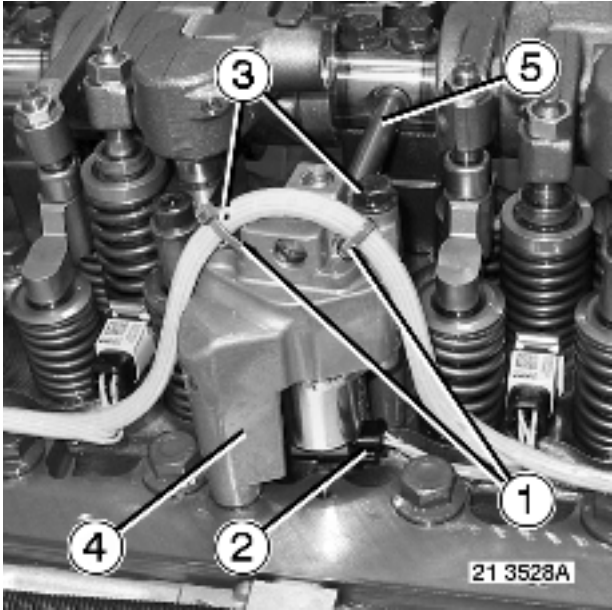


Rocker shaft, removal

Remove the cylinder head cover.



Remove brackets (1).

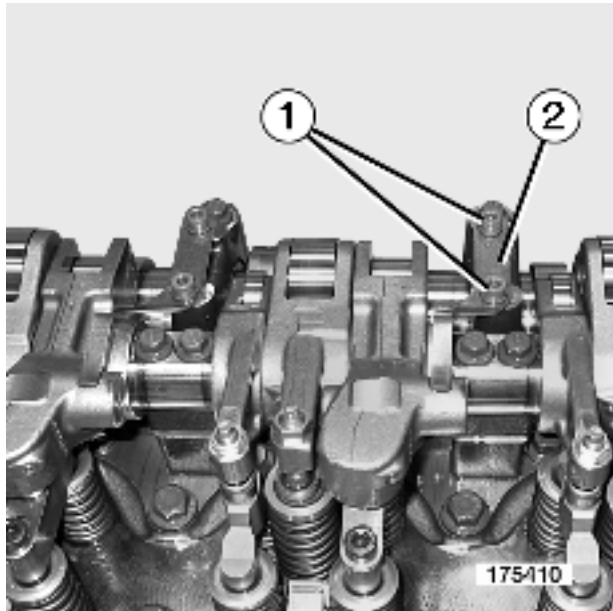
Depending on equipment

Unplug connector (2).

Remove bolts (3).

Remove control valve (4).

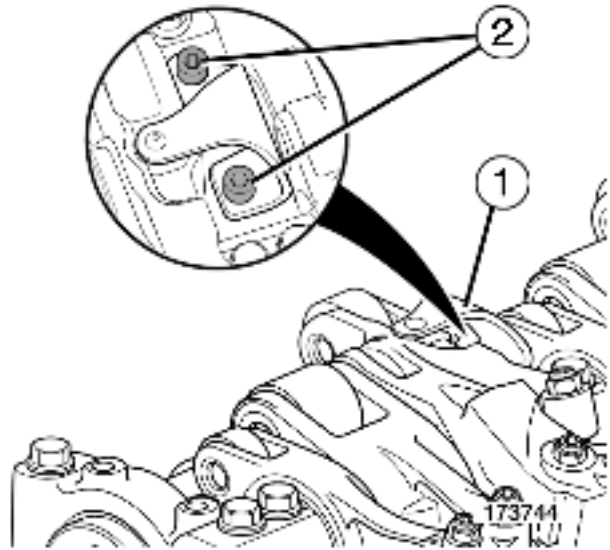
Remove tube (5).



Engine equipped with "Optibrake"

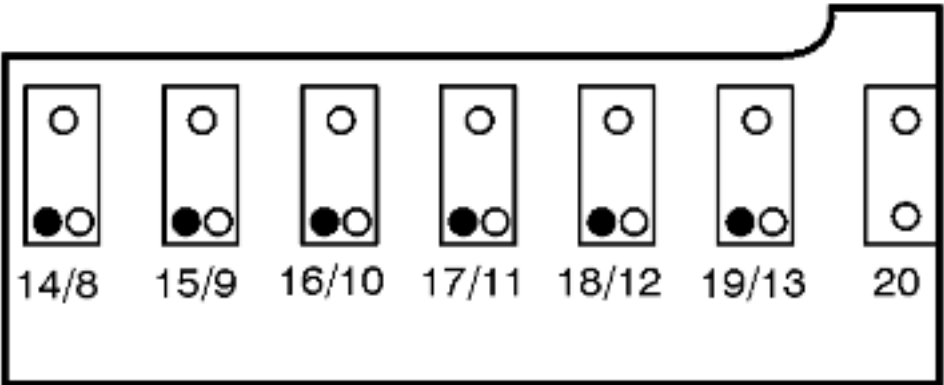
Remove bolts (1).

Remove elastic blades (2).



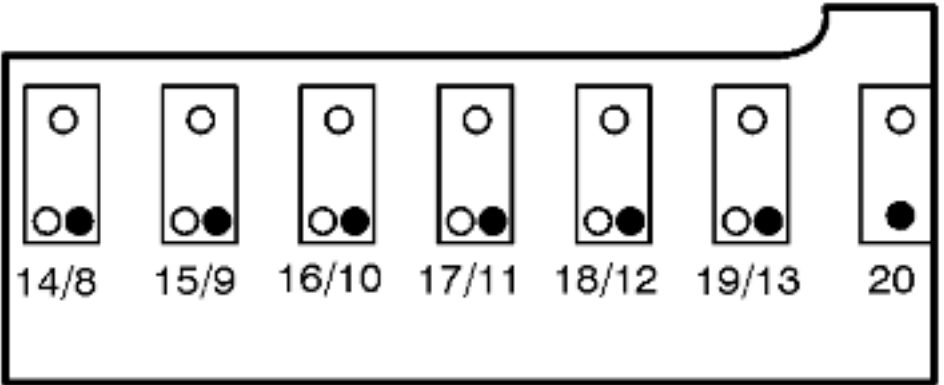
Engine equipped with "Optibrake +"

Remove bolts (2).
Remove elastic blades (1).



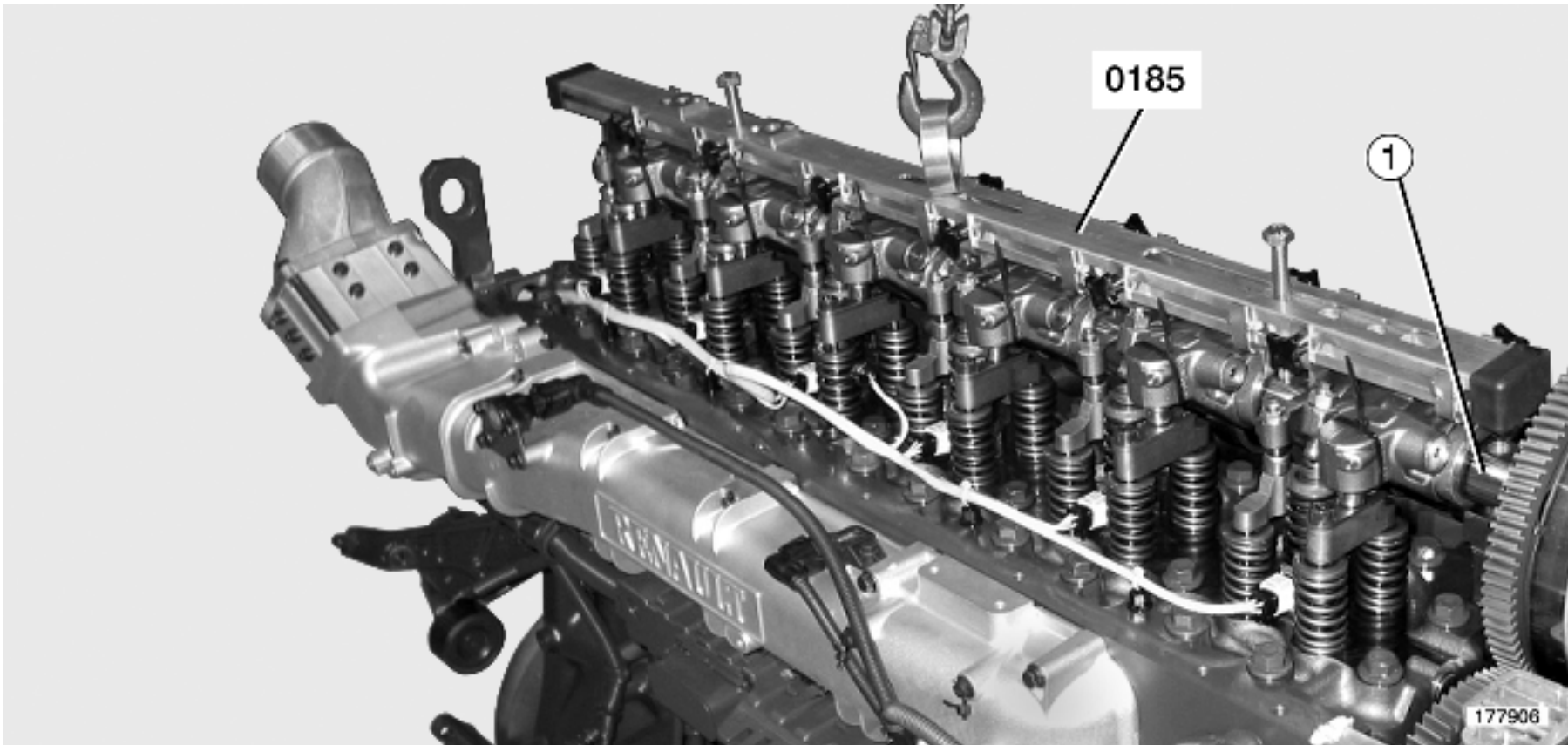
173824

Remove bolts (14 > 19).



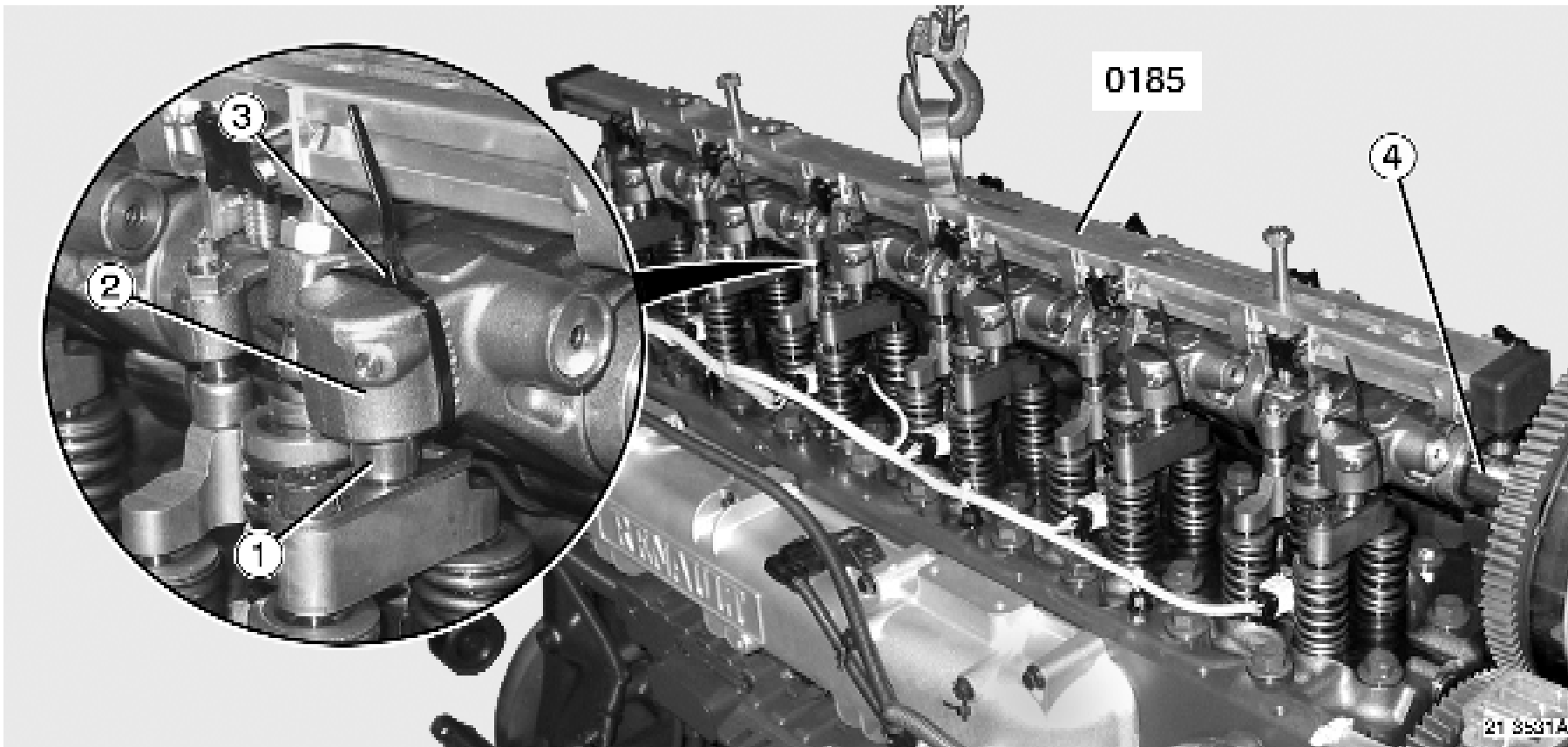
173845

Loosen bolts (8 › 13 - 20) progressively so as to not distort the rocker shaft.
Remove bolts (8 › 13 - 20).



Mount tool 0185.
Remove the rocker assembly (1).
Use lifting tackle.

Engine equipped with "Optibrake"



Mount tool 0185.

For an engine equipped with "Optibrake", immobilize the piston (1) of each exhaust rocker arm (2) with a plastic clamp (3).

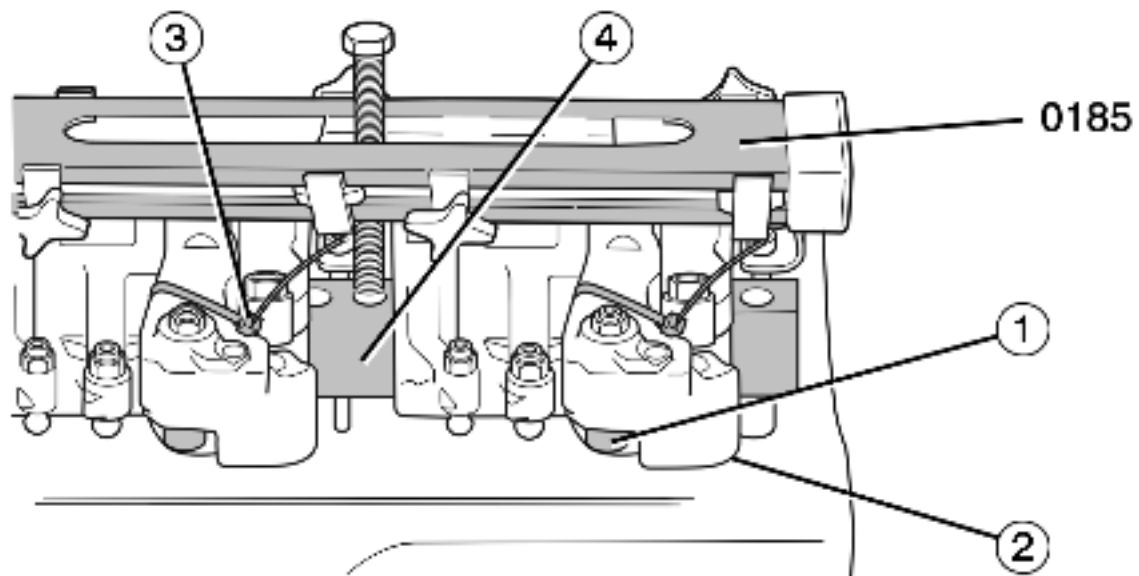


Blank off the openings in the cylinder head to prevent the ingress of foreign matter.

Remove the rocker assembly (4).

Use lifting tackle.

Engine equipped with "Optibrake +"



173784

Mount tool 0185.

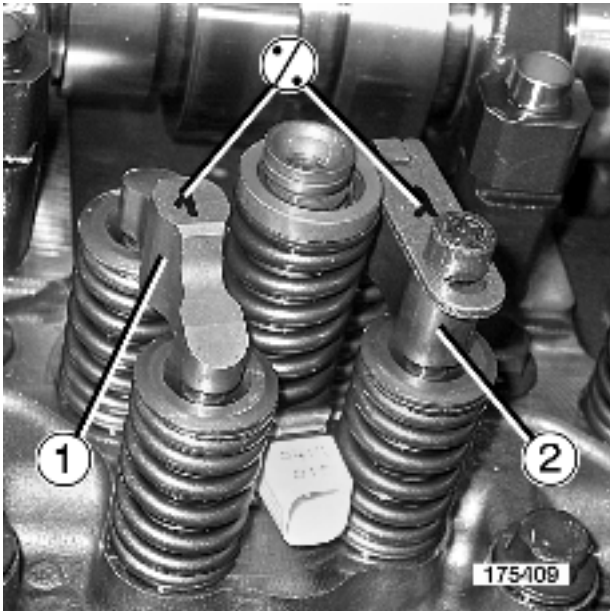
For an engine equipped with "Optibrake +", immobilize the piston (1) of each exhaust rocker arm (2) with a plastic clamp (3).



Blank off the openings in the cylinder head to prevent the ingress of foreign matter.

Remove the rocker assembly (4).


Use lifting tackle.



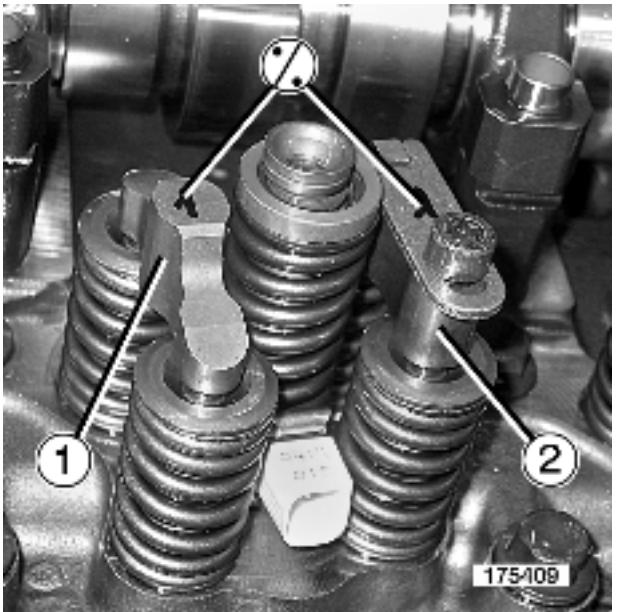
Mark.
Remove clips (1 - 2).

Tools

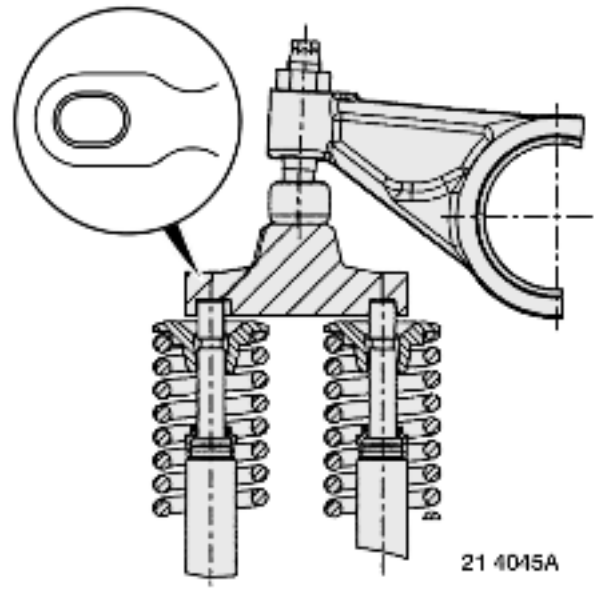
Specific tools

Illustration	RENAULT TRUCKS part N°	Designation	Manufacturer's reference N°	Manufacturer's code N°	Scale	Qty
	7409990185	LIFTING TOOL (ROCKER ARM ASSEMBLY)			2	1

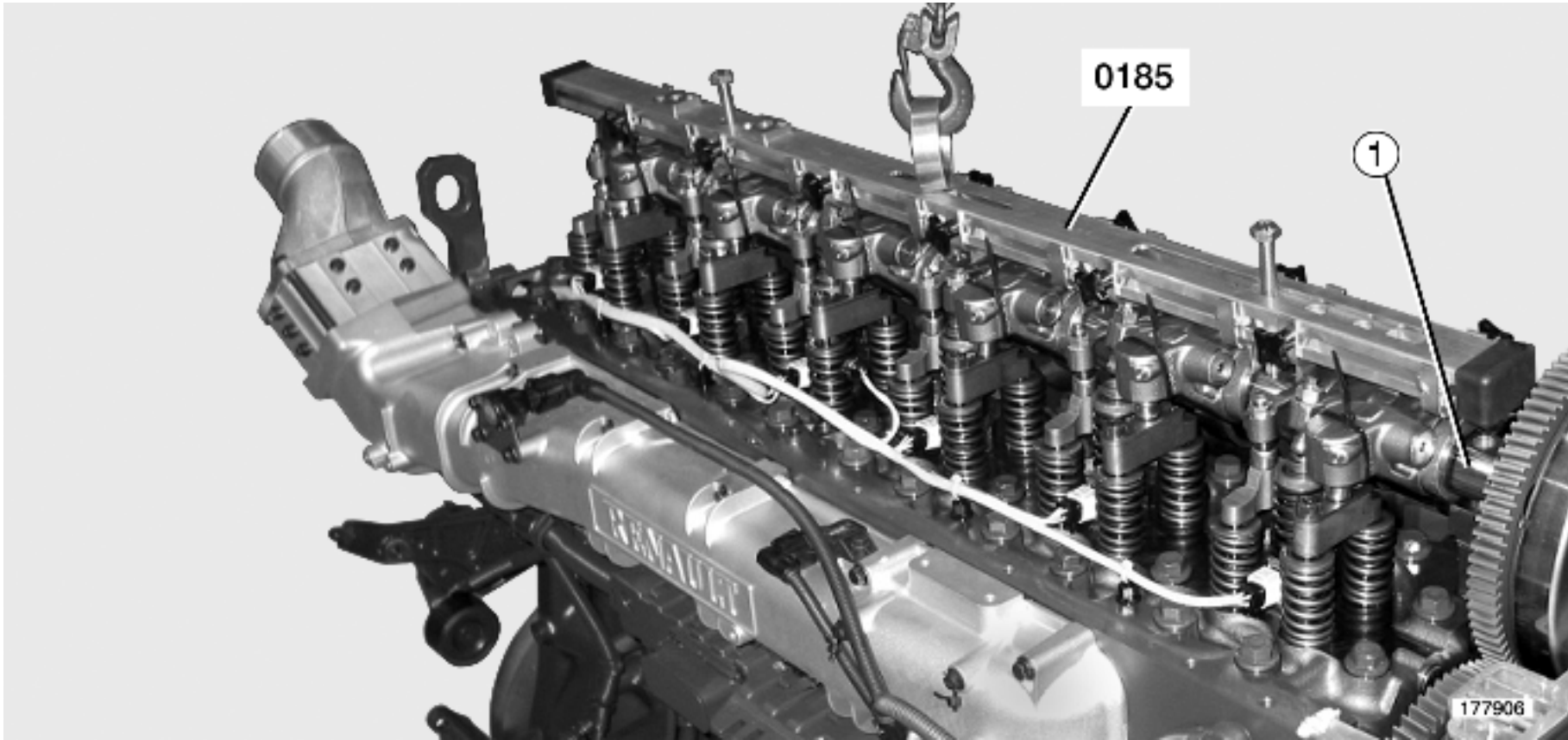
Rocker shaft, fitting



Fit yokes (1 - 2).
Line up the marks made upon removal.



When fitting new yokes, line up the marks.



Oil all moving parts.

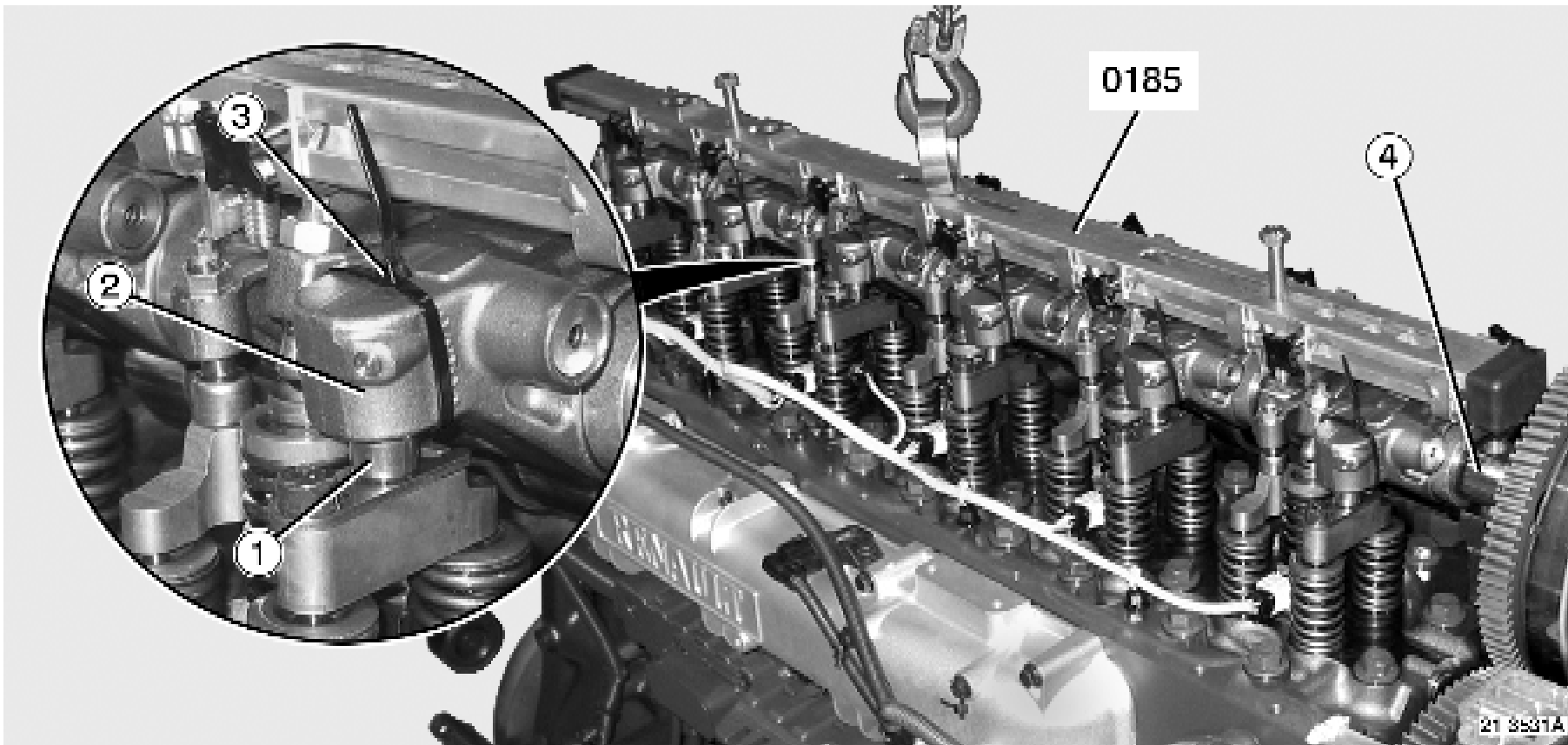
Use engine oil.

Fit the rocker shaft (1).

Use tool 0185.

Use lifting tackle.

Engine equipped with "Optibrake"



Oil all moving parts.

Use engine oil.

Fit the rocker shaft **(4)**.

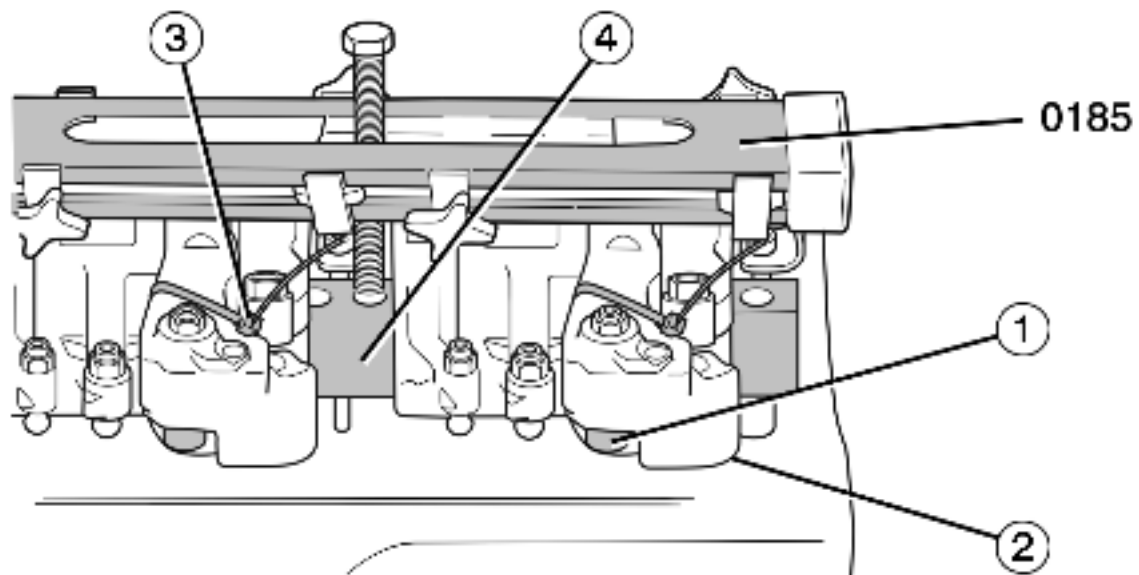
Use tool 0185.

Use lifting tackle.

Cut clamps **(3)** to free the pistons **(1)** of rocker arms **(2)**.

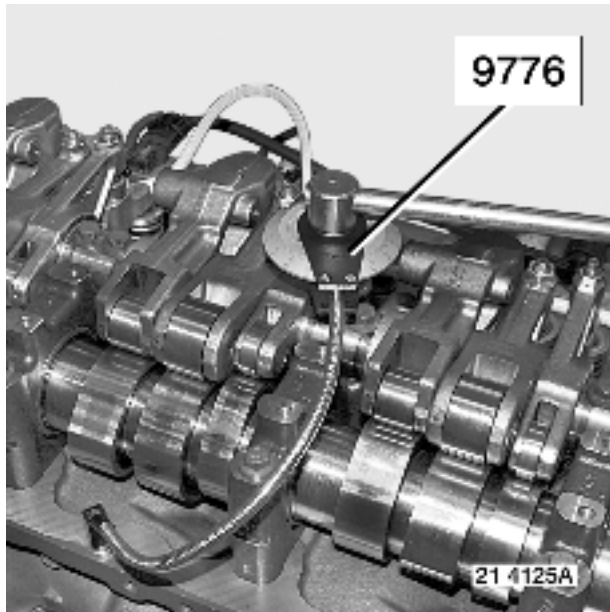
Withdraw tool 0185.

Engine equipped with "Optibrake +"



173784

- Oil all moving parts.
- Use engine oil.
- Fit the rocker shaft **(4)**.
- Use tool 0185.
- Use lifting tackle.
- Cut clamps **(3)** to free the pistons **(1)** of rocker arms **(2)**.
- Withdraw tool 0185.

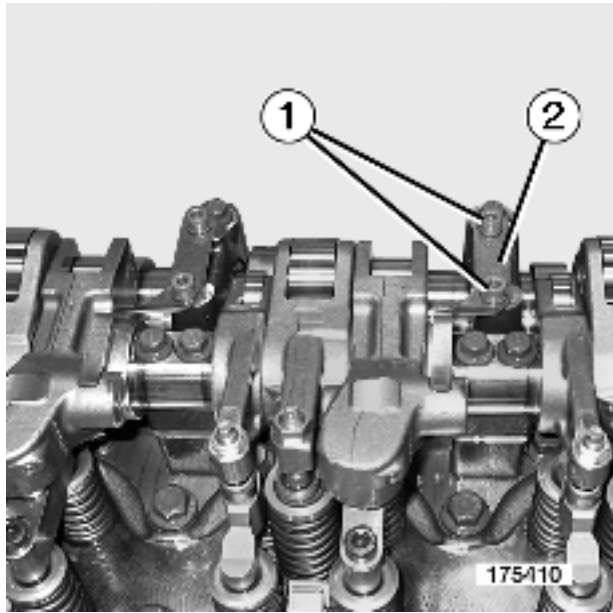


Tighten the camshaft and rocker shaft securing bolts to torque, following the tightening sequence (see page).

Use tool 9776.

Inspect the rocker arms.

Adjust the valve rocker clearances.

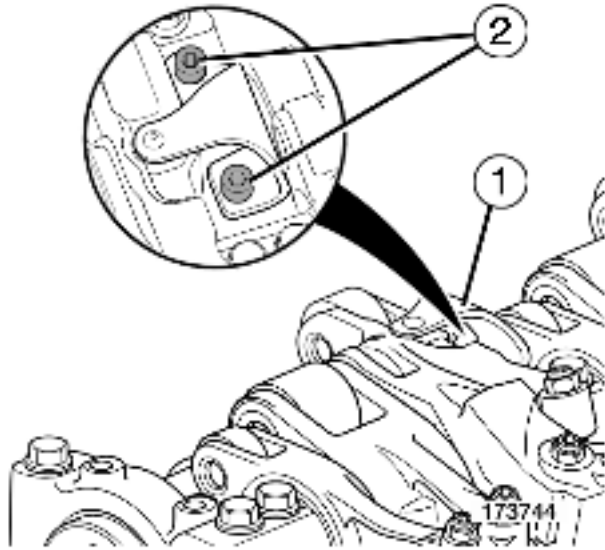


Engine equipped with "Optibrake"

Fit elastic blades (2).

Fit bolts (1).

Tighten to torque.

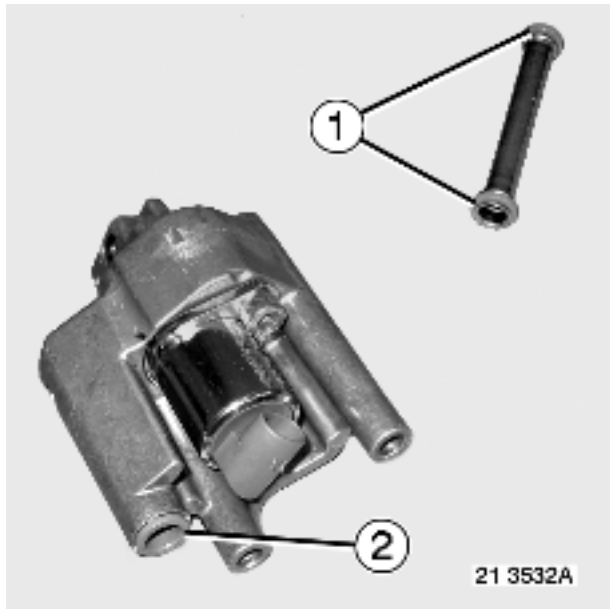


Engine equipped with "Optibrake +"

Fit elastic blades (1).

Fit bolts (2).

Tighten to torque.

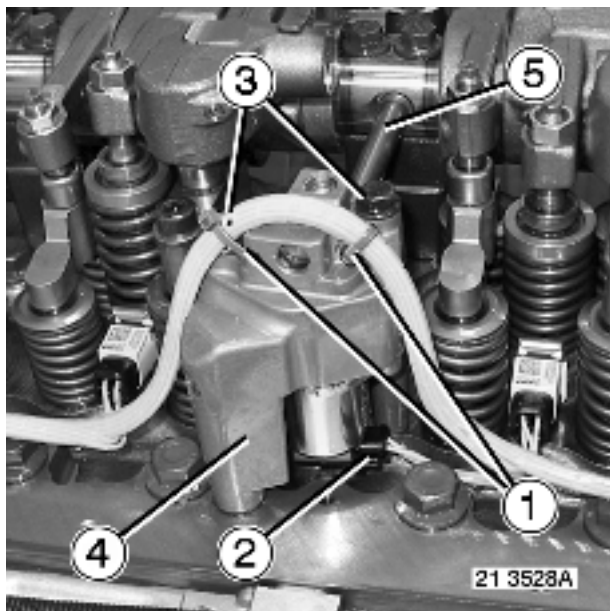


Clean the contact faces thoroughly.

Fit new seals **(1 - 2)**.

For assembly of the rectangular section gasket.

Clean the pipes.




- Fit pipe (5).
- Fit control valve (4).
- Fit bolts (3).
- Tighten to torque.

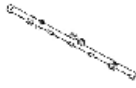
Depending on equipment

- Plug in connector (2).
- Fit new clamps (1).
- Fit the rocker cover.

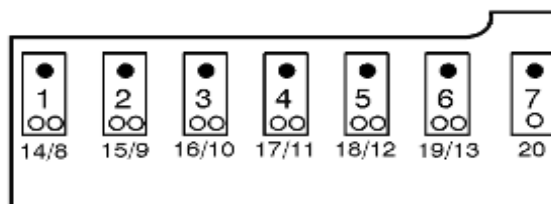
Tools

Specific tools

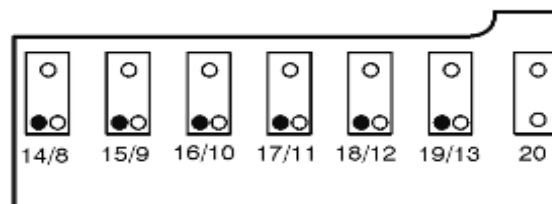
Illustration	RENAULT TRUCKS part N°	Designation	Manufacturer's reference N°	Manufacturer's code N°	Scale	Qty
	5000269776	INDICATOR DISC			1	1

	7409990185	LIFTING TOOL (ROCKER ARM ASSEMBLY)			2	1
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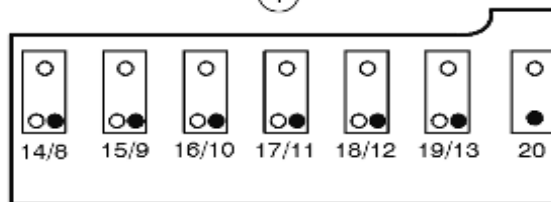
Rocker shaft and camshaft bearing caps, tightening torques



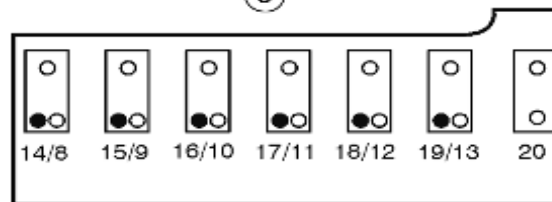
①



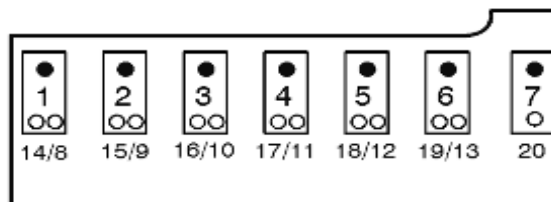
⑥



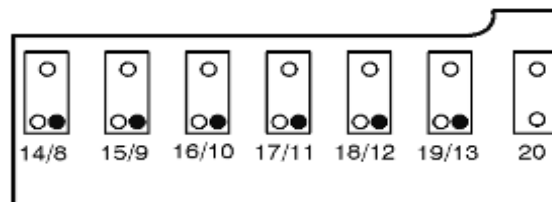
②



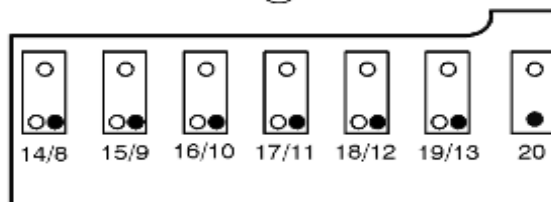
⑦



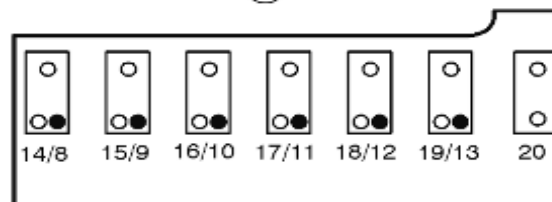
③



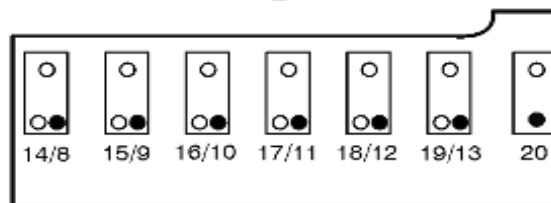
⑧



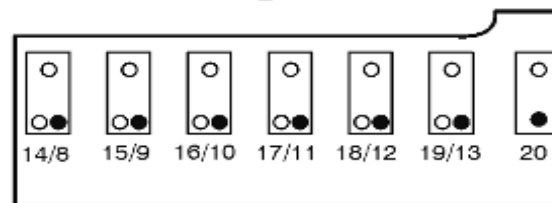
④



⑨



⑤



⑩

173846

Camshaft

Stage 1: bolts (1 > 7)

40±3 Nm

Stage 2: bolts (8 › 13 - 20)	60±5 Nm
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For the 2th stage, tighten bolts gradually in the following order: 11 - 10 - 12 - 9 - 13 - 8 - 20, so that the rocker shaft can be lowered without being damaged.

Stage 3: bolts (1 › 7)	90±5 °
Stage 4: bolts (8 › 13 - 20)	Loosen the bolts

Rocker shaft

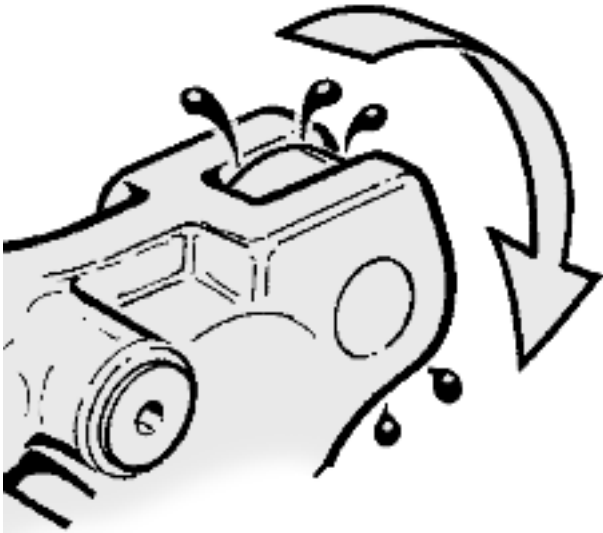
Stage 5: bolts (8 › 13 - 20)	60±5 Nm
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For the 5th stage, tighten bolts gradually in the following order: 11 - 10 - 12 - 9 - 13 - 8 - 20, so that the rocker shaft can be lowered without being damaged.

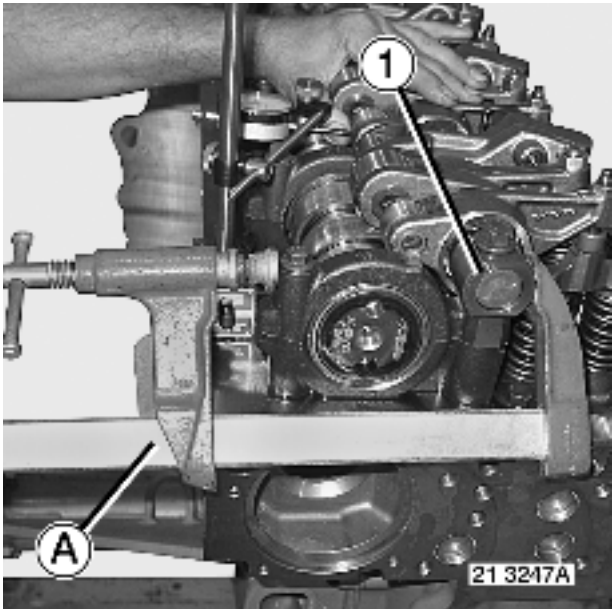
Stage 6: bolts (14 › 19)	40±3 Nm
Stage 7: bolts (14 › 19)	120±5 °
Stage 8: bolts (8 › 13)	Loosen the bolts
Stage 9: bolts (8 › 13)	40±3 Nm
Stage 10: bolts (8 › 13 - 20)	120±5 °

Rocker arms, inspection



21 2917

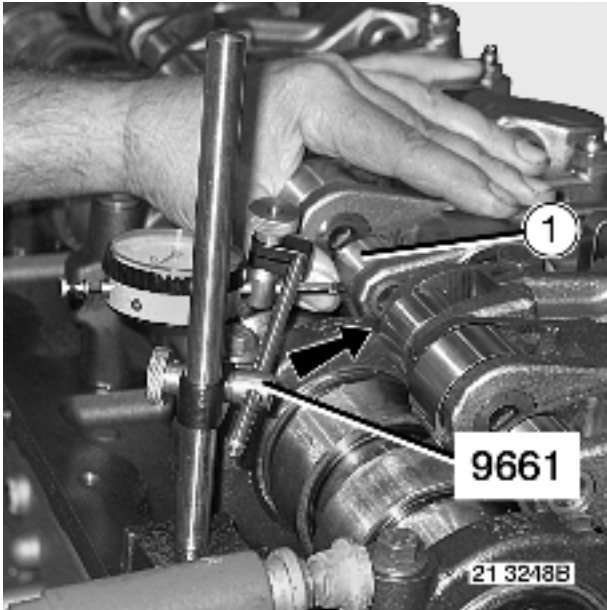
Turn the roller to eliminate the film of oil.
Check that the roller rotates freely.



21 3217A

Checking the roller play

With the rocker shaft bolts loosened, using a screw clamp **(A)**, immobilize rocker shaft **(1)**.

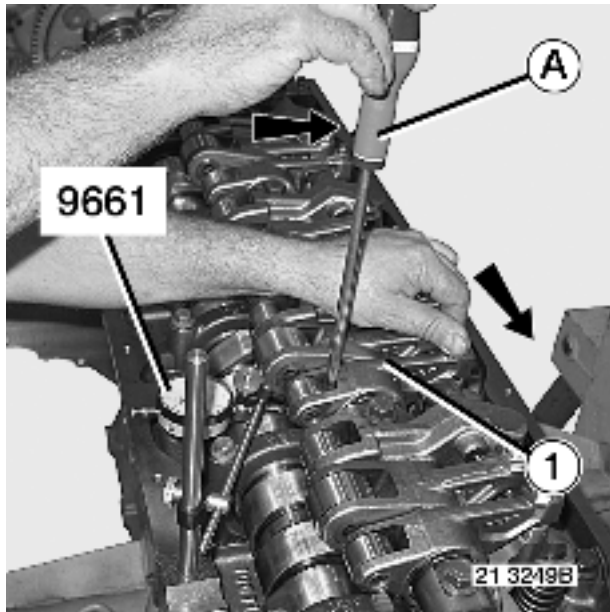


Position the stylus of the dial gauge in the horizontal axis of the rocker arm roller.

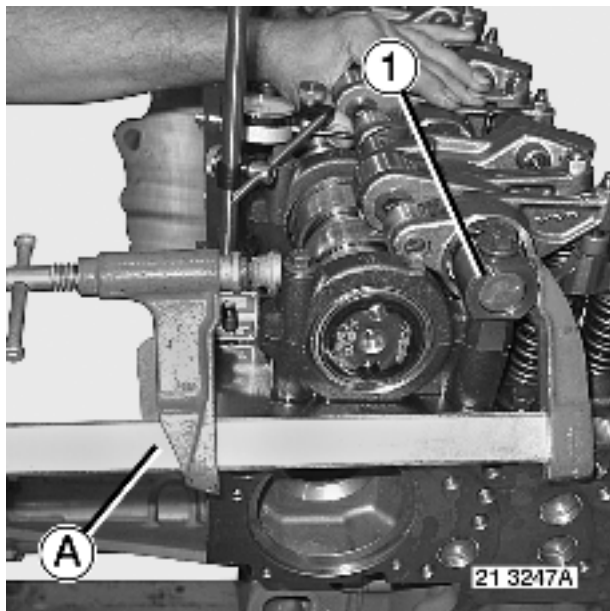
Push roller **(1)** in the horizontal axis to eliminate the clearances.

Reset the dial gauge to zero.

Use tool 9661.

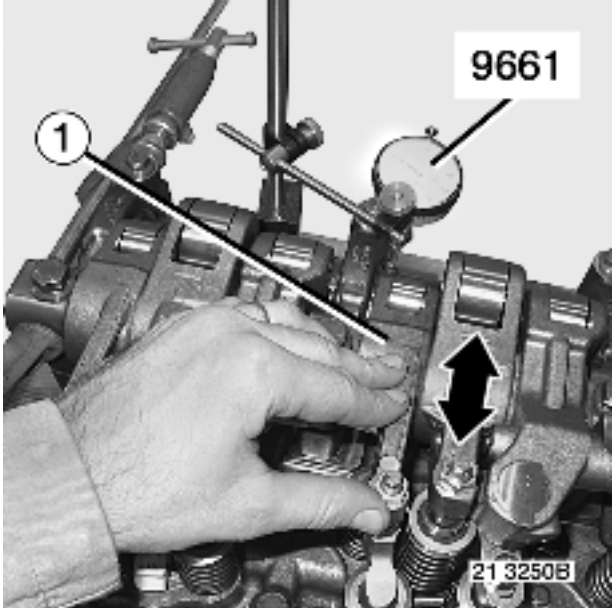


Using a screwdriver **(A)**, measure the roller clearance while holding rocker arm **(1)** in a horizontal position.
For values, see "Technical data" chapter.



Checking the rocker arm bearing clearance

With the rocker shaft bolts loosened, using a screw clamp (A), immobilize rocker shaft (1).

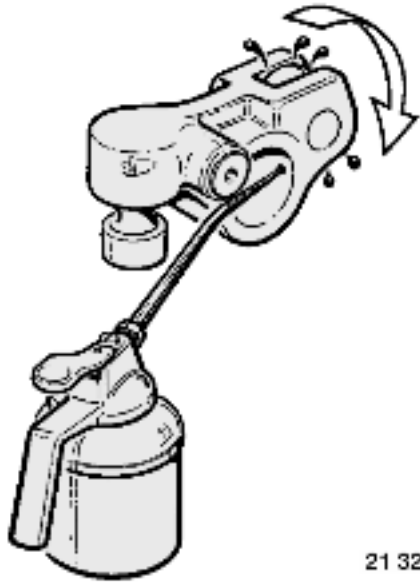


Position the stylus of the dial gauge at the end of the rocker shaft in the horizontal axis.

Use tool 9661.

Reset the dial gauge to zero.

Push rocker arm (1) back in the opposite direction to measure the clearance.

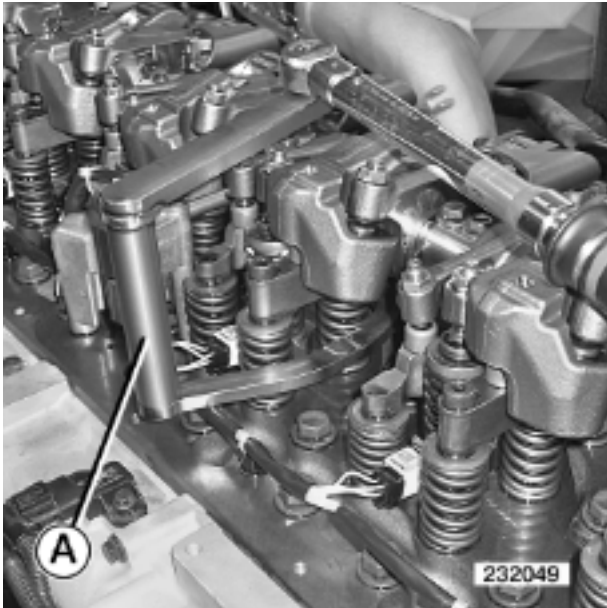


21 3251A

When replacing a rocker arm, use an oil can to squirt engine oil through the lubrication hole in the rocker arm to lubricate the roller shaft.



Upon removal, mark the position of the rocker arms on their shafts.




Check the torque of the injector flange attachment bolts without removing the rocker arm assembly.

Use tool **A**.
A = 0162
 Tighten to torque.


 This operation is to be performed at each valve adjustment maintenance.

Tools
General purpose tools

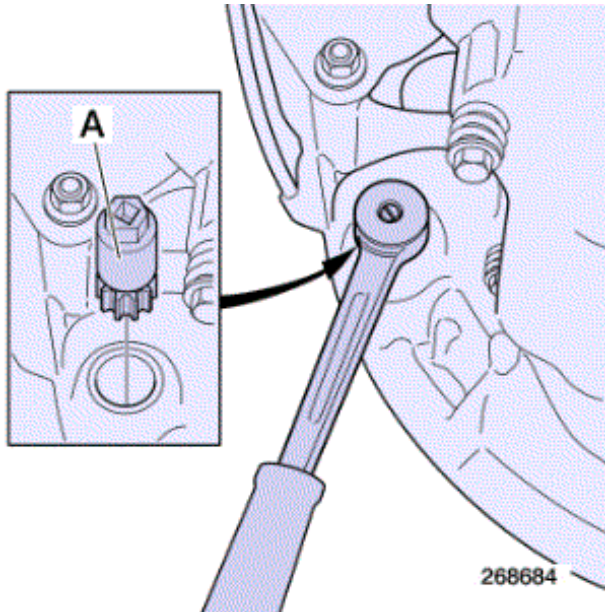
Illustration	RENAULT TRUCKS part N°	Designation	Manufacturer's reference N°	Manufacturer's code N°	Scale	Qty
	9661	MEASURING TOOL (DIAL GAUGE AND MAGNETIC FOOT)	AQ		1	1

AQ	BROWN & SHARP ROCH
	13-15 avenue Georges de la Tour
	BP 45
	FRANCE
	03 83 76 83 76 - 03 83 74 13 16 -

Specific tools

Illustration	RENAULT TRUCKS part N°	Designation	Manufacturer's reference N°	Manufacturer's code N°	Scale	Qty
	7488840162	WRENCH			2	1

Rocker arms, adjustment



Remove the blanking plug.

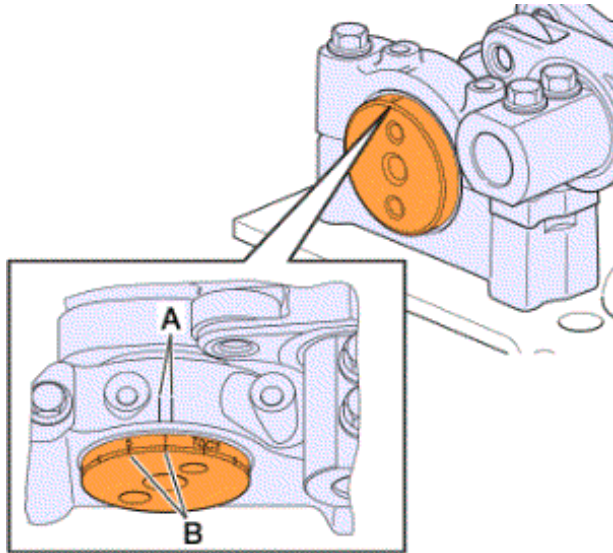
Position the marks on the camshaft which indicate the number of the cylinder to adjust between the marks on the camshaft front bearing cap.

Use tool **A**.

A = 1380

Engine rotation: **anti-clockwise, from the engine flywheel end.**

Camshaft marks



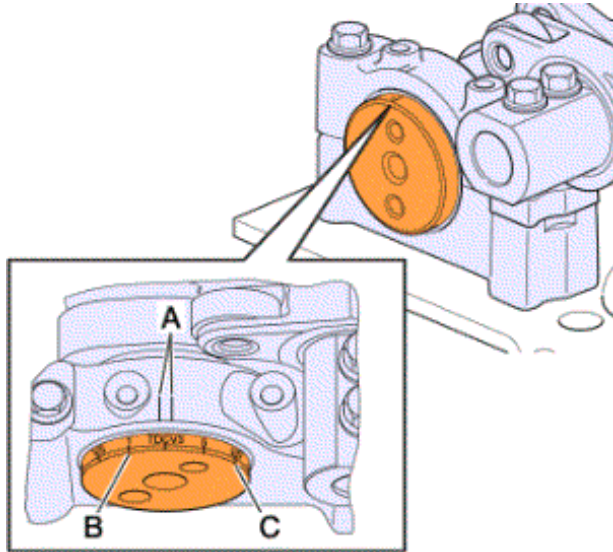
268693

Without "Optibrake" / "Optibrake +"

The marks **(B)** 1 - 5 - 3 - 6 - 2 - 4 correspond to the recommended inlet valve clearances , to the recommended exhaust valve clearances and to the recommended pump injector pre-travel distances for each relative cylinder.

Mark **(B)** must be positioned in the centre of marks **(A)** when carrying out the adjustment.

For values, see "Technical data" chapter.



268697

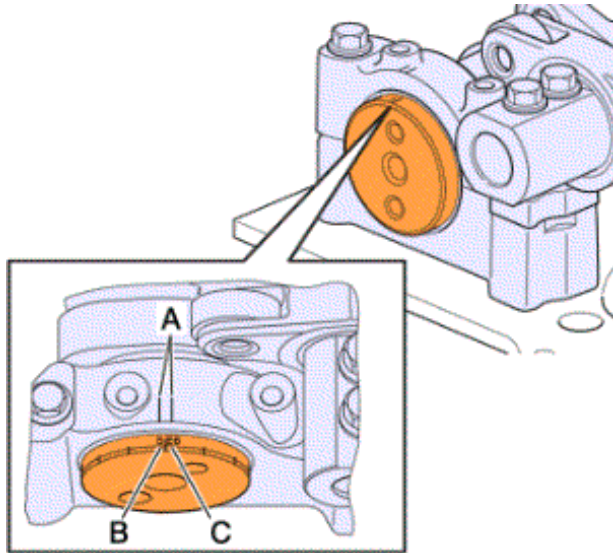
Engine equipped with "Optibrake"

The marks **(B) 1 - 5 - 3 - 6 - 2 - 4** correspond to the recommended inlet valve clearances and to the recommended pump injector pre-travel distances for each relative cylinder.

The marks **(C) V1 - V5 - V3 - V6 - V2 - V4** correspond to the recommended exhaust valve clearances for each relative cylinder.

The marks **(B)** or **(C)** must be positioned between the marks **(A)** to make the correct adjustment.

For values, see "Technical data" chapter.



268700

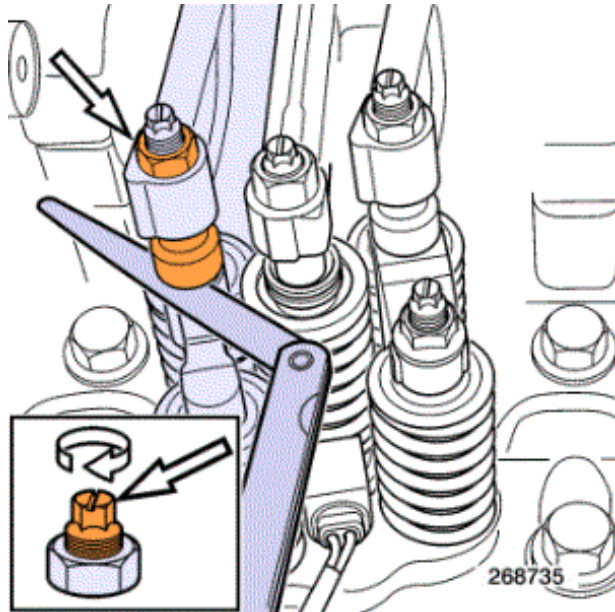
Engine equipped with "Optibrake +"

The marks **(B) 1 - 5 - 3 - 6 - 2 - 4** correspond to the recommended inlet valve clearances and to the recommended pump injector pre-travel distances for each relative cylinder.

The marks **(C) E1 - E5 - E3 - E6 - E2 - E4** correspond to the recommended exhaust valve clearances for each relative cylinder.

The marks **(B)** or **(C)** must be positioned between the marks **(A)** to make the correct adjustment.

For values, see "Technical data" chapter.



Adjustment of inlet valves

Measure the valve clearances using feeler gauges.

Loosen the locknut and the adjuster.

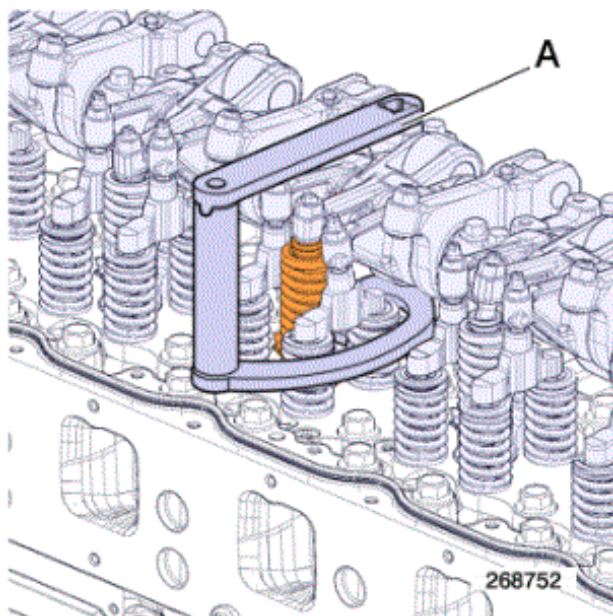
Adjust the clearance between the rocker arm and the valve yoke by means of screw.

Tighten the locknut to torque while holding the adjuster.



Make a mark on the rocker arm when adjustment is finished.

Perform the same operation on all the other cylinders.



Adjustment of unit pump injectors pre-travel

Check the torque of the injector flange attachment bolts without removing the rocker arm assembly.

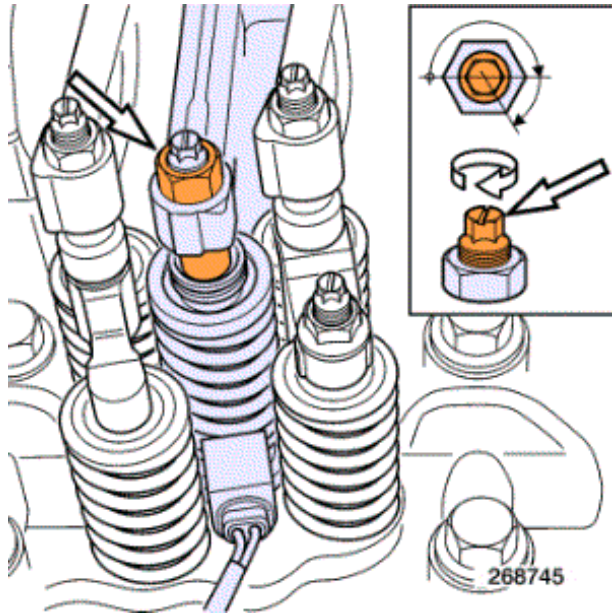
Use tool **A**.

A = 0162

Tighten to torque.



This operation is to be performed at each valve adjustment maintenance.

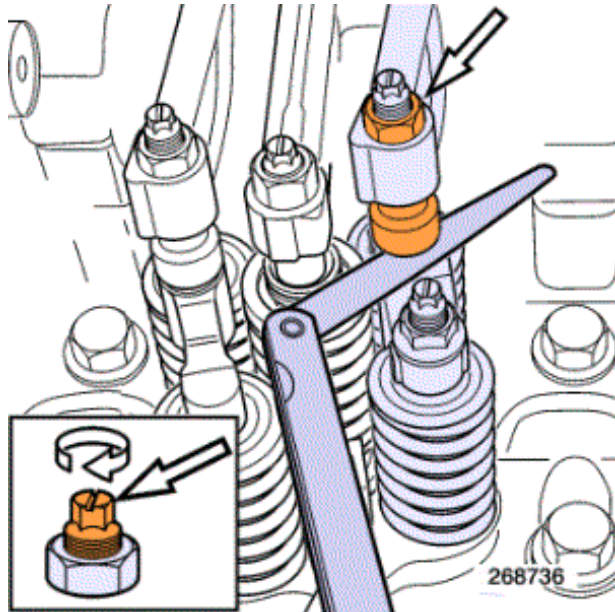


- Loosen the locknut and the adjuster.
- Screw up the adjuster by hand until contact is made with the pump injector.
- Tighten the adjuster through **2/3** of a turn to obtain a unit pump injector preload.
- Tighten the locknut to torque while holding the adjuster.



Make a mark on the rocker arm when adjustment is finished.
Perform the same operation on all the other cylinders.

Exhaust valve adjustment



Without "Optibrake" / "Optibrake +"

Measure the valve clearances using feeler gauges.

Loosen the locknut and the adjuster.

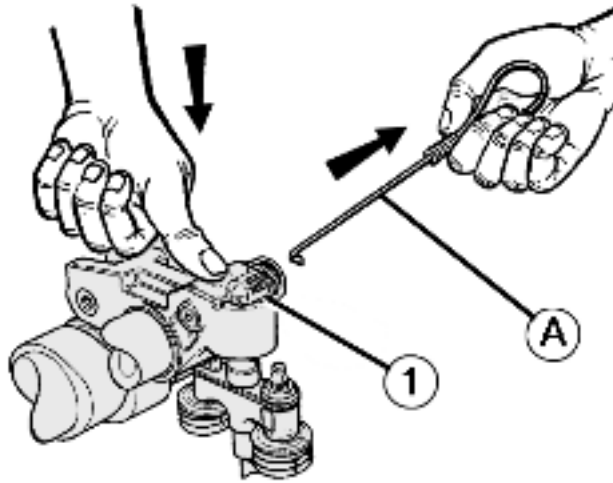
Adjust the clearance between the rocker arm and the valve yoke by means of screw.

Tighten the locknut to torque while holding the adjuster.



Make a mark on the rocker arm when adjustment is finished.

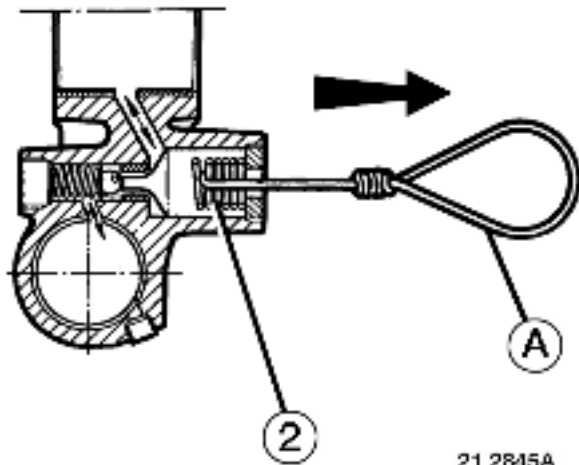
Perform the same operation on all the other cylinders.



21 2816A

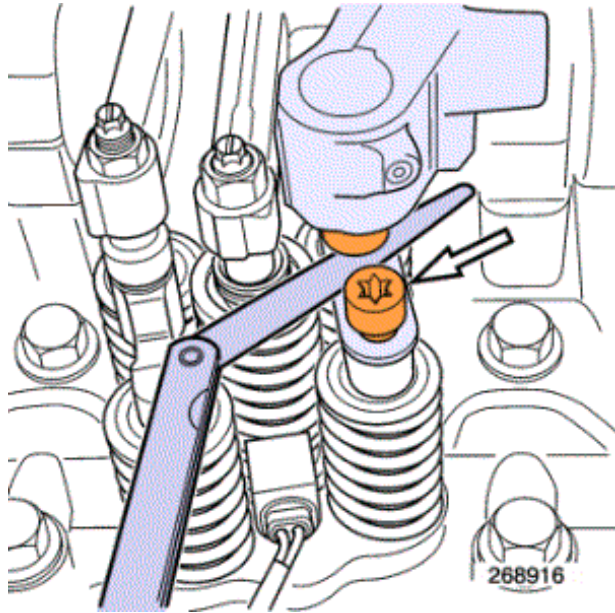
Engine equipped with "Optibrake"

Before making the adjustment, press rocker arm (1).



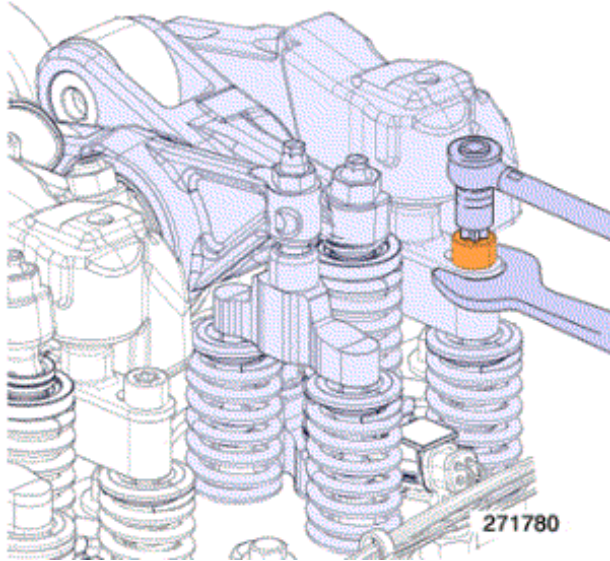
21 2815A

Compress valve spring (2) to free the oil in the rocker arm.
Use a piece of rigid iron wire to make a hook (A).



Check the clearance between the valve yoke and the exhaust rocker arm piston. Turn the piston to ensure that it is properly seated in its housing. Use a feeler gauge corresponding to the recommended clearance.

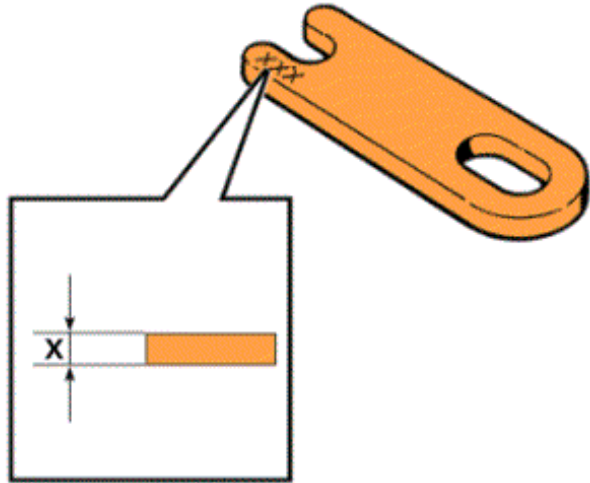
In the event of rocker arm play or sticking, make the check with a thicker or thinner feeler gauge in order to determine the thickness of the new adjusting shim.



In the event of incorrect clearances.
Remove bolt.
Remove adjusting shim .



Hold the caliper in place when unbolting.



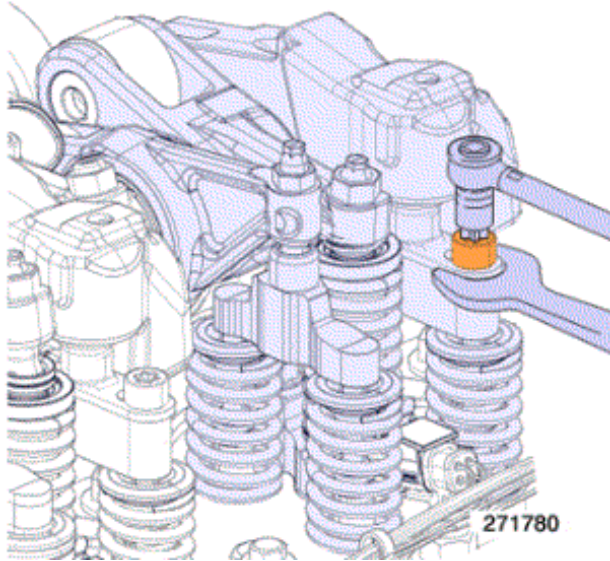
268522

Note down the thickness **X** engraved on adjusting shim.

Determine the thickness of the new adjustment shim, in order to obtain the recommended clearance.



You can superimpose a maximum of 2 adjusting shims, provided that they have the same thickness. Adjusting shims are available with thicknesses of 0.05 by 0.05 mm.



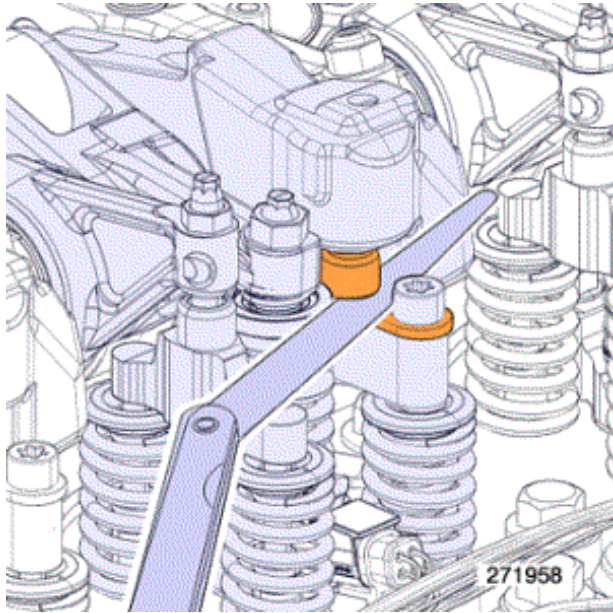
Fit shim.
Fit bolt.
Tighten to torque.



Hold the caliper in place when tightening.
Again check the clearance between the valve yoke and the arm piston.



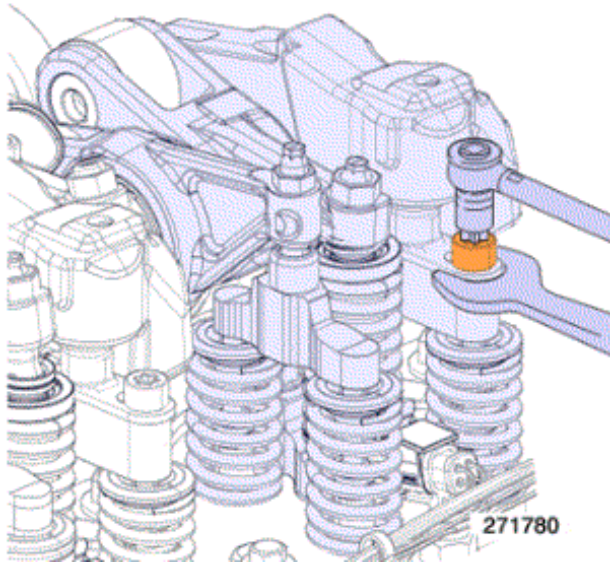
Make a mark on the rocker arm when adjustment is finished.
Perform the same operation on all the other cylinders.



Engine equipped with "Optibrake +"

Check the clearance between the valve yoke and the exhaust rocker arm piston. Turn the piston to ensure that it is properly seated in its housing. Use a feeler gauge corresponding to the recommended clearance.

In the event of rocker arm play or sticking, make the check with a thicker or thinner feeler gauge in order to determine the thickness of the new adjusting shim.

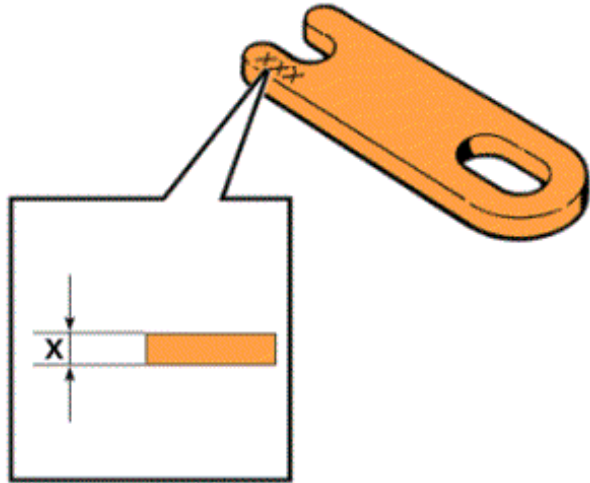


271780

In the event of incorrect clearances.
Remove bolt.
Remove adjusting shim .



Hold the caliper in place when unbolting.



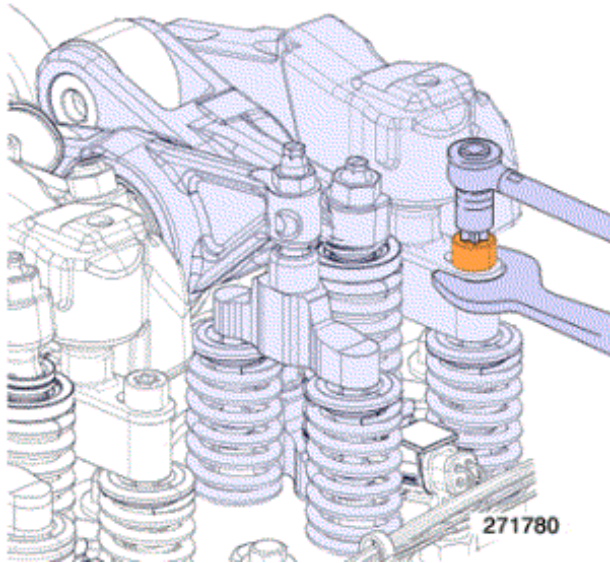
268522

Note down the thickness **X** engraved on adjusting shim.

Determine the thickness of the new adjustment shim, in order to obtain the recommended clearance.



You can superimpose a maximum of 2 adjusting shims, provided that they have the same thickness. Adjusting shims are available with thicknesses of 0.05 by 0.05 mm.



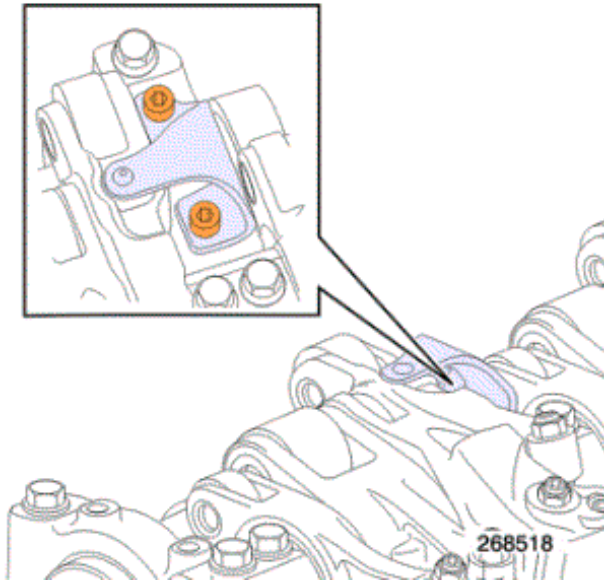
Fit shim.
Fit bolt.
Tighten to torque.



Hold the caliper in place when tightening.
Again check the clearance between the valve yoke and the arm piston.

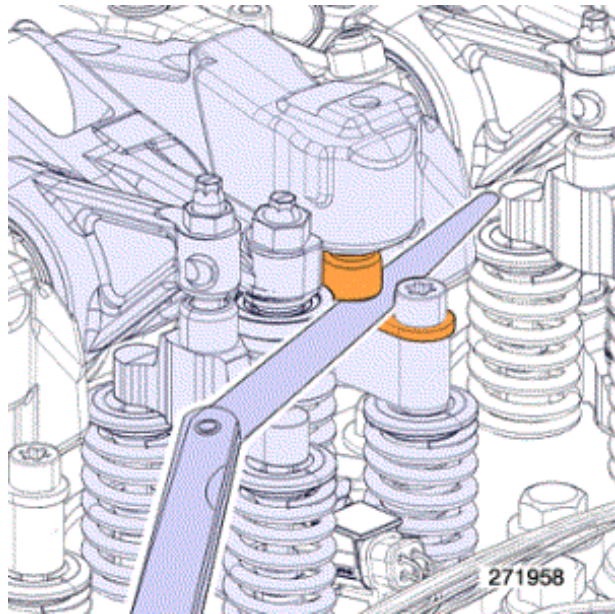



For adjusting the brake rocker arm, leave the feeler gauge in place.



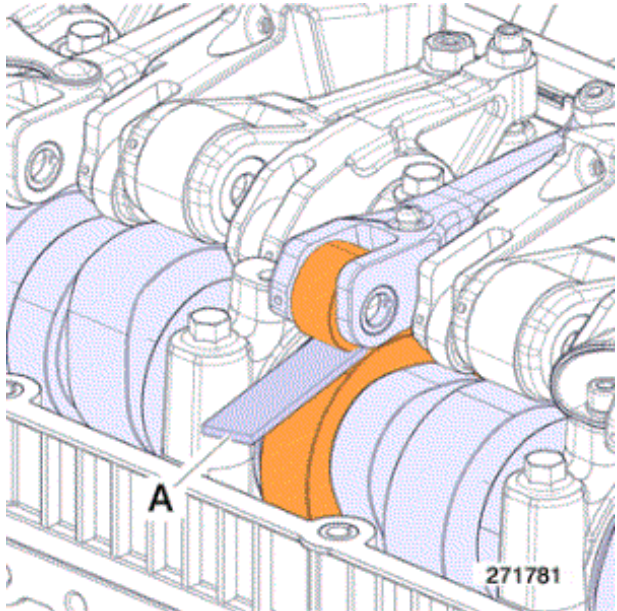
Adjustment of brake rocker arm

Loosen bolts.



 For adjusting the brake rocker arm, leave the feeler gauge in place.

The feeler gauge in place eliminates play in the exhaust valve.

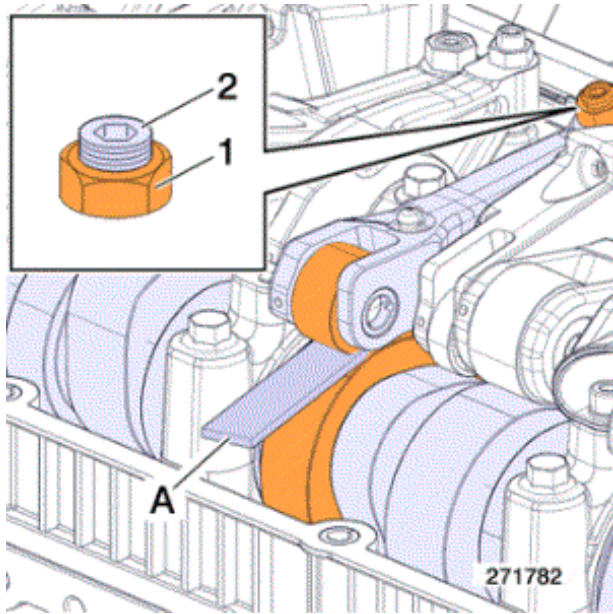


Check the play in the brake rocker arm.

Use the **2.85 mm** feeler gauge from tool **A**.

A = 0232

The checking feeler gauge should move without resistance.



In the event of incorrect clearances.

Loosen locknut **(1)**.

Loosen bolt **(2)**.

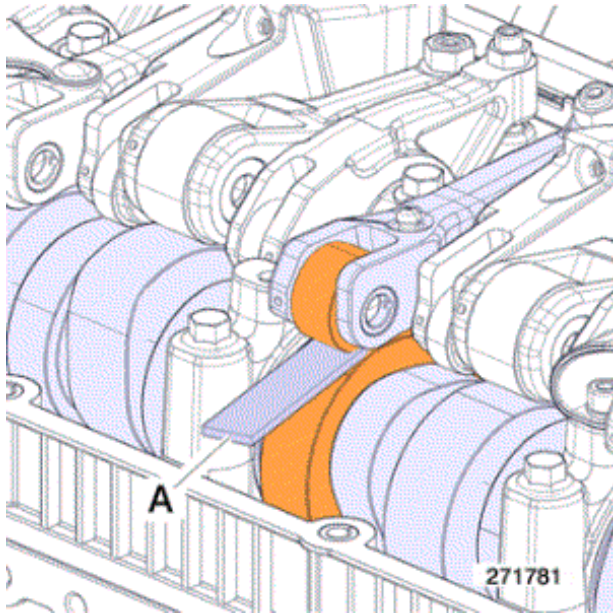
Fit the **3.20 mm** feeler gauge from tool **A**.

A = 0232

Tighten bolt **(2)** until the exhaust valve just starts to open.

Unscrew bolt **(2)** until feeler gauge **A** can be withdrawn with slight resistance.

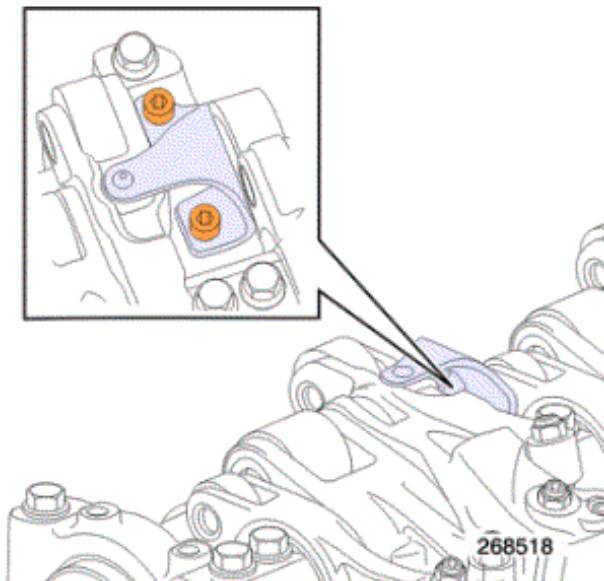
Tighten the locknut **(1)** to torque while holding the adjuster **(2)**.




Check the play in the brake rocker arm.
Use the **2.85 mm** feeler gauge from tool **A**.

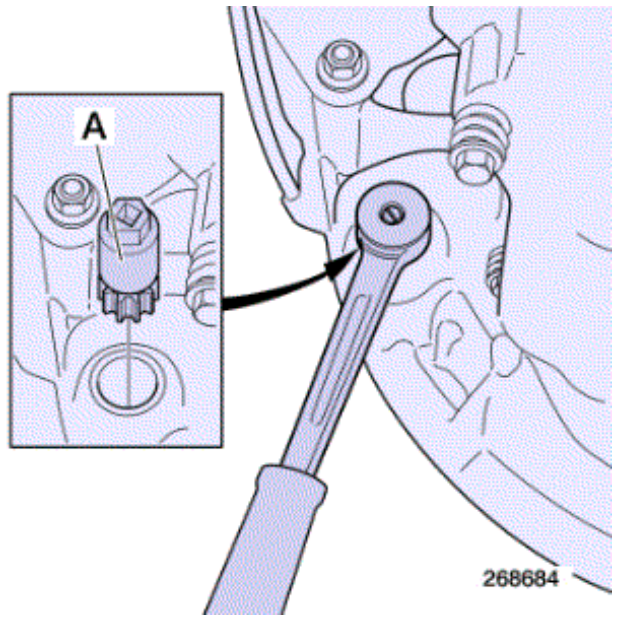
A = 0232

The checking feeler gauge should move without resistance.



Tighten the bolts to torque.


 **Make a mark on the rocker arm when adjustment is finished.**
Perform the same operation on all the other cylinders.





Remove tool **A**.
A = 1380
Fit blanking plug.

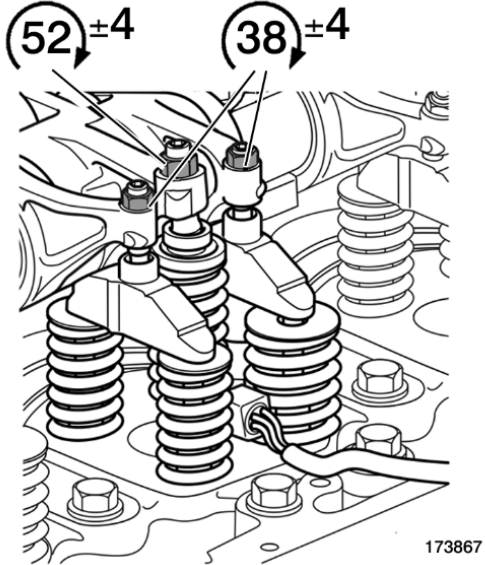
Tools

Specific tools

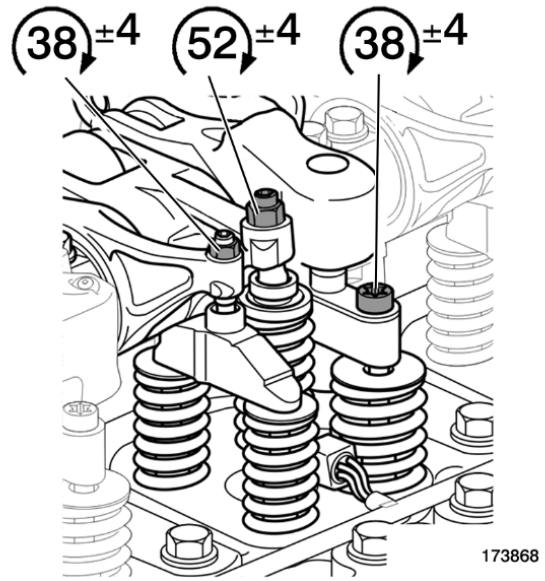
Illustration	RENAULT TRUCKS part N°	Designation	Manufacturer's reference N°	Manufacturer's code N°	Scale	Qty
	5000261380	CONTROL			1	1
	7488840162	WRENCH			2	1

						
	88800232			null	1	1

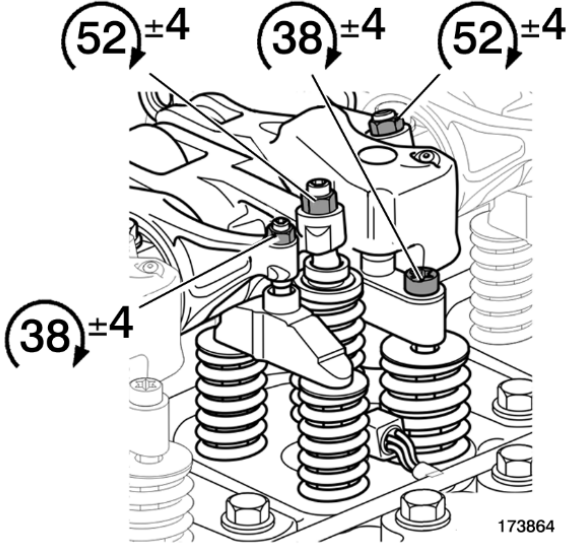
Rocker arms, tightening torques



Without "Optibrake" / "Optibrake +"



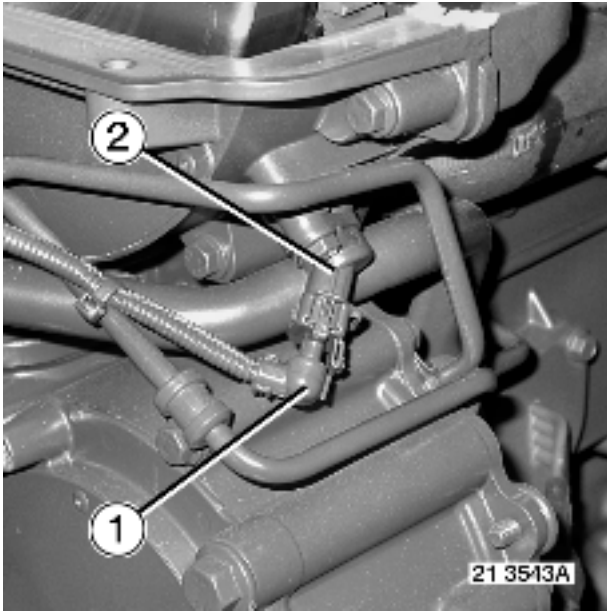
With "Optibrake"



With "Optibrake +"

Upper timing cover, removal

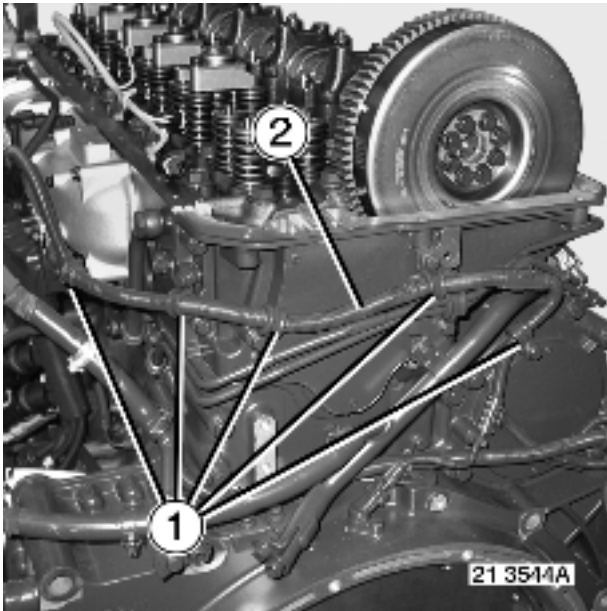
Remove the cylinder head cover.



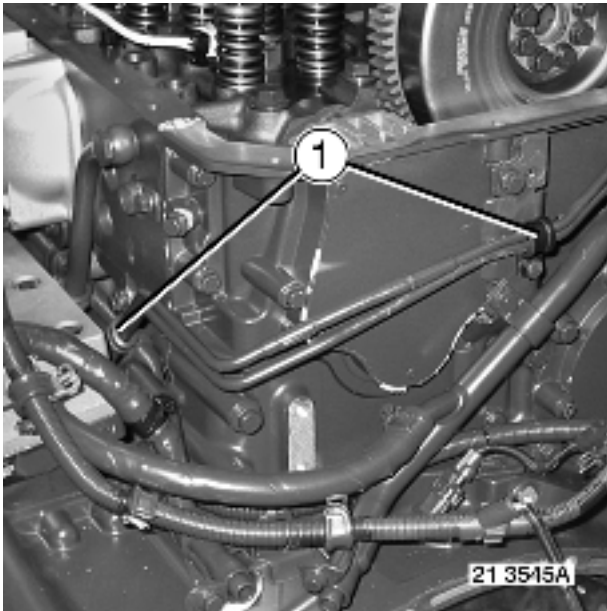
Unplug connector (1).

Remove bolt.

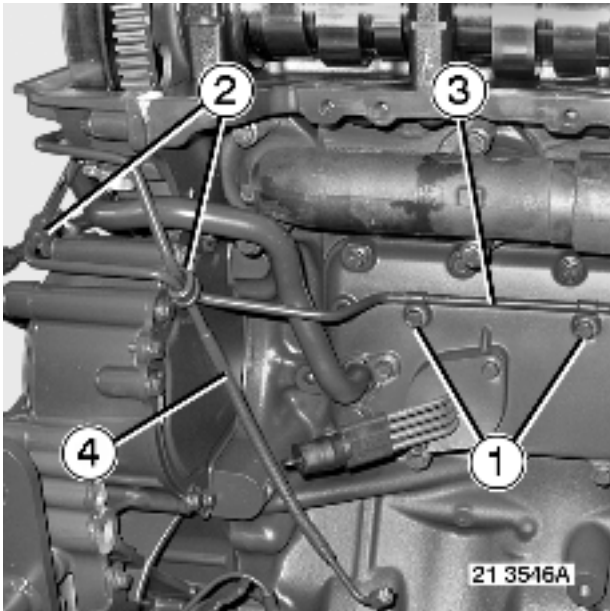
Remove sensor (2).



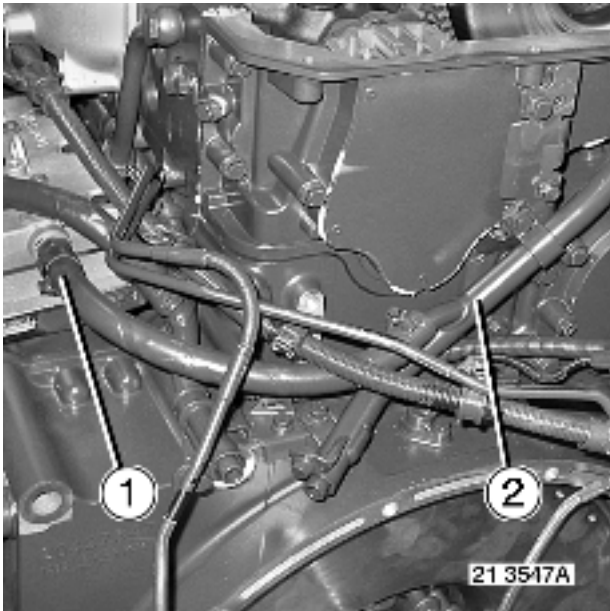
Remove clamps (1).
Disengage wiring harness (2).



Remove clamps (1).

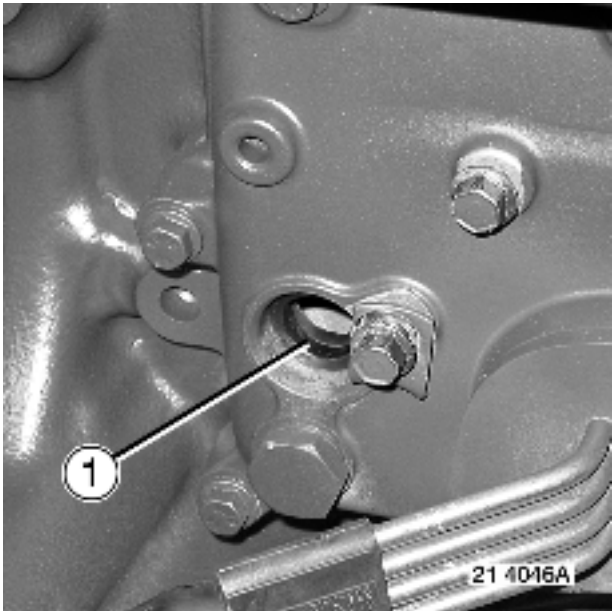


Remove clamps (1 - 2).
Disengage pipes (3 - 4).

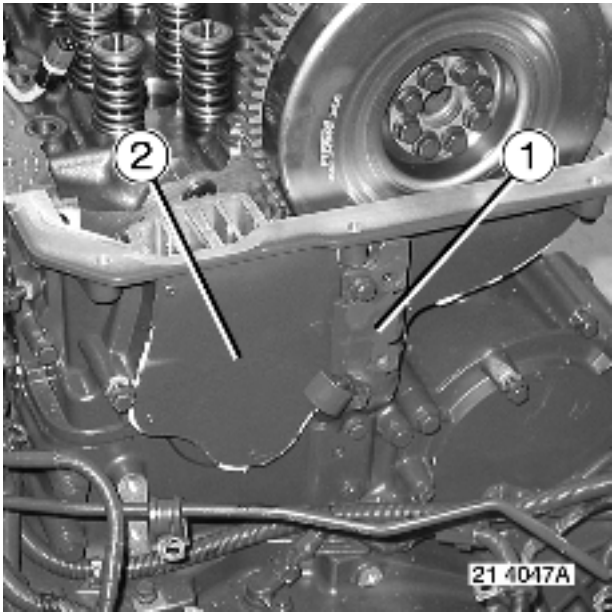


Loosen clamp.
Disconnect hose (1).

Remove tube (2).



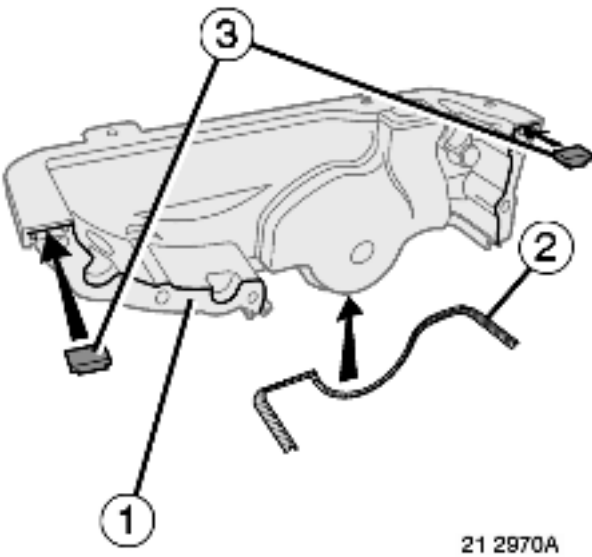
Remove gasket (1).



Remove piping bracket (1).

Remove casing (2).

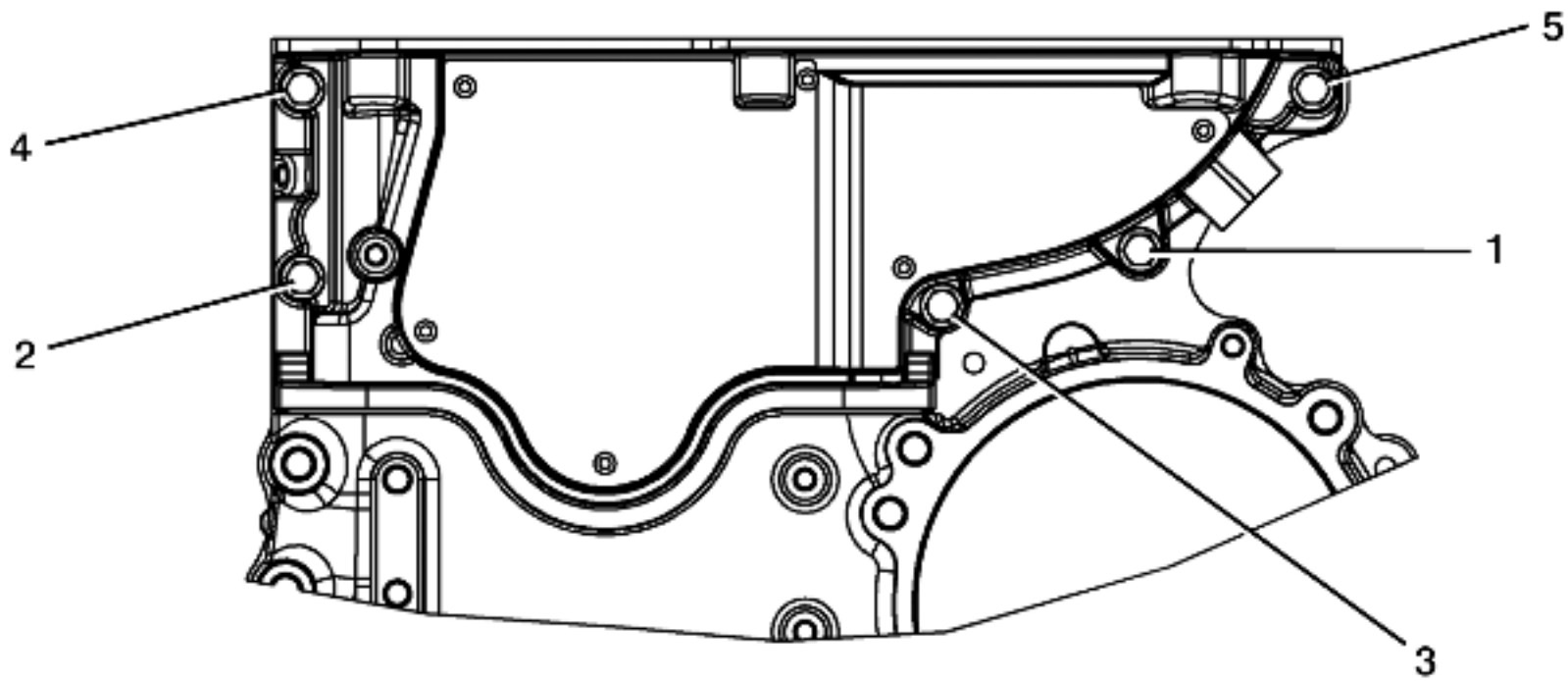
Upper timing cover, fitting



Clean the contact faces thoroughly.
Install seals (2 - 3).
Apply sealing compound to the timing case joint face (1).

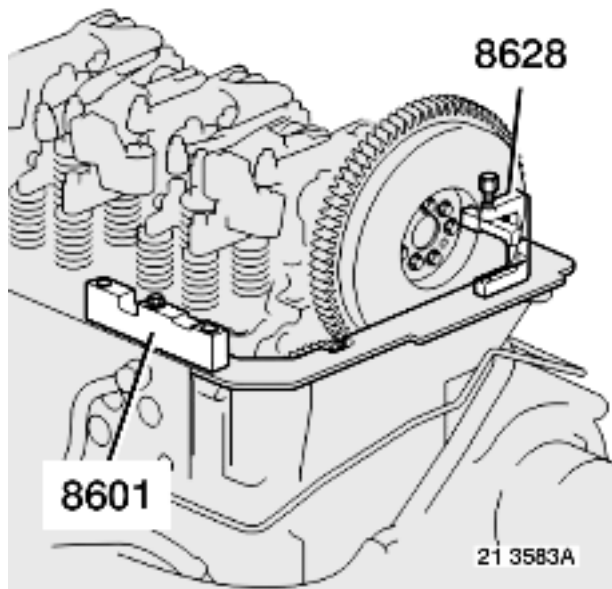
Apply "
ADHESIF SILICONE 7091

Fit casing (1).

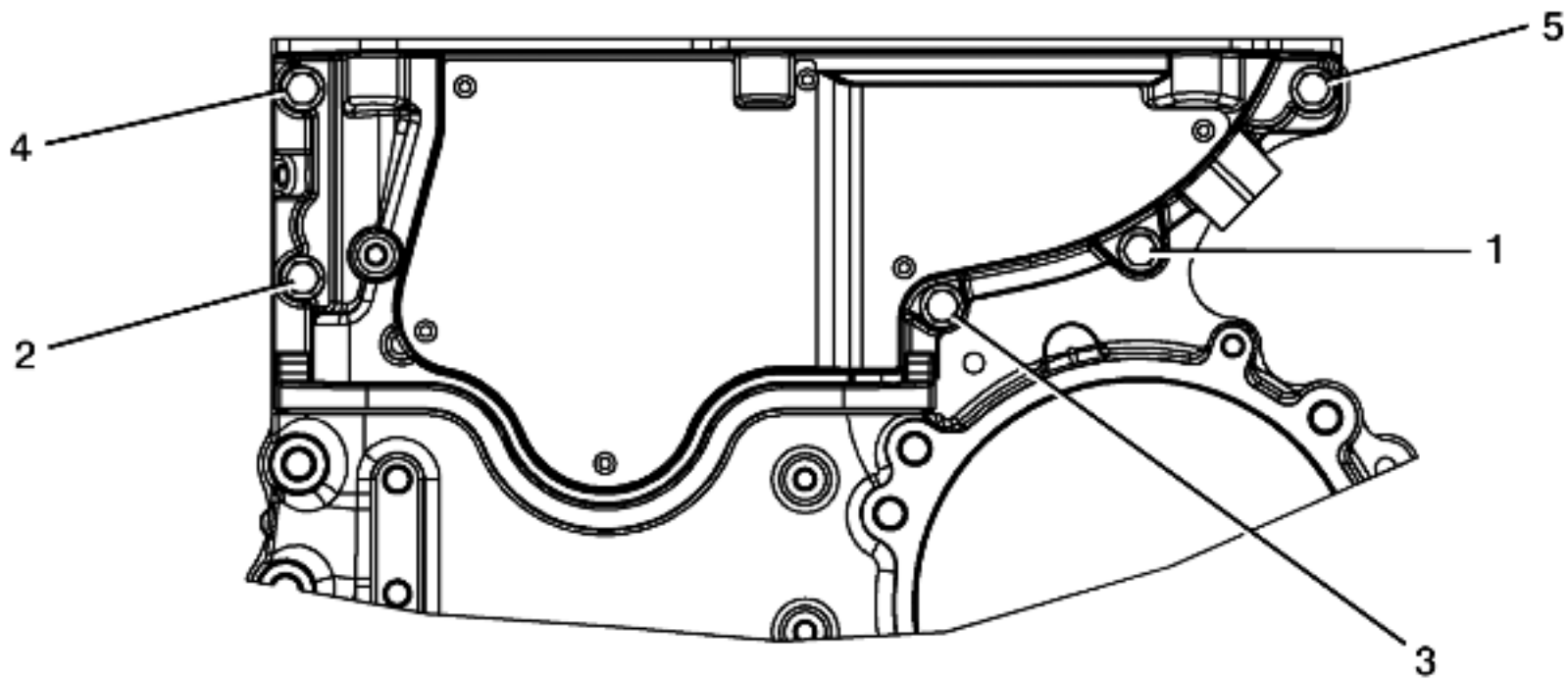


21 3580A

Fit bolts (1 - 2).
Bring the bolts into contact without tightening.

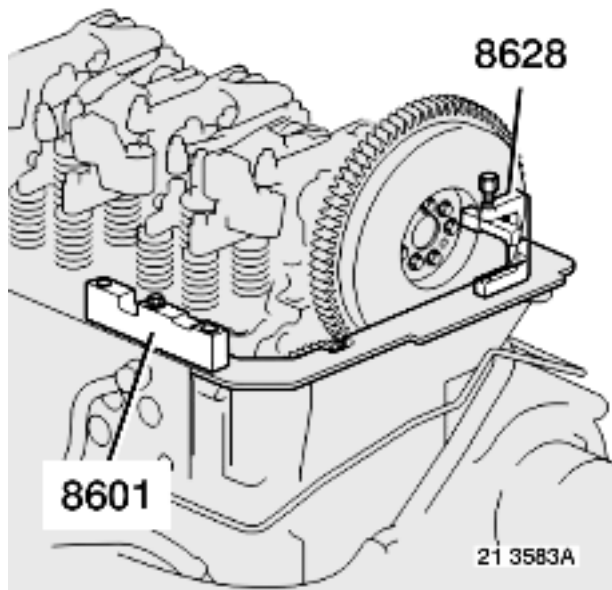


Align the timing case joint face with the upper joint face of the cylinder head to ± 0.1 mm.
Use tool 8601 + 8628.

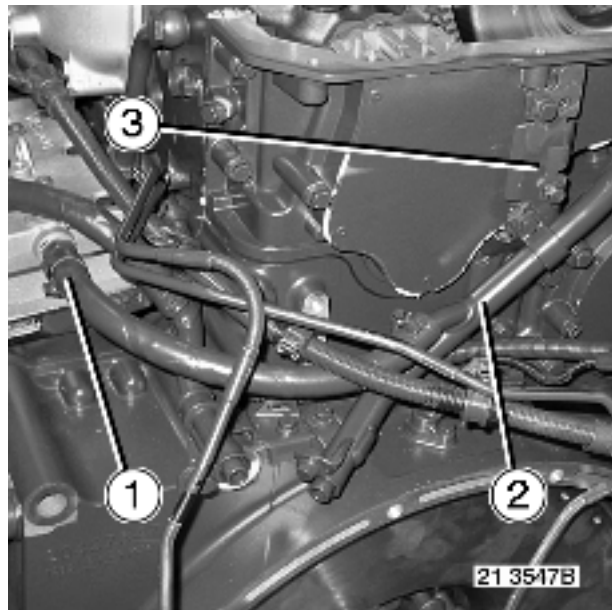


21 3580A

Fit bolts **(3 - 4 - 5)**.
Tighten bolts **(1 > 5)** to torque.
Follow the tightening sequence.



Remove tool 8601 + 8628.

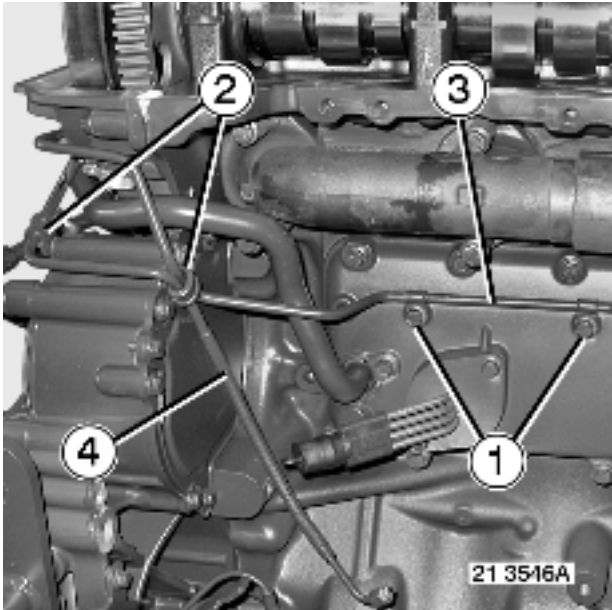


Fit piping bracket **(3)**.
Tighten to torque.

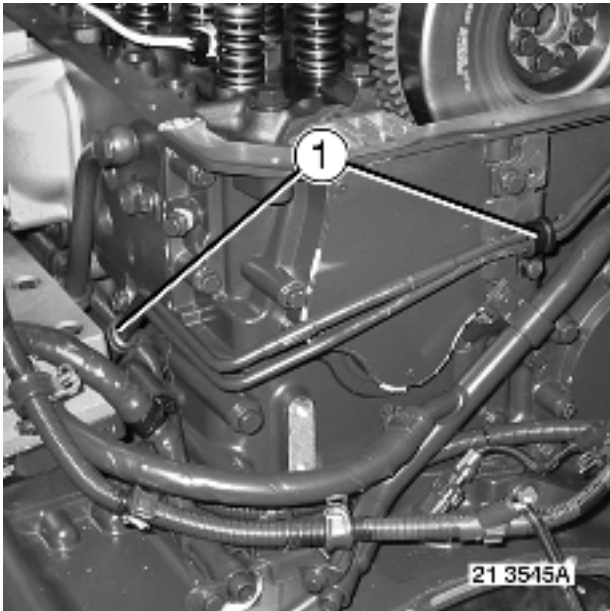
Replace gasket.

Fit pipe (2).
Tighten to torque.

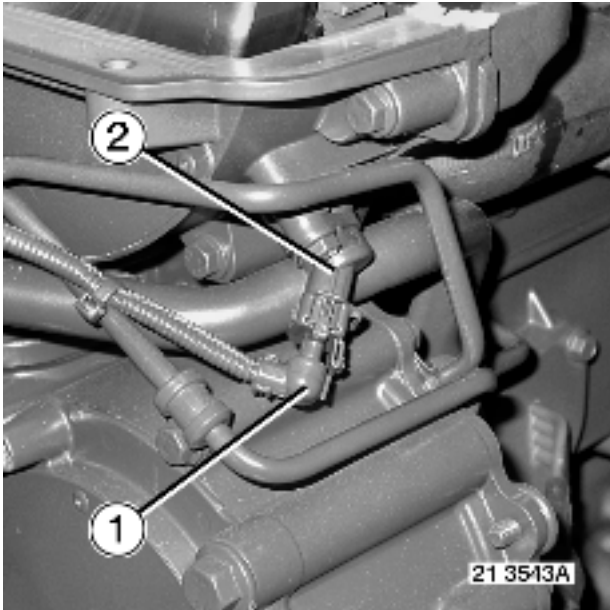
Connect hose (1).
Tighten shackle.
Tighten to torque.



Fit pipes (3 - 4).
Fit clamps (1 - 2).
Tighten to torque.



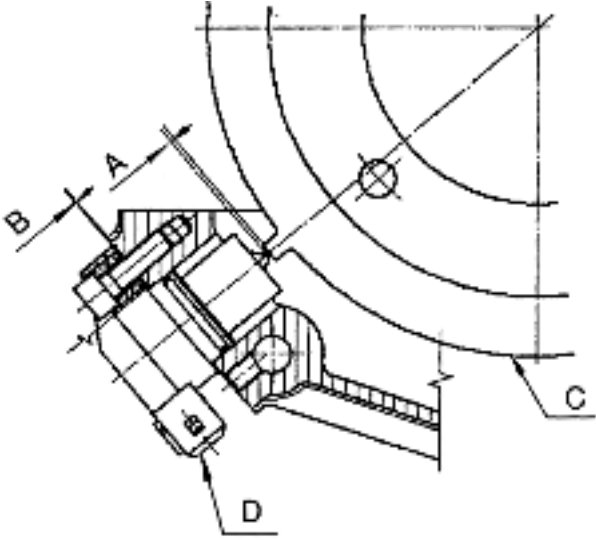
Fit clamps (1).
Tighten to torque.



Fit sensor (2).

Fit bolt.
Tighten to torque.

Plug in connector **(1)**.

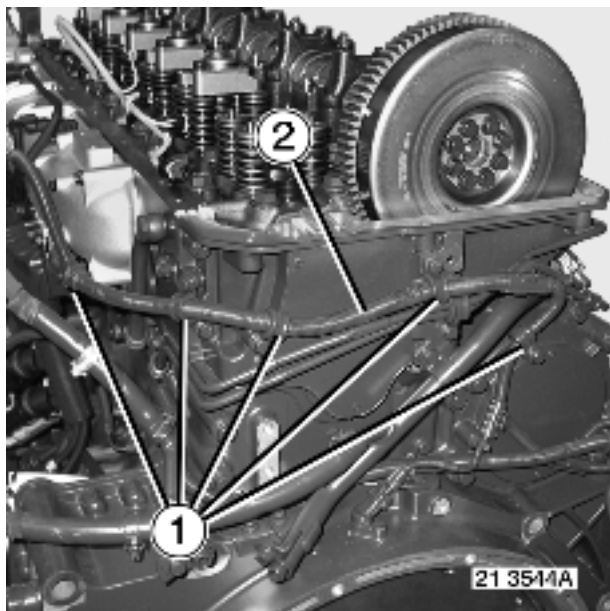


21 2974A

Turn the engine to position a camshaft pulse wheel magnetic pole opposite the speed sensor housing.

Check the air gap.

- * **(A)** = Clearance (mm)
- * **(B)** = Adjusting shim
- * **(C)** = Pulse wheel
- * **(D)** = Camshaft speed sensor



Install wiring harness (2).

Fit clamps (1).

Tighten to torque.

Fit the rocker cover.

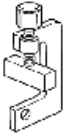

Consumables

Automotive part N°	Industrial reference N°
56 89 501 292	Silicon adhesive 7091

Tools

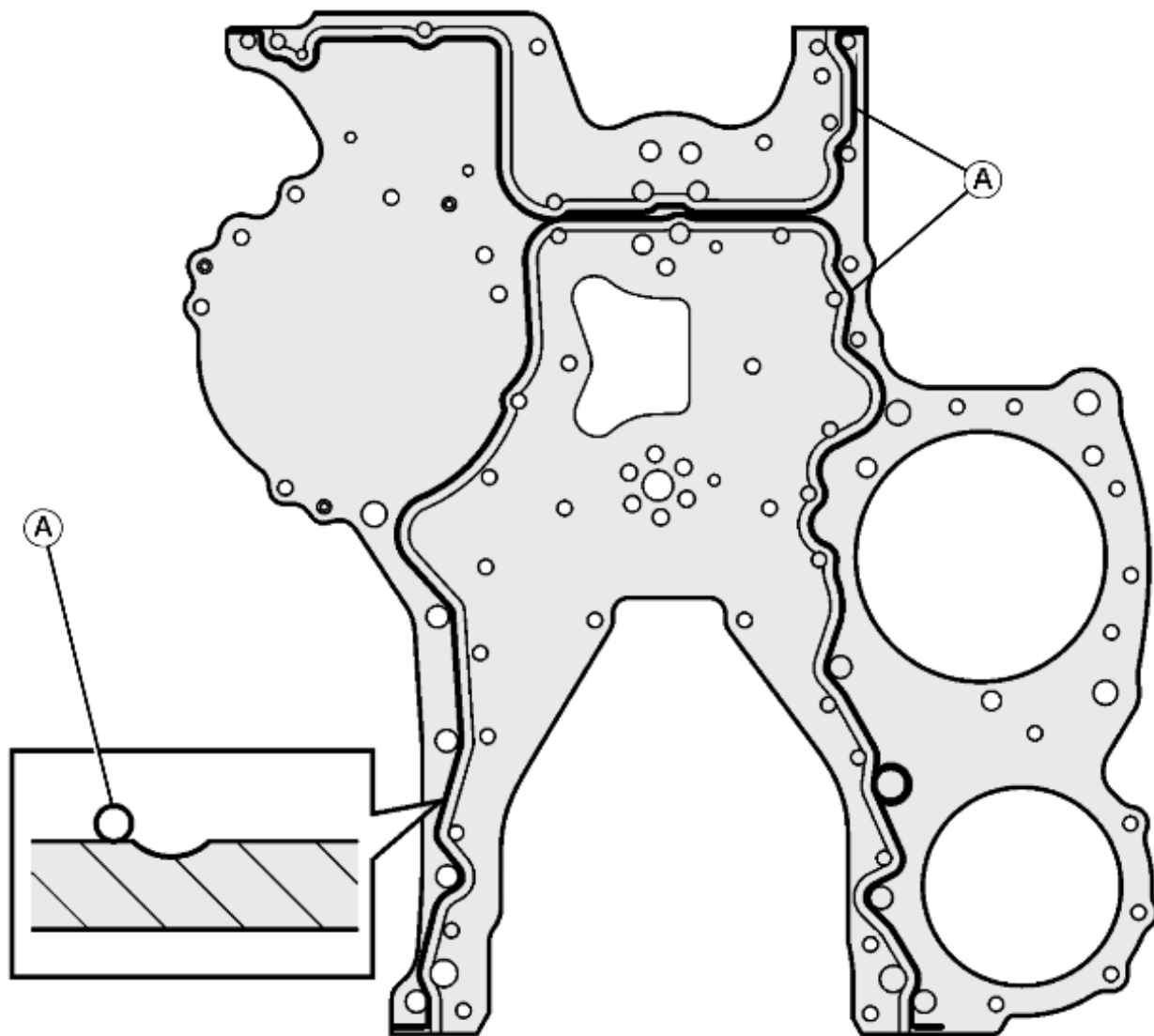
Specific tools

Illustration	RENAULT TRUCKS part N°	Designation	Manufacturer's reference N°	Manufacturer's code N°	Scale	Qty
	7409998628					

	
	7409998601

Timing system, tightening torques

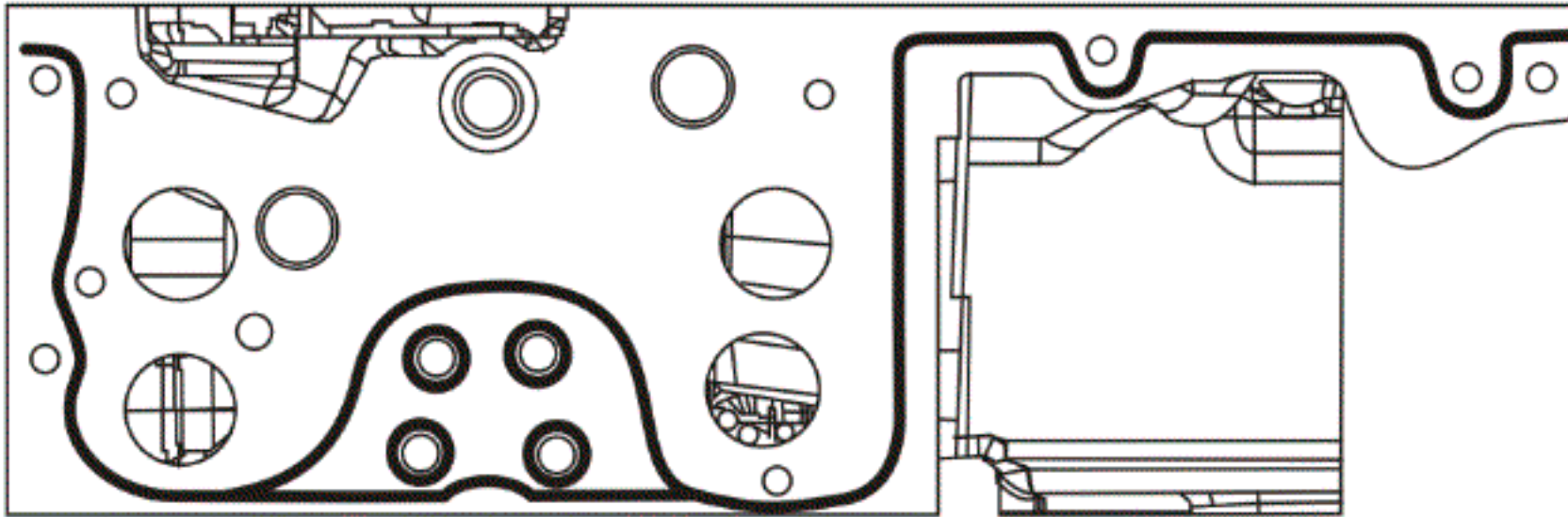
Assembly type A



21 3861A

Apply a bead of silicone **dia. 2 mm (A)** as shown in the drawing. Perform assembly within 20 minutes of application of the silicone.
Use a silicone sealant "

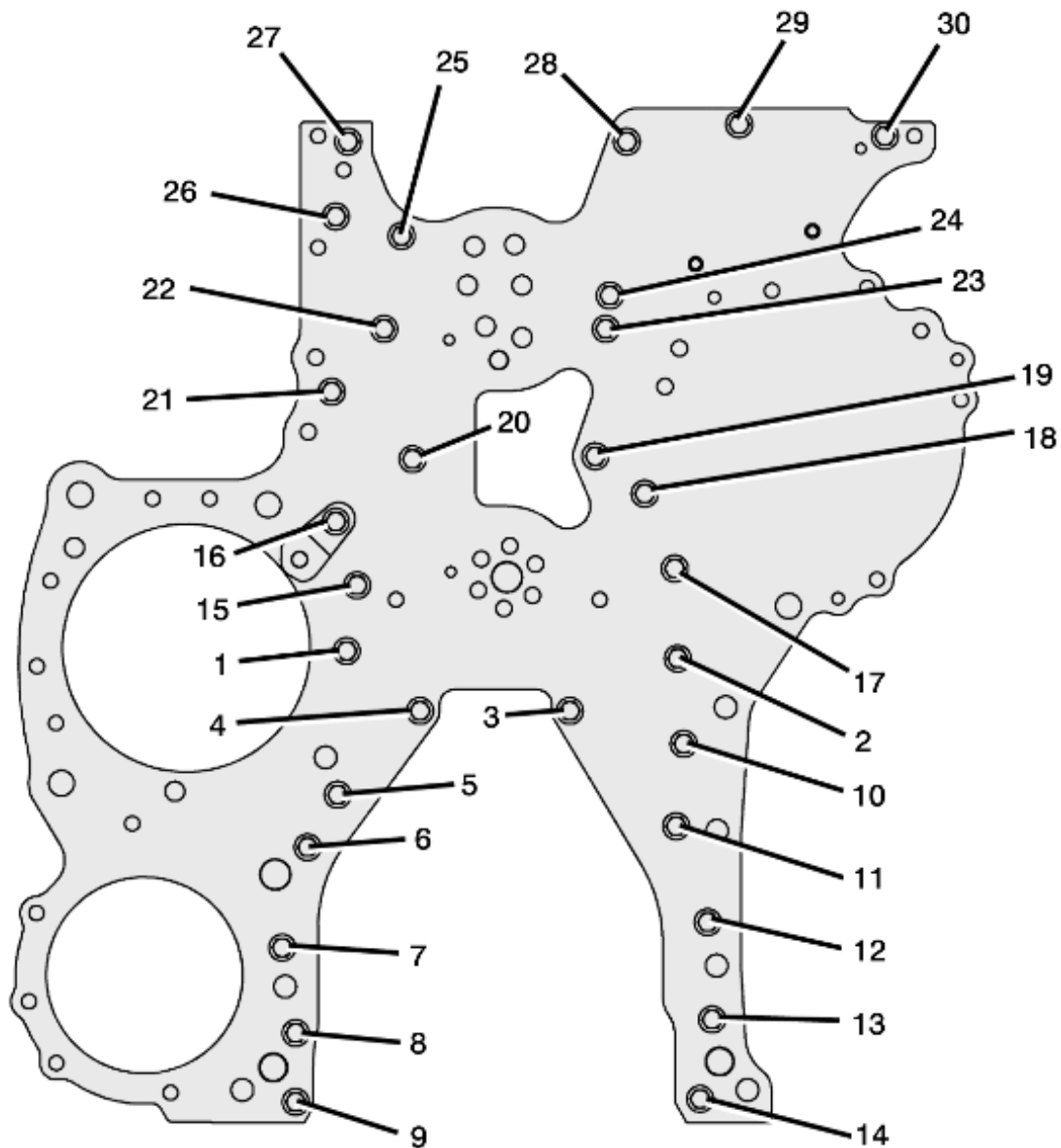
ADHESIF SILICONE 7091



224377

Apply a bead of silicone **dia. 2 mm (A)** as shown in the drawing. Perform assembly within 20 minutes of application of the silicone.
Use a silicone sealant "

ADHESIF SILICONE 7091



21 3511A

The item numbers indicate the tightening sequence.

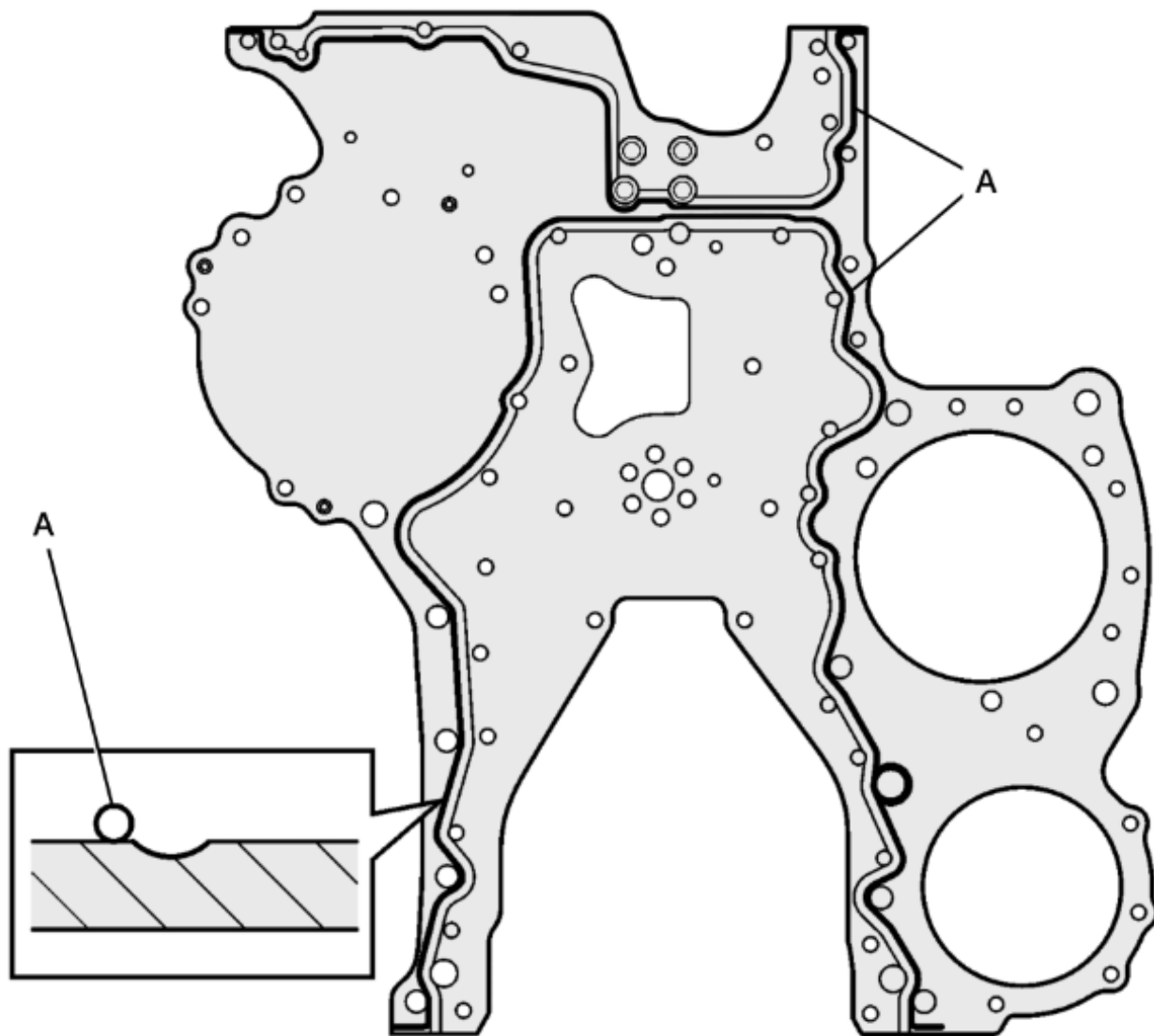
Timing plate securing bolts

28±4 Nm



The bolts must not be re-used. Use new bolts.

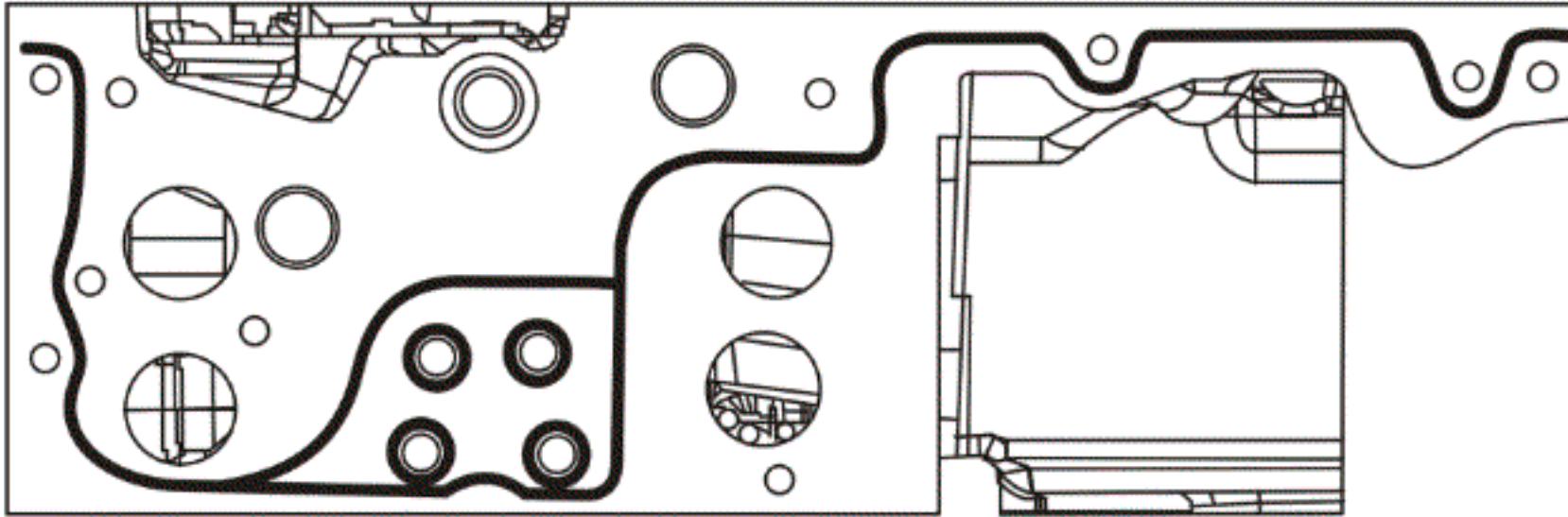
Assembly type B



224389

Apply a bead of silicone **dia. 2 mm (A)** as shown in the drawing. Perform assembly within 20 minutes of application of the silicone.
Use a silicone sealant "

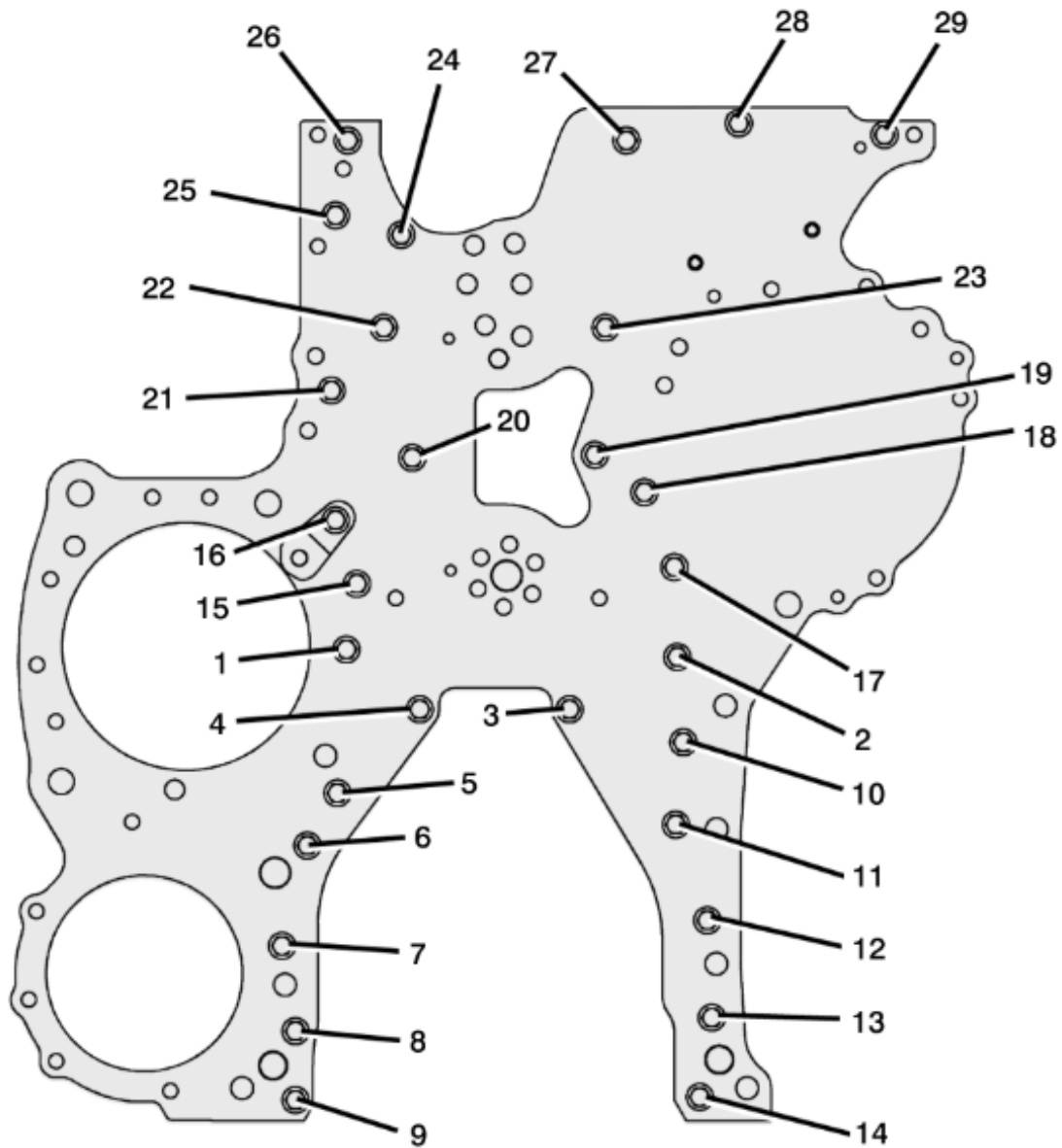
ADHESIF SILICONE 7091



224376

Apply a bead of silicone **dia. 2 mm (A)** as shown in the drawing. Perform assembly within 20 minutes of application of the silicone.
Use a silicone sealant "

ADHESIF SILICONE 7091



224388

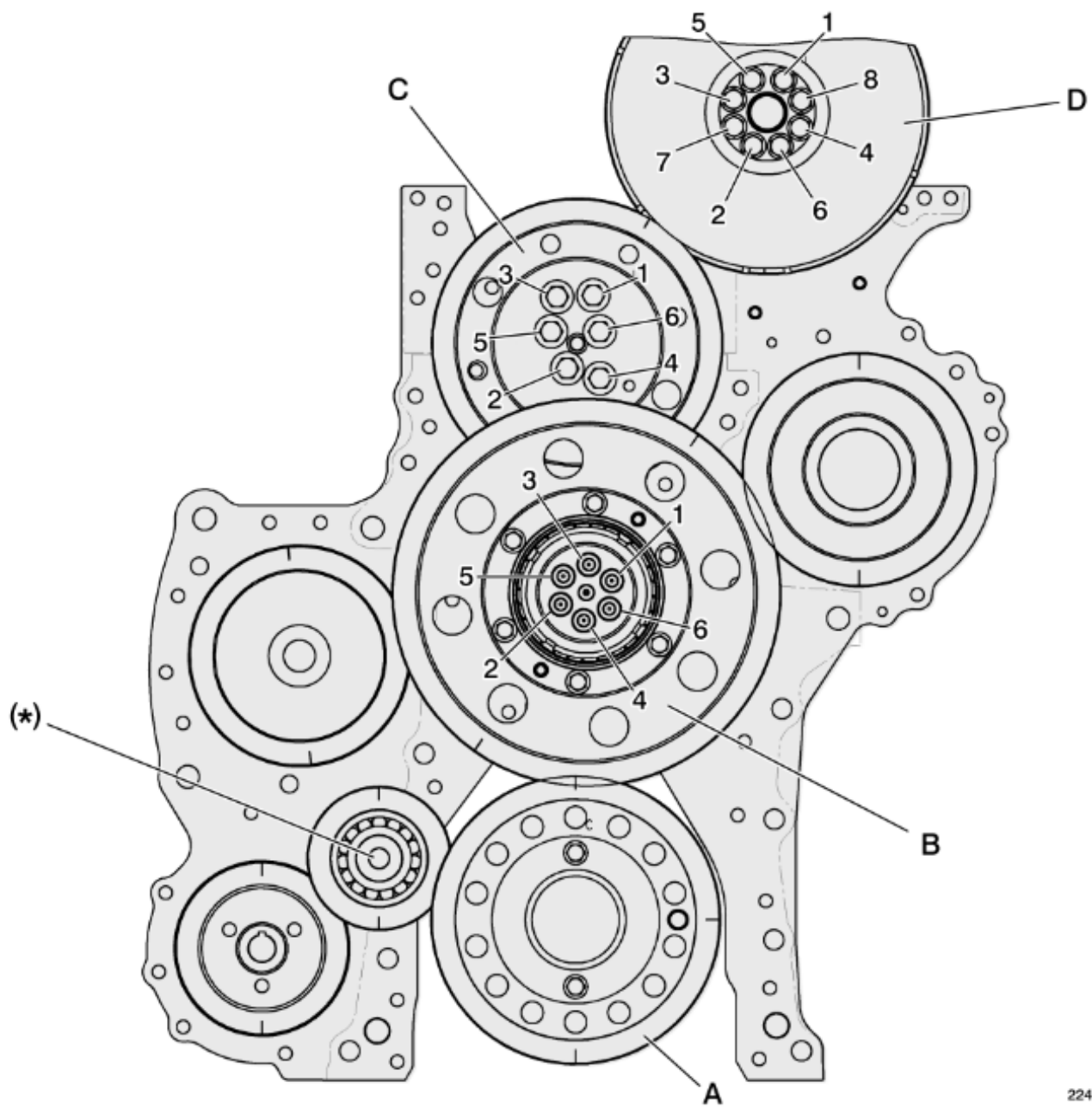
The item numbers indicate the tightening sequence.

Timing plate securing bolts

28±4 Nm



The bolts must not be re-used. Use new bolts.



224708

The item numbers indicate the tightening sequence.

Crankshaft pinion securing bolt (A)	24±4 Nm
Idler gear hub securing bolt (B)	25±3 Nm + 110±5 °

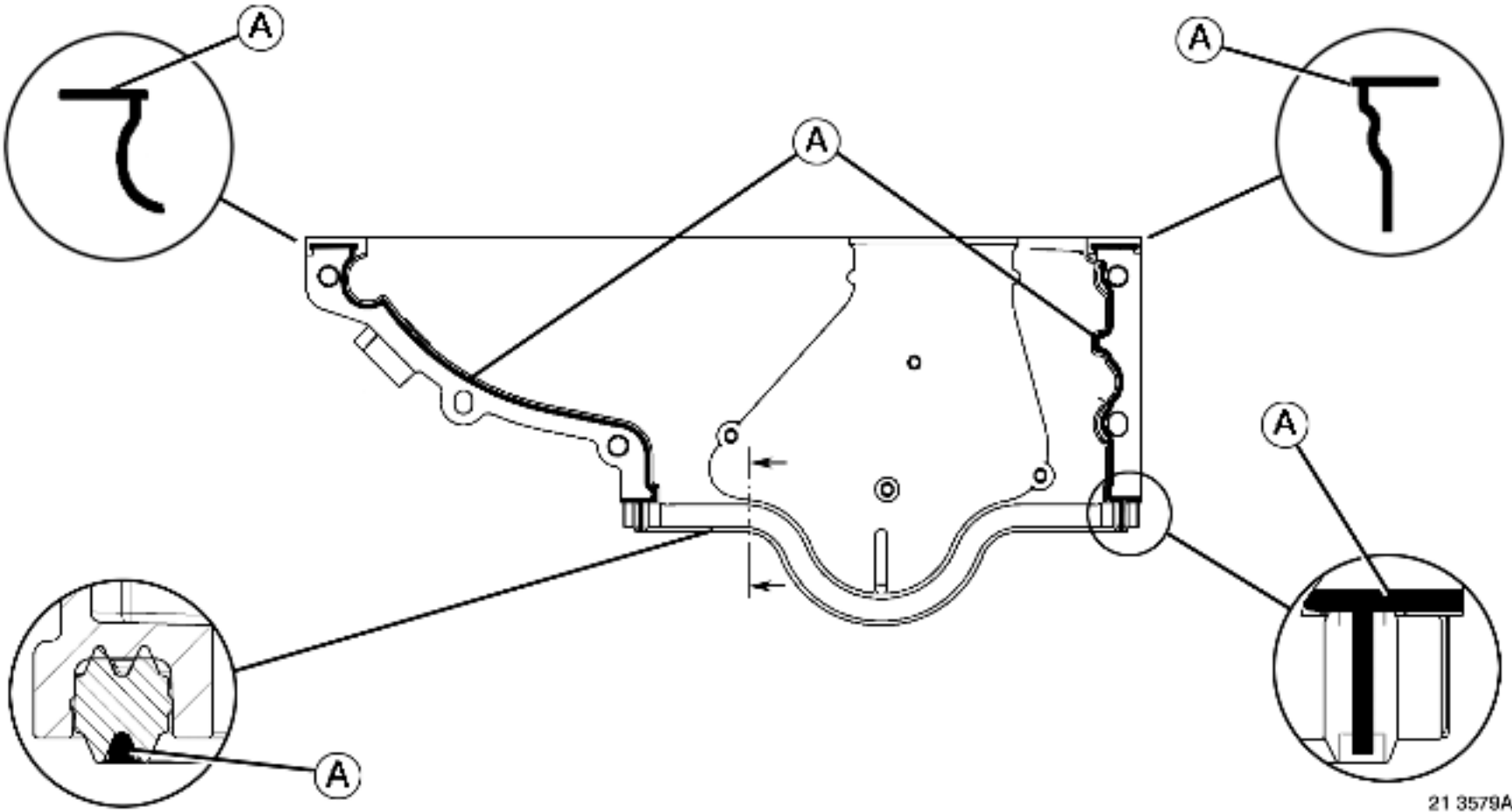


The bolts must not be re-used. Use new bolts.

Adjustable idler gear hub securing bolt (C)	35±4 Nm + 120±5 °
Camshaft pinion securing bolt (D)	45±5 Nm + 90±5 °

(*)Depending on the assembly.

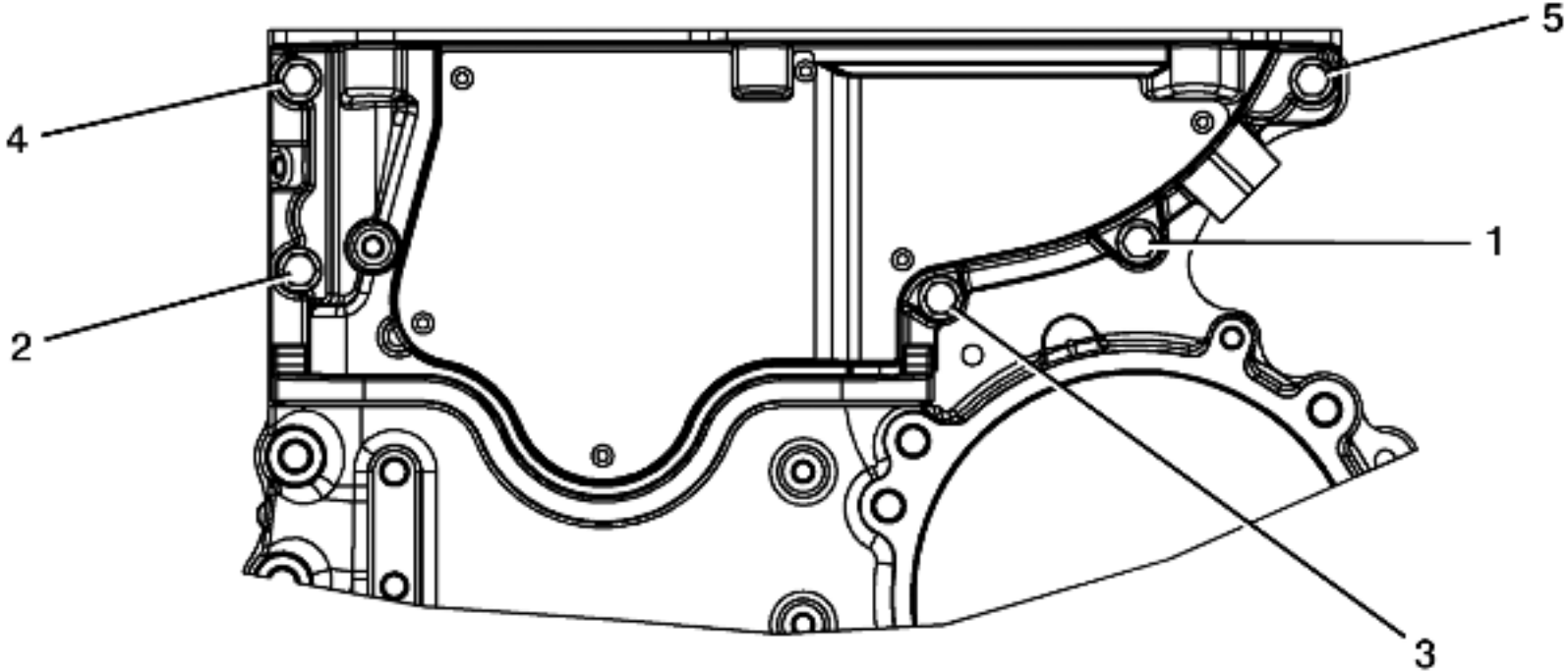
Idler pinion shaft securing bolts	140±10 Nm
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Apply a bead of silicone **dia. 2 mm (A)** as shown in the drawing. Proceed with assembly within 20 minutes following application of the silicone.

Use a sealing product

ADHESIF SILICONE 7091



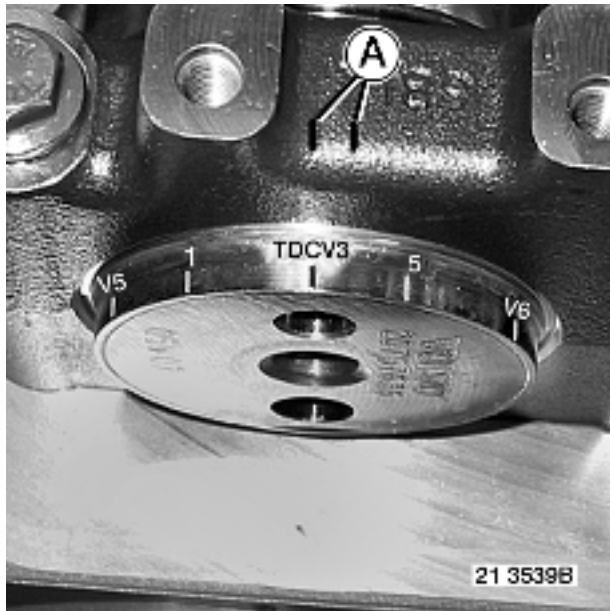
21 3580A

The item numbers indicate the tightening sequence.

Timing case to cylinder head securing bolts	24±4 Nm
---	---------

Camshaft, removal

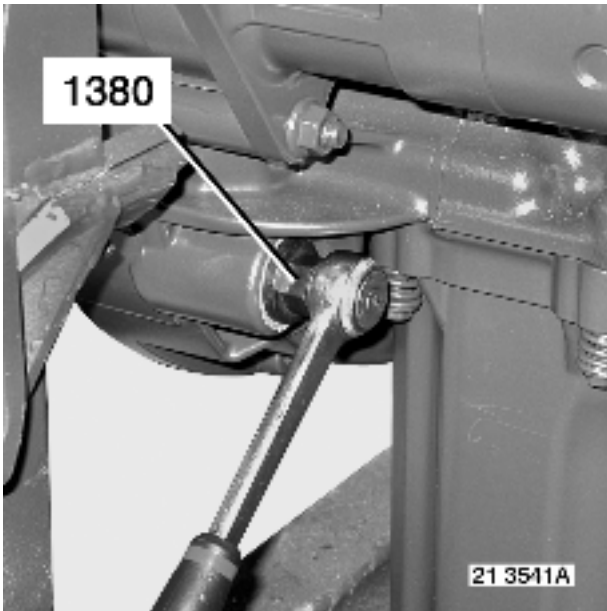
Remove upper timing casing .



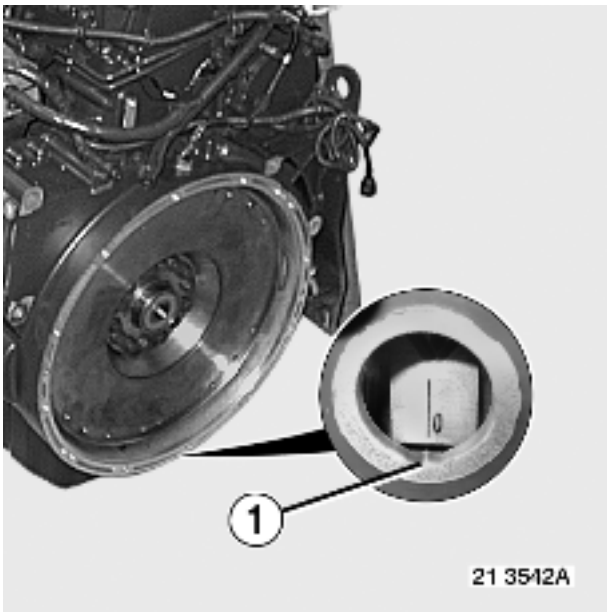
Turn the engine in the direction of normal running, as far as compression **TDC** of N° 1 cylinder (valves of cylinder in balance with valves of N° 6 cylinder).



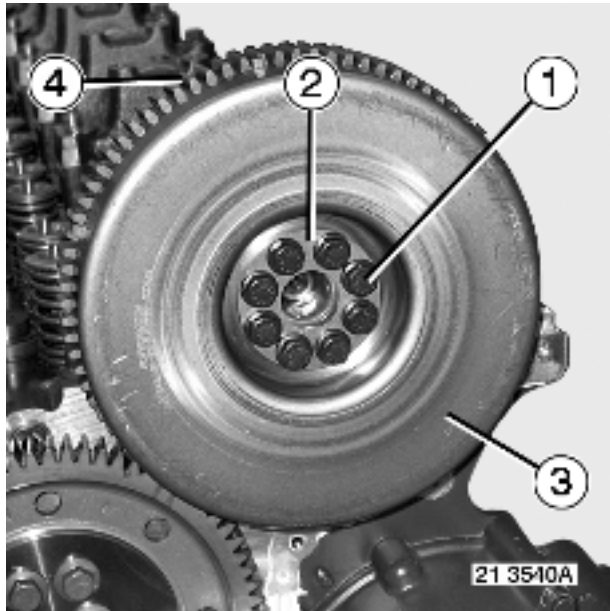
*The camshaft top dead centre mark (**TDC**) must be positioned between the marks (**A**) on the camshaft front bearing cap.*



Use tool 1380.



Check that the flywheel TDC mark is in line with pointer (1).
Remove the rocker assembly.



Remove bolts **(1)** proceeding in the reverse sequence of tightening.

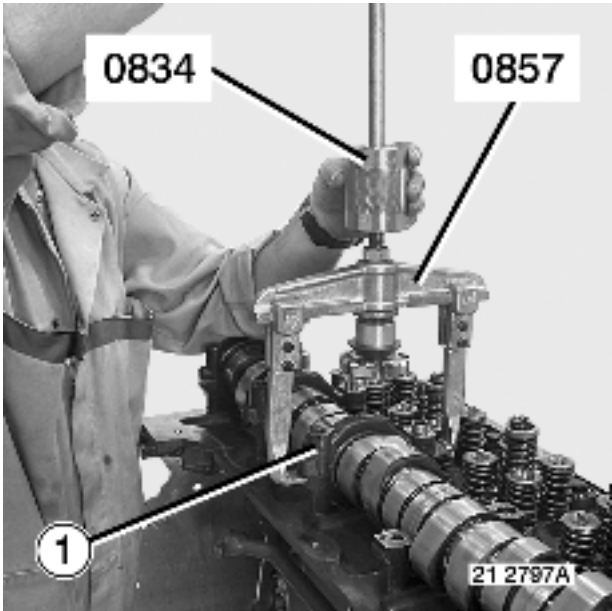
Remove washer **(2)**.

Remove vibration damper **(3)** and camshaft pinion **(4)**.

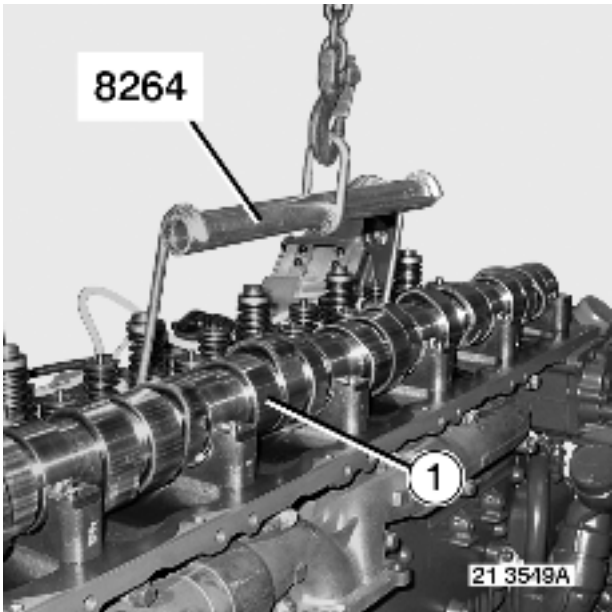


21 3518A

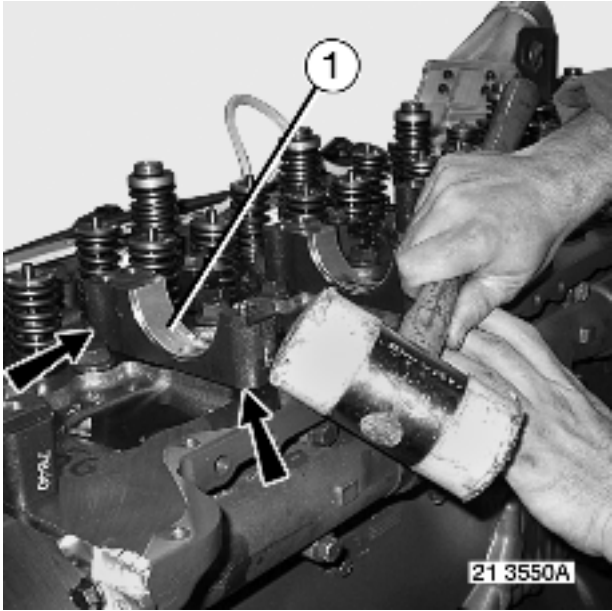
Remove bolts (1 > 7).



Remove upper half-bearings (1).
Use tool 0834 + 0857.
Remove bearing half-shells.





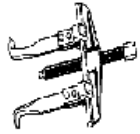
Remove the camshaft (1).
 Use tool 8264.
 Use lifting tackle.



Remove bearing half-shells.
 Remove lower half-bearings (1).

Tools
Specific tools

Illustration	RENAULT TRUCKS part N°	Designation	Manufacturer's reference N°	Manufacturer's code N°	Scale	Qty
	5000261380	CONTROL			1	1
	5000260834	PULLER			2	1
	5000260857	PULLER			2	1



740998264

**LIFTING TOOL
(CAMSHAFT)**

2

1



Camshaft, inspection

On the camshaft, inspect:

- * Coaxiality,
- * Cam lift,
- * Bearings out-of-round diameter,
- * Bearing half-shells.

For values, see "Technical data" chapter.

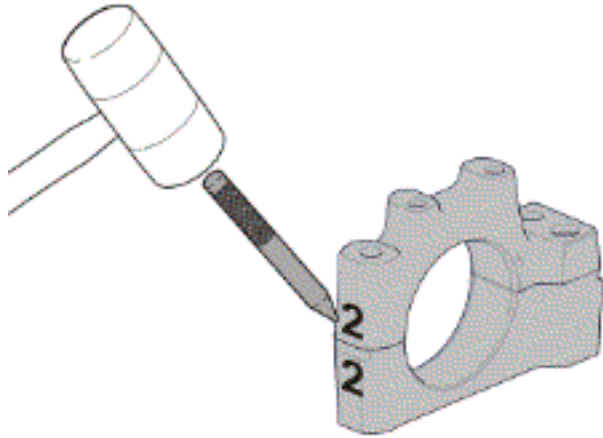
Camshaft bearings, replacement

Remove the camshaft.

See pages .

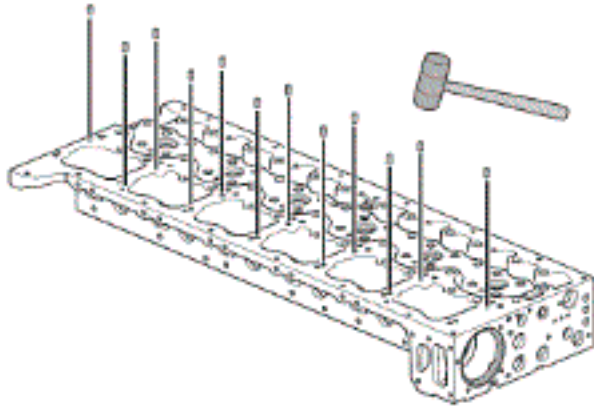


If one of the bearings is damaged, all bearings must be replaced.



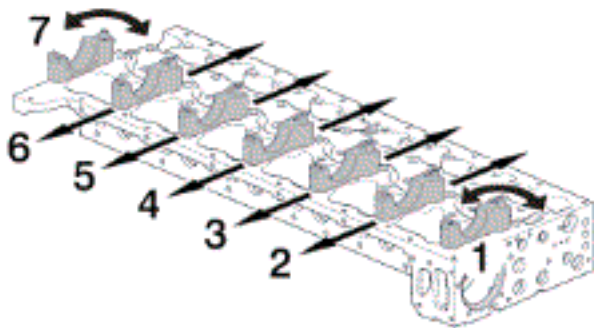
225106

Locate new bearings in pairs.



225107

Clean the cylinder head joint faces.
Fit locating dowels.
Use a mallet.



225108

Fit new lower half-shell bearings.

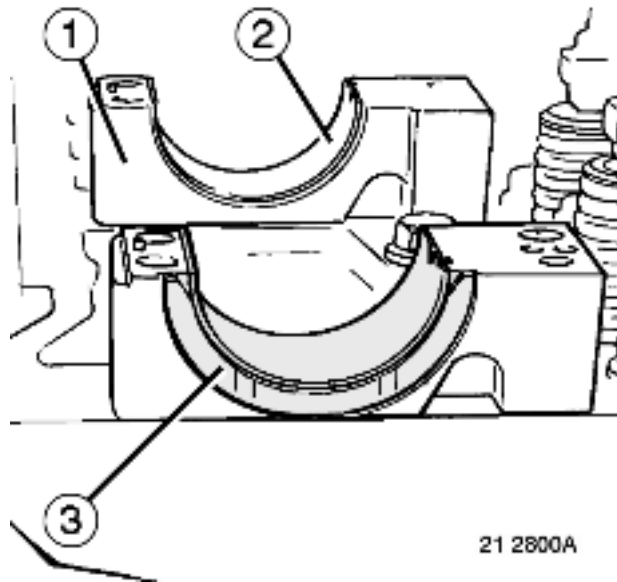


Ensure that half-shell bearings numbers 1 - 7 can rotate around pin.



Ensure that half-shell bearings numbers 2 > 6 can be moved laterally.
Fit the camshaft.

Camshaft, fitting



21 2800A


Oil all moving parts.

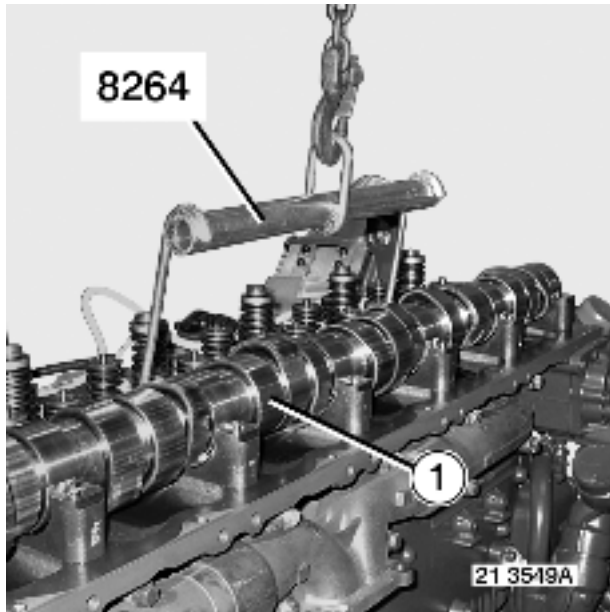
Fit camshaft lower half-bearings **(1)** on the cylinder head.

Marks positioned on exhaust manifold end.

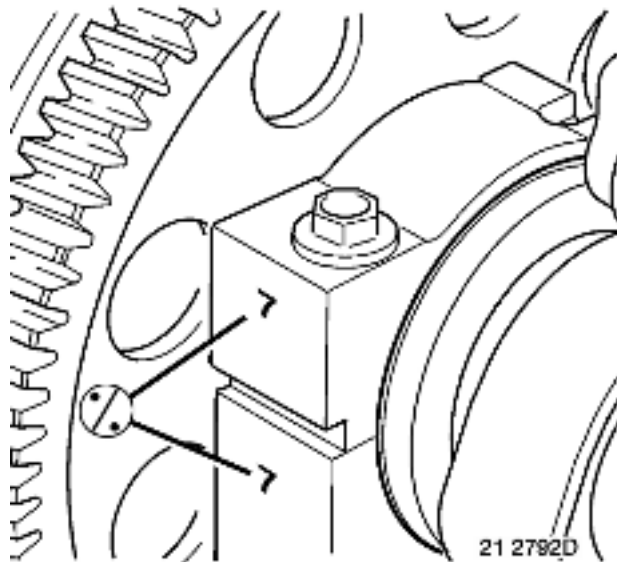
Apply oil (engine oil) to the inner faces of bearing half-shells **(2 - 3)** when installing them. Do not apply oil to the support face.

Fit bearing half-shells **(2 - 3)**.

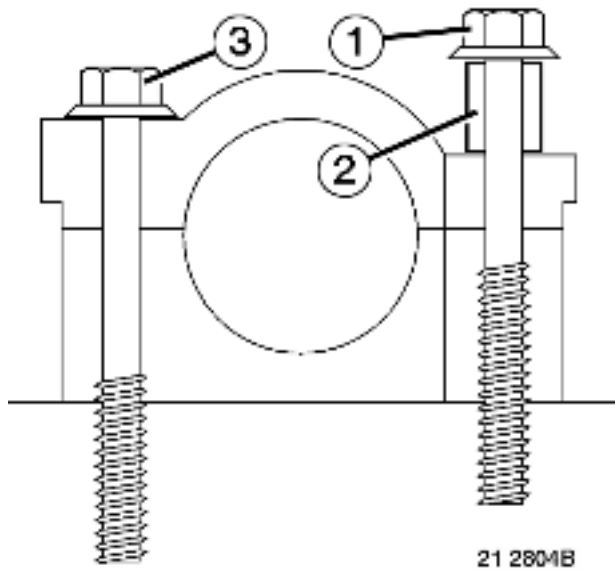
 **The half-shell (3) of N° 7 bearing determine the camshaft end float.**



Fit the camshaft (1).
Use tool 8264.
Use lifting tackle.

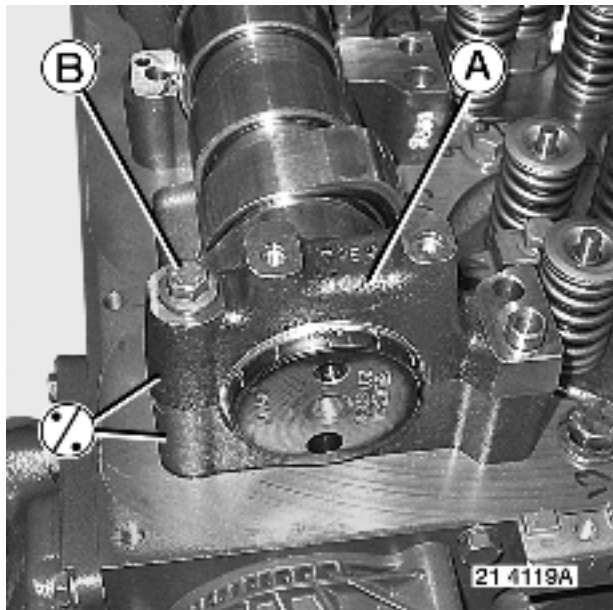


Fit half-bearing (item N° 7).



21 280MB

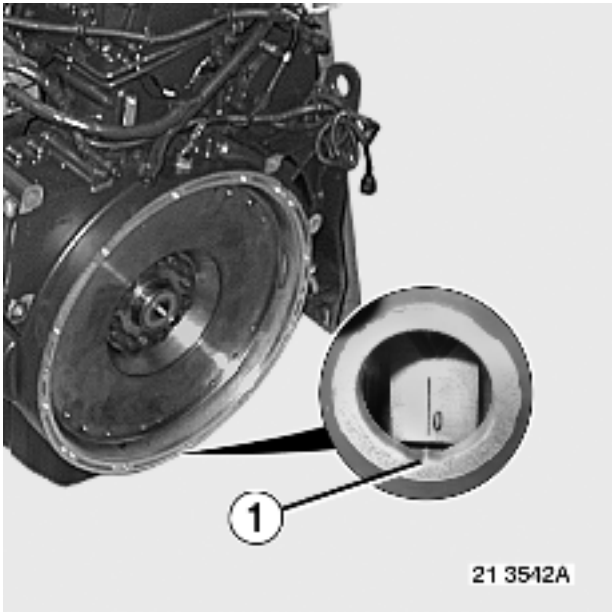
Temporarily fit a bolt (1) complete with spacer (2) to N° 7 bearing.
Fit bolt (3).
Tighten to a torque of **25 Nm**.



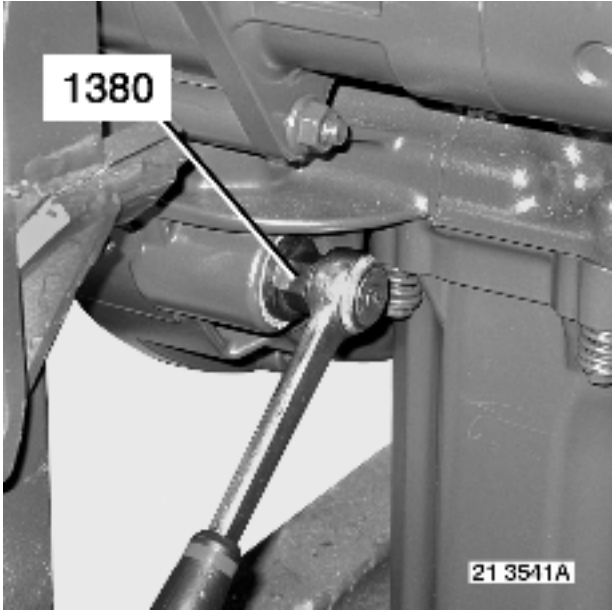
21 4119A

Fit half-bearing (A) (item N° 1).

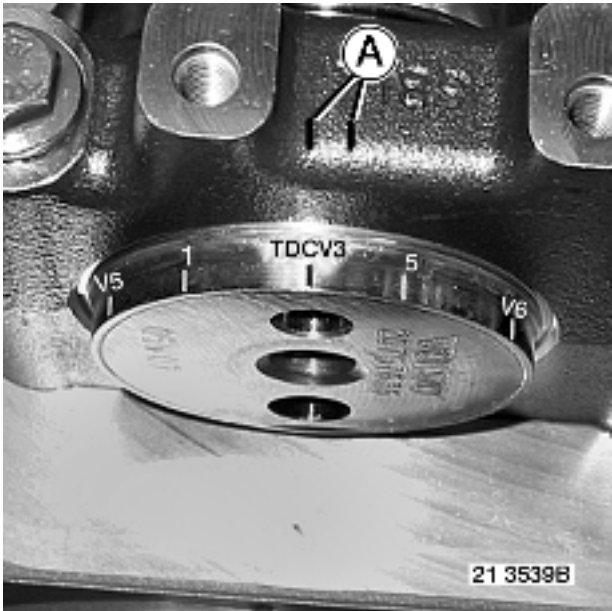
Fit bolt **(B)**.
Tighten to a torque of **25 Nm**.



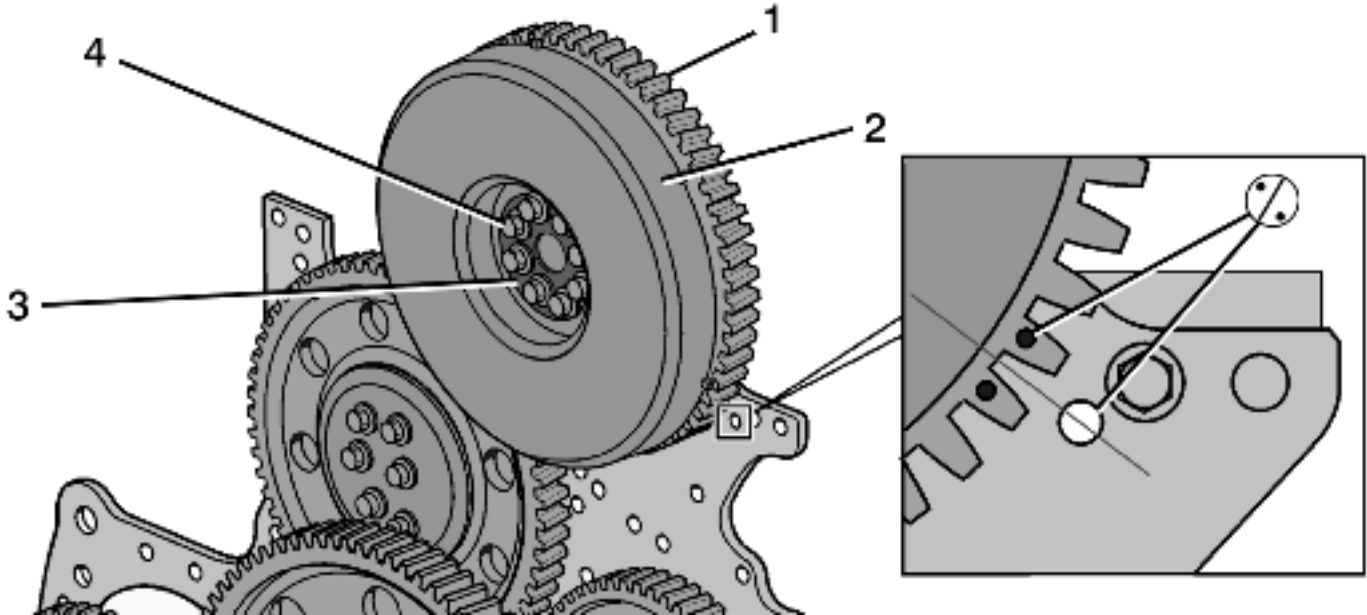
Position the crankshaft with N° 1 cylinder at TDC.
Check that the flywheel TDC mark is in line with pointer **(1)**.



Use tool 1380.



The camshaft top dead centre mark (TDC) must be positioned between the marks (A) on the camshaft front bearing cap.



21 3578A

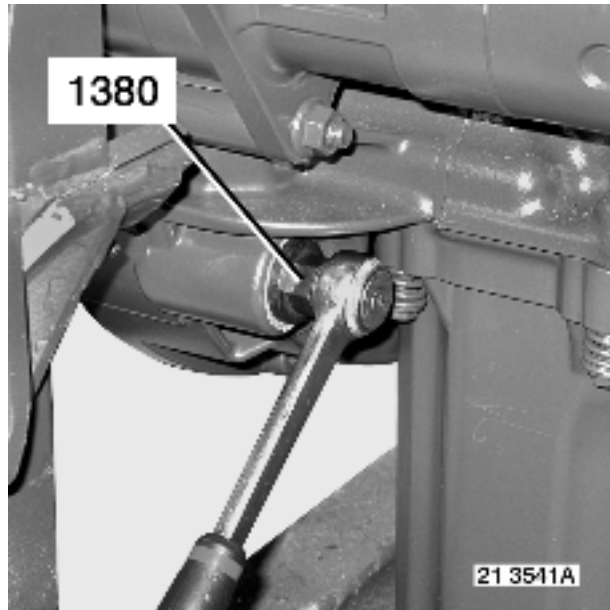
Fit pinion **(1)** ensuring the position of marks.

Fit vibration damper **(2)**.

Fit washer **(3)**.

Fit securing bolts **(4)**.

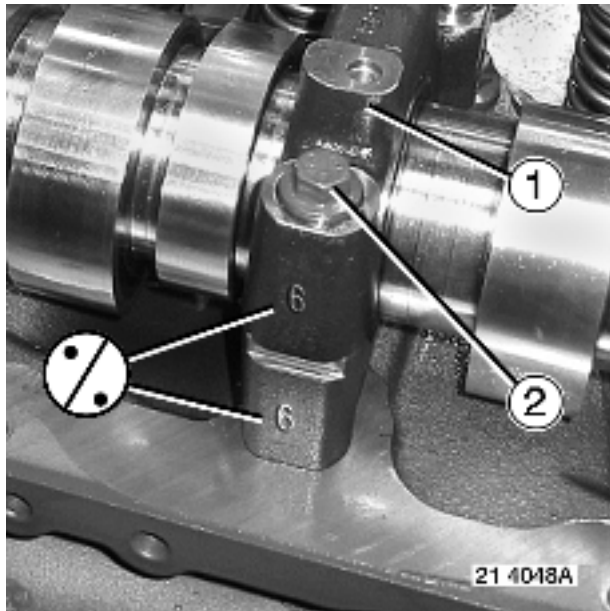
Tighten to torque.



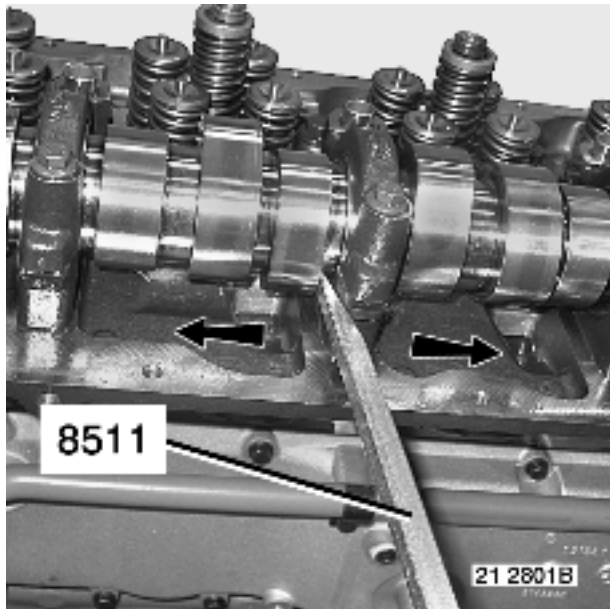
If necessary.

Immobilize crankshaft.

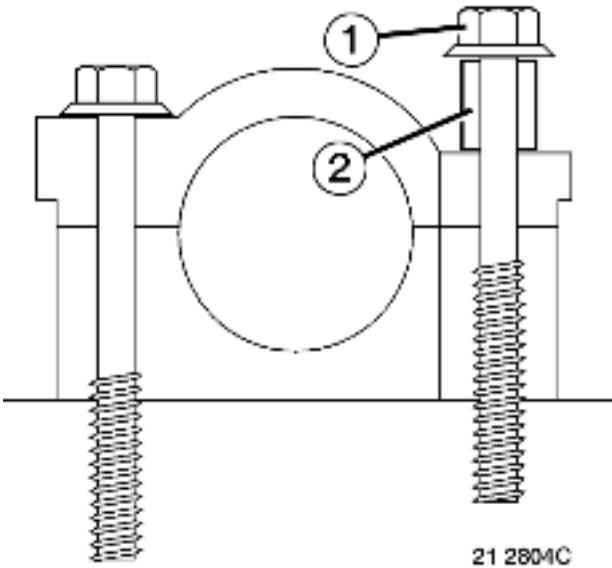
Use tool 1380.



Fit upper half-bearings **(1)** in their original locations.
Ensure the marking.
Fit bolts **(2)**.
Tighten to a torque of **25 Nm**.



Inspect the end play.
Use tool 8511 + 9661.
For values, see "Technical data" chapter.



Check the backlash .


If necessary.
Adjust the camshaft bearing backlash.

Remove bolt (1).
Remove shim (2).
Fit the rocker shaft.

Fit upper timing casing .

Tools




General purpose tools

Illustration	RENAULT TRUCKS part N°	Designation	Manufacturer's reference N°	Manufacturer's code N°	Scale	Qty
	9661	MEASURING TOOL (DIAL GAUGE AND MAGNETIC FOOT)	AQ		1	1

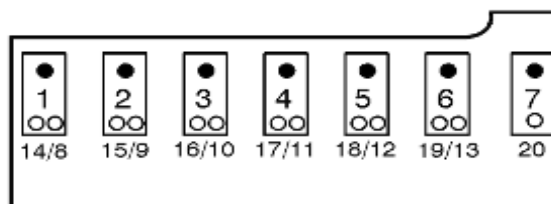
AQ	BROWN & SHARP ROCH
	13-15 avenue Georges de la Tour
	BP 45
	FRANCE
	03 83 76 83 76 - 03 83 74 13 16 -

Specific tools

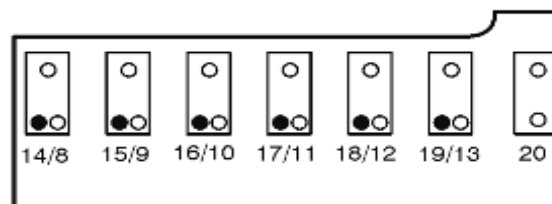
Illustration	RENAULT TRUCKS part N°	Designation	Manufacturer's reference N°	Manufacturer's code N°	Scale	Qty
	5000261380	CONTROL			1	1

						
	740998264	LIFTING TOOL (CAMSHAFT)			2	1
	740998511	CONTROL LEVER			1	1

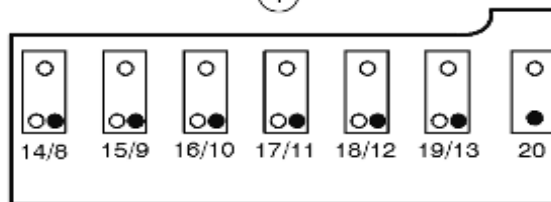
Rocker shaft and camshaft bearing caps, tightening torques



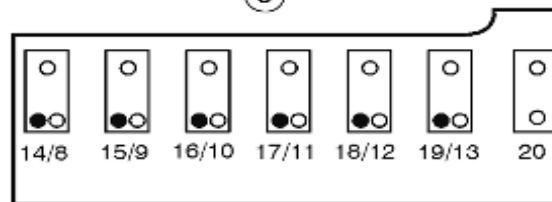
①



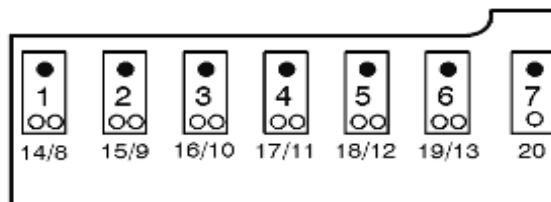
⑥



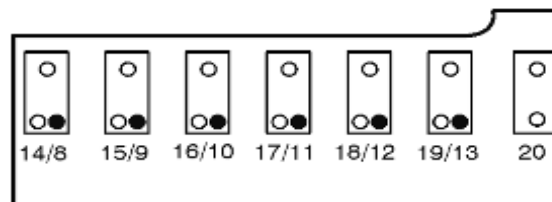
②



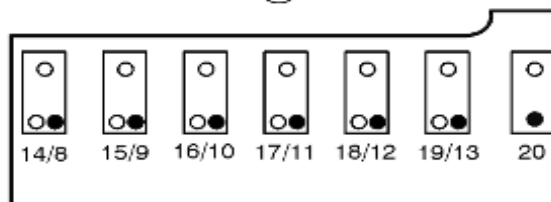
⑦



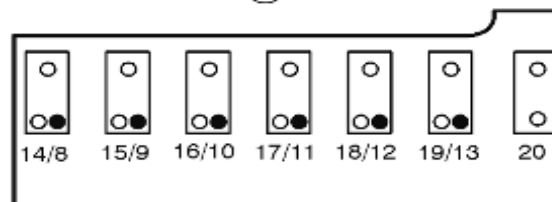
③



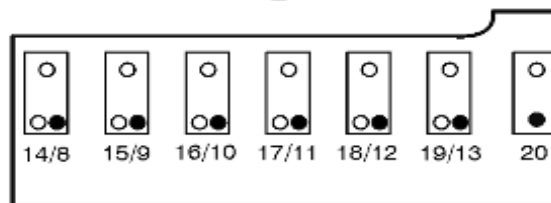
⑧



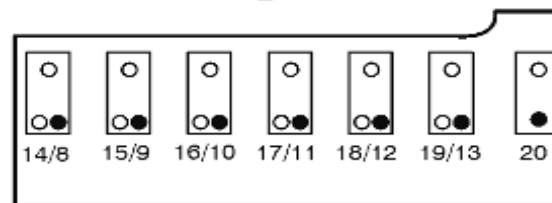
④



⑨



⑤



⑩

173846

Camshaft

Stage 1: bolts (1 > 7)

40±3 Nm

Stage 2: bolts (8 › 13 - 20)	60±5 Nm
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For the 2th stage, tighten bolts gradually in the following order: 11 - 10 - 12 - 9 - 13 - 8 - 20, so that the rocker shaft can be lowered without being damaged.

Stage 3: bolts (1 › 7)	90±5 °
Stage 4: bolts (8 › 13 - 20)	Loosen the bolts

Rocker shaft

Stage 5: bolts (8 › 13 - 20)	60±5 Nm
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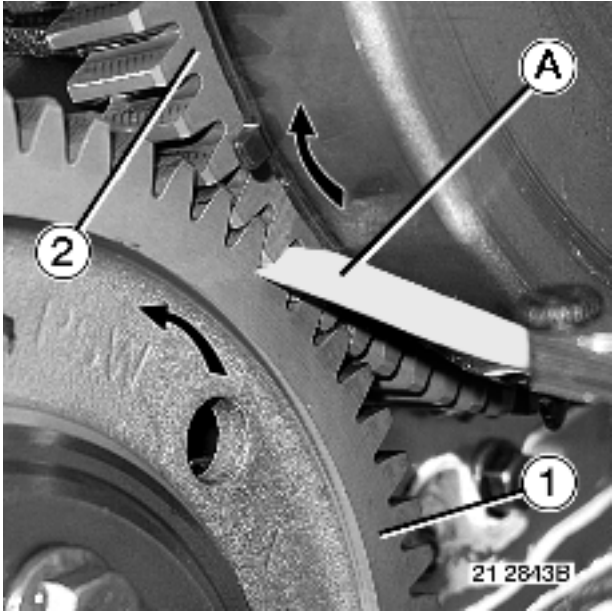
For the 5th stage, tighten bolts gradually in the following order: 11 - 10 - 12 - 9 - 13 - 8 - 20, so that the rocker shaft can be lowered without being damaged.

Stage 6: bolts (14 › 19)	40±3 Nm
Stage 7: bolts (14 › 19)	120±5 °
Stage 8: bolts (8 › 13)	Loosen the bolts
Stage 9: bolts (8 › 13)	40±3 Nm
Stage 10: bolts (8 › 13 - 20)	120±5 °

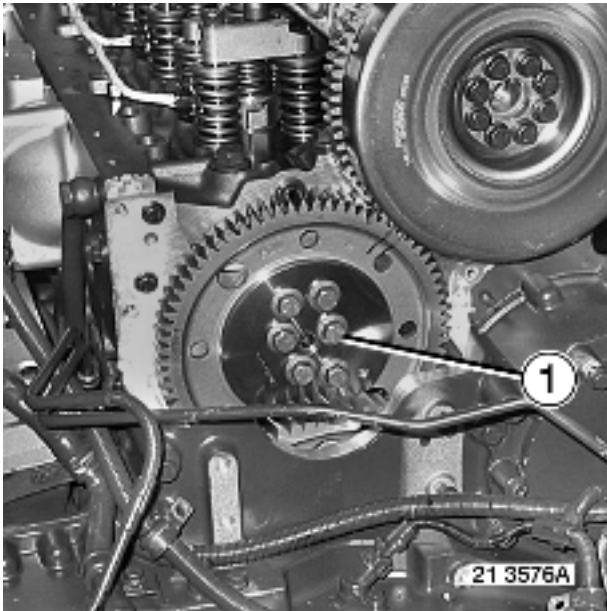
Camshaft, adjustment of tooth backlash



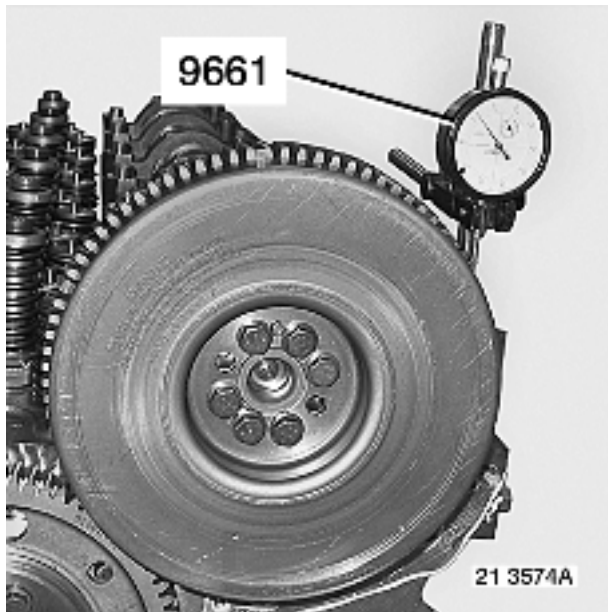
Loosen bolts (1).



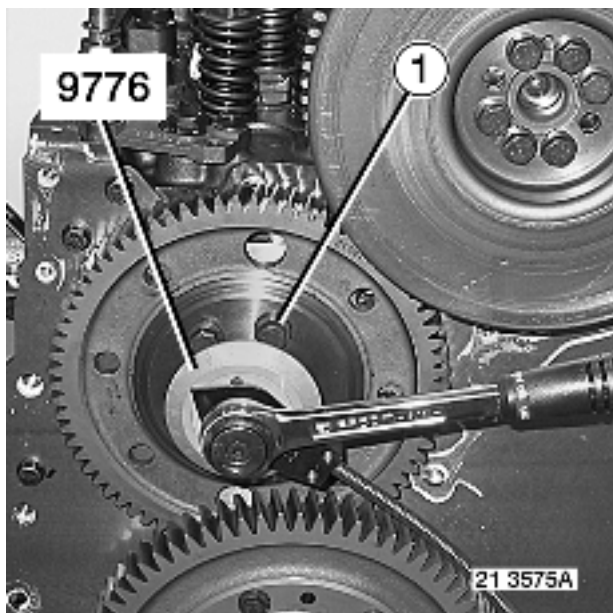
Slide a feeler gauge (A) with a thickness of 0.1 mm between the teeth contact faces of pinions (1 - 2).



Tighten bolts (1) to a torque of 10 Nm.




Check the backlash.
Use tool 9661.
For values, see "Technical data" chapter.



If the backlash is correct, tighten bolts **(1)** to torque (see page(s)).
Use tool 9776.


Tools

General purpose tools

Illustration	RENAULT TRUCKS part N°	Designation	Manufacturer's reference N°	Manufacturer's code N°	Scale	Qty
	9661	MEASURING TOOL (DIAL GAUGE AND MAGNETIC FOOT)	AQ		2	1

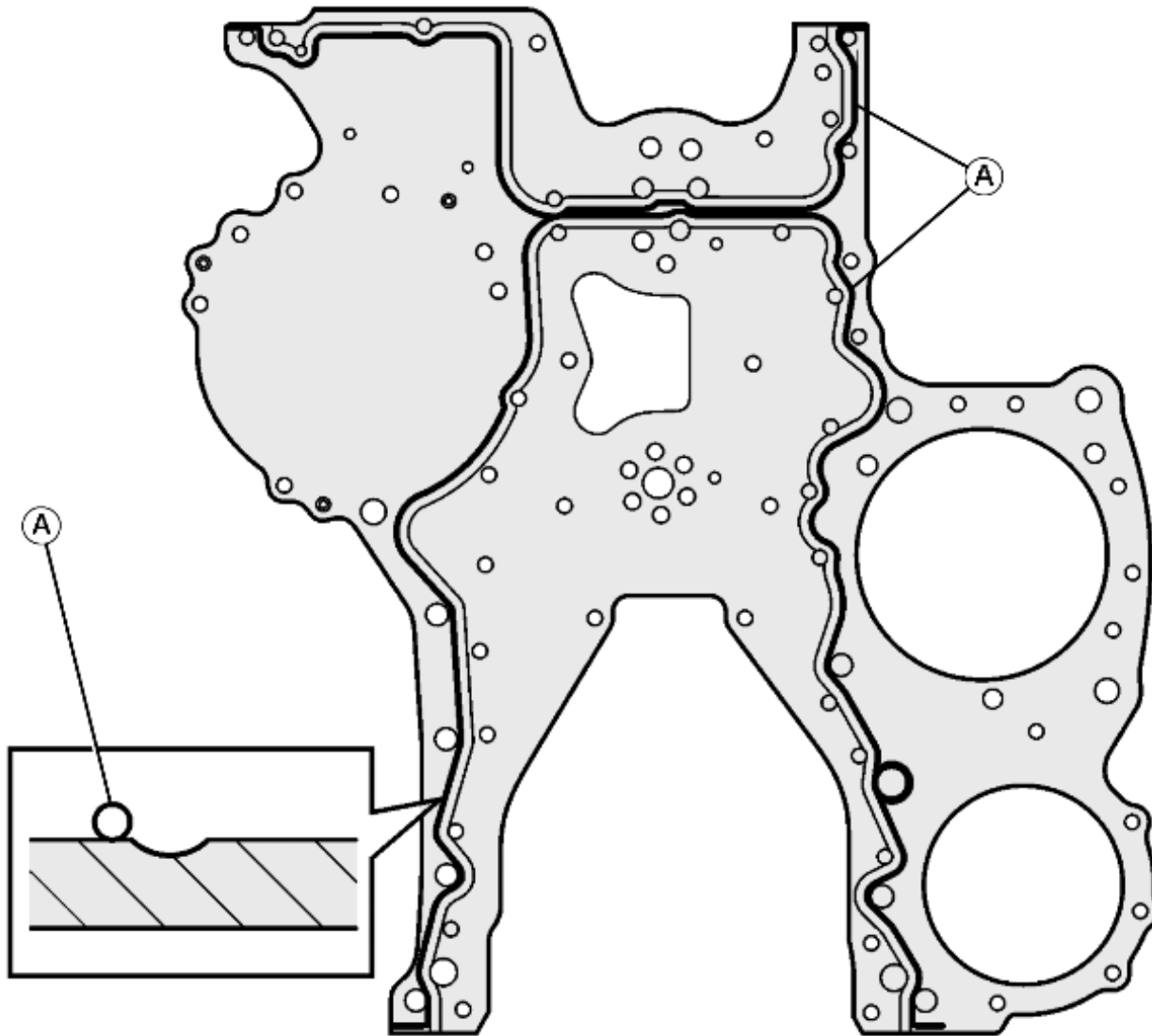
AQ	BROWN & SHARP ROCH
	13-15 avenue Georges de la Tour
	BP 45
	FRANCE
	03 83 76 83 76 - 03 83 74 13 16 -

Specific tools

Illustration	RENAULT TRUCKS part N°	Designation	Manufacturer's reference N°	Manufacturer's code N°	Scale	Qty
	5000269776	INDICATOR DISC			2	1

Timing system, tightening torques

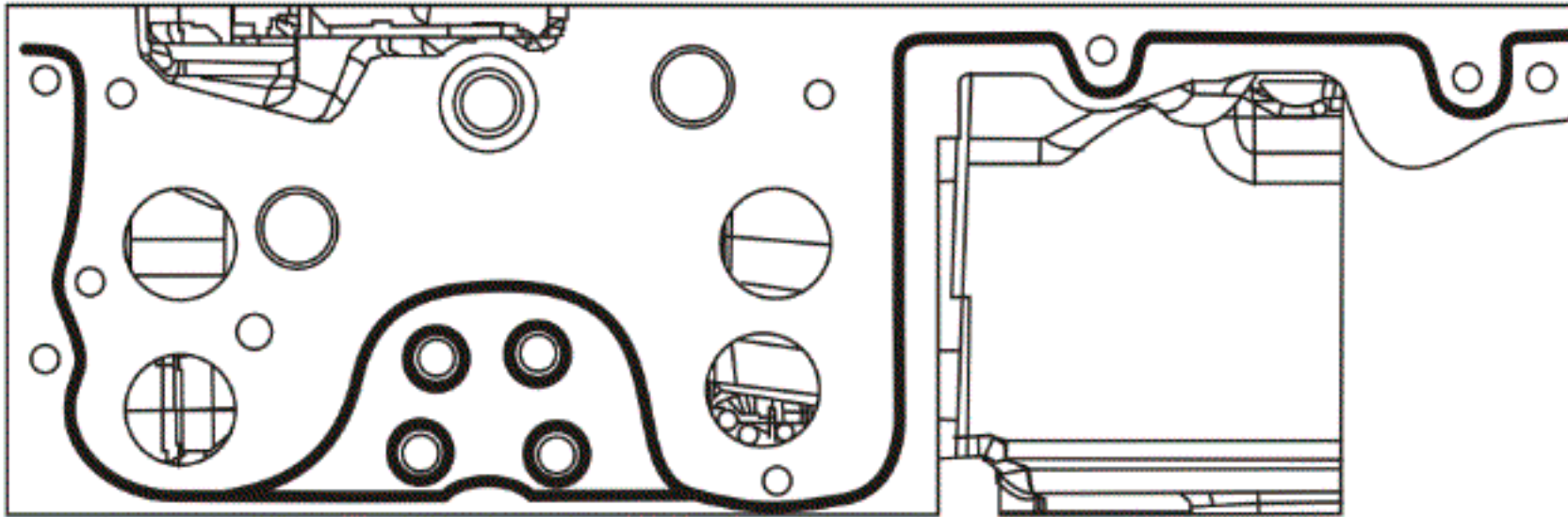
Assembly type A



21 3861A

Apply a bead of silicone **dia. 2 mm (A)** as shown in the drawing. Perform assembly within 20 minutes of application of the silicone.
Use a silicone sealant "

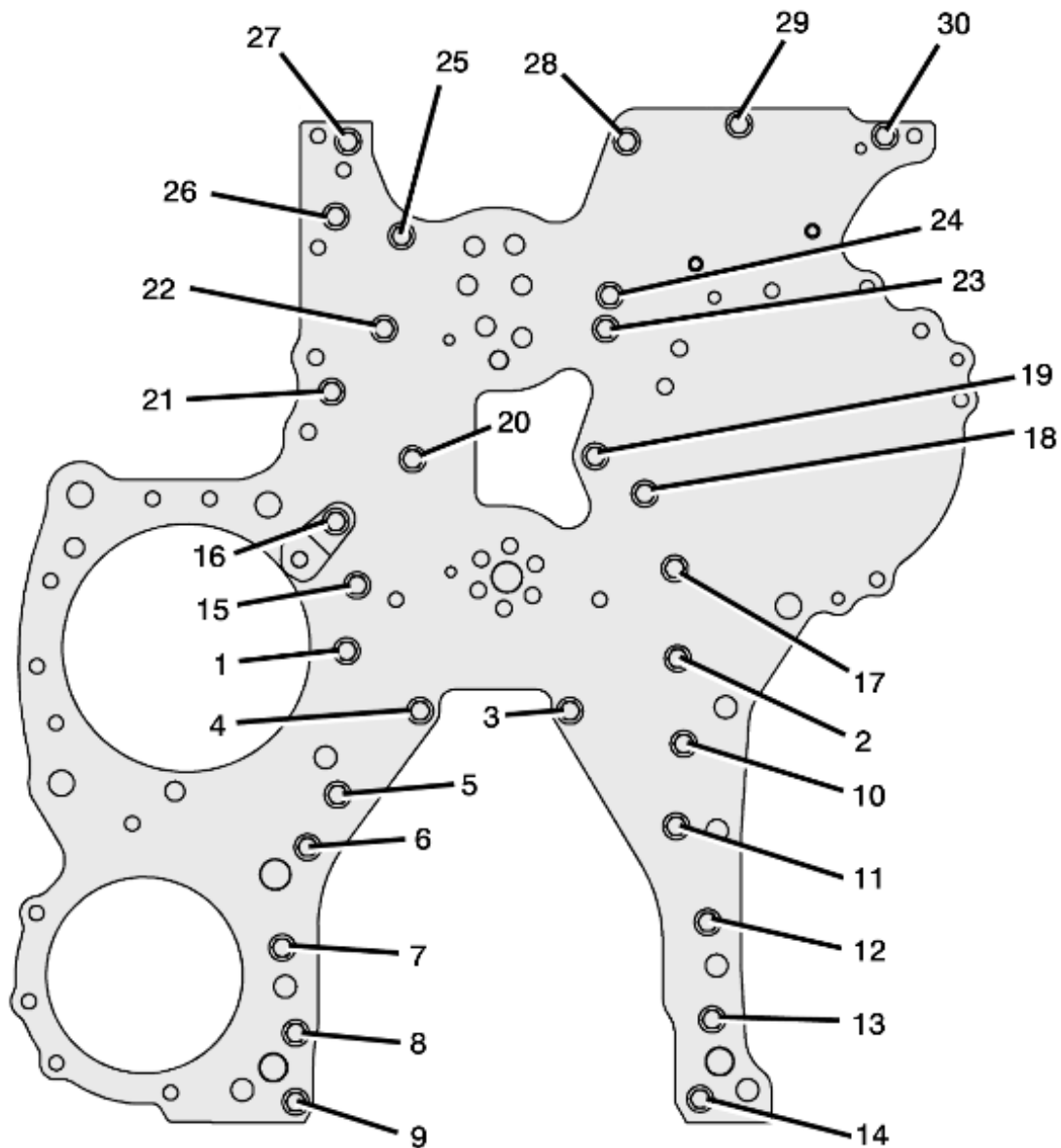
ADHESIF SILICONE 7091



224377

Apply a bead of silicone **dia. 2 mm (A)** as shown in the drawing. Perform assembly within 20 minutes of application of the silicone.
Use a silicone sealant "

ADHESIF SILICONE 7091



21 3511A

The item numbers indicate the tightening sequence.

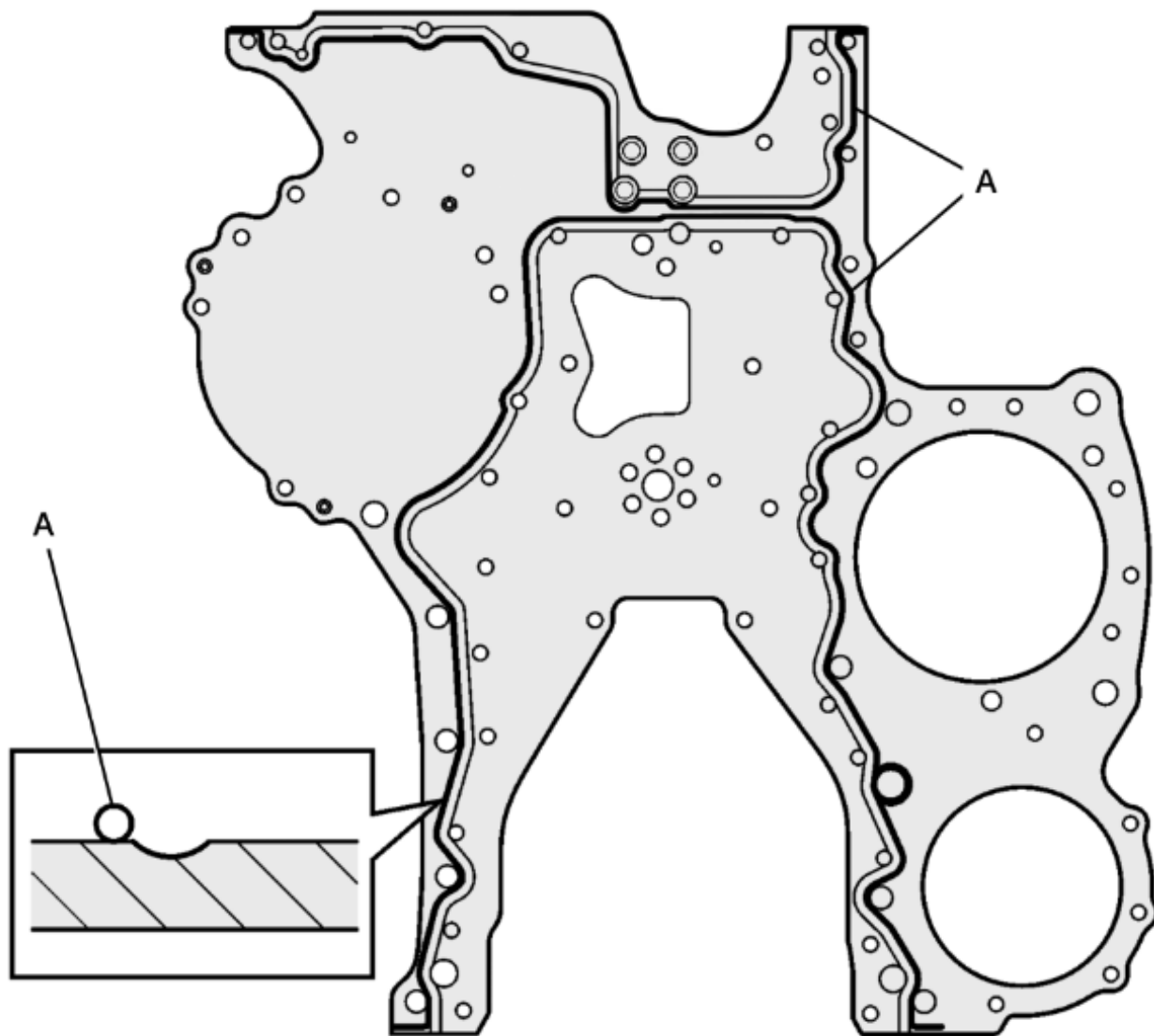
Timing plate securing bolts

28±4 Nm



The bolts must not be re-used. Use new bolts.

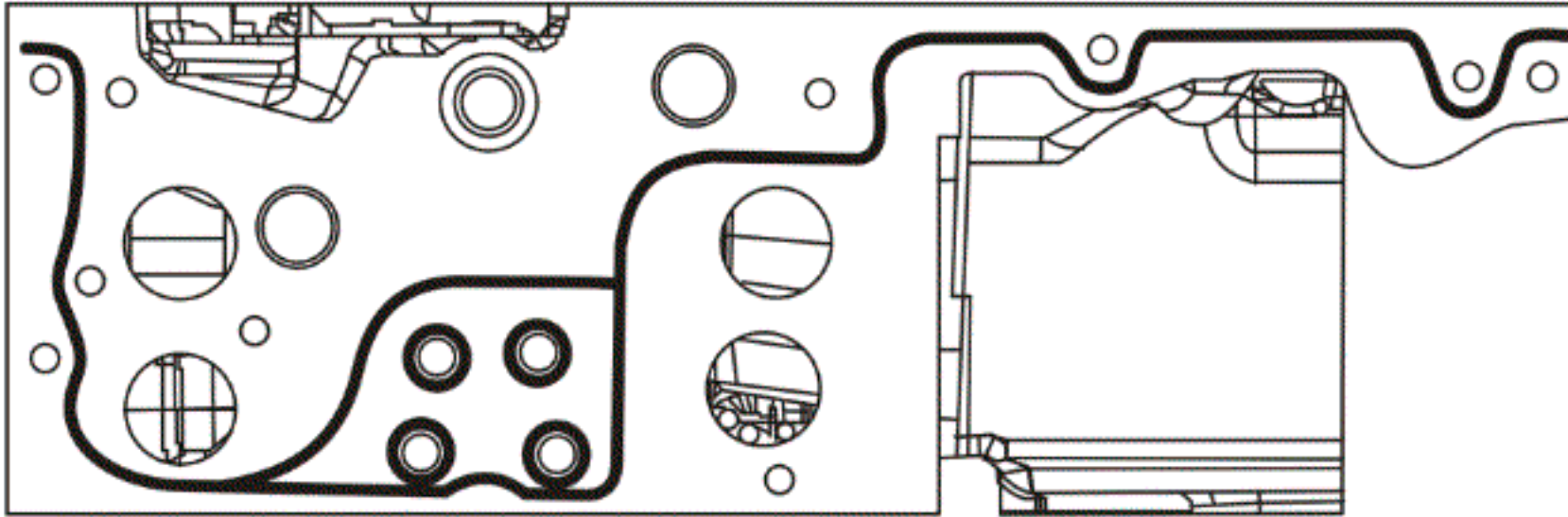
Assembly type B



224389

Apply a bead of silicone **dia. 2 mm (A)** as shown in the drawing. Perform assembly within 20 minutes of application of the silicone.
Use a silicone sealant "

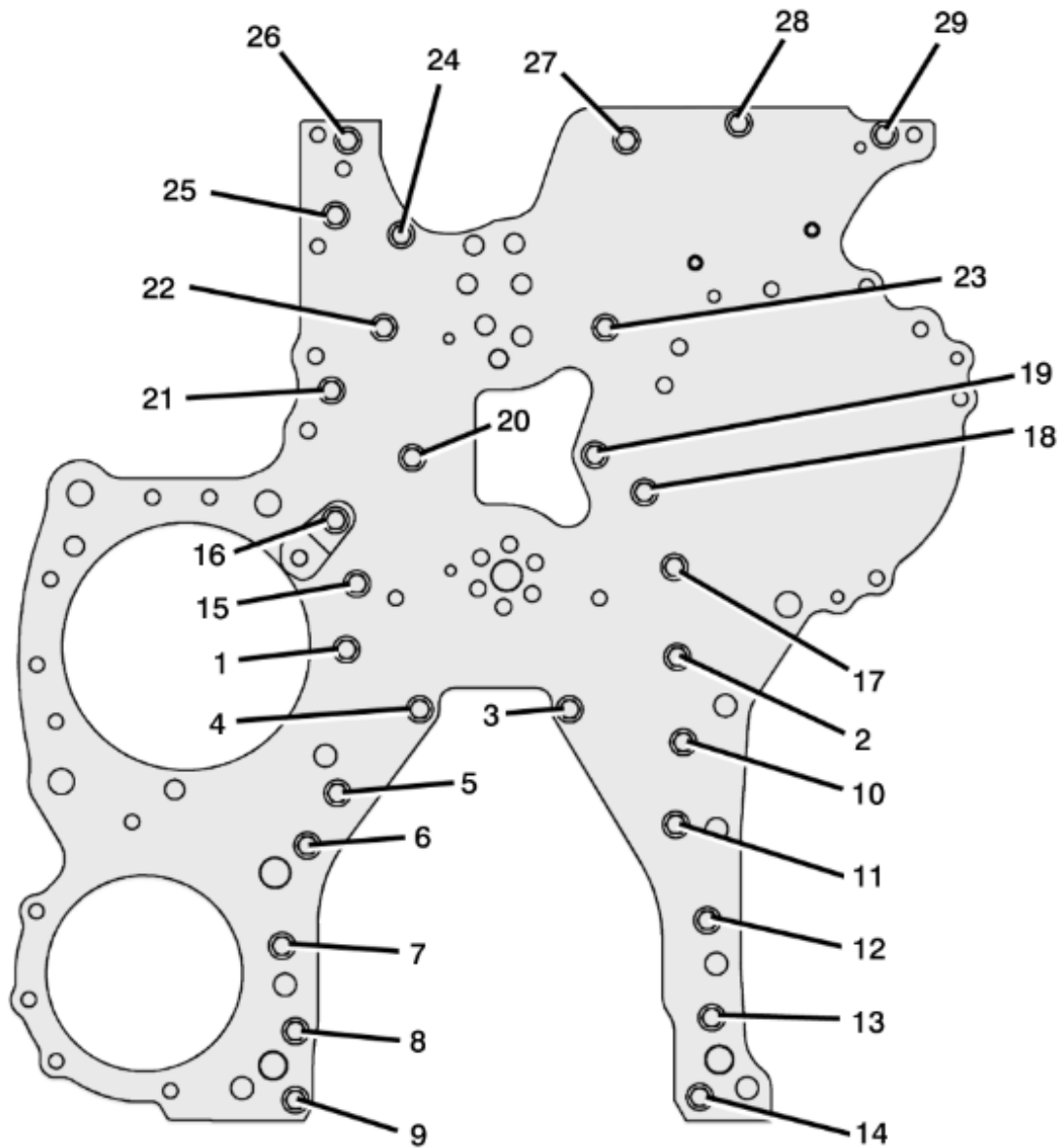
ADHESIF SILICONE 7091



224376

Apply a bead of silicone **dia. 2 mm (A)** as shown in the drawing. Perform assembly within 20 minutes of application of the silicone.
Use a silicone sealant "

ADHESIF SILICONE 7091



224388

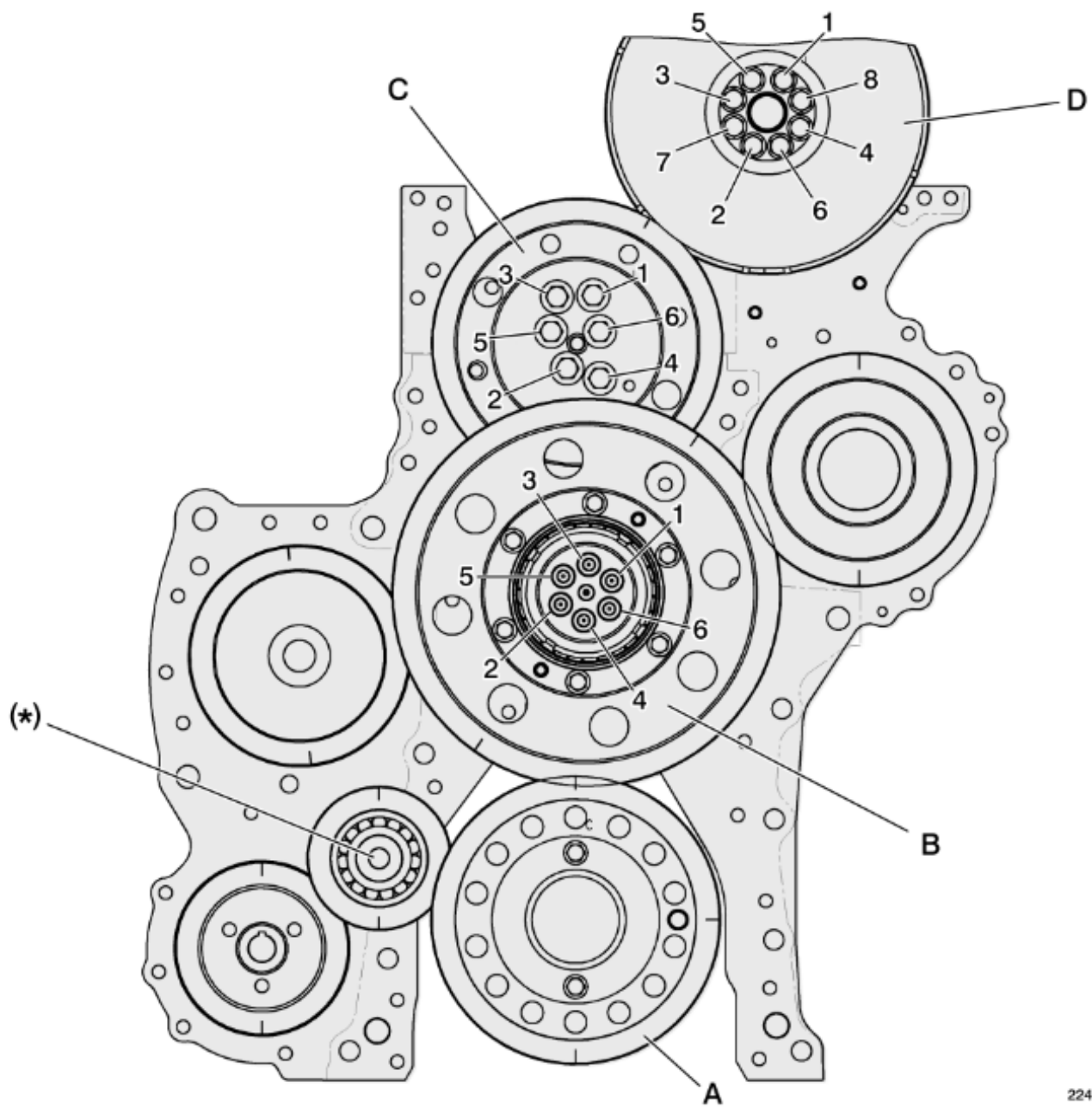
The item numbers indicate the tightening sequence.

Timing plate securing bolts

28±4 Nm



The bolts must not be re-used. Use new bolts.



224708

The item numbers indicate the tightening sequence.

Crankshaft pinion securing bolt (A)	24±4 Nm
Idler gear hub securing bolt (B)	25±3 Nm + 110±5 °

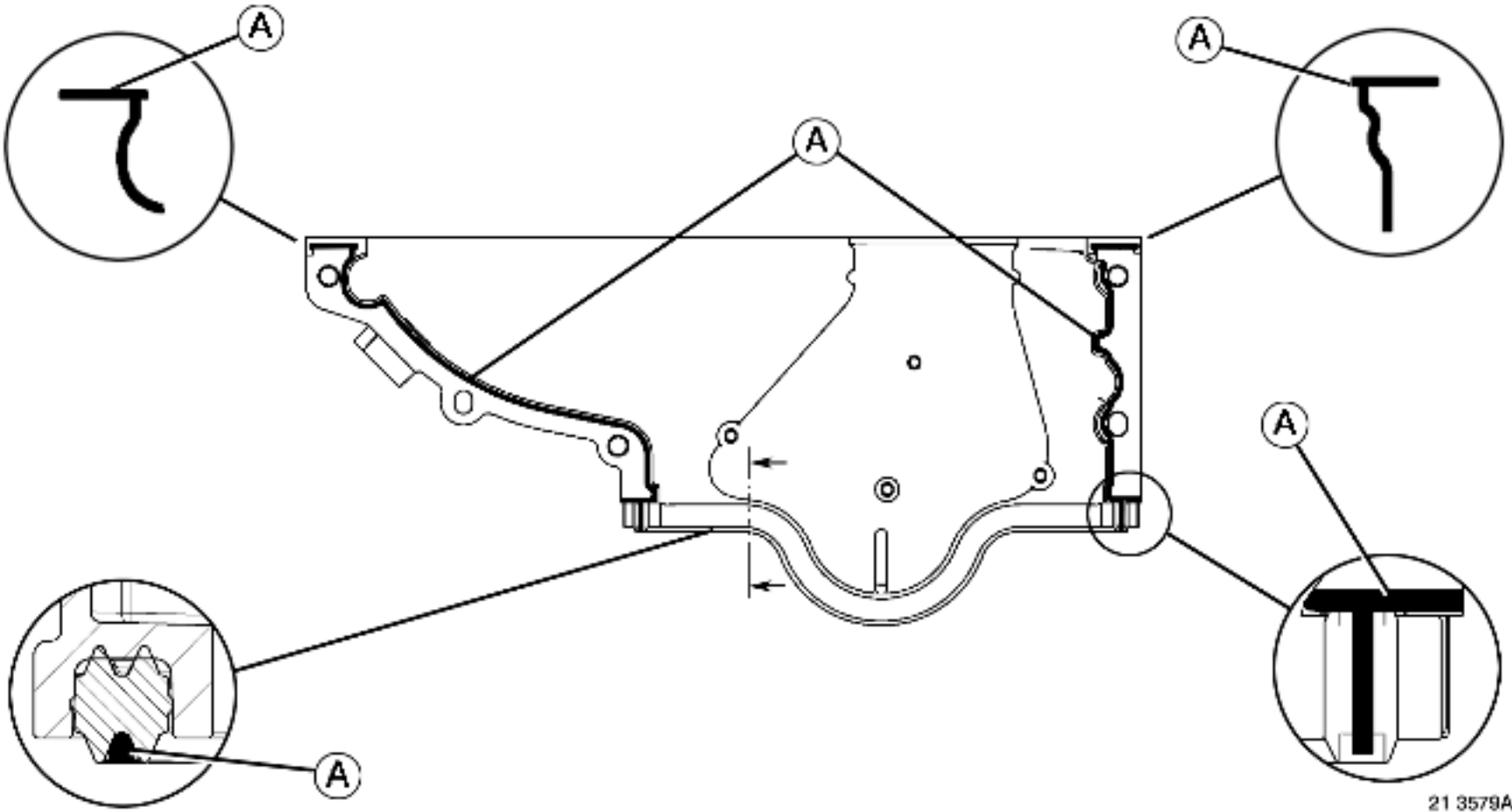


The bolts must not be re-used. Use new bolts.

Adjustable idler gear hub securing bolt (C)	35±4 Nm + 120±5 °
Camshaft pinion securing bolt (D)	45±5 Nm + 90±5 °

(*)Depending on the assembly.

Idler pinion shaft securing bolts	140±10 Nm
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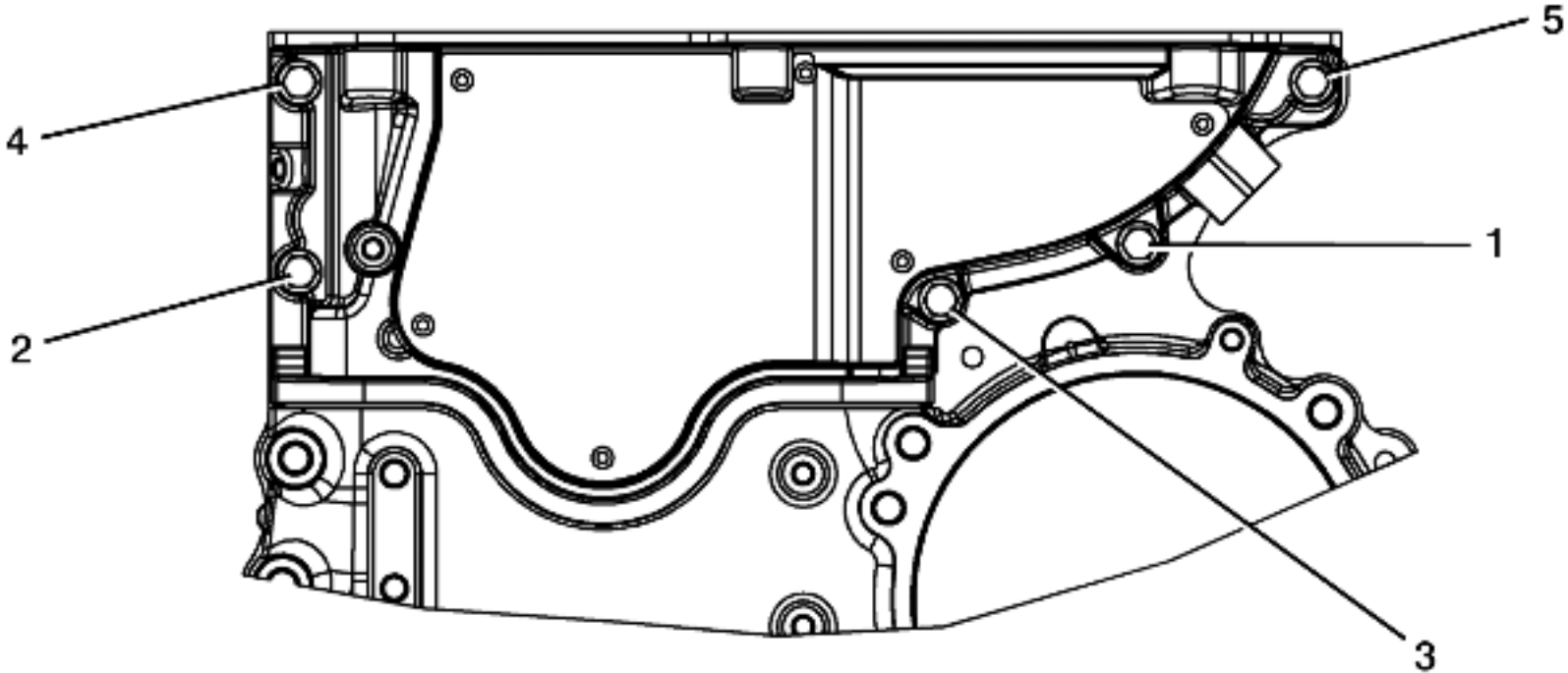


21 3579A

Apply a bead of silicone **dia. 2 mm (A)** as shown in the drawing. Proceed with assembly within 20 minutes following application of the silicone.

Use a sealing product

ADHESIF SILICONE 7091



21 3580A

The item numbers indicate the tightening sequence.

Timing case to cylinder head securing bolts	24±4 Nm
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