Condition


Engine Rattling Noises after Start, Engine Doesn't Start, Timing Chain Slipped

Customer may state:

- Rattling noises after engine start from front of the vehicle or engine compartment.
- Engine does not start.
- MIL ON

The following entries are logged in the engine control module (ECM):

<table>
<thead>
<tr>
<th>DTC</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>00022 P0016</td>
<td>Crankshaft Position vs. Camshaft Position Correlation</td>
</tr>
<tr>
<td>00808 P0328</td>
<td>Knock Sensor 1 Circuit High Input</td>
</tr>
</tbody>
</table>

Technical Background

Timing chain tension may be incorrect due to tensioner.
As a result, the timing chain can skip and causing contact between the pistons and valves.

Production Solution

N/A
Service

If timing chain is suspect, perform the following:

- Complete the DTC entries according to guided fault finding (GFF).
- Remove the lower timing chain cover, see Repair Manual Group 15 in ElsaWeb.
- Check the timing chain tensioner as follows:
  - Compress the tensioning rail of the timing chain (illustration 1, No. 2) by hand against the timing chain tensioner (Figure 1, No. 1).

![Inset 1: timing chain tensioner](image)

Inset 1: timing chain tensioner
Inset 2: tensioning rail the timing chain
arrow: Direction of pressure on the tensioning rail of the timing chain

*Figure 1)* section of the timing chain drive.

If the piston of the timing chain tensioner cannot be compressed by hand after several attempts (Figure 3, green arrow), further engine diagnosis is required.

**Tip:**
Inspect intake camshaft and camshaft bearing for damage.

If the piston of the timing chain tensioner can be compressed in by hand (Figure 2, red arrow) the timing chain tensioner has failed, and further engine diagnosis may be required.

**Tip:**
If engine noises or no start condition remain, inspect pistons and valves for contact damage. If engine damage is noted, cylinder head or engine may need to be replaced.
Warranty
Information only.

Required Parts and Tools
No Special Parts required.
No Special Tools required.

Additional Information
All part and service references provided in this Technical Bulletin are subject to change and/or removal. Always check with your Parts Dept. and Repair Manuals for the latest information.