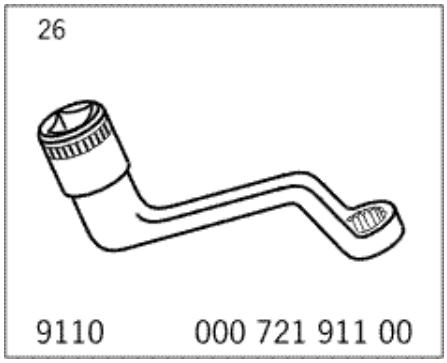
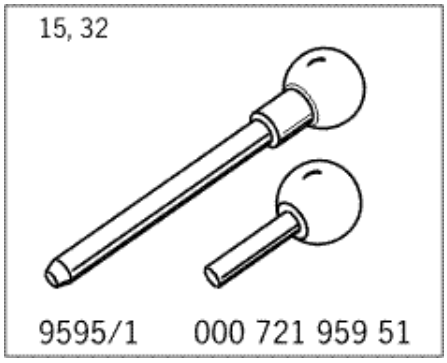
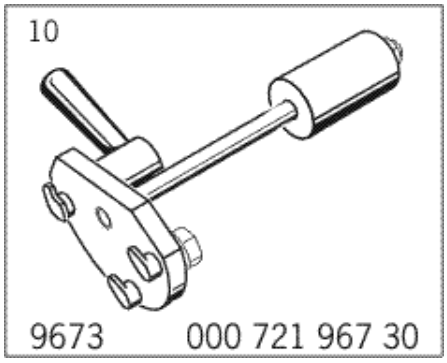
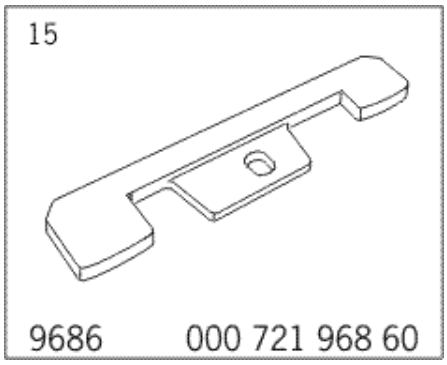
15 21 19 Removing and installing bearing cover for intermediate shaft - M96/26 - as of MY 2005

- Preliminary work for bearing cover for intermediate shaft
- Removing bearing cover for intermediate shaft
- Installing bearing cover for intermediate shaft
- Subsequent work for bearing cover for intermediate shaft

Tools

Designation	Type	Number	Explanation	
socket wrench	special tool	9110		
locating pins	special tool	9595/1		
puller	special tool	9673		

assembly tool	special tool	9673/1		PORSCHE siehe Handbuch Werkstattausrüstung Voir le Manuel Equipement d´atelier Refer to the Workshop Equipment manual Vease Manual de Equipamiento de Taller Vedere il Manuale dell´attrezzatura d´officina ワークショップ・イクイップメント・マニュアルを参照
adjusting gauge	special tool	9686		
cover for dust protection when fitting the engine	commercially available tool	NR.165		PORSCHE siehe Handbuch Werkstattausrüstung Voir le Manuel Equipement d´atelier Refer to the Workshop Equipment manual Vease Manual de Equipamiento de Taller Vedere il Manuale dell´attrezzatura d´officina ワークショップ・イクイップメント・マニュアルを参照

Preliminary work for bearing cover for intermediate shaft

Preliminary work for bearing cover for intermediate shaft

Note

- *Note the work instructions for disconnecting and reconnecting the battery.*

1. Disconnect the battery → *271000 Work instructions after disconnecting the battery*.
2. Drain engine oil → 170155 Engine oil and oil filter change - chapter on "draining".

Tiptronic:

3. Remove automatic transmission → 373519 Removing and installing automatic transmission - chapter on "Removing".
4. Remove drive plate for converter → 136319 Removing and installing drive plate for converter - chapter on "removing".

Manual transmission:

5. Remove manual transmission → 343519 Removing and installing transmission - chapter on "removing".
6. Remove clutch → 305019 Removing and installing clutch - chapter on "removing".
7. Remove double-mass flywheel → 136019 Removing and installing double-mass flywheel - chapter on "removing".

Removing bearing cover for intermediate shaft

Removing bearing cover for intermediate shaft - up to engine number 62.504094

ATTENTION

Timing chain may jump over.

- **Risk of engine damage**

→ Following removal of the chain tensioner, the crankshaft must not be turned under any circumstances.

ATTENTION

Risk of damage due to particles of dirt.

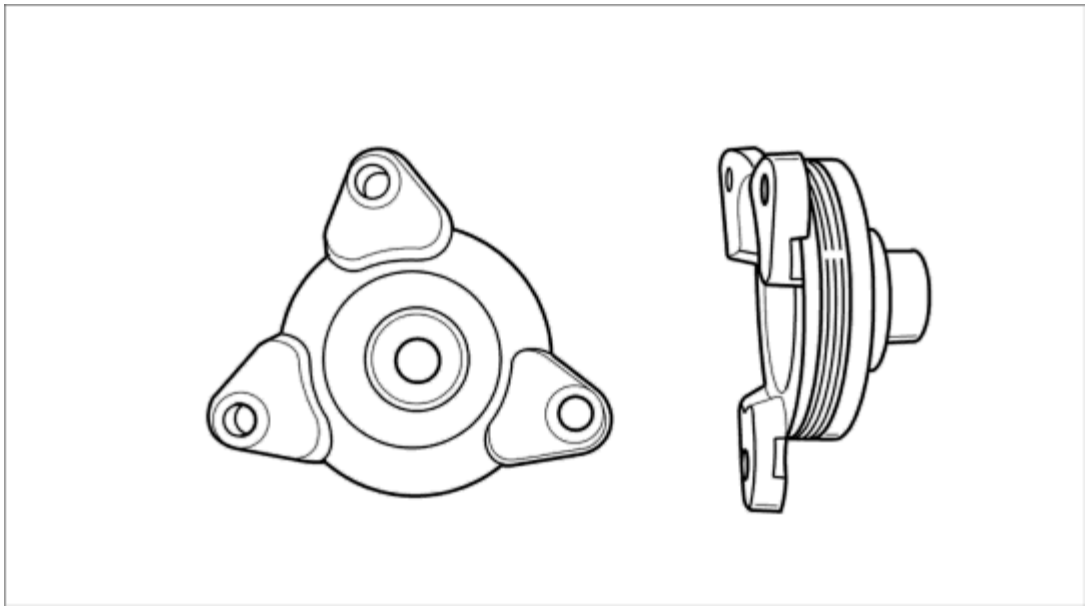
- **Oil bores/oil ducts can become blocked up.**

→ When working on the engine, absolute cleanliness is essential.
→ Lay removed engine parts on a clean base and cover them without fail.
→ Use the **cover for dust protection when fitting the engine NR.165** on the engine assembly support.

Note

Always observe specified engine number range.

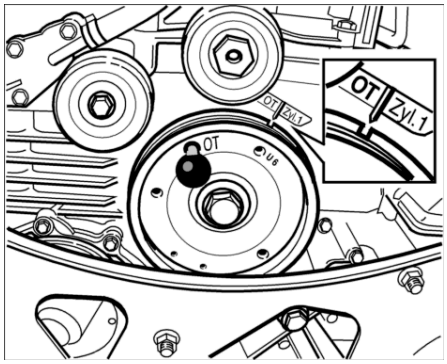
Bearing covers



Bearing cover with sealing ring

1. Lever out two green closure caps on pulley side of cylinder bank 1 - 3.

2. Turn the engine at the hexagon-head bolt (a/f 24) of the crankshaft belt pulley clockwise to overlapping TDC of cylinder bank 1 and fix it with special tool **locating pins 9595/1**.



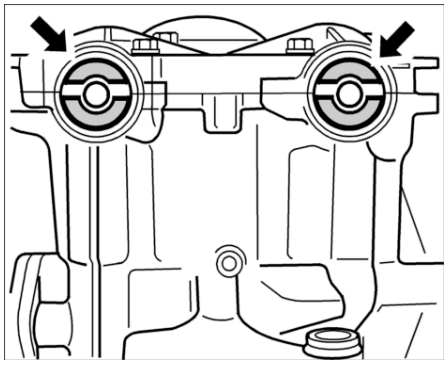
Fixing pulley

Note

- *For checking with the adjusting gauge, the timing adjustment must be correct.*

3. To check the camshaft adjustment, insert **adjusting gauge 9686** for camshaft into the camshaft slots (pulley side) (inscription on gauge and small circular cut-outs point towards cylinder head cover). If the gauge cannot be inserted, rotate the crankshaft a further 360° and secure it again.

4. Unscrew two M6 x 12 hexagon-head bolts on the coolant pipe mount (Tiptronic) at cylinder side 1 - 3.



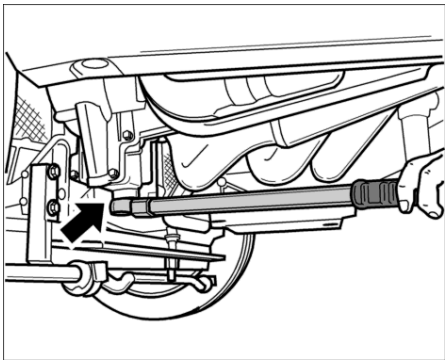
Cam slot position at overlapping TDC of cylinder 1

5. Remove primary chain tensioner (hexagon socket a/f 32).

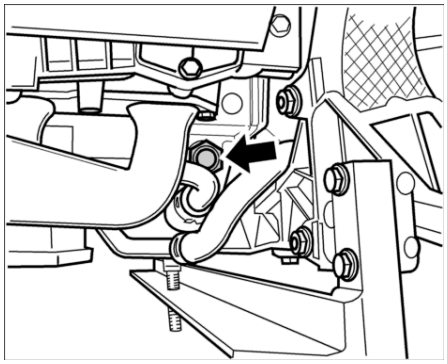
6. Remove chain tensioner, cylinder bank 1 - 3 (hexagon socket a/f 32).

Note

- *To make it easier to remove the bearing cover, spray the sealing surface with anti-rust agent.*



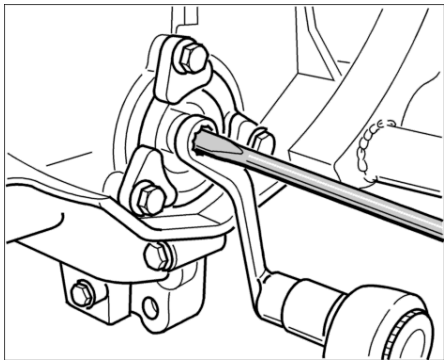
Chain tensioner, cylinders 1 - 3



Primary chain tensioner

7. Unscrew M8 hexagon collar nut on the bearing cover of the intermediate shaft with special tool **socket wrench 9110**, while at the same time countering at the slotted threaded pin on the intermediate shaft with a screwdriver.

8. Unscrew the three M6 x 20 hexagon-head bolts (coated) on the intermediate-shaft flange. Replace coated screws during installation and clean threaded bores.



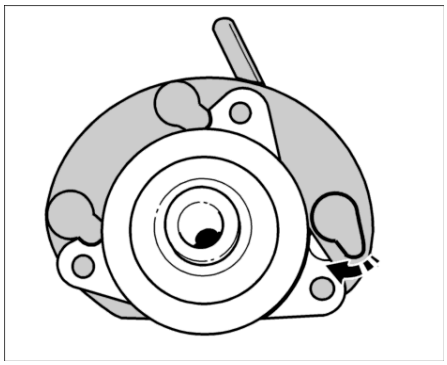
Collar nut for bearing cover

Note

- *Remove bearing cover using special tool **puller 9673**. If this is not available, lever the bearing cover out carefully with two screwdrivers so as not to damage the sealing surfaces. Turning several times to the left and right loosens the bearing cover.*

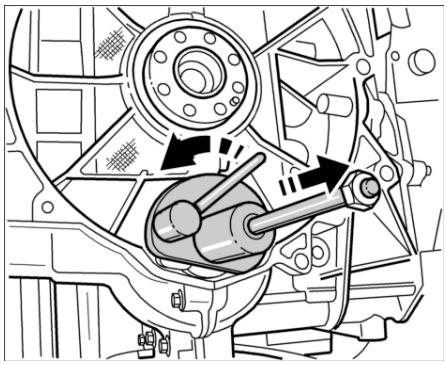
- *After removing the bearing cover, do not press the threaded bolts of the intermediate shaft.*

9. Position special tool **puller 9673** at the bearing cover grooves and secure by turning the locking lever anti-clockwise.



Puller on bearing cover: view when removed

10. Pull the slide hammer on the puller a number of times against the stop nuts while countering the tool at the same time with the other hand.



Removing bearing cover

11. If the puller is not available, lever the bearing cover out carefully using two screwdrivers (or angle screwdrivers), for example. Move the bearing cover frequently to the left and right to make the levering easier. Do not damage the sealing surfaces.

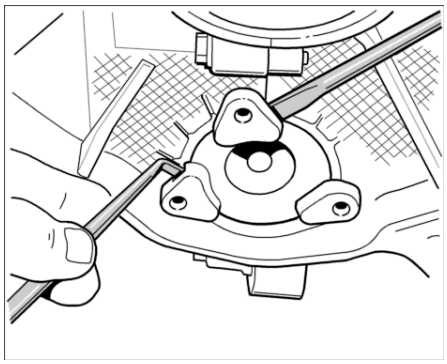
Removing bearing cover for intermediate shaft - from engine number 62.504095

ATTENTION

Timing chain may jump over.

- **Risk of engine damage**

→ Following removal of the chain tensioner, the crankshaft must not be turned under any circumstances.



Levering out bearing cover

ATTENTION

Risk of damage due to particles of dirt.

- **Oil bores/oil ducts can become blocked up.**

→ When working on the engine, absolute cleanliness is essential.
→ Lay removed engine parts on a clean base and cover them without fail.
→ Use the **cover for dust protection when fitting the engine NR.165** on the engine assembly support.

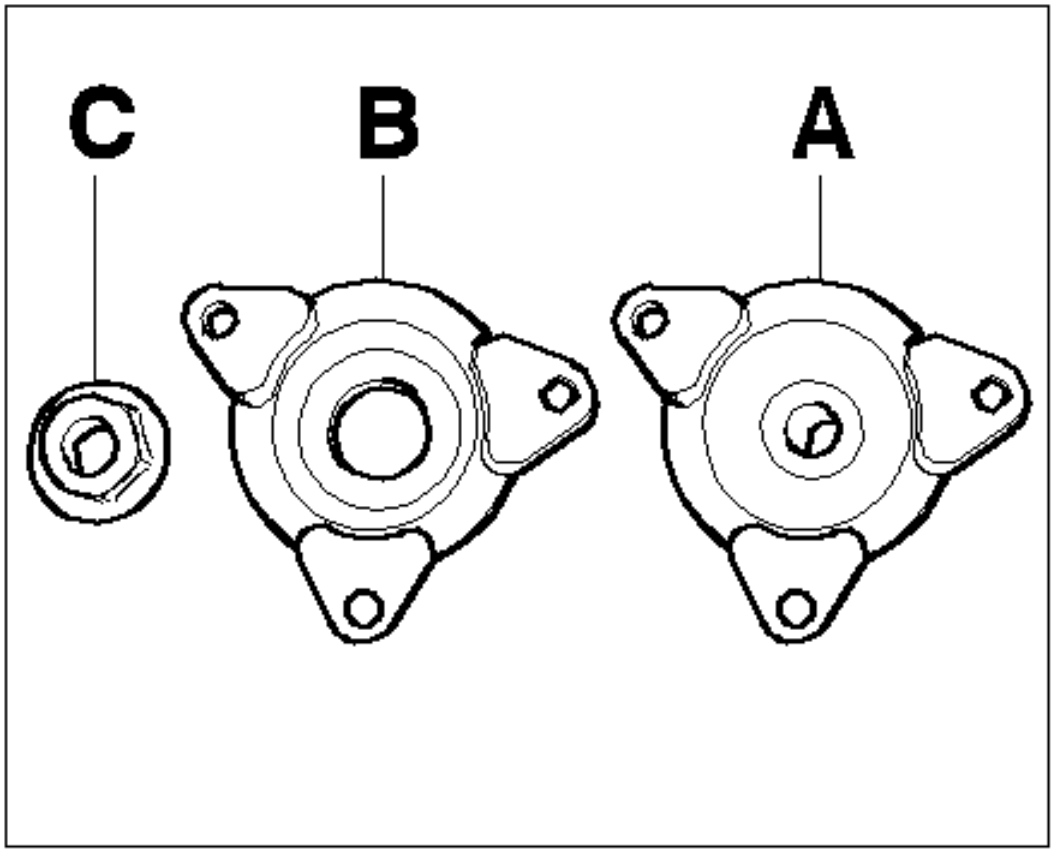
Note

- *The same sealing ring and installation/removal procedure applies as for the "old" bearing cover.*
- *The new bearing cover can only be retrofitted along with the new intermediate shaft up to model year 2003.*

Note

Always observe specified engine number range.

Overview of bearing covers for intermediate shaft.

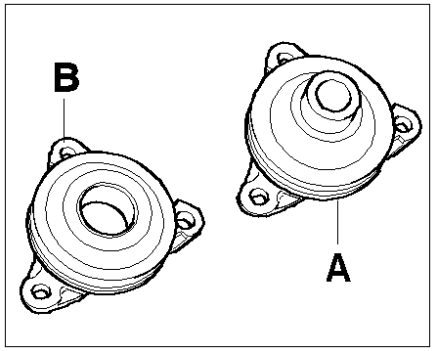


Differentiation of bearing covers for intermediate shaft

- A - Bearing cover 996.105.024.01
- B - Bearing cover 996.105.024.06
- C - Collar nut, M12 x 1.25

Rear of bearing cover

- A - Rear of bearing cover 996.105.024.01
- B - Rear of bearing cover 996.105.024.06



Rear view of bearing cover for intermediate shaft

Use the special tool **assembly tool 9673/1** for the M12 collar nut threaded joint.

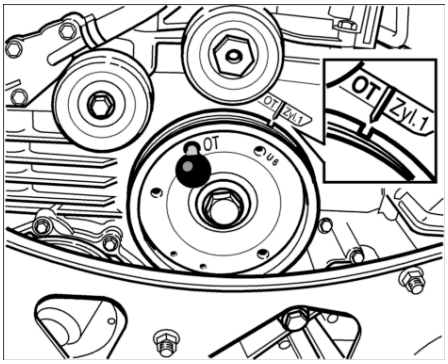
1. Lever out two green closure caps on pulley side of cylinder bank 1 - 3.

2. Turn the engine at the hexagon-head bolt (a/f 24) of the crankshaft belt pulley clockwise to overlapping TDC of cylinder bank 1 - 3 and fix it with special tool **locating pins 9595/1**.

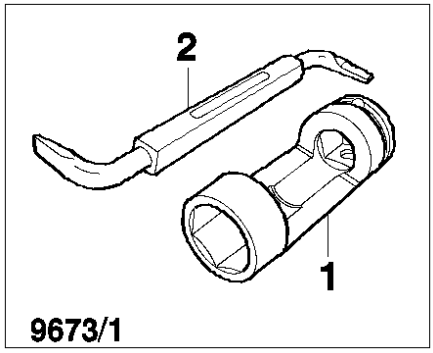
Note

- *For checking with the adjusting gauge, the timing adjustment must be correct.*

3. To check the camshaft adjustment, insert **adjusting gauge 9686** for camshaft into the camshaft slots (pulley side) (inscription on gauge pointing towards cylinder head cover). If the gauge cannot be inserted, rotate the crankshaft a further 360° and secure it again.



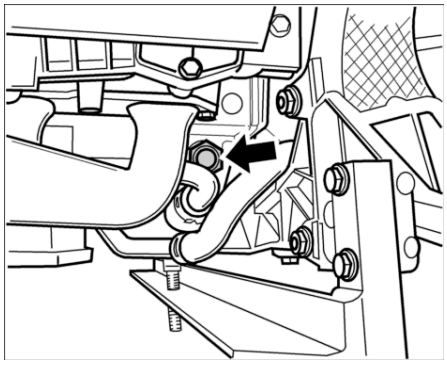
Fixing pulley



Special tool 9673/1

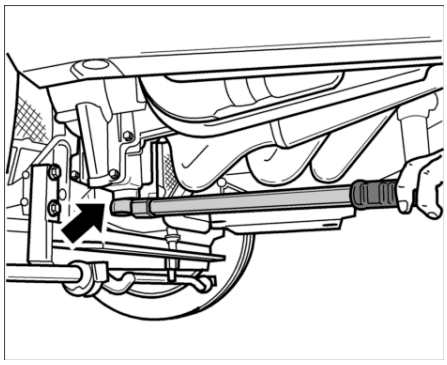
4. Unscrew two M6 x 12 hexagon-head bolts on the coolant pipe at cylinder side 1 - 3 (Tiptronic).

5. Remove primary chain tensioner (hexagon socket a/f 32).



Primary chain tensioner

6. Remove chain tensioner, cylinder bank 1 - 3 (hexagon socket a/f 32).



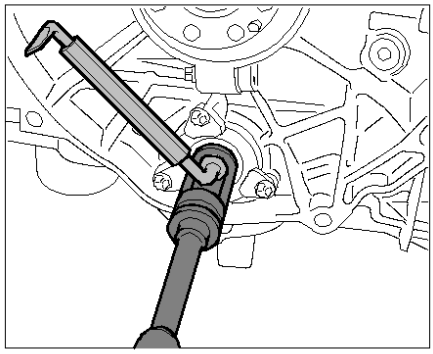
Chain tensioner, cylinders 1 - 3

Note

- *To make it easier to remove the bearing cover, spray the sealing surface with anti-rust agent.*

7. Loosen M12 hexagon collar nut (a/f 22) on bearing cover for intermediate shaft with special tool **assembly tool 9673/1** and screw it off → *Threaded joint with collar nut on bearing cover for intermediate shaft* .

8. Unscrew the three M6 x 20 fastening screws (coated) on the intermediate-shaft flange. Replace screws during installation and clean thread in crankcase.

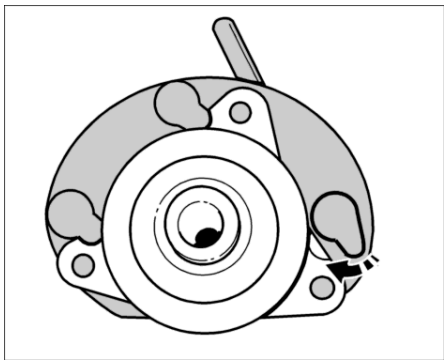


Threaded joint with collar nut on bearing cover for intermediate shaft

Note

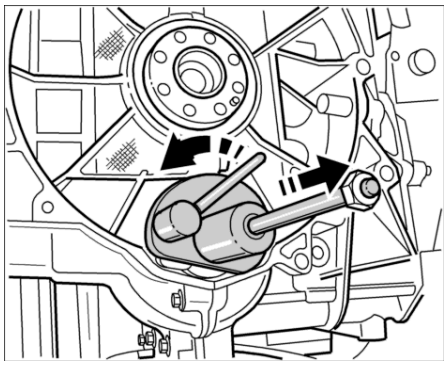
- *Remove bearing cover using special tool **puller 9673**. If this is not available, lever the bearing cover out carefully with two screwdrivers so as not to damage the sealing surfaces. Turning several times to the left and right loosens the bearing cover.*
- *After removing the bearing cover, do not press the threaded bolts of the intermediate shaft.*

9. Position special tool **puller 9673** at the bearing cover grooves and secure by turning the locking lever anti-clockwise.



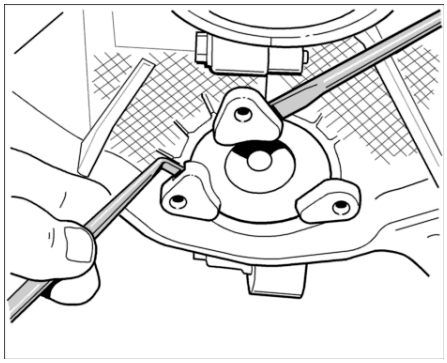
Puller on bearing cover: view when removed

10. Pull the slide hammer on the puller a number of times against the stop nuts while countering the tool at the same time with the other hand.



Removing bearing cover

11. If the puller is not available, lever the bearing cover out carefully using two screwdrivers (or angle screwdrivers). Move the bearing cover a number of times to the left and right to make levering easier. Do not damage the sealing surfaces.



Levering out bearing cover

Installing bearing cover for intermediate shaft

Installing bearing cover for intermediate shaft - up to engine number 62.504094

ATTENTION

Risk of damage due to particles of dirt.

- **Oil bores/oil ducts can become blocked up.**

→ When working on the engine, absolute cleanliness is essential.
→ Lay removed engine parts on a clean base and cover them without fail.
→ Use the **cover for dust protection when fitting the engine NR.165** on the engine assembly support.

Note

- *Clean working area of bore for bearing cover and crankcase thoroughly using acetone or solvent naphtha.*

1. Before installing the new bearing cover, check the fitted bore (axial attachment surface, bore chamfers) on the crankcase for sharp edges and burrs. They should be removed with an oilstone or a polishing cloth. Remove any existing residue and clean the bore with a clean cloth soaked in solvent naphtha or acetone.

Note

- *Replace bearing cover or sealing ring for bearing cover → 152355 Replacing sealing ring for intermediate shaft.*

Note

Always observe specified engine number range.

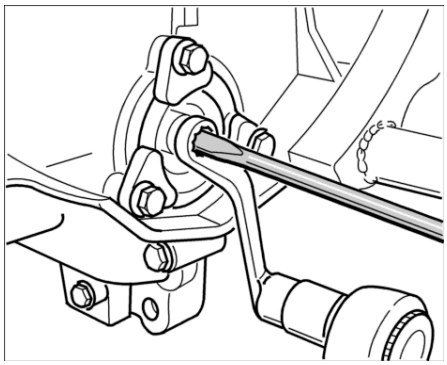
2. Grease fitted bore in crankcase and new bearing cover (with new sealing ring) with special grease Optimoly MP3 (available from Porsche Parts Service) and place bearing cover in position.

Note

- *Replace collar nut M8 x 1 and coated M6 screws for bearing cover.*

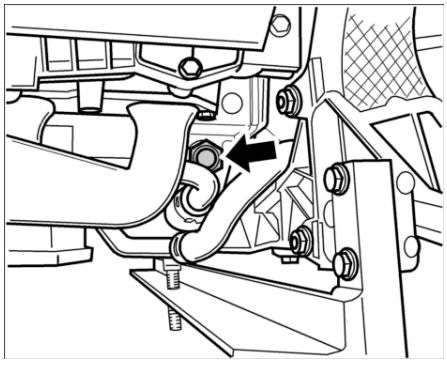
3. Position three new, coated M6 x 20 screws on the crankcase and pull in the bearing cover by screwing in the screws uniformly. Tighten the screws. → **Tightening torque: 10 (7.5 ftlb.) Nm**

4. Position new M8 x 1 collar nut on the threaded pin of the intermediate shaft. Then tighten the nut using special tool **socket wrench 9110**. At the same time, counter with a screwdriver in the slotted threaded pin of the intermediate shaft. → **Tightening torque: 12 (9 ftlb.) Nm +1 (0.5 ftlb.) Nm**



Collar nut for bearing cover

5. Insert primary chain tensioner with new sealing ring (hexagon a/f 32) and tighten to the specified torque. → **Tightening torque: 80 (59 ftlb.) Nm**



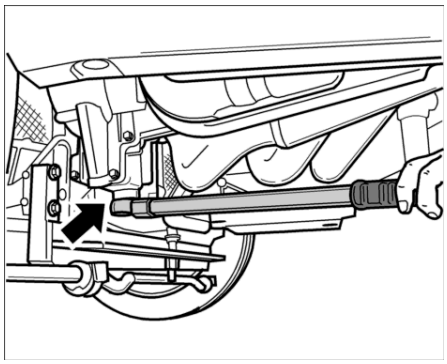
Primary chain tensioner

6. Insert chain tensioner for cylinder 1 - 3 with new sealing ring (hexagon a/f 32) and tighten to the specified torque. → **Tightening torque: 80 (59 ftlb.) Nm**

7. Fasten coolant pipes on cylinder side 1 -3 with two M6 x 12 hexagon-head bolts. → **Tightening torque: 10 (7.5 ftlb.) Nm**

8. Fit two new closure caps on cylinder head cover.

9. Pull locating pin out of crankshaft belt pulley.



Chain tensioner, cylinders 1 - 3

Installing bearing cover for intermediate shaft - from engine number 62.504095

ATTENTION

Risk of damage due to particles of dirt.

- **Oil bores/oil ducts can become blocked up.**

→ When working on the engine, absolute cleanliness is essential.
→ Lay removed engine parts on a clean base and cover them without fail.
→ Use the **cover for dust protection when fitting the engine NR.165** on the engine assembly support.

Note

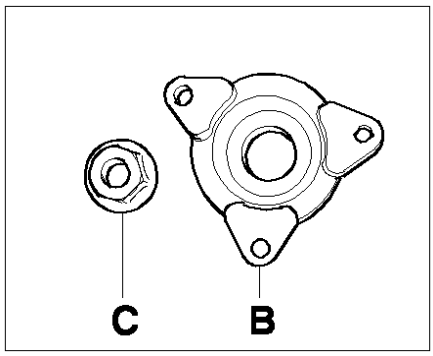
- *The same sealing ring and installation/removal procedure applies as for the "old" bearing cover.*
- *The new bearing cover can only be retrofitted along with the new intermediate shaft up to model year 2003.*

Note

Always observe specified engine number range.

New bearing cover

- B - Bearing cover 996.105.024.06
- C - Collar nut, M12 x 1.25



New bearing cover for intermediate shaft

Note

- *Clean working area of bore for bearing cover and crankcase thoroughly using acetone or solvent naphtha.*

1. Before installing the new bearing cover, check the fitted bore (axial attachment surface, bore chamfers) on the crankcase for sharp edges and burrs. They should be removed with an oilstone or a polishing cloth. Remove any existing residue and clean the bore with a clean cloth soaked in solvent naphtha or acetone.

Note

- *Replace bearing cover or sealing ring for bearing cover → 152355 Replacing sealing ring for intermediate shaft.*

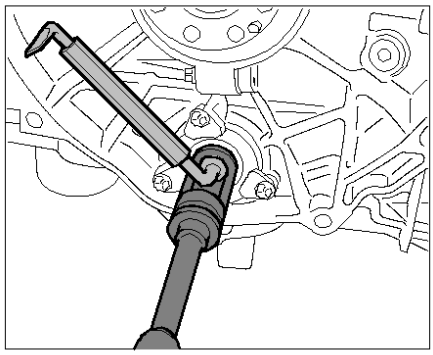
2. Grease fitted bore in crankcase and new bearing cover (with new sealing ring) with special grease Optimoly MP3 (available from Porsche Parts Service) and place bearing cover in position.

Note

- *Replace collar nut M12 and coated M6 screws for bearing cover.*

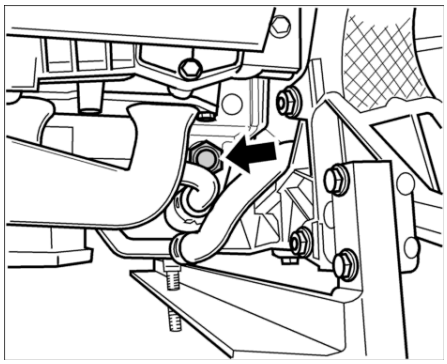
3. Position three new, coated M6 x 20 screws on the crankcase and pull in the bearing cover by screwing in the screws uniformly. Tighten the screws. → **Tightening torque: 10 (7.5 ftlb.) Nm**

4. Position new M12 x 1.25 collar nut on the threaded pin of the intermediate shaft. Then tighten the nut using special tool **assembly tool 9673/1**. At the same time, counter with an angle screwdriver in the slotted threaded pin of the intermediate shaft. → **Tightening torque : 20 (15 ftlb.) Nm +/-1 (0.5 ftlb.) Nm**



Threaded joint with collar nut on bearing cover for intermediate shaft

5. Insert primary chain tensioner with new sealing ring (hexagon a/f 32) and tighten to the specified torque. → **Tightening torque: 80 (59 ftlb.) Nm**



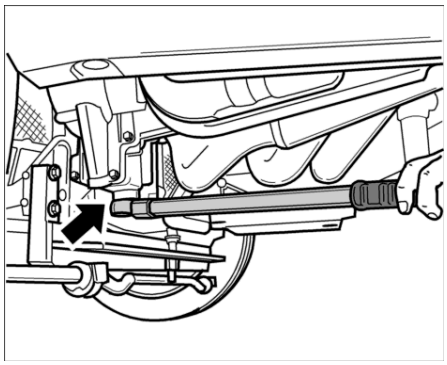
Primary chain tensioner

6. Insert chain tensioner for cylinder 1 - 3 with new sealing ring (hexagon a/f 32) and tighten to the specified torque. → **Tightening torque: 80 (59 ftlb.) Nm**

7. Secure coolant pipe on cylinder side 1 -3 with two M6 x 12 hexagon-head bolts. → **Tightening torque: 10 (7.5 ftlb.) Nm**

8. Fit new closure caps on cylinder head cover.

9. Pull locating pin out of crankshaft belt pulley.



Chain tensioner, cylinders 1 - 3

Subsequent work for bearing cover for intermediate shaft

Subsequent work for bearing cover for intermediate shaft

Tiptronic:

1. Install drive plate for converter → 136319 Removing and installing drive plate for converter - chapter on "installing".

2. Install automatic transmission → 373519 Removing and installing automatic transmission - chapter on "Installing".

Manual transmission:

3. Install clutch → 305019 Removing and installing clutch - chapter on "installing".

4. Install double-mass flywheel → 136019 Removing and installing double-mass flywheel - chapter on "installing".

5. Install transmission → 343519 Removing and installing transmission - chapter on "installing".

All:

6. Filling in engine oil → 170155 Engine oil and oil filter change - chapter on "filling in".

Note

- *Note the work instructions for disconnecting and reconnecting the battery.*

7. Connect the battery → *271000 Work instructions after disconnecting the battery*.

987320, 987321

as of MY 2005
Country C00, C02, C05, C07, C08, C09, C10, C11, C12, C13, C14, C15, C16, C18, C19, C20, C21, C22, C23, C24, C25, C26, C27, C28, C32, C33, C34, C35, C36, C37, C38, C39, C45, C46, C98, C99