RENAULT

Technical Note 6516A

Basic document: **M.R 305**

Sub-section concerned: 36B

Electric power assisted steering

This Technical Note cancels and replaces the relevant pages of Technical Note 2492A

77 11 176 022 **Edition 1 - SEPTEMBER 2007** **EDITION ANGLAISE**

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

The methods 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."

Contents

36B POWER ASSISTED STEERING

GENERAL INSTRUCTIONS	Consult this fault chart before beginning the fault finding.

Check that there is an earth on connection **NO** of component **502**. With the vehicle ignition switched off, check that there is a voltage = **12 V** on connection **BP81** of component **502**. With the ignition on, check that there is a voltage = **12 V** on connection **AP23** of component **502**.
If these voltages are not present, check that the system fuses are correctly clipped in place.
If the fault persists, check the electrical wiring continuity and insulation to earth and to + **12 V** on: – The connection **BP81** between components **597** and **502** – The connection **NO** between the earth **NC** and component **502**
– The connection **AP23** between components **502** and **260**
Repair the faulty electrical wiring.

AFTER REPAIR	Disconnect the battery within = **30 s** to proceed with erasure of the fault. Reconnect the battery, then switch on the ignition again and wait **10 seconds** (injection initialisation phase).

1	**Right-hand Bargraph 1 extinguished** Card number 37
	XR25 COMMUNICATION KIT **XR25 Help:** **A Bargraph that is extinguished when the ignition is on signifies a diagnostic trace printout fault**

NOTES	Before beginning the fault finding procedure, consult the general instructions.

With the ignition off, connect the XR 25 test kit. The test kit should display "r25".

If the test kit does not display "r25", repair the electrical wiring between the diagnostic socket tracks
– 2 and the earth,
– 6 and the fuse box.

Switch on the ignition. With the selector in position S6. Enter D37. The display should read "I.dAE".
Is "I.dAE" displayed?

YES

Start of fault finding procedure.

NO

If the screen displays horizontal lines, check:
– the position of selector S6,
– that the cassette is correct,
– the connection between the XR25 test kit and the diagnostic socket.
Repair the faulty component, if necessary.

Connect bornier **MS 1048** in place of the computer and check the continuity of the electrical wiring on:
The connections **109J** and **109H** between components **225** and **502**.
Repair the electrical wiring.

AFTER REPAIR	Start of fault finding procedure

1	**Left-hand Bargraph 1 illuminated** Card number 37
[redacted]	COMPUTER **XR25 Help: *01 =** **1.DEF: safety relay fault** **2.DEF: supply fault** **3.DEF: software fault**

NOTES	With the ignition switched off, the Left-hand BG 1 is still illuminated: ignore this. Before beginning the fault finding procedure, consult the general instructions.

1.DEF	***NOTES***	None

Replace the computer.

2.DEF	***NOTES***	None

Check the continuity and insulation to earth and to + **12V** of the electrical wiring on:
The connections **109K** and **109L** between components **502** and **850**.

Repair the electrical wiring if necessary.

With the ignition on, check that the voltage = **8 V** on:
the connections **109K** and **109L** between the component **502** and the earth **NC**.
Does the voltage value equal **8 V**?

YES	Change the steering column.
NO	Replace the computer.

AFTER REPAIR	Disconnect the battery within = **30 s** to proceed with erasure of the fault. Reconnect the battery, then switch on the ignition again and wait **10 seconds** (injection initialisation phase).

1 [redacted] **CONTINUED**	

3.DEF	***NOTES***	None

Replace the computer.

AFTER REPAIR	Disconnect the battery within = **30 s** to proceed with erasure of the fault. Reconnect the battery, then switch on the ignition again and wait **10 seconds** (injection initialisation phase).

2	**Left-hand Bargraph 2 illuminated** Card number 37
[redacted]	TORQUE SENSOR CIRCUIT **XR25 Help: *01 =** **1.DEF: main torque sensor fault** **2.DEF: secondary torque sensor fault** **3.DEF: different measurements between the 2 sensors**

NOTES	Before beginning the fault finding procedure, consult the general instructions.

1.DEF	***NOTES***	None

Check the continuity and insulation to earth and to + **12V** of the electrical wiring on: The connections **109K**, **109M** and **109P** between components **502** and **850**.
Repair the electrical wiring if necessary.
With the ignition on, check that the voltage = **8 V** on connection **109K** between component **502** and the vehicle earth **NC**. If this voltage is not present, change the computer.
With the ignition on, check that the voltage = **2.5 V** on connection **109M** between component **502** and the vehicle earth **NC**. If this voltage is not present, change the computer.
Disconnect the electrical wiring to connection **109M** between component **502**, then switch on the ignition and check that the voltage = **6.5 V** on connection **109M** between component **850** and the vehicle earth **NC**. Does the voltage value equal **6.5 V?**

YES	Replace the computer.
NO	Change the steering column.

AFTER REPAIR	Disconnect the battery within = **30 s** to proceed with erasure of the fault. Reconnect the battery, then switch on the ignition again and wait **10 seconds** (injection initialisation phase).

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2.DEF	***NOTES***	None

Check the continuity and insulation to earth and to + **12V** of the electrical wiring on:
The connections **109L**, **109N** and **109Q** between components **502** and **850**.
Repair the electrical wiring if necessary.

With the ignition on, check that the voltage = **8 V** on connection **109L** between component **502** and the vehicle earth **NC**.
If this voltage is not present, change the computer.

With the ignition on, check that the voltage = **2.5 V** on connection **109N** between component **502** and the vehicle earth **NC**.
If this voltage is not present, change the computer.

Disconnect the electrical wiring to connection **109N** between component **502**, then switch on the ignition and check that the voltage = **6.5 V** on connection **109N** between component **850** and the vehicle earth **NC**.
Does the voltage value equal **6.5 V?**

YES	Replace the computer.
NO	Change the steering column.

3.DEF	***NOTES***	If *02 = 1.DEF first, deal with the fault 1.DEF If *02 = 2.DEF first, deal with the fault 2.DEF

Change the steering column.

AFTER REPAIR	Disconnect the battery within = **30 s** to proceed with erasure of the fault. Reconnect the battery, then switch on the ignition again and wait **10 seconds** (injection initialisation phase).

3	**Left-hand Bargraph 3 illuminated**	Card number 37
[redacted]	VEHICLE SPEED SENSOR CIRCUIT **XR25 Help: *03 =** **1.DEF: no speed signal** **2.DEF: signal not plausible**	

NOTES	If the speed signal and the kilometre/mileage trip recorder on the instrument panel is not working, consult the relevant fault chart in section 8 of MR 305. Before beginning the fault finding procedure, consult the general instructions.

Set the XR25 test kit to pulse detector mode.
Lift one of the two front wheels and check that there are pulses on connection **47F** of component **502** when turning the wheel, with the ignition on.
Are there any pulses present when turning the wheel?

YES	Replace the computer.

NO	Check the continuity and insulation to earth and to + **12 V** of the following electrical wiring:

Speed signal 3-track connector	**A1**		fuse box
	B1	and	Connection **47F** of component **502**
	C1		vehicle earth

Repair the faulty electrical wiring.

AFTER REPAIR	Disconnect the battery within = **30 s** to proceed with erasure of the fault. Reconnect the battery, then switch on the ignition again and wait **10 seconds** (injection initialisation phase).

4	**Left-hand Bargraph 4 illuminated** Card number 37
[redacted]	ENGINE CIRCUIT **XR25 Help: *04 =** **1.DEF: electrical wiring fault** **2.DEF: excess current** **3.DEF: motor seized** **4.DEF: servo control fault**

NOTES	Before beginning the fault finding procedure, consult the general instructions.

1.DEF	***NOTES***	None

Using a multimeter, and with the ignition switched off, measure the resistance between the connection codes **109R** and **109S** of component **502**.
Is the resistance greater than **1** Ω?

YES	Check the continuity and insulation to earth and to + **12V** of the electrical wiring on: The connection codes **109R** and **109S** between components **502** and **540** Is the wiring sound?
	If the electrical wiring is in good condition: change the steering column.
	If the electrical wiring is faulty: repair the electrical wiring.
NO	Replace the computer.

2.DEF	***NOTES***	None

Replace the computer.

If the fault persists, change the steering column.

AFTER REPAIR	Disconnect the battery within = **30 s** to proceed with erasure of the fault. Reconnect the battery, then switch on the ignition again and wait **10 seconds** (injection initialisation phase).

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3.DEF	***NOTES***	None

Change the steering column.

4.DEF	***NOTES***	None

Using a multimeter, and with the ignition switched off, measure the resistance between the connection codes **109R** and **109S** of component **502**.
Is the resistance greater than **1** Ω?

YES	Check the continuity and insulation to earth and to + **12V** of the electrical wiring on: The connection codes **109R** and **109S** between components **502** and **540** Is the wiring sound?
	If the electrical wiring is in good condition: change the steering column.
	If the electrical wiring is faulty: repair the electrical wiring.
NO	Replace the computer.

AFTER REPAIR	Disconnect the battery within = **30 s** to proceed with erasure of the fault. Reconnect the battery, then switch on the ignition again and wait **10 seconds** (injection initialisation phase).

5	**Left-hand Bargraph 5 illuminated**	Card number 37
[redacted]	CLUTCH CIRCUIT **XR25 Help: poor electrical wiring**	

NOTES	Before beginning the fault finding procedure, consult the general instructions.

Using a multimeter, and with the ignition switched off, measure the resistance between connection codes **109T** and **109V** of component **502**.
Does the resistance value equal 15 ± 1 Ω?

NO	Check the continuity and insulation to earth and to + **12V** of the electrical wiring on: The connection codes **109T** and **109V** between components **502** and **540** Is the wiring sound?
	If the electrical wiring is in good condition: change the steering column.
	If the electrical wiring is faulty: repair the electrical wiring.
YES	Replace the computer.

AFTER REPAIR	Disconnect the battery within = **30 s** to proceed with erasure of the fault. Reconnect the battery, then switch on the ignition again and wait **10 seconds** (injection initialisation phase).

6	**Left-hand Bargraph 6 illuminated**	Card number 37
[redacted]	COMPUTER POWER SUPPLY CIRCUIT **XR25 Help: + Battery supply fault**	

NOTES	Before beginning the fault finding procedure, consult the general instructions. Check the condition of the battery. Check the condition of fuse.

Check the continuity and insulation to earth and to + **12 V** of the electrical wiring:
– on connection **BP81** between components **502** and **597**,
– between components **597** and **107**,
– on connection **NO** between component **502** and the vehicle earth **NC**.
Repair the electrical wiring.

If the fault persists, change the computer.

AFTER REPAIR	Disconnect the battery within = **30 s** to proceed with erasure of the fault. Reconnect the battery, then switch on the ignition again and wait **10 seconds** (injection initialisation phase).

9	**Left-hand Bargraph 9 illuminated when speed > 12 mph (20 km/h)** Card number 37
[redacted]	SPEED SENSOR CIRCUIT

NOTES	Before beginning the fault finding procedure, consult the general instructions. If BG 3G is illuminated, consult BG 3G.

Set the XR25 test kit to pulse detector mode.
Lift one of the two front wheels and check that there are pulses on connection **47F** between components **502** and **651**, with the ignition on.
Are there any pulses present when turning the wheel?

YES

Replace the computer.

NO

Check the continuity and insulation to earth and to **+ 12 V** of the following electrical wiring:

Speed signal 3-track connector	**A1**	fuse box
	B1 and	Connection **47F** of component **502**
	C1	vehicle earth

Repair the faulty electrical wiring.

AFTER REPAIR	Disconnect the battery within = **30 s** to proceed with erasure of the fault. Reconnect the battery, then switch on the ignition again and wait **10 seconds** (injection initialisation phase).

10	**Left-hand Bargraph 10 illuminated with the engine running** Card number 37
[redacted]	ENGINE SPEED INFORMATION CIRCUIT

NOTES	Before beginning the fault finding procedure, consult the general instructions.

Set the XR25 test kit to pulse detector mode.
With the engine running, check that there are pulses on connection **H7** of component **502**.
Are the pulses present?

YES	Replace the computer.
NO	With the XR25 test kit still in pulse detection mode, and the engine running, are the pulses present on connection code **H7** of component **120**?
	There are pulses present: repair the electrical wiring for connection code **H7** between components **502** and **120**.
	There are no pulses present: change the injection computer.

AFTER REPAIR	Disconnect the battery within = **30 s** to proceed with erasure of the fault. Reconnect the battery, then switch on the ignition again and wait **10 seconds** (injection initialisation phase).

ALP1	The electric power-assisted steering warning light is flashing constantly (with the XR25 test kit not connected)

NOTES	Before beginning the fault finding procedure, consult the general instructions. Carry out the tests without the XR25 test kit connected.

Check the insulation to earth of the electrical wiring for connection **109J** between components **502** and **225**.
Is the wiring sound?

YES	Change the diagnostic socket.
	If the fault persists, change the computer.
NO	Repair the electrical wiring.

AFTER REPAIR	Disconnect the battery within = **30 s** to proceed with erasure of the fault. Reconnect the battery, then switch on the ignition again and wait **10 seconds** (injection initialisation phase).

ALP2	The electric power-assisted steering warning light never illuminates

NOTES	Before beginning the fault finding procedure, consult the general instructions. Check the condition of the electric power-assisted steering **10A fuse**.

Check the continuity and insulation to earth and to + **12 V** of the electrical wiring between tracks:

Instrument panel 15-track connector	4		fuse box
	13	and	7 of the computer 16-track connector via the dashboard/single unit connection R221

Repair the electrical wiring or connectors, if necessary.

Route the connection **109H** of component **502** to earth.
Is the electric power-assisted steering warning light illuminated?

YES	Replace the computer.
NO	Change the instrument panel warning light strip.

AFTER REPAIR	Disconnect the battery within = **30 s** to proceed with erasure of the fault. Reconnect the battery, then switch on the ignition again and wait **10 seconds** (injection initialisation phase).

ALP3	**Power-assisted steering is inactive with no illumination of the electric power-assisted steering warning light**

NOTES	Before beginning the fault finding procedure, consult the general instructions.

With the vehicle ignition switched off, check that there is a voltage = **12 V** on connection **BP81** of component **502**.
With the ignition on, check that there is a voltage = **12 V** on connection **AP23** of component **502**.
Does the voltage value equal **12 V**?

YES	Replace the computer.

NO	Repair the electrical wiring for connection **BP81** between components **502** and **597** or for connection **AP23** between components **502** and **260**.

AFTER REPAIR	Disconnect the battery within = **30 s** to proceed with erasure of the fault. Reconnect the battery, then switch on the ignition again and wait **10 seconds** (injection initialisation phase).

ALP4	**Power-assisted steering is inactive with illumination of the electric power-assisted steering warning light**

NOTES	Before beginning the fault finding procedure, consult the general instructions. On card number 37: If BG 1G is illuminated, consult BG 1G. If BG 2G is illuminated, consult BG 2G. If BG 3G is illuminated, consult BG 3G. If BG 4G is illuminated, consult BG 4G. If BG 5G is illuminated, consult BG 5G.

Check the continuity and insulation to earth and to **12 V** of the electrical wiring for connection **H7** between components **502** and **120**.
Repair the electrical wiring or connectors, if necessary.

With the ignition on, check that the voltage = **12 V** on connection **H7** of component **502**.
Does the voltage value equal **12 V**?

YES	Replace the computer.
NO	Replace the injection computer.

AFTER REPAIR	Disconnect the battery within = **30 s** to proceed with erasure of the fault. Reconnect the battery, then switch on the ignition again and wait **10 seconds** (injection initialisation phase).