

Service Information No. 03/07

Date: 09.02.2007

Camshaft Vibration Dampers - Safety Note

M20/M25/M32/M43

This Service Information is intended to provide you with some important information about the camshaft vibration dampers used in all current MaK engine series.

The camshafts of the above mentioned engine series are equipped with one, two or even three vibration dampers at the free end of the engine, depending on the number of cylinders. The purpose of the dampers is to absorb and balance torsional vibration in order to protect the camshaft against damages.

These components are maintenance-free viscous dampers.

The damping effect is achieved by means of high-viscous silicone oil. To avoid impairing the damping effect, it is not allowable to open the screw plugs possibly provided on these dampers.

Particularly, we would like to point out the following:

- **For reasons of safety it is not allowed to open unserviceable vibration dampers because they may be under overpressure.**

Please inform your crews and, if necessary, also the scrapping company accordingly.

- **Due to bearing wear and changes in viscosity of the silicone oil these vibration dampers are to be replaced after 15,000 operating hours.**

The respective Job Cards are attached to this Service Information.

M20: A5.05.04.09.01.02

M25: A5.05.04.09.01.02

RM32: A5.05.04.09.01.04

VM32: A5.05.04.09.01.52

RM43: A5.05.04.09.01.01

VM43: A5.05.04.09.01.50

M20

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- See also:* -
- Spare parts list:* B1.05.04.2.3140
- Time requirement:* 1 Pers./ 1,00 h
- Personnel qualification:* skilled engine hand
- Operating medium:* Heavy fuel and distillate fuel

Tools:

Torque wrench 20 - 90 Nm 1/2"	W1 *	1.9454-020
Hex cap screw drive A/F12	W2 *	1.9039-012
*no illustration		

Auxiliary material:

Molykote paste „G-Rapid“ **
**or a product of equivalent standard

Note:

After 15.000 operating hours, the vibration dampers have to be exchanged against new ones.

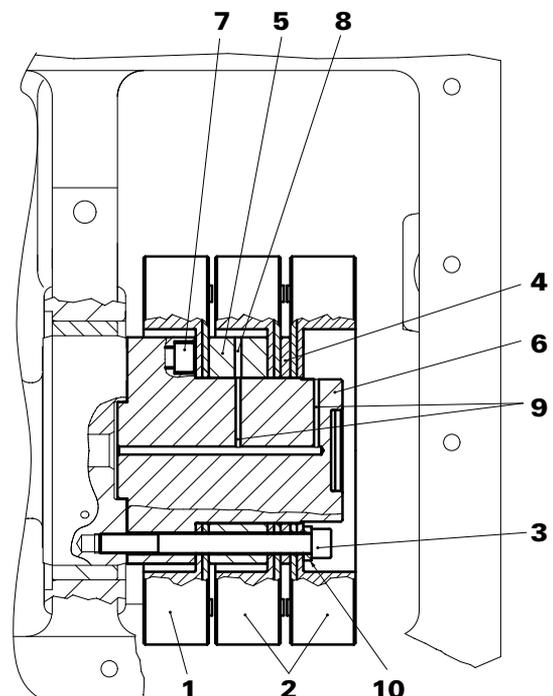


Safety note!

Attention, there is a risk of injury!
Never open a vibration damper

Sequence of operations:

- 1. Disassembly**
 - 1.1 Support dampers (1 and 2).
Loosen cylinder head screws (3).Lift off damper with washers (4 and 5).
 - 1.2 Support cover disk (6). Loosen hexagon socket head cap screws (7).
Remove cover disk.



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2. Reassembly

- 2.1 Clean contact faces of dampers (1 and 2), washers (4 and 5) and cover disk (6).
- 2.2 Check bores (9) of cover disk (6) and bore (8) of washer (5) for free flow and clean, if necessary.
- 2.3 Lubricate thread and contact face of cylinder head screws (3 and 7) with Molykote paste „G-Rapid“.
- 2.4 Mount cover disk (6).
- 2.5 Tighten cylinder head screws (7) with a torque of
M = 60 Nm
- 2.6 Slip-on damper (1) as shown in the illustration.
- 2.7 Place washer (5) and align it so that the bores (8 and 9) coincide.

Attention:**The free flow of bores (8 and 9) is absolutely necessary to ensure a proper function.**

- 2.8 Mount both dampers (2) with washer (4), cylinder head screws (3) and sleeves (10) in accordance with the illustration.
- 2.9 Tighten cylinder head screws (5) with a torque of

M = 60 Nm

See also:

Spare parts list: B1.05.03.251112, B1.05.04.253140

Time requirement: 1 Pers./ 1,00 h

Personnel qualification: skilled engine hand

Operating medium: Heavy fuel and distillate fuel

Auxiliary material:

Molykote paste "G-Rapid Plus" *
 * or a product of equal standard

Note:

The vibration damper must be replaced every 15,000 operating hours.

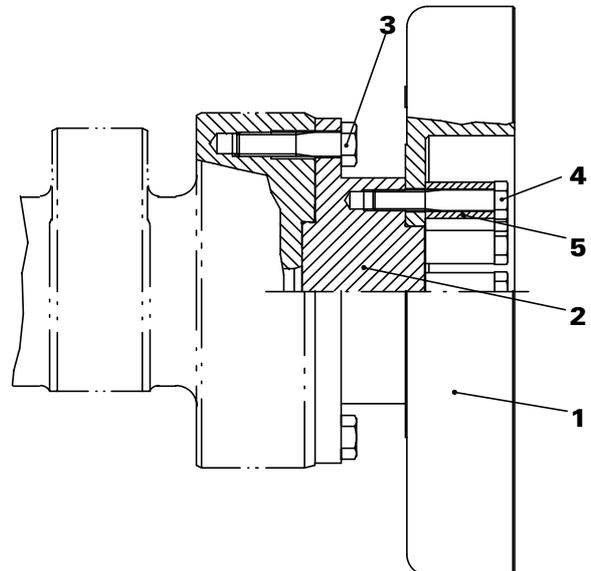


Safety note!

Attention, there is a risk of injury!
Never open a vibration damper

Sequence of operation:

1. **Disassembly**
 - 1.1 Remove the camshaft cover with the housing covers and seals.
 - 1.2 Secure the vibration damper (1) against falling down.
 - 1.3 Remove the bolts (4) and resilient sleeves (5).
 - 1.4 Attach the vibration damper (1) to a crane, pull it off the transition piece (3) and lift it out.



M25

15000

2. Reassembly**04**

- 2.1 Clean the contact surface of the damper (1) and transition piece (3) (free from grease).
- 2.2 Apply Molycote paste "G-Rapid Plus" to the threads of the bolts (2).
- 2.3 Push the vibration damper (1) onto the transition piece (2) and screw in the bolts (4) together with the resilient sleeves (5).
- 2.4 Tighten the bolts (2) crosswise and stepwise at a torque of
M = 50 Nm.
- 2.5 Mount the camshaft cover together with the housing covers and seals.

See also:

Spare parts list: B1.05.03.9.1112, B1.05.04.9.3140

Time requirement: 1 Pers./ 1,00 h

Personnel qualification: skilled engine hand

Operating medium: Heavy fuel and distillate fuel

Tools:

Torque wrench 40-180 Nm W1* 1.9454-040

* not available as figure

Auxiliary material:

Molykote paste "G-Rapid Plus" **

** or a product of equivalent standard

Note:

After 15,000 operating hours the vibration damper must be exchanged against a new one.

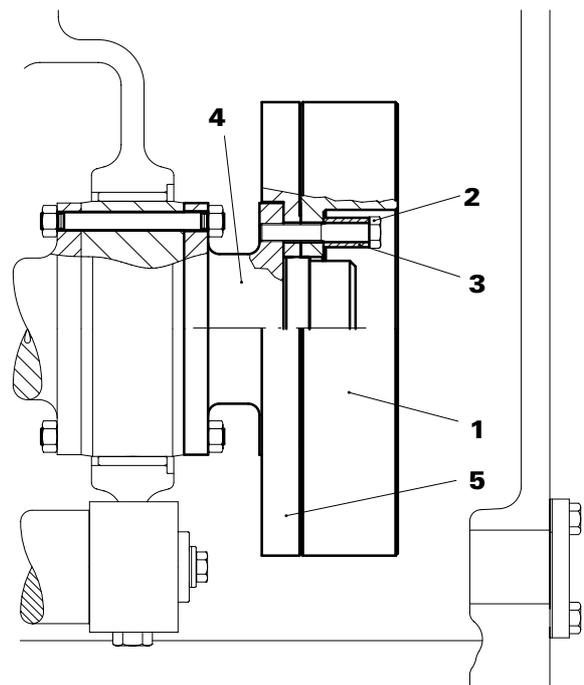


Safety note!

Attention, there is a risk of injury!
 Never open a vibration damper.

Sequence of operations:

1. **Disassembly**
 - 1.1 Remove lateral and face casing covers.
 - 1.2 Release screws (2) and remove together with extension sleeves (3).
 - 1.3 Lift the vibration damper (1) and intermediate ring (5) off the intermediate piece (4).



M32

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2. Reassembly**04**

- 2.1 Clean contact face of damper (1), intermediate ring (5) and intermediate piece (4) (fat free).
- 2.2 Lubricate the thread of screw (2) with Molykote-Paste "G-Rapid".
- 2.3 Push new damper (1) and intermediate ring (5) onto intermediate piece (4) and screw in screws (2) with extension sleeves (3).
- 2.4 Tighten screws (2) with a torque of
M = 130 Nm
- 2.5 Mount lateral and face casing covers.

VM32

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04*See also:**Spare parts list:* B1.05.03.9.1112, B1.05.04.9.3140*Time requirement:* 1 Pers./ 1,00 h*Personnel qualification:* skilled engine hand*Operating medium:* Heavy fuel and distillate fuel**Tools:**

40-180 Nm torque wrench W1* 1.9454-040

* not illustrated

Auxiliary material:

Molykote paste "G-Rapid Plus" **

** or a product of equal standard

Note:

The vibration damper must be replaced by a new one after 15,000 operating hours!

**Safety note!****Attention, there is a risk of injury!**
Never open a vibration damper.**Sequence of operations:****1. Disassembly**

- 1.1 Completely remove the camshaft cover of the last three cylinders.
- 1.2 Remove the hexagon bolts (3) and resilient sleeves (2).
- 1.3 Support the vibration damper (1). Pull it off the intermediate piece (4) and remove it.

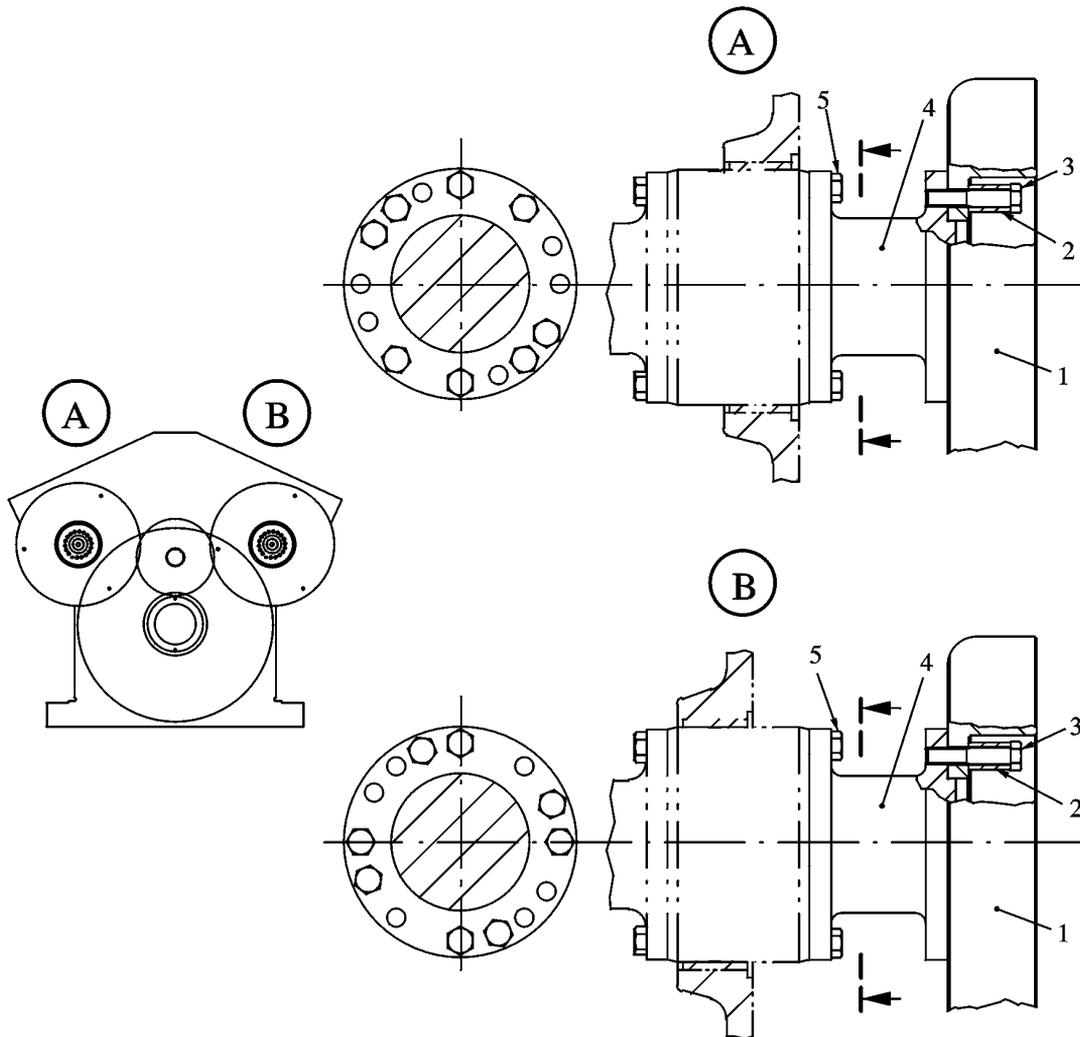
2. Reassembly

- 2.1 Clean the support surface of the vibration damper (1) and the intermediate piece (4). (Free from grease).
- 2.2 Apply Molykote paste to the contact surface and thread of the hexagon bolts (3).

- 2.3 Push the new vibration damper (1) onto the intermediate piece (4). Mount the hexagon bolts (3) together with the resilient sleeves (2).
- 2.4 Tighten the hexagon bolts (3) at a torque of

M = 50 Nm.
- 2.5 Apply Molykote paste to the contact surface and thread of the loosened hexagon bolts (5) and tighten at a torque of

M = 210 Nm.
- 2.6 Check the gasket on the camshaft cover and replace if it necessary. Mount the complete camshaft cover for the last three cylinders together with the gasket.



M43

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See also:

Spare parts list: B1.05.03.431112, B1.05.04.433140

Time requirement: 1 Pers./ 1,00 h

Personnel qualification: skilled engine hand

Operating medium: Heavy fuel and distillate fuel

Tools:

Torque wrench 100 -400 Nm

W1*

1.9454-400

* not available as figure

Auxiliary material:

Molykote paste "G-Rapid Plus" **

** or a product of equivalent standard

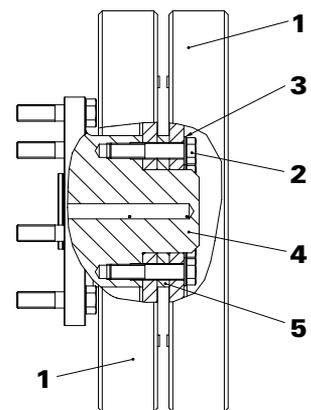
Note:

After 15,000 operating hours the vibration dampers must be exchanged against new ones.



Safety note!

Attention, there is a risk of injury!
Never open a vibration damper



Sequence of operations:

1. Disassembly

- 1.1 Remove lateral and face casing covers.
- 1.2 Release screws (2) and remove together with washers (3).
- 1.3 Lift the vibration dampers (1) and distance ring (5) off the intermediate piece (4).

2. Reassembly

- 2.1 Clean contact face of damper (1) and intermediate piece (4) (fat free).
- 2.2 Lubricate the thread of screw (2) with Molykote-Paste "G-Rapid".

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2.3 Push new dampers (1) and distance ring (5) onto intermediate piece (4) and screw in screws (2) with washers.

2.4 Tighten screws (2) with a torque of

$$M = 295 \text{ Nm}$$

2.5 Mount lateral and face casing covers.

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VM43

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See also:

Spare parts list: B1.05.03.431112, B1.05.04.433140

Time requirement: 1 Pers./ 1,00 h

Personnel qualification: skilled engine hand

Operating medium: Heavy fuel and distillate fuel

Tools:

Torque wrench 100 -400 Nm W1* 1.9454-400

* not shown

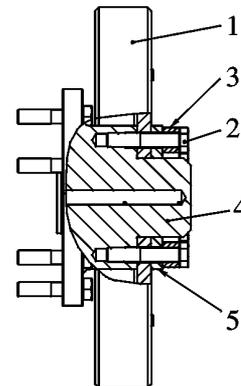
Ancillary materials:

Molykote Paste "G-Rapid" **

** or equivalent product

Note:

After 15,000 operating hours the torsional vibration dampers must be renewed.



Safety note!

Attention, there is a risk of injury!
Never open a vibration damper

Procedure:

1. Disassembly
 - 1.1 Remove lateral housing cover on clutch side.
 - 1.2 Loosen screws (2) and remove together with resilient sleeves (3).
 - 1.3 Lift vibration dampers (1) and distance ring (5) from adapter (4).
2. **Assembly**
 - 2.1 Clean connecting surface of damper (1) and adapter (4) (grease-free).
 - 2.2 Lubricate thread of screws (2) with Molykote Paste "G-Rapid".

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- 2.3 Slide new dampers (1) and distance ring (5) onto adapter (4) and fit screws (2) with resilient sleeves (3).
- 2.4 Tighten connecting bolts (2) using a torque of
- M = 295 Nm**
- 2.5 Fit lateral housing cover.

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