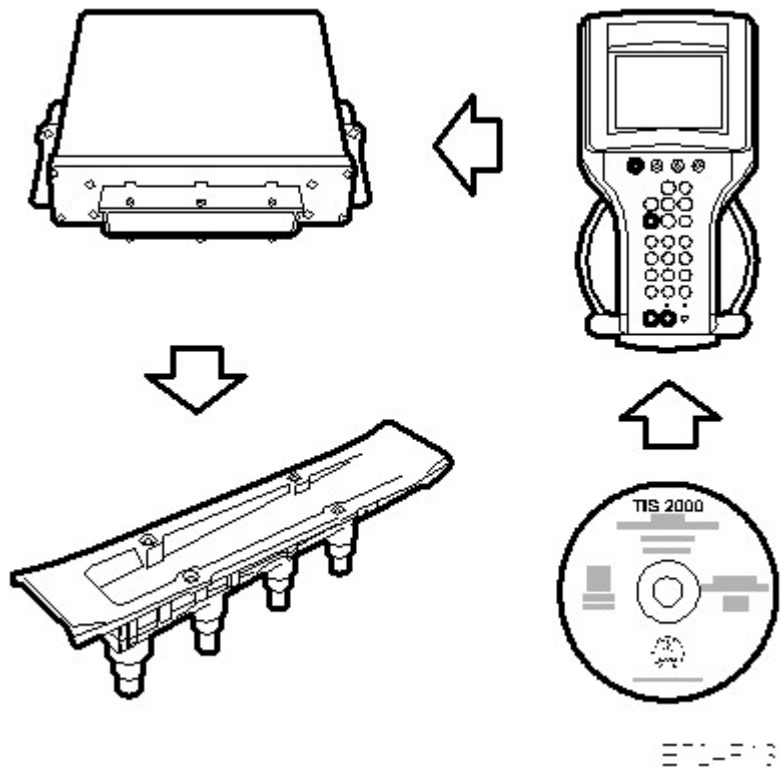


**TECHNICAL SERVICE BULLETIN**

Bulletin Nbr: 248-2474

Date:.....Juni 2004

Market: ej US/CA

**New fault diagnosis for ignition discharge module, Trionic 7****Cars affected**

Saab 9-5 M00- with Trionic 7 engine management system

(In 9-5, M00, only cars with engine option B235 are affected)

**Background**

New T7 software makes it possible to diagnose the ignition discharge module more accurately than before as it detects lack of sparks and improper combinations of knock and combustion signals. The new software is available via SPS/TIS2000 and was introduced into production (9-5 M03) from VIN 33041133.

- This TSB is to be followed when it is likely that the ignition discharge module is faulty. Ex:
  - in the event of misfiring
  - if the engine does not start and a fault in the ignition discharge module is suspected, e.g. if the discharge module is burnt or misfire DTCs are detected.
- Diagnostics is to be carried out as the first step of fault diagnosis for the aforementioned fault regardless of the order in WIS.

- Diagnostics is to be carried out and evaluated before the ignition discharge module is replaced even if it is obviously defective. "IDM Check Code" and "Failure Status" are to be included in the warranty report.

"IDM Check Code" and "Failure Status" that are read from Tech2 must be included with the claim. Note that these values are deleted when DTCs are cleared!

### Procedure

#### Note

In order to carry out this work the following is required:

- Tech2 version 108.000 or later
- TIS2000 edition 2003-3 Update 4 or later
- Engine temperature must exceed 15°C (59°F)

The temperature limit is set in order that the diagnosis is reliable. In order to raise the temperature and so enable the diagnosis to be run on cars which do not start and which have lower engine temperature, a working discharge module can be temporarily installed. The diagnosis must then be run with the defective discharge module.

### Fault diagnosis, extended ignition discharge module diagnostics

1. Contact T7 with Tech2, read and make a note of DTCs for possible later use.
2. Check if any of the following diagnostic trouble codes have been detected: P0340, P1312, P1313, P1324 or P1334. These diagnostic trouble codes can be generated following repeated cold starts without the opportunity for the engine to be warmed up, depending on the carbon coating on the spark plugs. Carbon results in incorrect combustion signals and can prevent the ignition from being synchronised. However, the generation of these diagnostic trouble codes during normal driving is most often due to a fault in the ignition discharge module.
  - 2.a. Replace ignition discharge module.
  - 2.b. Clear the diagnostic trouble codes with Tech2 and continue with step 3.
3. Select "Ignition Discharge Module Diagnose" from the "Diagnostic Trouble Codes (DTC)" menu in Tech2.
  - If the extended diagnostic function **is not available** in the software, a message will be displayed explaining that the function is not supported. **SPS program** T7 and restart diagnostics from step 3.
  - If the diagnostics **are available** a value/code for "Current Status", "Failure Status" and "IDM Check Code" will be displayed. Information explaining "Current Status" in plain text will also be displayed in Tech2.

**4. If a code for "Failure Status" is displayed before the engine is started:**

- 4.a. Note down "Failure Status" and "IDM Check Code". Repair or replace according to the table below.
- 4.b. Clear DTCs with Tech2 after work is completed.

**5. If no code for "Failure Status" is displayed before the engine is started:**

- 5.a. Complete the diagnosis according to the instructions in the "Information Text" field on the Tech2 screen.
- 5.b. If a code for "Failure Status" is displayed during starter motor cranking, during the synchronisation phase or after the key has been released back to ON following a start attempt, note down the "Failure Status" and "IDM Check Code". Repair or replace according to the table below.
- 5.c. Clear DTCs with Tech2 after work is completed.

**6. If the diagnostics fail to detect a fault:**

Continue fault diagnosis in subsystems other than the ignition system. Use the previously read DTCs if available.

**Note**

If the ignition discharge module is replaced due to type P diagnostic trouble codes related to incorrect combustion signals or synchronisation errors in accordance with step 2 then the fault is probably rectified. Note down all type P diagnostic trouble codes which lead to the decision to replace the ignition discharge module.

**Note**

Further information on diagnostic trouble codes P0340, P1312, P1313, P1324 and P1334.

The spark plugs are the control module's sensors for combustion data. Repeated cold starts without the opportunity for the engine to be warmed up can cause a carbon coating on the spark plugs. This can result in type P diagnostic trouble codes of the same type as an internal fault in the ignition discharge module. In the event of uncertainty over the reason for such a type P diagnostic trouble code, DTC Freeze Frame can be used. It has become evident that these diagnostic trouble codes are most often generated with an engine at operating temperature (above 80°C (176°F)) if the cause is an internal fault in the ignition discharge module. Carbon related diagnostic trouble codes are generated at the start of the engine's warming-up phase. It is difficult to check for carbon on the spark plugs in the

workshop by means of visual inspection alone of the spark plugs as the carbon easily burns away after the engine has been warmed up. For this reason, and until further notice, the ignition discharge module must be replaced when these diagnostic trouble codes are generated.

## Description of Tech2 status information

### "Current Status"

This value indicates the current stage of the diagnostic procedure. If the value is 130 or below, no fault has been detected on the ignition discharge module thus far. The following P-DTCs can block diagnostics: P0171, P0172, P0336, P0337, P1171, P1172, P1181, P1182, P1310, P1320 and P1460. Diagnostics can also be blocked if coolant temperature is below 15°C (59°F). If one of the aforementioned DTCs has been detected, follow standard fault diagnosis.

### "Failure Status"

If "Current Status" indicates a value of 131 or higher then a fault has been detected that is also displayed as "Failure Status". With some exceptions, "Failure Status" is then stored during 40 warming-up cycles. The function is similar to fault handling for normal type P diagnostic trouble codes. Failure Status is deleted when diagnostic trouble codes are cleared with Tech2.

### "IDM Check Code"

A code is displayed here if a fault has been detected. A code for "Failure Status" is also displayed. "IDM Check Code" contains data from the fault occurrence and car identification. "IDM Check Code" is deleted when diagnostic trouble codes are cleared with Tech2. "IDM Check Code" and "Failure Status" must be included when submitting a claim for the ignition discharge module.

### "Information Text"

In this field, Tech2 displays "Current Status" in plain text.

### "Current Status"

Value	Meaning
0	Diagnostics not started during this driving cycle.
1-5	Conditions for diagnostics not met before beginning starter motor cranking:  1= One of the P-DTCs listed under the heading "Current Status" is stored  2 = Fuel shut-off  3 = Coolant temperature below 15°C

	<p>4 = Battery voltage below 6.5V</p> <p>5= Number of P-DTCs is 6 or more (refers to all P-DTCs)</p>
20	Conditions for diagnostics met before starter motor cranking
21-26	<p>Diagnostics interrupted during starter motor cranking:</p> <p>21= One of the P-DTCs listed under the heading "Current Status" is stored</p> <p>22 = Fuel shut-off</p> <p>23 = Coolant temperature below 15°C</p> <p>24 = Battery voltage below 6.5V</p> <p>25= Number of P-DTCs is 6 or more (refers to all P-DTCs)</p> <p>26 = Starter motor cranking prematurely interrupted</p>
40	The engine has not started. No ignition discharge module faults detected. Other faults (e.g. fuel system) prevent engine start.
50	The engine has started. No ignition discharge module faults detected
51-55	<p>Conditions for diagnostics not met before synchronisation:</p> <p>51= One of the P-DTCs listed under the heading "Current Status" is stored</p> <p>52 = Fuel shut-off</p> <p>53 = Coolant temperature below 15°C</p> <p>54 = Battery voltage below 6.5V</p> <p>55= Number of P-DTCs is 6 or more (refers to all P-DTCs)</p>
70	Conditions for diagnostics met before synchronisation. No ignition discharge module faults detected.
71-75	<p>Diagnostics interrupted during synchronisation:</p> <p>71= One of the P-DTCs listed under the heading "Current Status" is stored</p> <p>72 = Fuel shut-off</p> <p>73 = Coolant temperature below 15°C</p>

	74 = Battery voltage below 6.5V 75= Number of P-DTCs is 6 or more (refers to all P-DTCs)
90	Engine is synchronised. No ignition discharge module faults detected.
91-96	Conditions for diagnostics not met after synchronisation: 91= One of the P-DTCs listed under the heading "Current Status" is stored 92 = Fuel shut-off 93 = Coolant temperature below 15°C 94 = Battery voltage below 6.5V 95= Number of P-DTCs is 6 or more (refers to all P-DTCs) 96 = Evaluation of misfire not started
110	Conditions for diagnostics met after synchronisation. No ignition discharge module faults detected.
111-115	Diagnostics interrupted after synchronisation: 111= One of the P-DTCs listed under the heading "Current Status" is stored 112 = Fuel shut-off 113 = Coolant temperature below 15°C 114 = Battery voltage below 6.5V 115= Number of P-DTCs is 6 or more (refers to all P-DTCs)
130	All diagnostics completed. No ignition discharge module faults detected.
131-	Faults detected

### "Failure Status", cars with 4-cyl engine

<b>Procedure marked (*)</b>	1. Replace spark plug (if not already done) 2. Clear the diagnostic trouble codes and repeat the diagnosis.	
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	<p>3. Is the fault detected again?</p> <p><b>YES:</b> Replace ignition discharge module.</p> <p><b>NO:</b> Correct procedure performed</p>	
<b>Fault/Reason code:</b>	<b>Fault</b>	<b>Procedure</b>
<b>Diagnostics during starter motor cranking</b>		
173	Fuel shut-off status 12	<p>Possible faulty contact in the module's 10-pin connection. Check and remedy if necessary.</p> <p>If OK: Replace ignition discharge module.</p>
131-134	Faulty signal from the ignition discharge module	Replace ignition discharge module
137-141	- " -	- " -
144-148	- " -	- " -
151	- " -	- " -
152-155	- " -	- " -
158-162	- " -	- " -
165-169	- " -	- " -
172	- " -	- " -
239-242	- " -	- " -
245-249	- " -	- " -
252	- " -	- " -
<b>Diagnostics during synchronisation</b>		
181-184	Faulty signal from the ignition discharge module	Replace ignition discharge module
187-190	- " -	- " -
193-202	- " -	- " -

<b>Diagnostics after synchronisation</b>		
253	Fuel shut-off status 12	Possible faulty contact in the module's 10-pin connection. Check and remedy if necessary.  If OK: Replace ignition discharge module.
211-215	Faulty signal from the ignition discharge module	Replace ignition discharge module
218-221	- " -	- " -
224	- " -	- " -
225-228	- " -	* see procedure above
231	- " -	* see procedure above
232-236	- " -	- " -
268-271	- " -	- " -
274	- " -	- " -
278	- " -	- " -
279-282	- " -	- " -
285	- " -	- " -
289-292	- " -	* see procedure above
295	- " -	* see procedure above
299-302	- " -	- " -
305	- " -	- " -
309-312	- " -	- " -
315	- " -	- " -
319-322	- " -	- " -
325	- " -	- " -

**"Failure Status", cars with V6 engine**



<b>Procedure marked (*)</b>	<p>1. Replace spark plug (if not already done)</p> <p>2. Clear the diagnostic trouble codes and repeat the diagnosis.</p> <p>3. Is the fault detected again?</p> <p><b>YES:</b> Replace ignition discharge module.</p> <p><b>NO:</b> Correct procedure performed</p>	
<b>Fault/Reason code:</b>	<b>Fault</b>	<b>Procedure</b>
<b>Diagnostics during starter motor cranking</b>		
173	Fuel shut-off status 12	<p>Possible faulty contact in a 10-pin connection in the module. Check and remedy if necessary.</p> <p>If OK: Replace ignition discharge module, front or rear bank</p>
131-172	Faulty signal from the ignition discharge module	Replace ignition discharge module, front or rear bank
207-208	- " -	- " -
239-252	- " -	- " -
<b>Diagnostics during synchronisation</b>		
181	Faulty signal from the ignition discharge module, rear bank	Replace ignition discharge module, rear bank
183	- " -	- " -
185	- " -	- " -
187	- " -	- " -
189	- " -	- " -
191	- " -	- " -
193	- " -	- " -
194	- " -	- " -
203	- " -	- " -

	- " -	- " -
182	Faulty signal from the ignition discharge module, front bank	Replace ignition discharge module, front bank
184	- " -	- " -
186	- " -	- " -
188	- " -	- " -
190	- " -	- " -
192	- " -	- " -
195	- " -	- " -
196	- " -	- " -
204	- " -	- " -
197-199	Faulty signal from both ignition discharge modules	Replace both ignition discharge modules
205	- " -	- " -
<b>Diagnostics after synchronisation</b>		
213	Faulty signal from the ignition discharge module, front bank	Replace ignition discharge module, front bank
215	- " -	- " -
217	- " -	- " -
219	- " -	- " -
221	- " -	- " -
223	- " -	- " -
226	- " -	* see procedure above
228	- " -	* see procedure above
230	- " -	* see procedure above
234	- " -	- " -
236	- " -	- " -
238	- " -	- " -

257	- " -	- " -
260	- " -	* see procedure above
263	- " -	- " -
266	- " -	- " -
269	- " -	- " -
271	- " -	- " -
273	- " -	- " -
276	- " -	- " -
280	- " -	- " -
282	- " -	- " -
284	- " -	- " -
287	- " -	- " -
290	- " -	* see procedure above
292	- " -	* see procedure above
294	- " -	* see procedure above
297	- " -	* see procedure above
300	- " -	- " -
302	- " -	- " -
304	- " -	- " -
307	- " -	- " -
310	- " -	- " -
312	- " -	- " -
314	- " -	- " -
317	- " -	- " -
320	- " -	- " -
322	- " -	- " -
324	- " -	- " -

327	- " -	- " -
211 224 231 232 274 285 295 305 315 325	Engine not synchronised, not possible to determine the faulty bank - " - - " - - " - - " - - " - - " - - " - - " - - " - - " -	Replace ignition discharge module, front or rear bank - " - * 1 or 2 (front or rear) - " - - " - - " - - " - * 1 or 2 (front or rear) - " - - " - - " -
258 261 264 267 277 278 288 298 308 318 328	Faulty signal from both ignition discharge modules - " - - " - - " - - " - - " - - " - - " - - " - - " - - " - - " -	Replace both ignition discharge modules * both - " - - " - - " - - " - - " - - " - * both - " - - " - - " -
212 214 216	Faulty signal from the ignition discharge module, rear bank - " - - " -	Replace ignition discharge module, rear bank - " - - " -

218	- " -	- " -
220	- " -	- " -
222	- " -	- " -
225	- " -	* rear bank
227	- " -	* rear bank
229	- " -	* rear bank
233	- " -	- " -
235	- " -	- " -
237	- " -	- " -
256	- " -	- " -
259	- " -	* rear bank
262	- " -	- " -
265	- " -	- " -
275	- " -	- " -
279	- " -	- " -
281	- " -	- " -
283	- " -	- " -
286	- " -	- " -
289	- " -	* rear bank
291	- " -	* rear bank
293	- " -	* rear bank
296	- " -	* rear bank
299	- " -	- " -
301	- " -	- " -
303	- " -	- " -
306	- " -	- " -
309	- " -	- " -

311	- " -	- " -
313	- " -	- " -
316	- " -	- " -
319	- " -	- " -
321	- " -	- " -
323	- " -	- " -
326	- " -	- " -

### Standard times-/Warranty information

In the case of customer complaint and if the car is **within the warranty period**, include "**Failure Status**" and "**IDM Check Code**" and use the following information to fill out the claim:

#### **SPS programming has been completed**

Failed object: 34041

Fault/reason code: 08

Location code: 09

Repair/Action code: 08

Time: 0.7 hrs.

#### **SPS programming has not been completed**

Failed object: 34041

Fault/reason code: 08

Location code: 09

Repair/Action code: 08

Time: 0.2 hrs.

#### **For spark plug replacement:**

Add Failed Object for 4-cyl: 34411

Time: 0.3 hrs.

Add Failed Object for V6: 34411

Time: 0.5 hr