

**TO:** ALL MERCEDES-BENZ PASSENGER CAR DEALERS  
**DATE:** November 1995 (supersedes S.I. 05/91, December 1994) **REF. NO.** 05/93

**Revision:** *Engine 606 included.*

**SUBJECT:** **ENGINES 602, 603 AND 606  
 ENGINE RELATED COMPLAINTS DUE TO STRETCHED TIMING CHAIN**

In model 124 equipped with engines 602 and 606; and model 140 equipped with engine 603 built between July 1992 and April 1994, the following complaints may be the result of a stretched timing chain:

- Unusual noise from timing chain area
- Rough running engine
- Hard start
- Loss of power
- Increase in oil consumption

### Effective Serial Number Range

| Model | Engine   | As of chassis end number |          |
|-------|----------|--------------------------|----------|
|       |          | From                     | To       |
| 124   | 602, 606 | B 810470                 | B 999999 |
|       |          | C 000001                 | C 142875 |
|       |          | J 001335                 | J 049633 |
|       |          | F 231885                 | F 293159 |
| 140   | 603      | A 092142                 | A 202313 |

The engine must be checked for correct basic timing (crankshaft at 0 ° TDC and camshaft at TDC mark) to determine if the timing chain is stretched.

In order to check basic engine timing, turn the engine slowly (in normal rotation) using the crankshaft pulley bolt until the mark on camshaft sprocket aligns with the mark on the camshaft bearing cap (arrows, Figure 1). The position of the crankshaft will tell if the chain is stretched, i.e. is still within specifications (Figure 2). For engine 606, refer to SMS Job No. AR 05.20-6010 HA.

1. If the timing mark on the crankshaft pulley is off by  $3^{\circ}$  -  $10^{\circ}$  :

- The timing chain is stretched and should be replaced (Engine 602/603 SMS, Job No. 05.10-320; Engine 606 SMS, Job No. AR 05. 10-7601 HA).
- Visually inspect timing chain sprocket for wear or damage:  
Turn the engine 2 complete revolutions (in normal rotation) using the crankshaft pulley bolt and inspect the camshaft sprocket (B, Figure 3 [undamaged tooth]). If the teeth are worn (A) or broken (C) the camshaft sprocket and injection pump timing sprocket must be replaced (Engine 602/603 SMS, Job No. 07.1-240) or (Engine 606 SMS, Job 07.1-8014) along with the timing chain.

2. If the timing mark on the crankshaft pulley is off by greater than  $10^{\circ}$  :  
Inspect the top of the pistons with a borescope to determine if any of the pistons have come in contact with the valves.

- If there was any valve to piston contact, the engine must be repaired accordingly.
- If the tops of the pistons do not show any visible damage caused by valve contact proceed with step 1 above.

**⚠ Note:**

Timing chain guide wear such as grooves or track marks do not justify the exchange of the chain or the rail.

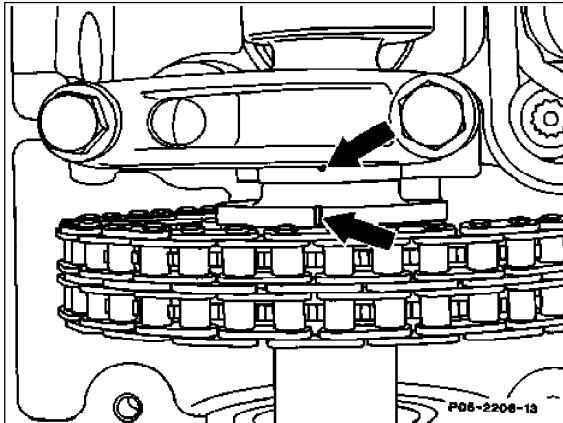


Figure 1

P05-2206-13

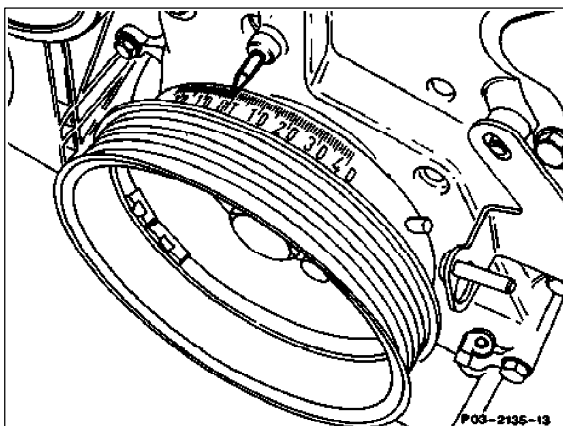


Figure 2

P03-2135-13

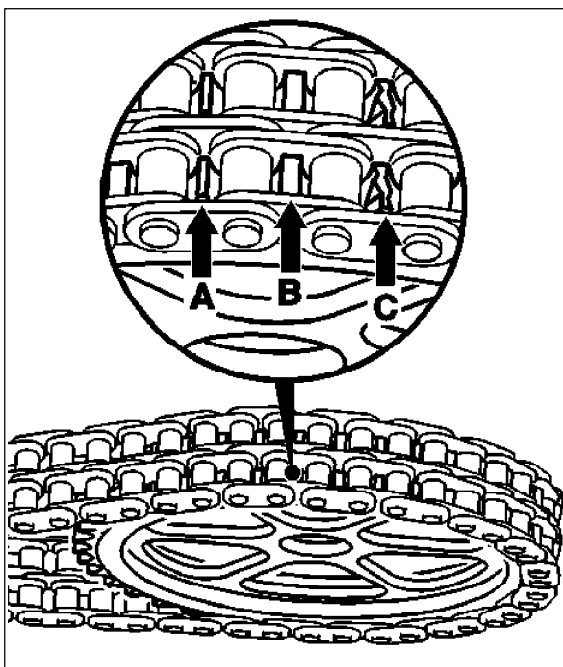


Figure 3

P05-5498-15

**Parts Information**

| Part Name    | Engines  | Part Number   |
|--------------|----------|---------------|
| Timing chain | 602, 603 | 003 997 48 94 |
| Timing chain | 606      | 003 997 49 94 |

- Operation:**
1. Visual inspection of camshaft sprocket and basic engine timing [Op. No. 02-0530] (valve cover removed).
  2. For added repairs, refer to the latest Warranty Time Guide.

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| Damage Code | Operation Number | Time (hrs.) | Model Indicator(s) |
|-------------|------------------|-------------|--------------------|
| 05111 49    | 02-0530          | 0.3         | 61, 86, A5         |

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**Note:**

If the valve cover is already removed for performing other operations, **only 0.3 hrs. (Op. No. 02-0530) can be claimed** for the basic engine timing and visual inspection of camshaft sprocket.

For replacement of injection pump timing sprocket and camshaft sprocket on model 124 with engine 606 use [Op. No. 07-8014], punch time and Model Indicator 61. This operation number is subject to change - refer to future publications of the Warranty Time Guide for valid operation number and time allowance.