

15 90 55 REPLACING LID SEAL FOR CAMSHAFT HOUSING (VALVE LID SEAL) - AS OF MY 2003 (CAYENNE S TIP, CAYENNE S MAN, CAYENNE TURBO, CAYENNE TURBO S, CAYENNE S TIO TITAN)

INFORMATION

Information

1. In order to change the camshaft housing cover seal, the camshaft housing cover must be removed and installed. --> 159121 Removing camshaft housing cover --> 159123 Installing camshaft housing cover

15 91 21 REMOVING COVER FOR CAMSHAFT HOUSING - AS OF MY 2003 (CAYENNE S TIP, CAYENNE S MAN, CAYENNE TURBO, CAYENNE TURBO S, CAYENNE S TIO TITAN)

TOOLS

Designation	Type	Number	Explanation	
Socket changeover ratchet, 1/4 inch	commercially available tool			
Torque wrench	commercially available tool	90		
Centring sleeve	special tool	P 9701		

PRELIMINARY WORK

Preliminary work

1. Remove engine cover Refer to 10 83 19 Removing and installing design cover. - as of MY 2003 (Cayenne S TIP, Cayenne S MAN, Cayenne Turbo, Cayenne Turbo S, Cayenne S TIO Titan) ..

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2. Remove secondary air pump with console Refer to **26 65 19 Removing and installing secondary air pump - as of MY 2003 (Cayenne S TIP, Cayenne S MAN, Cayenne Turbo, Cayenne Turbo S, Cayenne S TIO Titan) ..**

3. Remove ignition coils (ignition rod module). Refer to Refer to **28 20 55 Replacing ignition coils - as of MY 2003 (Cayenne S TIP, Cayenne S MAN, Cayenne Turbo, Cayenne Turbo S, Cayenne S TIO Titan) .**

TOOLS AND MATERIALS

Special tools

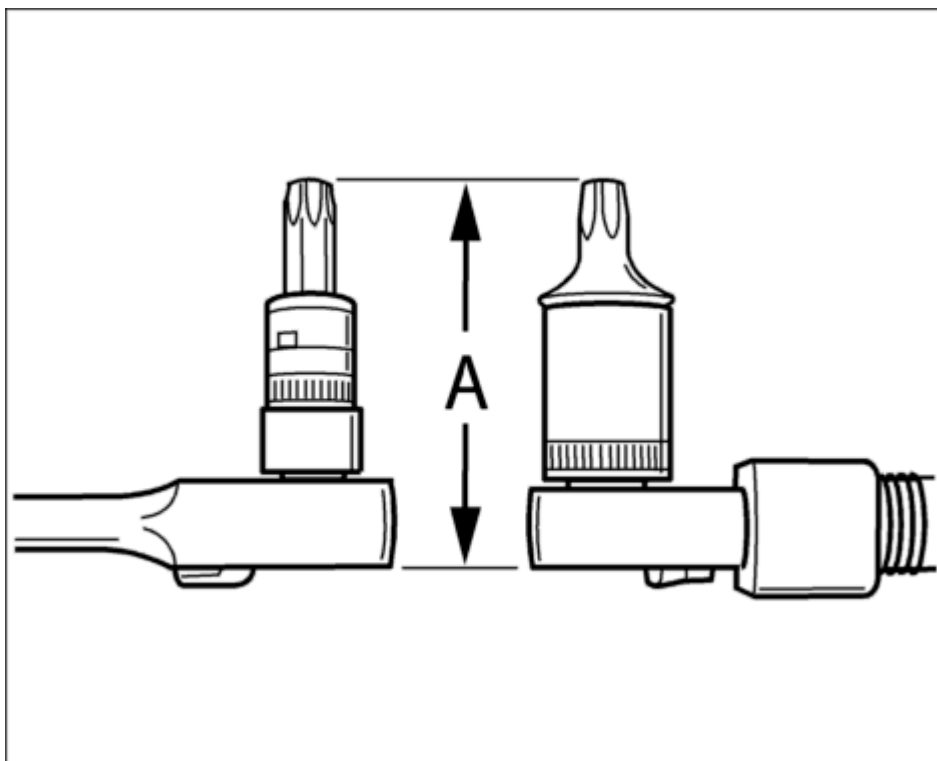


Fig. 433: Tool height

Courtesy of PORSCHE OF NORTH AMERICA, INC.

NOTE:

- It is best to use a tool that has an head height of less than 50 mm -A- (see special tools) to loosen and tighten the rear fastening screw of the cylinder head cover close to the plenum panel. See **Fig. 433.**

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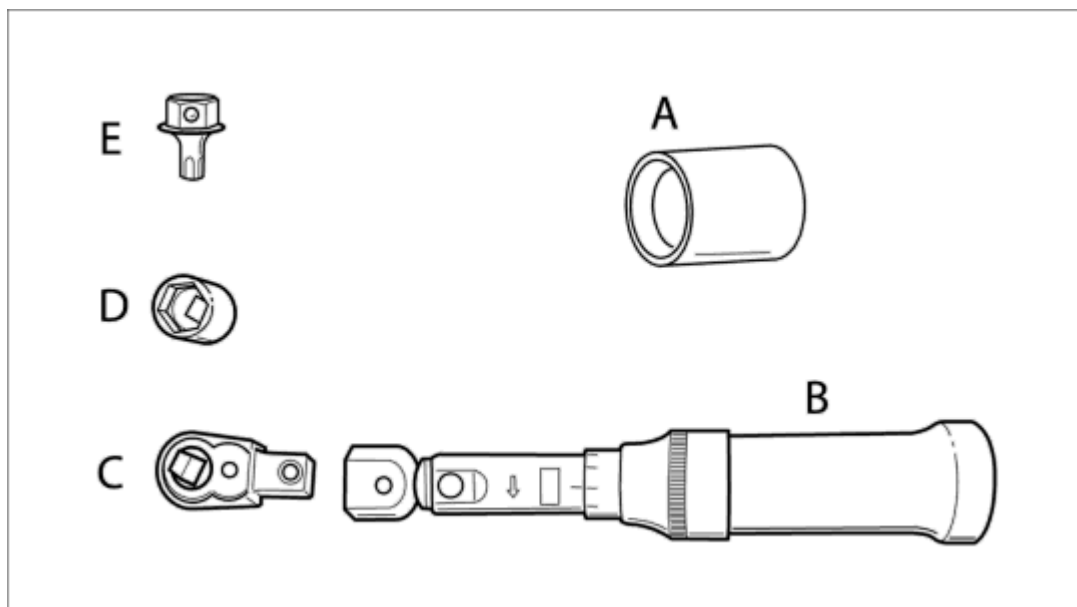


Fig. 434: Recommended special tools

Courtesy of PORSCHE OF NORTH AMERICA, INC.

Item	Designation	Source	Explanation
-A- See Fig. 434 .	<u>Centring sleeve P 9701</u>	-	
-B- See Fig. 434 .	<u>Torque wrench 90</u>	-	
-C- See Fig. 434 .	<u>Socket changeover ratchet, 1/4 inch</u>	-	
-D- See Fig. 434 .	<u>Socket insert wrench (a/f 13), 1/4 inch</u>	-	
-E- See Fig. 434 .	<u>T40 inner hexagon socket bit</u>	-	

INFORMATION

Component overview

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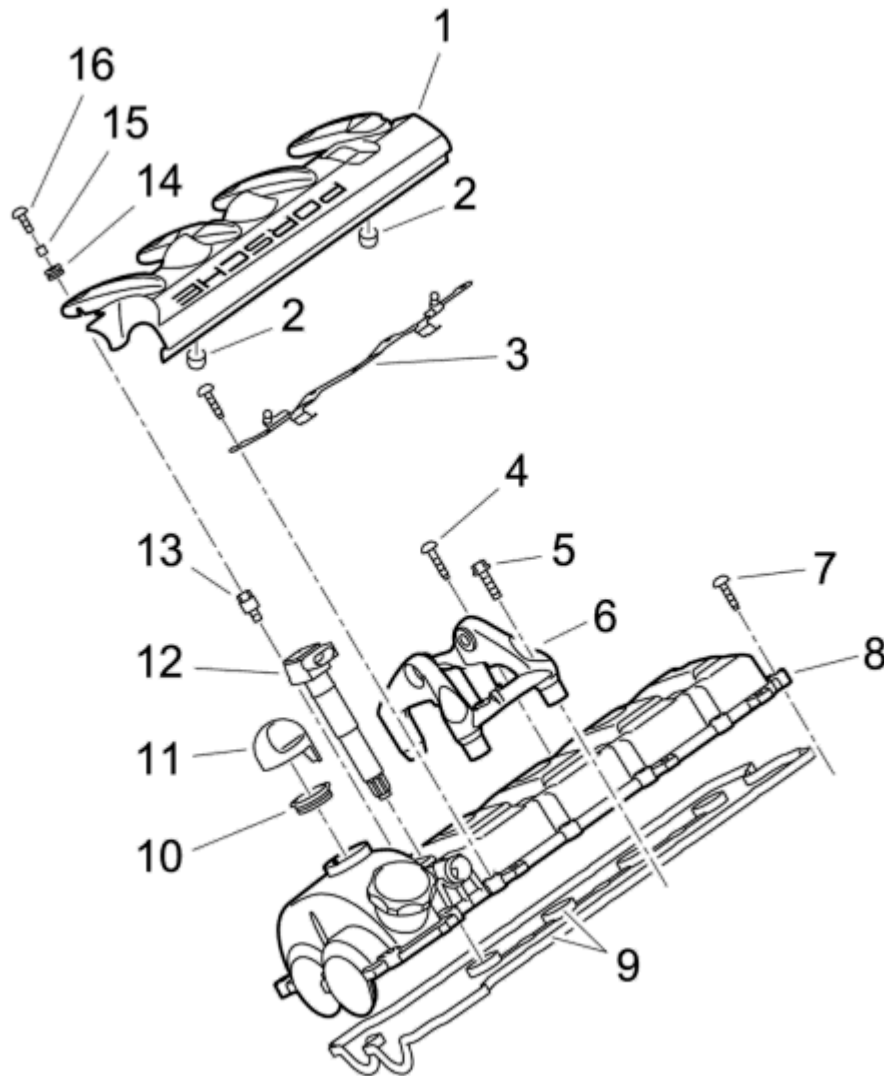


Fig. 435: Camshaft housing lid overview

Courtesy of PORSCHE OF NORTH AMERICA, INC.

1 - Design cover

2 - Ball socket

3 - Cover holder

4 - BM8 x 45 screw

5 - Hexagon-head bolt M6 x 40

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- 6 - Engine support bracket
- 7 - M6 x 30 oval-head screw
- 8 - Camshaft housing cover on cylinder 1 - 4
- 9 - Camshaft housing cover seal, inner and outer
- 10 - Seal for NVS camshaft housing
- 11 - Cap
- 12 - Ignition coil (ignition rod module)
- 13 - Screw with internal thread
- 14 - Grommet
- 15 - Sleeve
- 16 - Countersunk screw, M5 x 16

REMOVING COVER FOR CAMSHAFT HOUSING ON CYLINDER BANK 1 - 4

Removing cover for camshaft housing on cylinder bank 1 - 4

NOTE:

- *The cover for the camshaft housing is removed and installed in the same way on cylinder bank 5 - 8 and cylinder bank 1 - 4!*

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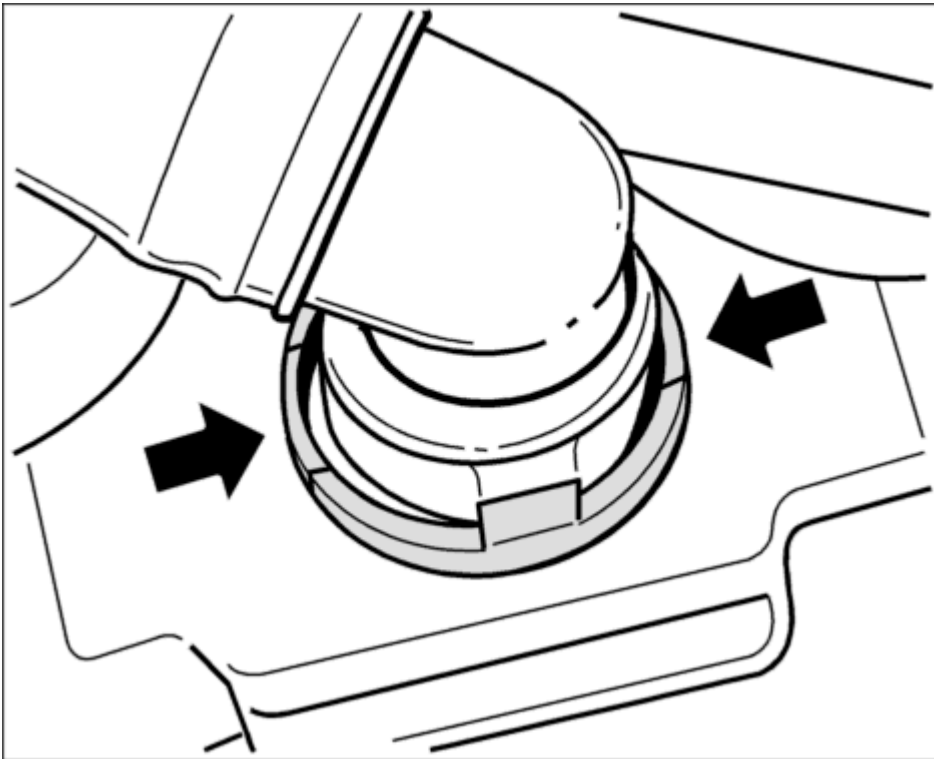


Fig. 436: Plug connection of the positive crankcase ventilation valve.
Courtesy of PORSCHE OF NORTH AMERICA, INC.

1. Press together the plug connection for the positive crankcase ventilation on the camshaft housing lid -see **arrows-** and pull it off. See **Fig. 436.**

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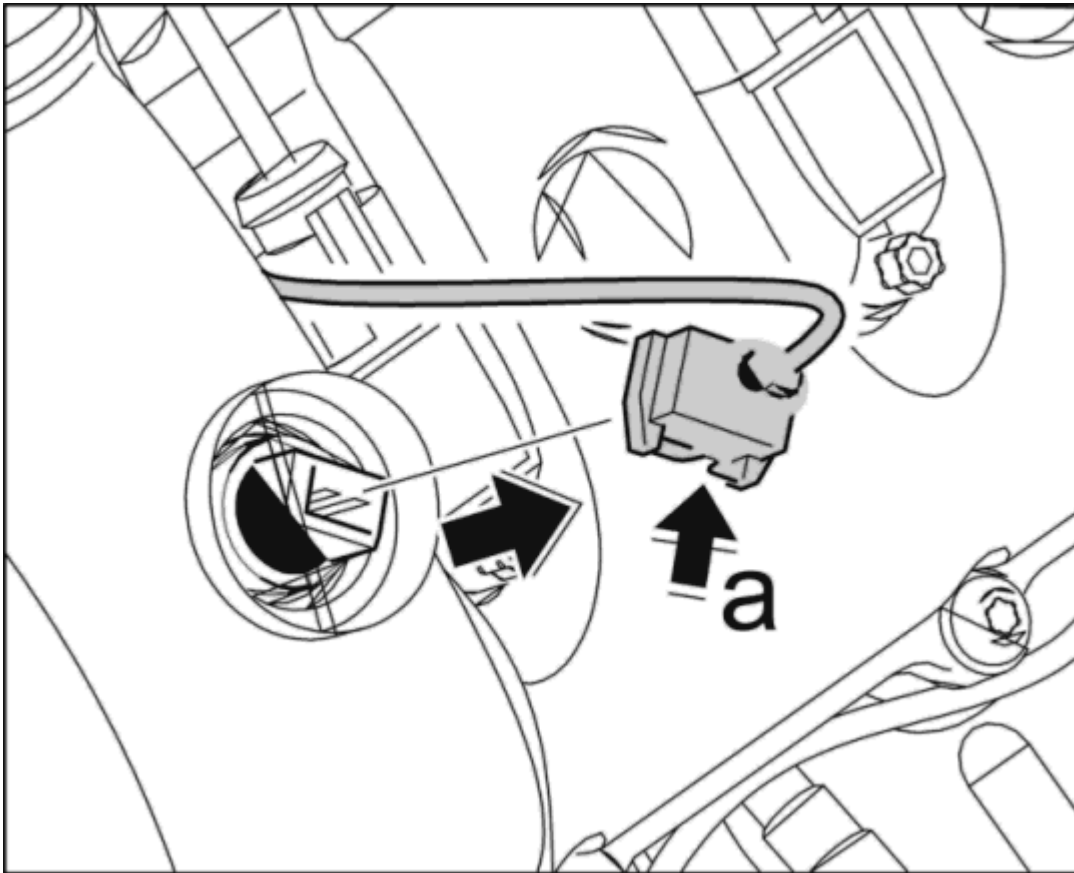


Fig. 437: Cap and cable plug of the hydraulic valve
Courtesy of PORSCHE OF NORTH AMERICA, INC.

2. Pull off the cap and the cable plug for the hydraulic valve lying beneath it by pressing on wire clip **-a-** .

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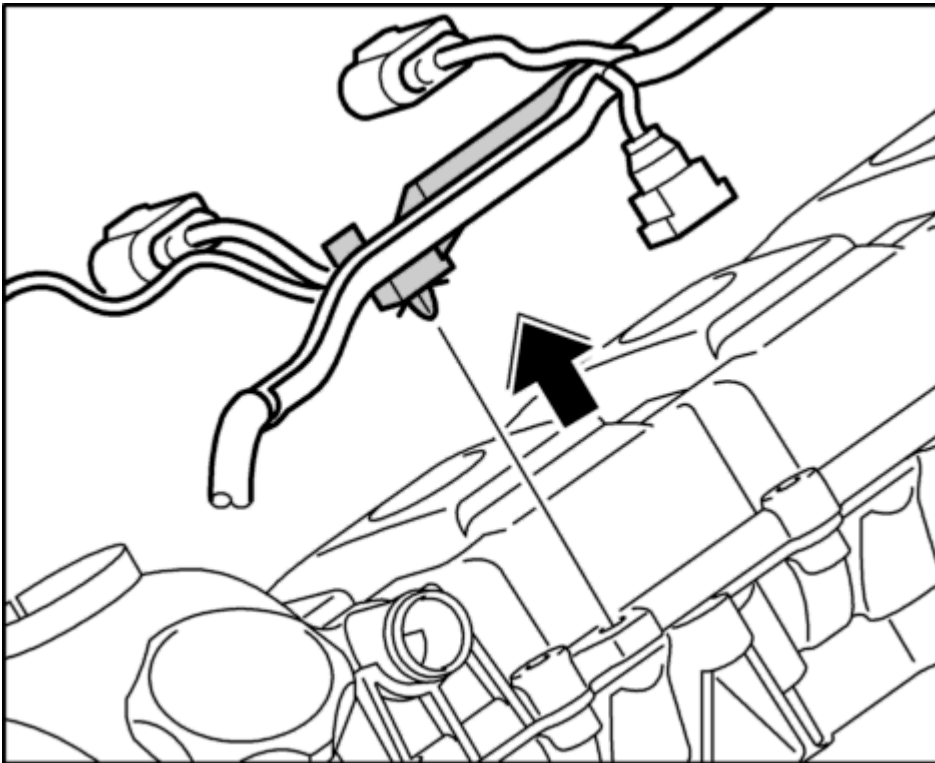


Fig. 438: Wiring harness holder

Courtesy of PORSCHE OF NORTH AMERICA, INC.

NOTE:

- *Plastic clips can be damaged once the wiring harness holder has been undone and must be checked to ensure they can be used again!*

3. Remove wiring harness holders by pulling carefully on the holders. Lay wiring harness aside.

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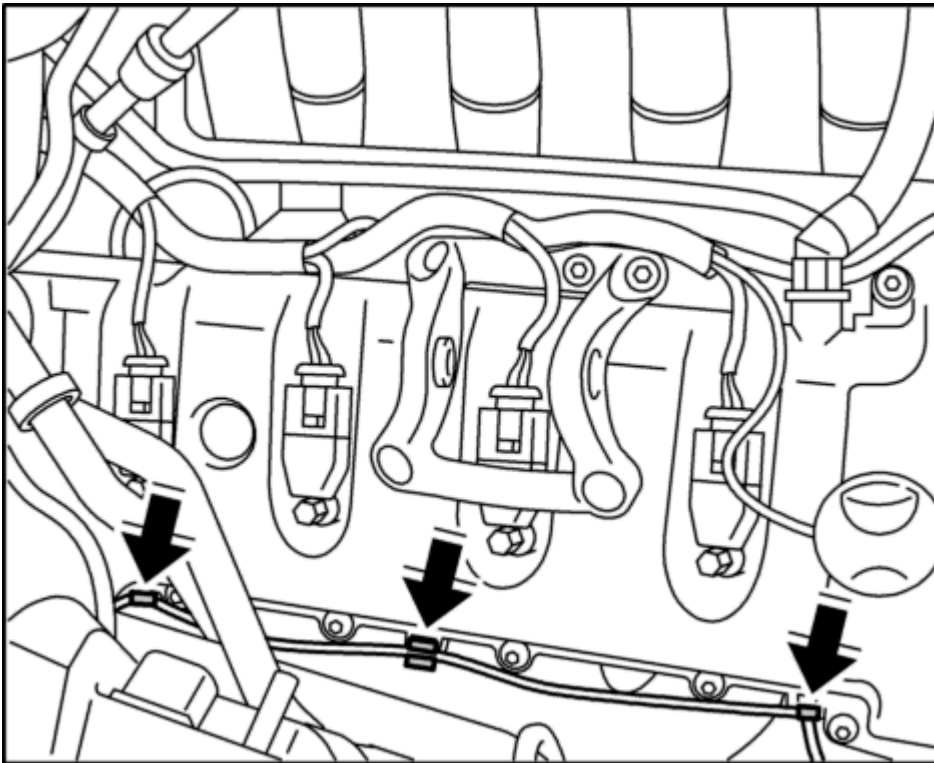


Fig. 439: Wiring harness

Courtesy of PORSCHE OF NORTH AMERICA, INC.

4. Remove wiring harness on sheetmetal holders on the camshaft housing lid.

CAUTION: Risk of damage to the position sensor on the camshaft's trigger wheel!

- The trigger wheel can be damaged when the cover of the camshaft housing is moved.
- Ignition faulty.
- Engine damage.

--> Move the camshaft housing lid carefully.

--> Carefully watch the trigger wheel when removing or fitting the cover of the camshaft housing.

NOTE:

- *If the camshaft housing lid is not removed carefully, it can cause the trigger wheel on the position sensor at the rear on the camshaft to be bent out of shape!*

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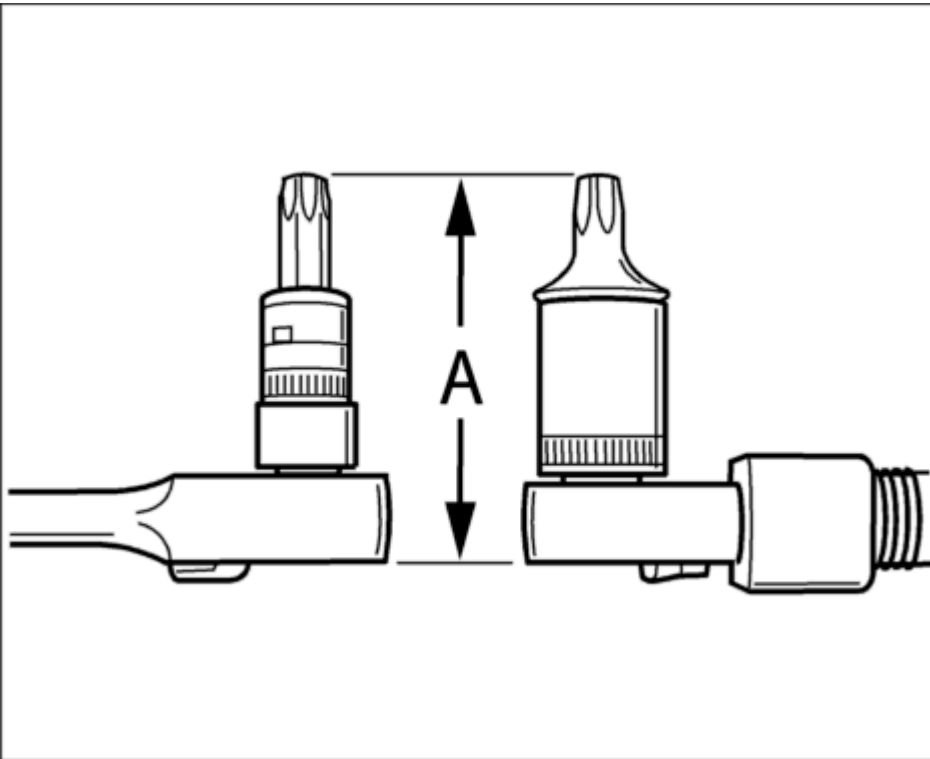


Fig. 440: Tool height

Courtesy of PORSCHE OF NORTH AMERICA, INC.

NOTE:

- It is best to use a tool that has an head height of less than 50 mm -A- (see special tools) to loosen and tighten the rear fastening screw of the cylinder head cover close to the plenum panel. See [Fig. 433](#).

5. Unscrew screws **-1 to 19-** (**-16 and 19-** were mounted on the torque support bracket) and lift the camshaft housing lid carefully at the back to avoid damaging the trigger wheel of the reference mark sender on the camshaft (this is located in the vicinity of screws 1 and 7). Then lift it off completely. See [Fig. 441](#).

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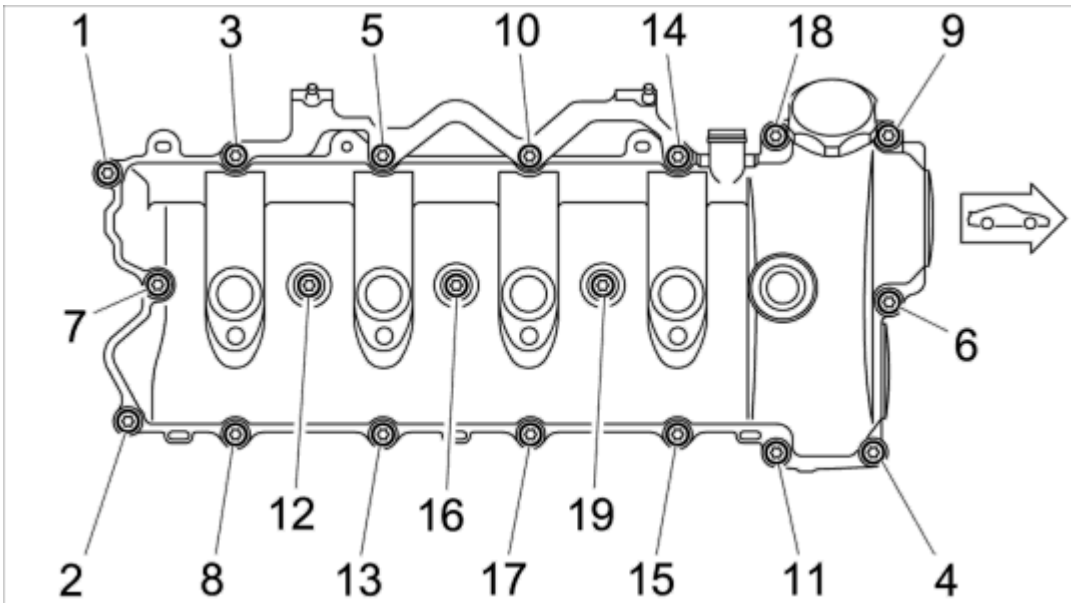


Fig. 441: Camshaft housing lid

Courtesy of PORSCHE OF NORTH AMERICA, INC.

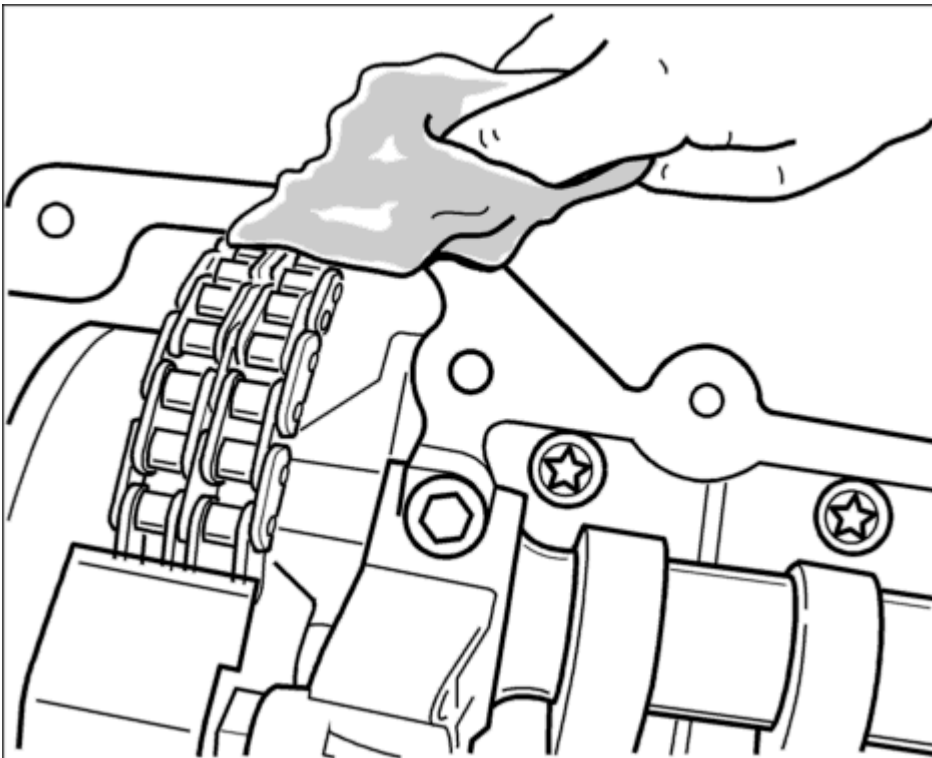


Fig. 442: Sealing faces on camshaft housing lid and cylinder head

Courtesy of PORSCHE OF NORTH AMERICA, INC.

6. Turn the camshaft housing lid over and remove inner and outer seal for camshaft housing. Clean sealing faces on the camshaft housing lid and cylinder head.

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NOTE: • *Always replace seals.*

15 91 23 INSTALLING COVER FOR CAMSHAFT HOUSING - AS OF MY 2003 (CAYENNE S TIP, CAYENNE S MAN, CAYENNE TURBO, CAYENNE TURBO S, CAYENNE S TIO TITAN)

TOOLS

Designation	Type	Number	Explanation
Socket changeover ratchet, 1/4 inch	commercially available tool		
Torque wrench	commercially available tool	90	
Centring sleeve	special tool	P 9701	

TOOLS AND MATERIALS

Special tools

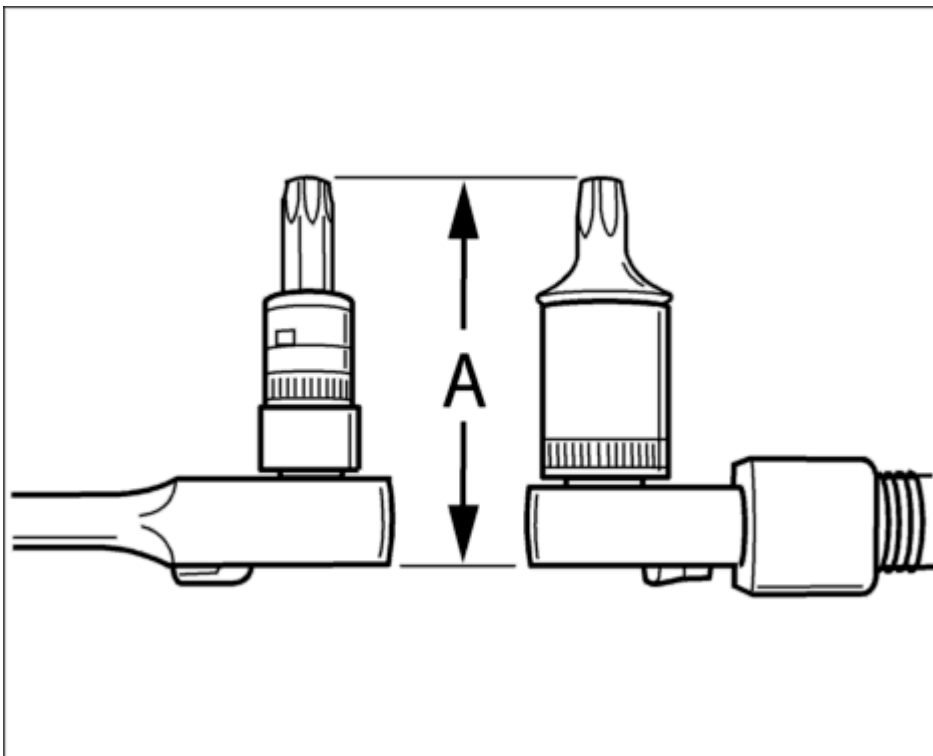


Fig. 443: Tool height

Courtesy of PORSCHE OF NORTH AMERICA, INC.

NOTE: • It is best to use a tool that has an head height of less than 50 mm -A- (see

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special tools) to loosen and tighten the rear fastening screw of the cylinder head cover close to the plenum panel. See [Fig. 443](#).

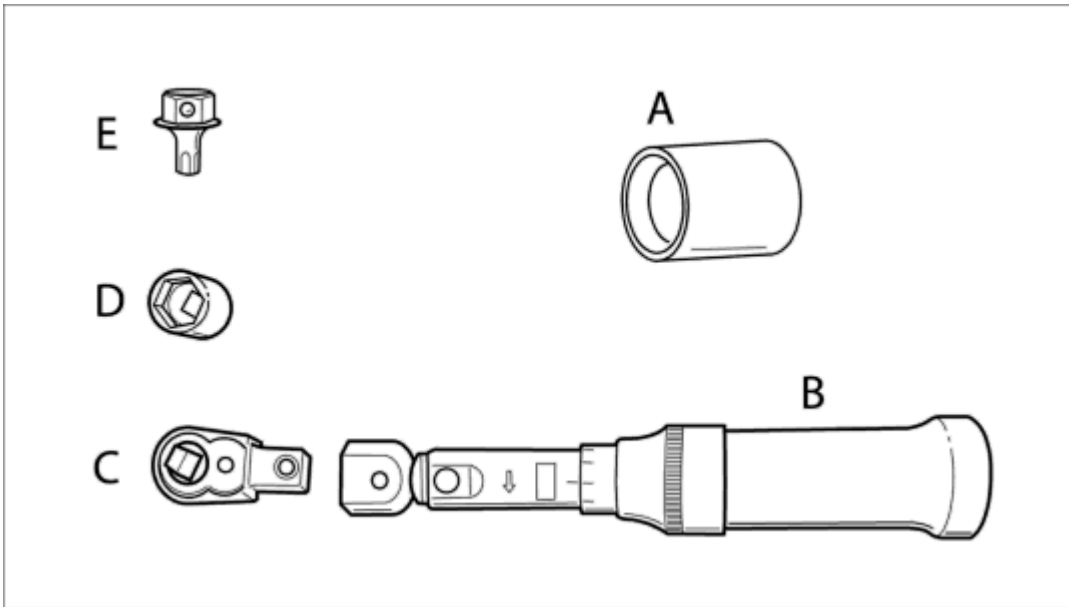


Fig. 444: Recommended special tools -Torque wrench set
Courtesy of PORSCHE OF NORTH AMERICA, INC.

Item	Designation	Source	Explanation
-A- See Fig. 444 .	<u>Centring sleeve P 9701</u>	-	
-B- See Fig. 444 .	<u>Torque wrench 90</u>	-	
-C- See Fig. 444 .	<u>Socket changeover ratchet, 1/4 inch</u>	-	
-D- See Fig. 444 .	<u>Socket insert wrench (a/f 13), 1/4 inch</u>	-	
-E- See Fig. 444 .	<u>T40 inner hexagon socket bit</u>	-	

INFORMATION

Component overview

2005 Porsche Cayenne

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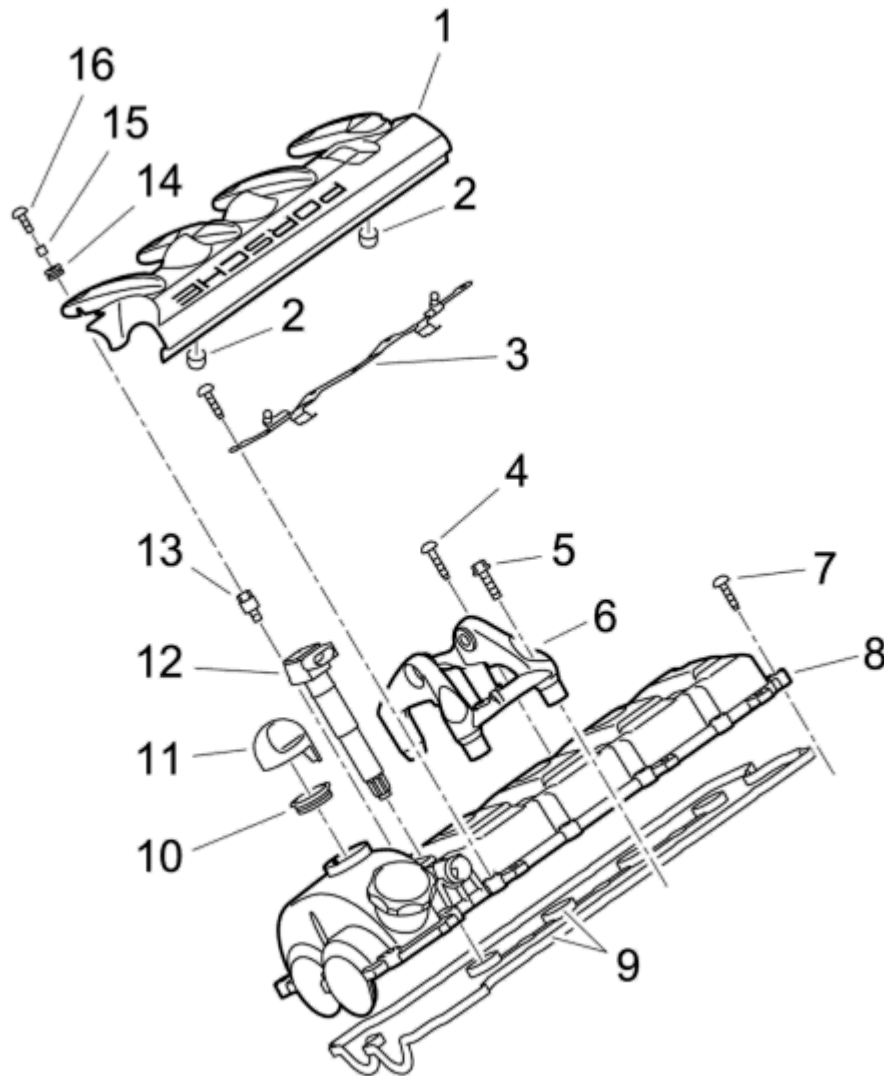


Fig. 445: Camshaft housing lid overview

Courtesy of PORSCHE OF NORTH AMERICA, INC.

1 - Design cover

2 - Ball socket

3 - Cover holder

4 - BM8 x 45 screw

5 - Hexagon-head bolt M6 x 40

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- 6 - Engine support bracket
- 7 - M6 x 30 oval-head screw
- 8 - Camshaft housing cover on cylinder 1 - 4
- 9 - Camshaft housing cover seal, inner and outer
- 10 - Seal for NVS camshaft housing
- 11 - Cap
- 12 - Ignition coil (ignition rod module)
- 13 - Screw with internal thread
- 14 - Grommet
- 15 - Sleeve
- 16 - Countersunk screw, M5 x 16

INSTALLING COVER FOR CAMSHAFT HOUSING ON CYLINDER ROW 1 - 4

CAUTION: Risk of damage to the position sensor on the camshaft's trigger wheel!

- **The trigger wheel can be damaged when the cover of the camshaft housing is moved.**
- **Ignition faulty.**
- **Engine damage.**

--> Move the camshaft housing lid carefully.

--> Carefully watch the trigger wheel when removing or fitting the cover of the camshaft housing.

NOTE:

- ***The cover for the camshaft housing is removed and installed in the same way on cylinder bank 5 - 8 and cylinder bank 1 - 4!***

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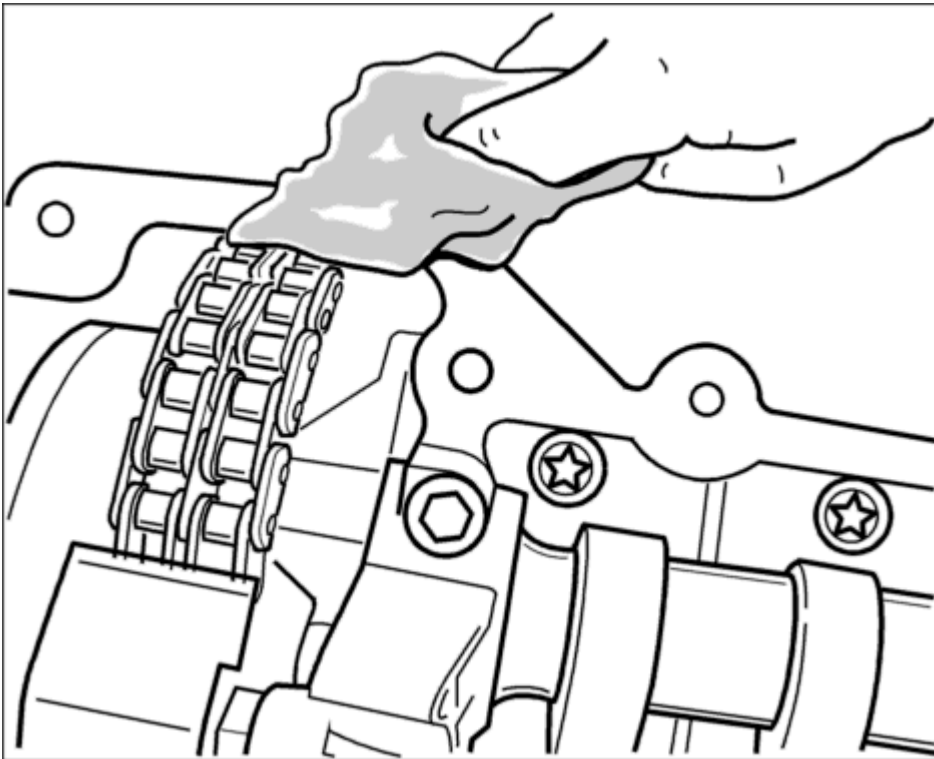


Fig. 446: Camshaft housing lid and cylinder head

Courtesy of PORSCHE OF NORTH AMERICA, INC.

NOTE:

- ***Always replace inner and outer seal for camshaft housing!***

1. Thoroughly clean sealing faces on the camshaft housing lid and cylinder head.

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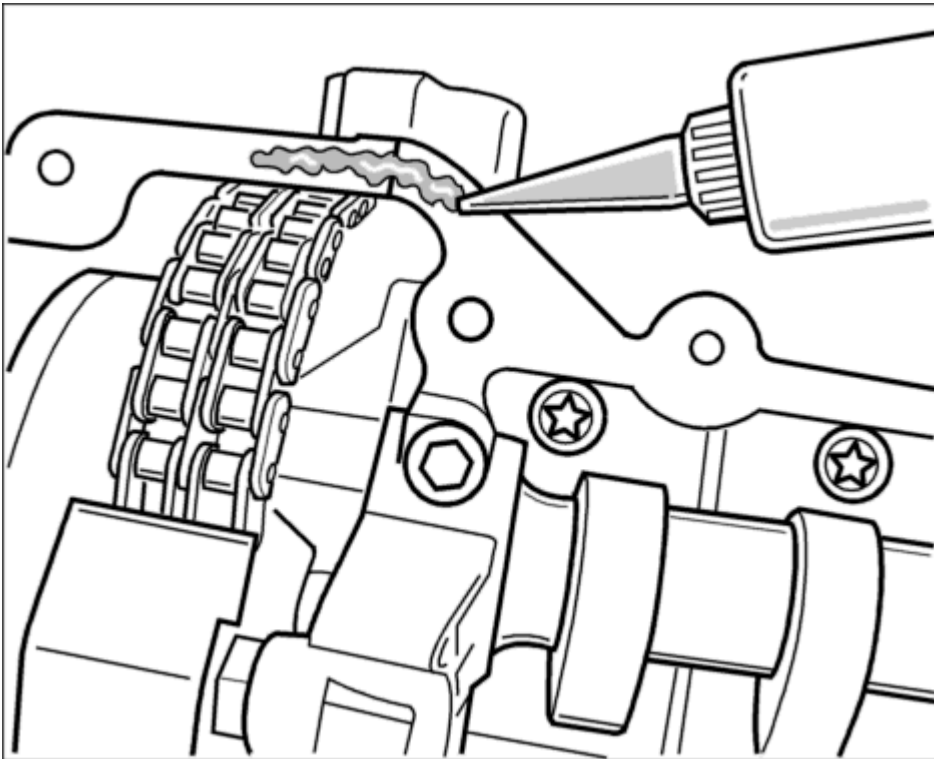


Fig. 447: Camshaft housing lid

Courtesy of PORSCHE OF NORTH AMERICA, INC.

2. Insert inner and outer seal in camshaft housing lid and apply a bead of Silikon 2210 Drei Bond sealant (000.043.204.58, status 02/06) to the lining between the cylinder head and timing chain cover on both sides.

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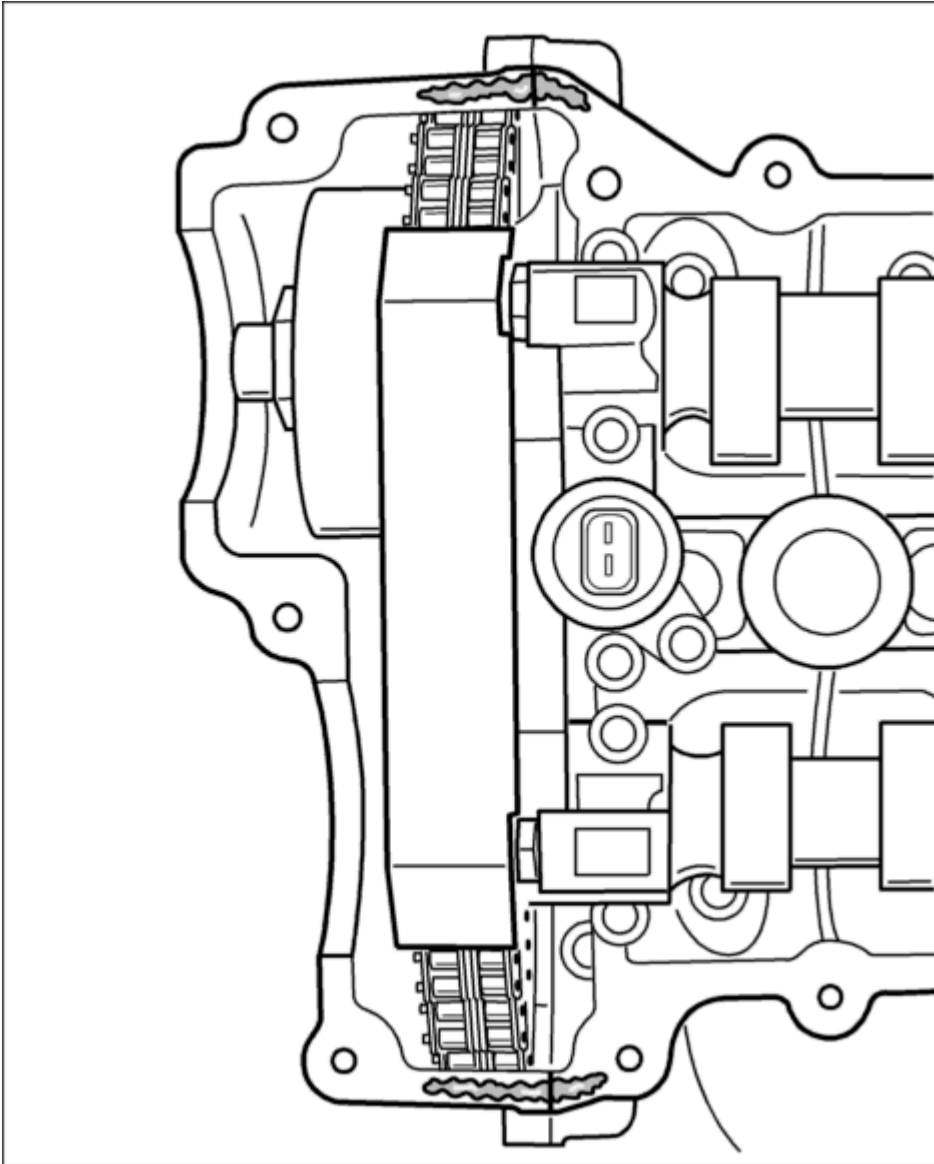


Fig. 448: Sealant beads on both sides

Courtesy of PORSCHE OF NORTH AMERICA, INC.

NOTE:

- ***If the camshaft housing cover is not fitted carefully, it can cause the trigger wheel on the position sensor at the rear on the camshaft to be bent out of shape!***

3. Position the camshaft housing lid carefully; do not bend the trigger wheel of the position sensor on the camshaft when doing so.

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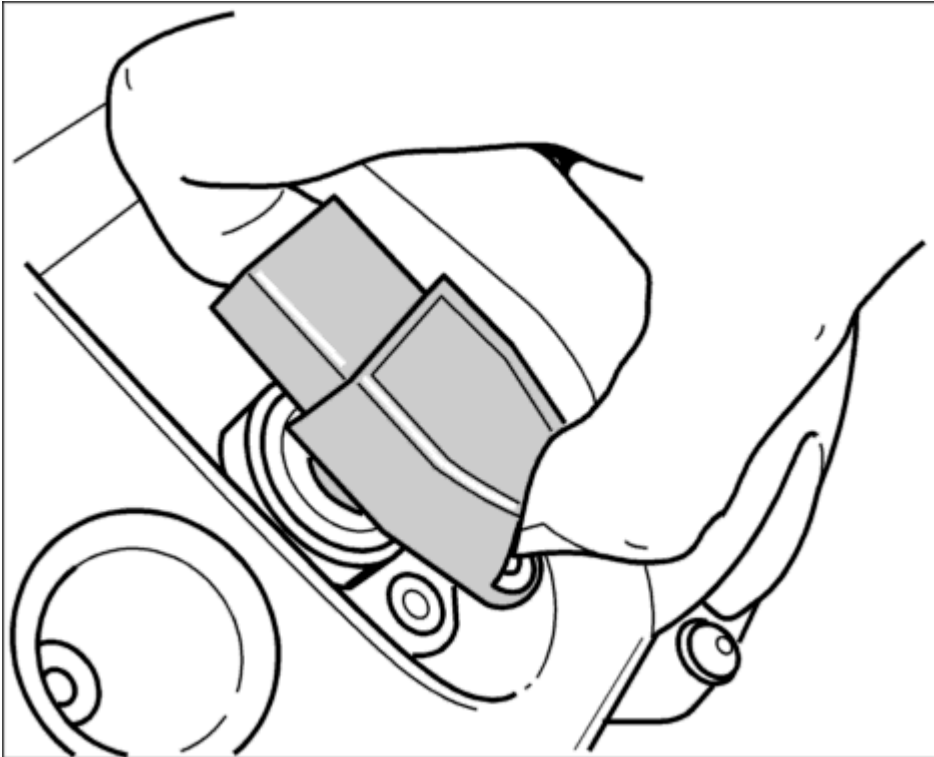
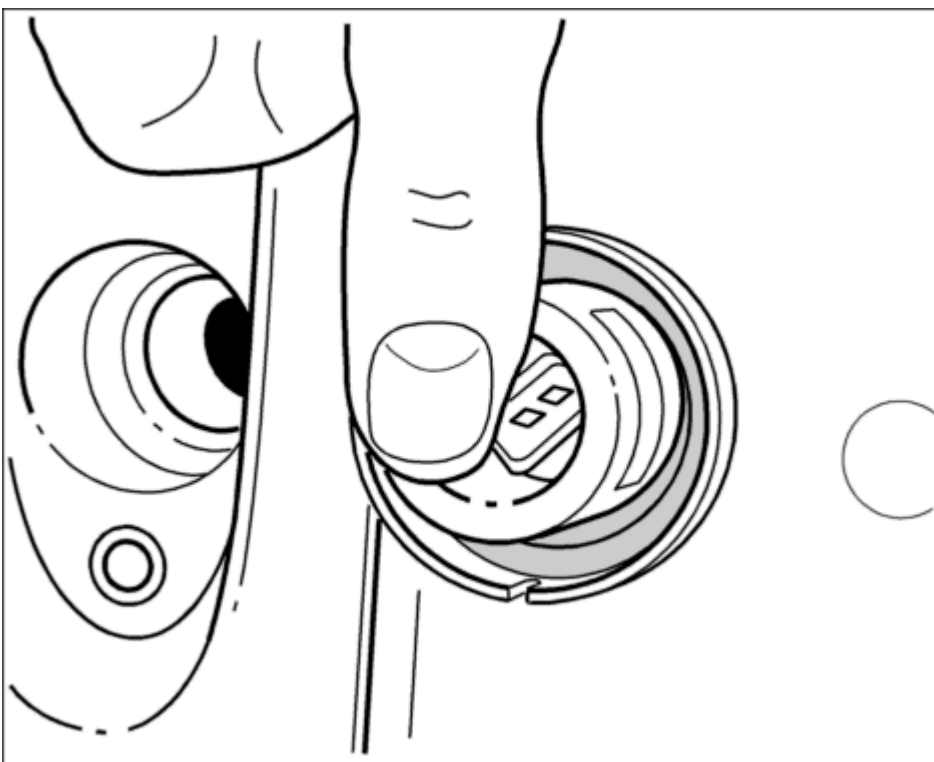


Fig. 449: Inserting ignition rod modules

Courtesy of PORSCHE OF NORTH AMERICA, INC.

4. Insert all ignition rod modules aligned in the corresponding camshaft housing lid.



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Fig. 450: Sealing lip with assembly sleeve

Courtesy of PORSCHE OF NORTH AMERICA, INC.

5. Using the **assembly sleeve P 9701**, press the sealing lip of the hydraulic valve over the hydraulic valve and align it.

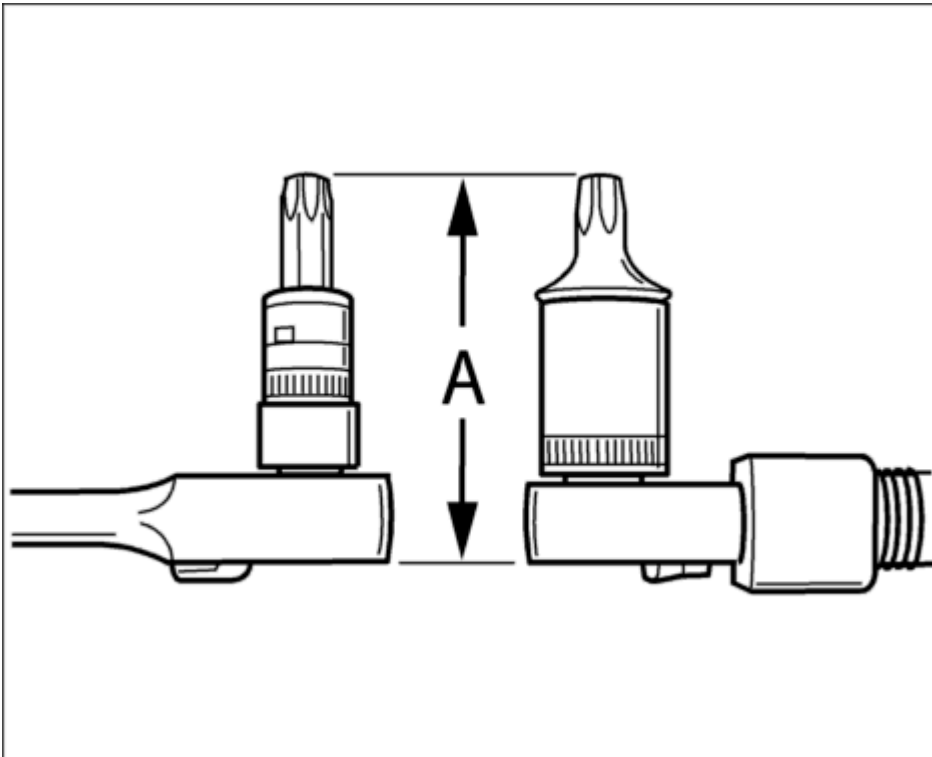


Fig. 451: Tool height

Courtesy of PORSCHE OF NORTH AMERICA, INC.

NOTE:

- It is best to use a tool that has an addendum of less than 50 mm -A- (see special tool) to tighten the rear fastening screw on the cylinder head cover close to the plenum panel. See **Fig. 451**.

6. Position all fastening screws and tighten them in accordance with the correct tightening sequence --> **Tightening torque: 13 (9.5 ftlb.) Nm** -see figures for both cylinder rows- . Screws -18 and 19 in cylinder rows 1 to 4- are inserted later with the torque support bracket.

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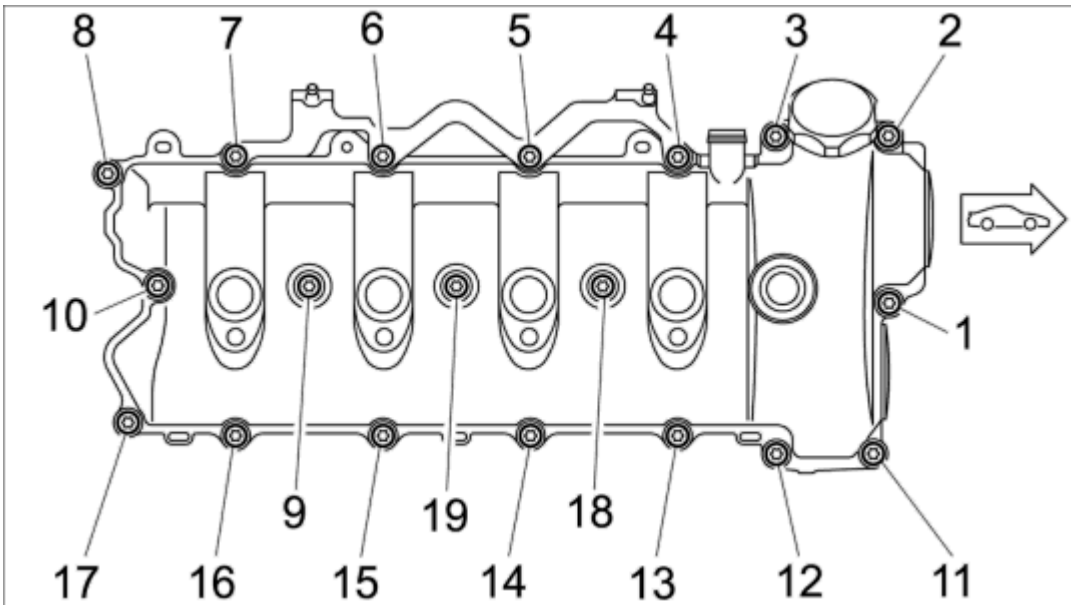


Fig. 452: Cylinder head cover - cylinder row 1 to 4
Courtesy of PORSCHE OF NORTH AMERICA, INC.

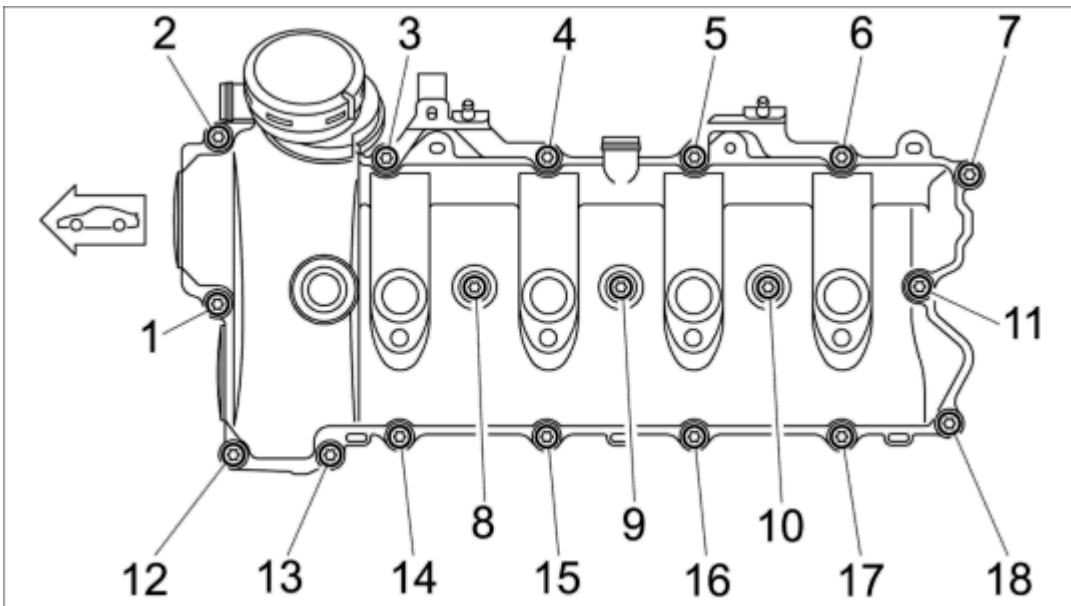


Fig. 453: Cylinder head cover - cylinder row 5 to 8
Courtesy of PORSCHE OF NORTH AMERICA, INC.

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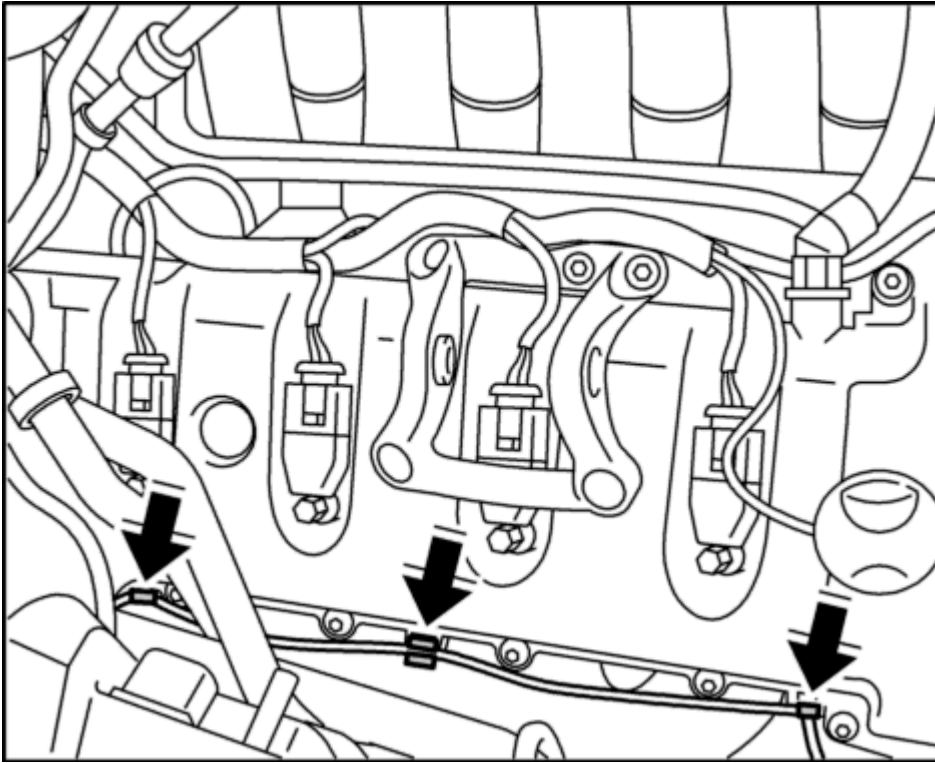


Fig. 454: Wire harness

Courtesy of PORSCHE OF NORTH AMERICA, INC.

7. Fit wire harness to sheetmetal holders on the camshaft housing lid.

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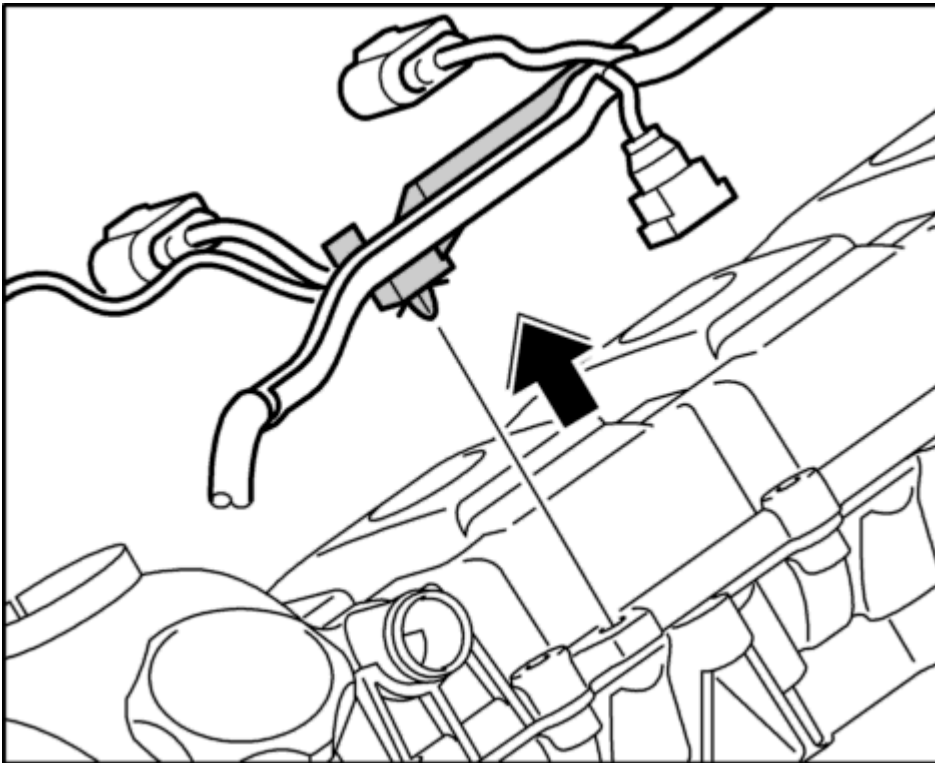


Fig. 455: Wire harness holder

Courtesy of PORSCHE OF NORTH AMERICA, INC.

8. Fit wire harness holder with new plastic clips. To do this, simply press on the wire harness holder.

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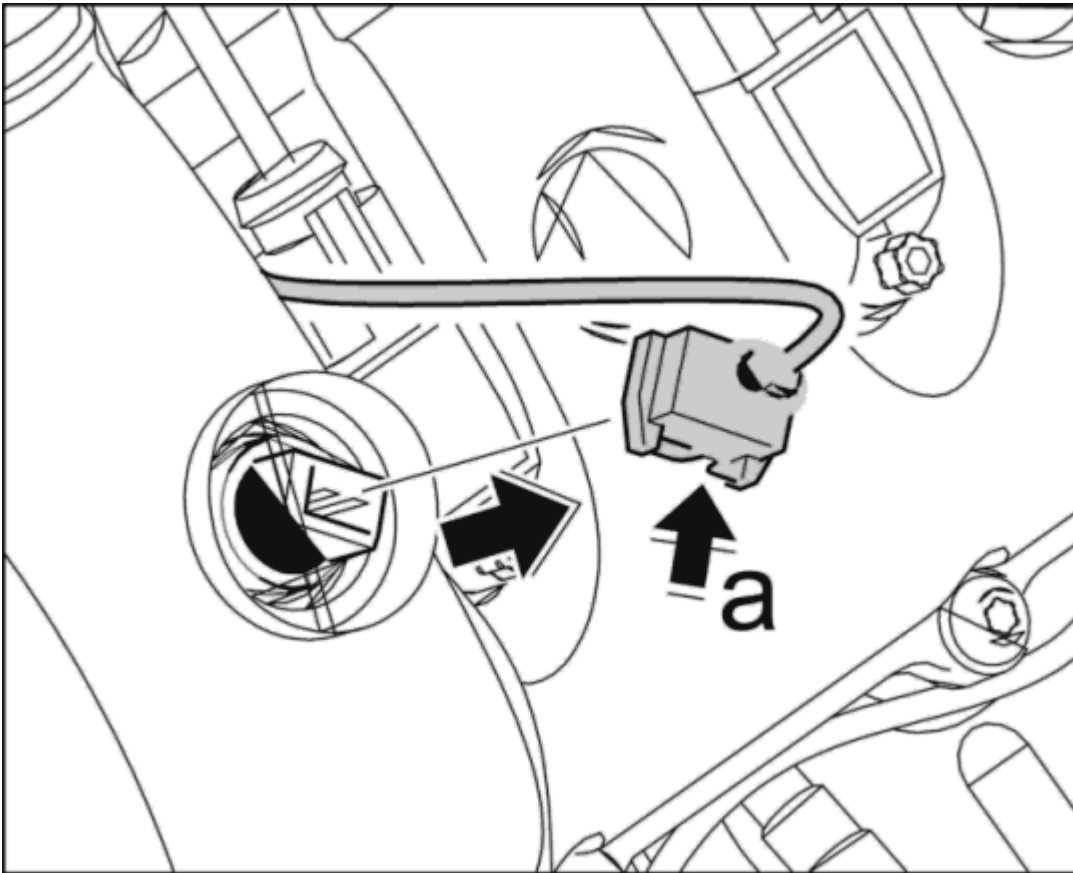


Fig. 456: Cable plug

Courtesy of PORSCHE OF NORTH AMERICA, INC.

9. Connect the cable plug for the hydraulic valve and fit the cap.
10. Attach plug connection for the positive crankcase ventilation to the flange on the camshaft housing lid.
11. Tighten the ignition coils. --> **Tightening torque: 10 (7.5 ftlb.) Nm**

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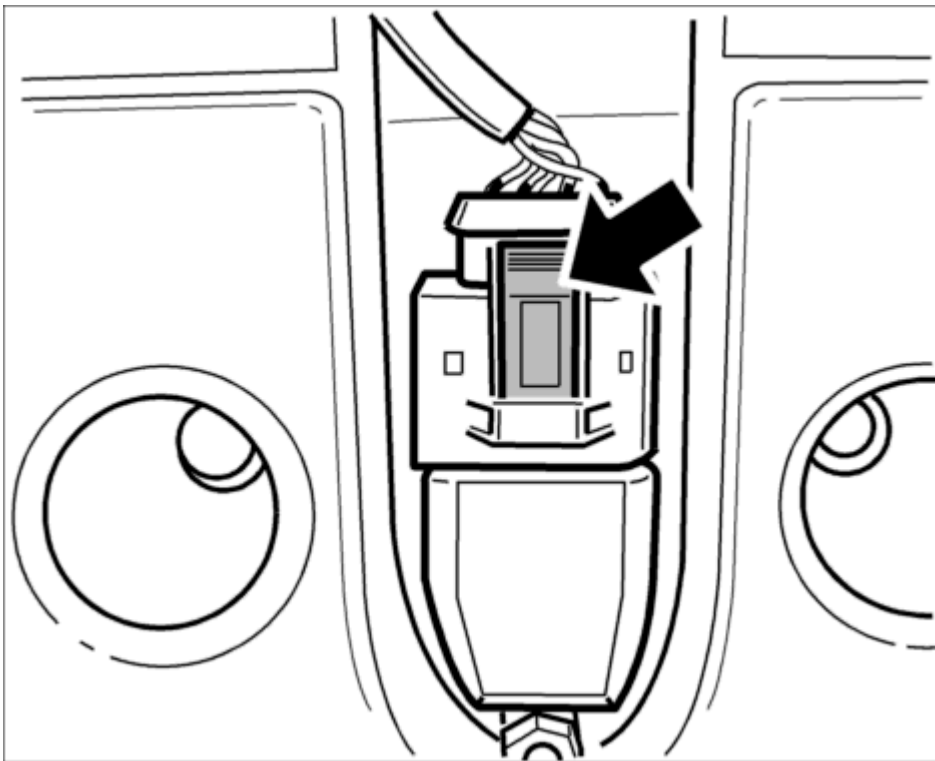
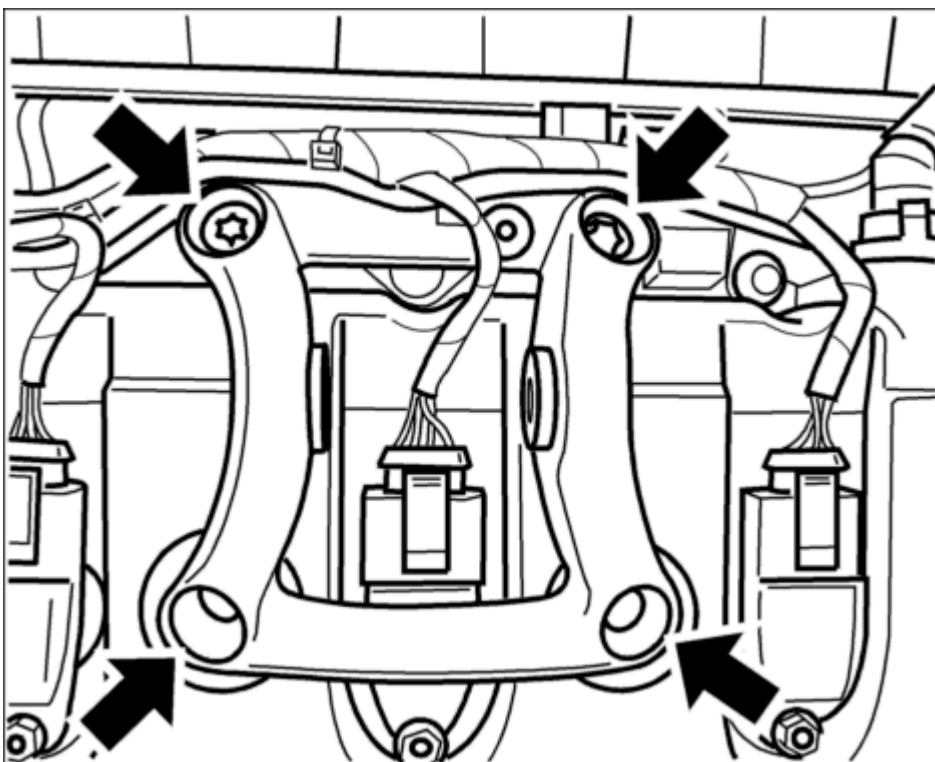


Fig. 457: Ignition coil

Courtesy of PORSCHE OF NORTH AMERICA, INC.

12. Connect ignition coil. To do this, push on the connector until it locks with an audible click.



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Fig. 458: Fastening screws on bracket for torque support

Courtesy of PORSCHE OF NORTH AMERICA, INC.

13. Install bracket for torque support. Tighten the M8 x 45 Torx screws at the top screw points. --> **Tightening torque: 23 (17 ftlb.) Nm** Tighten the M6 x 40 screws at the bottom screw fastening points (middle of valve cover). --> **Tightening torque: 13 (9.5 ftlb.) Nm**

SUBSEQUENT WORK

Subsequent work

1. Install ignition coils (ignition rod modules). Refer to **28 20 55 Replacing ignition coils - as of MY 2003 (Cayenne S TIP, Cayenne S MAN, Cayenne Turbo, Cayenne Turbo S, Cayenne S TIO Titan)** .
2. Install secondary air pump with console. Refer to **26 65 19 Removing and installing secondary air pump - as of MY 2003 (Cayenne S TIP, Cayenne S MAN, Cayenne Turbo, Cayenne Turbo S, Cayenne S TIO Titan)** ..
3. Install engine cover. Refer to **10 83 19 Removing and installing design cover. - as of MY 2003 (Cayenne S TIP, Cayenne S MAN, Cayenne Turbo, Cayenne Turbo S, Cayenne S TIO Titan)** ..