

How to distribute and more on the V6 3.2 24V



(Photo credit: Gates)

Here is a detailed tutorial to carry out the operations below. It is based on a GTV 3.2, but some operations are very similar, see identical for 3.0:

- Replacement of the distribution kit
- Water pump replacement
- Replacement of AAC oil seals
- Replacement of the oil seal Av of the crankshaft
- Replacement of the accessory belt kit
- Candle replacement

Before you start, make sure you have the necessary equipment.

Tools (non-exhaustive list)

First of all, I advise you to read well and especially not to neglect the tooling part if you want to tackle the distribution on the GTV.

Indeed, the space is very limited, especially for the roller winding and the pulley of the left exhaust AAC (therefore on the front part of the engine).

Some tools can be very useful, and above all they avoid to go up or down the engine to the extreme to be able to pass the conventional keys.

There is a site that specializes in the supply of these specific tools: TotallyAlfa. By cons, beware of prices, it figures very quickly. Especially the shipping costs.

However I find that some tools from home are charged far too expensive for the quality it is (such as the socket, the angle wrench, ...)

Minimum basic tools:

- A set of ratchets and sockets in $\frac{1}{4}$ and $\frac{1}{2}$ (preferably with cardan joint)



- A set of screwdrivers (flat and cruciform)



- A set of combination keys ideally (with at least 8, 10, 13, 15, 17 and 19)



- A hexagonal socket box (or at least 5mm, 6mm and 8mm)



Minimum specific tools:

- A universal key blocks the pulley (KSTools type) or the version from TotallyAlfa (ref: 1.822.088.000) or the Alfa version (ref: 1.870.896.300)



- If you do not take a universal pulley block wrench like the KS above, you will also need the tool to adjust the belt tensioner. Either a simple lug wrench like the TotallyAlfa



Either the tension tool recommended by Alfa (ref: 1.860.950.001), like the copy of TotallyAlfa (ref: 1.860.950.000), but not top in quality I think.



- A universal pulley puller (type BGS or Laser 5925) or the version from TotallyAlfa (ref: 1,860,954,000)

The reference has been replaced at Alfa, you must now order 1.860.954.001



- A 41 ½ socket for Peugeot ball joints (type Laser 4395). Or a socket of 41, but whose outside diameter does not exceed 51mm.

Or the version of TotallyAlfa (it's actually a classic socket that has been re-machined)



- Torque wrenches in $\frac{1}{4}$ of 1-25 Nm, and in $\frac{1}{2}$ of 10-100Nm or 20-200Nm, and 60320Nm.

- o The 1-25Nm will be used for the water pump, the coil screws, the cover screws cylinder heads, distribution cover screws,...
- o The 10-100Nm (or 20-200Nm) will be used for the rollers, the tensioner, the pulleys,...
- o The 60-320Nm would cover the pulleys of AAC, but especially the vilo nut



But ideally, if you do not yet have a key (10-100 or 20-200), I advise you to go on a 9x12 or 14x18 fitting version, with a 19mm imprint and an imprint for 6 sides (plus a head ratchet for various operations). This will greatly facilitate the work on the pulleys of AAC, and the rollers.



If you already have keys, and to overcome this problem of space, it may be interesting to obtain a copy of the Alfa tool (Ref: 1.822.150.000). It is also available from TotallyAlfa (ref: 1.822.166.000). The finish is not there, but it does a good service.

In this case, take care to take into account the length of this extension for the new torque adjustment.

However, it does not work for the roller, just for the pulleys.



- An impact wrench (mini 450 Nm when released). Ideally, this greatly facilitates the task of loosening the vilo nut.



If you do not have an impact wrench, and you are on your own, you need to provide a tool that will immobilize the flywheel to loosen the connecting nut. The one recommended by Alfa (Ref: 1,820,088,000) does the job very well. A copy is available from TotallyAlfa (ref: A.2.0461)



For the tool below, the Alfa workshop is false in this area, because it serves **ONLY TO TIGHTEN** torque damper pulley.

NEVER USE TO LOOSE this pulley, you risk breaking the oil sump, and the side sump.

In addition the manual mentions the ref for the 3.0 which have pulleys of 130mm, while the 3.2 is 140mm.

We therefore need the ref: 1.870.646.000



- A TDC rod with its comparator. If you do not have a rod yet, I advise you to go on a 2.5mm version, instead of 5mm. This makes it compatible at once, with JTS engines.

The choice is vast (KSTools, TotallyAlfa, Laser, Sealey,...)



- A set of shims for AAC specific to 3.2 (GTA, GT and GTV).
This is the ref. 1,870,849,000. These tools are available for rental on the net, but also for purchase from merchants such as EbSpares, Alfisti, TotallyAlfa,...



Detached pieces :

Either in the Alfa network or on the net, you have the choice. But in order to help you in this vast choice, here are some recommendations; as you can imagine, Alfa, sorry the Fiat group, do not manufacture these parts itself....

You can totally save money, without taking any risks, by purchasing parts directly from the original equipment manufacturer.

Finally, as a last reminder, do not forget that a part is not guaranteed after assembly (by your network or the dealer), unless it is assembled by a professional. Check your parts carefully before assembly.

- The distribution kit:



The original parts are:

- 1 Belt manufactured by Gates (ref. Alfa 60674528)
- 2 roller rollers manufactured by SKF (ref. Alfa 6060356)
- 1 Belt tensioner manufactured by Litens Made In Canada (ref. Alfa 55191536)

We will therefore favor 2 kits: Gates (ref K015476XS) and SKF (ref VKMA02540)

If you take a Gates kit, you will have: X1 Gates belt, X2 INA rollers, and X1 Litens tensioner (Made In Canada).

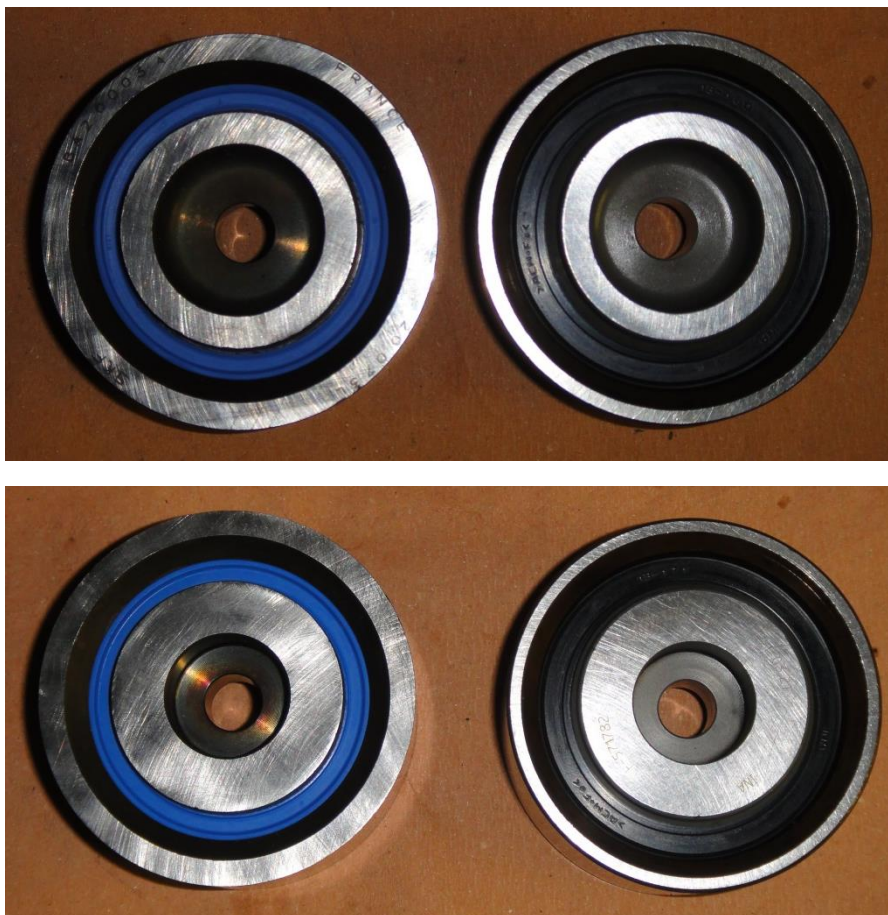
If you take a SKF kit, you will have: X1 Gates belt marked SKF, X2 SKF rollers, and X1 Litens tensioner (Made In Canada).

So it seems interesting to take the SKF kit, except that personally, I do not find the SKF rollers as being of quality, and this kit is more expensive than the Gates.

One, the edges of the pebbles are not deburred, and two, on 4 pebbles, I had 1 screw, when they were supposed to be new.

On the other hand, the Ina rollers of the Gates kit are really of a very good finish I find. As for the seals, they have less friction and are perfectly integrated into the body of the bearing.

Note that AlfaWorkShop also uses INA rollers now, although it mentions SKF...



(on the right the SKF, and on the left the INA of the Gates kit)

The Litens tensioner is therefore identical regardless of the kit. It is also identical to the Alfa version, except for the color of the plate which had to change in the meantime.



(In the photos: the Alfa tensioner on the right, and on the left the Litens from the Gates or SKF kits)

The other important point, when we distribute it, is to make sure that we don't mount an old belt.

The recommendation is to change the belt every 5 years from the date of assembly (3 years in the case of extreme conditions, or frequent trips in town).

And it is possible to store a belt in optimal conditions for 3 years max (in theory...).

In reality, and as a precaution, it is better to apply the rule of: 5 years from the date of manufacture.

At Gates and for our case (Alfa, SKF and Gates belt since it is the manufacturer of the first 2), it is very simple to check the date of manufacture of the belt (note, this process is not applicable to all types of belts, even at Gates)



(Gates kit strap)

The code is composed as follows J SS A Factory, therefore 6 07 5DS

In the present case, the belt was manufactured on the 6th day of week 07 of the year 2015 in the Dumfries factory, therefore on February 14, 2015 (Happy Valentine's Day my little 3.2) The numbers 033, 034, 035 correspond increments in the manufacturing strip for this lot.

For SKF, code marking is a little different. It consists of JSSAA. The factory code does not appear for SKF.

In the case below (51315), the belt was produced on the 5thth day of week 13 of the year 2015, so March 27, 2015.



(SKF kit strap)

And at Alfa, the code marking is identical to Gates, so JSSAFactory



(Original Alfa belt)

Please note that a manufacturer may change their codes.

In addition, the above cases are not applicable by letter to other manufacturers.

- The water pump:



The original version for the GTV and Spider has a metal blade (ref. Alfa 55198358), while the other 3.2 of the brand have a plastic blade.

Ideally, choose the version with the metal blade. The plastic version tends to crack at the axis of the blade.

The metal version is perhaps more resistant, and we might be tempted to change it only once 2, but very often there are micro-leaks at the axis seal.

At the price of the pump, versus the job and the price of dropping a distribution, I advise you to change it systematically.

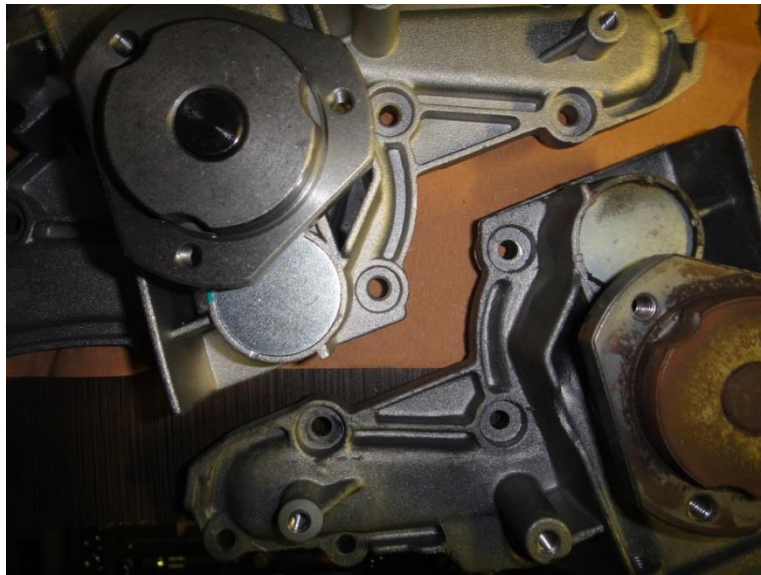
Finally, it is good to provide new screws in addition to the water pump. If they are rusty, better change them to avoid breaking one in the housing during the next disassembly.

In metallic version, there is Saleri (ref: PA1287), the Magnetti Marelli (ref: 81355), the Bugatti.... No certainty about the origin of the original pump, but the quality seems as poor as the Bugatti.

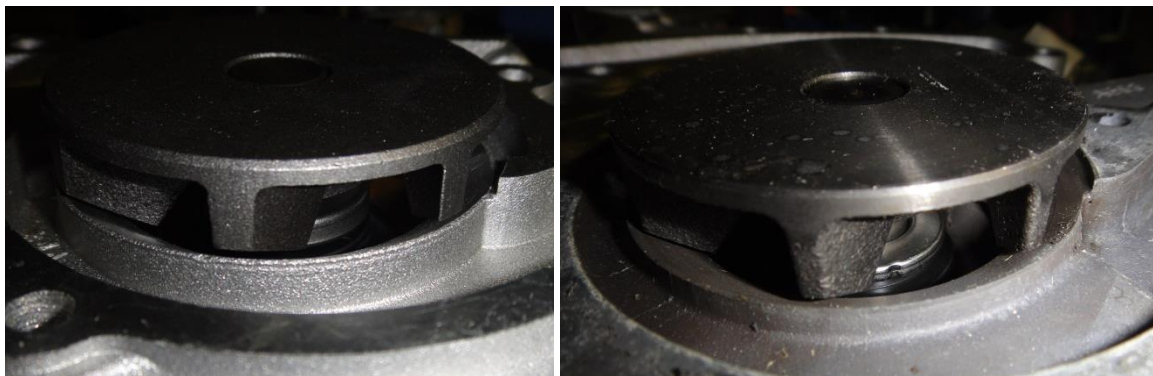
So I opted for the Magnetti, however the Saleri seems identical to this first and easier to supply in France.



(Above the Magnetti pump, below the original Alfa pump)



(above the Magnetti pump, below the original Alfa pump)



(On the left the Magnetti pump, on the right the original Alfa pump)

- accessory belt kit:



Originally, it is Dayco for the belt, the rollers and the tensioner.

It's made of :

- 1 roller roller (Alfa ref: 55190054)
- 1 roller roller (Alfa ref: 55190052)
- 1 tensioner roller (Alfa ref: 55190053)
- 1 6PK belt (Alfa ref: 71753674)

All these parts are available individually at Dayco. However, it is much more profitable to take the Dayco KPV021 complete kit (complete kit at the cost of the tensioner only) It includes all the necessary parts (even the screws).

Again, you will be able to check the date of manufacture of your belt (even if it is much less important than for the timing belt).



At Dayco, for this belt model and this factory, the digits read as follows: AASSJLOT So 14391195, in our case, this gives us a belt manufactured in 2014, the 39th week, day 1 (197 to 194 being the batch in the manufacturing strip). Or September 22, 2014.

- Coolant:



The manual recommends Paraflu 11 for the 916, which is fine if you still have the original copper radiator.

If you have switched to a replacement Alu radiator (Valeo type), then you can use Paraflu UP (it is even preferable).

Count about 6 cans of 1L, to make your 12L of liquid (mix 50% demineralized water).

Please note, the 2 products are not miscible. So it's one or the other.

- Gaskets for cylinder head covers and sealing rings:

AAC sealing rings are no longer available from Alfa (ref: 60610985), except with the complete engine pocket. A little expensive for 4 joints...

There are connections with Corteco (ref: 12014699b), Elring, Glaser, Victor,... but none of them found my favor in terms of quality equivalent to those of origin.

So I turned to Payen (ref: NA5163), which are completely coated, with turbulence on the right only, and a lip machined like some SKF seals (which Corteco does not have).

The Elring, Victor, ... have mixed turbulence (right and left on the same joint), so in theory, a less effective hair.



(From left to right: Origin, Corteco, Payen)

For the cylinder head cover gaskets, the Elrings are doing very well (those tested), and the Corteco too. The references are:

- Alfa: 60609978 and 60609979
- Corteco: 026125p and 026124p
- Elring: 375.080 and 375.270

For the Spi Av of the vilo, it is an original Corteco (it is written on it, you can't go wrong).

The ref. Alfa is 60601977 and the Corteco 12017172b does the job perfectly.

- The candles :

NGK of origin, there is no better looking for less, and it can be a source of trouble. The reference is: PFR6B 3500 (Alfa ref .: 60579903)

Here is a comparison between a new candle, and one of 75Mkms (the least worst of the 6...) They are however given to make 100Mkms !!!

And given the work to be done to access the candles on the bench 1-2-3, you might as well take the opportunity to change them at that time.



Finally, last recommendation before starting, make sure that ALL components are at the same temperature as your engine.

One is a V6 with a large belt, and two, the tensioner roller is a bimetal roller. Clearly, the temperature of it has an influence on the voltage.

It is therefore important that it is at the same temperature as the engine during assembly and adjustment.

Below is Ruville's technical note on this subject (Ruville also uses the pebble from Litens)

REMARQUE CONCERNANT LE MONTAGE DU GALET TENDEUR 55875 À RESSORT BIMÉTAL

INFORMATION TECHNIQUE N° 1070

CONSTRUCTEUR/MODÈLES:

Alfa Romeo	147, 156, 166, GT, GTV, Spider
Lancia	Kappa, Thesis

MOTEURS CONCERNÉS:

2.5 V6, 3.0 V6, 3.2 V6

ARTICLES CONCERNÉS:

RUVILLE-N°.	OE-N°.
55875	55191536

KITS CONCERNÉS:

RUVILLE-N°.	
55875	kit 5587570 set 5587550

Par rapport aux galets tendeurs habituels, le galet tendeur 55875 a la particularité d'être équipé d'un ressort bimétal.

Ce ressort bimétal garantit la tension constante de la courroie crantée, quelle que soit la température.

Une différence de température entre le moteur et le galet tendeur lors du montage peut entraîner des décalages dans les temps de réaction du galet tendeur.



Photo 1: 55875 – Galet tendeur à ressort bimétal

Summaries of spare parts (+ additional parts):

- Distribution kit + Accessory kit:

If purchasing parts in kits:

- o Distribution Kit: Gates K015476XS or Skf VKMA02540
- o Accessory Kit: Dayco KPV021

If purchasing spare parts:

- o x1 timing belt 60674528 (Gates ref 5476XS)
- o x2 roller rollers 60603056 (SKF VKM22540 ref; INA ref 532037320)
- o x1 tensioner roller 55191536 (ref SKF 12541; ref Gates T43107)
- o x1 accessory strap 71753674 (Dayco ref 6PK1995)
- o x1 roller pulley 55190054 (Dayco ref APV1019)
- o x1 roller pulley 55190052 (Dayco ref APV1091)
- o x1 tensioner roller 55190053 (ref Dayco APV1002)

Parts whose change is strongly recommended:

- o x1 cylinder head cover 60609978 (ref Elring 375.080; ref Corteco 026125p)
- o x1 cylinder head cover 60609979 (ref Elring 375.270; ref Corteco 026124p)
- o x1 roller roller screw distrib. length 40mm 14307721 (mounting not recommended)
- o x1 distributor roller screw length 45mm 14307824 (mounting recommended)
- o x1 screw roller reel distrib. lg.50mm 14307721
- o x2 rewinding roller lock washers 12601474 (possible substitution 12601474)
- o x2 wavy washers 12601474 (mounting recommended with 14307824)
- o x2 tensioning screw distrib 14306521
- o x2 brake tensioner washers distrib 12601374
- o x6 intake pipe seals 60513868

Parts whose change depends on the state at disassembly:

- o x6 seals spark plug well cylinder head cover 60610548
- o x6 screw crankcase 55190281
- o x1 crankshaft nut 55190293
- o x3 gasket breather cover cylinder head 7792371

- Water pump :

- o x1 water pump (metal blade) 55198358 (ref Magnetti 81355; ref Saleri PA1287)

When purchasing an Alfa original water pump, provide the seals 60559070 and 60604170.

- o X2 O-ring 14458480 (it is better to change them)
- o x12 water pump screw 10902524 (if rust is present, change)
- o x6 Paraflu 11 or Paraflu Up (depending on type of radiator)
- o x6 demineralized water

- Sealing rings:

- o x4 sealing rings of AAC 60610985 (Ref Payen NA5163)
- o x6 screw caster distrib 55190281 (in the case of changing the AAC seals, if necessary)
- o x1 crankshaft seal ring 60601977 (Corteco ref 12017172b)

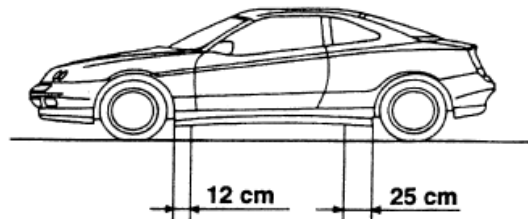
- Spark plugs:

- o X6 spark plugs 60579903 (ref NGK PFR6B 3500)

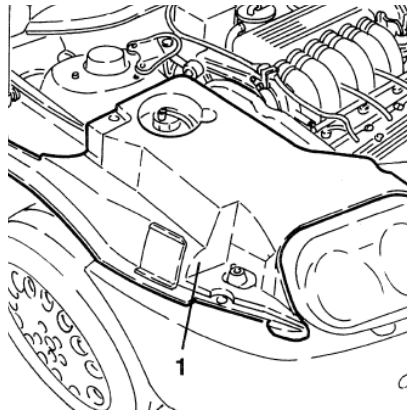
Replacement of the Distribution kit:

In theory, nothing too complicated. So, I quickly pass on the basic and simple steps. I use diagrams (taken from the workshop) and photos taken during the operations. Even if the photos are nice, you will find that it is sometimes more explicit to use the diagrams.

- 1- Disconnect the battery
- 2- Place at least the front of the vehicle on jack stands at the point provided for this purpose, and using lifting studs.



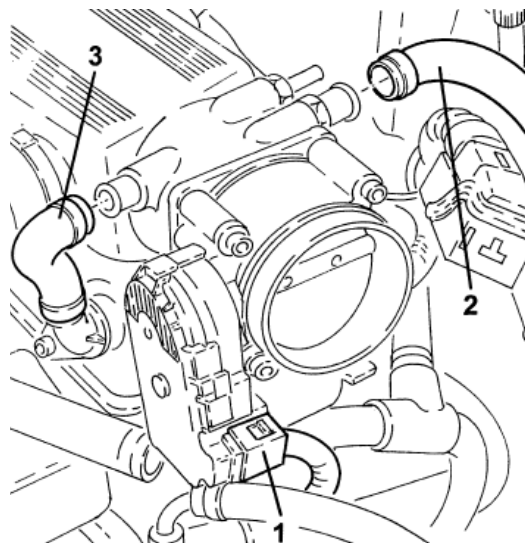
- 3- Remove the front wheels
- 4- Remove the upper left cover (rep. 1)



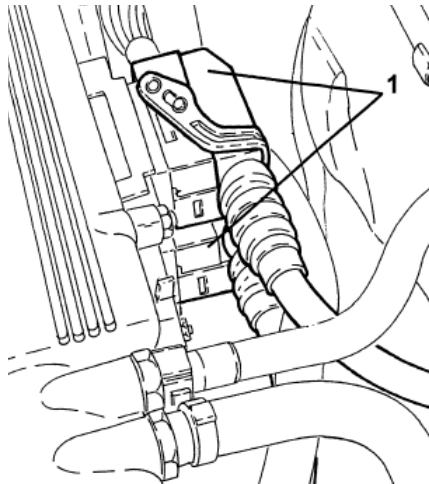
- 5- We will now proceed to remove the plenum.

Remove the intake hose from the throttle body, then disconnect the 3 hoses located on the plenum (2 behind and 1 in front).

We take this opportunity to disconnect the throttle body (rep. 1 of the diagram)

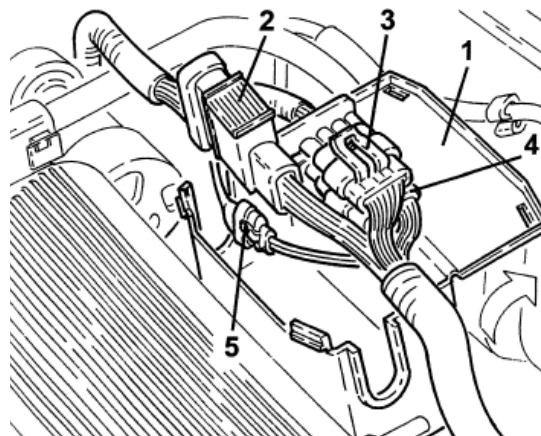


Then, we disconnect the 2 connectors of the computer (do not try to pull on it, it comes all by itself by tilting the lever)

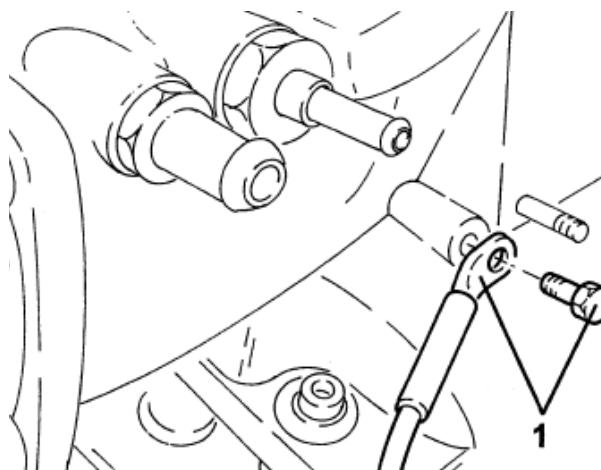


We then open the box to extract and disconnect the different connectors (no need to locate the sockets)

And remove this box (2 Phillips screws at the bottom), it's easier for the rest.

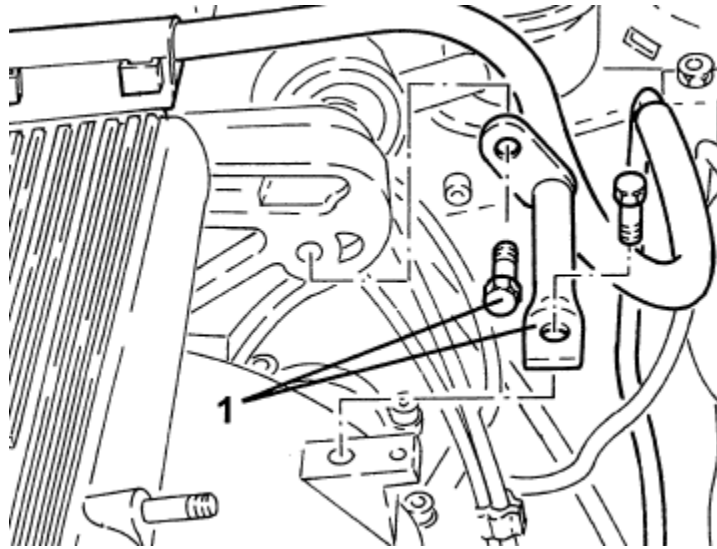


We will now disconnect the mass present on the plenum. It is located at the rear, very close to the computer. Normally, you do not have to dismantle the latter.



We now remove the plenum support flange from the anti-vibration support of the engine (therefore right side).

You now understand why it was necessary to dismantle the connector box

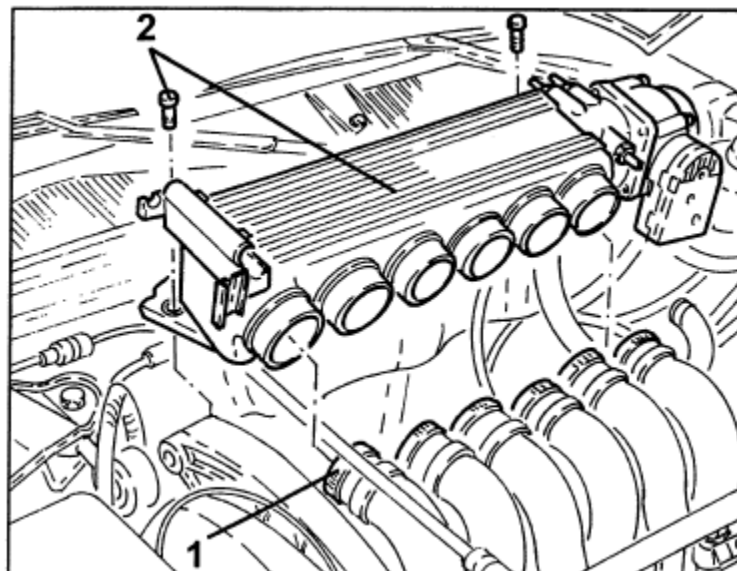


Then disconnect the hose clamps from the intake pipes. To make your job easier, use a small flat screwdriver, which you insert on the side, to then lever it up.

Then, we shift the fuel hose maintained on the plenum

All you have to do is remove the two screws holding the plenum (rep. 2 in the diagram). Then remove the plenum, lifting it slightly on the rear part, and pull it by lever towards the rear.

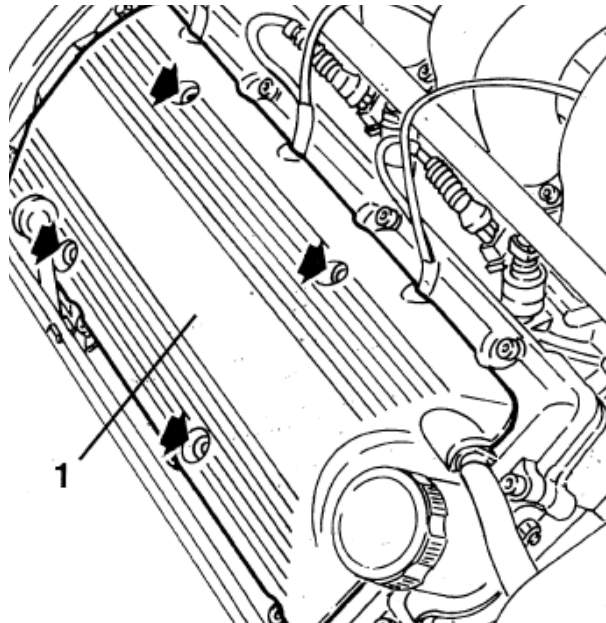
Be careful not to lose the tampons



Then protect the intake pipes to ensure that nothing can get in there.

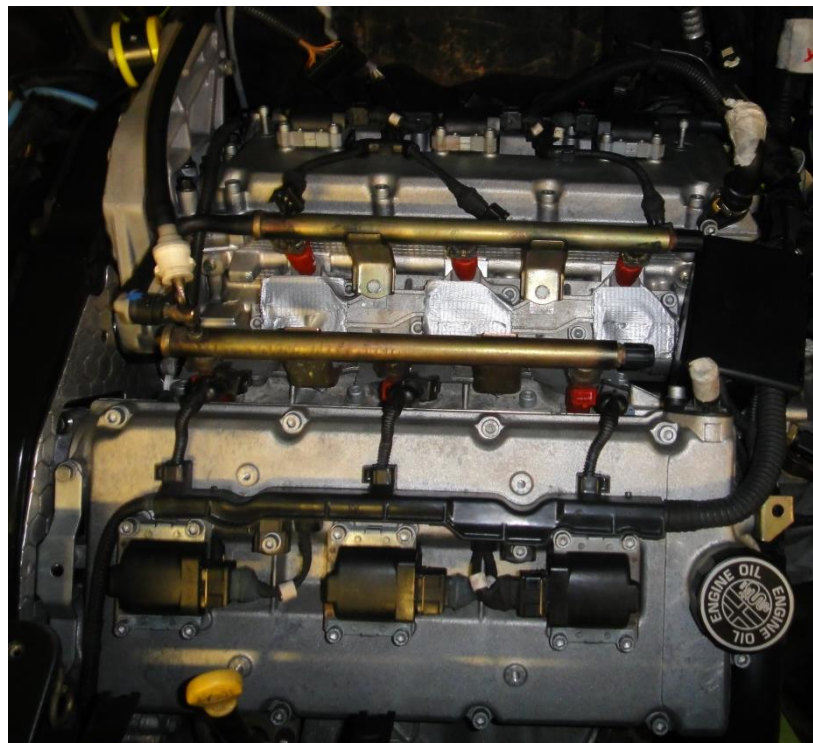
Variant : If you intended to polish your intake pipes, in this case, do not disconnect them from the plenum, but unscrew them directly. And take out the set. Remember to protect admission entrances (especially in this case)

6- We then attack the removal of the front cover (in fact, it is officially the left, the right being the plenum;))



7- In the case of the variant, you should end up with this (without the intake pipes).

We therefore have access to the coils, and above all easily access to the injector connectors (which is not the case with the other solution:



From there, you have 2 possibilities (I strongly recommend the first):

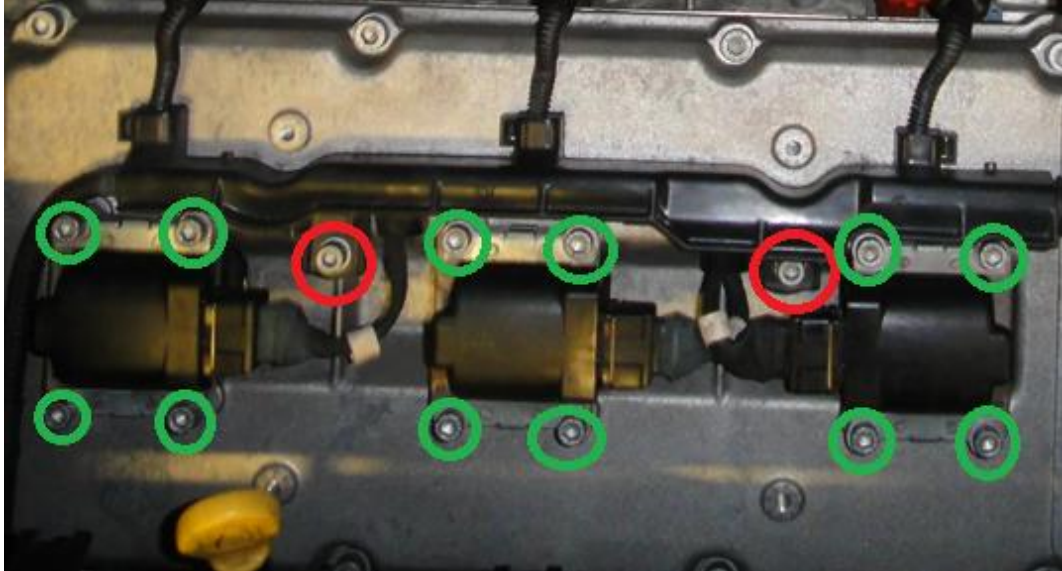
- o Disconnect the injectors plugs, and take out the harness
- o Do not disconnect them, but then fold the harness back into its center.

Personally, I find that it damages it, and it's not very practical.

8- So we're going to take out the beam.

We disconnect the connectors of the injectors (I use a needle that I insert on the side of the connector to pry on the metal tab).

Then, we unscrew all the screws of the coils (green) and of the beam maintenance (red). And this, on the two cylinder heads.



We disconnect the connectors from the coils, and take care to number the coils. This can be very useful in case of ignition problems later, or when changing the spark plugs, if one of them is damaged abnormally.

We then open the black box which is located above the thermostat block, we disconnect the connectors, in order to be able to extract the harness.

And we remove the harness from the rear cylinder head cover support (in red on photo)



We take this opportunity to disconnect the mass of the front cylinder head cover. You can remove the tab immediately, otherwise it will be later.



And we end by disconnecting the connectors on the front panel, at the air conditioning compressor.



It only remains to switch the beam on the left side of the engine, above the gearbox, and the air box.

Then, a small blow of blow in the wells of candles, in order to remove the impurities which are there (from where the utility to have blocked the entries of the admission)

So we should end up with this:



9- Then dismantle the tie rod of the engine

Be careful to mark its mounting position.

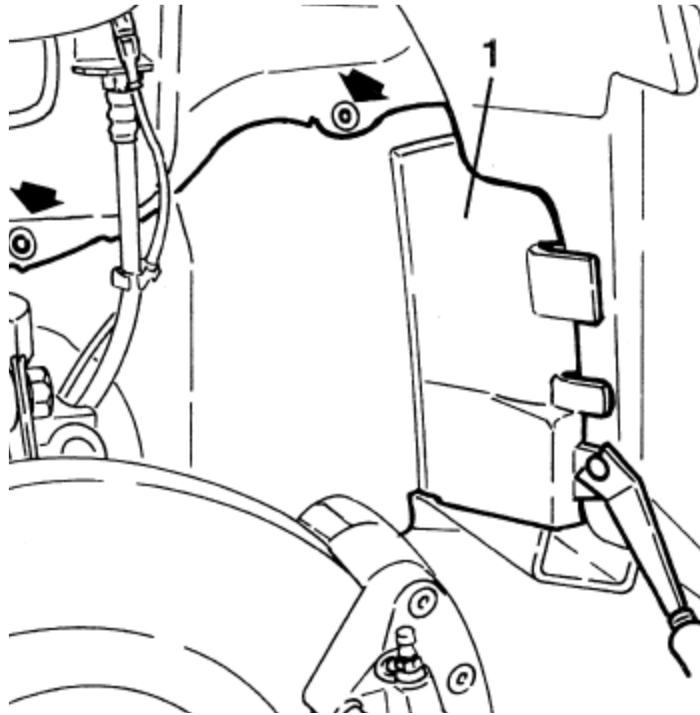
The motor will move slightly during disassembly (in theory forward, but max 1cm); don't panic, it's normal.



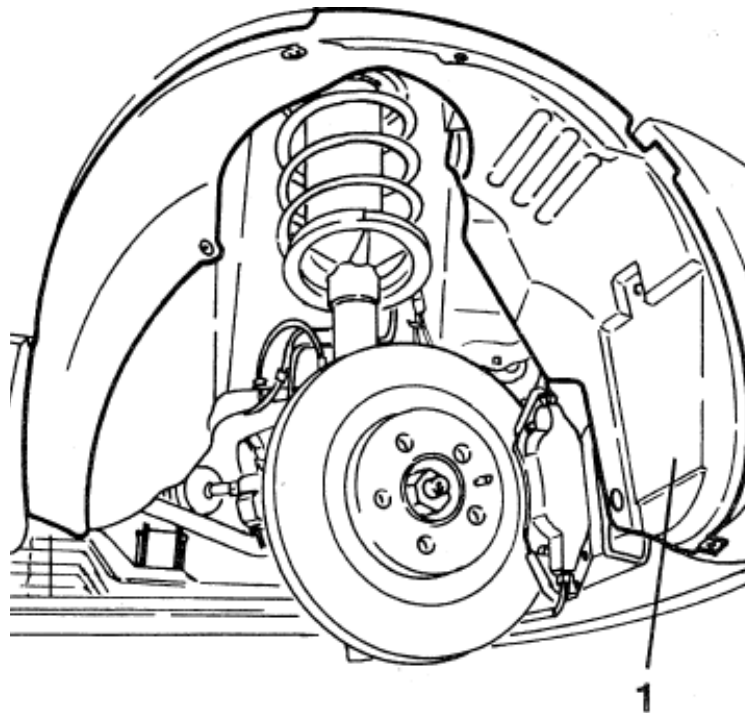
10- We will now attack the disassembly of the wheel arch, and the various elements for have enough space afterwards.

At this stage, it is not necessary to drop the bumper according to the workshop. But frankly, it fell so quickly that it saves time and workspace I find (You see).

So, we remove the side cover of the right front wheel arch (Be careful with the clip, it is fragile).

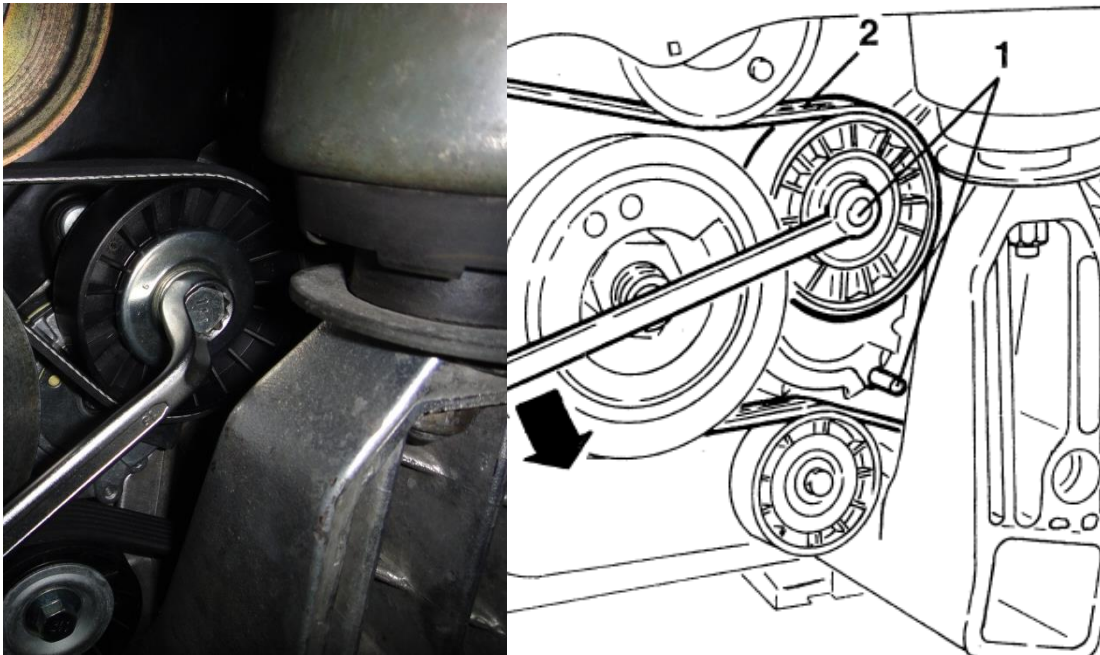


Then, remove the complete wheel arch. (Again, this operation is not mandatory)



11- It's time to dismantle the accessory belt and its pulleys.

Equip yourself with a rod, and a key long enough to come and relax the tensioner, and lock it in position.



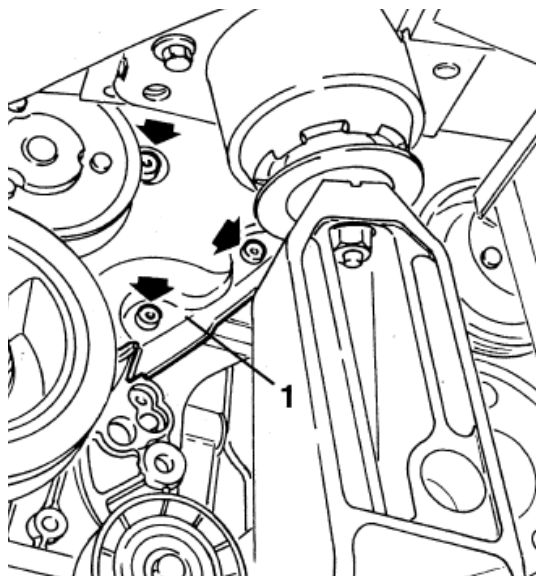
Then, we remove the accessory strap (or cut it if you change it, it's faster). But do not throw the strap away, it will be used later (even when cut).

Then, the tensioner roller and the take-up rollers of the accessory belt are removed. For the alternator side roller, hold the roller in place, and extract the screw at $\frac{3}{4}$, then take out the assembly, otherwise, it will hit the spar.

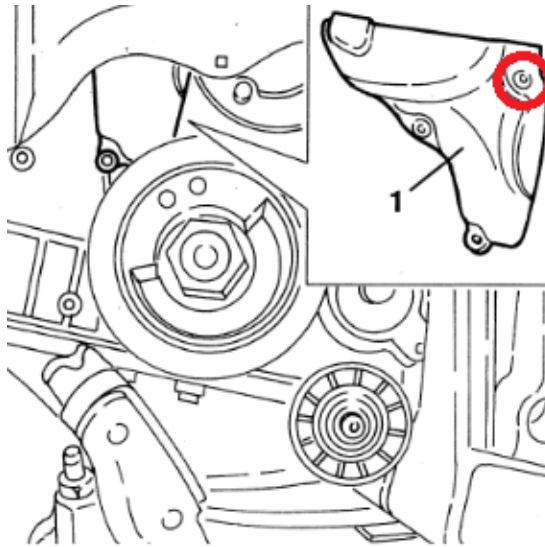
12- Then remove the screws from the 2 lower timing covers (3 screws on each side).

Take care to insert your 6-point impression well, as the screw head can quickly be damaged.

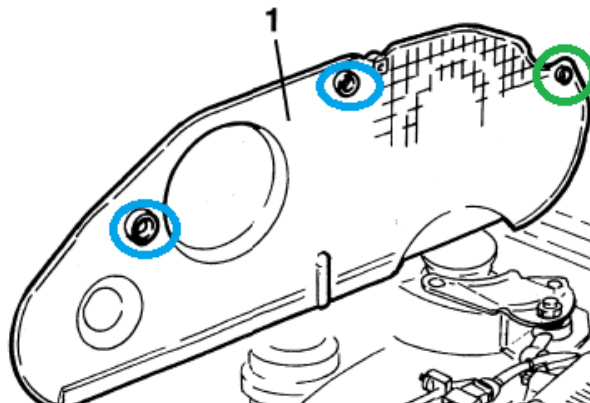
This one, the screws are easily accessible.



On the other hand, for the second, it is a little more complicated, notably the one that is surrounded in red. (you can access it more easily from above)

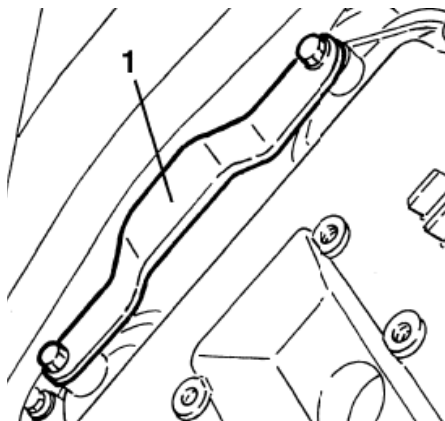


Then dismantle the upper casing. There are 2 screws on the front (blue: key 10), and one on the rear, on the motor support side (green: imprint of 5)

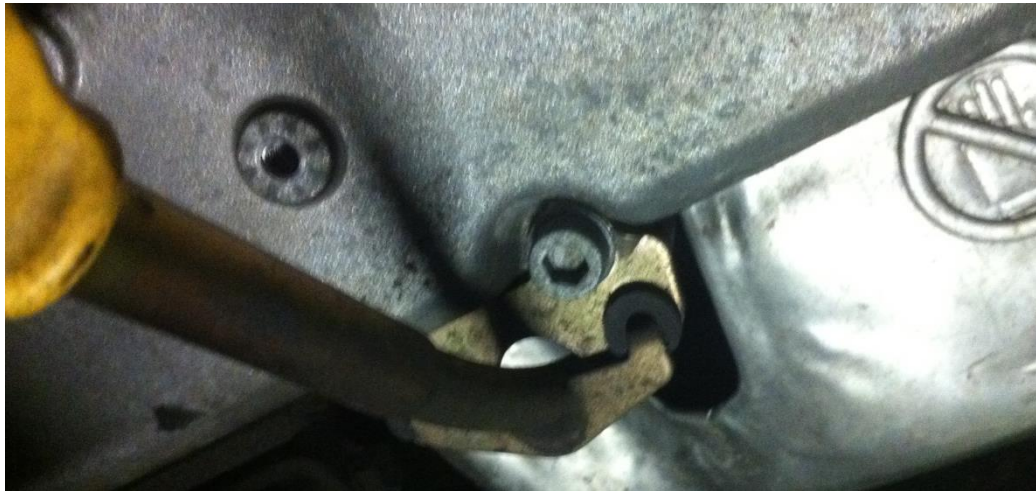


13- We will be able to remove the 2 cylinder head covers.

For the front cylinder head cover, there is a baluster which is located in the timing cover, between the 2 pulleys. It is necessary to remove this baluster, then remove the backplate which is on the cylinder head cover.



Then remove all the bolts from the cylinder head cover, paying particular attention to the direction of assembly of the oil dipstick tube support.



We then disassemble the second cylinder head cover, and take the opportunity to remove the first spark plug.

Then, we mount the TDC rod with its comparator.



14- Before attacking the distribution calibration stage, it is necessary to determine which solution will be used to release the crankshaft nut (which can be seized)

Depending on the method used to release the nut, the final setting will be carried out before or after.

So there are 3 solutions to unlock the nut:

at. A good electric or pneumatic impact wrench (unquestionably the best solution)

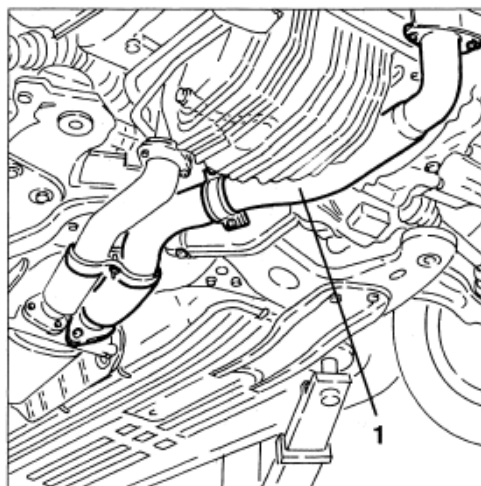
With this method, we come to pre-set the benchmark. Normally, the steering wheel should only oscillate by 0.5mm maximum. If more, it is because you have used very large means.



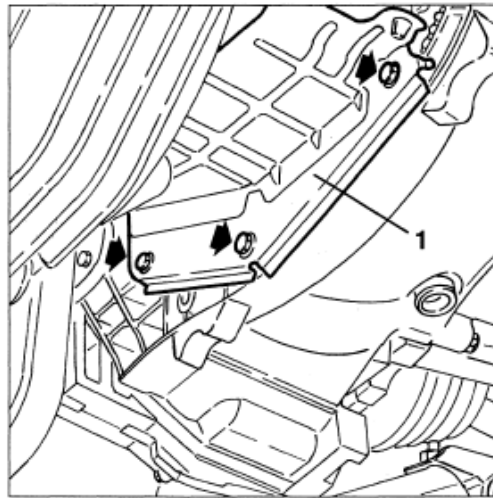
b. Lock the flywheel with the Alfa 1.820.088.000 tool.

With this method, you hold perfectly from the start. It shouldn't move anymore.

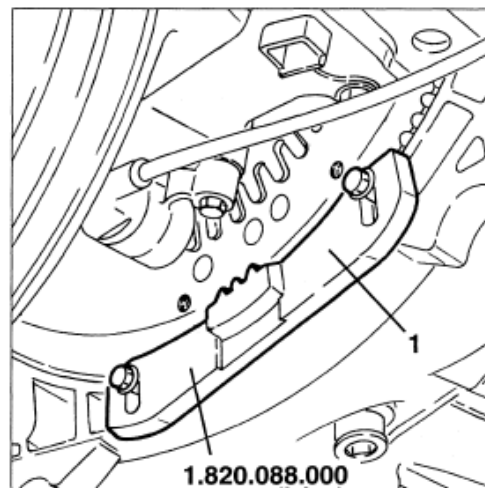
This therefore involves dropping the front pipe, to put the tool there (therefore, the risk of breaking an old rusty stud by age when disassembling). So, we disassemble the front pipe before



Then, the protective casing of the BV



And we install the tool, once the setting is done.



vs. Engage 5th and ask your palest friend to depress the pedal
brake to the floor.

There, no need for photos to explain. However, this method has the disadvantage of having to be completely reset afterwards.

d. In fact, there is indeed a solution 4, known as that of "bamako": block the key against the triangle, and put a starter kick. (Avoid, that's why I didn't count it).

15- Once the solution has been selected, we attack the setting, and the disassembly of the nut.

The timing principle:

It consists in positioning cylinder 1 at Top Dead Center (TDC) during the explosion phase. This means that all the valves for this cylinder will be closed, and the piston at its highest point.

To know if we are approaching the right value, we can help ourselves with:

- at. The mark of the damper pulley which must come to coincide with the fin of the pump water (Attention, this is just to find your way around, it is not reliable as positioning, the comparator is always compulsory)
- b. The ACA lobes at the TDC rod which must be oriented towards the rod.

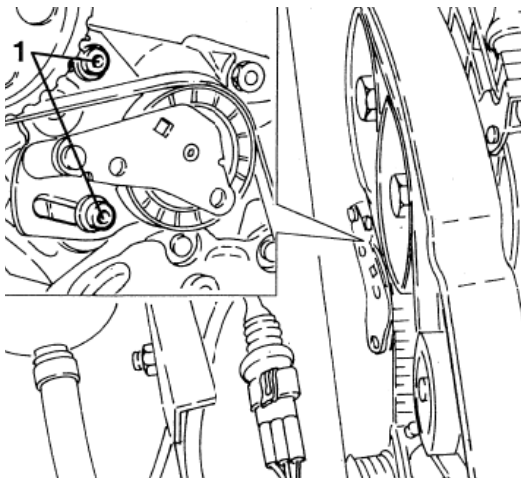
So turn the crankshaft clockwise (to the right) to bring cylinder 1 to TDC.

ALWAYS make sure to perform its last rotation to the right (if you wanted to go back a bit).



Once the TDC is obtained, correctly position your dial gauge so that you can immediately identify a variation in TDC (you never know what can happen). Then, loosen the nut, but leave the pulley for the moment (it will be used to readjust yourself at TDC if you had moved during the loosening).

We can now loosen the belt, by loosening the 2 tensioner screws. But just loosen, not remove them right away.



At this point, the TDC may move very slightly (if the steering wheel is not blocked with the tool).

We then wedge the AACs with the shims provided for this purpose.

Be careful to identify their position. They are not interchangeable, and must be reassembled in the same position, and in the correct direction.

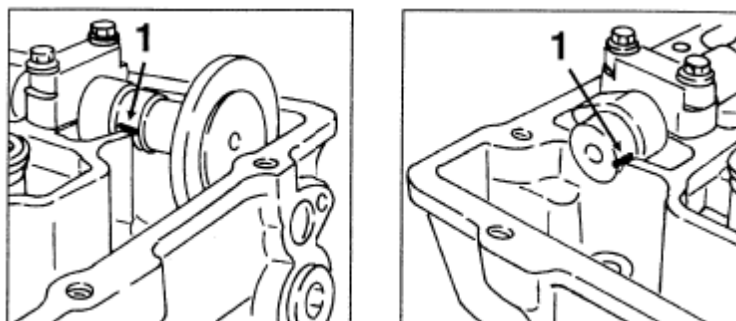
They are marked with an arrow (towards the distribution), and a letter or a number.



To do this, remove the following caps:

- o Cylinder 1: Exhaust (rep. G)
- o Cylinder 1: Admission (rep. B)
- o Cylinder 4: Exhaust (rep. 7)
- o Cylinder 6: Admission (rep. 4)

With the help of the pulley block wrench or a flat wrench of 25 (on the flat in the center of the AAC), slightly rotate the AACs to bring them to the correct position to fit the shims.



(photo credit: Alfa 156 forum)

Mount the respective shims at each location.

Warning : the original screws are too short (the shims are thicker than the caps), so be sure to take screws a little longer. Tighten the shims to 10Nm max . Also pay attention to the position of the shims, depending on the model, the marking indicates the cap or the cylinder (example below)



It's time to unlock the pulleys from AAC.

(Depending on the tools at your disposal, it may be necessary to tilt the engine to free up space. In this case, lower the engine on the left side, by removing the screw from the BV support on the silent block).

With the help of the pulley blocking key, keep the pulley in position (do not use the shims as an AAC brake), and loosen the pulley screws.



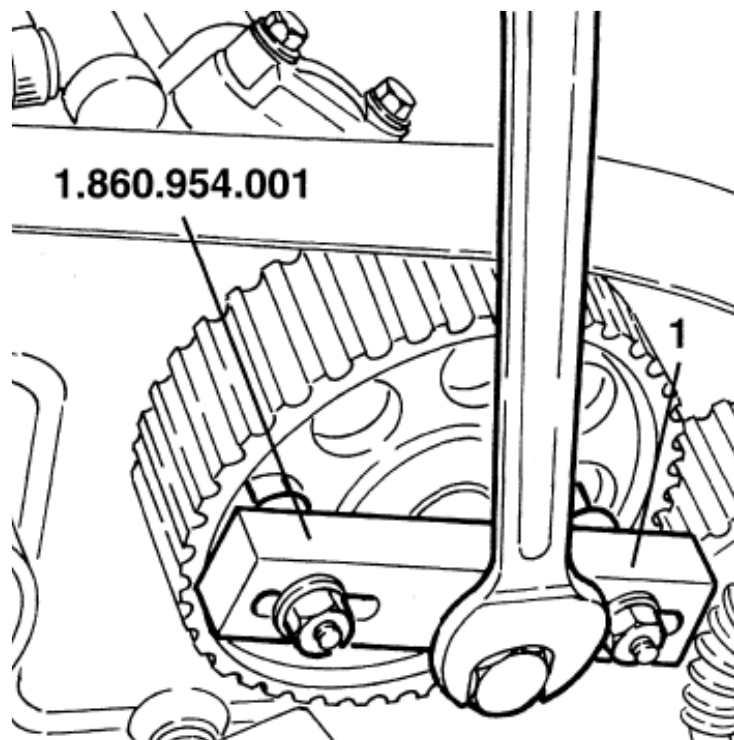
Once the 4 pulley screws have been loosened, remove the belt from the AACs and rollers, then dismantle the tensioner roller.

In the event that the steering wheel was not blocked with the tool, we make sure that the TDC is good (if necessary, use the pulley to readjust perfectly), then we remove the pulley and the pinion belt

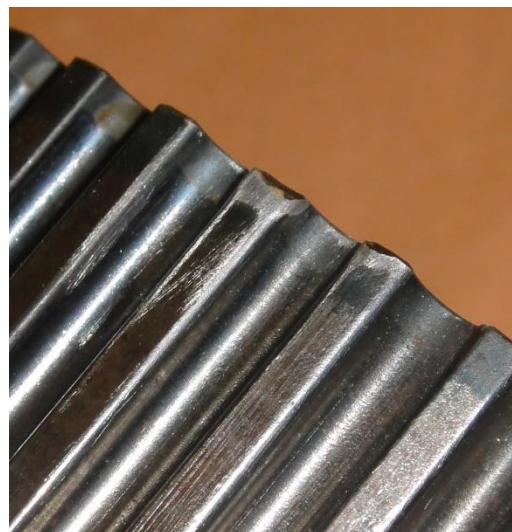
Then, take off the pulleys of the AAC using the extractor.

If you are using the BGS model, fit just 2 pins. Mount the screw on the AAC without the washer, then position the extractor, and finally loosen the screw of the AAC to push on the extractor.

If you use the Alfa or totally Alfa tool, proceed as follows:



It is not advisable to try to pry, or to tap on the pulleys to unlock them. You may damage them



The 2 winding rollers are then dismantled.

If you run out of plaque, you can use a crowfoot. This prevents the engine from tipping over.



And sometimes, some screws can be recalcitrant, so you have to go out of your way, and drill... (good luck)



16- Changing the crankshaft sealing ring (*Go to step 18 if you don't want perform this operation*)

It is necessary to remove the pinion, then the bearing ring (make the notch coincide with the key), and finally the old seal. It is not necessary to remove the key.



Thoroughly clean the assembly, taking care not to drop anything behind it (otherwise, dismantling of the housing guaranteed)

If you do not have the right tool, it is better to get plumbing equipment:

- o A 63/50 reducer
- o A sleeve 63



Then, assemble the fitting in the sleeve, and file if necessary the inscriptions of the face which will serve as support with the joint



Set up the seal by tapping with a rubberized mallet opposite (with this homemade tool, you will not be able to push the seal more than necessary, because there is no rear stop on the flange of the housing, so be careful)



Clean the pinion well, if necessary a slight stroke of "spontex" with WD40, then degreaser, and reassemble it, taking care to lightly oil the vilo.



17- Replacement of AAC sealing rings (Meet at step 18 if you do not wish to perform this operation)

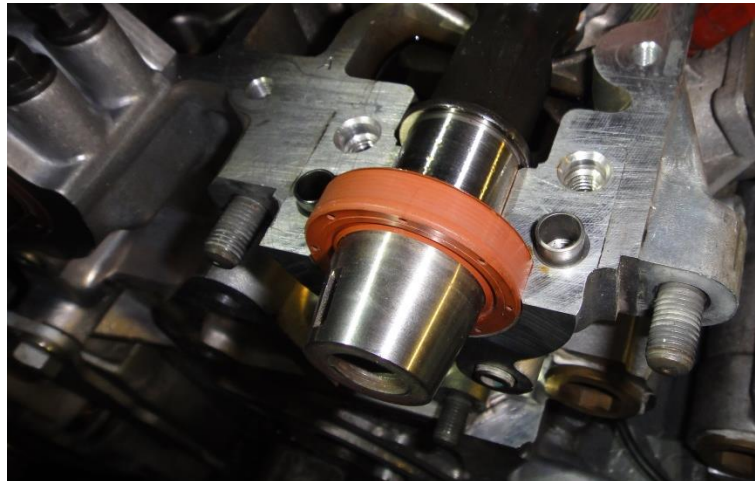
Once the rollers and pulleys removed, you must remove the 2 rear casings of the timing belt (3 screws each)



Then remove the motor support which is held by 3 nuts



Unscrew and remove the AAC cap (mark them well, they are not interchangeable)



Remove the old gasket, and thoroughly clean the bonnet and the cylinder head seat. Put a drop of oil on the cap seat and on the screw threads. Then tighten the hat to the couple (repeat the operation for the other 3).

Tightening torque 18: 20 Nm

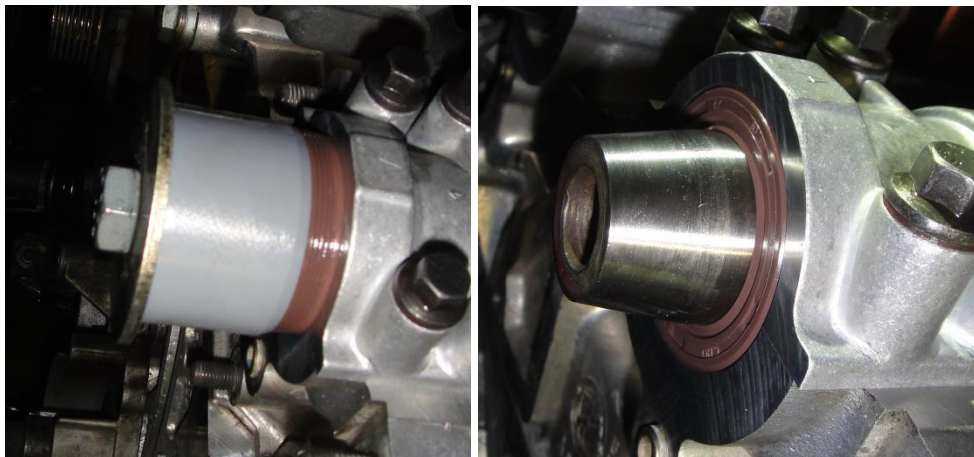


If you don't have the right tool, you can make one for less than € 3:

- o A plumbing reducer in diameter 50
- o A large washer and the AAC pulley clamping screw



Position the seal, and tighten the screw to bring the seal back.



We can now reassemble the engine support. Do not forget to put the lock washers, after having cleaned the threads of the studs, then tighten to the torque.

Tightening torque 34: 42 Nm



Reassemble the casings, and torque tighten the screws.

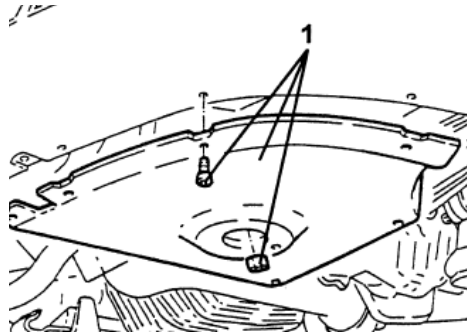
Tightening torque 08: 10 Nm



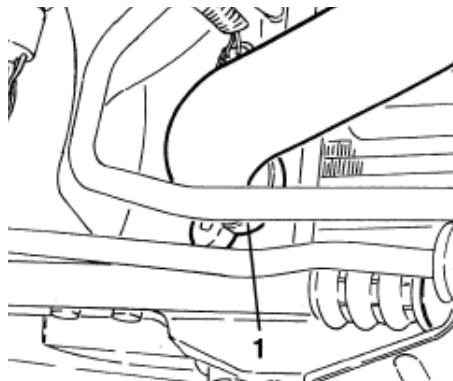
18- Change the water pump (Appointment in step 19 if you do not wish to perform this operation)

First, drain the cooling system.

For this, preferably remove the protective plate under the air box.



Then, disconnect the lower lower hose from the radiator (provide a container of at least 15l). Open the cap of the expansion tank and allow the coolant to drain

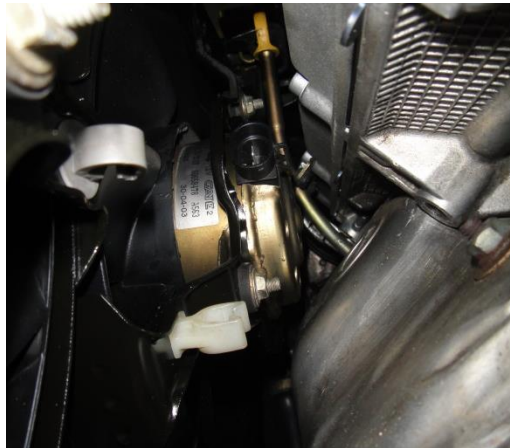


Remove the pulley from the water pump. For this, we can use the old belt with which we maintain the pulley.



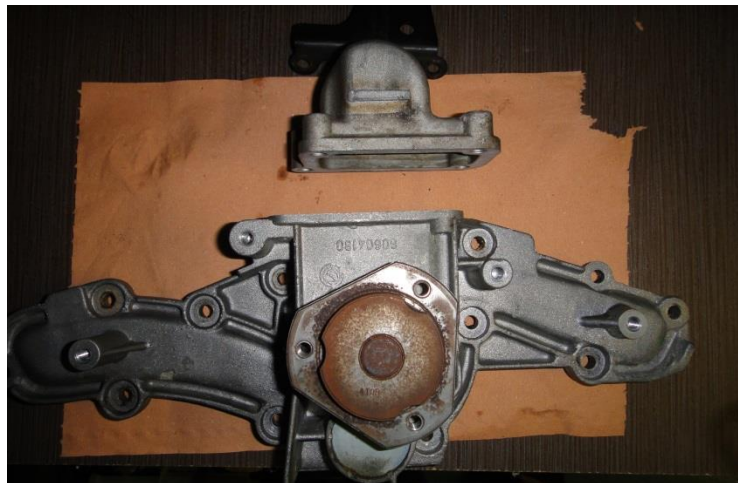
You may not have enough room to pass the pulley between the pump and the beam. Either, you had lowered the engine before, on the BV side, it must pass in this case, or you did not do it, you can then reassemble a chouilla the engine, on the distrib side or switch it to the level of the anti couple.

In all cases, pay attention to the level of the collector heat shield, and the fan, there is very little space.



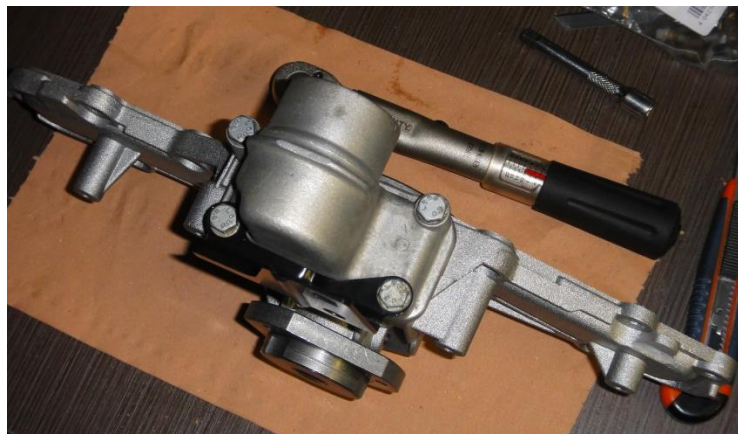
Then remove the water pump and its old seal, making sure not to dislodge the tube from the side of the thermostat.

Recover the crankcase retainer and the PAE upper body from the old pump.



Clean the gasket surfaces, install the new gasket and tighten everything to the prescribed torque (cross tightening) on the new pump.

Tightening torque 08: 10 Nm



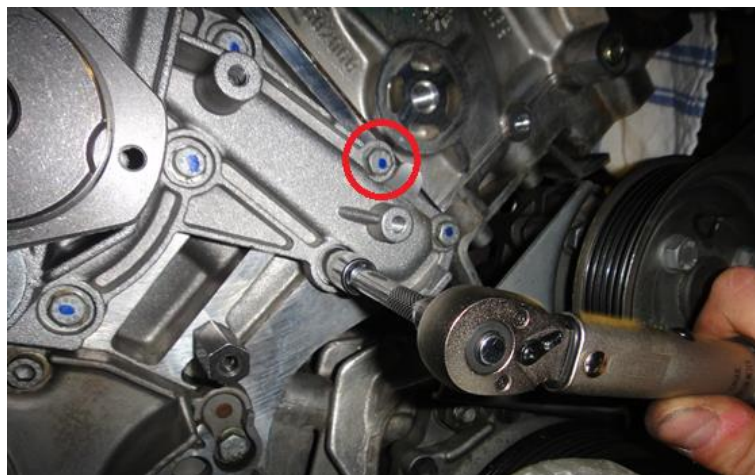
Thoroughly clean the gasket on the engine block. Be careful not to bring any waste into the housing during scraping. If necessary, change the 2 O-rings from the PAE connection tube to the thermostat housing.



Position the new seal and install the new pump.

As a reminder, this pump must be mounted with a paper seal. So, in theory, no joint compound (This involves uniformly tightening the screws to the prescribed torque). Attention during reassembly, because one of the screws is shorter (see red on photo)

Tightening torque 08: 10 Nm



Then reassemble the pulley (opposite to disassembly) using the old belt to hold it.

Tightening torque 07: 09 Nm



Reconnect the radiator hose.

Top up with coolant. Be careful not to mix Paraflu Up with Paraflu 11 (see paragraph on this subject).
You should need about 10l to 11l. Reassemble the bottom plate.

Note: the seal may ooze very slightly at the very start. This type of seal will first become waterlogged, and therefore swell, then harden when the engine is first heated.



19- Reassembly of the distribution.

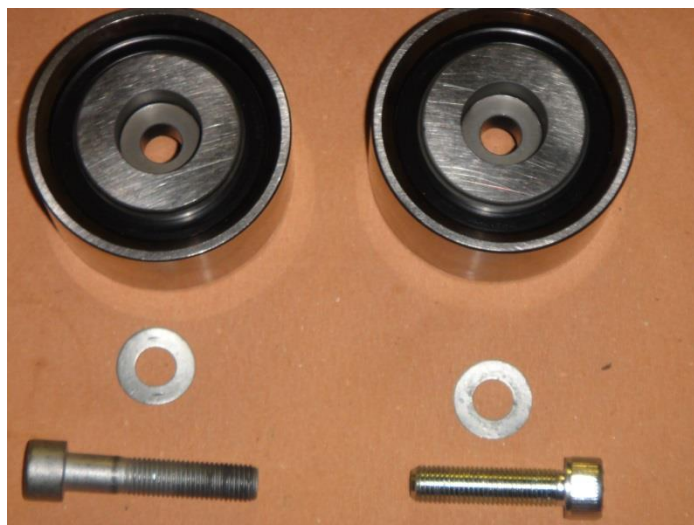
Be careful before you start

Alfa changed the roller screw reference on the 3.0 from 98, and it now equips the 3.2.
It went from 45mm to 40mm.

Alfa has never changed the tightening torque in its MR for this screw.

The risk is simply to tear off the thread from the cylinder head, and given the position of this Ci, you will have no other solution than to go out at least the engine to redo this tapping by adding a specific insert (long high temp thread)

On the left, the roller and screw which goes on the engine support between the pulleys AAC (Upper roller) On the right, the roller and screw which goes on the cylinder head (Lower roller) It is for this one (or rather its screw) that we must be very vigilant



Depending on the screw and washer selected, it will be necessary to adopt an adequate tightening torque, which is sometimes very far from Alfa's recommendation on this subject. And which will necessarily be different from that of the upper roller.

Vis Réf	Type	Rondelle		Longueur Implantation	Couple Théo. Cf. 0.175	Remarques
		Réf	Type			
14307721	M10x125 - 40	12601474	Ondulée	12 mm	33,8 Nm	Montage préconisé Alfa. NON CONSEILLE Attention au couple 30:35Nm MAX
14307721	M10x125 - 40	11198371	Frein	10,5 mm	29,6 Nm	Montage fortement Déconseillé Attention couple MAX 30Nm
14307824	M10x125 - 45	12601474	Ondulée	17 mm	47,9 Nm	Montage conseillé Couple de serrage 45:50 Nm
14307824	M10x125 - 45	11198371	Frein	15,5 mm	43,7 Nm	Montage possible Couple de serrage 40:45 Nm
14307924	M10x125 - 50	12601474	Ondulée	22 mm	NoK	Montage Impossible (Taraudage trop court)
14307924	M10x125 - 50	11198371	Frein	20,5 mm	NoK	Montage trop risqué (Limite de taraudage)

I clearly recommend that you do not follow the Alfa preco for mounting this roller, and choose the 45mm long screw (ref 14307824) with the wavy washer (ref 12601474).

Last point IMPORTANT, make sure that the thread on the cylinder head is perfectly degreased before mounting.

For the upper roller (the one being tightened in the photo below), no worries about tightening torque, since the screw is the 50mm version (ref 14307924)

Reminder of the couples and the choices I recommend:

Lower roller (Screw length 45mm + wavy washer)

Tightening torque 45: 50 Nm

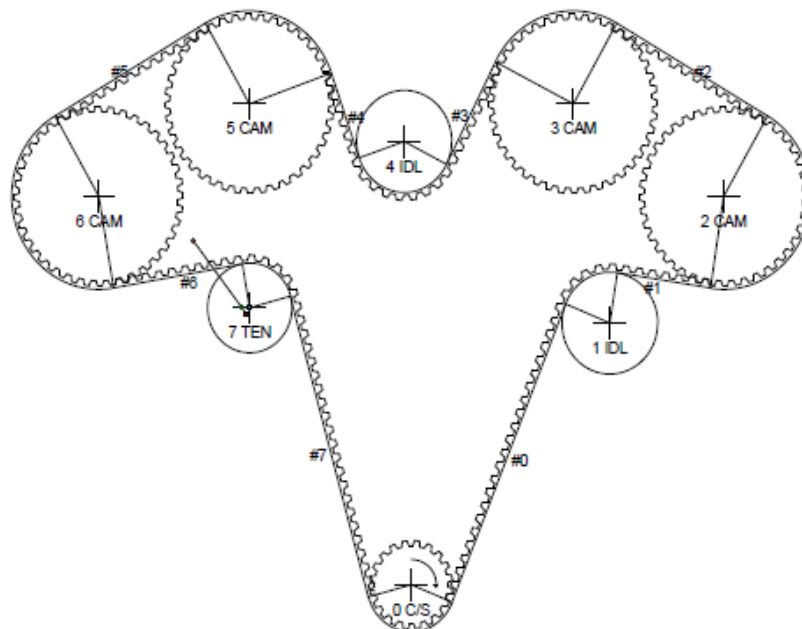
Upper roller (Screw lg. 50mm + wavy washer)

Tightening torque 45: 55 Nm



Put the new tensioner roller in the relaxed position. But do not restrain it, so that it remains free.

Fit the AAC pulleys, but make sure that they remain free. Make sure that the TDC has not moved, then fit the new timing belt starting from the crankshaft pinion, then positioning it counterclockwise (in order: Pinion - Roller - Pulley - Pulley - Roller - Pulley - Pulley - Tensioner)



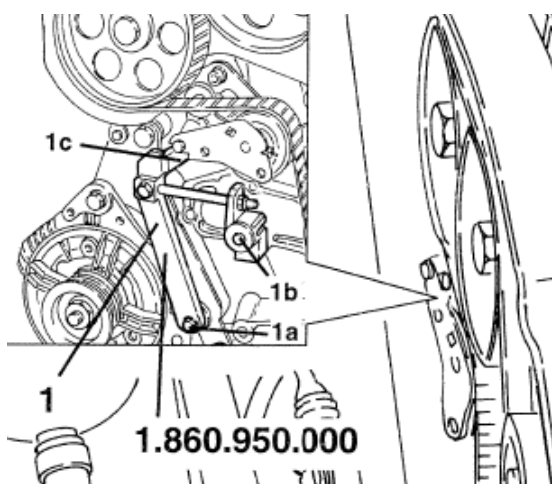
0: Crankshaft, 1: Idler, 2 and 3: Camshafts, 4: Idler
5 and 6: Camshafts 7: Tensioner

(credit: Litens)



Tension the belt.

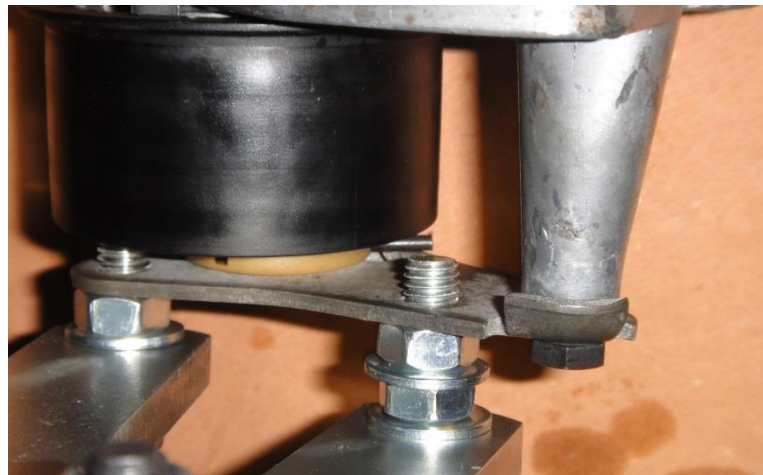
Either using the Alfa type tool that I do not find practical at all (refer to the instructions for this one)



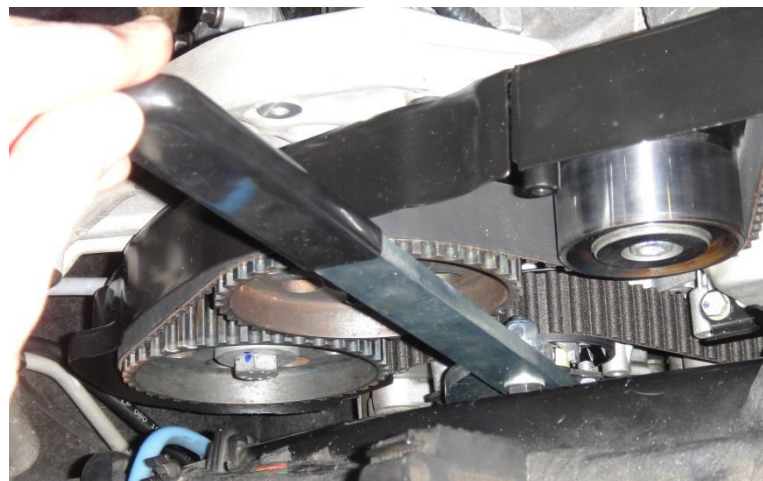
Either using the TotallyAlfa tool, or better by modifying the key blocking the universal pulley like this:



So as to be positioned in the 2 holes of the tensioner plate:

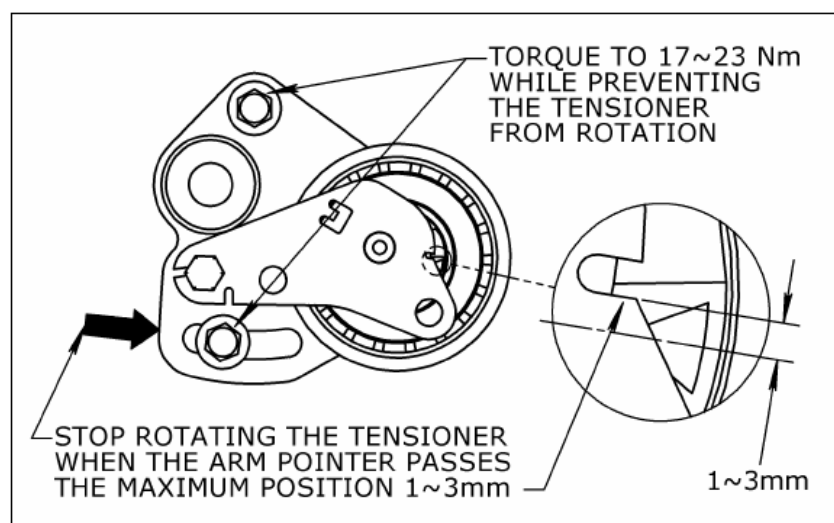


And be able to operate the tensioner from above (or below if you wish):



Bring the movable tensioner marker under the fixed mark. Then tighten the screws to the torque

Tightening torque 17: 23 Nm



Torque the AAC screws.

Be careful to immobilize the pulley well and do not rotate it when tightening. Initially, perform a slight pre-tightening (without forcing to just stick the pulley), then with the pulley blocking key, come and hold the pulley in position to carry out final tightening (the pulley blocking key then serves as anti-torque)

Tightening torque 72: 88 Nm



Remove the AAC wedges, then put the respective caps (clean and degreased) back (pay attention to the direction of assembly).

A drop of oil on the surface, and on the screws, then torque tightening

Tightening torque 18: 20 Nm

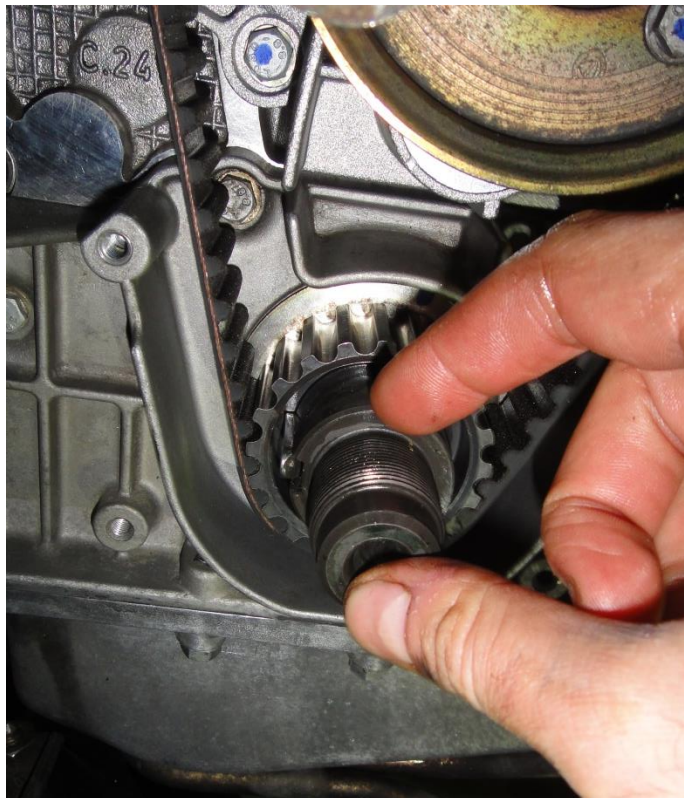


Clean the damper pulley, and make sure it is in good condition.

If necessary, a little "spontex" with WD40 on the bore and the outer seat, then degrease the assembly well.



Oil the seat of the crankshaft very lightly, and oil the thread well.



Fit the pulley, the washer and its nut. It's time to tighten up the torque. For this, 4 solutions:

- o Thanks to the steering wheel locking tool if you had used it for disassembly.
- o Passing the 5th, and asking a friend to lock the brakes
- o Passing the 5th, and immobilizing the rotation of the wheels
- o With an adjustable impact wrench which you are sure of, because the tolerance of the tightening torque is quite important.

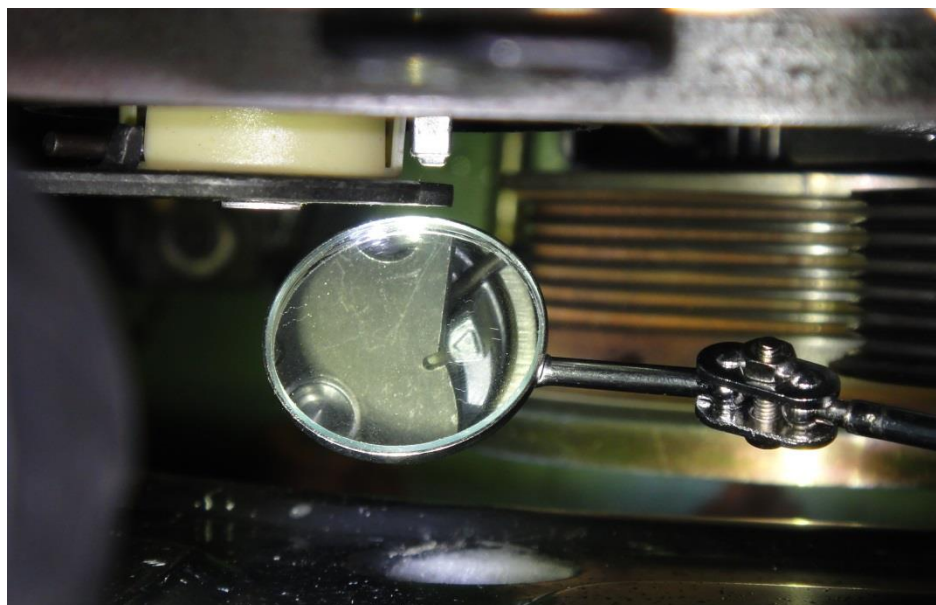
Tightening torque 200: 247 Nm



Remove the flywheel if you had one.

Make 2 turns of the crankshaft clockwise, so that the belt fits perfectly.

Check that the tensioner tension is correct (the arrow on the moving part must be in the center the notch on the fixed part).



20- We start the reassembly. The hard part is behind you.

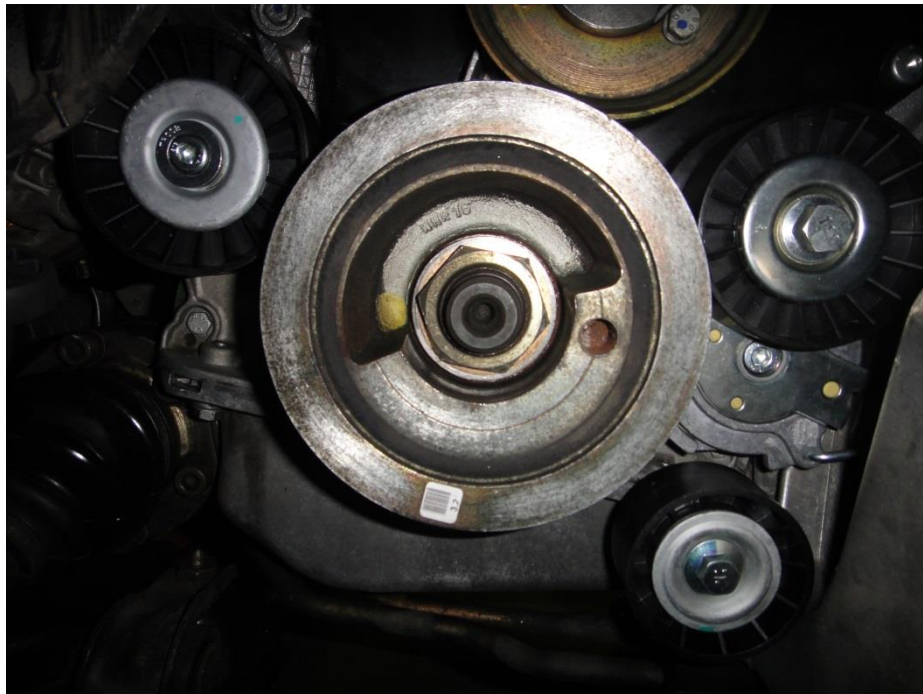
Refit the 2 lower covers of the timing cover.

Tightening torque 08: 10 Nm



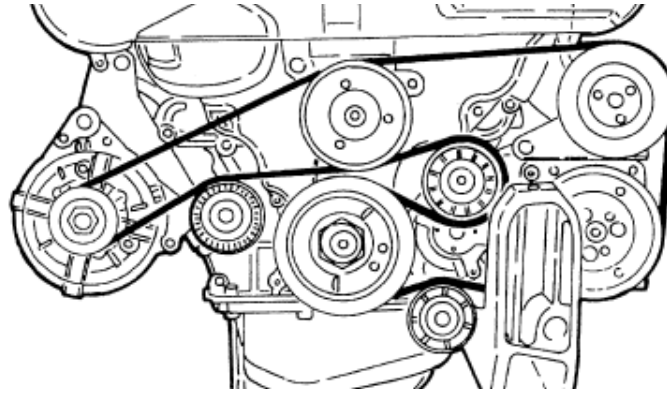
Fit the rollers and the tensioner of the accessory belt.

Tightening torque 21: 26 Nm

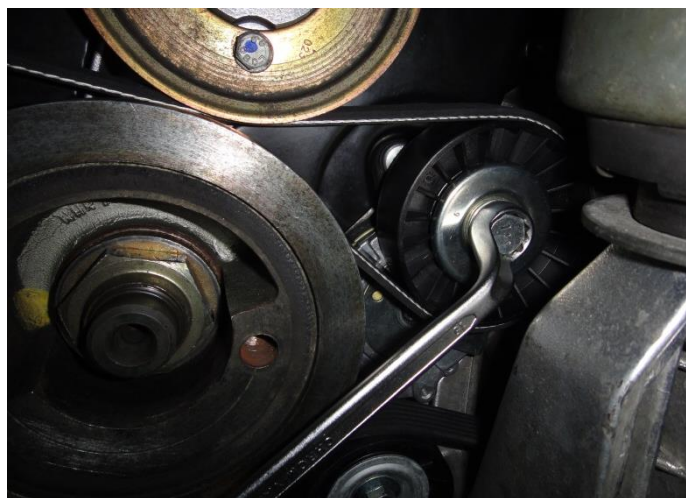


Fit the accessory strap.

It is simpler to start by returning the belt to the alternator pinion, going to the tensioner pulley, then coming to wind on the damper pulley,... (therefore, anti-clockwise)



Make sure the belt is securely in place on each sprocket, then release the belt tensioner.



Disassemble the TDC rod.

Clean the cylinder head covers, and install a new seal.

Then tighten the cylinder head covers to a couple (crosswise, starting at the center), making sure to reassemble the oil dipstick tube support, but also the harness fixing lug:

Tightening torque 14: 17 Nm



Replace the harness on the cylinder head covers and tighten to the torque of the supports.

Tightening torque 07: 09 Nm



If necessary, repeat before cladding (especially at the injector wiring) with a new corrugated sheath.



We make sure to have reconnected the harness in front of the air conditioning compressor, as well as in the box above the thermostat.

We do not forget the ground connection on the front cylinder head, and we attach the harness on its mounting tab of the rear cylinder head.

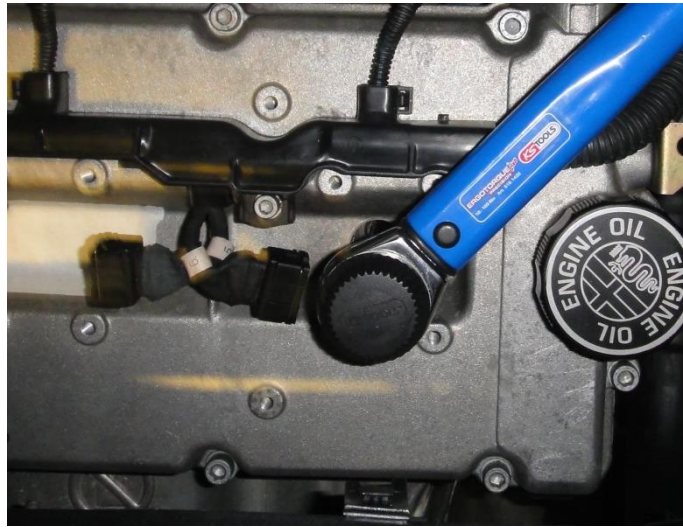
21- We take the opportunity if necessary to mount new candles.

A little copper grease on the thread before mounting is preferable.



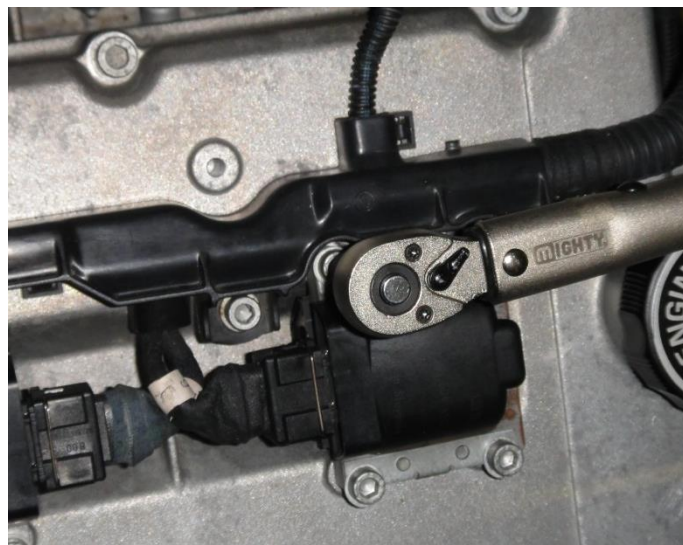
Mandatory torque tightening.

Tightening torque 27: 34 Nm



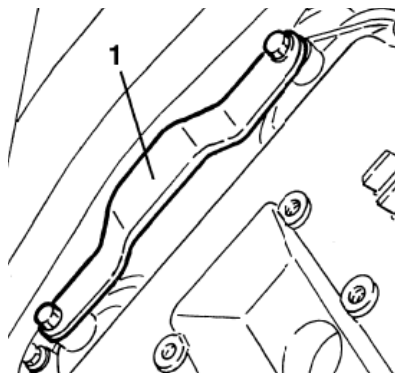
Winding of coils, and connection of cables

Tightening torque 08: 10 Nm



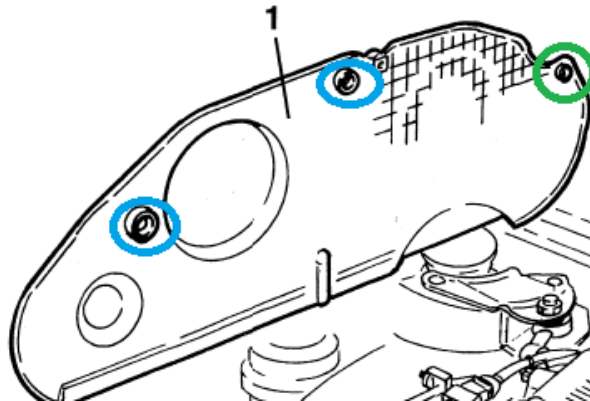
22- Reassembly of the timing case retaining plate and its baluster.

Tightening torque 08: 10 Nm



Then we reassemble the timing cover

Tightening torque 08: 10 Nm

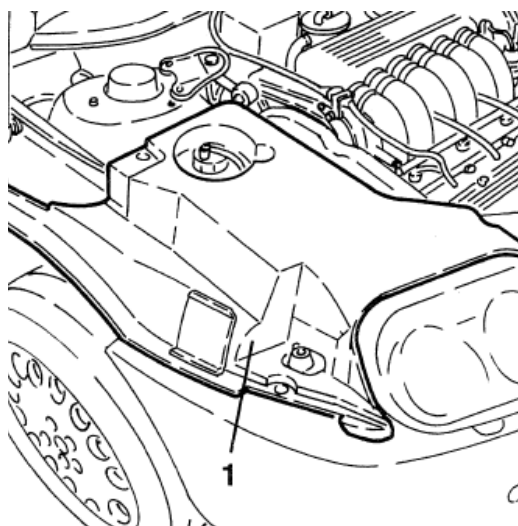


And we reassemble the anti vibration support

Tightening torque 42: 51 Nm

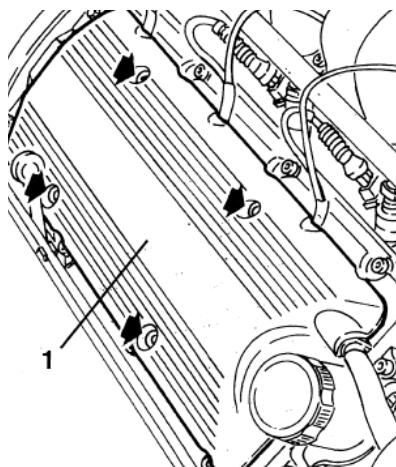


Reassembly of the upper front left cover.



Refit the front cover

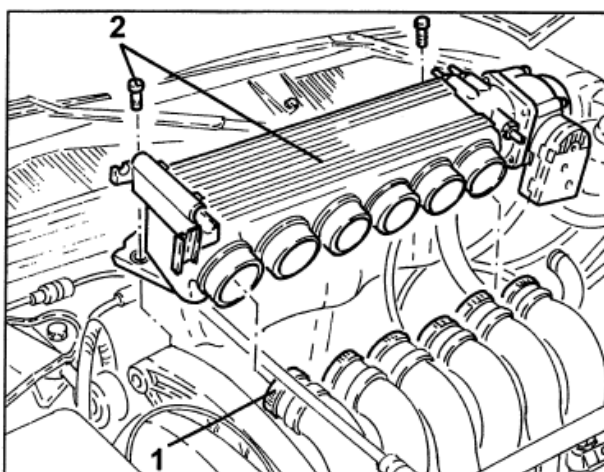
Tightening torque 08: 10 Nm



Reassembly of the plenum (and emission pipes if necessary), making sure to position it correctly on the 2 pads of the cylinder head cover.

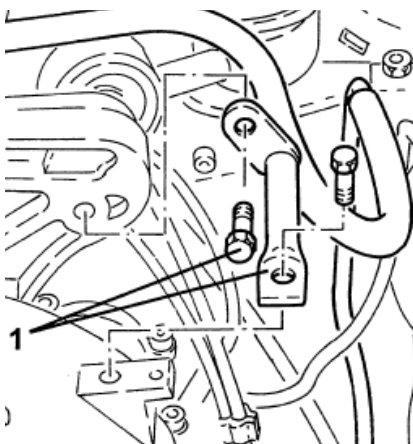
It is preferable to fit new seals if the intake pipes have been dismantled.

Plenum tightening torque 08: 10 Nm Intake pipe
tightening torque 09: 11 Nm



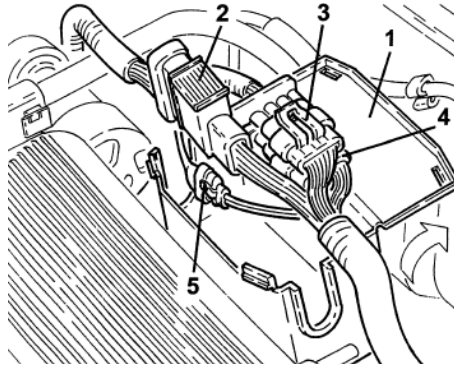
Do not forget to reattach the mounting bracket connecting the plenum to the engine support.

Tightening torque 14: 17 Nm



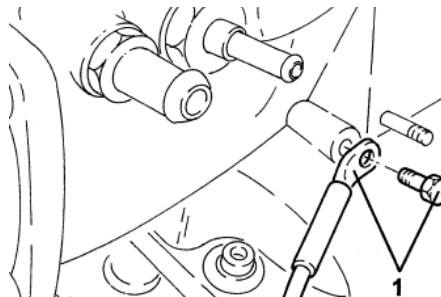
And we reattach the box on the plenum, and we reconnect all the connectors

Tightening torque 07: 09 Nm



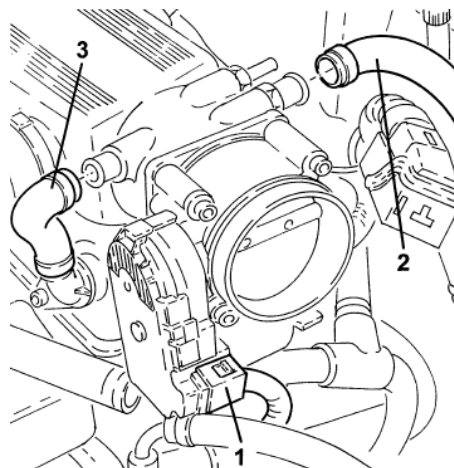
Reattach the ground terminal on the plenum at the computer, then reconnect the computer sockets

Tightening torque 08: 10 Nm



Reconnect the different hoses to the plenum,

Then, reconnect the plug of the throttle body and reattach the intake hose to the plenum.



We end by going up:

- o The casing on the spar
- o The undertray and the bumper if you had removed it.
- o The wheels

We reconnect the battery, and voila.

See you in 5 years.