SAAB 900

Repair workshop manual

2:3 Injection Control, **LUCAS CU14** model year 1990 –

Technical information

Fuel system

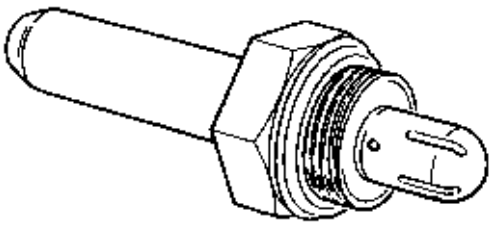
System pressure	3 bar (over intake pressure)	
Remaining pressure, engine turned off	2,8 bar	

Temperature sensor

Resistance at temperature	0 deg	5700-5900 Ohm
	20 deg	2400-2600 Ohm
	40 deg	1100-1300 Ohm
	60 deg	500-700 Ohm
	80 deg	300-400 Ohm

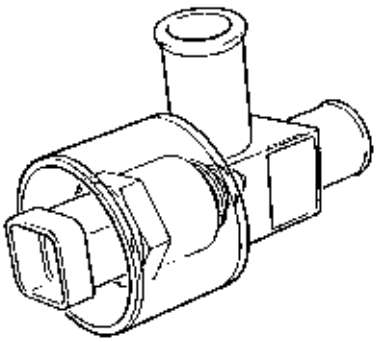
Speed sensor

Signal voltage	0,5 – 11V



Lambda sensor

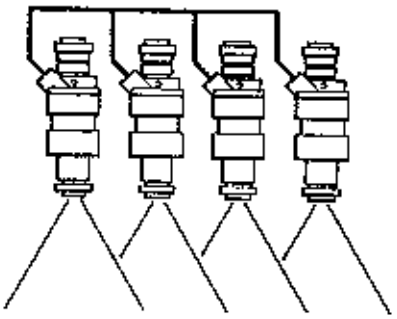
Resistance, pre-heating resistor	<10 Ohm
Signal voltage	0-1V



AIC valve

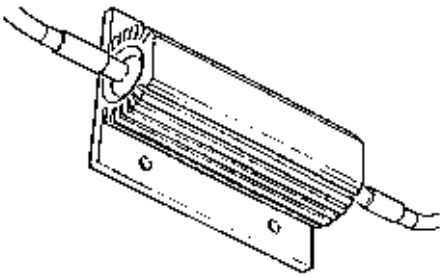
Resistance, coil (pins 1-26)	40-60 Ohm

Coil (pins 28-29)	40-60 Ohm



Fuel injectors

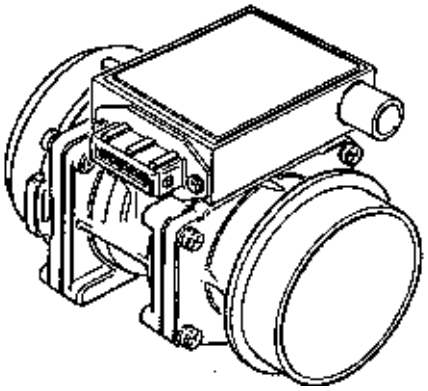
Resistance at 20 degrees temperature	2,0-2,8 Ohm
Flow capacity	108-132 ml/30s



Pre-resistor

Resistance	2-3 Ohm

Throttle position potentiometer



Resistance (pins 1-3)	4-6 kOhm

Air mass meter

Signal voltage, pin 3	0,2-0,7V
Resistance, basic value (pins1-6)	331-341 Ohm
CO-value, at idle	1,0-1,6%

Electronic Control Unit

Number of pins	40

Fuelpump

Tightening torque, cover	55 Nm

Trouble shooting, recorded faults

1. Connect yellow/white wire from 3-pin connector to ground
- Use a wire with switch

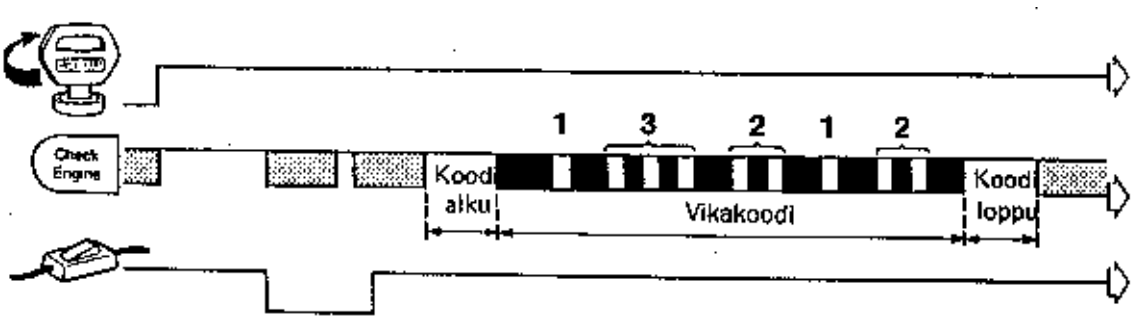
NOTE:
Read the whole description through before switching ignition ON

2. Switch ignition to DRIVE position, CHECK ENGINE light goes ON
3. Set switch to ”ON” position, CE light goes OFF
4. Watch CE light carefully, after about two seconds comes short blink, that means first fault code will be activated.
   Set switch ”OFF” right after the flash
5. Now the first Fault code is active and it will be shown by short CE light blinks

NOTE:
Right after the fault code will be longer CE light blink, that has nothing to do with the code

Fault code

The whole procedure is shown on the picture below



Fault code on the picture is ”13212”, which is, according the fault list, means that Throttle position potentiometer signal on full load is too weak.

When the switch is turned ”OFF” the next fault code won´t be active, instead it shows The same code (13231) again.

NOTE:
You´ll always get ”13231” as a first fault code, ”no rpm signal”
Run starter about 5 seconds , if fault code disappears when ignition is turned off, ”rpm signal” is okay.
You cannot read fault codes when engine is running.

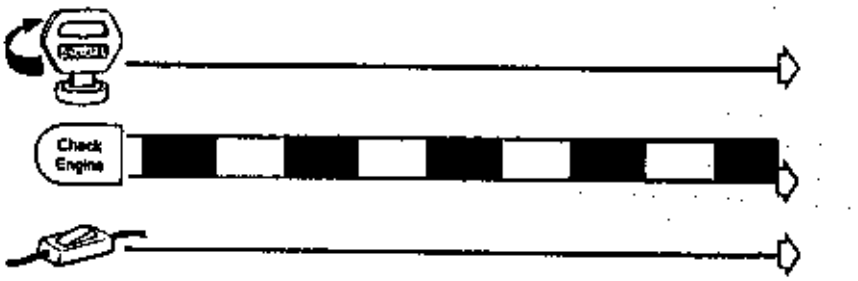
The next fault code

To check if there is any other fault codes recorded, do as follows:

1. Set switch ”ON”
2. After short blink, set it ”OFF”

The fault number two will be shown just like the first one.
The same goes with all the other fault codes recorded.

If there will be no any other faults, this will be shown by continuous longer CE light



blinks.

STARTING ALL AGAIN

If you want, for some reason, to check fault codes again, do as follows:

1. Set switch ”ON”
2. After two short blinks, set switch ”OFF”, fault codes will be shown again from the first fault code.

EMPTYING the FAULT MEMORY

1. set switch ”ON”
2. After three short blinks, set switch ”OFF”

NOTE:
Memory cannot be formatted, before the code ”00000” has been shown.
(No more fault codes)

FAULT CODES

CODE	*CE light*	*FAULT/faulty component*
13212	off	Throttlepot, too weak signal on full load
13213	off	Throttlepot, too high signal on low load
13214	on	Temperature sensor, faulty signal
13215	off	Throttlepot, signal too weak at idle
13221	on	Air mass meter, signal is missing/ faulty action – Engine running on ”limp home mode”
13222	off	Idle adjustment, or AIC valve fault
13223	off	Fuel/Air mixture too lean
13224	off	Fuel/Air mixture too rich
13225	on	Lambda sensor, signal faulty/pre-heating is not working
13231	off	Ignition signal testing, ignition signal is missing This will always be the first signal, if engine is not running
13233	off	ROM-fault (Electronic Control Unit faulty)
13234	off	Speed sensor, signal is missing
13235	off	DRIVE-signal is missing

Code 13231

Ignition signal missing

CHECK ENGINE – ”OFF”

Symptom: Engine won´t start

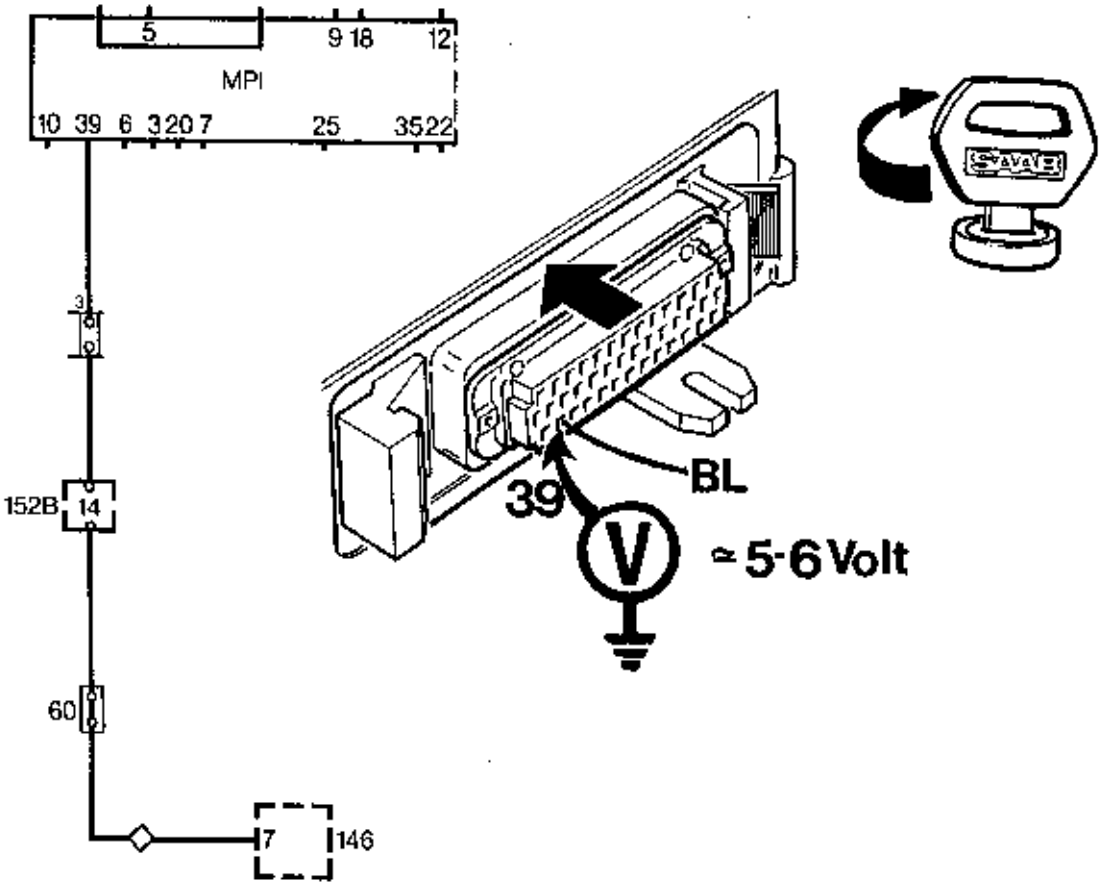
NOTE: this will always come first if engine is not running

Action:
Run starter for about 5 seconds. If code disappears, ignition signal is in order and fault is something else

NOTE: when you left key from the start position, CHECK ENGINE light goes ”ON” again

A Check voltage between ECU pin 39 and ground at the same time when starter is Running. After five seconds voltage should be 5-6 volts. If not, check ignition system and try to fix problem.

B Try with new ECU.



Code 13212

Throttle potentiometer, signal too low under maximum load.
CHECK ENGINE – ”OFF”

Action: See code 13215

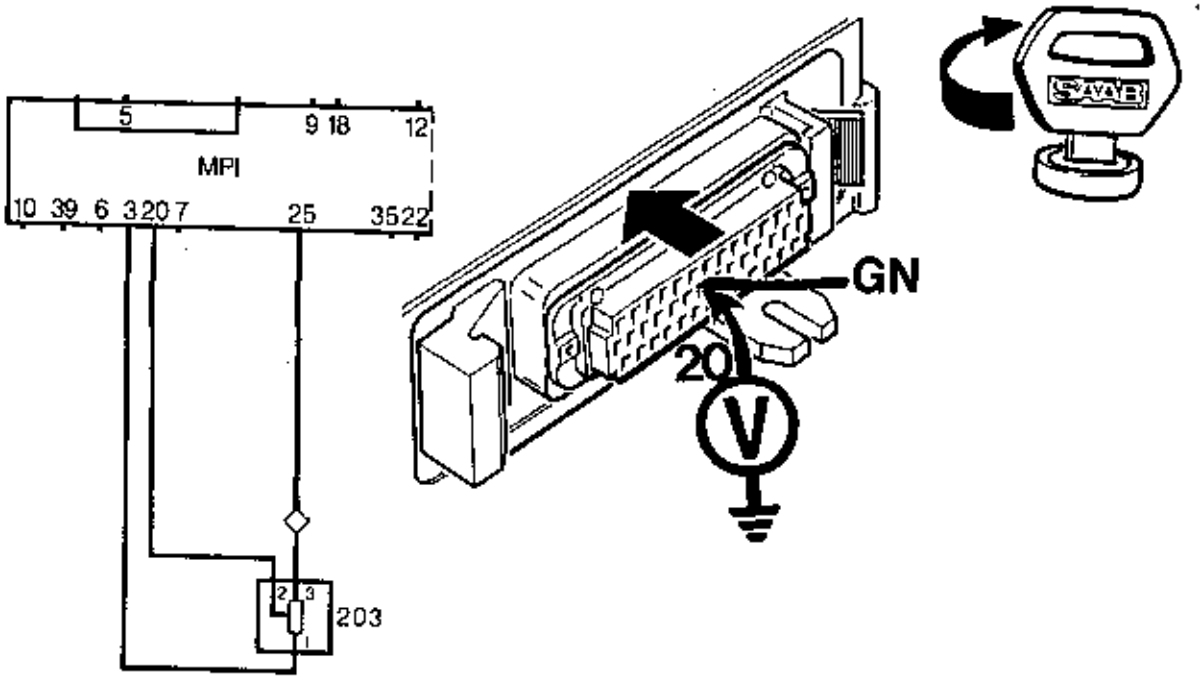
Code 13213

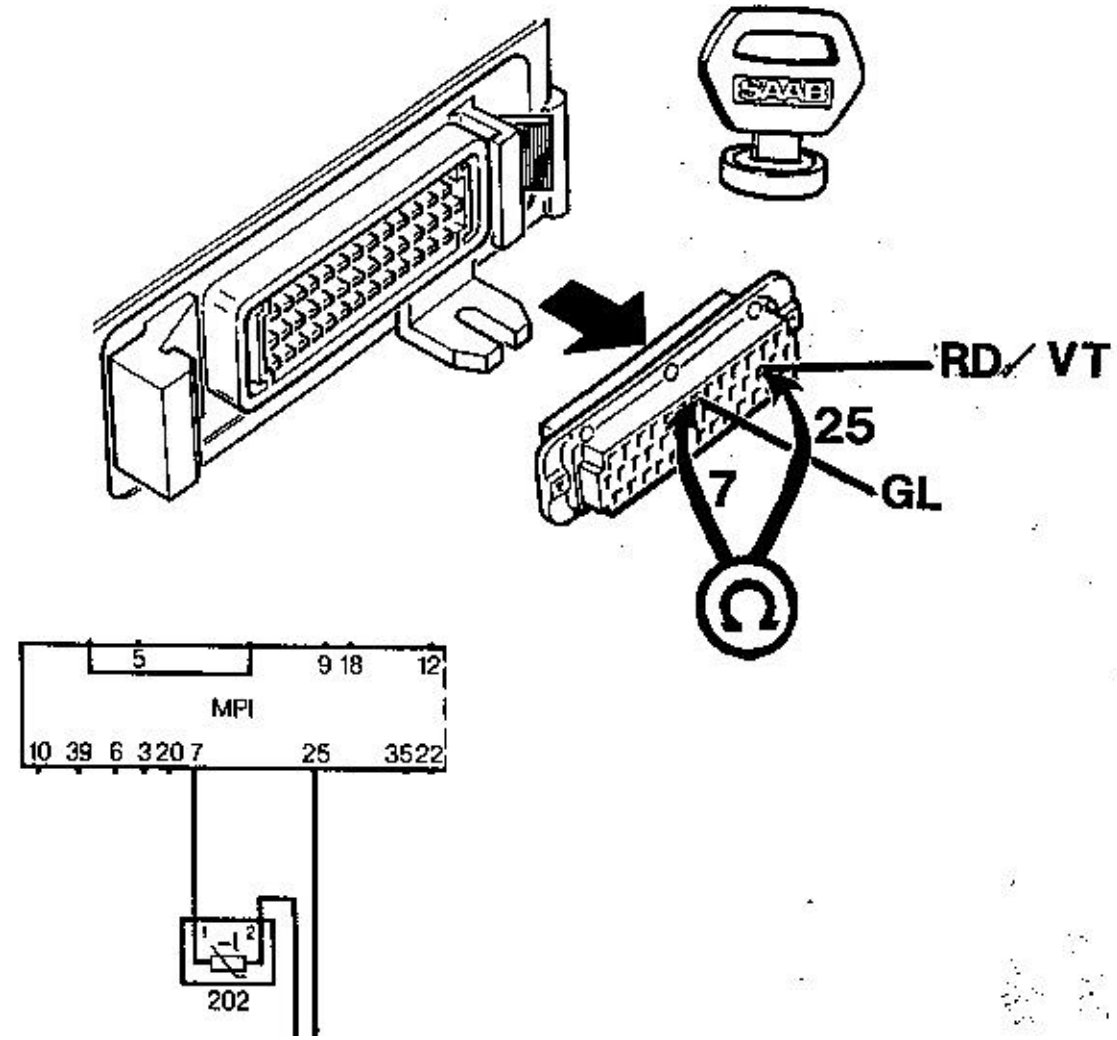
Throttle potentiometer, signal too high at partial load.
CHECK ENGINE – ”OFF”

Symptom: Engine won´t run correctly.

Action: See code 13215

Code 13214





°C	°F	(Ohm)
-10	14	9100-9300
0	32	5700-5900
20	68	2400-2600
40	104	1100-1300
60	140	500-700
80	176	300-400
100	212	150-200

Code 13215

Throttle potentiometer, faulty action

CHECK ENGINE – ”OFF”

Symptom: Rich mixture under acceleration is missing, High or low idle.

Actions:

A Check resistance between UCE pin 3 (GR) and 25 (RD/VT). Correct value is
51 kOhm.
If not, check the wire betw throttle pot pin 1 and ECU pin 3 (GR) and
Between TP pin 3 and ECU pin 25 (RD/VT).

B Try with new Throttle position potentiometer.

C Check the voltage (ECU connector disconnected) between pin 20 (GN/RD)
And ground.
Voltage should be:
Throttle closed: 0,08-0,56 V
Throttle fully open : 4,2-4,9 V
If not, Check the wire between TP pin 2 and ECU pin 20 (GN/RD)

Also Check the wire between ECU connector pin 27 and ground point 201 (SV/VT)

D Try with a new ECU

Code 13221

Air Mass Meter, signal faulty/ supply voltage missing

CHECK ENGINE – ”ON”

Symptom: No idle, ”jerky” under acceleration

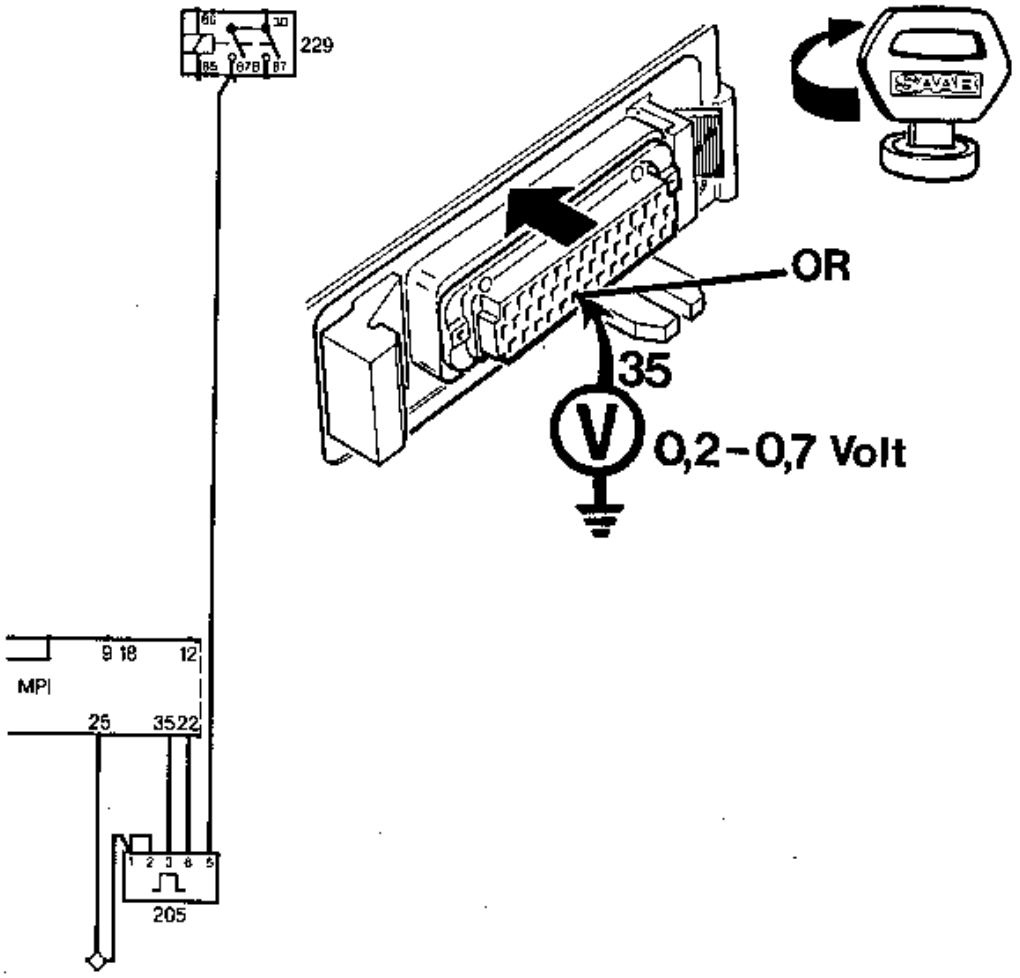
Action:

A **Ignition lock on ”DRIVE” position, check that there is battery voltage between**
AMM pin 5 (BR/VT) and ground.
If not, check the wire between AMM pin 5 and main relay pin 87B (BR/VT)
Check main relay and replace if necessary

B **Ignition lock on ”DRIVE” position, Check the voltage between ECU pin 35 (OR)**
And ground. Should be 0,2-0,7 Volts.
If not, Check the wire between AMM pin 3 and ECU pin 35 (OR)
Check the wire betw AMM pin 1 and ECU pin 25 (RD/VT)

C **Try with new AMM**

D **Try with new ECU**



Code 13222

Idle adjustment or AIC valve faulty

CHECK ENGINE – ”OFF”

Symptom: Too high or low idle rpm

Action:

A **Check the intake system for the possible leaks and if necessary, check throttle**
Plate position/adjustment.

B **Check the resistance betw ECU pin 1 (GR/VT) and pin 26 (BL/RD).**
Should be 40-60 Ohm.
Also check the resistance betw pin 28 (GL/RD) and pin 29 (BL/VT)
Should be 40-60 Ohm
If not, Check all the wires between AIC valve and ECU

C **Try with new AIC valve**

D **Try with very darn old ECU** ✍

NOTE: Also check the speed signal, code 13234. If signal is missing, this coudl be reason to the
Faulty idle speed.

Code 13223

Fuel / Air micture too lean

CHECK ENGINE - ”OFF”

Symptom: -

Action:

A **Check intake system for the possible leaks**
If no leaks, check the lambda sensor action as descriped on CODE 13225

NOTE: When you get problem fixed, you´ll need to take off battery voltage from the ECU to
Get it out from LIMP-HOME mode (closed lambda correction)

Code 13225

Lambda sensor, signal faulty

CHECK ENGINE – ”ON”

Symptom: -

Action :

A **Check the intake system for the possible leaks**

B **Check the fuse n:o 1**

C **Disconnect preheater connector.**
Start engine and check that there is battery voltage between it´s pins (NOTE polarity. BL/RD wire to RD wire.)
If not, check the wire betw connector and fuel pump relay pin 87B (GR/RD)
Check the wire betw connector and ground point 201 (SV)

D **Measure the resistance betwe en Lambda sensor 2-pin connector. Should be**
< 10 Ohm (cold sensor). After that, connect preheater connector.

Start engine and measure voltage betw ECU pin 23 and ground.
Should vary between 0 – 1 V.
If not, check the wire betw Lambda sensor and ECU pin 23 (SV)
Also check the wire from ECU pin 4 to ground point 201.

E **Try with new Lambda sensor**

F **Guess what??**

Code 13233

ROM fault (ECU fault)

CHECK ENGINE – ”OFF”

Action:

Try with new ECU.

Code 13234

Speed signal missing

CHECK ENGINE – ”OFF”

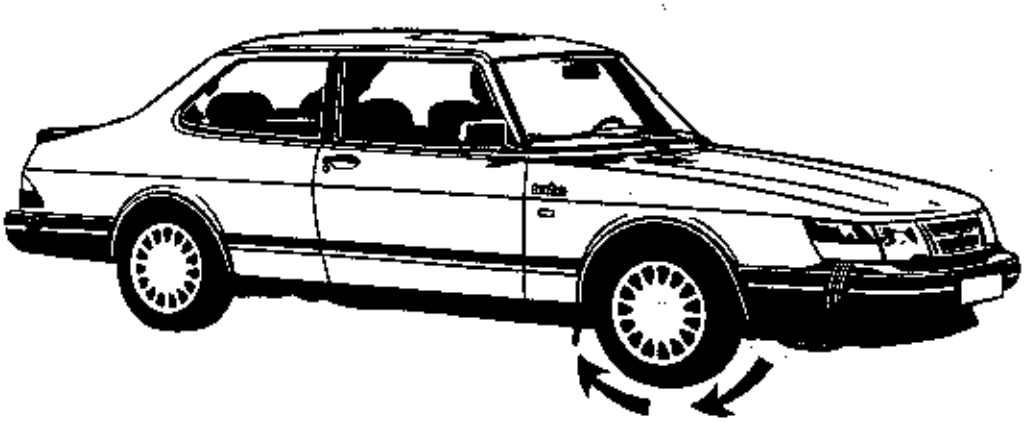
Symtom: No idle, or idle speed very low.

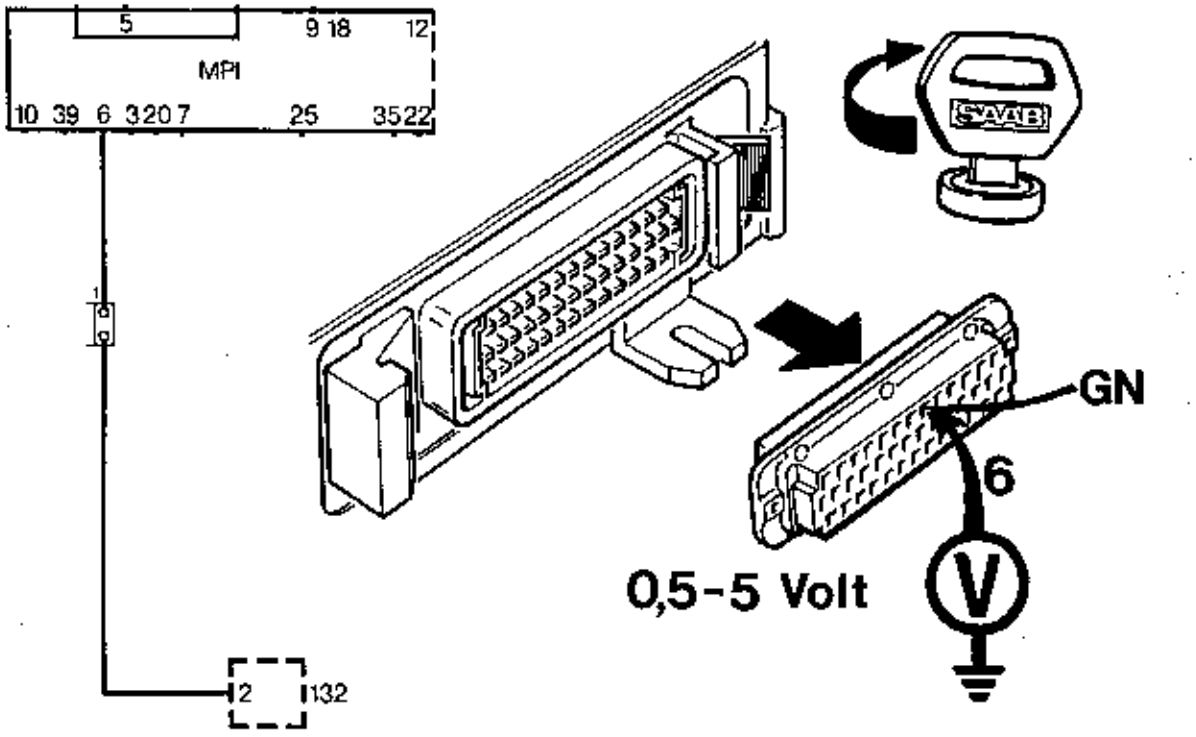
Action :

A **Measure voltage betw ECU pin 6 and ground . Should vary betw 0,5 and 5 Volts,**
When other front tire is being rolled.
If not, check the wire betw speed sensor and CU pin 6 (GR)

B **Check if ”Cruise” is still working. It uses the same speed signal.**

C **Try with new meter**





Code 13235

Drive signal missing, automatic transmission only.