBSTACLE DETECTED)	**ALP3**
BUZZER SOUNDS CONTINUOUSLY (WITH CARAVAN ATTACHMENT)	**ALP4**

ALP1	No dialogue with the computer

NOTES	None

Try the **diagnostic tool** on another vehicle.
Check: – The connection between the **diagnostic tool** and the diagnostic socket (lead in good condition). – The injection, engine and passenger compartment fuses.
Check the condition of fuses **F6** (**15A**) and **F11** (**20A**) and replace them if necessary.
Check that there is a **+ 12 V battery feed** on connection **BP19** of the diagnostic socket. Check that there is an earth on connections **MAM** and **NAM** of the diagnostic socket. If the connection or connections are faulty and if there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring or replace it.
Check for a **+ 12 V** supply on connection **AP3**. Check for **earth** on connection **MG** of the connector of component **1222**. If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.
Switch off the ignition, and disconnect the parking distance control computer to check the **insulation, continuity and the absence of interference resistance** on the following connections: ●Connection code **AP3** between components **1222 and 1016**. ●Connection code **MG** between components **1222 and the MG earth**. ●Connection code **HK** between components **1222 and 225**. ●Connection code **BP19** between components **225 and 1016**. ●Connection code **NAM** between components **225 the earth NAM**. ●Connection code **MAN** between components **225 and earth MAN**. If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.
If the fault is still present, contact Techline.

AFTER REPAIR	Carry out a complete check using the **diagnostic tool**.

ALP2	No buzzer

NOTES	Only investigate this customer complaint after a **full check using the diagnostic tool** (there must be no present or stored faults).

Using the **diagnostic tool** Main Data screen, check that the parking distance control system is on.
The status **ET003 Parking proximity sensor function** must be READY (and the red warning light on the parking proximity sensor switch must be off).

Is status ET003 Parking proximity sensor "READY"?

NO → Turn on the parking proximity sensor by pressing the switch for **1** or **3 seconds** (the red light should go out).
Note:
For more information concerning the activation of the system, consult the interpretation of status **ET003 Parking proximity sensor**.

YES ↓

Using the **diagnostic tool's** Main Data screen, check that reverse gear is selected.
The **ET001 Reverse gear selected** status must be YES.
Also ensure that the reversing lights come on when reverse gear is selected.

Is status ET001 YES?

NO → Apply the interpretation of status **ET001 Reverse gear engaged**.

YES ↓

Using the **diagnostic tool** configuration readings screen, check that the buzzer volume has not been switched off (**LC001 Buzzer volume** should not be ZERO).

Is the LC001 function ZERO

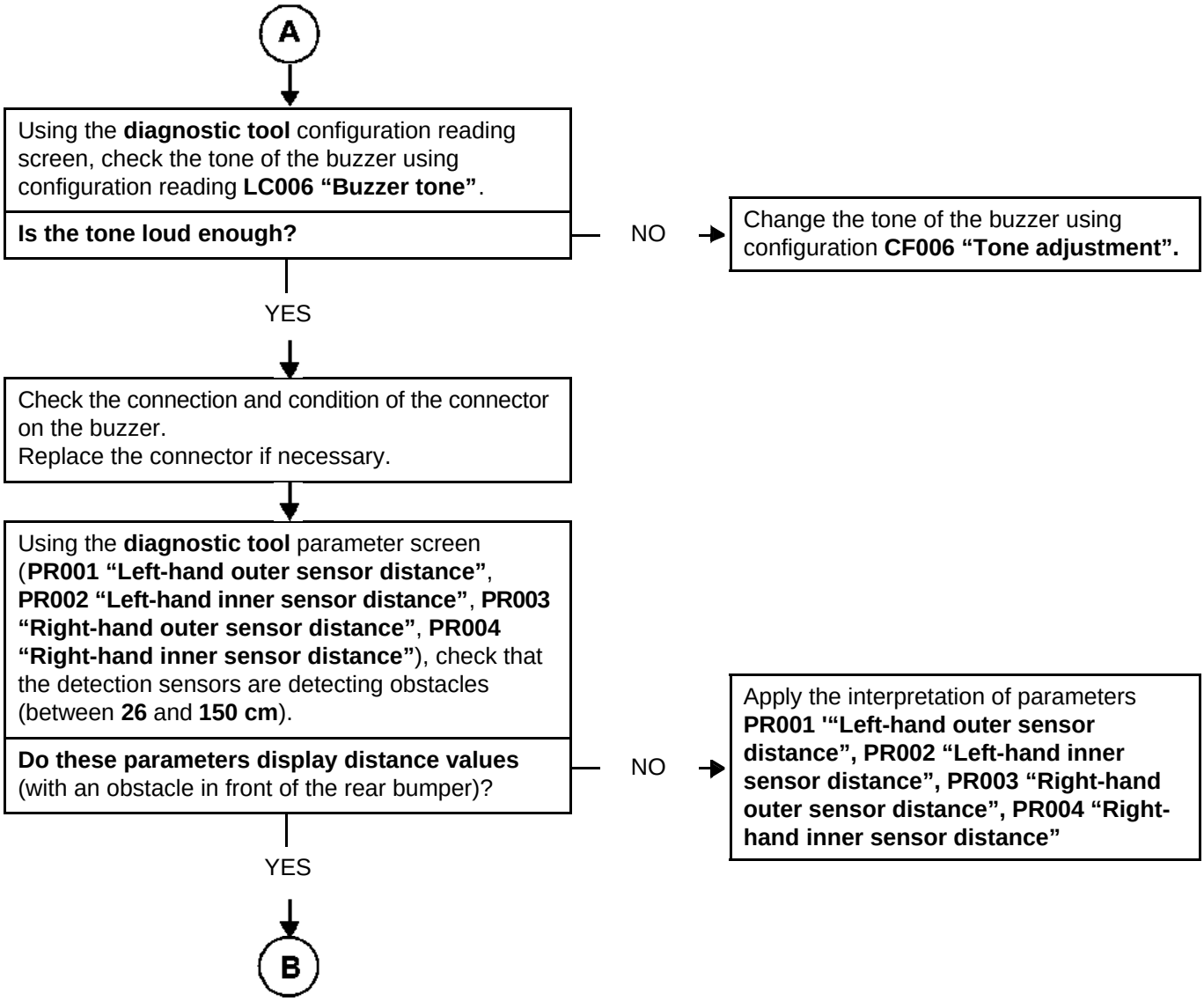
YES → Reconfigure the buzzer volume using the **diagnostic tool** (command **CF001 Buzzer volume**).

NO ↓

(A)

AFTER REPAIR	Check that the system is operating correctly.

ALP2 CONTINUED 1	



AFTER REPAIR	Check that the system is operating correctly.

ALP2

CONTINUED 2

B

YES

Place an obstacle in front of the rear bumper to make the tool display a distance reading. During the detection process, check that the buzzer has correct power supply by measuring between connections **151R** and **151S**.

During this test, is the buzzer receiving power?

YES

Check the resistance value of the buzzer by measuring between these two connections. Replace the buzzer if its resistance is not approximately **48Ω**.

Is the fault still present?

YES

Replace the buzzer.

NO

End of fault finding procedure.

NO

Switch off the ignition, and disconnect the parking distance control computer to check the **insulation and continuity and the absence of interference resistance** on the following connections:
Connection code **151R**,
Connection code **151S**.
Between components **1222 and 1223**.

If there is a repair procedure (See **Technical Note 6015A**, **Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace the wiring.

Is the fault still present?

NO

End of fault finding procedure.

YES

Contact the Techline.

AFTER REPAIR	Check that the system is operating correctly.

ALP3	Buzzer sounds continuously (no obstacle detected)

NOTES	Only investigate this customer complaint after a **full check using the diagnostic tool** (there must be no present or stored faults).

With no obstacle in front of the rear bumper (less than 150 cm away), check that the distance parameters on the diagnostic tool display **0 cm** for the "out of detection range" (**PR001 "Left-hand outer sensor distance", PR002 "Left-hand inner sensor distance", PR003 "Right-hand outer sensor distance", PR004 "Right-hand inner sensor distance"**).
If the parameters display a setting even though there is no obstacle in front of the rear bumper, make sure nothing is interfering with the reading (sticker, mud, snow etc. on the rear bumper).
Repair if necessary.
WARNING
If heavy rain falls directly on to the head of the sensor (membrane), or if the sensor encounters certain noises (pneumatic drill/hammer), the sensor may pick up these vibrations/waves and this may lead to random beeps. Do not replace the sensor but inform the customer.

↓

Switch off the ignition, and disconnect the parking proximity sensor computer connector to check the **insulation and continuity and ensure the absence of interference resistance** on the following connections:
Connection code **151R**,
Connection code **151S**.
Between components **1222 and 1223**.
If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Note:
The line coming from connection **151R** of the computer must be insulated against **+ 12 V** and the line coming from connection **151S** of the computer must be insulated against the earth.
Repair if necessary (see vehicle wiring diagram).

Is the fault still present?

NO → End of fault finding procedure.

YES

↓

End of fault finding procedure.

AFTER REPAIR	Check that the system is operating correctly.

ALP4	buzzer sounds continuously (with caravan attachment)

NOTES	Only investigate this customer complaint after a **full check using the diagnostic tool** (there must be no present or stored faults). Make sure it is a Renault caravan attachment.

Check that the cover is correctly aligned with the caravan towing hitch.
If it is incorrectly aligned, realign it or remove it.

Is the fault still present?

NO → End of fault finding procedure.

YES ↓

Using the **diagnostic tool**, gradually increase the distance between the central sensors and the ball on the caravan attachment centimetre by centimetre (this distance enables the threshold point to be redetermined (**0 cm**) from the rear of the vehicle depending on the length of the caravan attachment) using configuration **VP003 "Caravan attachment distance" (maximum distance: 35 cm)**. The caravan attachment distance can be checked with parameter **PR026**.

↓

End of fault finding procedure.

AFTER REPAIR	Check that the system is operating correctly.