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SUBSCRIPTION

RPO No: 7511 →

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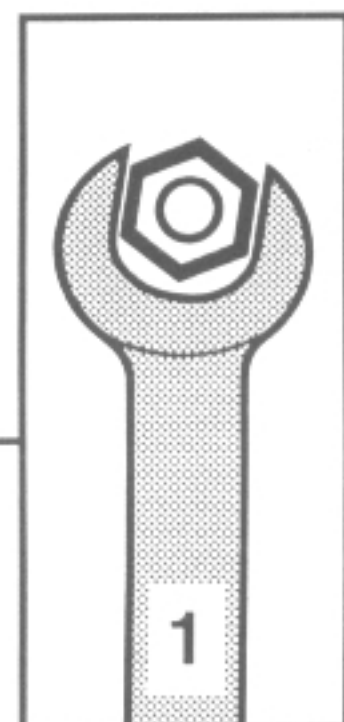
No XM 112-00/3

PETROL ENGINE

ES9J4 (2946 cm³. V6)

● CYLINDER HEAD

MAN 108931



GB

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"The technical information appearing in this brochure is subject to updating as the characteristics of each model in the range evolve. Motor vehicle repairers are invited to contact the CITROËN network periodically for further information and to obtain any possible updates".



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CONTENTS

CYLINDER HEAD

| | |
|--|----|
| REMOVING – REFITTING : CYLINDER HEAD | 1 |
| 1 – Recommended tools | 1 |
| 2 – Preliminary operations | 2 |
| 3 – Removing | – |
| 4 – Refitting | 4 |
| | |
| REMOVING – REFITTING : THE CAMSHAFTS | 8 |
| 1 – Recommended tools | 8 |
| 2 – Removing | 9 |
| 3 – Refitting | 10 |

REMOVING – REFITTING : CYLINDER HEAD

1 – RECOMMENDED TOOLS

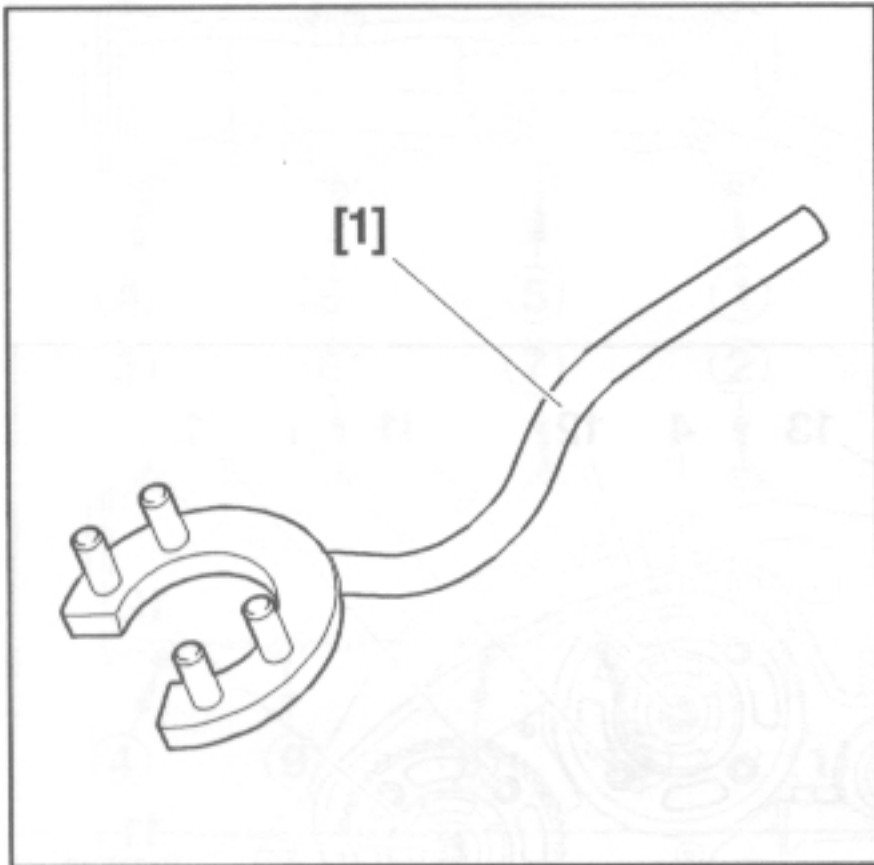


Fig : E5AP03NC
[1] camshaft immobilising key (-).0187 F.

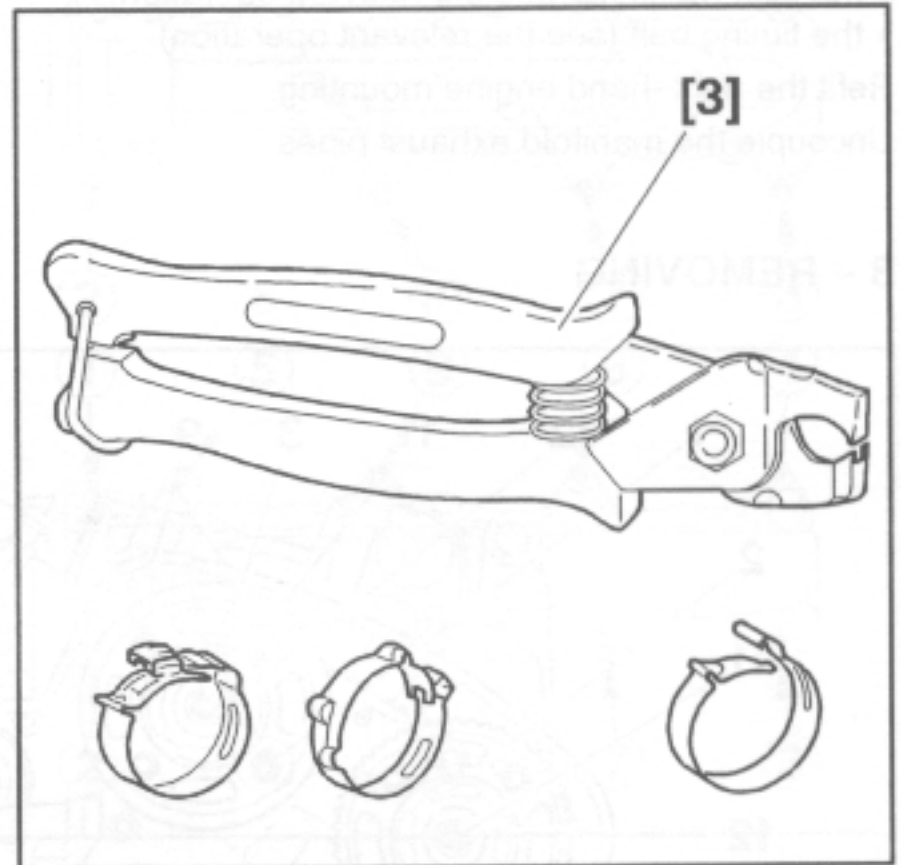


Fig : E5-P12HC
[3] pliers to remove "clic" clips 4145-T.

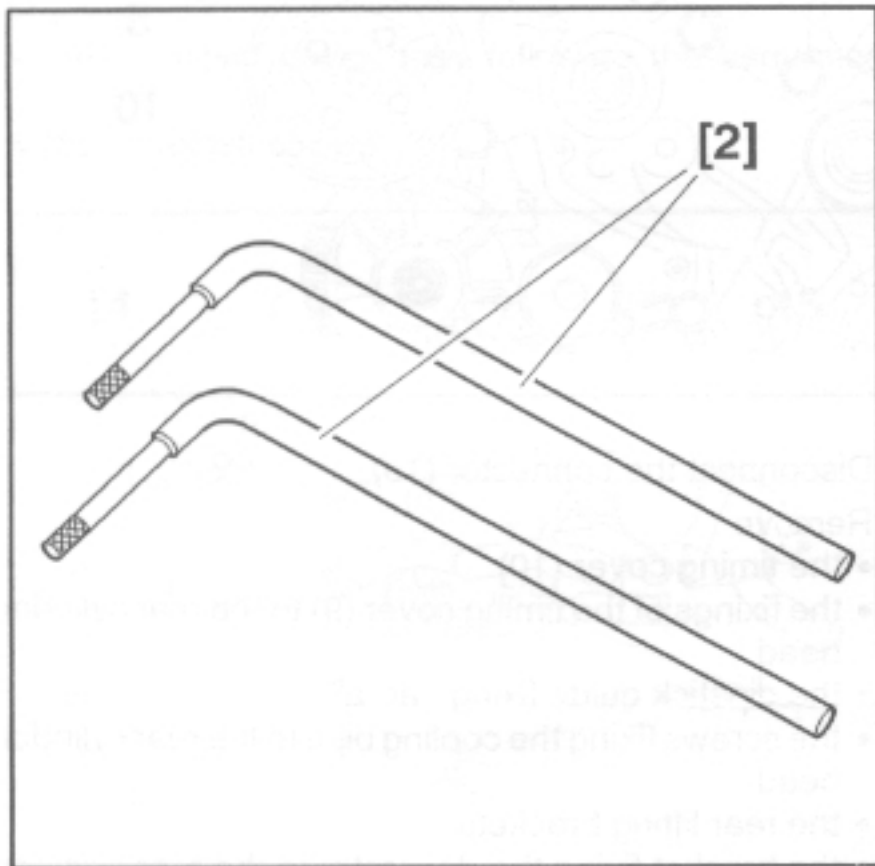


Fig : E5AP051C
[2] cylinder head releasing levers 149-T.

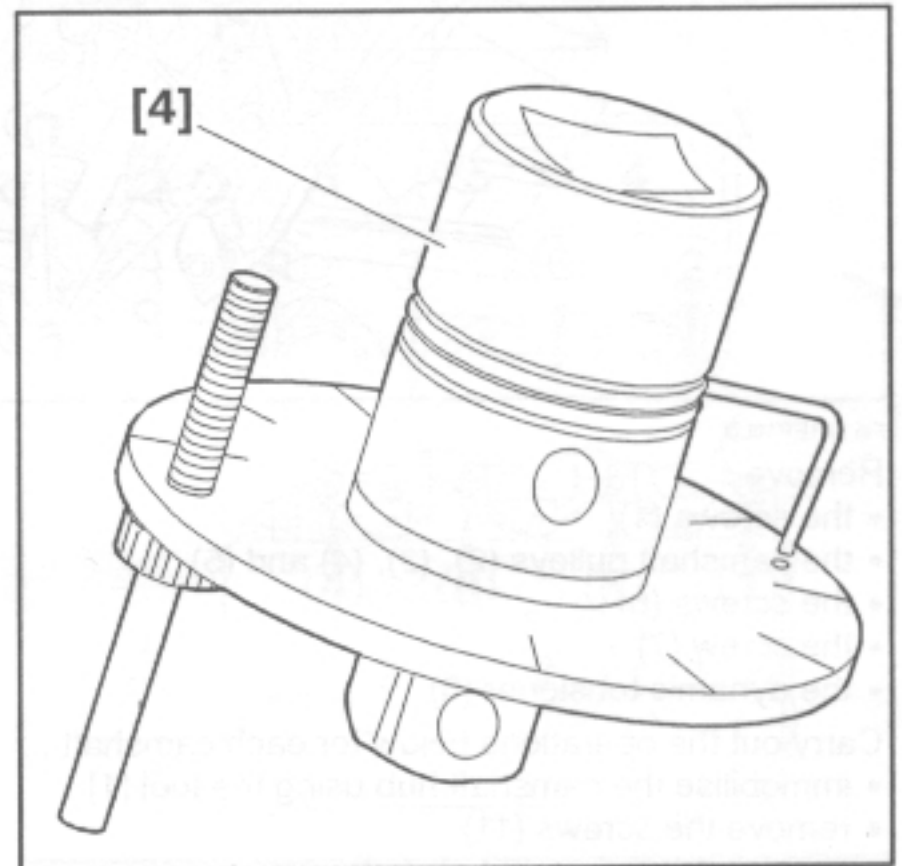


Fig : E5AP052C
[4] angle sector to tighten the cylinder head 4069-T.

2 – PRELIMINARY OPERATIONS

Drain the cooling system (see the relevant operation).

Remove :

- the engine cover
- the inlet manifold (see the relevant operation)
- the timing belt (see the relevant operation)

Refit the right-hand engine mounting.

Uncouple the manifold exhaust pipes.

3 – REMOVING

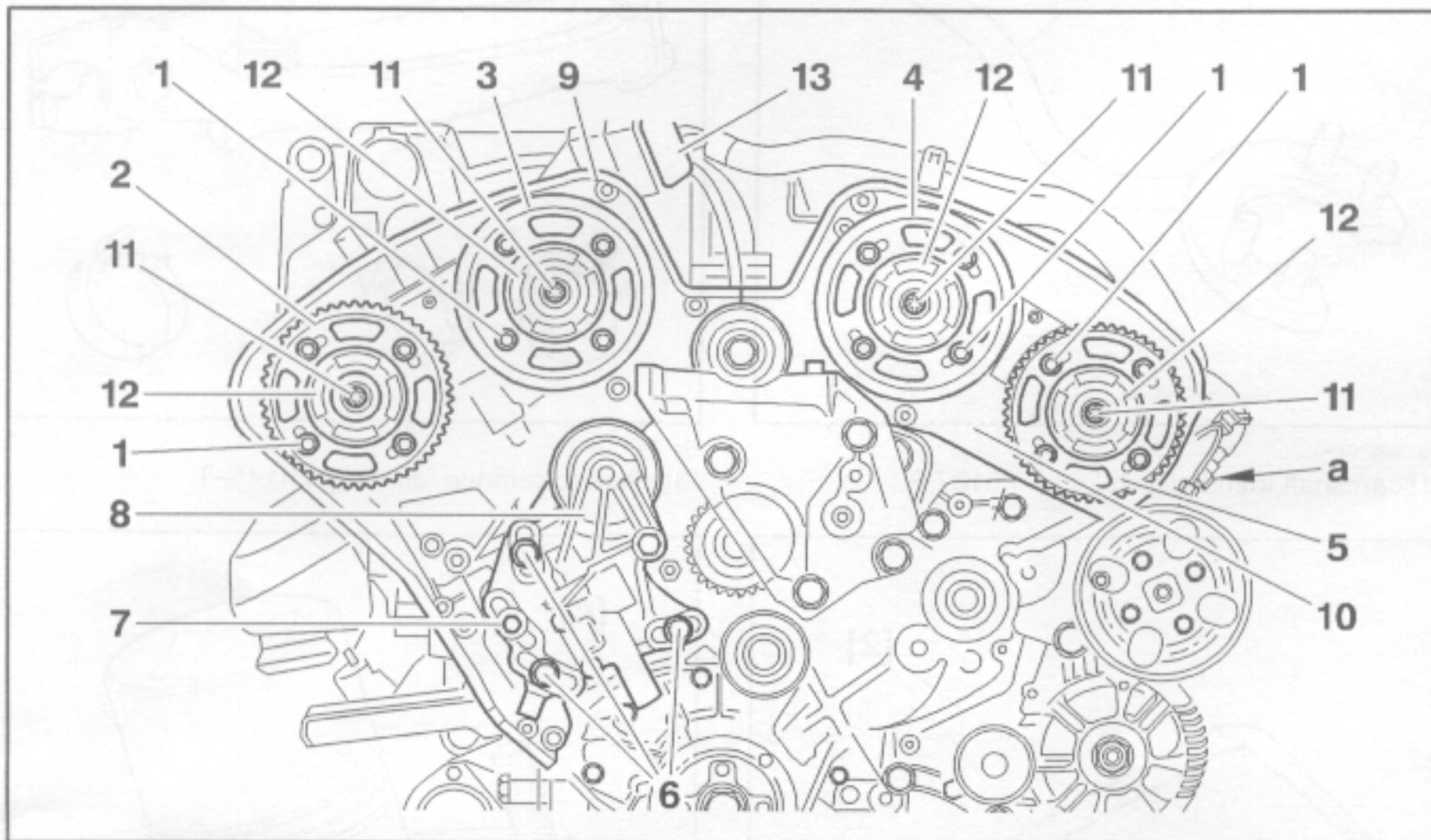


Fig : B1EP10LD

Remove :

- the screws (1)
- the camshaft pulleys (2), (3), (4) and (5)
- the screws (6)
- the screw (7)
- the dynamic tensioner (8)

Carry out the operations below for each camshaft :

- immobilise the camshaft hub using the tool [1]
- remove the screws (11)
- remove the camshaft hub (12)

WARNING : Due to the importance of the tightening torque of the camshaft hubs fixing screws, the spanner must be held straight during removal.

Disconnect the connector (13).

Remove :

- the timing cover (10)
- the fixings of the timing cover (9) to the rear cylinder head
- the dipstick guide fixing ; at "a"
- the screws fixing the cooling pipe to the rear cylinder head
- the rear lifting brackets
- the bracket fixing the deaerator to the rear cylinder head

Uncouple :

- the earths, harnesses and connectors connecting to the cylinder heads
- the high pressure pump pipes ; using a pipe spanner and the tool [3]
- the vent pipes from the camshaft covers

CYLINDER HEAD

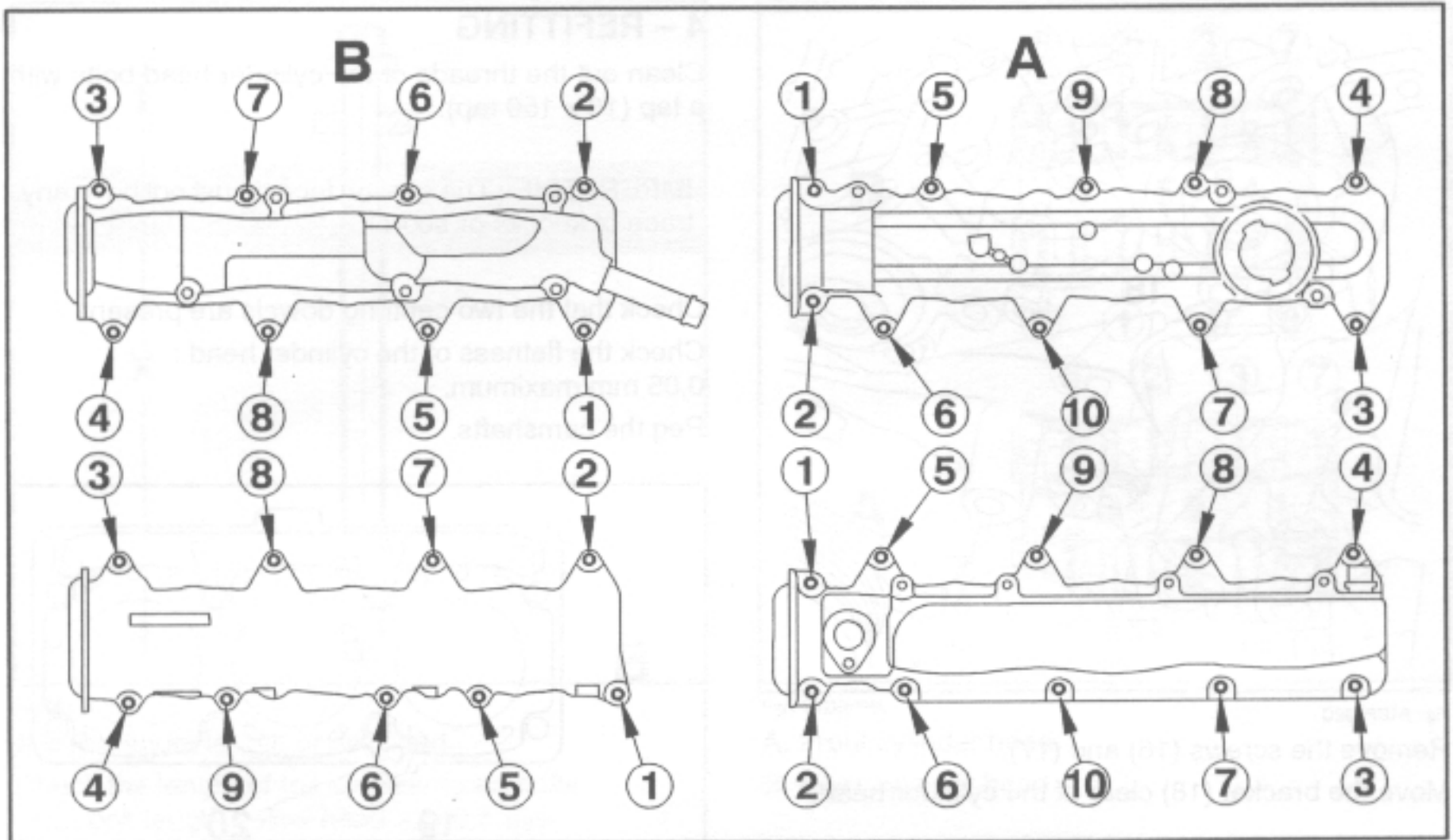


Fig: B1DP08YD

A. Front cylinder head.

B. Rear cylinder head.

Remove :

- the camshaft cover bolts following the sequence shown
- the camshaft covers

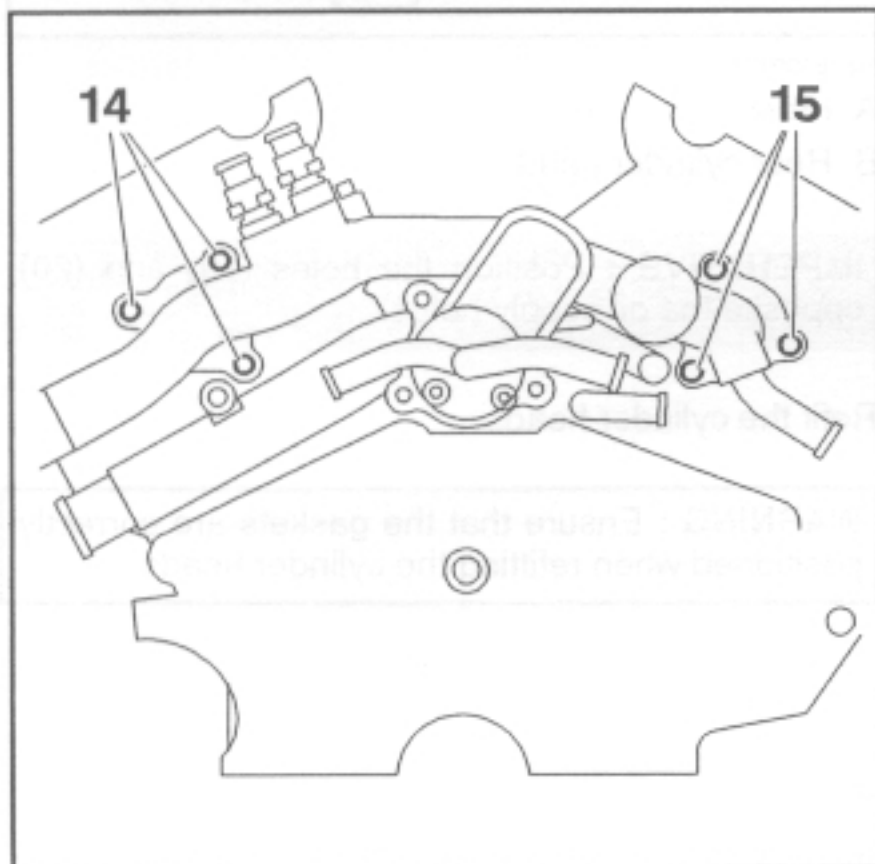


Fig: B1GP05YC

Remove the screws (14) and (15).

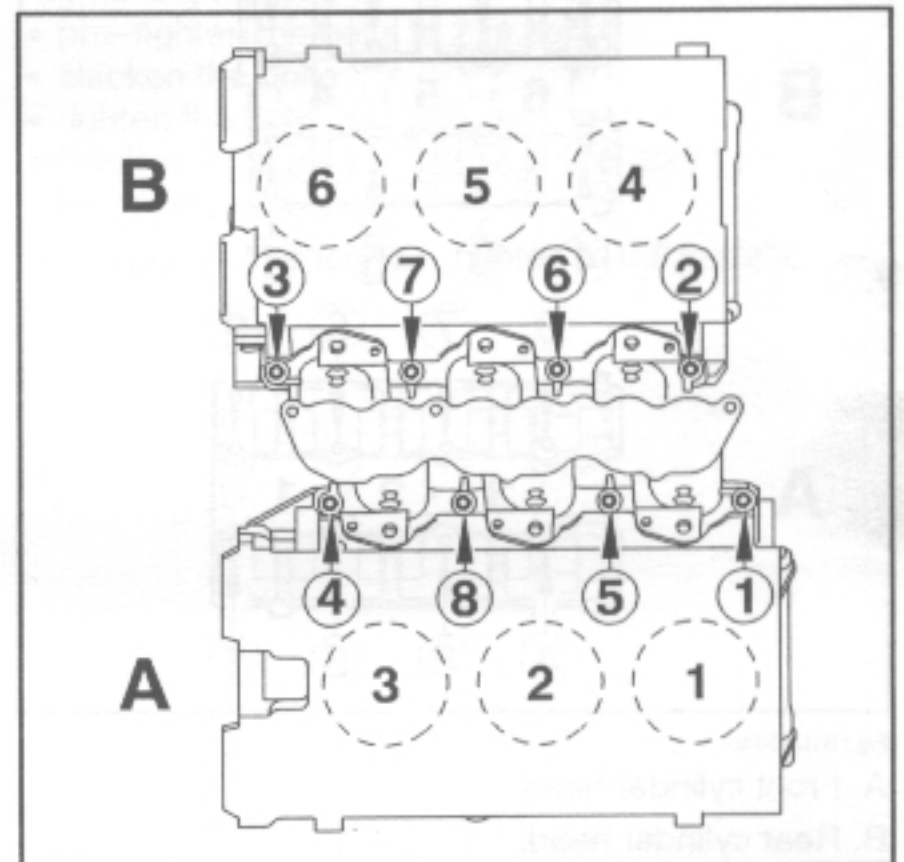


Fig: B1DP092C

A. Front cylinder head.

B. Rear cylinder head.

Following the sequence shown, slacken the nuts and bolts securing the air manifold and fuel rail assembly. Remove the air manifold/fuel rail assembly.

NOTE : Mark the route of the vent pipe.



Fig : B1DP132C
Remove the screws (16) and (17).
Move the bracket (18) clear of the cylinder head.

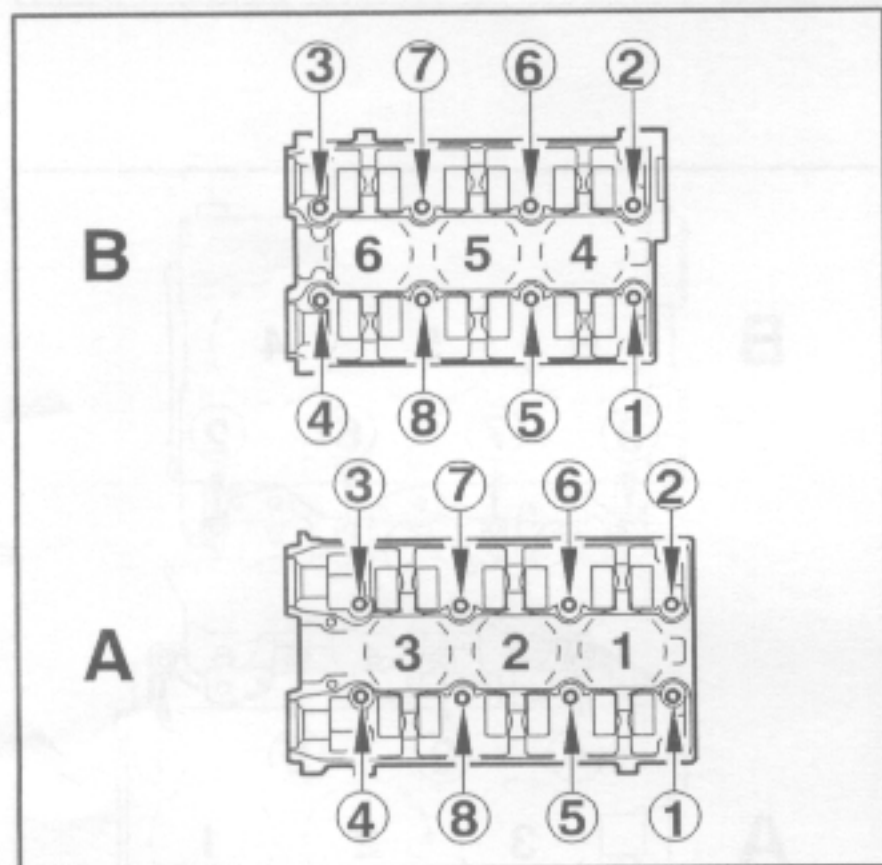


Fig : B1DP094C
A. Front cylinder head.
B. Rear cylinder head.
Slacken the cylinder head bolts following the sequence shown.
Release the cylinder heads from the cylinder block using the levers [2].
Remove the cylinder heads.

WARNING : Protect the various sealing faces.

4 – REFITTING

Clean out the threads of the cylinder head bolts with a tap (10 x 150 tap).

IMPERATIVE : The sealing faces must not have any trace of knocks or scores.

Check that the two centring dowels are present.
Check the flatness of the cylinder head :
0,05 mm maximum.
Peg the camshafts.

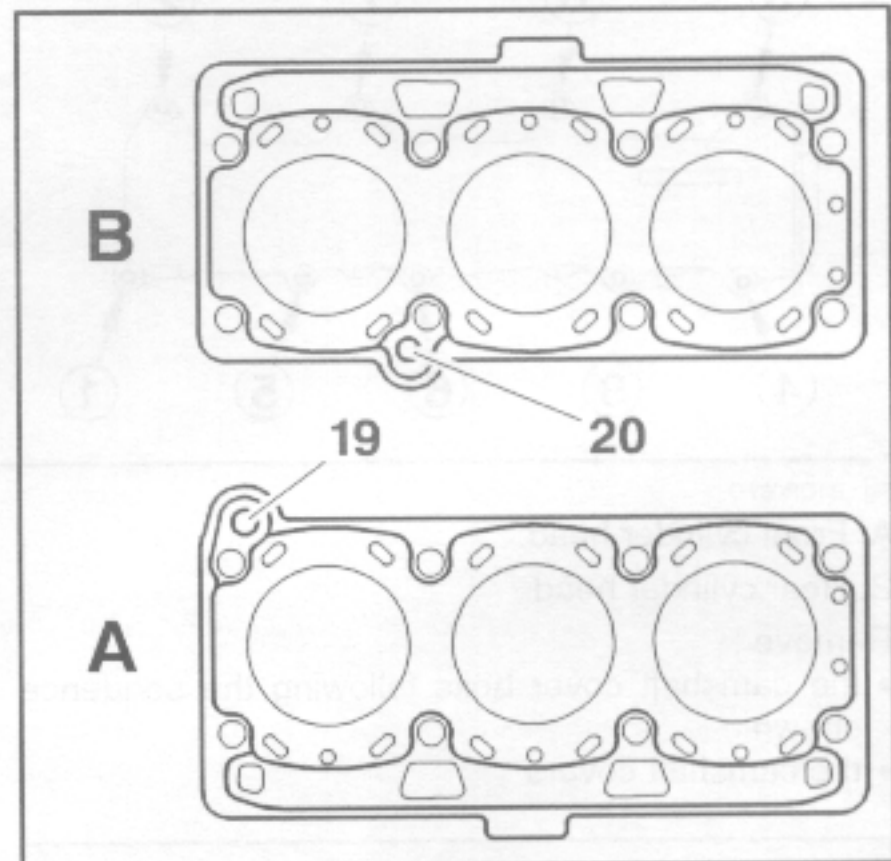


Fig : B1DP133C
A. Front cylinder head.
B. Rear cylinder head.

IMPERATIVE : Position the holes (19) and (20) opposite the oil supply holes.

Refit the cylinder heads.

WARNING : Ensure that the gaskets are correctly positioned when refitting the cylinder heads.

CYLINDER HEAD

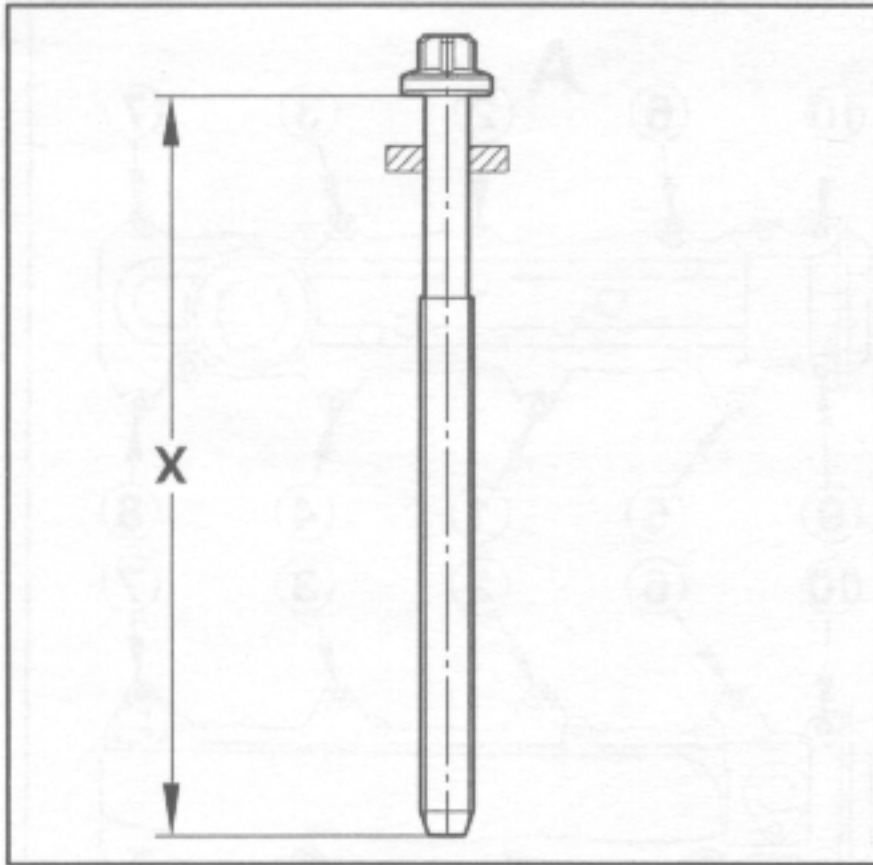


Fig : B1DP134C

X = maximum length under head.

Check the length of the cylinder head bolts :
max. bolt length below head = 149,5 mm.

Clean the cylinder head bolts.

Coat the bolt threads and contact surfaces under the bolt heads with MOLYKOTE G.RAPIDE PLUS G10.

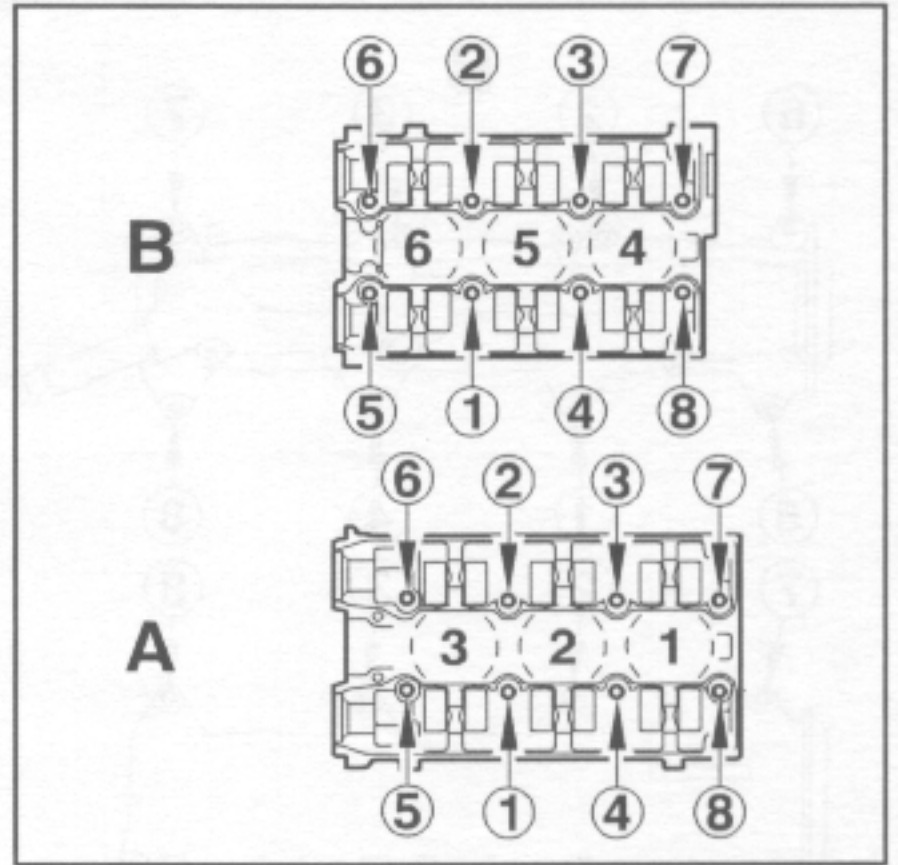


Fig : B1DP096C

A. Front cylinder head.

B. Rear cylinder head.

WARNING : Proceed bolt by bolt in the order shown.

Tightening method :

- pre-tighten the bolts to 2 m.daN
- slacken the bolts
- tighten the bolts to 1,5 m.daN
- finish with an angular tightening of 225 ° ;
by means of tool [4]

Refit bolts (14) and (15) ; tighten to 0,8 m.daN.

CYLINDER HEAD

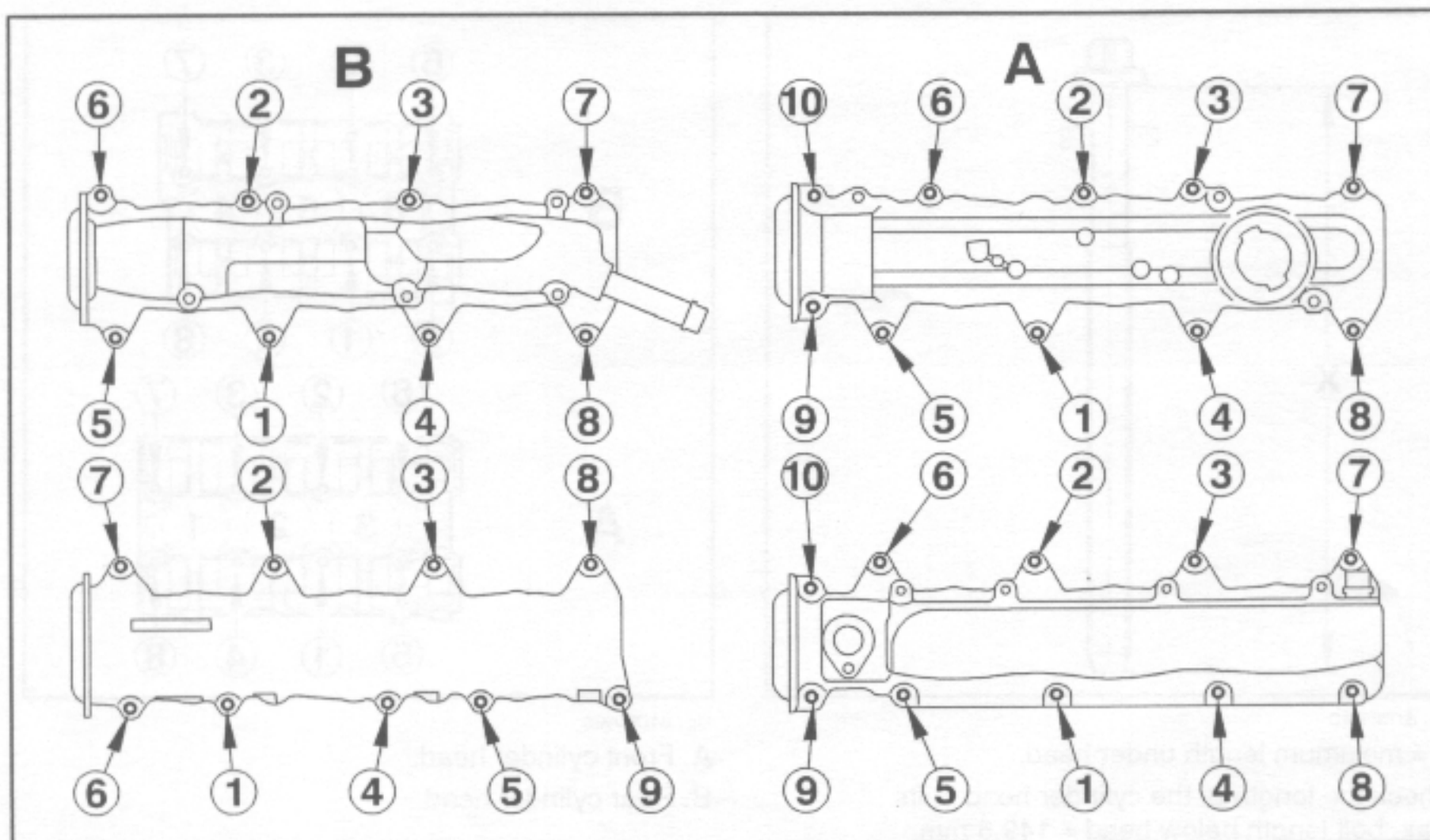


Fig : B1DP06UD

A. Front cylinder head.

B. Rear cylinder head.

Fit :

- the camshaft covers
- the camshaft cover bolts following the sequence shown

WARNING : Proceed bolt by bolt in the order shown.

Tightening method :

- pre-tighten the bolts to 0,5 m.daN
- tighten the bolts to 0,8 m.daN

Connect the vent pipes.

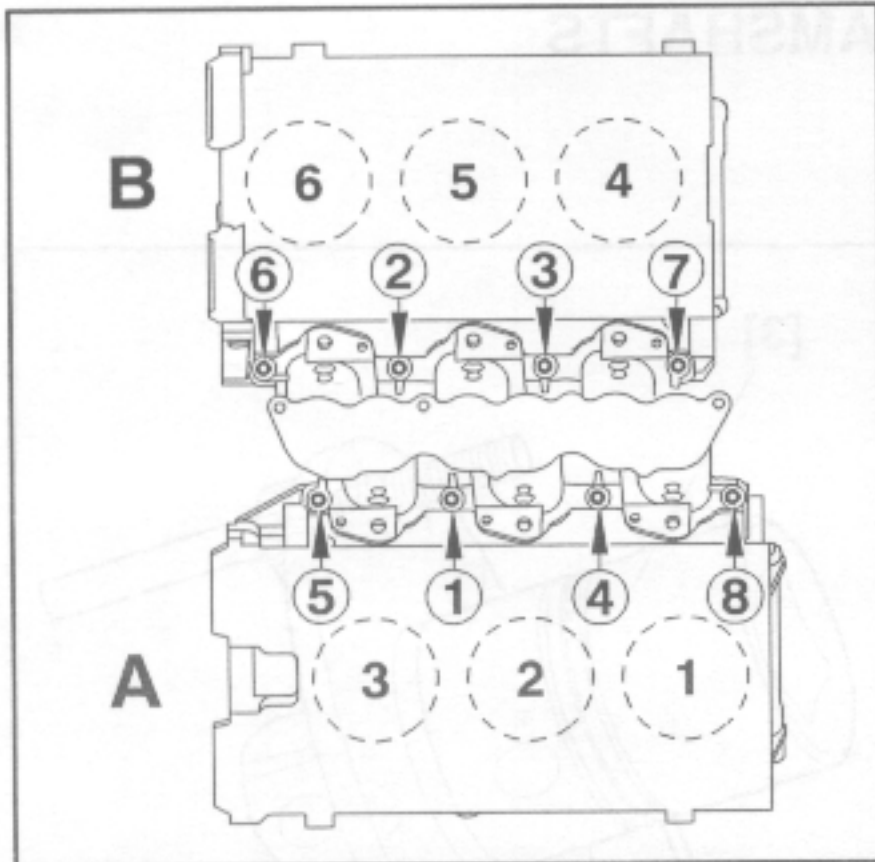


Fig : B1DP097C

A. Front cylinder head.
B. Rear cylinder head.

Replace the seals between the lower manifold and the cylinder head.

Replace the seal between the upper and lower manifolds.

Refit the lower air manifold.

WARNING : Proceed bolt by bolt in the order shown.

Tightening method. Fixing with diameter of 6 mm :

- 0,4 m.daN pre-tightening
- tightening torque = 1 m.daN

Check.

Tightening method. Fixing with diameter of 8 mm :

- 1 m.daN pre-tightening
- tightening torque = 2,5 m.daN

Reconnect the connector (13).

Fit :

- the timing cover (10)
- the fixings of the timing cover (9) to the rear cylinder head

4.1 – Carry out the operations below on each camshaft

Fit the camshaft hub (12).

Immobilise the camshaft hub using the tool [1].

Fit and tighten screws (11) :

- first procedure : tighten to 2 m.daN.
Tighten by an angle of 57 ° with tool [4]
- second procedure :
tighten to 8 m.daN

4.2 – Refitting (continued)



Fig : B1EP10MC

Fit :

- the dynamic tensioner (8)
- the screw (7) ; tighten to 1 m.daN
- the screws (6) (without tightening)
- the camshaft pulleys (2), (3), (4) and (5)
- the screws (1) (without tightening)
- the exhaust clamps ; tighten to 2,5 m.daN

Remove the right-hand engine mounting.

Fit :

- the timing belt (see the relevant operation)
- the bracket fixing the deaerator to the rear cylinder head
- the screw (17) ; tighten to 4 m.daN
- the screw (16) ; tighten to 6 m.daN

Couple :

- the high pressure pump pipes ; using a pipe spanner and the tool [3]
- the earths, harnesses and connectors connecting to the cylinder heads

Fit :

- the rear lifting brackets
- the screws fixing the cooling pipe to the rear cylinder head
- the dipstick guide fixing ; tighten to 2,5 m.daN
- the upper inlet manifold (see the relevant operation)

Fill and bleed the cooling system (see the relevant operation).

Reinitialise the injection ECU.

REMOVING – REFITTING : THE CAMSHAFTS

1 – RECOMMENDED TOOLS

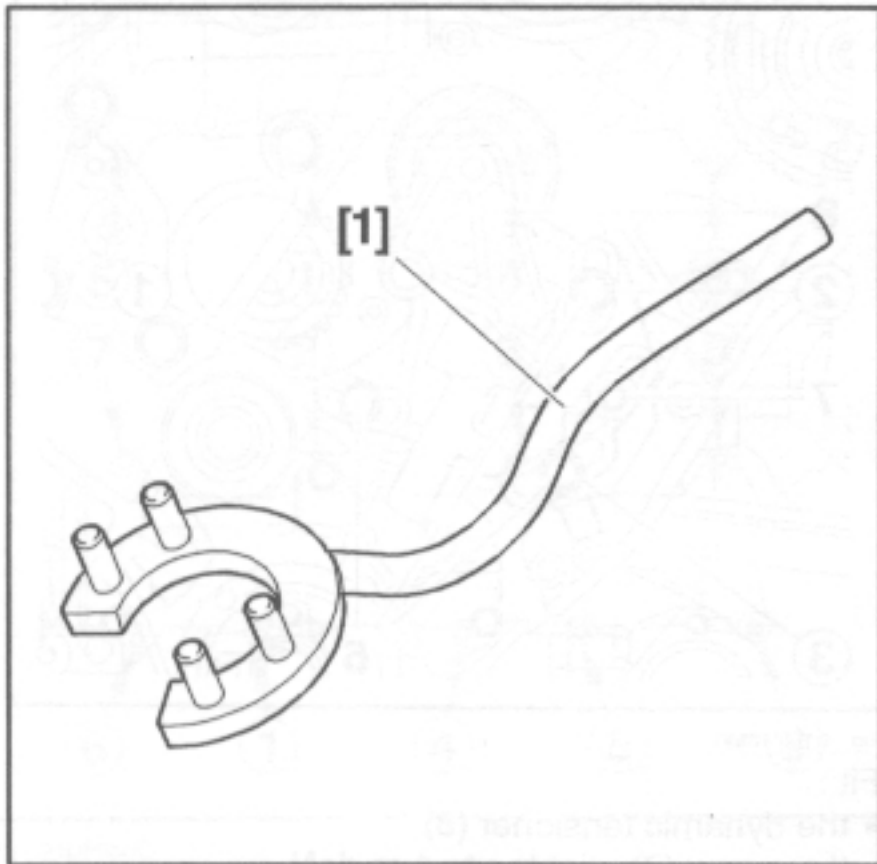


Fig : E5AP03NC

[1] camshaft hub locking tool (-).0187 F.

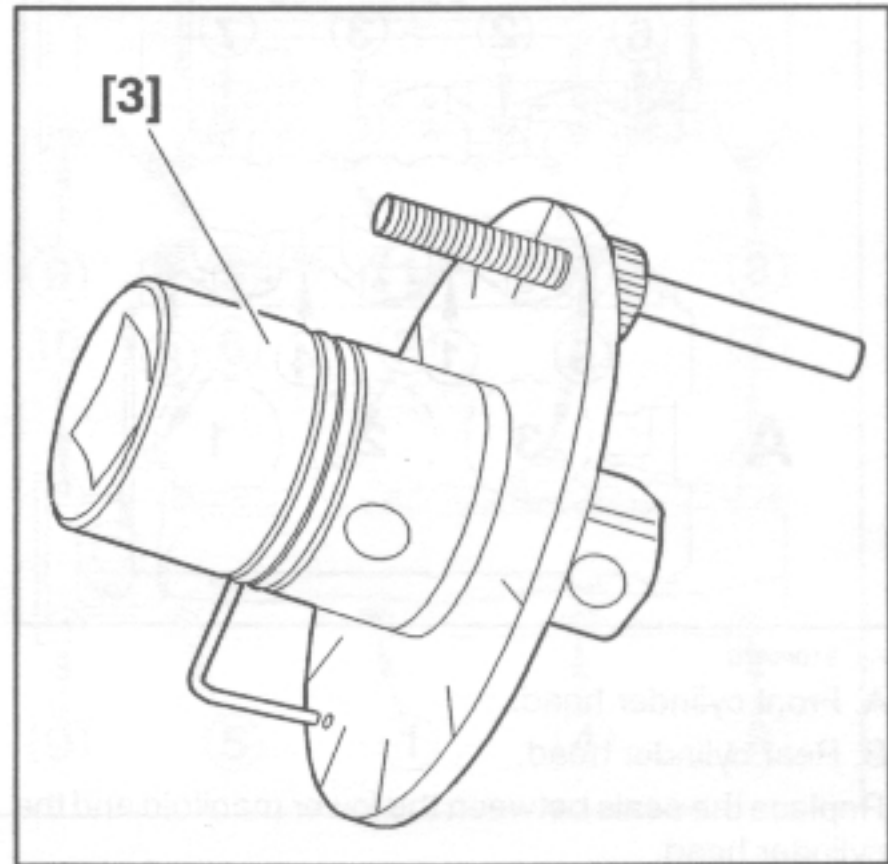


Fig : E5AP03QC

[3] adaptor for angular tightening 4069-T.

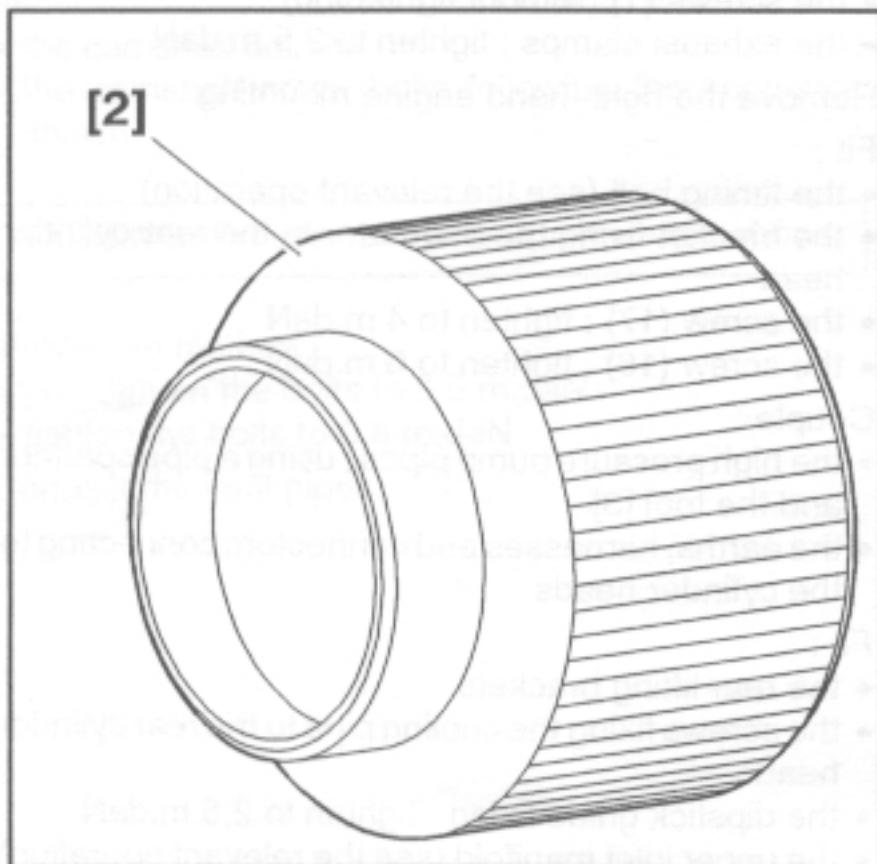


Fig : E5AP03PC

[2] fitting mandrel of the camshaft lipped seal C.0187 D.

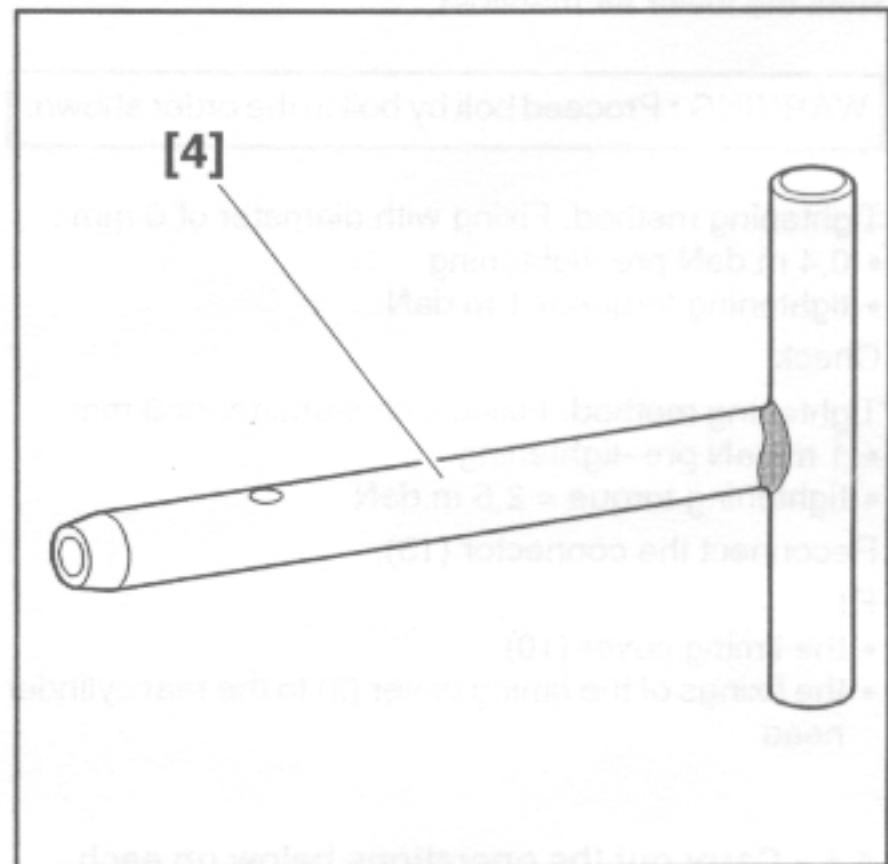


Fig : E5AP03TC

[4] camshaft setting pegs (-).0187 B.

2 – REMOVING

Remove the cover.

Uncouple the ignition harness.

Remove :

- the rear lifting brackets
- the ignition harness mounting
- the upper inlet manifold (see the relevant operation)
- the timing belt (see the relevant operation)
- the camshaft drive pulleys

Refit the right hand upper engine mounting.

Lock the camshaft hubs using the tool [1].

Remove the camshaft hubs fixing screws.

WARNING : The tightening torques of the camshaft hubs fixing screws are important. Ensure that the spanner is held straight during removal.

Remove :

- the timing cover bolts of the camshaft bearing cap casings
- the front timing cover

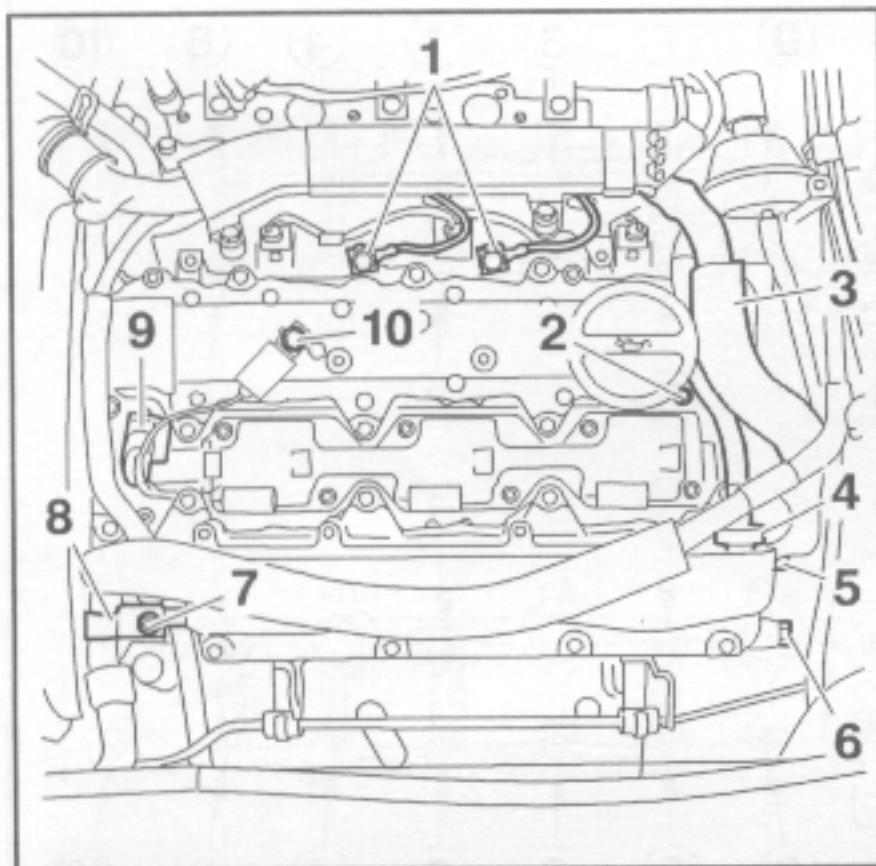


Fig : B1DP135C

Disconnect the earths (1).

Remove the screws (2), (5), (6) and (7).

Disconnect the connector (9).

Disconnect the pipe (4).

Remove flange (8).

Release :

- the LHM supply pipe
- the electrical harness (3)

Remove the screw (10).

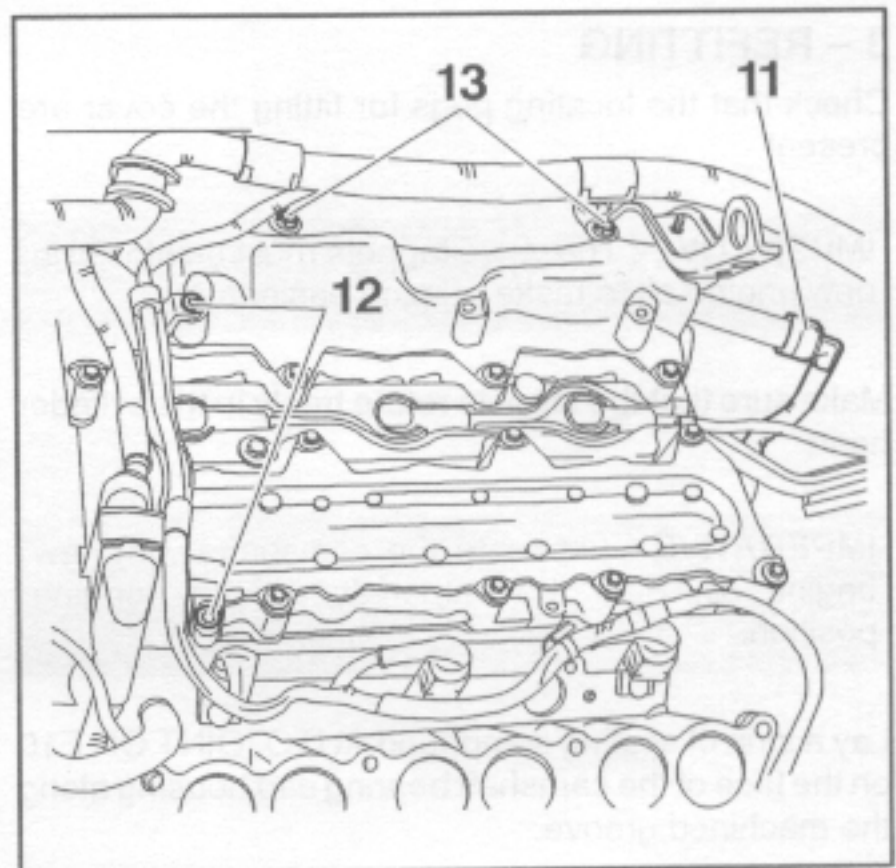


Fig : B1DP136C

Disconnect the pipe (11).

Remove the screws (12) and (13).

Progressively loosen the bolts of each cylinder head cover in a spiral sequence starting from the outside.

Remove the cylinder head covers.

WARNING : Progressively loosen the camshaft bearing cap housing fixing screws in a spiral sequence, starting from the outside, so that they move a few millimetres from the seal surface.

Remove :

- the camshaft bearing caps housings
- the camshafts

NOTE : If removing the valve tappets. Mark the location of the tappets before removing them.

3 – REFITTING

Check that the locating pegs for fitting the cover are present.

IMPERATIVE : The valve tappets must be stored in new engine oil to make priming easier.

Make sure that the tappets rotate freely in the cylinder head.

IMPERATIVE : Lubricate the camshafts with new engine oil. Refit the camshafts in the pegging position.

Lay a strip of sealing compound AUTOJOINT OR E10 on the face of the camshaft bearing cap housing along the machined groove.

Refit the camshaft bearing cap casings.

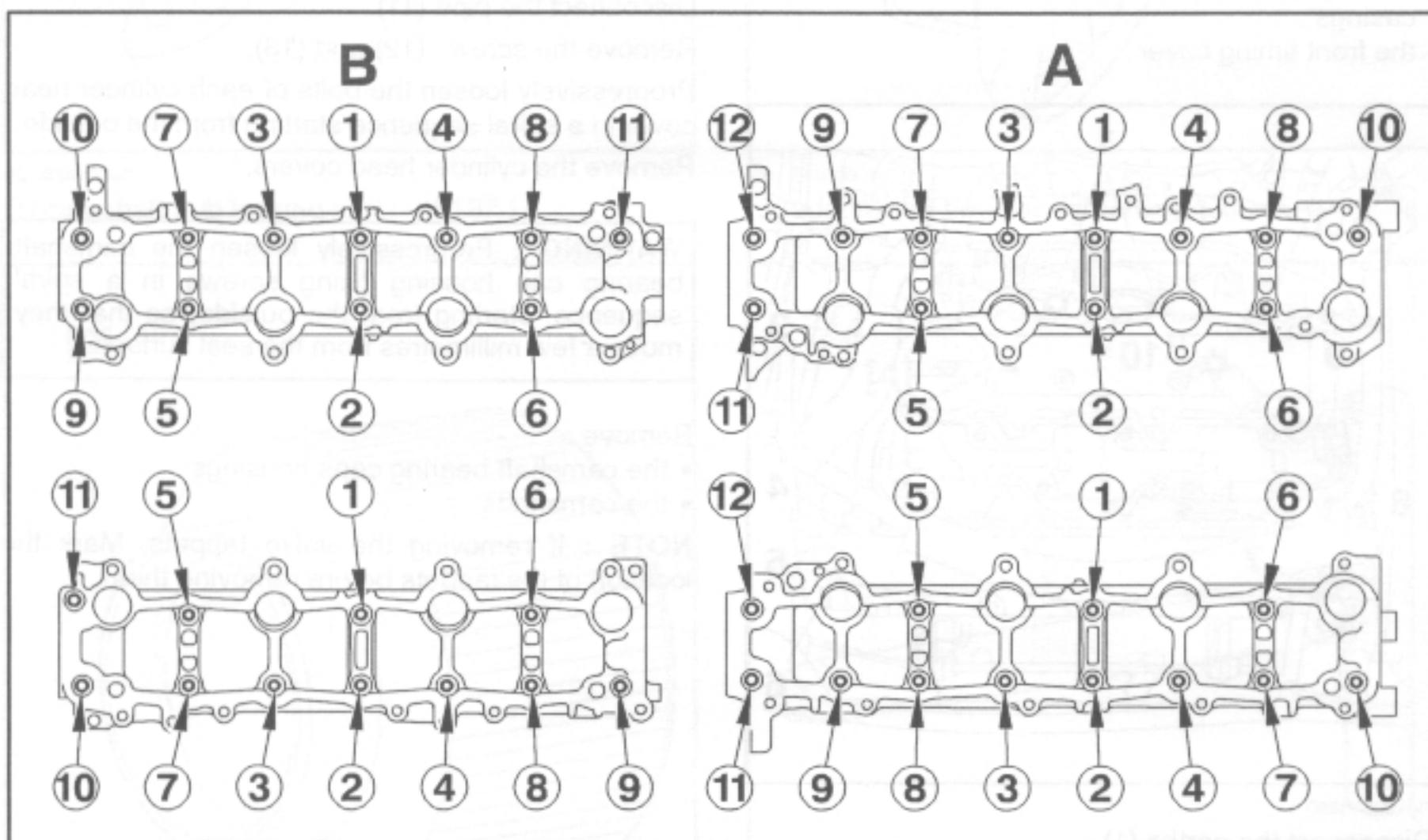


Fig : B1DP08TD

A : front cylinder head.

B : rear cylinder head.

Nip then progressively tighten the fixing bolts in the order shown.

Pre-tighten to 0,2 m.daN.

Tightening torque = 0,8 m.daN.

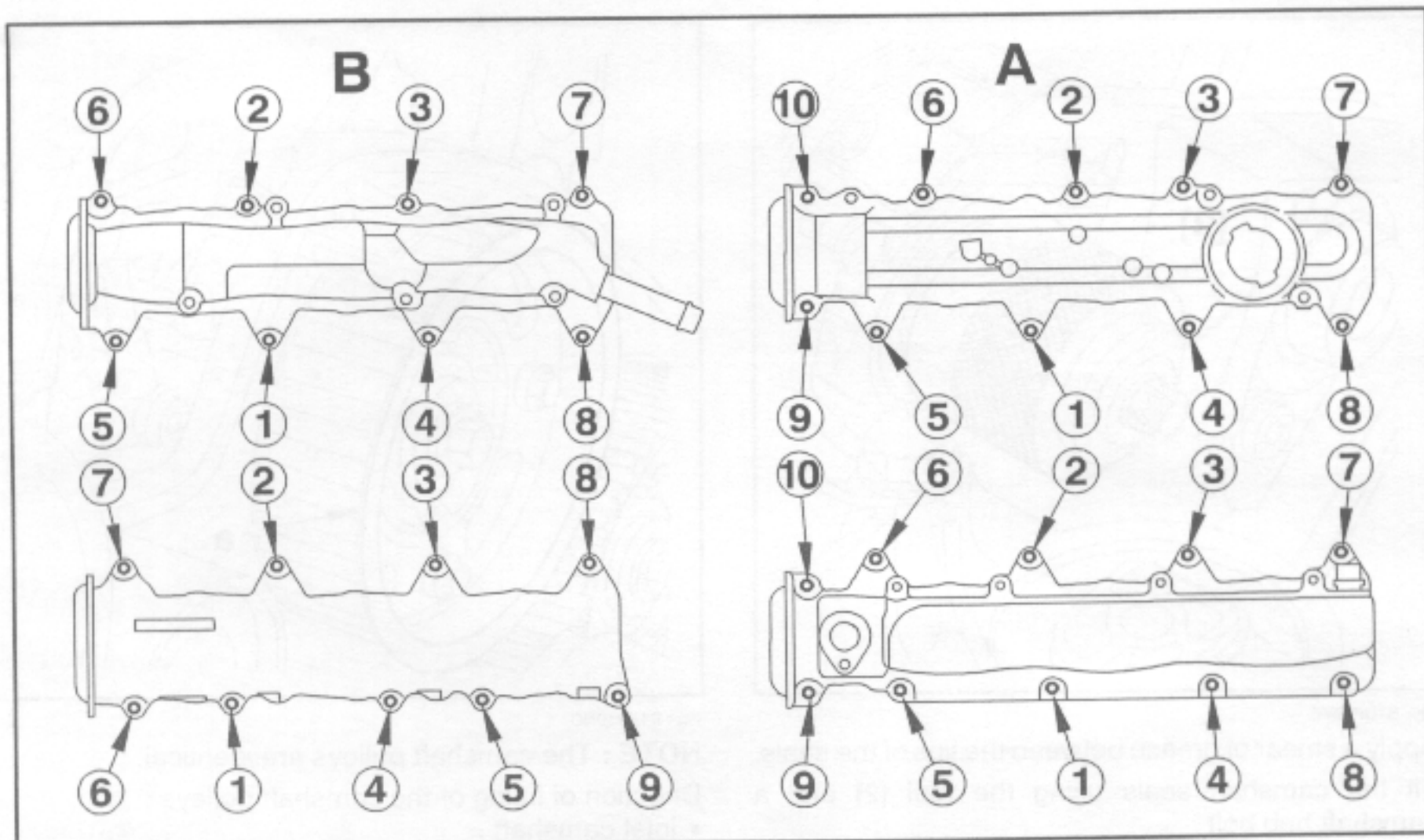


Fig : B1DP08UD

A : front cylinder head.
 B : rear cylinder head.

NOTE : The cylinder head covers are fitted with a gasket made of composite material which can be removed several times. If the gasket is damaged, it can be partially repaired with sealing product AUTOJOINT OR E10.

Nip then progressively tighten the fixing bolts in the order shown.

Pre-tighten to 0,5 m.daN.

Tightening torque = 1 m.daN.

Fit :

- the timing cover bolts on the camshaft bearing cap casings
- the front timing cover

IMPERATIVE : The outer face of the gaskets must be free of all traces of oil.

CYLINDER HEAD

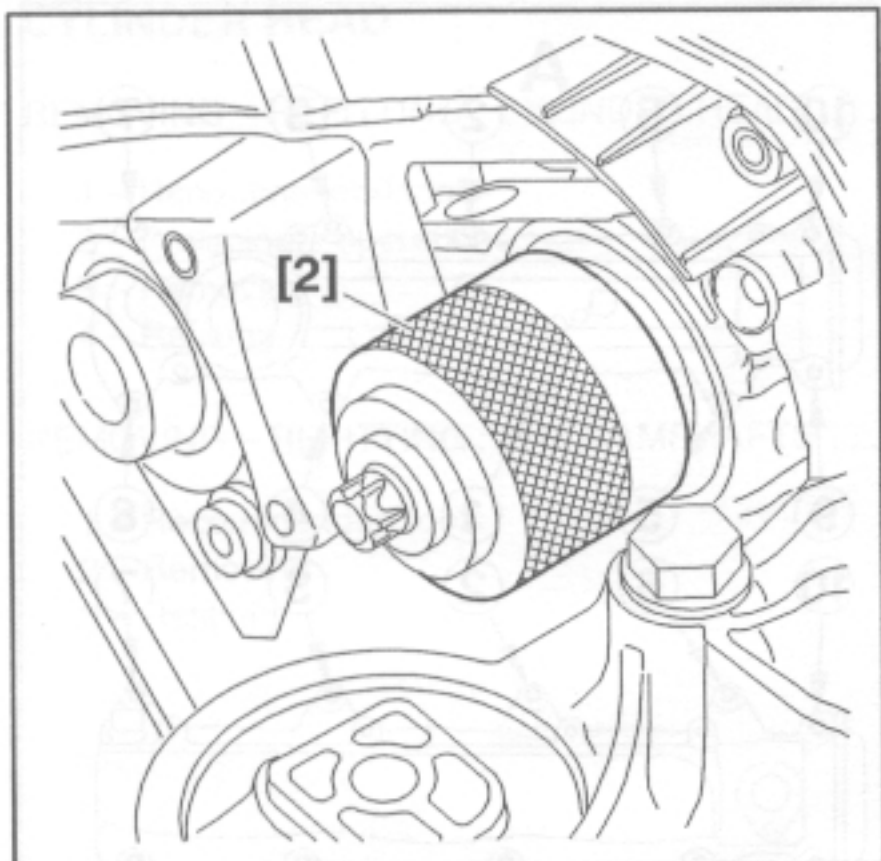


Fig : B1DP08VC

Apply a smear of grease between the lips of the seals.
Fit the camshaft seals using the tool [2] and a camshaft hub bolt.

NOTE : Use only new seals.

Fit the camshaft hubs.

NOTE : Smear the threads and contact faces under heads of the bolts with MOLYKOTE G. RAPID PLUS grease.

Carry out the operations below on both camshafts.

Immobilise the camshaft hub using the tool [1].

Refit the camshaft hub fixing bolt.

Peg the camshaft hubs ; by means of tools [4].

Tighten the camshaft hub fixing bolt using one of the following two methods :

- 1st method :
tighten to 2 m.daN.
Angular tightening of 57° ; by means of tool [3]
- 2nd method :
tighten to 8 m.daN

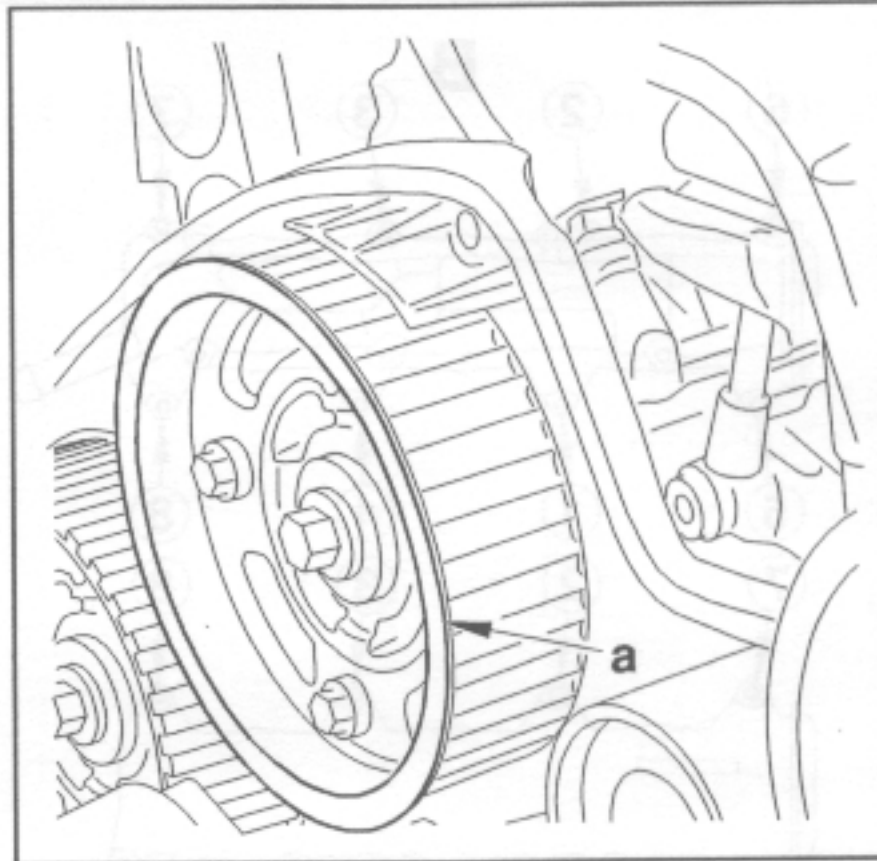


Fig : B1EP10NC

NOTE : The camshaft pulleys are identical.

Direction of fitting of the camshaft pulleys :

- inlet camshaft =
flange "a" towards the outside
- exhaust camshaft =
flange "a" towards the inside

Refit screw (10).

Reconnect the connector (9).

Position :

- the LHM supply pipe
- the electrical harness (3)

Fit :

- the flange (8)
- the screws (12), (13), (7), (6), (5) and (2)
- the earths (1)
- the rear lifting brackets
- the timing belt (see the relevant operation)
- the upper inlet manifold (see the relevant operation)

Couple up pipe (4).

Refit the ignition harness mounting.

Connect the ignition harness.

Fit the cover.