

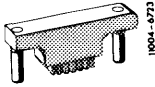
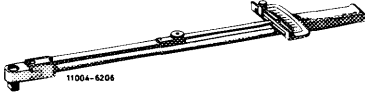
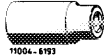
## 03-342 Removal and installation of hub, vibration damper and V-belt pulley

### Data

Permissible deviation on vibration damper	radial runout	0.3
	lateral runout	0.5
<b>Tightening torques</b>		<b>Nm</b>
Crankshaft end bolt	3 diaphragm springs <sup>1)</sup>	270-330
	4 diaphragm springs <sup>1)</sup>	370-400
Bolts, V-belt pulley to hub		35

<sup>1)</sup> See Note 03-324.

### Special tools

Detent		116 589 01 40 00
Torque wrench 3/4" drive, 150-500 Nm		001 589 31 21 00
Socket insert 27 mm, 1/2" drive		001 589 65 09 00

### Conventional tool

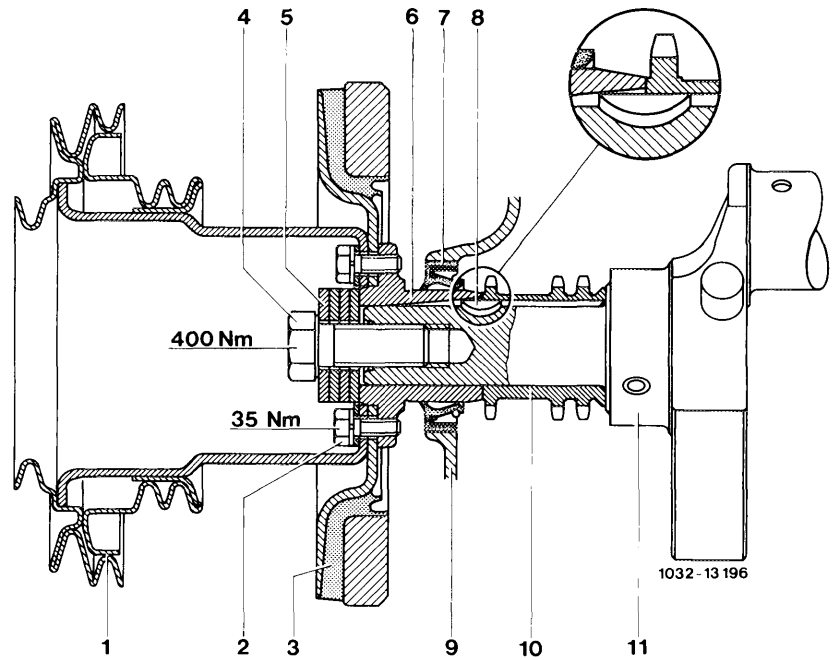
Adapter 3/4" inside to 1/2" outside drive	e.g. Hazet, D-5630 Remscheid Order No. 1058 RI
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### Note

The crankshaft sprocket (10) and the hub (6) are seated on the front crankshaft stub, lined up by means of the Woodruff key (8). This assembly is pressed against the crankshaft with the bolt (4) and the 4 diaphragm springs (5) (2nd version as of 1985). The vibration damper (3) and the V-belt pulley (1) are bolted to the hub (6) in a certain position, since one of the six threaded holes is set off.

Crankshaft arrangement  
2nd version

- 1 V-belt pulley
- 2 Bolt M 8 x 22
- 3 Vibration damper  
Engine 116.96 201.5 mm dia.  
Engine 117.96 214 mm dia.
- 4 Bolt M 18 x 1.5 x 45
- 5 Diaphragm springs (4 required)
- 6 Hub
- 7 Radial sealing ring
- 8 Woodruff key
- 9 Timing case cover
- 10 Crankshaft sprocket
- 11 Crankshaft



Hub, vibration damper and V-belt pulley can be renewed without balancing.

The vibration dampers of the engines 116.96 and 117.96 have a different outside diameter and characteristic frequency.

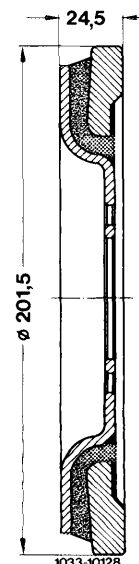
The V-belt pulleys of the different engines 116.96 and 117.96 are also different.

**Note:** The vibration damper of engines 116.960/961 (AUS) (J) (S) and (USA) with asymmetrical mounting bore at the outer circumference was replaced with the vibration damper 116 030 07 03 with symmetrically arranged installation recesses as of January 1981.

**Used in:**

Engine No. 116.960 12 006407  
116.961 12 011140

1st version  
Vibration damper engine 116.96



## Removal

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1 Remove radiator, fan and V-belt.

2 Use special tool detent to locate crankshaft in position.

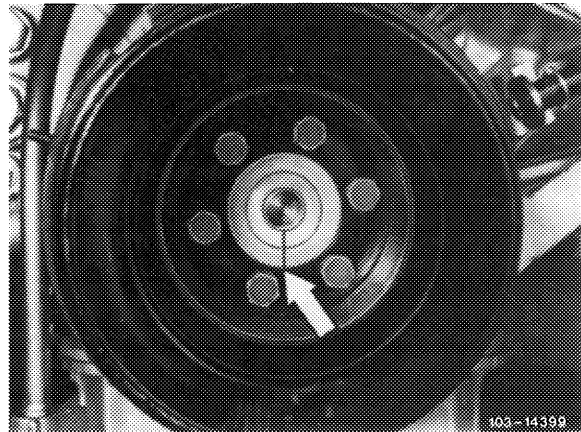
3 Unscrew crankshaft and bolt.

4 Use a chisel to mark crankshaft and hub relative to each other (arrow) so that the groove of the hub lines up with the Woodruff key upon assembly.

5 Manually pull off vibration damper together with V-belt pulley and hub, assisting with light taps with a plastic hammer if necessary.

### Caution!

Take care not to break the cast-iron V-belt pulley.



## Installation

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6 Mount vibration damper, V-belt pulley and hub bolted together as a unit.

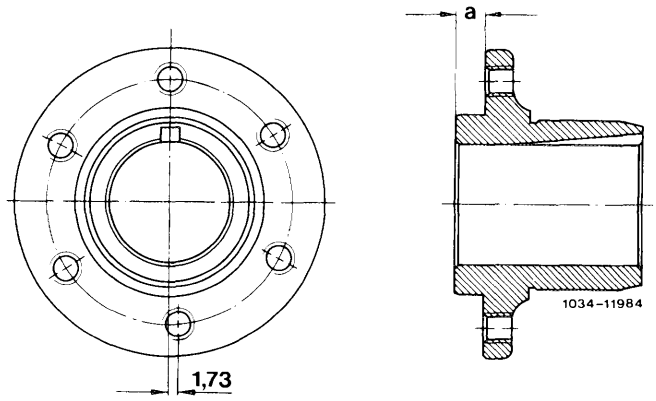
7 For this purpose, heat the hub to approx. 50 °C to facilitate sliding onto the crankshaft. Slide onto crankshaft while turning the assembly to ensure alignment of hub groove with Woodruff key.

**Caution!**

The vibration damper, the V-belt pulley and the hub must be bolted together in a certain position.

One of the 6 bores is offset. The holes must correspond accurately (see dimension 1.73).

As opposed to cast-iron engine, the 6 bolts M 8 x 22 for the attachment of the V-belt pulley and the vibration damper are installed without spring washers.



8 Install the bolts M 18 x 1.5 x 45 with 4 diaphragm springs (2nd version) and tighten with the specified torque (see Note 03-324).

If the vibration damper was renewed, the TDC transmitter must be newly adjusted (03-345).

