



	Type	S/Section
KANGOO	XC0 A/C	17
TWINGO	X06 6/7/8	17
CLIO	XB0 A/B/C/D/F/G/K	17

17 CENTRAL COOLANT TEMPERATURE MANAGEMENT

- | | | | |
|-------------|-----------------|---------------|---------------------|
| • Engine : | D7F - E7J - K7M | Basic manual: | M.R. 305 - M.R. 325 |
| • Gearbox : | XXX | | M.R. 337 |

This note provides information on the installation and advances made to the central coolant temperature management system on D7F, E7J and K7M engines. These can be identified as follows:

- the first generation (the engine cooling fan assembly is controlled by a radiator temperature switch),
- the second generation or **GCTE 1** (there is no longer a temperature switch on the radiator and the engine cooling fan is controlled by the injection computer),
- the third generation or **GCTE 2** (identical to **GCTE 1** except that relay **238** is no longer fitted).

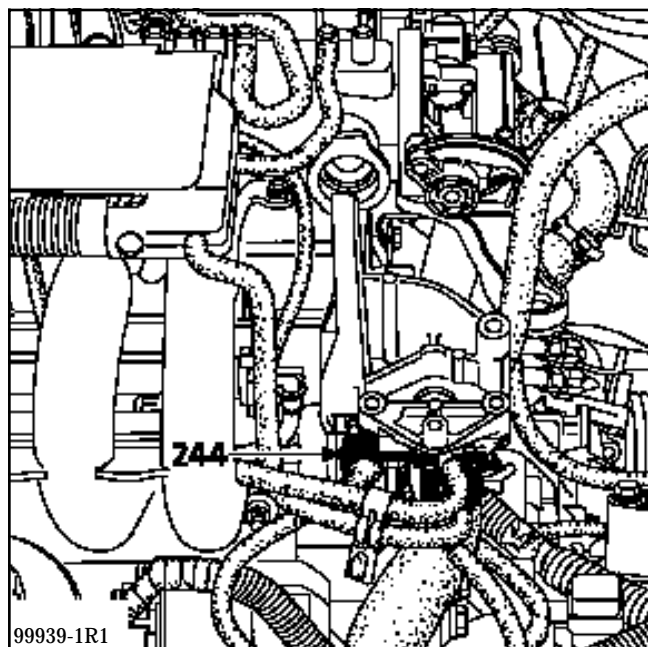
GCTE is an abbreviation of the French for "**Central coolant temperature management**".

See the next page for more information on these modification stages.

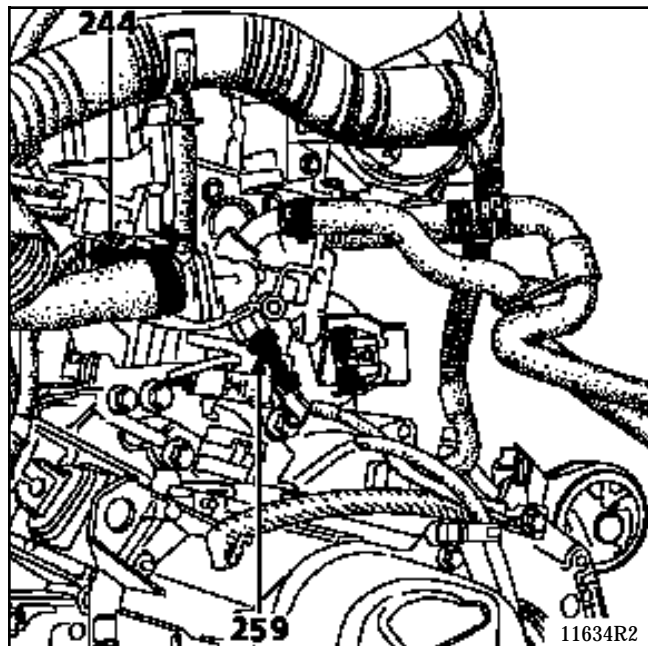
FUNCTION	1st GENERATION	2nd GENERATION (GCTE 1)	3rd GENERATION (GCTE 2)
Coolant temperature information to the injection computer	Via sensor 244 (2 tracks)	Via sensor 244 (3 tracks) Injection computer uses 2 out of 3 tracks of temperature sensor	Via sensor 244 (3 tracks) Injection computer uses 2 out of 3 tracks of the temperature sensor
Start of fan operation	Via temperature switch 248 on radiator	Via injection computer	Via injection computer
Coolant temperature indicated on instrument panel	Via dual function sensor 251 (not used on TWINGO , replaced by single function sensor 259)	Via sensor 244 (3 tracks) used by one of three tracks on temperature sensor to indicate temperature on instrument panel (not used on TWINGO).	Via sensor 244 (3 tracks) Used by one of three tracks on temperature sensor to indicate temperature on instrument panel (not used on TWINGO).
Warning light on instrument panel	Via dual function sensor 251 (not used on TWINGO , replaced by single function sensor 259)	Via single function sensor 259	Via injection computer

IMPORTANT: New part numbers have been created. The computers are not interchangeable. If these computers are interchanged, it will result in the engine overheating (as no control signal will be sent to the engine cooling fan).

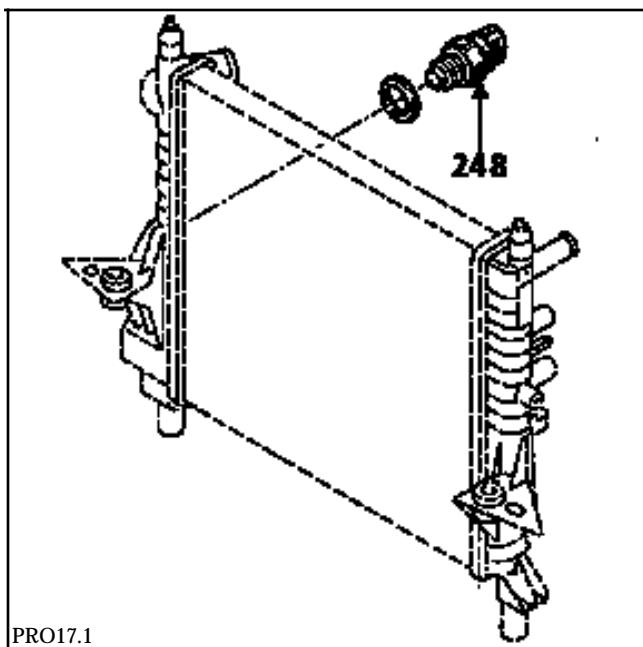
1st generation



244 Coolant temperature sensor for injection.
2-track sensor.

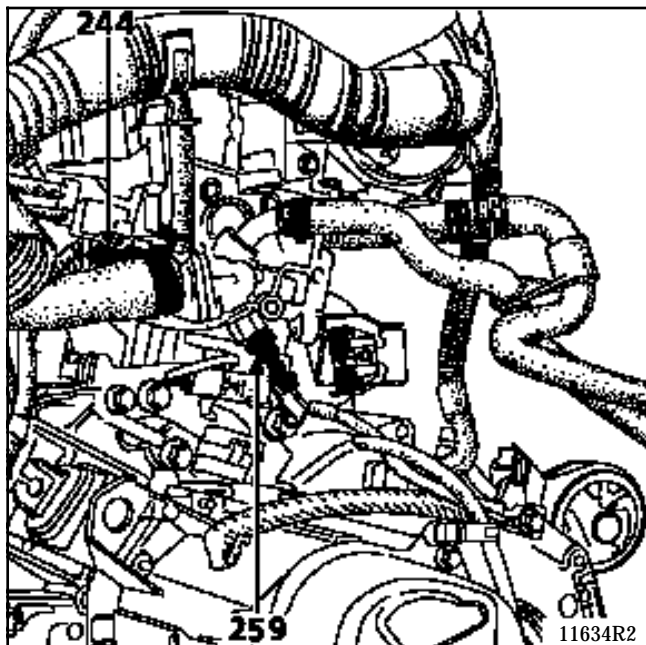


259 Coolant temperature warning switch for
instrument panel.



248 Coolant temperature switch for engine co-
oling fan

2nd generation (GCTE 1)



- 244** Coolant temperature sensor for injection (and coolant temperature indication on instrument panel. Not used on TWINGO). 3-track sensor, of which two tracks are allocated to injection coolant temperature information and one to indication of the coolant temperature on the instrument panel.
- 259** Warning coolant temperature switch for instrument panel.

Purpose of the modification

Coolant temperature switch for engine cooling fan (248) no longer fitted.

For information on other vehicles, the purpose of the modification is so that it will no longer be necessary to fit the dual function temperature switch (251) (warning light and indication of coolant temperature on instrument panel) and to replace it by a coolant warning temperature switch on the instrument panel (259). The TWINGO did not have a temperature indicator on the instrument panel originally, although a sensor (259) was already fitted.

Operating principle

Sensor 244 allows:

- the coolant temperature to be shown on the instrument panel,
- the injection computer to receive constant information on the engine coolant temperature.

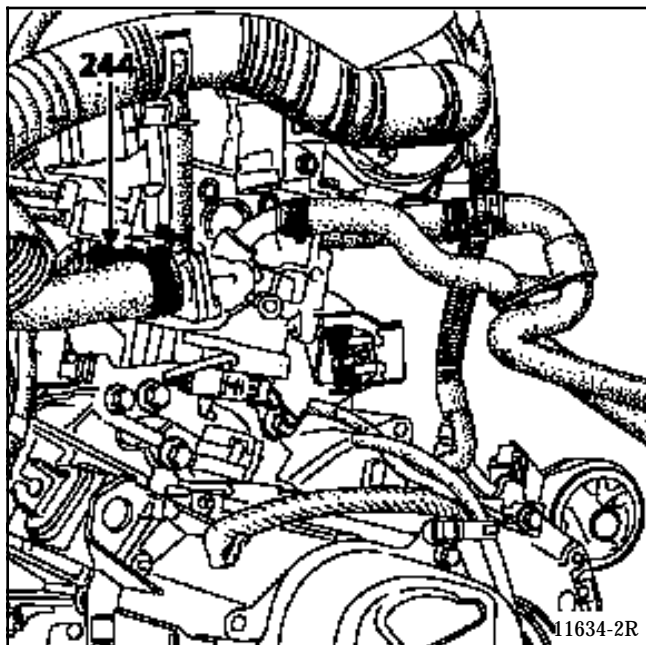
The injection computer, depending on the coolant temperature, controls:

- the injection system,
 - the cooling fan assembly.
- The engine cooling fan assembly is controlled at fast speed (the slow speed is controlled by the air conditioning system) according to the temperature.

Modification of the management system for starting the air conditioning compressor

The information to enable compressor operation is no longer sent to the air conditioning computer: instead it is sent directly to the control circuit of the relay feeding the compressor. This is also a dual operation relay: it also feeds the fan in slow speed mode

3rd generation (GCTE 2)



- 244** Coolant temperature sensor for injection (and coolant temperature indication on instrument panel. Not used on TWINGO). 3-track sensor, of which two tracks are allocated to injection coolant temperature information and one to indication of the coolant temperature on the instrument panel.

Purpose of the modification

It will no longer be necessary to fit the temperature switch for the engine cooling fan (259), linked to the warning light on the instrument panel .

Operation

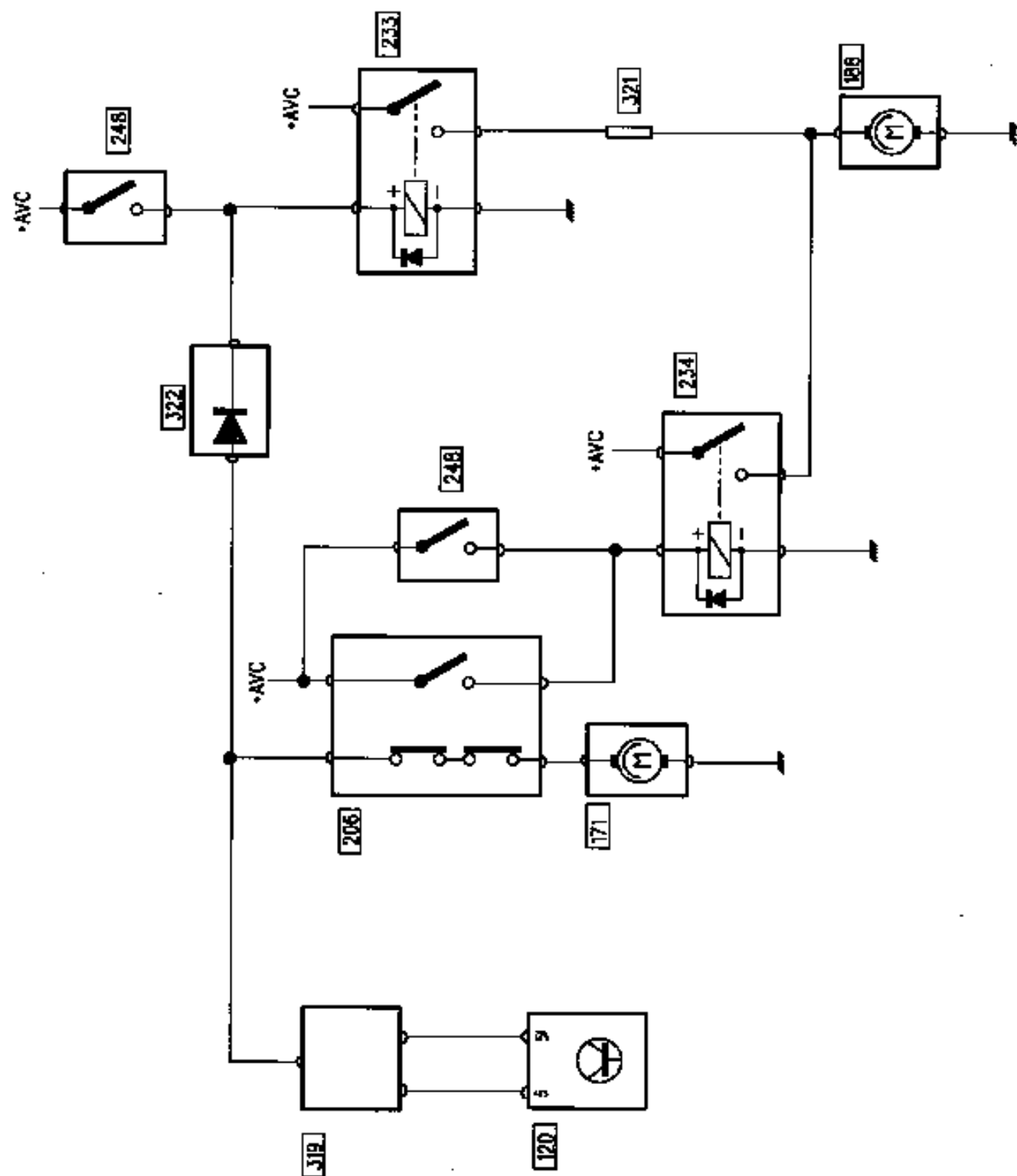
Sensor 244 allows:

- the coolant temperature to be shown on the instrument panel,
- the injection computer to receive constant information on the engine coolant temperature.

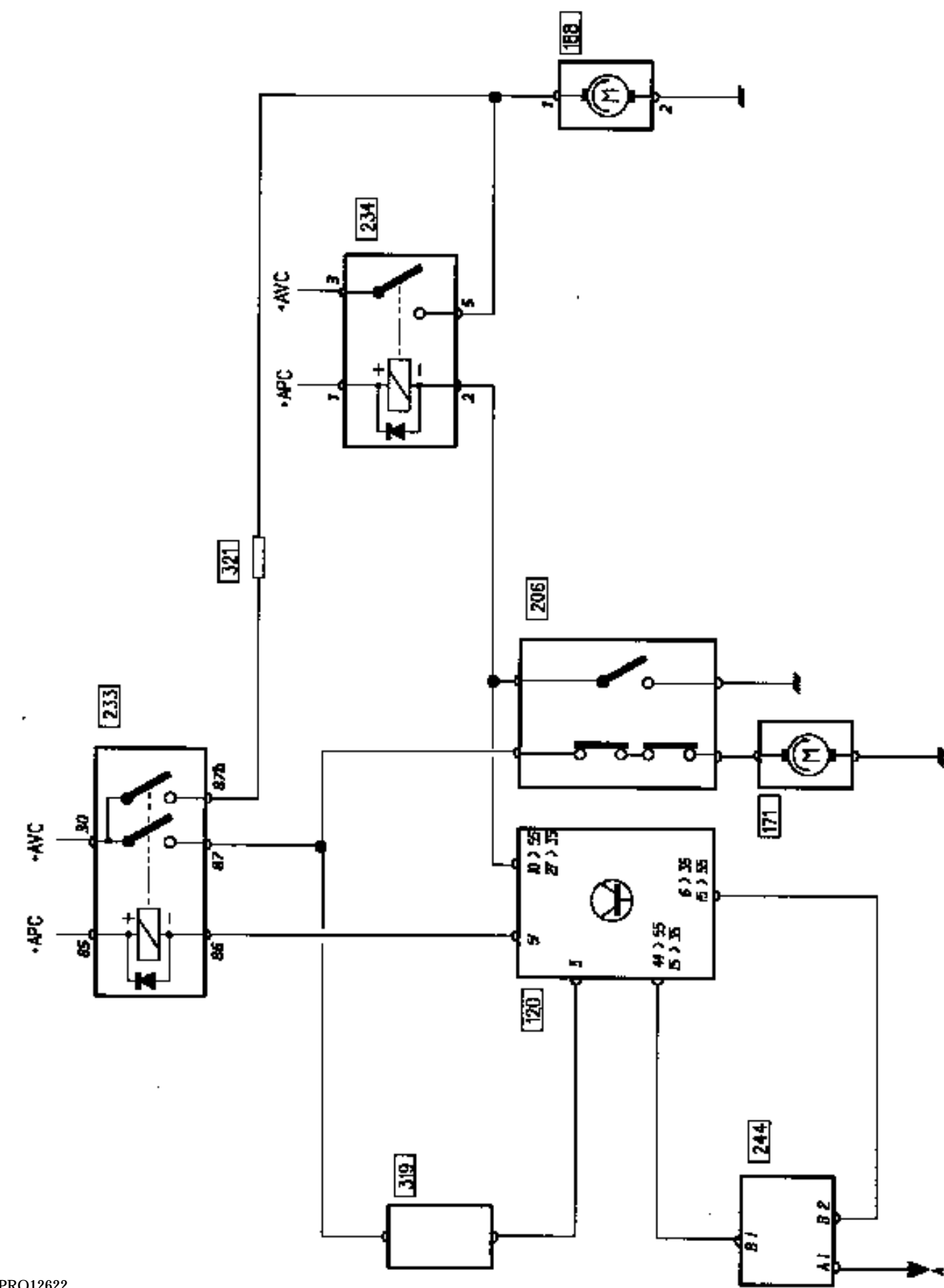
The injection computer, depending on the coolant temperature, controls:

- the injection system,
- illumination of the coolant temperature warning light on the instrument panel,
- the engine cooling fan assembly:
 - at slow speed depending on the coolant temperature or when the air conditioning is activated,
 - at fast speed depending on the coolant temperature,
 - for the antipercolation function.

Operating wiring diagram (1st generation)



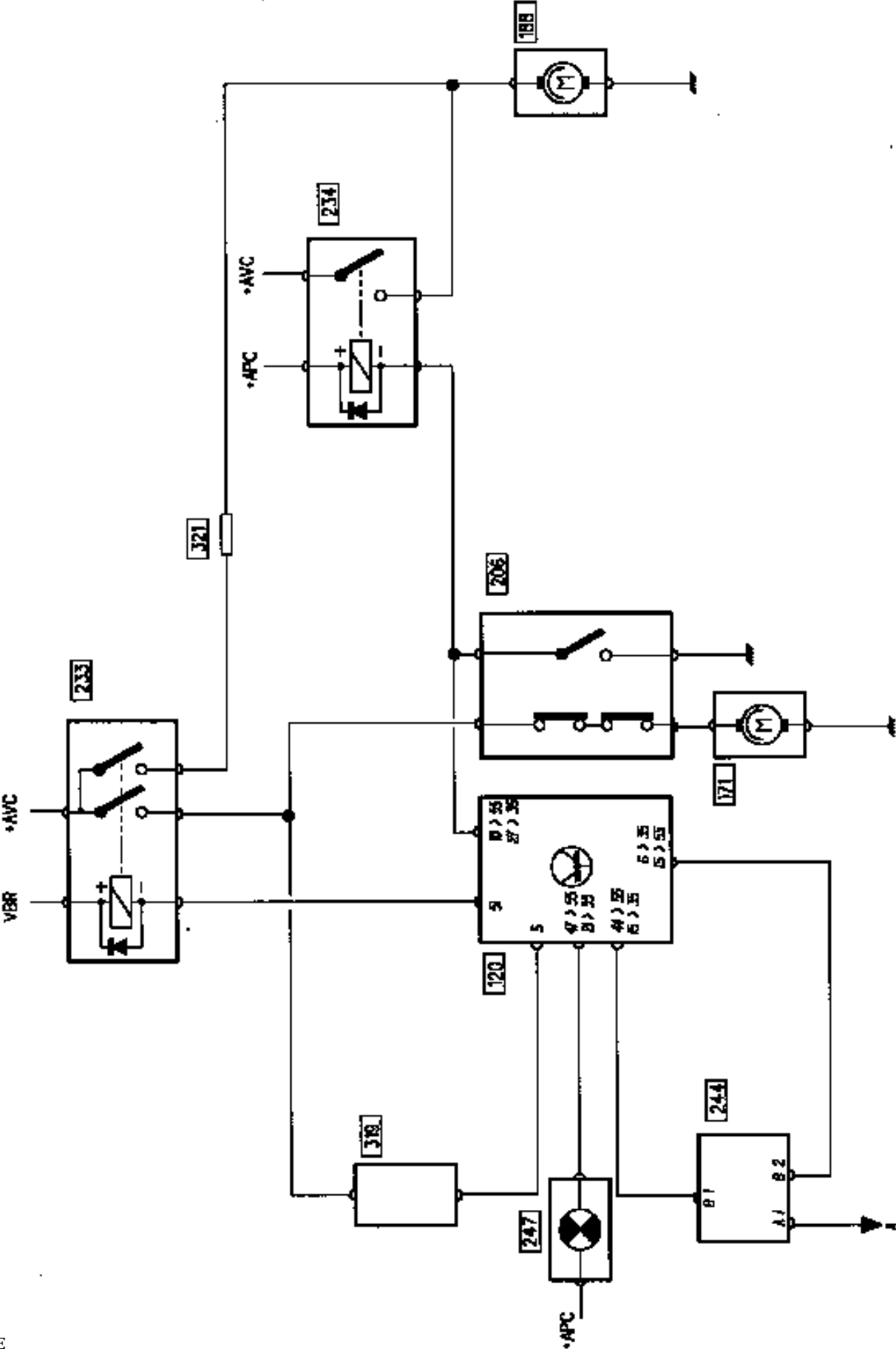
Operating wiring diagram (2nd generation, GCTE 1, SAGEM and MAGNETI MARELLI computers)



INJECTION

Central coolant temperature management

Operating wiring diagram (3rd generation, GCTE 2, SAGEM or MAGNETI MARELLI computer)



KEY

- 120 Injection computer
- 171 Air conditioning compressor
- 188 Engine cooling fan assembly
- 206 Air conditioning pressostat
- 233 Engine cooling fan slow speed relay
- 234 Engine cooling fan fast speed relay
- 244 Coolant temperature sensor
- 247 Instrument panel warning light
- 248 Temperature switch
- 262 Engine cooling fan assembly
- 319 Air conditioning computer
- 321 Engine cooling fan resistor
- 419 Air conditioning monitoring unit
- 700 Percolation fan unit low speed relay

A To indicator needle on instrument panel

Specifications of coolant temperature sensor

Temperature in °C (± 1°)	20	40	80	90
Coolant temperature sensor				
CTN type	2600 to 4000	1100 to 1600	270 to 300	200 to 270
Resistance in ohms				

Central coolant temperature management

If you need to find out whether the computer is version GCTE, GCTE 1 or GCTE 2, together with the part numbers, you must interrogate the injection computer using the XR25.

NOTE : This method is only valid for SAGEM and MAGNETI MARELLI computers. All "SIEMENS SIRIUS 32" computers operate with the GCTE2 version.

Type in

#	5	3
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- If the two first letters read on the screen are less than or equal to **50** or **A1** :

5	0	X	X
---	---	---	---

A	1	X	X
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it indicates that the computer is designed to work with two temperature sensors (one 3-track sensor for the engine cooling fan assembly and another for the temperature warning light).

- If the first two figures read on the display are equal to or greater than **51**:

5	1	X	X
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the computer is designed to operate with one GCTE 2 coolant temperature sensor (3 tracks).

If work has been carried out on the vehicle which involves changing the computer or the coolant temperature sensor, warm up the engine and make sure the fan is operating properly before returning the vehicle to the customer.

IMPORTANT: CHANGE IN THE INJECTION COMPUTER

Computers operate with traditional coolant temperature sensors or GCTE 1 or 2 sensors and these are not interchangeable.

If a computer which is not suitable for GCTE sensors is fitted to an engine equipped with a GCTE sensor, a control signal will never be sent to the engine cooling fan with the result that the engine will overheat.

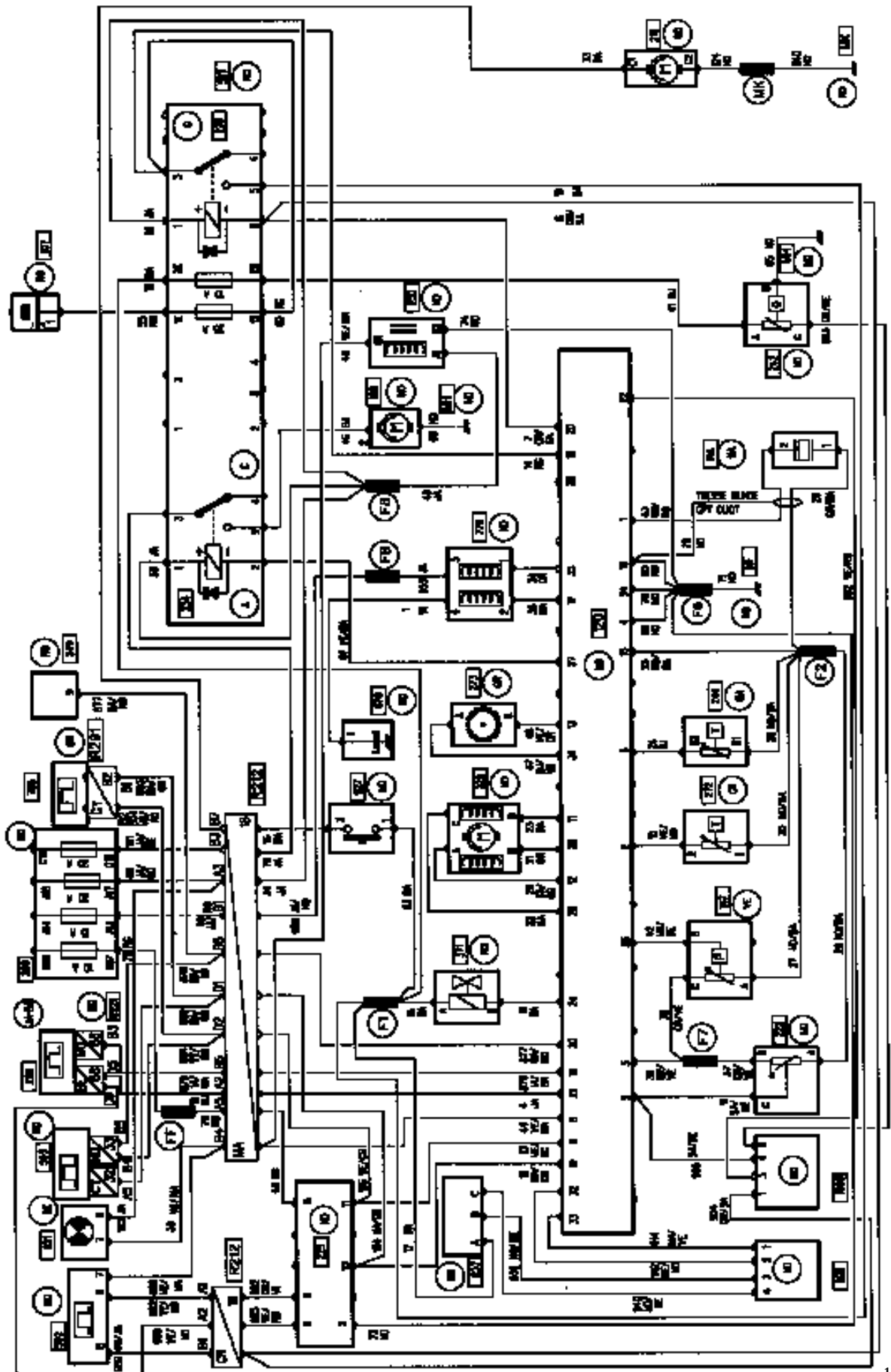
If a GCTE computer is fitted to an engine equipped with a traditional coolant temperature sensor, the vehicle will no longer comply with the anti-pollution regulations.

SAFIR 1 GCTE 1, SAFIR 2 GCTE 2 and "SIRIUS 32" computers are not interchangeable.

For this reason, if a computer is changed it is essential to check whether the type of computer and the type of coolant temperature sensor are compatible.

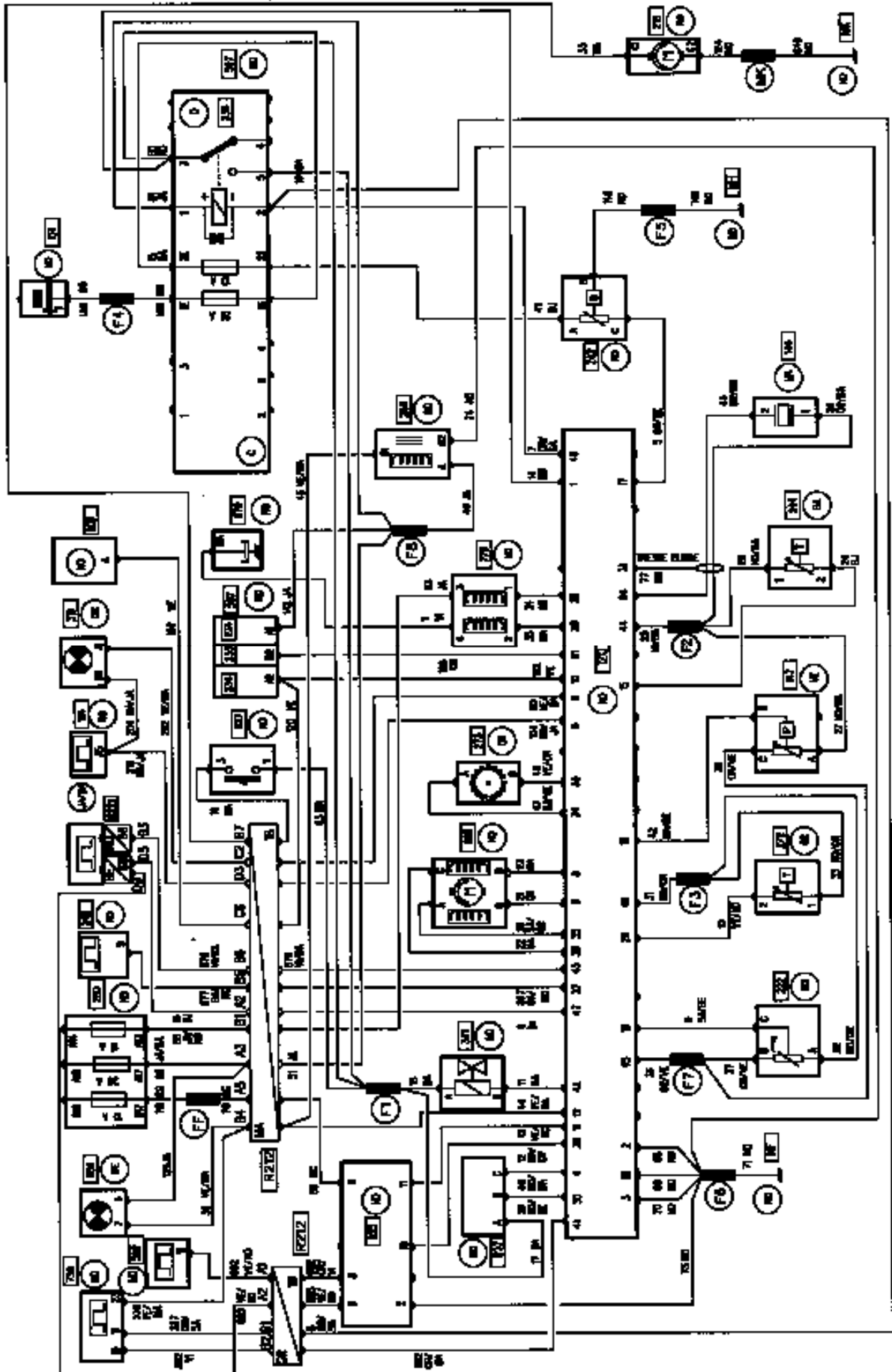
Central coolant temperature management

Wiring diagram for the SAFIR 2 - 35-track computer (for information only)



Central coolant temperature management

Wiring diagram for the SAFIR 2 - 55-track computer (for information only)



Central coolant temperature management

Wiring diagram for the SIEMENS "SIRIUS 32" computer (for information only)

