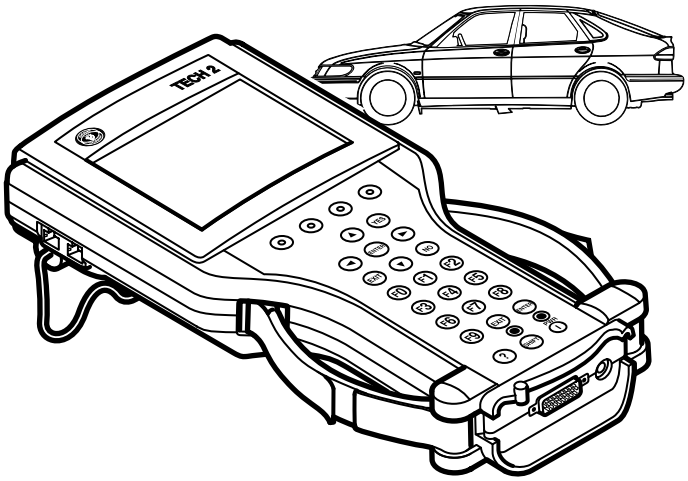
SERVICE INFORMATION

SI No. **248-9037**	Date **September 2001**	**900**
PI No.	Distr. **US**	

OBD 2 readiness codes not set



D248B604

Cars concerned

Saab 900 B234i with Motronic 4.1 OBDII M96-98

Background

Some states, as part of their mandatory State Emission Testing program, will include checks for OBD readiness codes. Some M96-98 naturally-aspirated 2.3L 900's may fail these checks, especially if the battery has lost power or if DTC's have been reset using Tech2.

The following information will allow a technician, using a Tech2 to perform a specific driving cycle that will allow the Motronic M4.1 system to set the required readiness codes.

Symptom description

Failed checks for OBD readiness codes

Actions

Preparation before driving:

Before driving, make sure that there are no DTCs stored in the ECU of Motronic 4.1. If codes are stored, repair the affected system and clear the fault codes. M96 models with Secondary Air Injection (SAI) must begin each driving cycle with engine temperature below 40°C (104°F), so car must cool down between driving cycles. All other models may begin with engine at normal running temperature. Connect Tech2 and read out the following values under Motronic M4.1- OBD II - Read Values - Activate and scroll down to Diagnostic Status. The following functions are important:

- Evap
- Catalytic Converter
- Oxygen Sensor
- Preheating
- Secondary Air (only M -96)
- Trip OBD II

ENG

Further down in the same menu you can read out rpm and engine load in "ms". The load and rpm must be kept between 1.3 - 4.3 ms / 1120 -2500 rpm for automatic cars and 1.3 - 3.8 ms / 1320 -2700 rpm for manual cars to fulfill the requirements and set the readiness flags.

While you are driving it is OK to stop, slow down or speed up. Once you have met the requirements of a particular segment for load and rpm, a time counter will start and accumulate elapsed time. If you stop, the counter will resume accumulating time when you are back at the correct load and rpm again. One "Trip" takes 20 minutes of driving at the correct load and rpm. To set all of the readiness flags, it takes two "Trips" (2 x 20 minutes). It is OK to drive with the A/C on, however the cycling of the compressor will make it more difficult to keep a steady load.

Due to different final drive ratios/tire sizes, speeds listed may not match the given RPM reading. In these cases, the RPM range should be followed.

How to drive: Automatic cars

Before driving, make sure to read and understand the steps of the procedure.

Note

For 1996 models only, because of the Secondary Air Injection (SAI) it is necessary to start with a cold engine (below 40°C/104°F) to set the SAI readiness codes.

1. Start the car and check the time. Drive 0 -70 mph for 3 -5 minutes. Check using Tech2 that preheating 1 & 2 and oxygen sensor 1 & 2 are "Ready". If not, drive until they are "Ready".
2. Drive at 35-40 mph in Drive position (D) for 5 minutes. Drive with as steady load as possible. Load and rpm should be within 1.35 - 2.3 ms and 1120 - 1500 rpm.
3. Increase the speed to 40 - 50 mph for 5 minutes. Load and rpm should be within 1.3 - 2.3 ms and 1520 - 2000 rpm.
4. Increase the speed again to 55 - 60 mph in Drive position and drive for 5 minutes with a steady load. Load and rpm should be within 2.3 - 4.3 ms and 2000 -2500 rpm.
5. Park the car and shut off the A/C and let the engine idle for up to 10 minutes. Check the values in Tech2. Trip OBD II must say "Ready".

Note

We have seen that catalytic converter does not set "Ready". This is a fault in Tech2.

6. When you have got "Ready" for Trip OBD II, shut the engine off for one minute and start it again. Repeat steps 1 - 5.

Note

Note: M96 models with SAI must cool down between trips.

7. Read out if readiness is OK with Tech2. Go to GST (Generic Scan Tool), then go to Powertrain Control Module (PCM) and Read Values to see if readiness is OK.

   Following functions should be set "Ready":

   - Catalyst
   - Heated Catalyst
   - EVAP
   - Secondary Air Injection (Only model year 1996)
   - O2-sensor
   - HO2-sensor

If you fail (no flags are set to "Ready") repeat the procedure above again.

Focus on driving with as steady load as possible. The whole procedure takes about 60 minutes.

Note

If the PCM looses its power by, for example, disconnecting the battery, removing fuses which feeds the PCM, disconnecting the PCM or if DTCs are deleted, you will loose the readiness OK's and you are back to zero again and must repeat the complete driving cycles.

How to drive: Manual cars

Before driving, make sure to read and understand the steps of the procedure.

Note

For 1996 model only, because of the Secondary Air Injection, it is necessary to start with a cold (40°C/104°F) engine to set the SAI readiness code.

1. Start the car and check the time. Drive 0 -70 mph for 3 -5 minutes. Check using Tech2 that preheating 1 & 2 and oxygen sensor 1 & 2 are ready. If not, drive until they are "Ready".
2. Drive at 35-40 mph in 4:th gear for 5 minutes. Drive with as steady load as possible. Load and rpm should be within 1.35 - 1.95 ms and 1320 - 2000 rpm.
3. Increase the speed to 40 - 50 mph. Use 4:th gear for 5 minutes. Load and rpm should be within 1.3 - 1.95 ms and 2000 - 2700 rpm.

4 Increase the speed again to 55 - 60 mph with 5:th gear and drive for 5 minutes with a steady load. Load and rpm should be within 1.95 - 3.7 ms and 2000 -2700 rpm.

5 Park the car and shut off the A/C and let it idle for up to 10 minutes. Check the values in Tech 2. Trip OBD II must say " Ready".

Note
We have seen that catalytic converter does not set "ready". This is a fault in Tech2.

6 When you have "Ready" for Trip OBD II, shut the engine off for one minute and start it again. Repeat steps 1 - 5.

Note
M96 models with SAI must be allowed to cool down between trips.

7 Read out if readiness is OK with Tech2. Go to GST (Generic Scan Tool). Then go to Powertrain Control Module (PCM) and Read Values to check if readiness is OK.

Following functions should be set "Ready":

- Catalyst
- Heated Catalyst
- EVAP
- Secondary Air Injection (Only valid for M96, all other models will automatically show "Ready")
- O_2-sensor
- HO_2-sensor

If you fail (no flags are set to "Ready") repeat the procedure above again. Focus on driving with as steady load as possible. The whole procedure should take about 60 minutes.

Note
If the PCM looses power by, for example, disconnecting the battery, removing fuses which feed the PCM, disconnecting the PCM or if DTCs are deleted you will loose the readiness OKs and you are back to zero again and must repeat the complete driving cycles.

Time/Warranty information

To resolve a customer complaint for a vehicle **under warranty**, submit a claim using the following information:

Failed object: 24810

Fault/Reason code: 62

Location: 09 (US=9)

Warranty Type (US): 01/09

Repair/Action code: 08

Labor Operation (US): 2481015

Time: 1.4 hours