twingo

Kangoo

Master

T.N. 3546A

IMMOBILISER FAULT FINDING

This note cancels and replaces section 82 of Workshop Repair Manual 323

77 11 306 482 **JULY 2001** **EDITION ANGLAISE**

Contents

IMMOBILISER
Fault finding - Introduction

This document contains fault finding features applicable to all immobiliser computers fitted to TWINGO, KANGOO and MASTER vehicles.

To undertake fault finding on this system, it is essential to have the following items available:

- **This fault finding technical note,**
- **The function wiring diagrams for the vehicle concerned,**
- **The Clip or NXR diagnostic tool.**

GENERAL APPROACH TO FAULT FINDING

– Use one of the diagnostic tools to identify the immobiliser system equipping the vehicle (to read the computer family, the program number, the Vdiag, etc.).
– Locate the "Fault finding" documents corresponding to the system identified.
– Take note of information contained in the introductory sections.

DESCRIPTION OF THE FAULT FINDING PHASES

1 - CHECKING THE FAULTS

It is essential to start with this stage before any work is done on the vehicle.
– Read the faults stored in the computer memory and use the "Fault interpretation" section of the documents.
Reminder: Each fault is interpreted for a particular type of storage (fault present, fault stored in memory, fault present or stored). The checks defined for dealing with each fault are therefore only to be performed if the fault declared by the diagnostic tool is interpreted in the document for the way it is stored. The storage type should be considered when using the fault finding tool after the ignition has been switched off and switched back on.
If a fault is interpreted when it is declared as stored, the conditions for applying fault finding appear in the notes box. When the conditions are not satisfied, use fault finding to check the circuit of the faulty part since the fault is no longer present on the vehicle. Perform the same operation when a fault is declared as stored by the diagnostic tool but is only interpreted in the documentation as a present fault.

2 - CONFORMITY CHECK

The conformity check is designed to check the states and parameters which do not display any faults on the diagnostic tool when they are outside the permitted tolerance values. This stage:
– diagnoses faults that do not have a fault display, and which may correspond to a customer complaint.
– checks that the immobiliser is working correctly and ensures that a fault will not reappear after repair.

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

If a state is not operating normally or a parameter is outside permitted tolerance values, you should consult the corresponding diagnostic page.

3 - RECTIFYING THE CUSTOMER COMPLAINT

If the diagnostic tool check is correct, but the customer complaint is still present, the problem should be dealt with according to the customer complaint.

This section has fault finding charts, which suggest a series of possible causes of the problem. These lines of investigation must only be used in the following cases:
– No faults appear on the diagnostic tool.
– No faults are detected during the conformity check.
– The immobiliser is not working correctly.

IMMOBILISER SYSTEM TEST:

When the immobiliser transponder has been programmed, it is possible to test that the engine immobiliser system is working properly with **the two keys** using the following procedure:

1 - With the ignition off, the red immobiliser warning light should flash for 10 seconds after the ignition is switched off (slow flashing).

2 - With the diagnostic tool connected, re-establish communication with the immobiliser system and check the following states: IMMOBILISER state **ET001** should be: **ACTIVE.**

3 - With the ignition off and the immobiliser warning light flashing slowly, enter the **FORCED PROTECTION MODE** command (**ACTUATOR COMMANDS** menu).

4 - Switch on the ignition; The immobiliser warning light will flash more rapidly and it should be impossible to start the vehicle.

5 - The procedure is complete. After switching the ignition off and on again (for more than 2 seconds), check that the vehicle can be started with both keys.

NOTE: the engine may appear to start (in spite of the **FORCED PROTECTION MODE** command) due to the fuel left in the injection pump (for diesel vehicles). To confirm that it does not really start, repeat the procedure.

DF006 PRESENT OR STORED	DIESEL SOLENOID VALVE CUT-OFF CIRCUIT

NOTES	**Priority for dealing with a combination of faults:** – Deal with fault **DF014** Coded line circuit first if it is present or stored.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after the ignition has been switched on for 5 seconds.
	Special notes: If the decoder unit has been changed, check that it has been correctly configured by displaying the coded diesel solenoid valve configuration state **ET042**. This state should be **ACTIVE** for a diesel engine with a coded solenoid valve and **INACTIVE** for a petrol or diesel engine with an injection computer. If necessary, configure the decoder unit according to the vehicle engine (configuration menu).

Check the **connection and condition** of the coded solenoid valve connector.
Repair if necessary.

Disconnect the decoder unit and, **with the ignition off, check the connection's insulation** (in relation to +12 volts and the earth), **continuity and absence of interference resistance**:

Decoder unit **track A6** ⟶ Coded solenoid valve (refer to vehicle engine diagrams)

Repair if necessary.

Check the conformity of **the 12 volt supply** and **the earth** of the coded solenoid valve (refer to vehicle engine diagrams).
Repair if necessary.

AFTER REPAIR	Follow the instructions to confirm repair. Clear the fault memory. Deal with any other possible faults.

DF006 CONTINUED 1	

Reconnect the solenoid valve and the decoder unit, turn on the ignition and, using the fault finding tool, display state **ET006** rereading the diesel solenoid valve cut-off (on the state screen).
If the connection tested previously conforms and the solenoid valve is correctly supplied, state **ET006** should be **ACTIVE** (problem solved).

If the previous tests did not solve the problem (state **ET006** remains **INACTIVE**), **replace** the coded diesel solenoid valve.

AFTER REPAIR	Follow the instructions to confirm repair. Clear the fault memory. Deal with any other possible faults.

DF014 PRESENT OR STORED	CODED LINE CIRCUIT

NOTES	**Conditions for applying the fault finding procedure to stored faults:** The fault is declared present after the ignition has been switched on for 20 seconds.
	Special notes: If the decoder unit has been changed, check that it has been correctly configured by displaying the coded diesel solenoid valve configuration state **ET042**. This state should be **ACTIVE** for a diesel engine with a coded solenoid valve and **INACTIVE** for a petrol or diesel engine with an injection computer. If necessary, configure the decoder unit according to the vehicle engine (configuration menu).

Vehicles fitted with a coded solenoid valve (not DCI):

Check the **connection and condition** of the coded solenoid valve connector. Repair if necessary.
Disconnect the decoder unit and, **with the ignition off, check the connection's insulation** (in relation to +12 volts and the earth), **the continuity and absence of interference resistance** : Decoder unit **track A6** ⟶ Coded solenoid valve (refer to vehicle engine diagrams) Repair if necessary.
Check the conformity of **the 12 volt supply** and **the earth** of the coded solenoid valve (refer to vehicle engine diagrams). Repair if necessary.
Reconnect the solenoid valve and the decoder unit, turn on the ignition and, using the fault finding tool, display state **ET006** rereading the diesel solenoid valve cut-off (on the state screen). If the connection tested previously conforms and the solenoid valve is correctly supplied, state **ET006** should be **ACTIVE** (problem solved).

AFTER REPAIR	Follow the instructions to confirm repair. Clear the fault memory. Deal with any other possible faults.

DF014 CONTINUED 1	

If the previous tests did not resolve the problem (state **ET006** remains **INACTIVE**), check that the decoder unit is sending a signal to the solenoid valve by measuring between the coded track of the solenoid valve and the earth (with the decoder unit and coded solenoid valve electrically connected).
– When the ignition is switched off, there should be no voltage.
– With the ignition on, it should be possible to measure an average of around 5 volts with a multimeter set to the a.c. voltage measurement position (the decoder unit sends out a permanent signal).
NOTE: for a more precise measurement, the signal can be tested using an oscilloscope to measure between the coded track of the solenoid valve and the earth (5 volts per scale division and 50 ms on the time base). It should display a permanent square wave signal.

If the signal measured previously is not present, **change the decoder unit.**
If the signal is present but the problem persists, **change the coded diesel solenoid valve**.

Petrol or diesel vehicles with an injection computer:

Disconnect the decoder unit and, **with the ignition off, check the connection's insulation** (in relation to +12 volts and the earth), **continuity and absence of interference resistance** :

Decoder unit **track A6** → Injection computer (see diagrams for the injection fitted to the vehicle).

Repair if necessary.

AFTER REPAIR	Follow the instructions to confirm repair. Clear the fault memory. Deal with any other possible faults.

DF014 CONTINUED 2	

If the previous test did not resolve the problem, check that the decoder unit is sending a signal to the computer by measuring between **track A6** of the decoder unit and the earth (with the decoder unit and injection computer electrically connected).
– When the ignition is switched off, there should be no voltage.
– With the ignition on, it should be possible to measure an average of around 5 volts with a multimeter set to the a.c. voltage measurement position (the decoder unit sends out a permanent signal).
NOTE: for a more precise measurement, the signal can be tested using an oscilloscope to measure between **track 6** of the decoder unit and the earth (5 volt per scale division and 50 ms on the time base). A permanent square wave signal should be displayed.

If the signal measured earlier is not present, **change the decoder unit.**
If the signal is present but the problem persists, **change the injection computer**.

AFTER REPAIR	Follow the instructions to confirm repair. Clear the fault memory. Deal with any other possible faults.

DF015 PRESENT or STORED	AERIAL DECODER LINK **OC.0 :** OPEN CIRCUIT OR SHORT CIRCUIT TO THE EARTH **SC.1 :** SHORT CIRCUIT TO + 12 V

NOTES	**Conditions for applying the fault finding procedure to stored faults:** The fault is declared present when the ignition is switched on (when the ignition is switched off, the fault is stored even if it is still present).
	NOTE: the voltage referred to in the test below (in the last test) is not a voltage supply but a high state signal (12 volts) with a stop pulse to extinguish the immobiliser warning light (coded).

Remove the half cowling under the steering wheel, and check that the antenna ring connector (on the ignition switch) **is connected and in working order**.
Repair if necessary.

Disconnect the decoder unit (under the steering column) and, **with the ignition off, check the connection or connections' insulation** (in relation to +12 volts and the earth), **continuity and absence of interference resistance**:

For vehicles fitted with a door control receiver as part of the antenna ring:

decoder unit **track A2** → **track 4** of the antenna ring
decoder unit **track B1** → **track 1** of the antenna ring

For vehicles fitted with a separate door control receiver:

decoder unit **track A2** → **track 4** of the antenna ring

Repair if necessary.

Check for the presence of an earth on **track 2** and +12 volts before ignition on **track 3** of the antenna ring.
Repair if necessary.

AFTER REPAIR	Follow the instructions to confirm repair. Clear the fault memory. Deal with any other possible faults.

DF015 Cont'd	

If the previous tests have not solved the problem, turn on the ignition and check for the presence of a 12 volt signal on track **A2** of the decoder unit connector (ring and decoder unit **connected**).
NOTE: for a more precise measurement, the signal can be tested using an oscilloscope to measure between **track A2** of the decoder unit and **the earth** (5 volt per scale division and 50 ms on the time base). It should display 12 volts with a 100 ms pulse (signal variation) until the warning light goes out (if the pulse is fast, try it a few times or activate the pre-trigger on the oscilloscope).
If the signal is not present, **change the antenna ring**.
If the signal is present, **change the decoder unit**.

AFTER REPAIR	Follow the instructions to confirm repair. Clear the fault memory. Deal with any other possible faults.

DF065 **PRESENT**	COMPUTER

NOTES	None.

The computer fault indicates an internal memory fault. Try to **erase the fault**, and switch the ignition on and off again.

If the fault reappears, check **the connection and condition** of the decoder unit connector.
Repair if necessary.

Disconnect the decoder unit (under the steering column) and, **with the ignition off**, check the conformity of its supply (it should be equal to the battery voltage with the ignition on ± 0.5 volts) by checking the connections:

decoder unit **track A7** → **+ after ignition**
decoder unit **track A8** → **earth**
decoder unit **track A9** → **+ before ignition** (see vehicle diagrams)

Repair if necessary.

If the previous checks did not erase the fault, **replace** the decoder unit.

AFTER REPAIR	Clear the fault memory. Deal with any other possible faults.

NOTES	Only carry out this conformity check after a **complete check** with the fault finding tool (**no faults should be present**). Checking application conditions: **Ignition switched off and immobiliser ACTIVE.**

Order	Function	Parameter or state Check or action	Display and notes	Fault finding
1	Supplies	**ET005**: +12 volts after ignition **PR002**: Computer supply voltage	**INACTIVE** **10 v < x < 12.5 v**	If there is a problem check, **the conformity** of the decoder unit supplies. If the problem persists, carry out **a fault finding test on the charging circuit**.
2	Immobiliser	**ET001**: Immobiliser	**ACTIVE**	If the state is **INACTIVE** (when the ignition has been switched off for more than 15 seconds), the decoder unit supplies conform and the keys have been correctly programmed, replace the decoder unit.
		ET007: Forced protection mode	**INACTIVE**	This state should only convert to **ACTIVE** after the "forced protection mode" command has been entered. This command tests the immobiliser (it is impossible to start the engine). If the state is **ACTIVE** switch on the ignition, turn it off then on again.
3	Ignition key	**ET002**: Key code received **ET003**: Valid key code **ET008**: Key presented	**NO** **NO** **NO**	**None.**

NOTES	Only carry out this conformity check after a **complete check** with the fault finding tool (**no faults should be present**). Checking application conditions: **Ignition switched off and immobiliser ACTIVE.**

Order	Function	Parameter or state Check or action	Display and notes	FAULT FINDING
4	Key programming	**ET020**: Programming the first key	**INACTIVE**	Transfers to **ACTIVE** state when the first key is programmed.
		ET022: Key has been programmed	**YES**	If these states display **NO**, the key must be programmed. For further information refer to the Technical Note that deals with programming.
		ET023: Key programming is locked	**YES**	
		ET045: Key programming configuration	**1 KEY** **or** **2 KEYS**	**1** or **2 KEYS** according to the configuration carried out.
5	Immobiliser security code	**ET142**: Security code entry timed block	**INACTIVE**	**ACTIVE**after entering 3 incorrect security codes. This state will become **INACTIVE** when a correct code is entered. **NOTE:** is the state is **ACTIVE**, its necessary to wait 15 minutes **with the ignition switched on,** before entering a new security code.

NOTES	Only carry out this conformity check after a **complete check** with the fault finding tool (**no faults should be present**). Checking application conditions: **Ignition switched off and immobiliser ACTIVE.**

Order	Function	Parameter or state Check or action	Display and notes	FAULT FINDING
6	Coded diesel solenoid valve	**ET042**: Configuration: coded diesel solenoid valve	**ACTIVE** **or** **INACTIVE**	The state should be **ACTIVE** if a diesel engine is fitted with a coded solenoid valve controlled by the decoder unit and **INACTIVE**for a diesel or petrol engine with an injection computer. If the state display does not conform with the vehicle engine, the decoder unit must be reconfigured.
		ET006: Diesel solenoid valve cut-off rereading	**INACTIVE**	**None.**
7	Immobiliser warning light	**PR005**: LED warning light	**0** or **1**	The state is **0** if the warning light is switched off and **1** when it is lit.
8	8 Equipment level	**PR014**: 8 Equipment level	**1, 2, 3, 4, 5** or **6**	**None.**

NOTES	Only carry out this conformity check after a **complete check** with the fault finding tool (**no faults should be present**). Checking application conditions: **Ignition switched on and immobiliser INACTIVE.**

Order	Function	Parameter or state Check or action	Display and notes	Fault finding
1	Supplies	**ET005**: +12 volts after ignition **PR002**: Computer supply voltage	**ACTIVE** **10 v < x < 14.4 v**	If there is a problem check, **the conformity** of the decoder unit supplies. If the problem persists, carry out **a fault finding test on the charge circuit**.
2	Immobiliser	**ET001**: Immobiliser	**INACTIVE**	If the state is **ACTIVE**, check that the decoder unit is correctly configured and that the keys have been programmed. If it persists, refer to **Fault Finding Chart 2**
		ET007: Forced protection mode	**INACTIVE**	This state should only convert to **ACTIVE** state after the "forced protection mode" command has been entered. This command tests the immobiliser (it is impossible to start the engine). If the state is **ACTIVE** switch on the ignition, turn it off then on again.
3	Ignition key	**ET002**: Key code received **ET003**: Valid key code **ET008**: Key presented	**YES** **YES** **YES**	If one of these states displays **NO,** refer to the interpretation of states.

NOTES	Only carry out this conformity check after a **complete check** with the fault finding tool (**no faults should be present**). Checking application conditions: **Ignition switched on and immobiliser INACTIVE.**

Order	Function	Parameter or state Check or action	Display and notes	Fault finding
4	Key programming	**ET020**: Programming the first key	**INACTIVE**	Transfers to **ACTIVE** state when the first key is programmed.
		ET022: Key has been programmed	**YES**	If these states display **NO**, the key must be programmed. For further information refer to the Technical Note that deals with programming.
		ET023: Key programming is locked	**YES**	
		ET045: Key programming configuration	**1 KEY or 2 KEYS**	**1** or **2 KEYS** according to the configuration carried out.
5	Immobiliser security code	**ET142**: Security code entry timed block	**INACTIVE**	**ACTIVE**after entering 3 incorrect security codes. This state will become **INACTIVE** when a correct code is entered. **NOTE:** is the state is **ACTIVE**, its necessary to wait 15 minutes **with the ignition switched on,** before entering a new security code.

NOTES	Only carry out this conformity check after a **complete check** with the fault finding tool (**no faults should be present**). Checking application conditions: **Ignition switched on and immobiliser INACTIVE.**

Order	Function	Parameter or state Check or action	Display and notes	Fault finding
6	Coded diesel solenoid valve	**ET042**: Configuration: coded diesel solenoid valve	**ACTIVE or INACTIVE**	The state should be **ACTIVE** if a diesel engine is fitted with a coded solenoid valve controlled by the decoder unit and **INACTIVE**for a diesel or petrol engine with an injection computer. If the state display does not conform with the vehicle engine, the decoder unit must be reconfigured.
		ET006: Diesel solenoid valve cut-off rereading	**ACTIVE** for a diesel engine without injection computer and **INACTIVE** for a petrol or diesel engine with injection computer.	If the state is **INACTIVE** when the decoder unit controls the solenoid valve (diesel engine without injection computer), carry out fault finding procedure **DF006** diesel solenoid valve cut-off.
7	Immobiliser warning light	**PR005**: LED warning light	**0** or **1**	The state is **0** if the warning light is switched off and **1** when it is lit.
8	8 Equipment level	**PR014**: 8 Equipment level	**1, 2, 3, 4, 5** or **6**	**None.**

ET 002	KEY CODE RECEIVED
ET 003	VALID KEY CODE
ET 008	KEY PRESENTED

NOTES	**Special notes:** Before looking for possible state problems, check that the keys have been properly programmed by displaying states "**ET022** key programming complete and **ET023** key programming locked". Both states should display **YES**, if this is not the case, refer to the Technical Note for key programming.

IGNITION OFF, IMMOBILISER ACTIVE: The three states should display **NO.**
IGNITION ON, IMMOBILISER INACTIVE: The three states should display **YES.**
If this is not the case, there are three possible scenarios:

FIRST CASE:
– **ET008** KEY PRESENTED: **NO**
– **ET002** KEY CODE RECEIVED: **NO**
– **ET003** KEY CODE VALID: **NO**

→

1 / Antenna ring supply problem.
2 / The key head chip no longer works.
3 / The ring is not receiving the signal.
In order to ascertain which feature is not working , you must first check that there is a before ignition supply on **track 3** and an earth on **track 2** of the antenna ring connector.
Repair if necessary (see the vehicle's wiring diagrams).
If the problem persists, carry out a test with a new ring (it is not coded).
If the problem is solved, replace the antenna ring, if not, change the key head chip.

SECOND CASE:
– **ET008** KEY PRESENTED: **YES**
– **ET002** KEY CODE RECEIVED: **NO**
– **ET003** KEY CODE VALID: **NO**

→

1 / The ring / decoder unit connection is faulty.
2 / The ring is faulty.
To determine which item is not working, first carry out a fault finding procedure on the ring/decoder connection (**DF015**).
If the problem persists, carry out a test with a new ring (it is not coded).
Replace the ring if necessary.

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AFTER REPAIR	Restart the conformity check from the beginning.

ET002 **ET003** **ET008** Cont'd	

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THIRD CASE:
– **ET008** KEY PRESENTED: **YES**
– **ET002** KEY CODE RECEIVED: **YES**
– **ET003** KEY CODE VALID: **NO**

→

1 / The key head chip no longer works.
2 / The key head chip does not conform to the code programmed into the decoder unit.
In either case, the key head chip must be replaced.

AFTER REPAIR	Restart the conformity check from the beginning.

NOTES	Only refer to this customer complaint after a complete check using the diagnostic tool.

NO COMMUNICATION WITH THE COMPUTER	CHART 1
THE VEHICLE DOES NOT START (when the ignition is on, the immobiliser warning light flashes continuously)	CHART 2
THE VEHICLE DOES NOT START (when the ignition is turned on, the immobiliser warning light comes on for three seconds then goes out)	CHART 3
THE IMMOBILISER WARNING LIGHT STAYS ILLUMINATED	CHART 4
THE IMMOBILISER WARNING LIGHT DOES NOT LIGHT UP (even when the immobiliser is active)	CHART 5

CHART 1	NO COMMUNICATION WITH THE COMPUTER

NOTES	None.

Check that the vehicle battery is properly charged.
Charge the battery if necessary.

Try the diagnostic tool on another vehicle (to confirm that it is working).

Check:
– - the connection between the diagnostic tool and the diagnostic socket (wiring in good condition),
– the injection, engine and passenger compartment fuses.

Check for the presence of **+ 12 volts before ignition** on **track 16**, **+ 12 volts after ignition** on **track 1** and an **earth** on **tracks 4 and 5** of the diagnostic socket.
Repair if necessary.

Check that the decoder unit is properly supplied and adapted to the diagnostic socket by checking **the insulation, continuity and absence of interference resistance**in the connections:

decoder unit **track A9** → **before ignition** (passenger compartment fuse box)
decoder unit **track A7** → **+ after ignition** (passenger compartment fuse box)
decoder unit **track A8** → **earth**
decoder unit **track A4** → **track 15** of the diagnostic socket (line L)
decoder unit **track A3** → **track 7** of the diagnostic socket (line K)

Repair if necessary.

If the above checks did not solve the problem, replace the decoder unit.

AFTER REPAIR	Perform a complete check using the diagnostic tool. If the decoder unit has been changed, reprogram and reconfigure it with reference to the Technical Note for programming.

CHART 2	THE VEHICLE DOES NOT START (when the ignition is on, the immobiliser warning light flashes continuously)

NOTES	Only refer to this customer complaint when you have carried out **a complete check with the diagnostic tool (there should be no fault present** in the immobiliser and injection fault finding procedures).
	Special notes: Before carrying out this fault finding procedure, check that the decoder unit has been programmed and configured by displaying states **ET022**, **ET023** and **ET042**. To determine whether the states conform, refer to the **checking conformity** section: If the state displays are not as required, refer to the Technical Note for key programming.

Check for the presence of a before ignition supply on **track 3** and an earth on **track 2** of the antenna ring connector. Repair if necessary (see the vehicle's wiring diagrams).

↓

Turn on the ignition and check the states in the state menu:
ET008 KEY PRESENTED.
ET002 KEY CODE RECEIVED.

DO THE States DISPLAY: YES?

NO → Carry out a test with the second key.

Is the problem solved?

YES → The key head chip of the first key is faulty, replace it.

NO → Replace the antenna ring.

YES ↓

Turn on the ignition and check the state in the state menu:
ET003 KEY CODE VALID.

DOES THE State DISPLAY: YES?

YES → Replace the decoder unit.

NO → Replace the key head chip.

AFTER REPAIR	Perform a complete check using the diagnostic tool. If the decoder unit has been changed, reprogram and reconfigure it with reference to the Technical Note for programming.

CHART 3	THE VEHICLE DOES NOT START (when the ignition is turned on, the immobiliser warning light comes on for three seconds then goes out)

NOTES	
	Only refer to this customer complaint when you have carried out **a complete check with the diagnostic tool (there should be no fault present** in the immobiliser or injection fault finding procedures).
	Special notes: Before carrying out this fault finding procedure, check that the decoder unit has been programmed and configured, particularly the input of the manual code if the decoder unit has been changed (so that the new code can be programmed into the injection computer or coded solenoid valve).
	NOTE: To activate the diesel solenoid valve control with the fault finding tool: – For diesel injection without an injection computer, the command mode is located in the immobiliser diagnostic. – For diesel injection with an injection computer, there is no coded solenoid valve and hence no command mode.

For those vehicles with an engine without an engine management computer:

When the fault finding tool is connected, carry out a mechanical check of the solenoid valve (listening test): With the ignition switched off, activate the **DIESEL SOLENOID VALVE** control then turn the ignition back on (as soon as you enter the command). The solenoid valve should open and close for 30 seconds.

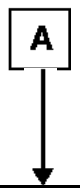
Is it possible to hear the solenoid valve working?

NO → Replace the coded diesel solenoid valve.

YES → **A**

AFTER REPAIR	Perform a complete check using the diagnostic tool. If the decoder unit has been changed, reprogram and reconfigure it with reference to the Technical Note for programming.

CHART 3 Cont'd	



Refer to the **fault finding chart** (for starting faults) in the Technical Note for the injection fitted to the vehicle. This customer complaint requires investigation of the main causes of non starting: starter motor faults, battery voltage, engine coolant sensor, preheating, engine speed sensor, air and fuel supply systems, exhaust system and the general condition of the engine (oil level, compression etc.).

For those vehicles with an engine with an engine management computer:

Refer to the **fault finding chart** (for starting faults) in the Technical Note for the injection fitted to the vehicle. This customer complaint requires investigation of the main causes of non starting: starter motor faults, battery voltage, engine coolant sensor, preheating, engine speed sensor, air and fuel supply systems, exhaust system and the general condition of the engine (oil level, compression etc.).

AFTER REPAIR	Perform a complete check using the diagnostic tool. If the decoder unit has been changed, reprogram and reconfigure it with reference to the Technical Note for programming.

CHART 4	THE IMMOBILISER WARNING LIGHT STAYS ILLUMINATED

NOTES	
	Only refer to this customer complaint when you have carried out **a complete check with the diagnostic tool (there should be no fault present** in the immobiliser, injection or connection unit diagnostic).
	Special notes: If there is a diesel solenoid valve cut-out fault or a problem on the coded line, the immobiliser warning light stays on. In the immobiliser fault finding procedure, check whether the faults are not present or stored.
	NOTE: When resynchronising remote controls (by pressing down on the external door locking button), the immobiliser warning light stays lit for 10 seconds: normal operation.

With the ignition on, disconnect the decoder unit.

Does the warning light go out?

YES → Replace the decoder unit.

NO

With the decoder unit disconnected and the ignition switched off, check the connection's **insulation** (in relation to the earth), **continuity and the absence of interference resistance**:

decoder unit **track A5** → instrument panel (refer to the instrument panel diagrams corresponding to the vehicle)

Repair if necessary.

Does the warning light go out?

YES → End of fault finding.

NO

Carry out a fault finding procedure on the instrument panel (refer to the relevant Technical Note).

AFTER REPAIR	Perform a complete check using the diagnostic tool. If the decoder unit has been changed, reprogram and reconfigure it with reference to the Technical Note for programming.

CHART 5	THE IMMOBILISER WARNING LIGHT DOES NOT LIGHT UP (even when the immobiliser is active).

NOTES	Only refer to this customer complaint when you have carried out **a complete check with the diagnostic tool (there should be no faults present** in the immobiliser or injection fault finding procedures).

With the decoder unit disconnected and the ignition switched off, check the connection's **insulation** (in relation to +12 volts) **continuity and the absence of interference resistance**:

decoder unit **track A5** → instrument panel (refer to the instrument panel diagrams corresponding to the vehicle)

Repair if necessary.

When the decoder unit connector is reconnected, does the warning light come on?

YES → End of fault finding.

NO

Disconnect the decoder unit and reconnect track A5 of the decoder unit connector to a vehicle earth.

Does the warning light come on?

YES → Replace the decoder unit.

NO

Check the conformity of the supplies and earths of the instrument panel (see instrument panel diagrams).
If the supplies and earths are correct, carry out a fault finding procedure on the instrument panel (refer to the relevant Technical Note).

AFTER REPAIR	Perform a complete check using the diagnostic tool. If the decoder unit has been changed, reprogram and reconfigure it with reference to the Technical Note for programming.