

MEGANE

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EDITION ANGLAISE

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

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ABBREVIATIONS

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ABBREVIATIONS	MEANING OF ABBREVIATION
ABS	Anti-lock braking system
ALP	Fault finding chart
APC	After ignition
AVC	Before ignition feed
BVA	Automatic gearbox
BVM	Manual gearbox
BVR	Sequential gearbox
CAN	Controller Area Network
AC	Air conditioning
CD	Compact disc
PAS	Power assisted steering (hydraulic)
DAE	Electric power assisted steering
DVD	Digital versatile disc
DTC	Fault finding code
EGR	Exhaust gas recirculation
ESP	Electronic Stability Program
GMV	Fan assembly
CNG	Compressed natural gas
LPG	Liquefied petroleum gas
HLE	High yield strength
MAG	Metal active gas (for welding steel)
MIG	Metal inert gas (for welding aluminium)
MR	Workshop repair manual
TN	Technical Note
OBD	On board diagnostics
SER	Resistance spot welding
SSPP	Tyre pressure monitoring system
THLE	Very high-tensile strength
TM	Labour time
UCH	UCH
UPC	Protection and switching unit
UCT	Roof control unit
UHLE	Ultra high yield strength
VIN	Vehicle identification number

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Warning:

The Mégane can only support fault finding using the **CLIP diagnostic tool fitted with the new vehicle connection sensor lead** (Part no. **Elé. 1674 or 00 00 167 400**).

The Mégane is a **new generation multiplex vehicle**. The specifications of the multiplex network have changed. The main change in the multiplex network is the speed of communication: it has changed from **250 kBauds** to **500 kBauds on the Mégane**.

NOTE:

The multiplex network of the vehicle is the **main functional communication network** of the vehicle. But certain optional functions are still performed by track wires.

This change has allowed a new optimisation of the electronic layout of the vehicle in two ways:

- **Distribution of vehicle functions:** the main computers present on the multiplex network **manage several functions** (example: UCH: access - vehicle protection - lighting - wipers - passenger compartment heating - tyre pressure monitor).
- **Elimination of redundant sensors:** The "steering wheel angle" signal used by the electronic stability program is produced by the electric power assisted steering which then transmits it to the multiplex network. So the steering wheel angle sensor used by the electronic stability program does not exist.

This change has also allowed **fault finding on computers** present on the multiplex network to be performed by **the main communication network of the vehicle** (multiplex network) instead of a cable network dedicated to fault finding (K / L lines).

IMPORTANT:

However, the Mégane still uses **two different physical fault finding media**:

- **The multiplex network:** which allows fault finding of the following computers: instrument panel, electric power assisted steering, airbag, automatic air conditioning, UCH, anti-lock braking system - electronic stability program, protection and switching unit, injection.
- **The K/L line fault finding network:** which allows fault finding on the following computers: automatic transmission, LPG - NGV unit, XENON bulb.

Certain other computers, although present on the vehicle multiplex network, are still fitted with "**self-diagnostic function**": Central Communication Unit (Carminat), driving school unit.

IMPORTANT:

Computer supply for the fault finding procedure:

To run fault finding on the vehicle computers, proceed as follows:

- Renault card on the card holder (keyless vehicle scenario 1 (basic, not hands-free) and scenario 2 (top of the range, hands-free))
- Long press (more than 5 seconds) on "start" button without start-up conditions
- Then connect the diagnostic tool and perform the required operations.

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Innovations on the Mégane:

The innovations on the Mégane may be classified into three categories:

FUNCTIONAL INNOVATIONS	This section describes the new services present on the vehicle and their integration on the vehicle.
ARCHITECTURAL INNOVATIONS	This section describes the distribution of the main functions and the new computers fitted to the vehicle.
FAULT FINDING INNOVATIONS	<p>This section describes the fault finding changes implemented on the Mégane in order to:</p> <ul style="list-style-type: none">● Allow fault finding on the multiplex network of the vehicle (new vehicle to diagnostic tool connection sensor lead).● Develop and complement multiplex network fault finding functions (physical measurements of the type of fault, fault finding assistance etc.).● Mask the diversity and complexity of vehicle functions: fault finding by function, multi-computers, etc.

1 - Functional innovations:

The main functional innovations on the vehicle are as follows:

KEYLESS VEHICLE <i>(access, protection - de-protection and hands-free starting)</i>	<p>This function is provided by the following computers:</p> <ul style="list-style-type: none">● UCH: responsible for access and vehicle protection (immobiliser).● Steering lock: participates in vehicle protection (electromechanical locking of the steering column).● Injection: responsible for vehicle protection (immobiliser) and control of the starter motor.● Switching Protection Unit: responsible for the power supplied to the starter motor at the request of the UCH, and for injection management.
ELECTRONIC STABILITY PROGRAM	<p>This function is provided by the following computers:</p> <ul style="list-style-type: none">● Anti-lock braking system - electronic stability program: responsible for the trajectory analysis function by means of the speed sensors, the yaw sensor, the transverse acceleration sensor and the steering wheel angle (driver's intention: signal sent by the electric power assisted steering).● Injection: management of engine torque in order to correct the trajectory at the request of the electronic stability program or automatic transmission.● Automatic transmission: translation (shared with the injection computer) of driver's intention, sends torque requests to the injection computer.
LIGHTING - XENON BULB	<p>This function is provided by the following computers:</p> <ul style="list-style-type: none">● UCH: translation of driver's intention, management of the lighting stalk, the direction indicators and the rear fog lights.● Switching Protection Unit: responsible for the power needed for lighting, the side lights, the main beam headlights and the front fog lights.● XENON bulb: responsible for management and correction of the dipped headlights.

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MULTIMEDIA	<p>This function is provided by the following computers:</p> <ul style="list-style-type: none">● Central Communication Unit (Carminat): responsible for the function.● Navigation display: displays information relating to navigation. <p>IMPORTANT: This function may also be provided by the radio display, depending on the type of navigation (basic - top of the range).</p>
TYRE PRESSURE MONITOR	<p>This function is provided by the following computers:</p> <ul style="list-style-type: none">● UCH: responsible for the function, it also houses the receiver for tyre pressure signals.● Instrument panel: displays information relating to the tyre pressure monitor. <p>NOTE: The tyre pressure is monitored by specific valves fitted with tyre pressure sensors.</p>

2 - Design innovations:

These innovations concern services which are already in use but which are implemented in a specific way on the Mégane II:

AIR CONDITIONING	<p>This service is standard on RENAULT vehicles, only the distribution of tasks is specific:</p> <ul style="list-style-type: none">● Air conditioning: responsible for user intention (management of temperature for controlled air conditioning) and for mixing and distribution of air in the passenger compartment (manual and controlled air conditioning).● UCH: responsible for the heating function.● Injection: responsible for management of the air conditioning (cold cycle).● Switching Protection Unit: responsible for the power required for air conditioning (compressor and engine cooling fan).
WIPERS	<p>The distribution of the function is as follows:</p> <ul style="list-style-type: none">● UCH: responsible for driver's intention, management of the wiper stalk and the rear screen wiper.● Switching Protection Unit: responsible for the power required for the windscreen wiper.
LIGHTING	<p>This function has already been described in Section 1 - Functional innovations. Refer to this section for further information.</p> <p>NOTE: In the case of lighting without XENON bulbs, the Switching Protection Unit manages the dipped headlights.</p>

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ENGINE MANAGEMENT - INJECTION	<p>This function is shared by two computers:</p> <ul style="list-style-type: none">● Injection: management of programming and information associated with engine management, and of the speed regulation and limitation function.● Protection and Communication Unit: management of the power required for engine management. The Protection and Communication Unit also incorporates the fuel pump relay and actuators controlled by cable by the injection computer.
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Finally, the Mégane has a new computer, which has never been fitted to any RENAULT vehicle before: **the Switching Protection Unit**. The main functions of this computer are as follows:

VEHICLE POWER SUPPLY	The main power relays of the vehicle are directly integrated into the Switching Protection Unit (including the fuel pump relay and injection actuators).
POWER UNIT FOR INJECTION	Management of the starter motor, the air conditioning compressor and the engine cooling fan.
POWER UNIT FOR THE UCH	Management of lighting (combined with the XENON bulbs) and window wipers.
POWER UNIT FOR AIR CONDITIONING	Management of the heated rear screen.

3 - Fault finding innovations:

Development of the electronic and functional design of the Mégane has necessitated changes in the fault finding processing used. The main fault finding changes are as follows:

- **New diagnostic tool to vehicle connection sensor lead:** This change is made necessary by the new medium used for communication with the computers present on the main communication network of the vehicle: the multiplex network. This lead incorporates the communication cards for the computers of the multiplex network and the computers which can support fault finding on the K / L lines.

IMPORTANT:

The airbag harness tests and the various physical measurement tests must always be carried out using the existing diagnostic tool leads and modules.

- **New interface for diagnostic tool navigation:** The diagnostic tool navigation display has changed for fault finding the Mégane. Note in particular the following changes:
- **Identification of the vehicle by entering the VIN:** For the moment this change is specific to the Mégane. It can be performed manually or automatically, by interrogation of the vehicle. It also gives the After-Sales type, and the engine and gearbox type.

NOTE:

This change will eventually be extended to all RENAULT vehicles which can already support fault finding by VIN identification (example: Laguna II, Clio II Phase 2).

- **Distinction between the fault finding and repair menus:** The fault finding menu incorporates all the functionalities associated with analysis of an electrical or electronic fault (processing of faults, conformity checking, actuator commands and processing by customer complaint) whereas the repair menu allows performance of all the operations associated with replacement of a component and/or modification of the diagnostic system configuration (configuration read operations, configuration, programming, specific commands etc.).
- **New electronic layout integrity test:** As correct operation of the vehicle is dependent on the integrity of the multiplex network (main functional communication network) and of the cabled electronic systems, the **multiplex network test** has changed, becoming the **vehicle electronic layout integrity test**. The changes are as follows:
- **Multiplex network test:** This test remains similar to that already used for RENAULT multiplex vehicles. But it also incorporates a read of the number of faults from the multiplex computers, physical measurements of the types of multiplex network faults (open circuit, short circuit to earth, short circuit to the +ve of the faulty rings) and an assisted help procedure for detecting the defective computer or ring (in the event of total paralysis of the network).

- **Testing other computers which support fault finding:** this test consists of connection and identification of the computers present on the vehicle which can support fault finding K / L lines.
- **New fault finding topics:** the fault finding topics are now split into two separate menus:
 - **Computer diagnosis:** similar to the existing fault finding topics apart from the changed menu presentation. The states and parameters menus have been modified to allow simultaneous display of these data items and divided into screens by function and sub-function (example: "ignition" sub-function in Injection). In addition, the computer fault finding procedure allows access to the vehicle "repair" menu when replacing parts to be matched with the vehicle (configuration, programming).
 - **Fault finding by function:** limited to computer fault finding present on the multiplex network of the vehicle and to the **keyless vehicle, air conditioning** and **tyre functions**. This new type of fault finding allows an overall diagnosis of a function to be made by **simultaneous dialogue with all the computers involved** in providing the service. In this way, it is possible to simultaneously analyse all the components associated with a function and also simultaneously supervise intersystem exchanges between the computers responsible for a customer service.

NOTE:

In the event of detecting a faulty component, it is necessary to switch to computer fault finding mode to perform the configuration operations - programming the replaced part.

If a function fault is detected, a physical part is replaced: hence the choices made concerning navigation of the diagnostic tool.

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Summary list of the computers and functions present on the Mégane vehicle:

Computer name	Fitting	Fault finding procedure	Main function	Fault finding sub-functions
Airbag	Standard	<ul style="list-style-type: none"> ● Tool ● Multiplex network 	<ul style="list-style-type: none"> ● Passive protection by deployment of airbags 	None
Anti-lock braking system	Standard	<ul style="list-style-type: none"> ● Tool ● Multiplex network 	<ul style="list-style-type: none"> ● Anti-lock braking in braking phase 	None
Automatic gearbox	Optional	<ul style="list-style-type: none"> ● Tool ● K / L lines (although present on the multiplex network) 	<ul style="list-style-type: none"> ● Automatic gear change depending on driver intention 	None
Driving school unit	Optional	<ul style="list-style-type: none"> ● Self-diagnostic ● Multiplex network 	<ul style="list-style-type: none"> ● Management of the "dual control" system 	None
Manual or automatic air conditioning	Optional	<ul style="list-style-type: none"> ● Manual air conditioning cannot support fault finding ● Tool for automatic air conditioning ● Multiplex network 	<ul style="list-style-type: none"> ● Air conditioning: user intention and passenger compartment air distribution 	Air conditioning
Electric power assisted steering	Standard	<ul style="list-style-type: none"> ● Tool ● Multiplex network 	<ul style="list-style-type: none"> ● Power assisted steering 	Supplies the steering wheel angle to the electronic stability control program
Electronic stability control program (including anti-lock braking system)	Optional	<ul style="list-style-type: none"> ● Tool ● Multiplex network 	<ul style="list-style-type: none"> ● Anti-lock braking function ● Electronic stability and understeer program 	None
Injection	Standard	<ul style="list-style-type: none"> ● Tool ● Multiplex network 	<ul style="list-style-type: none"> ● Engine management computer 	Keyless vehicle: Air conditioning
LPG / NGV	Optional	<ul style="list-style-type: none"> ● Tool ● K / L lines (although present on the multiplex network) 	<ul style="list-style-type: none"> ● LPG / NGV injection management 	None
XENON bulb (COSLAD)	Optional	<ul style="list-style-type: none"> ● Tool ● K / L lines 	<ul style="list-style-type: none"> ● Position and management of the dipped headlights 	None
Central Communication Unit (Carminat)	Optional	<ul style="list-style-type: none"> ● Self-diagnostic ● Multiplex network 	<ul style="list-style-type: none"> ● Satellite navigation 	None

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Computer name	Fitting	Fault finding procedure	Main function	Fault finding sub-functions
UCH	Standard	<ul style="list-style-type: none">● Tool● Multiplex network	<ul style="list-style-type: none">● Management of access and the passenger compartment	Keyless vehicle Air conditioning Tyres
Switching Protection Unit	Standard	<ul style="list-style-type: none">● Tool● Multiplex network	<ul style="list-style-type: none">● Output management (mainly engine compartment)	Keyless vehicle Air conditioning
Instrument panel	Standard	<ul style="list-style-type: none">● Tool● Multiplex network	<ul style="list-style-type: none">● Display of vehicle information	Tyres
Steering column lock	Standard	<ul style="list-style-type: none">● Does not support fault finding (supervised by the UCH)● Multiplex network	<ul style="list-style-type: none">● Immobilisation of the steering column (vehicle protection)	Keyless vehicle