

# DUSTER

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## 3 Chassis

### 36B

#### POWER-ASSISTED STEERING PUMP ASSEMBLY

GEPDA

Vdiag No.: 04

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V1

Edition Anglaise

"The repair procedures given by the manufacturer in this document are based on the technical specifications current when it was prepared.

The procedures may be modified as a result of changes introduced by the manufacturer in the production of the various component units and accessories from which his vehicles are constructed."

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## 1. SCOPE OF THIS DOCUMENT

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

Vehicle: **DUSTER**  
Function concerned: **Power-assisted steering pump assembly**

Computer name: **GEPDA**  
Vdiag No.: **04**

## 2. PREREQUISITES FOR FAULT FINDING

**Documentation type:**

**Fault finding procedure** (this manual):

- Assisted fault finding (integrated into the **diagnostic tool**), Dialogys.

**Wiring Diagrams:**

- Visu - Schéma

**Type of diagnostic tools:**

- CLIP**

**Special tooling required:**

Special tooling required	
Diagnostic tool	
Multimeter	
<b>Elé. 1681</b>	Universal bornier

## 3. SAFETY INSTRUCTIONS

Safety rules must be observed during any work on a component to prevent any material damage or personal injury:

- check the battery voltage to avoid incorrect operation of computer functions,
- use the proper tools.

## Faults

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

Consider the fault status, **present** or **stored** when the **diagnostic tool** is used after the + after ignition feed (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 Notes section.

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

If the fault is **not confirmed**, check:

- the electrical connections that correspond to the fault,
- the connectors for this connection,
- the resistance of the faulty component,
- the condition of the wires.

**Refer to paragraphs 4.1 Checking wiring and 4.2 Checking connectors**

## Conformity check

The aim of the conformity check is to check data that does not produce a fault on the **diagnostic tool** when 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.

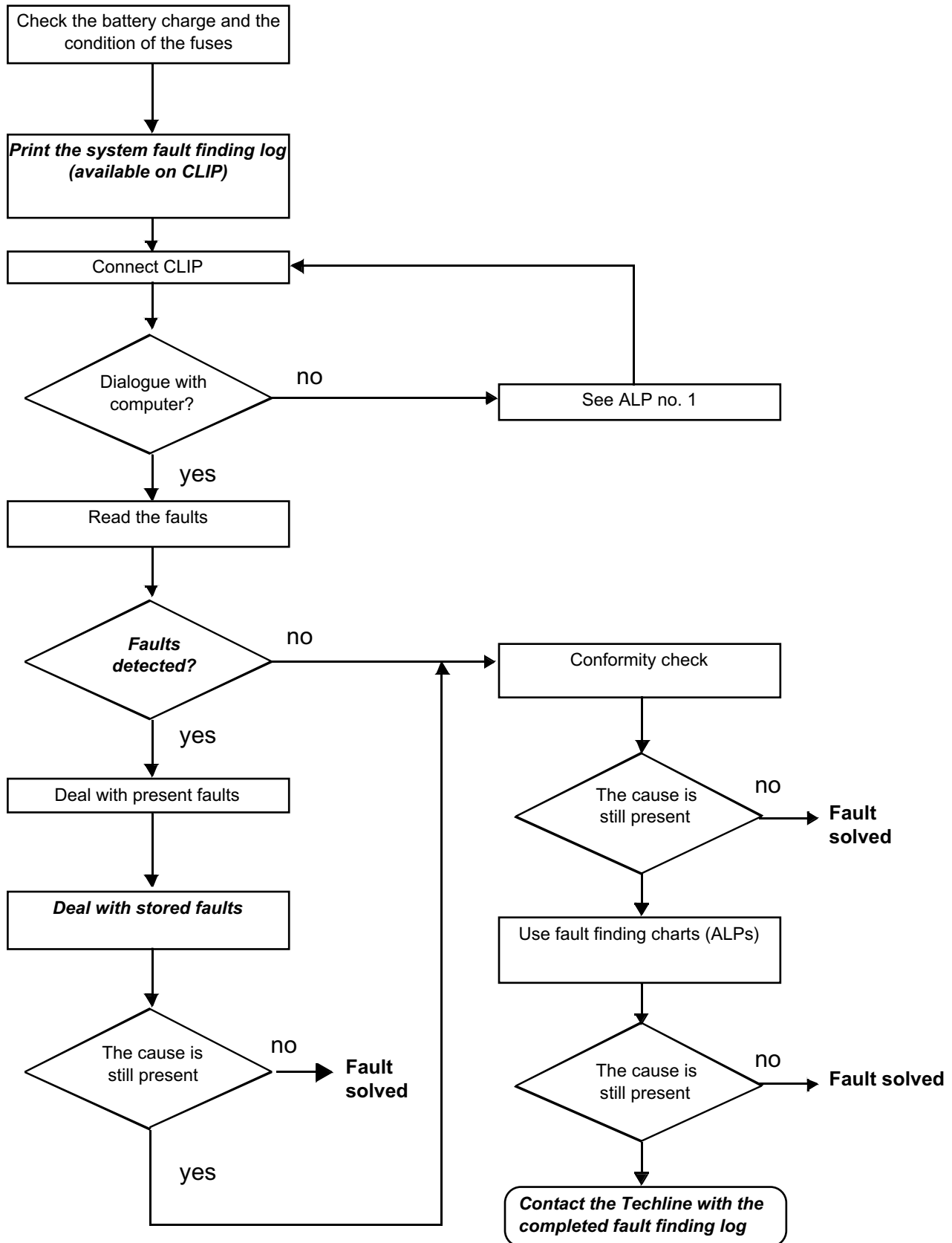
If a status is not behaving normally or a parameter is outside the permitted tolerance values, consult the corresponding fault finding page.

## 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 summary of the overall 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)**

### **4.1 Wiring check**

#### **Fault finding problems**

Disconnecting the connectors and/or manipulating the wiring may temporarily remove the cause of a fault.

#### **Visual inspection**

Look for damage under the bonnet and in the passenger compartment.

Carefully check the protectors, insulation, and routing of the wiring, as well as the mountings.

#### **Physical inspection**

While manipulating the wiring, use either the **diagnostic tool** to detect a change in status from “stored” to “present”, or use the multimeter to view the status changes.

Make sure that the connectors are properly locked.

Apply light pressure to the connectors.

Twist the wiring harness.

#### **Checking earth insulation**

This check is carried out by measuring the voltage (multimeter in voltmeter mode) between the suspect connection and the **12 V** or **5 V**. The correct measured value is **0 V**.

#### **Checking insulation against + 12 V or + 5 V**

This check is carried out by measuring the voltage (multimeter in voltmeter mode) between the suspect connection and the earth. In the first instance, the earth may be taken on the chassis. The correct measured value should be **0 V**

#### **Continuity check**

A continuity check is carried out by measuring the resistance (multimeter in ohmmeter mode), with the connectors disconnected at both ends. The expected result is **1  $\Omega$   $\pm$  1  $\Omega$**  for every connection. The line must be fully checked, and the intermediate connections are only included in the method if this saves time during the fault finding procedure. The continuity check on the multiplex lines must be carried out on both wires. The measured value should be **1  $\Omega$   $\pm$  1  $\Omega$** .

#### **Checking the supply**

This check may be carried out using a test light (**21 W** or **5 W** depending on the maximum authorised load).

## 4.2 Checking the connectors

**Note:**

Carry out each requested check visually.  
Do not remove a connector if it is not required.

**Note:**

Repeated connections and disconnections alter the functionality of the connectors and increase the risk of poor electrical contact. Limit the number of connections/disconnections as much as possible.

**Note:**

The check is carried out on the 2 parts of the connection. There may be two types of connection:

- Connector/Connector.
- Connector/Device.

### **Visual inspection of the connection:**

- Check that the connector is connected correctly and that the male and female parts of the connection are correctly coupled.

### **Visual inspection of the area around the connection:**

- Check the condition of the mounting (pin, strap, adhesive tape, etc.) if the connectors are attached to the vehicle.
- Check that there is no damage to the wiring trim (sheath, foam, adhesive tape, etc.) near the wiring.
- Check that there is no damage to the electrical wires at the connector outputs, in particular on the insulating material (wear, cuts, burns, etc.).

Disconnect the connector to continue the checks.

### **Visual inspection of the plastic casing:**

- Check that there is no mechanical damage (casing crushed, split, broken, etc.), in particular to the fragile components (lever, lock, sockets, etc.).
- Check that there is no heat damage (casing melted, darker, deformed, etc.).
- Check that there are no stains (grease, mud, liquid, etc.).

### **Visual inspection of the metal contacts:**

*(The female contact is called CLIP. The male contact is called TAB).*

- Check that there are no bent contacts (the contact is not inserted correctly and can come out of the back of the connector). The contact comes out of the connector when the wire is pulled gently.
- Check that there is no damage (folded tabs, clips open too wide, blackened or melted contact, etc.).
- Check that there is no oxidation on the metal contacts.

**Visual inspection of the sealing:**

(Only for watertight connectors)

Check for the seal on the connection (between the 2 parts of the connection).

- Check the seal at the back of the connectors:
  - For *unit* joints (1 for each wire), check that the unit joints are present on each electrical wire and that they are correctly positioned in the opening (level with the housing). Check that plugs are present on openings which are not used.
  - For a *grommet* seal (one seal which covers the entire internal surface of the connector), check that the seal is present.
  - For *gel* seals, check for gel in all of the sockets without removing the excess or any protruding sections (it does not matter if there is gel on the contacts).
  - For *hotmelt* sealing (heat-shrink sheath with glue), check that the sheath has contracted correctly on the rear of the connectors and the electrical wires, and that the hardened glue comes out of the side of the wire.
- Check that there is no damage to any of the seals (cuts, burns, significant deformation, etc.).

If a fault is detected, consult **Technical Note 6015A, Repairing electrical wiring.**

## 5. FAULT FINDING LOG



### **IMPORTANT!**

#### **IMPORTANT**

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

**IT IS THEREFORE ESSENTIAL THAT THE FAULT FINDING LOG IS FILLED OUT EVERY TIME IT IS REQUESTED BY TECHLINE OR THE WARRANTY RETURNS DEPARTMENT.**

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 INSTRUCTIONS

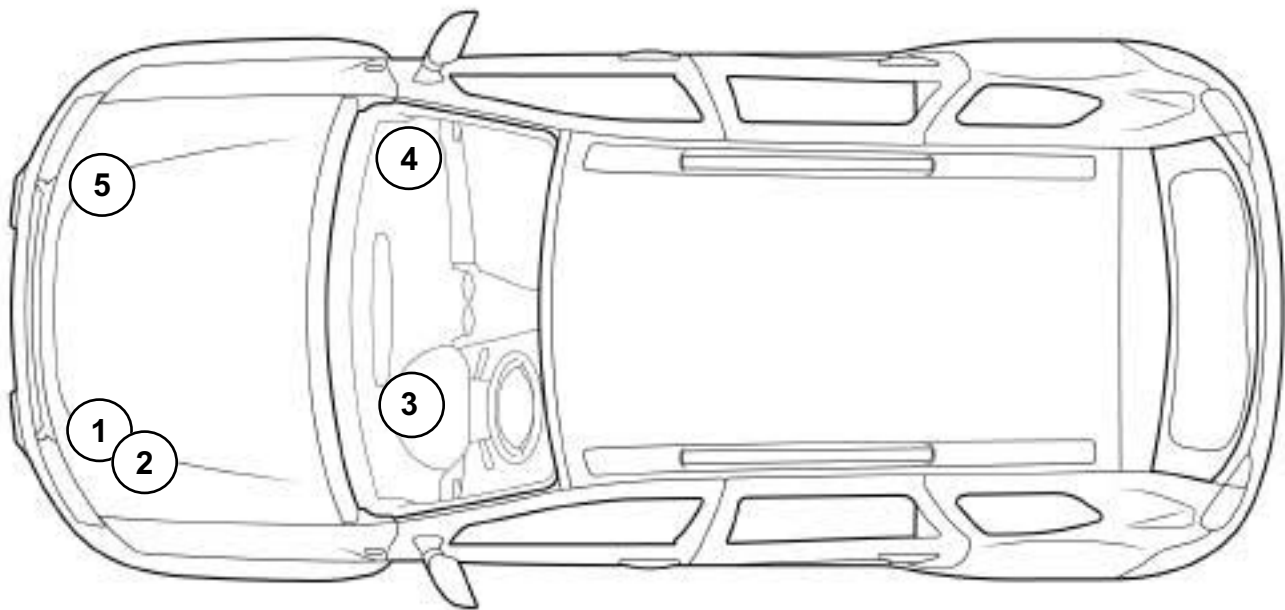
Safety rules must be observed during any work on a component to prevent any material damage or personal injury:

- check the battery voltage to avoid incorrect operation of computer functions,
- use the proper tools.

**It is forbidden to carry out a road test with the diagnostic tool in dialogue with the ECU because the ABS and Electronic Brake Distribution functions are deactivated. Braking pressure is identical on both vehicle axles (risk of a spin under heavy braking).**



Location of components

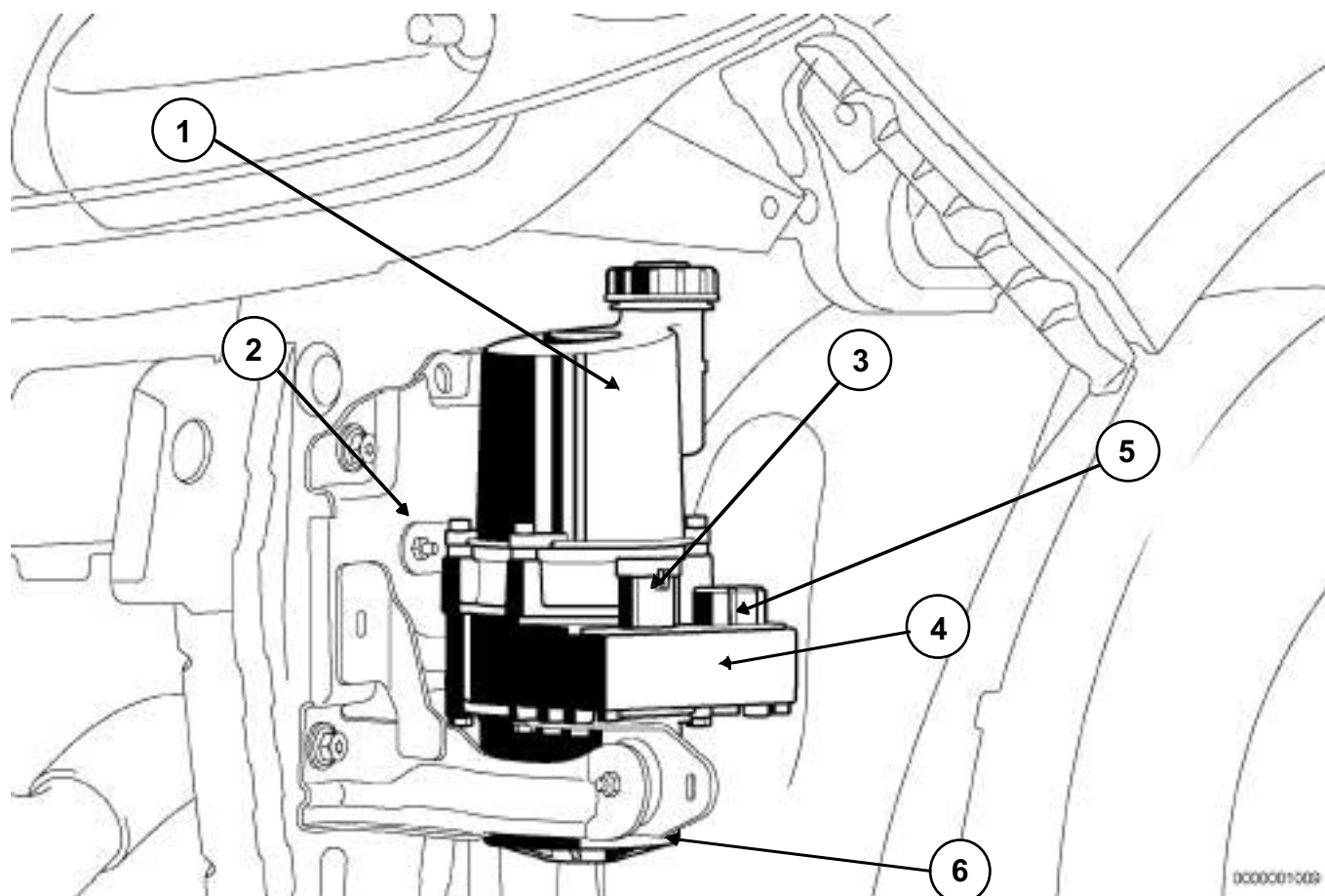


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- |   |                                       |   |                   |
|---|---------------------------------------|---|-------------------|
| 1 | Power-assisted steering pump assembly | 4 | Diagnostic socket |
| 2 | Engine interconnection unit           | 5 | Alternator        |
| 3 | Passenger compartment fuse box        |   |                   |

**Power-assisted steering pump assembly**

**System outline**



1	Oil reservoir	4	Computer
2	Hydraulic pump (in tank)	5	Signal connector
3	Power connector	6	Electric motor

## Functions provided

- **Main function**

### Power-assisted steering:

The power-assisted steering system uses a pump assembly which generates the hydraulic pressure assistance in the steering circuit.

Operation of the power-assisted steering is managed by a computer integrated into the pump assembly of the power-assisted steering.

Correct system operation is checked using sensors integrated into the pump assembly of the power-assisted steering.

The power-assisted steering is only available when the **+ after ignition feed** is on (computer activation) and the vehicle's engine is running (the presence of the alternator signal is interpreted by the computer as "engine running"). The power-assisted steering is only switched off if the after ignition feed and alternator signal disappear and the speed is less than **2 mph (3 km/h)**.

The level of assistance calculated is based on parameters defined by Renault (tuning or assistance strategy) and stored in the computer memory. This assistance strategy should be entered after replacing the **pump assembly\* of DUSTER**.

### Specific case:

- When the vehicle speed is absent, or received but invalid, then the level of assistance provided corresponds to the level of assistance for **60 mph (100km/h)**. In this case, power-assisted steering is available but is not optimal. Heavy steering is easily perceived when stationary.

**The higher the vehicle speed, the more limited the power-assisted steering assistance.** The **DUSTER GEP\*** is a variable power-assisted steering system, which varies according to the vehicle speed.

- The assistance is available more or less immediately when the vehicle is started. Two cases can be identified:
  - The ignition is on but the engine is not started immediately. This allows time for the GEP\* to perform its initialisation sequence (**500 ms** approximately). As soon as the engine is **running**, the GEP\* supplies assistance with a gradient of **100%/s**.
  - The ignition is on and the engine is started immediately. The GEP\* starts the initialisation phase immediately followed by a gradient of **100%/s**.

The power-assisted steering can be maintained in degraded mode then reduced gradually for the following **5 minutes** until assistance stops completely. This particular mode is active when the signal connector is disconnected.

Fault finding only operates when the **GEP** supply voltage is between **9V** and **18V**. Abnormal levels of voltage, which are out of range, may generate noticeable variations in assistance.

\*GEP: Pump assembly

- **Temperature Protection Function**

The temperature of the pump assembly is monitored by two sensors, one for the oil temperature, the other for the temperature of the internal electronics.

There are two possible cases:

- When at least one of the two temperatures (**PR008 COMPUTER TEMPERATURE** and **PR016 OIL TEMPERATURE**) exceeds the threshold of **107°C**, the rotation speed of the electric motor decreases **until the temperature drops below this threshold**.
- When at least one of the two temperatures (**PR008 COMPUTER TEMPERATURE** and **PR016 OIL TEMPERATURE**) exceeds the threshold of **125°C**, the electric pump switches off and no assistance is provided for as long as it takes for the temperature to return below this threshold.

- **Fault finding function**

The pump assembly computer includes a self-test procedure function. The required information can be accessed using the **diagnostic tool**, by the **HK** line.

## Equipment required:

CLIP diagnostic tool

## Configurations of the power-assisted steering function

Configuration readings available using the **diagnostic tool**:

Configuration reading	Name of configuration	Option	Configuration
LC005	Computer calibration	K9K	VP006

- Check the configurations in the **Read configurations** menu

## SETTINGS

### **VP001: Write VIN.**

This command permits manual entry of the vehicle's VIN into the computer.  
Use this command each time the pump assembly of the power-assisted steering is replaced.

Check that the configuration is correct by reading the identification **ID010 V.I.N. code**.

### **VP005: Enter After-Sales operation date.**

This command allows is used to manual enter the date of the last After-Sales operation on the pump assembly system of the power-assisted steering.

Use this command after every operation, whether mechanical or electric/electronic, on the pump assembly of the power-assisted steering.

Consecutively enter the six figures of the date: two for the year, two for the month and two for the day. E.g. 000706 (06 July 2000).

Check that the configuration is correct by reading the identification **ID018 Read last After-Sales operation date**.

### **VP006: Computer calibration.**

This command enables the rotation speed of the electric pump motor to be calibrated in the computer.

Use this command after each replacement of the power-assisted steering pump assembly when this is not already configured.

Check by reading **LC005 Computer calibration** that the configuration has been registered correctly.

### Precautions for use

- The power-assisted steering pump assembly (the computer, the electric motor, the hydraulic pump, the oil reservoir) cannot be separated.

### OPERATIONS FOR REPLACING THE PUMP ASSEMBLY

Before replacing the power-assisted steering pump assembly, perform fault finding on the system and apply the appropriate fault finding procedure.

The power-assisted steering pump assembly may only be replaced after approval from Techline.

After replacing the pump assembly, calibrate the computer using the **diagnostic tool**.

#### **WARNING:**

To prevent any accidents, it is essential to disconnect the battery when performing operations on the front axle, regardless of the operation, to remove the risk of trapping someone between a wheel and the body if the power-assisted steering is accidentally triggered due to a fault in the pump assembly system.

When replacing the power-assisted steering pump assembly, perform the following operations:

- disconnect the vehicle battery,
- replace the power-assisted steering pump assembly (see **MR 451 Mechanical, 36B, Power-assisted steering, Power-assisted steering pump assembly: Removal - Refitting**),
- reconnect the vehicle battery,
- connect **the diagnostic tool**, switch on the ignition and establish dialogue with the computer of the power-assisted steering pump assembly,
- configure the computer by running command **VP006 Computer calibration** (see **Programming**),
- Enter the vehicle VIN using command **VP001 Enter VIN** (see **Programming**),
- write the date of the last After-Sales operation using command **VP005 Enter After-Sales operation date** (see **Programming**),
- switch off the ignition for at least **15 seconds** for the configurations to register, without disconnecting the battery,
- switch on the ignition and establish dialogue with the computer of the power-assisted steering pump assembly,
- use configuration reading **LC005 Computer calibration** to check that the calibration corresponds correctly to the vehicle
- check that there are no faults and that the parameters are correct,
- start the vehicle engine and check that the power-assisted steering pump assembly is operating correctly (power-assisted steering available with the engine running),
- check that there are no faults and that the parameters are correct.



Tool fault	Associated DTC	Diagnostic tool title
DF002	5608	Computer
DF017	5606	Motor circuit
DF023	5613	+After ignition supply
DF037	5601	Battery voltage
DF043	5616	Vehicle speed
DF053	5602	Computer configuration
DF055	5607	Computer memory
DF075	5617	Alternator fault

<b>DF002 PRESENT OR STORED</b>	<u>COMPUTER</u> 1.DEF: Supplier No. 1 signal 2.DEF: Supplier No. 2 signal 3.DEF: Supplier No. 3 signal 4.DEF: Supplier No. 4 signal 5.DEF: Supplier No. 5 signal
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<b>NOTES</b>	<b>Conditions for applying the fault finding procedure to stored faults:</b> The fault is declared <b>present</b> after starting or moving the steering wheel movement from full lock to full lock.
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Replace the **GEPDA** computer (see **MR 451 Mechanical, 36B, Power-assisted steering, Power-assisted steering pump assembly: Removal - Refitting**)

<b>AFTER REPAIR</b>	Deal with any faults displayed by the <b>diagnostic tool</b> . Clear the computer memory. Carry out a road test followed by another check with the <b>diagnostic tool</b> .
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<p><b>DF017 PRESENT OR STORED</b></p>	<p><u>MOTOR CIRCUIT</u> 1.DEF: Supplier No. 1 signal 2.DEF: Control overcurrent 3.DEF: Inverter 4.DEF: No signal</p>
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<p><b>NOTES</b></p>	<p><b>Conditions for applying the fault finding procedure to stored faults:</b> The fault is declared <b>present</b> after starting or moving the steering wheel movement from full lock to full lock.</p>
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Replace the **GEPDA** computer (see **MR 451 Mechanical, 36B, Power-assisted steering, Power-assisted steering pump assembly: Removal - Refitting**).

<p><b>AFTER REPAIR</b></p>	<p>Deal with any faults displayed by the <b>diagnostic tool</b>. Clear the computer memory. Carry out a road test followed by another check with the <b>diagnostic tool</b>.</p>
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<b>DF023 PRESENT OR STORED</b>	<u>+ AFTER IGNITION FEED</u> DEF: No signal
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<b>NOTES</b>	<b>Conditions for applying the fault finding procedure to stored faults:</b> The fault is declared <b>present</b> after starting or moving the steering wheel movement from full lock to full lock.
	<b>Special note:</b> Use the <b>Wiring Diagrams Technical Note for DUSTER</b> .

<ul style="list-style-type: none"><li>– Check the condition and conformity of the supply fuses for the computer of the power-assisted steering pump assembly, component code <b>186</b> (see <b>MR 451 Mechanical, 81C, Fuses, Fuses: List and location of components</b>):</li><li>– power fuse <b>F02</b> in the <b>engine compartment connection unit</b>, component code <b>597</b>, <b>+ after ignition feed</b> fuse <b>F24</b> in the <b>passenger compartment fuse box</b>, component code <b>1016</b>.</li></ul>
<p>Disconnect the two connectors from the <b>computer on the power-assisted steering pump assembly</b>. Check the condition and conformity of the connectors on the power-assisted steering pump assembly and their clips. If the connectors are faulty and if there is a repair procedure (see <b>Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair</b>), repair the connector, otherwise replace the wiring.</p>

<b>AFTER REPAIR</b>	Deal with any faults displayed by the <b>diagnostic tool</b> . Clear the computer memory. Carry out a road test followed by another check with the <b>diagnostic tool</b> .
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DF023  
CONTINUED

Check for:

- a + 12 V **before ignition supply** on connection **BP36** of component **186**,
- an **earth** on connection **MS** of component **186**,
- a + 12 V **after ignition supply** on connection **AP23** of component **186**.

If the connection(s) are faulty and there is a repair procedure (see **Technical Note 6015A (Renault)** or **Technical Note 9804A (Dacia)**, **Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check the battery voltage and check the charging circuit (see **Technical Note 6014A (Renault)** or **Technical Note 9859A (Dacia)**, **Checking the charging circuit**).

If the fault is still present, contact the Techline.

**AFTER REPAIR**

Deal with any faults displayed by the **diagnostic tool**.  
Clear the computer memory.  
Carry out a road test followed by another check with the **diagnostic tool**.

<b>DF037 PRESENT OR STORED</b>	<b>BATTERY VOLTAGE</b> DEF: Under voltage
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<b>NOTES</b>	<b>Special note:</b> This fault is raised in the event of an on-board network fault, if the voltage drops below <b>10V</b> . Assistance maintained when driving as long as the voltage level is <b>&gt; 8 V</b> . Degraded assistance between <b>8</b> and <b>10V</b> . Loss of assistance below <b>8V</b> . Impossible to enter fault finding with the <b>GEP*</b> if the voltage is less than <b>8V</b> at the computer terminals.
	Use the <b>Wiring Diagrams Technical Note for DUSTER</b> .

Check the following components: on-board network/alternator, wiring harness and wiring, battery, computer.  
Check the tightness of the alternator terminal and the voltage level of the battery.  
Check the tightness and the condition of the battery terminals (see **MR 451, Mechanical, 80A, Battery, Battery: Removal - Refitting**).  
Check the charge circuit.  
Check the condition and position of fuse **F01** and **F02** in the **engine fuse and relay box**.  
Check the condition and position of fuse **F24** in the **passenger compartment fuse box** (see **MR 451 Mechanical, 81C, Fuses, Fuses: List and location of the components**).

**With the ignition on and the engine stopped**, check for a voltage equal to the battery voltage on connections **BP36** and **AP23** in relation to the **earth MS**.

\*GEP: Pump assembly

<b>AFTER REPAIR</b>	Deal with any faults displayed by the <b>diagnostic tool</b> . Clear the computer memory. Carry out a road test followed by another check with the <b>diagnostic tool</b> .
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**DF037**  
**CONTINUED**

Disconnect the two connectors from the **computer on the power-assisted steering pump assembly**, component code **186**.

Check the condition and conformity of the connectors on the power-assisted steering pump assembly and their clips.

If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

With the connectors of the **engine fuse and relay box**, component code **597** and of the **passenger compartment fuse box**, component code **1016**, disconnected:

Check the continuity and insulation of connection **BP36** between components **186** and **597**.

Check the continuity and insulation of connection **AP23** between components **186** and **1016**.

Check the continuity and insulation of connection **MS** of component **186**.

If the checks reveal no faults, check the conformity of components **597** and **1016**.

If the fault is still present, contact the Techline.

**AFTER REPAIR**

Deal with any faults displayed by the **diagnostic tool**.

Clear the computer memory.

Carry out a road test followed by another check with the **diagnostic tool**.

<b>DF043 PRESENT OR STORED</b>	<u>VEHICLE SPEED</u> CO: Open circuit CC.0: Short circuit to earth
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<b>NOTES</b>	<b>Special note:</b> The vehicle speed signal comes from the ABS, ESP, speed sensor or from the ETC. This fault indicates the disappearance or abnormal behaviour of the vehicle speed wire signal, such as, for example, a significant variation in speed.
	Use the <b>Wiring Diagrams Technical Note for DUSTER</b> .

Check whether the **instrument panel**, component code **247**, receives the vehicle speed signal on:  
the ETC torque distribution computer, for a **4x4 vehicle without ABS, without ESP**,  
the vehicle speed sensor for a **4x2 vehicle without ABS, without ESP**;  
The ABS computer for a vehicle **with ABS** (see **38C, Anti-lock braking system**);  
The ESP computer for a vehicle **with ESP** (see **38C, Anti-lock braking system**).

Carry out a road test.  
Check the consistency of the speed signal on the **instrument panel**, component code **247**.  
If necessary, run fault finding on the **UCH** system (see **87B, Passenger compartment connection unit**).  
Then use the diagnostic tool to check that **PR003 Vehicle speed** is not zero.

Outside **+** after ignition, check the **connection** and **condition** of the **connector** of the **power-assisted steering pump assembly**, component code **186** and of these clips.  
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

<b>AFTER REPAIR</b>	Deal with any faults displayed by the <b>diagnostic tool</b> . Clear the computer memory. Carry out a road test followed by another check with the <b>diagnostic tool</b> .
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DF043  
CONTINUED 1

If the vehicle speed signal is supplied by the vehicle speed sensor (for a 4x2 vehicle without ABS, without ETC, without ESP):

Check the **condition** and **connection** of the connectors of the **vehicle speed sensor**, component code **250** and of the **power-assisted steering pump assembly**, component code **186**.

If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check **the continuity, insulation** and **the absence of interference resistance** of the following connection:

- **47F** between components **250** and **186**.

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**

Deal with any faults displayed by the **diagnostic tool**.

Clear the computer memory.

Carry out a road test followed by another check with the **diagnostic tool**.

DF043  
CONTINUED 2

If the fault is still present, disconnect the **connector** of the speed sensor, component code **250**.

Check for + 12 V on the following connection:

- **3FB** (for petrol) between components **1047** or **120** and **250**,
- **3FBA** (for diesel) between components **597** and **250**.

If there is no + 12 V:

Check the condition of the vehicle speed sensor protection fuse.

Check that the **injection relay**, component code **1047** (for petrol) and **983** (for diesel) operates correctly.

Replace it if necessary.

If the fault is not resolved, use the "universal bornier" to check the **insulation, continuity** and **absence of interference resistance** on the following connection:

- **3FB** (for petrol) between components **1047** or **120** and **250**,
- **3FBA** (for diesel) between components **597** and **250**.

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 **earth** is absent:

Use the "universal bornier" to check the insulation, continuity and the absence of interference resistance on the following connection:

- **NH** between the **earth** and the **vehicle speed sensor**, component code **250**.

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, use the "universal bornier" to check the **insulation, continuity** and the **absence of interference resistance** on the following connection:

- **47F** between components **186** and **250**.

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 persists, replace the vehicle speed sensor.

If the fault is still present, contact your Techline.

## AFTER REPAIR

Deal with any faults displayed by the **diagnostic tool**.

Clear the computer memory.

Carry out a road test followed by another check with the **diagnostic tool**.

**DF043**  
**CONTINUED 3**

**If the vehicle speed signal is supplied by the ABS computer (for a 4x2 or 4x4 vehicle with ABS):**

Check the **condition** and **connection** of the **ABS computer** connectors, component code **118**.  
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Replace it if necessary (see **MR 451, Mechanical, 38C, Anti-lock braking system, Hydraulic brake unit: Removal - Refitting**).

If the fault is still present, use the diagnostic tool to check that the ABS is correctly receiving the vehicle speed signal during a road test.

If the fault is not resolved, use the "universal bornier" to check the **insulation, continuity and the absence of interference resistance** of the following connection:  
• **47F** between components **186** and **118**.  
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 your Techline.

**AFTER REPAIR**

Deal with any faults displayed by the **diagnostic tool**.  
Clear the computer memory.  
Carry out a road test followed by another check with the **diagnostic tool**.

**DF043**  
**CONTINUED 4**

**If the vehicle speed signal is supplied by the ESP computer (for a 4x2 or 4x4 vehicle with ESP):**

Check the **condition** and **connection** of the **ESP computer** connectors, component code **1094**.  
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Replace it if necessary (see **MR 451, Mechanical, 38C, Anti-lock braking system, Hydraulic brake unit: Removal - Refitting**).

If the fault is still present, use the diagnostic tool to check that the ESP correctly receives the vehicle speed signal during a road test.

If the fault is not resolved, use the "universal bornier" to check the **insulation, continuity** and **absence of interference resistance** of the following connection:  
• **47F** between components **186** and **1094**.  
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 your Techline.

**AFTER REPAIR**

Deal with any faults displayed by the **diagnostic tool**.  
Clear the computer memory.  
Carry out a road test followed by another check with the **diagnostic tool**.

DF043  
CONTINUED 5

If the vehicle speed signal is supplied by the ETC torque distributor computer (for a 4x4 vehicle without ABS, without ESP).

Check the **condition** and **connection** of the **ETC torque distributor computer** connectors, component code **2017**.

If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Replace it if necessary (see **MR 451 Mechanical, 26A, Rear final drive, Rear final drive coupler computer: Removal - Refitting**).

If the fault is still present, use the diagnostic tool to check that the ETC torque distributor is correctly receiving the vehicle speed signal during a road test.

If the fault is not resolved, use the "universal bornier" to check the **insulation, continuity** and **absence of interference resistance** of the following connection:

- **47F** between components **186** and **2017**.

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 your Techline.

## AFTER REPAIR

Deal with any faults displayed by the **diagnostic tool**.

Clear the computer memory.

Carry out a road test followed by another check with the **diagnostic tool**.

**DF053  
STORED**COMPUTER CONFIGURATION

DEF: Computer calibration not carried out

**NOTES****Fault finding application conditions for stored faults:**This fault is declared **present** after the engine is started.

Configure the **computer** of the **power-assisted steering pump assembly** using command **VP006 Computer calibration** respecting the vehicle equipment (see **Programming**).

If the fault is still present, contact the Techline.

**AFTER REPAIR**Deal with any faults displayed by the **diagnostic tool**.

Clear the computer memory.

Carry out a road test followed by another check with the **diagnostic tool**.

**DF055  
PRESENT  
OR  
STORED**

COMPUTER MEMORY

- 1.DEF: Supplier No. 6 signal
- 2.DEF: Supplier No. 7 signal
- 3.DEF: Supplier No. 1 signal

**NOTES**

**Special notes:**

The fault is declared **present** after the battery is disconnected.

Replace the **GEPDA** computer (see **MR 451 Mechanical, 36B, Power-assisted steering, Power-assisted steering pump assembly: Removal - Refitting**).

**AFTER REPAIR**

Deal with any faults displayed by the **diagnostic tool**.  
Clear the computer memory.  
Carry out a road test followed by another check with the **diagnostic tool**.

<b>DF075 PRESENT OR STORED</b>	<u>ALTERNATOR FAULT</u> DEF: No signal
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<b>NOTES</b>	<b>Special notes:</b> This fault indicates that the alternator signal has disappeared. Assistance maintained. No immediate effect but no assistance when the ignition is next switched on.
	Use the <b>Wiring Diagrams Technical Note for DUSTER</b> .

Check the connection and condition of the **connector** of the **power-assisted steering pump assembly computer**, component code **186**.

If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check the connection and condition of the **alternator connector**, component code **103** and the **instrument panel connector**, component code **247**.

If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check the insulation, continuity and the absence of interference resistance on the following connections:

- **2K** between components **103** and **120**,
- **2A** between components **247**, **186** and **103**.

If the connection(s) are faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Repair the **alternator** (see **MR 451, Mechanical, 16A, Starting – charging, Alternator: Repair**) and carry out the **conformity check**.

If the fault is still present, replace the alternator (see **MR 451, Mechanical, 16A, Starting – charging, Alternator: Removal - Refitting**).

<b>AFTER REPAIR</b>	Deal with any faults displayed by the <b>diagnostic tool</b> . Clear the computer memory. Carry out a road test followed by another check with the <b>diagnostic tool</b> .
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DF075  
CONTINUED

If the fault is still present, contact the Techline.

**AFTER REPAIR**

Deal with any faults displayed by the **diagnostic tool**.  
Clear the computer memory.  
Carry out a road test followed by another check with the **diagnostic tool**.

**NOTES**

Only carry out this conformity check after a complete check using the **diagnostic tool**.  
The values shown in this conformity check are given as a guide.  
Test conditions: **With the engine stopped, ignition on and vehicle speed zero.**

**Main screen**

Function	Parameter or status Checked or action	Display and notes	Fault finding
Computer supply	<b>PR108:</b> Computer feed voltage	<b>10 V &lt; PR108 &lt; 16 V.</b>	<b>In the event of a fault,</b> apply the interpretation of parameter <b>PR108</b>
Engine status	<b>ET006:</b> Engine status	<b>NOT RUNNING</b>	<b>In the event of a fault,</b> consult the interpretation of fault <b>DF075 Alternator</b> fault.

**NOTES**

Only carry out this conformity check after a complete check using the **diagnostic tool**.  
The values shown in this conformity check are given as a guide.  
Test conditions: **With the engine stopped, ignition on and vehicle speed zero.**

**Main screen (continued 1)**

Function	Parameter or status Checked or action	Display and notes	Fault finding
Vehicle speed	<b>PR003</b> Vehicle speed	0 mph (km/h)	<b>In the event of a fault,</b> consult the interpretation of fault <b>DF043 Vehicle speed</b> .
Oil temperature	<b>PR016:</b> Oil temperature	Indicates the oil temperature in °C. The sensor is integrated into the pump assembly.	Without any action on the steering wheel.
Computer temperature	<b>PR008:</b> Computer temperature	Indicates the temperature of the electronics in °C. The sensor is integrated into the computer of the pump assembly.	Without any action on the steering wheel.

**NOTES**

Only carry out this conformity check after a complete check using the **diagnostic tool**.  
The values shown in this conformity check are given as a guide.  
Test conditions: **With the engine stopped, ignition on and vehicle speed zero.**

**Main screen (continued 2)**

Function	Parameter or status Checked or action	Display and notes	Fault finding
Electric motor	<b>PR012:</b> Current absorbed by the motor	<b>0 A &lt; PR012 &lt; 1 A.</b>	<b>In the event of a fault,</b> apply the interpretation of parameter <b>PR012</b>
Electric motor speed	<b>PR024:</b> Pump assembly motor speed	<b>0 rpm.</b>	<b>In the event of a fault,</b> apply the interpretation of parameter <b>PR024</b> .
Electric motor speed	<b>PR025:</b> GEP* motor speed setpoint	<b>0 rpm.</b>	<b>In the event of a fault,</b> apply the interpretation of parameter <b>PR025</b> .

\*GEP: Pump assembly

**NOTES**

Only carry out this conformity check after a complete check using the **diagnostic tool**.  
The values shown in this conformity check are given as a guide.  
Application conditions: **Engine idling and vehicle speed zero.**

**Main screen**

Function	Parameter or status Checked or action	Display and notes	Fault finding
Computer supply	<b>PR108:</b> Computer feed voltage	<b>10 V &lt; PR108 &lt; 16 V.</b>	<b>In the event of a fault</b> , apply the interpretation of parameter <b>PR108.</b>
Engine status	<b>ET006:</b> Engine status	<b>Running.</b>	<b>In the event of a fault</b> , consult the interpretation of fault <b>DF075 Alternator fault.</b>

**NOTES**

Only carry out this conformity check after a complete check using the **diagnostic tool**.  
The values shown in this conformity check are given as a guide.  
Application conditions: **Engine idling and vehicle speed zero.**

**Main screen (continued 1)**

Function	Parameter or status Checked or action	Display and notes	Fault finding
Vehicle speed	<b>PR003</b> Vehicle speed	<b>0 mph (km/h)</b>	<b>In the event of a fault</b> , refer to the interpretation for parameter <b>PR003</b> .
Oil temperature	<b>PR016:</b> Oil temperature	<b>PR016 &lt; 110°C.</b>	<b>In the event of a fault</b> , consult the interpretation of parameter <b>PR016</b> .
Computer temperature	<b>PR008:</b> Computer temperature	<b>PR008 &lt; 110°C.</b>	Exceptionally, the parameter value may reach <b>75°C</b> when the engine is put under great strain and in a hot ambient environment.

**NOTES**

Only carry out this conformity check after a complete check using the **diagnostic tool**.  
The values shown in this conformity check are given as a guide.  
Application conditions: **Engine idling and vehicle speed zero.**

**Main screen (continued 2)**

Function	Parameter or status Checked or action	Display and notes	Fault finding
Electric motor	<b>PR012:</b> Current absorbed by the motor	<b>0 A &lt; PR012 &lt; 80 A.</b>	<b>In the event of a fault,</b> apply the interpretation of parameter <b>PR012</b> .
Electric motor speed	<b>PR024:</b> Pump assembly motor speed	<b>800 rpm &lt; PR024 &lt; 3200 rpm.</b>	<b>In the event of a fault,</b> apply the interpretation of parameter <b>PR024</b> .
Electric motor speed	<b>PR025:</b> GEP* motor speed setpoint	<b>800 rpm &lt; PR025 &lt; 3200 rpm.</b>	<b>In the event of a fault,</b> apply the interpretation of parameter <b>PR025</b> .

\*GEP: Pump assembly

Tool status	Diagnostic tool title
ET006	Engine status



Tool Parameter	Diagnostic tool title
PR003	Vehicle speed
PR008	Computer temperature
PR012	Current absorbed by the motor
PR016	Oil temperature
PR024	Pump assembly motor speed
PR025	GEP* motor speed setpoint
PR108	Computer feed voltage

\*GEP: Pump assembly

PR003	<u>VEHICLE SPEED</u>
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NOTES	None.
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This value should vary gradually (and not suddenly) according to the way the vehicle is being driven.

If the parameter is not correct, consult the interpretation of fault **DF043 Vehicle speed**.

\*GEP: Pump assembly

AFTER REPAIR	Carry out a check using the <b>diagnostic tool</b> .
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<b>PR012</b>	<u>CURRENT ABSORBED BY THE MOTOR</u>
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<b>NOTES</b>	None.
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Parameter **PR012** indicates the current actually consumed by the electric motor of the power-assisted steering pump assembly. The power varies when moving the steering wheel and it decreases when the steering wheel is held at full lock (thermal protection).

If the parameter does not comply with the values indicated in the **Conformity check**, refer to the interpretation of fault **DF017 Motor circuit**.

<b>AFTER REPAIR</b>	Carry out a check using the <b>diagnostic tool</b> .
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<b>PR024</b>	<u>PUMP ASSEMBLY MOTOR SPEED</u>
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<b>NOTES</b>	None.
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Parameter **PR024** indicates the actual speed of the electric motor of the power-assisted steering pump assembly.

The value of parameter **PR024** should be roughly equal to the value of parameter **PR025 GEP\* motor speed setpoint**.

If the parameter differs from **PR025**, carry out a visual inspection of the condition of the hydraulic circuit (leaks etc.) and top up the electric pump assembly oil (see **MR 479 Mechanical, 36B, Power-assisted steering, Power-assisted steering pump assembly: Bleed**).

\*GEP: Pump assembly

<b>AFTER REPAIR</b>	Carry out a check using the <b>diagnostic tool</b> .
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<b>PR025</b>	<u>GEP* MOTOR SPEED SETPOINT</u>
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<b>NOTES</b>	None.
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Parameter **PR025** indicates the setpoint value for the speed of the electric motor of the power-assisted steering pump assembly.

The value of parameter **PR025** should be roughly equal to the value of parameter **PR024 Pump assembly motor speed**.

If the parameter differs from **PR025**, carry out a visual inspection of the condition of the hydraulic circuit (leaks, etc.) and top up the electric pump assembly oil (see **MR 479 Mechanical, 36B, Power-assisted steering, Power-assisted steering pump assembly: Bleed**).

\*GEP: Pump assembly

<b>AFTER REPAIR</b>	Carry out a check using the <b>diagnostic tool</b> .
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PR108

COMPUTER SUPPLY VOLTAGE**NOTES**

There must be no **present** or **stored** faults.  
No electrical consumers.

Parameter **PR108** indicates the supply voltage read by the **GEPDA** computer.  
If it does not correspond to the on-board voltage, consult the interpretation of fault **DF037 Battery voltage**.

**AFTER REPAIR**

Carry out a check using the **diagnostic tool**.

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CLEARING

RZ001:	Fault memory. This command is used for clearing the <b>stored</b> faults from the computer.
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NOTES	Only address this customer complaint after a complete check with the diagnostic tool.
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NO DIALOGUE WITH THE COMPUTER	ALP1
CUSTOMER COMPLAINTS CONCERNING ASSISTANCE	ALP2
TOO LITTLE ASSISTANCE	ALP3
ASSISTANCE AVAILABLE WITHOUT STARTING VEHICLE ENGINE	ALP4



ALP1	No dialogue with the computer
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NOTES	Only consult this customer complaint after a full check with the <b>diagnostic tool</b> .
	<b>Special note:</b> Use the <b>Wiring Diagrams Technical Note for DUSTER</b> .

Check the battery voltage of the vehicle (**10 V < Battery voltage < 16 V**).

To check that the **diagnostic tool** is not causing the fault, try to establish dialogue with a computer on another vehicle.  
If the tool is not at fault and dialogue cannot be established with any other computer on the same vehicle, it may be that a faulty computer is disrupting communication.

Check the supply fuses on the power-assisted steering pump assembly, component code **186** (see **MR 451 Mechanical, 81C, Fuses, Fuses: List and location of components**):

- power fuse **F02** in the engine compartment connection unit, component code **597**,
- **+ after ignition** supply fuse **F24** in the passenger compartment fuse box, component code **1016**.

Check the **condition** and **conformity** of the **connector** on the **diagnostic socket**, component code **225**.

If the connector is faulty and there is a repair procedure (see **Technical Note 6015A (Renault)** or **Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check for:

- **a + 12 V battery** supply on connection **BP56** of component **225**,
- **a + 12 V after ignition supply** on connection **AP10** of component **225**,
- an **earth** on connections **MAM** and **NC** of component **225**.

If the connection or connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault)** or **Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

AFTER REPAIR	Carry out a road test, followed by a check with the <b>fault finding tool</b> .
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ALP1  
CONTINUED

Disconnect the two connectors from the computer on the power-assisted steering pump assembly.  
Check the condition and conformity of the connectors on the power-assisted steering pump assembly and their clips.

If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check the conformity of the electrical **supplies** (they must be equal to the battery voltage) on the following connections:

- **BP36** on component **186**,
- **MS** of component **186**,
- **AP23** on component **186**.

If the connection or connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check **the insulation, continuity and absence of interference resistance** of the wiring harness between the diagnostic socket and the connector on the computer of the power-assisted steering pump assembly on the following connection:

**HK** between components **225** and **186**.

If the connection is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

## AFTER REPAIR

Carry out a road test, followed by a check with the **fault finding tool**.

ALP2	Poor vehicle handling
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NOTES	Only consult this customer complaint after a full check with the <b>diagnostic tool</b> .
	<b>Special note:</b> Use the <b>Wiring Diagrams Technical Note for DUSTER</b> .

Check the pressure and condition of the tyres, the condition of the joints and the front axle geometry.  
Check the battery voltage of the vehicle and the condition of the battery terminals, component code **107**.

Check the **condition** and **presence** of power **fuse F02** on the power-assisted steering pump assembly, component code **186** (see **MR 451 Mechanical, 81C, Fuses, Fuses: List and location of components**).

Check the condition and presence of **+ after ignition** fuse **F24** on the power-assisted steering pump assembly, component code **186** (see **MR 451 Mechanical, 81C, Fuses, Fuses: List and location of components**).

AFTER REPAIR	Carry out a road test, followed by a check with the <b>fault finding tool</b> .
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**ALP2  
CONTINUED**

Check the **insulation, continuity** and **absence of interference resistance** on the following connection:  
**BP36** between components **186** and **597**.

If the connection is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault)** or **Technical Note 9804A (Dacia)**, **Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Make sure the configuration reading **LC005 Computer calibration** matches the vehicle equipment.

If necessary, use the **diagnostic tool** to configure the power-assisted steering pump assembly computer correctly (see **Configuration and programming**).

If the fault is still present, contact the Techline.

**AFTER REPAIR**

Carry out a road test, followed by a check with the **fault finding tool**.

<b>ALP3</b>	<b>Too little assistance</b>
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<b>NOTES</b>	Only consult this customer complaint after a full check with the <b>diagnostic tool</b> .
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Check the <b>pressure</b> and <b>condition</b> of the <b>tyres</b> , the <b>condition</b> of the <b>joints</b> and the <b>front axle geometry</b> .
Check the vehicle battery voltage. Check the charging circuit if necessary (see <b>Technical Note 6014A (Renault)</b> or <b>Technical Note 9859A (Dacia)</b> , <b>Checking the charging circuit</b> ).
Do not operate the power-assisted steering pump assembly for at least <b>1 hour</b> . Check the conformity of parameters <b>PR008 Computer temperature</b> and <b>PR016 Oil temperature</b> . Check that no component placed in the area around the power-assisted steering pump assembly causes an abnormal rise in the temperature of the pump assembly.
Carry out a visual inspection of the general condition of the hydraulic circuit (leak, pipe crushed, etc.) Top up the hydraulic circuit (see <b>MR 451 Mechanical, 36B, Power-assisted steering, Power-assisted steering pump assembly: Bleed</b> ).
If the fault is still present, contact the Techline.

<b>AFTER REPAIR</b>	Carry out a road test, followed by a check with the <b>fault finding tool</b> .
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<b>ALP4</b>	<b>Assistance available without starting vehicle engine</b>
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<b>NOTES</b>	Only consult this customer complaint after a full check with the <b>diagnostic tool</b> .
	<b>Special note:</b> Use the Wiring Diagrams Technical Note for DUSTER.

Check the **condition** of the **connection** of the **alternator signal connector**, on the **vehicle alternator**, component code **103**.

If the connector is faulty and there is a repair procedure (see **Technical Note 6015A (Renault)** or **Technical Note 9804A (Dacia)**, **Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check the charging circuit if necessary (see **Technical Note 6014A (Renault)** or **Technical Note 9859A (Dacia)**, **Checking the charging circuit**).

Check that the battery charge warning light illuminates on the instrument panel during **+ after ignition** with the vehicle engine stopped.

<b>AFTER REPAIR</b>	Carry out a road test, followed by a check with the <b>fault finding tool</b> .
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ALP4  
CONTINUED

Check the **insulation, continuity** and **absence of interference resistance** on the following connection:

- **2A** between components **186** and **103**.

If the connection is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault)** or **Technical Note 9804A (Dacia)**, **Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

## AFTER REPAIR

Carry out a road test, followed by a check with the **fault finding tool**.