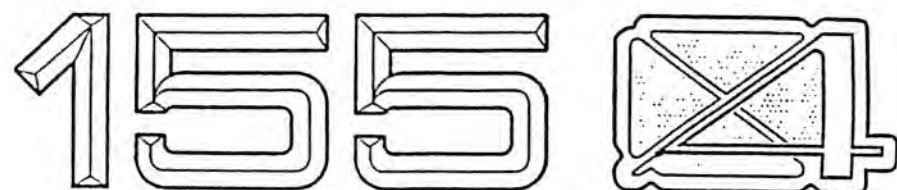


155

REPAIR MANUAL

- VEHICLE CHARACTERISTICS AND MAINTENANCE

UPDATE CARD



REPAIR MANUAL

VEHICLE CHARACTERISTICS AND MAINTENANCE



UPDATE CARD			
UPDATE (DATE)	SECTION	PAGE	
		SUBSTITUTED	ADDED
	Vehicle characteristics and Maintenance (pages with PA4655A24x4001)		
1 (12/1994)		00-1	
1 (12/1994)		00-2	
1 (12/1994)			00-B/1
1 (12/1994)			00-B/2
1 (12/1994)			00-B/3
1 (12/1994)		00-11 to 00-15	
1 (12/1994)		00-18	
1 (12/1994)		00-71	

Insert this Update Card in the volume "155 - Repair Manual - Vehicle Characteristics and Maintenance" at the beginning of the section referring to 155.



VEHICLE CHARACTERISTICS AND MAINTENANCE

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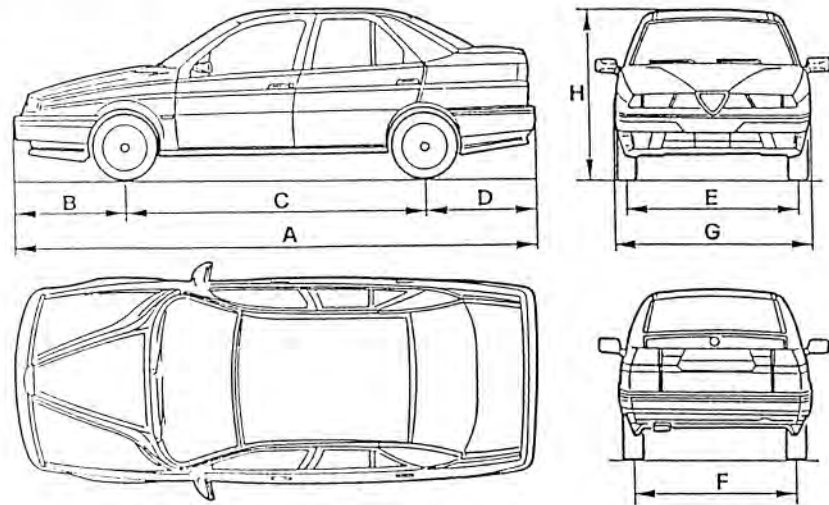
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- Checking sealing of braking system.....	00-63	- Checking exhaust emissions.....	00-70
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DIMENSIONS



		Version	
			155
Dimensions			
A	Maximum length	mm	4443
B	Front projection	mm	960
C	Wheel base	mm	2540
D	Rear projection	mm	943
E	Front wheel track	mm	1477
F	Rear wheel track	mm	1402
G	Maximum width	mm	1700
H	Maximum height	mm	1440



WEIGHTS AND LOADS

		Version	
			155
Weights and loads			
Kerb weight (DIN)		kg	1390
Vehicle weight when fully loaded		kg	1845
Useful load		kg	455
Maximum permitted weight per axle	front	kg	1030
	rear	kg	980
Towable weight	with trailer with brakes	kg	1500
	with trailer without brakes	kg	450
Maximum loading on tow hook		kg	105



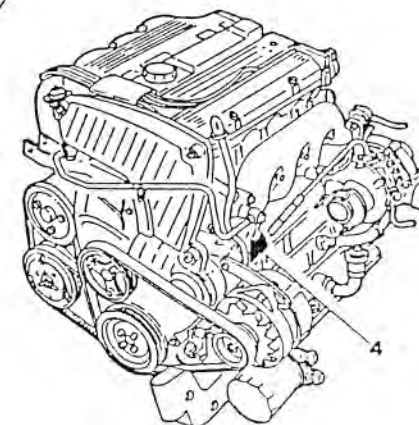
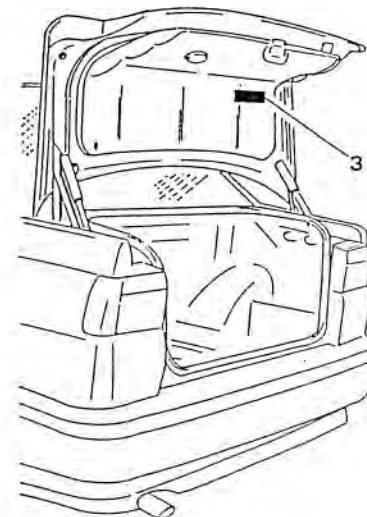
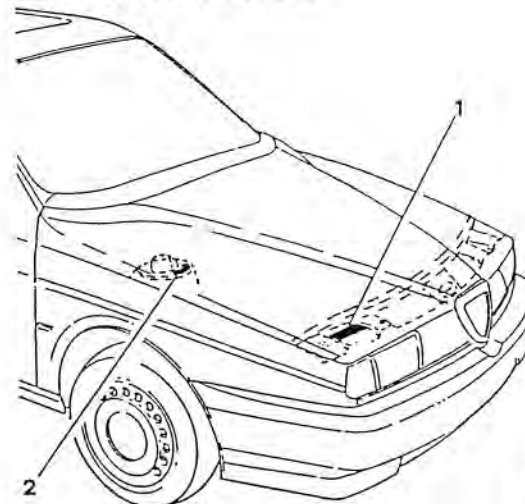
WHEELS AND TYRES

		Version
Characteristics		155
Rim size		6J x 15"
Tyre dimensions	standard	205/50 ZR 15"
	optional	-
Tyre pressure bar - kg/cm ²	average load, normal speed	front 2.5 rear 2.0
	full load, high speed	front 2.8 rear 2.5
Compact spare wheel	rim size	4J x 15"
	tyre dimensions	115/70 R 15"
	tyre pressure bar - kg/cm ²	4.2



IDENTIFYING THE MODEL

IDENTIFICATION LABELS



1. Identification label
2. Chassis number
3. Body paint identification label
4. Engine number



IDENTIFICATION TABLE

Version		155
Type		4 door saloon
Drive		LH + RH
N° Vehicle Type	on identification label	167A2C
	in engine compartment to one side of the upper attachment of right-hand shock absorber	167000
Progressive chassis N°		0.000.000.1
Progressive type and engine N°		AR 67203 from 000.001



OVERALL IDENTIFICATION LABEL

This can be found on the engine compartment cross-member and carries the following identification data:

	A	
	B	
P	C	D
	E Kg	
O	F Kg	
	G Kg	
N	1 -	H Kg
	2 -	H Kg
MOTORE - ENGINE		I
VERSIONE - VERSION		L
N° PER RICAMBI N° FOR SPARES		M

- A. Manufacturer's trade name
- B. Homologation number
- C. Vehicle type identification code
- D. Progressive chassis number
- E. Maximum weight allowed for fully loaded vehicle
- F. Maximum weight allowed for fully loaded vehicle with trailer
- G. Maximum weight allowed on first axle (front)
- H. Maximum weight allowed on second axle (rear)
- I. Engine type
- L. Body type serial number
- M. Number for spare parts
- N. Correct value of the smoke coefficient (for diesel and turbo diesel engines)
- O. Supplier's code
- P. Producing country

BODY PAINT IDENTIFICATION LABEL

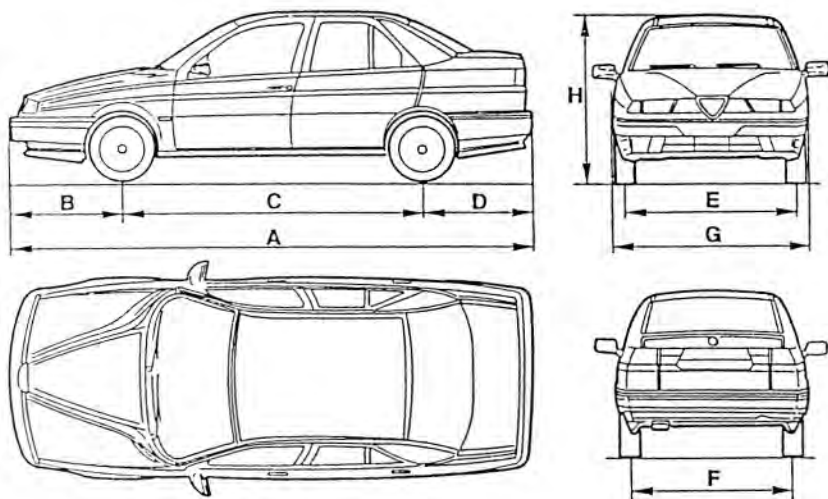
This is located in the inner part of the luggage compartment and carries the following data:

Versione originale Peinture originale/Original painting Originalierung/Prinado original	A
Colore/Tintina/Colour Fazione/Color	B
Codice/Code/Código	C
PER RITOCCHI E RIVERNICIATURE	D

- A. Paint manufacturer
- B. Name of colour
- C. Colour code
- D. Touch-up or respray colour code



DIMENSIONS ('95 Versions)



		Version	
			155
			(167A2E)
Dimensions			
A	Maximum length	mm	4443
B	Front overhang	mm	960
C	Wheelbase	mm	2540
D	Rear overhang	mm	943
E	Front track	mm	(*)
F	Rear track	mm	(*)
G	Maximum width	mm	1730
H	Maximum height	mm	(*)

(*) Not available at time of going to press.



WEIGHTS AND LOADS ('95 Versions)

		Version	
			155
			(167A2E)
Weights and loads			
Kerb weight (without driver)	kg		1465
Towable weight (with brakes trailer)	kg		1500

WHEELS AND TYRES ('95 Versions)

		Version	
			155
			(167A2E)
Specifications			
Rim size			7J x 16" (▲)
Tyre size	standard		205/45 ZR16
	optional (for versions/markets, where applicable)		205/50 ZR15
Tyre pressure bar - kg/cm ²	reduced load (2 persons)		front 2.5 rear 2.3
	full load		front 2.8 rear 2.5
Compact spare wheel	rim size		4B x 15" (in alloy)
	tyre size		115/70 R15 90M
	tyre pressure bar - kg/cm ²		4.2

(▲): 6.5J x 15" with 205/50 ZR15 tyres

WARNING:

In the event of continuous driving at top speed, the pressures should be increased by 0.3 bar.

NOTE: To improve mating between the wheels and the car body, the rims have a specific camber for each rim size. Therefore, in addition to the correct rim and tyre match it is also necessary to check and maintain the rim camber angle.

RIM SIZE	RIM CAMBER ANGLE
6.5J x 15"	37 mm
x 16"	41 mm



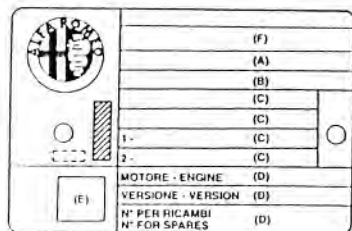
MODEL IDENTIFICATION ('95 Versions)

MODEL IDENTIFICATION

Vehicle		155
Trim level		4-door saloon
Drive		LH + RH
Model no.	on identification label	167A2E
	in the engine compartment, at the side of the right shock absorber upper coupling	167000
Chassis serial number		(*)
Engine type and serial number		AR 67203 from (*)

(*) engine/chassis no. not available at time of going to press.

IDENTIFICATION LABEL



- A. National homologation number
- B. Chassis serial number
- C. Space available for maximum weights authorized by the different national regulations
- D. Space reserved for version (for example 167A2E) and any supplementary information
- E. Smoke opacity index
- F. Name of manufacturer



SPECIFIC TOOLS

The specific tools play an important role in vehicle maintenance as they are essential in order to guarantee a complete, reliable and rapid service.

The times regarding the various operations have been calculated considering the use of the specific tools.

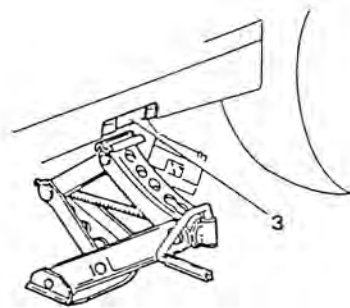
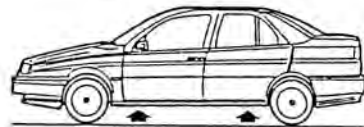
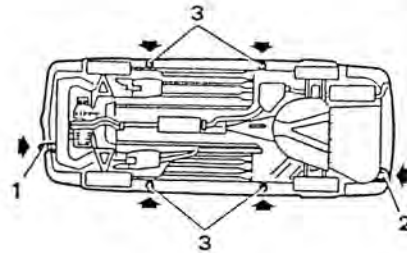
This manual list and illustrates the specific tools produced by the Vehicle Manufacturer for maintenance, overhaul and repair operations.

The tool identification code is formed by a new number of 10 digits and an old code of 1 letter and 5 digits.

e.g.: 1.824.016.000
(C.2.0129)

Recently produced tools only have the new number.

The assistance network can supply the specific tools in compliance with the procedures already in force at the single Alfa Romeo dealers.



1. Front tow hook
2. Rear tow hook
3. Lifting points



CAUTION:

After raising the vehicle using the jack, support it with safety stands.

Before raising the rear (front) end of the vehicle, block the wheels by placing chocks in front of (behind) the front (rear) wheels.



When necessary the vehicle must be towed so that all four wheels touch the ground. Whenever this is not possible the vehicle must be transported by raising it completely off the ground (transport on another vehicle).

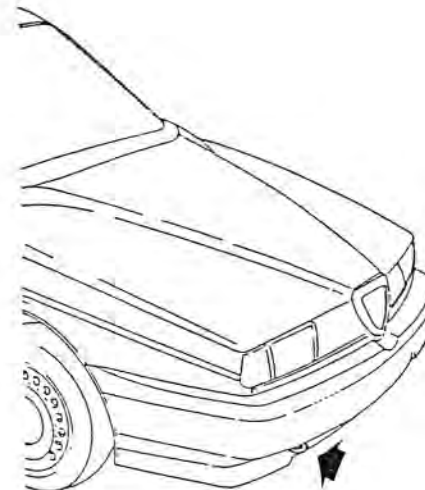


CAUTION:

Do not tow the vehicle with only two wheels on the ground as this may damage the transmission.

The vehicle is fitted with two tow hooks (front and rear) located on the right-hand side of the bumpers.

When towing or being towed drive with care, observing the laws in force.



Front tow hook



Rear tow hook

Before towing ensure that the ignition switch of the vehicle being towed has been turned to the MAR position and then returned to the STOP position without withdrawing the key; in this way the steering will not lock while the vehicle is in motion.

When being towed no vacuum is created in the servo brake system and it is therefore necessary, when braking, to apply a greater force than normal on the brake pedal.

The power steering system will also not be activated and it will therefore be necessary to exert a greater force on the steering wheel.



CAUTION:

Do not remove the key from the ignition. If the key is however removed, check that the steering lock is not engaged.



SERVICING OPERATIONS

The servicing operations comprise checking and restoring the efficiency of certain parts of the vehicle on which wear and phase displacement are foreseen after normal use.

The following table lists the servicing operations to be carried out at the specified mileage intervals.

WARNINGS:

Precautions to be taken before servicing operations. The engine compartment contains many moving parts, high temperature components and high voltage cables that can be dangerous.

Carefully follow the precautions given below:

- Turn the engine off and allow it to cool down.
- Do not smoke or use naked flames. The presence of fuel can cause a fire hazard.
- Always keep a fire extinguisher handy.

Operations to have done at the mileage shown	km x 1.000									
	20	40	60	80	100	120	140	160	180	200
Changing the engine oil and filter (at all events once a year) and checking lubrication circuit for leaks	Every 10,000 km									
Checking valve clearance (except engines with hydraulic tappets)		•		•		•		•		•
Changing the timing gear drive belt						•				
Checking the conditions of the trapezoidal belts		•		•		•		•		•
Checking the conditions of the Poly V belts				•				•		
Changing the air cleaner cartridge		•		•		•		•		•
Changing the fuel filter cartridge (petrol versions)				•				•		
Checking operation of the exhaust gas oxygen sensor (lambda probe)				•				•		
Changing the spark plugs	•	•	•	•	•	•	•	•	•	•
Changing the anti-freeze mixture				•				•		
Checking the gearbox and differential oil level (only versions with manual gearbox)				•				•		
Checking conditions of protective bellows for axle shafts, power steering and steering knuckle caps		•		•		•		•		•
Checking brake and fuel system pipes for leaks		•		•		•		•		•
Checking handbrake travel		•		•		•		•		•
Checking power steering oil level		•		•		•		•		•



**SERVICING OPERATIONS
(Continued)**

To keep the car in good operating conditions, the following recommendations should be adhered to carefully:

Every 500 kms (or when refuelling) check:

- the engine oil level.
- the level of the fluid in the coolant circuit.
- the level of the brake/clutch fluid.
- the tyre pressures.
- the level of the fluid in the windscreen wiper/washer system.

Engine oil and filter

To be changed at the specified intervals.
At all events, they must be changed once a year.

Air cleaner

If the car is habitually used on dusty roads, the air cleaner should be changed more often than specified.

Brake pads

Wear of the brake pads is indicated by the turning on of a warning light on the instrument cluster.
When changing the front pads, also check the rear ones. However, depending on the use of the car, the rear pads might not need to be changed immediately, in which case, you are recommended to check them at a later stage.

Brake and clutch fluid

The brake fluid is hygroscopic, i.e. it absorbs moisture. To avoid faulty braking, change the brake fluid every two years, regardless of the mileage driven.

Battery

During hot weather, check the electrolyte level frequently.

Dust and/or pollen filter (if fitted)

Once a year, preferably at the beginning of summer, have the conditions of the dust and/or pollen filter (if fitted) checked by the Alfa Romeo Service Network.

If the car is mostly used for town/motorway driving or on dusty roads, it is wise to check more often than indicated.

Warning: Failure to change the filter can considerably reduce the performance of the air conditioner system.

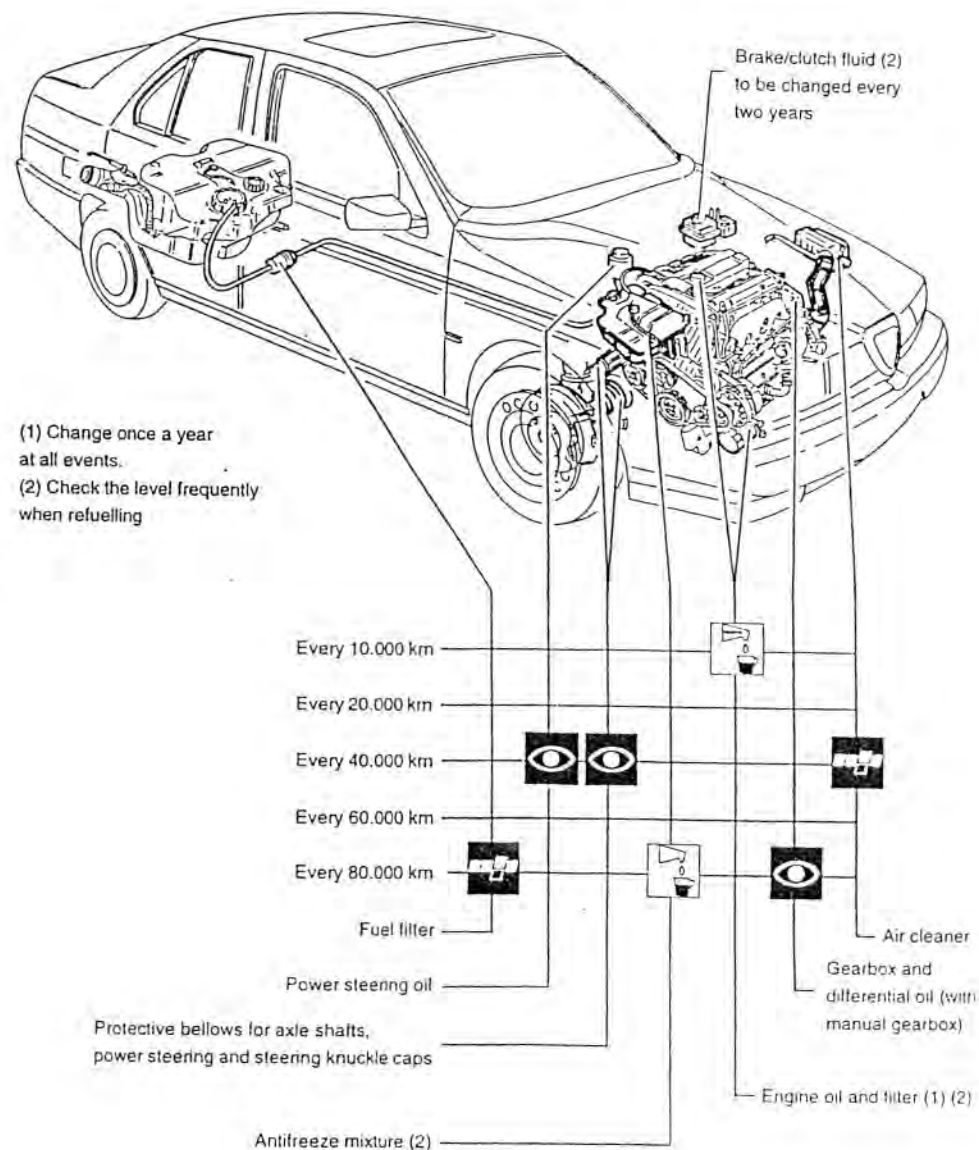
Anti-freeze

It is advisable to top up with **Alfa Romeo Climafluid Super Permanent -40°C** to conserve the protective properties of the mixture.

Notes

Under special driving conditions (e.g. on roads sprinkled with antifreeze salt and/or corrosive substances, rough road surfaces, etc.) often check the boots of the axle shafts and steering box, and clean and lubricate joints, hinges, door catches, bonnet catch, etc.)

When forced to use fuel, lubricants and/or fluids in general with characteristics other than those specified by the manufacturer (in emergencies), replace the fluids and corresponding filters at the earliest opportunity.

**PROGRAMMED CHECKS AND MAINTENANCE**



(*): This page replaces pages 00-15/16/17
of publication PA4655A24x4000 of 12 - 1991.

Therefore pages 00-16/17 are deleted

FLUIDS AND LUBRICANTS

Type	Group ref.	Application	Classification	Name	
OIL	01 - Engine (1)	Engine (Refilling)	API SG	SELENIA	
			CCMC G5	SPECIAL FORMULA	
			SAE 10W/40	ALFA ROMEO 10W/40	
	13 - Gearbox and differential	Gearbox and differential (Refilling)	API GL-4	TUTELA ZC 80/S	
OIL	18 - Rear axle 4-wheel drive	Rear axle (Refilling)	SAE 80W/90	TUTELA W90/M - DA	
			API GL-5		
FLUIDO	80 - Climate control	Compressor (Refilling)	-	SUNISO 5GS SANDEN SP 10 "PAG" (▲)	
	07 - Engine cooling	Cooling circuit (Refilling)	-	ALFA ROMEO	
				CLIMAFLUID SUPER PERMANENT -40°C	
	12 - Clutch	Brake & clutch hydraulic circuit (Refilling)	SAE J 1703 F	DOT 4	ALFA ROMEO
	22 - Brakes			ALFA ROMEO BRAKE FLUID SUPER DOT 4	
	23 - Steering	Power steering system (Refilling)	G.M. DEXRON II	TUTELA G/A	
80 - Climate control	Conditioning system circuit (Refilling)	-	RIVOIRA Freon 12 - RIVOIRA: SUVA R134a (▲) - HOECHST - TAZZETTI; FRIGEN R134a (▲) - ICI - TAZZETTI; KLEA R134a (▲)		
GREASE	SEE SPECIFIC FUNCTIONAL GROUPS				

(1): For decidedly sportive use of the car fully synthetic **SELENIA Racing 10W/60** engine oil is recommended

(▲): From chassis no. 105779 - 1003349 (on two assembly lines).



APPROXIMATE SERVICING CAPACITIES

Capacity	Version	155
Fuel tank		60 litres
Fuel reserve		- 5 litres
Engine oil	Total capacity: sump + filter + wells + radiator	5.5 litres
	Sump + filter (for periodical replacement)	4.5 litres
	Oil filter	0.4 litres
	Camshaft wells + oil radiator	1.0 litres
Oil for gearbox - front differential and central converter		4 litres
Rear differential oil		1.4 litres
Brake - clutch circuit fluid		0.6 litres
Power steering system oil		1.0 litres
Antifreeze mixture		9.1 litres
Conditioner compressor oil		135 g 240 ± 15 cm ³ (▲)
Conditioning system fluid		950 g
		700 g (▲)

(▲): From chassis no. 105779 - 1003349 (on two assembly lines).

SPECIFIED FUEL

The octane number of a fuel defines its resistance to detonation: it is essential to use fuel with the correct number of octanes as this will prevent pinging which may prove dangerous for the engine.

The higher the octane number the greater the anti-detonation capacity.

The 155 model has been designed to run on unleaded petrol with an octane number of 95 RON (Research Octane Number).

These vehicles are all fitted with a catalytic converter. To enable this to function with the highest degree of efficiency, unleaded petrol must be used, as the lead deposits contained in other fuels build up on the surface of the catalytic converter and prevent it from working properly. The size of the filler necks has been reduced in order to prevent the nozzles used on leaded petrol pumps from being inserted.



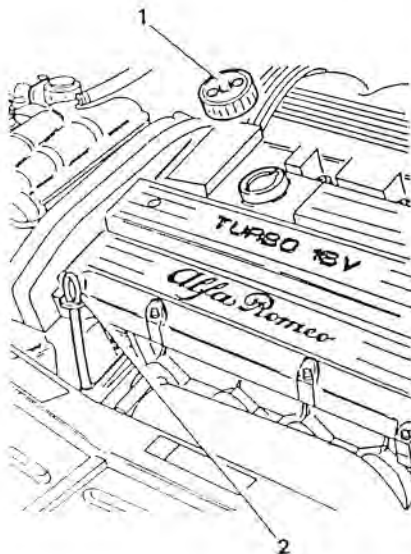
ENGINE MAINTENANCE OPERATIONS

REPLACING ENGINE OIL AND FILTER

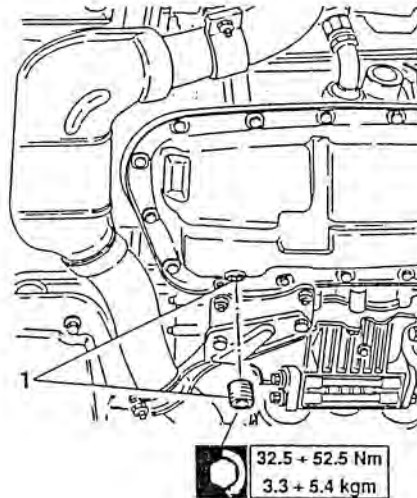


CAUTION:
Engine oil can be harmful to the skin. Keep all contact to a minimum and wash off with soap and water.

- Place the vehicle on a lift.
- 1. When the engine is warm remove the filler cap.
- 2. Withdraw the dipstick.



- Raise the vehicle.
- 1. Unscrew the drainage cap and let the oil to drain off for at least 15 minutes.



CAUTION:
To avoid pollution do not dispose of waste oil in the environment. Take all waste oil to your local collection centre.

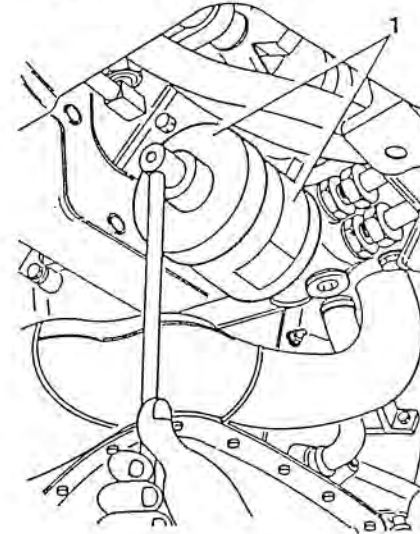


CAUTION:
Whitish substances in the oil indicate contamination by engine coolant. Low viscosity is due to dilution with fuel.



CHECKING AND ADJUSTING VALVE CLEARANCE

- 1. Using appropriate tool, remove the oil filter.



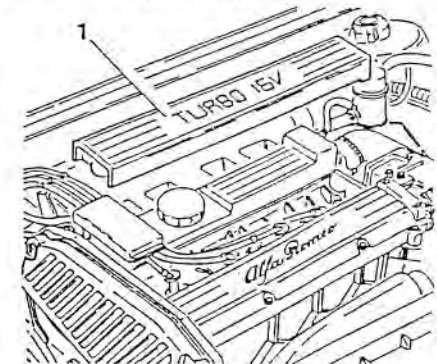
- Clean the drainage cap and tighten it along with its gasket, to the specified torque.
- Wipe the gasket of the new filter with oil and tighten on by hand.
- Lower the vehicle.
- Refill the engine with oil of the specified type and in the specified quantity.
- Check the oil level using the dipstick.



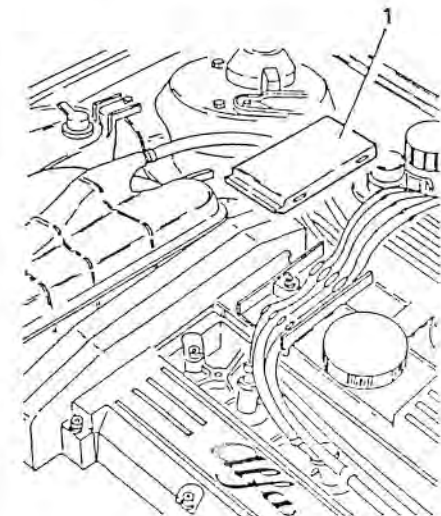
CAUTION:
The oil level should be checked when the vehicle is on a level surface. If the oil level is above the MAX mark there will be an excessive evaporation which will cause a loss in oil pressure.

- Refit the filler cap and run the engine for about two minutes. Switch off the engine and wait for a few minutes.
- Check that the oil level is correct and that there are no leaks.

- 1. Remove the spark plug cover.

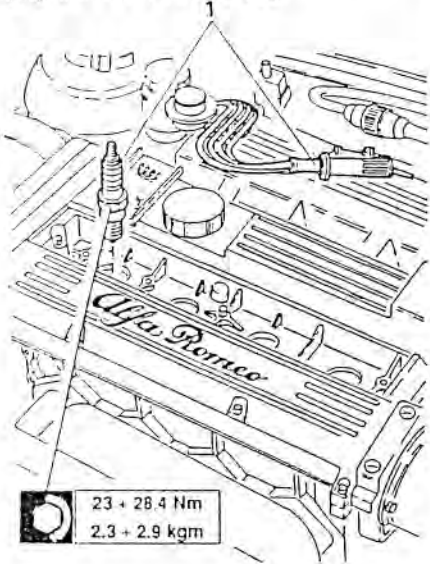


- 1. Remove the spark plug cable retaining cover.

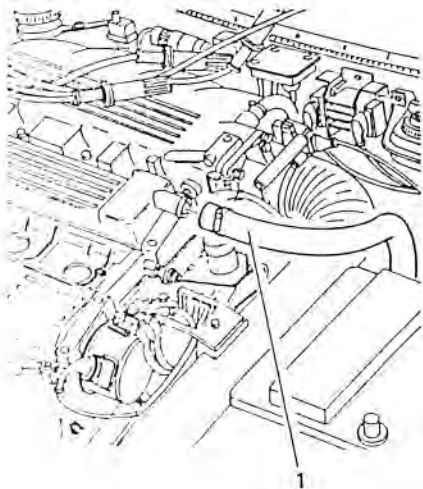




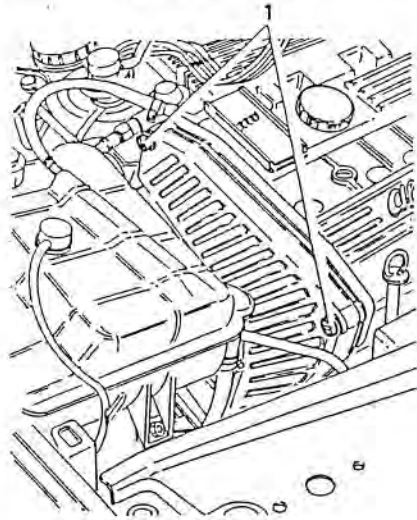
1. Disconnect the high voltage cables from the spark plugs and remove the spark plugs.



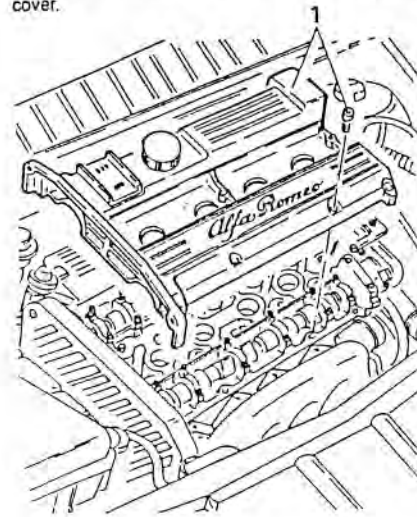
1. Disconnect the oil vapour recovery hose from the timing cover.



1. Loosen the upper screws securing the timing cover.



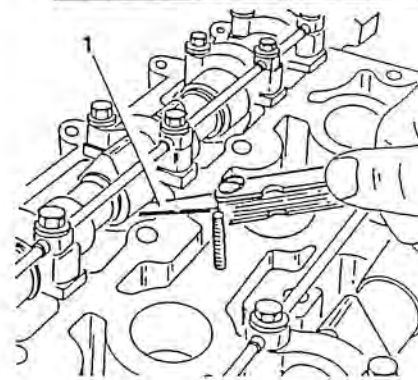
1. Loosen the retaining screws and remove the timing cover.



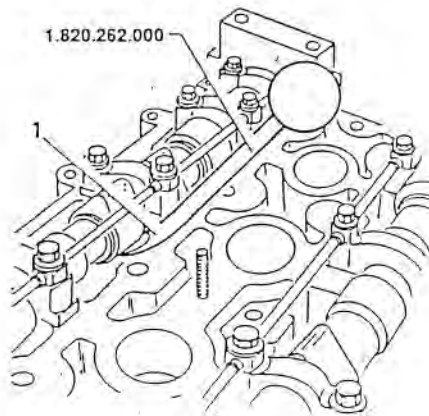
- Rotate the camshaft until the cam is perpendicular to the valve clearance adjustment cap to be controlled.
1. When the engine is cold check that the clearance between the cam heel radius and the relative tappets is within the specified limits.



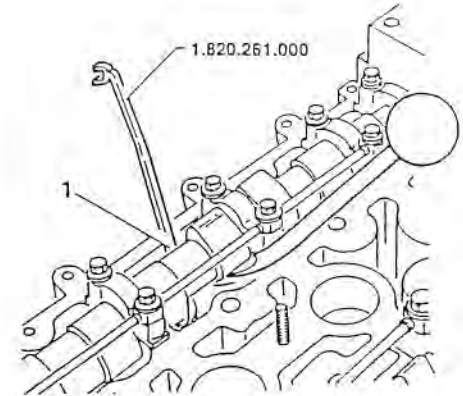
Valve clearance Intake side	0.36 - 0.44 mm
Valve clearance exhaust side	0.46 - 0.54 mm



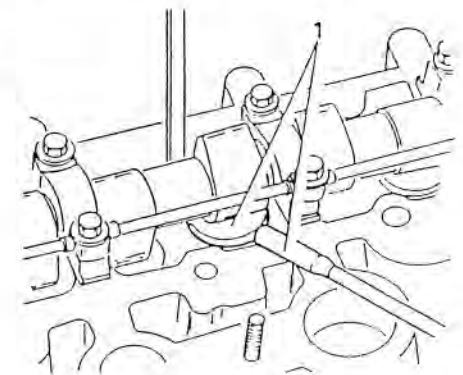
- If the valve clearance is not within the specified limits, adjust as follows:
1. Using the pressure lever N° 1.820.262.000 lower the tappets.



1. Position tool N° 1.820.261.000 to secure the tappets and arranging the notches on the edges of the tappets so that the valve clearance adjustment cap can be removed easily.



1. Pull off the tappet adjustment cap using a scribe and remove it with a magnet.

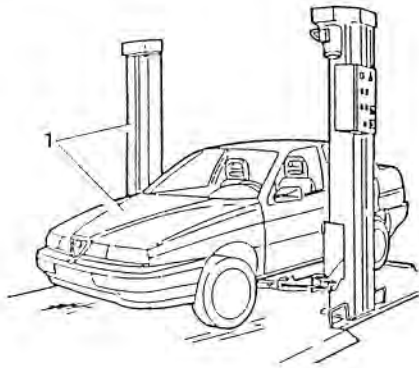


- Replace the cap with another of the same thickness and repeat the above operations for the other valves.

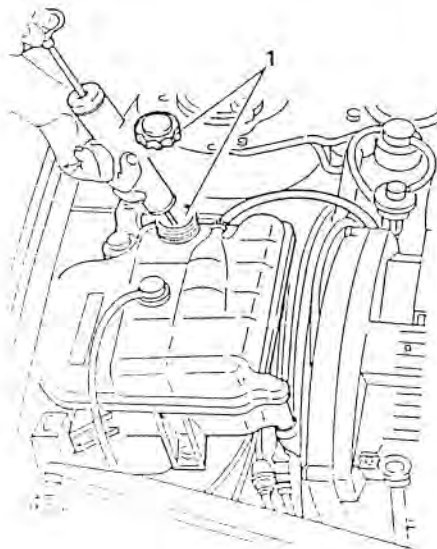


REPLACING TIMING BELT

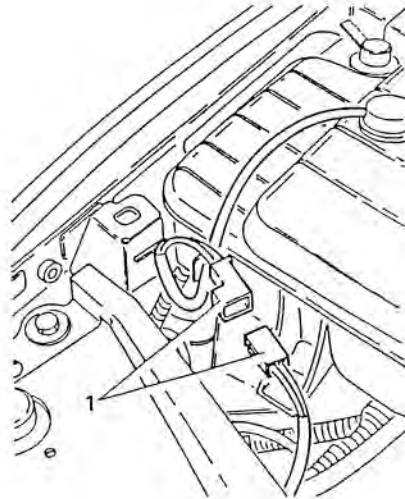
- 1 Place the vehicle on a lift.
- Disconnect the negative cable from the battery



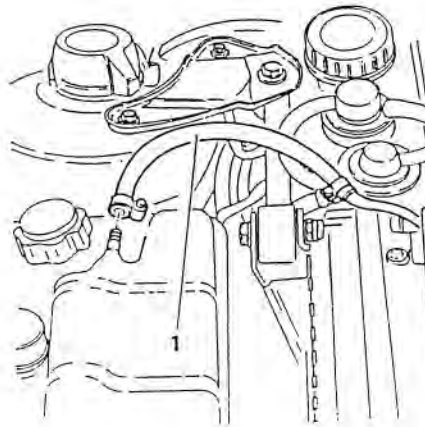
- 1 Empty the engine coolant expansion tank using the appropriate syringe.



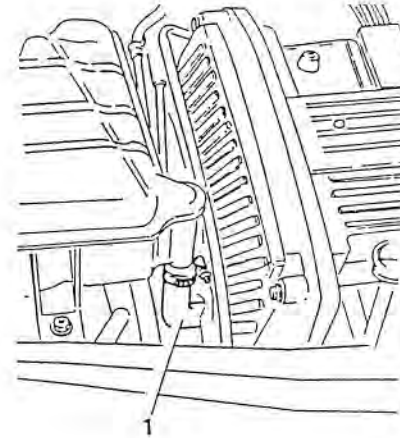
1. Disconnect the electrical connection from the engine coolant minimum level sensor.



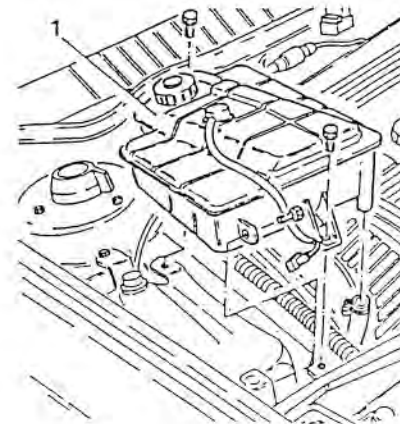
1. Disconnect the deaeration and engine coolant return hose from the expansion tank.



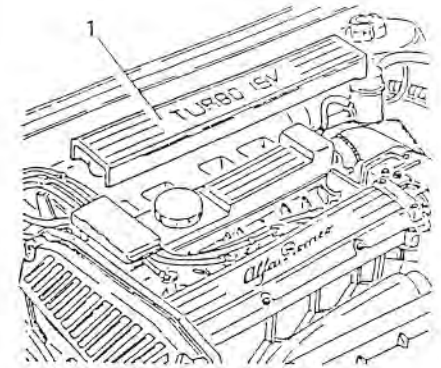
1. Disconnect the engine coolant delivery hose from the expansion tank.



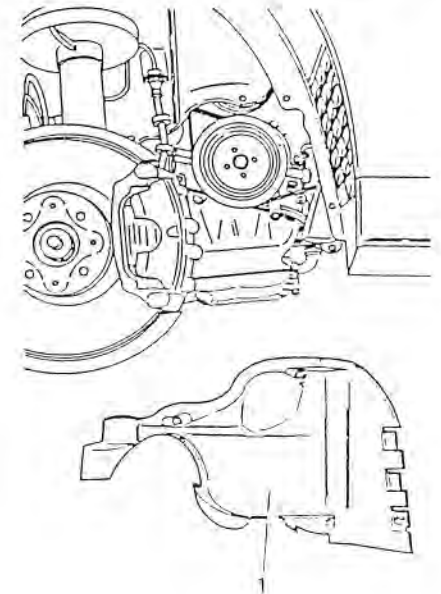
1. Loosen the retaining screws and remove the expansion tank.



1. Remove the spark plug cover.

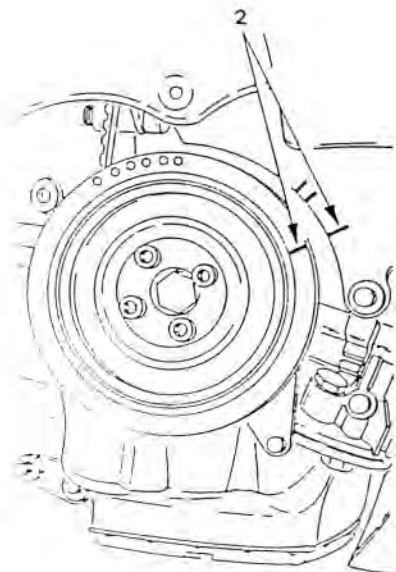
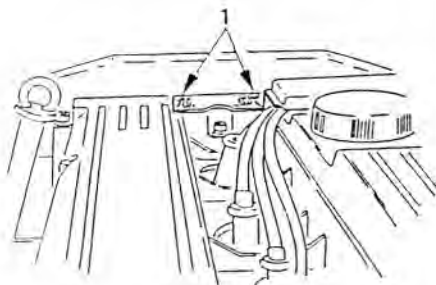


- Remove the front right-hand wheel.
- 1. Remove the dustguard from the right-hand wheel housing

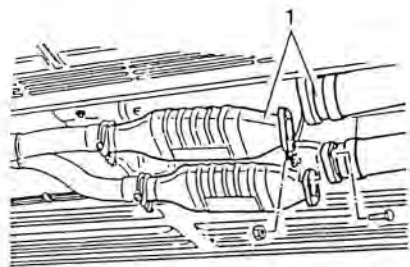




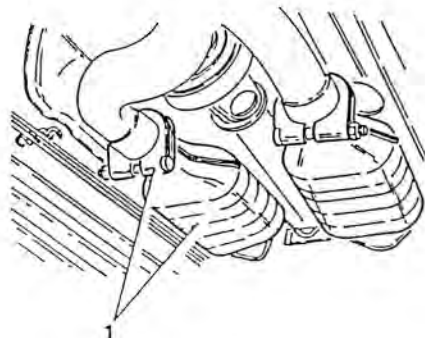
- Check that the piston of cylinder n° 4 is at T.D.C. during firing by operating as follows:
- 1. Check that the reference notches on the timing pulley coincide with the reference marks on the timing cover.
- 2. Check that the notch on the crankshaft pulley coincides with that engraved on the timing cover.



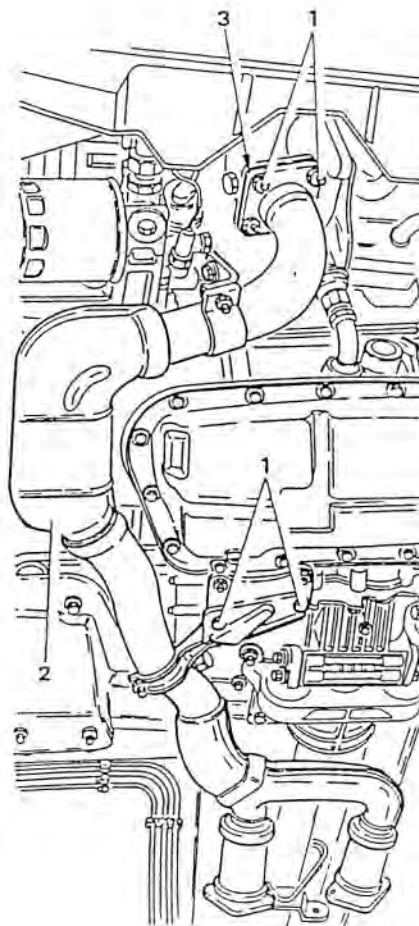
- Raise the vehicle on the lift.
- 1. Disconnect the two flanges of the front section of the exhaust pipe from the two catalytic converters.



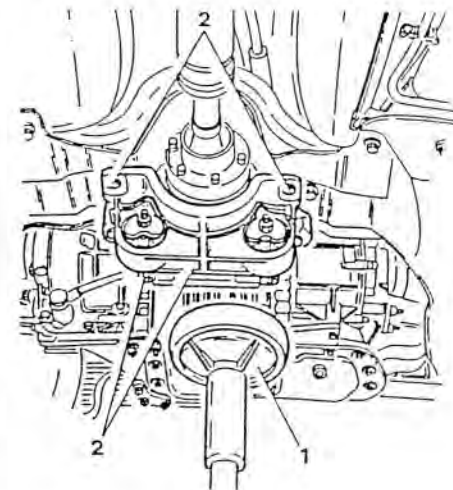
- 1. Loosen the collars and remove the two catalytic converters.



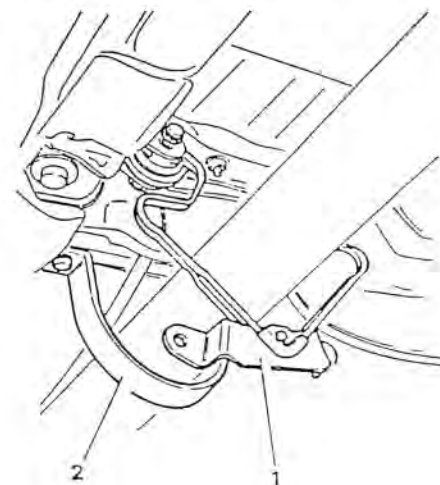
- 1. Loosen the screws and the nuts securing the front section of the exhaust pipe to the turbocharger and to the supporting brackets.
- 2. Remove the front section of the exhaust pipe.
- 3. Remove the gasket.



- 1. Position a suitable column lift under the central differential.
- 2. Loosen the screws and the bolts securing the rear engine unit support and remove the support.

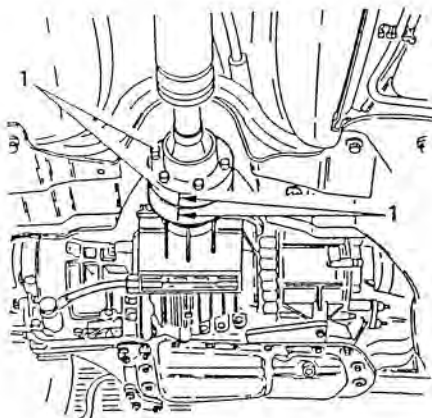


- Remove the column lift.
- 1. Remove the flexible support securing the exhaust pipe.
- 2. Remove the safety bracket from the drive shaft.

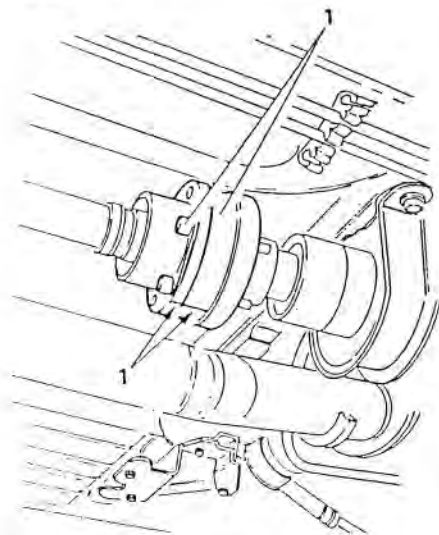




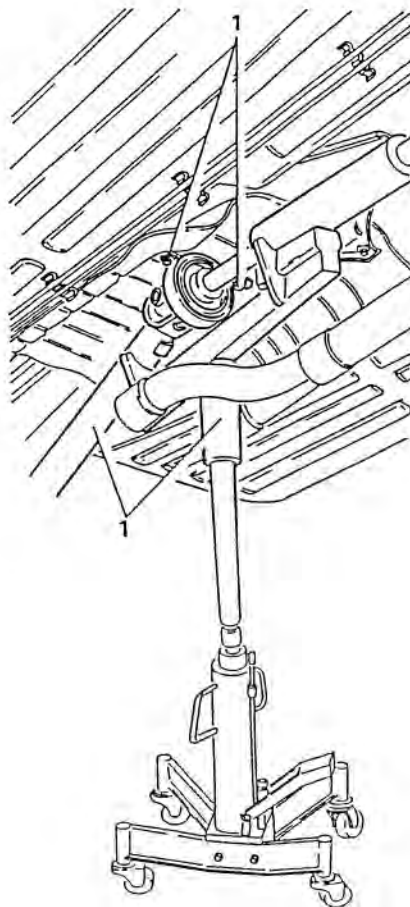
1. Make reference notches on the flanges of the coupling between the front section of the drive shaft and the central differential and separate them by unscrewing the relative screws.



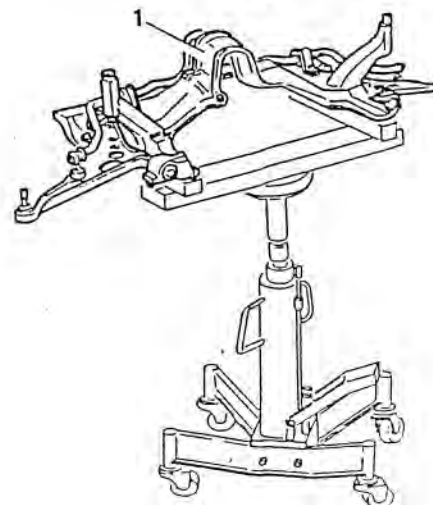
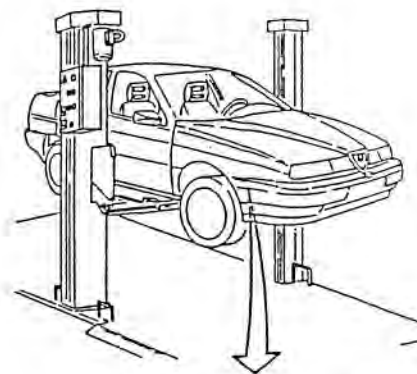
1. Make reference notches on the flanges of the coupling between the front and rear sections of the drive shaft and separate them by unscrewing the relative screws.



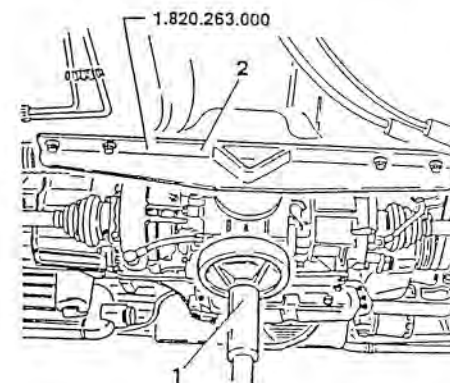
1. Support the front and central sections of the drive shaft using an appropriate tool and after unscrewing the screws securing the central flexible support remove them.



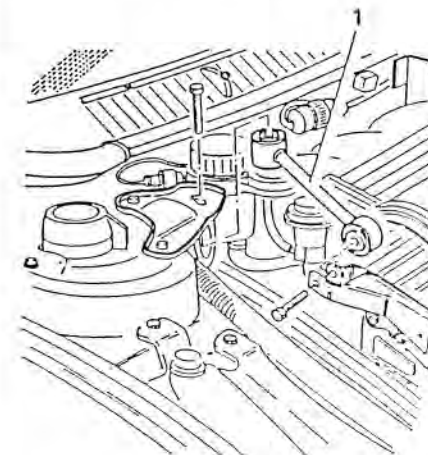
1. Loosen the retaining screws and remove the cross-member and swinging arms (see GROUP 21).



1. Position a suitable hydraulic lift under the central differential and raise the rear part of the engine unit.
2. Position engine unit support tool N° 1.820.263.000.

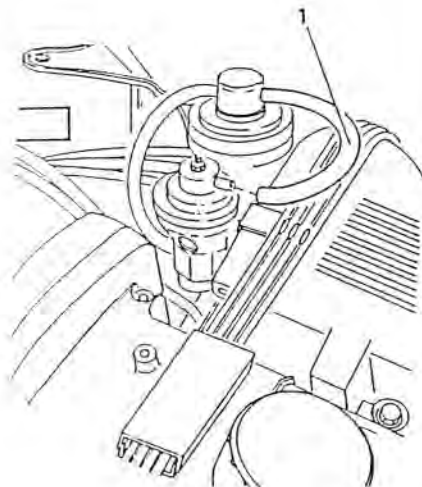


- Lower the vehicle.
1. Remove the engine damper rod.

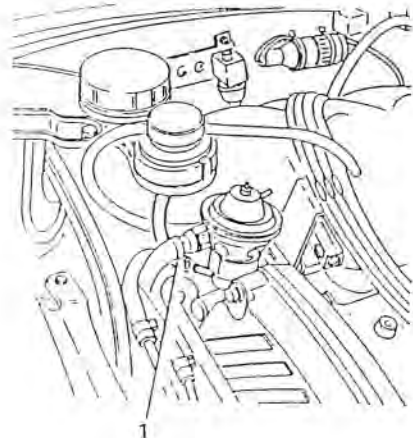




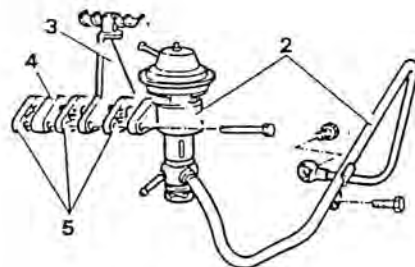
- 1 Disconnect the vacuum signal delivery hose from the EGR valve.



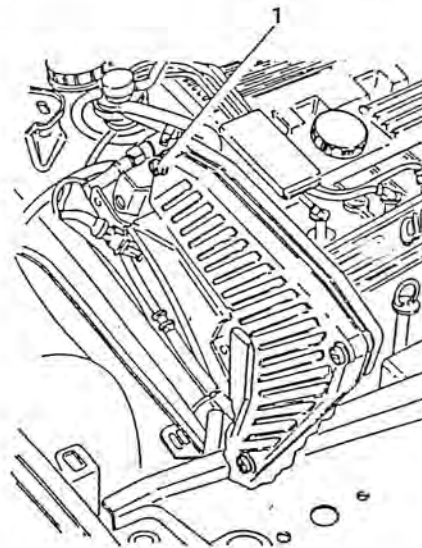
- 1 Disconnect the exhaust gas to pneumatic signal modulation valve delivery hose from the EGR valve.



1. Disconnect the connection between the exhaust gas intake from the exhaust manifold.
2. Loosen the retaining screws and remove the EGR valve together with the exhaust gas intake hose.
3. Remove the spark plug cables support bracket.
4. Remove the spacer and the gaskets.
5. Remove the gaskets.

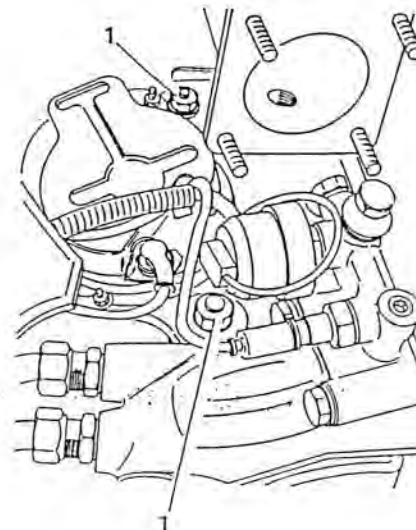


1. Loosen the upper screws securing the timing cover.

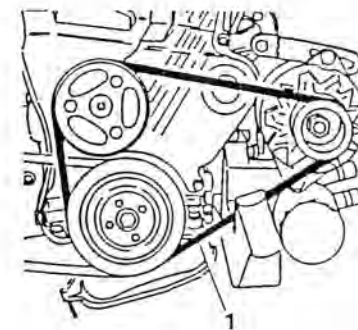


- Raise the vehicle.

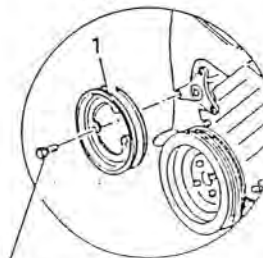
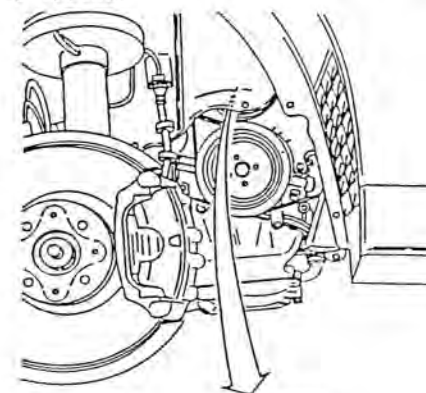
1. Loosen the two bolts securing the alternator.



1. Remove the alternator - water pump drive belt.



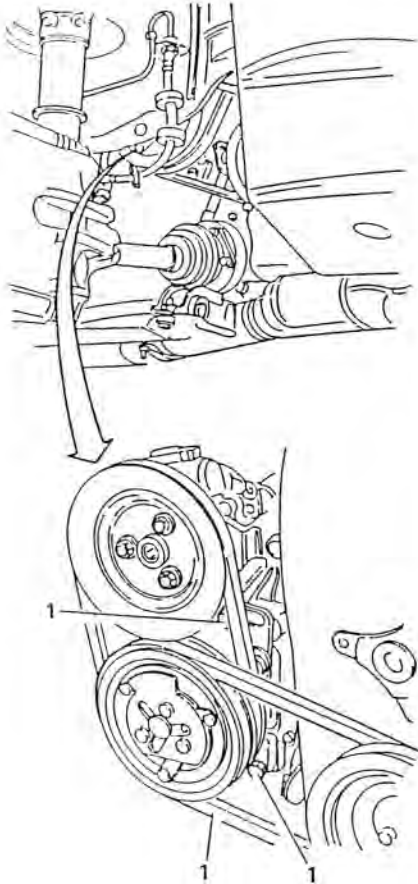
1. Loosen the retaining screws and remove the water pump pulley.



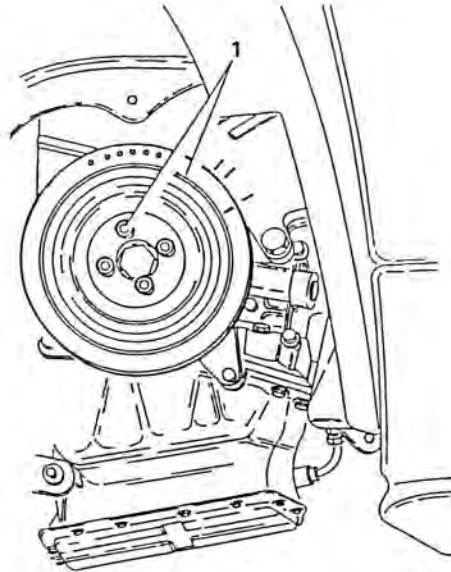
21.3 - 26.3 Nm
2.2 - 2.7 kgm



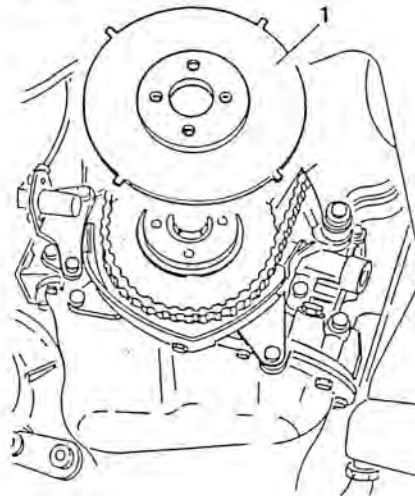
1. Loosen the two upper screws and the two bolts securing the air conditioning compressor and remove the drive belt.



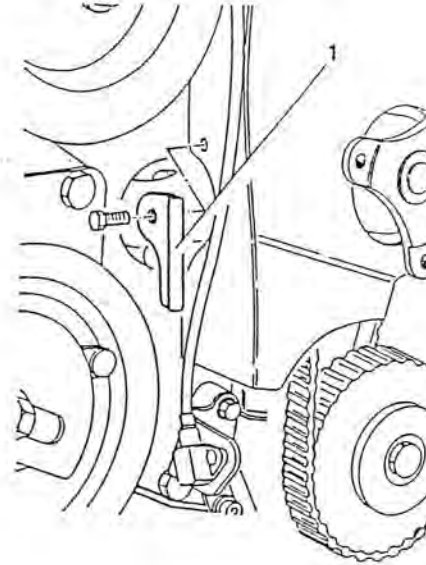
1. Loosen the retaining screws and remove the auxiliary drive pulley.



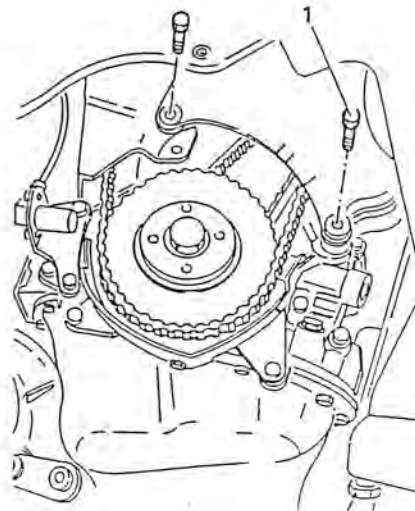
1. Remove the phonic wheel of the r.p.m. and timing sensor.



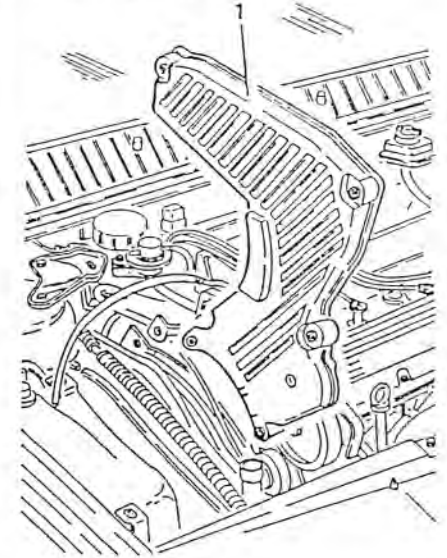
1. Loosen the screw and remove the r.p.m. and timing sensor cable retaining plate.



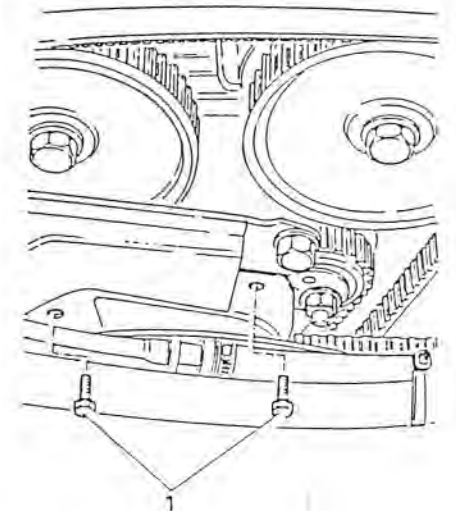
1. Loosen the screws securing the timing belt cover.



- Lower the vehicle.
1. Remove the timing belt cover.

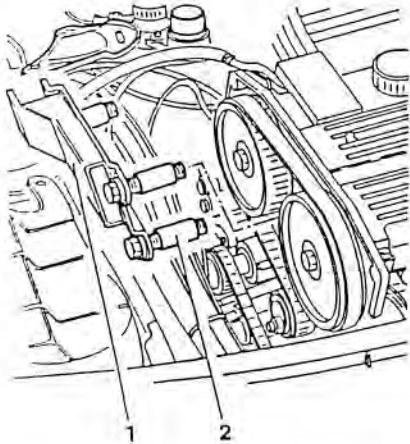


1. Loosen the two screws securing the metal timing belt cover to the engine damper rod support bracket and remove the cover.





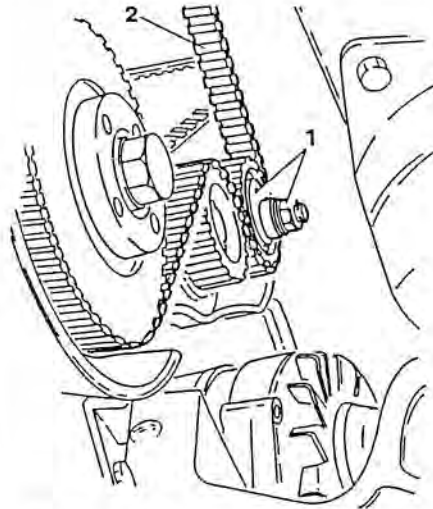
1. Loosen the three screws and remove the engine damper rod support bracket.
2. Remove the spacers.



1. Remove the metal timing belt cover which was loosened previously.



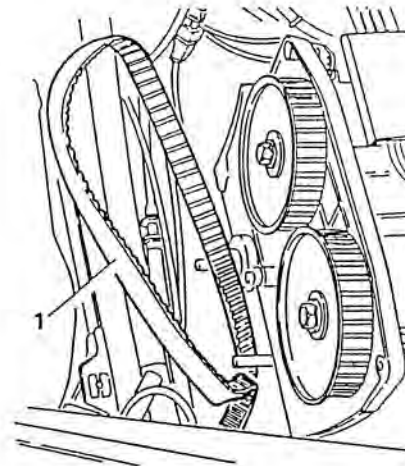
- Raise the vehicle.
1. Loosen the nut and remove the counter-shaft drive belt tensioner.
 2. Remove the counter-shaft drive belt.




- Lower the vehicle.
1. Loosen the nut and remove the timing belt tensioner.




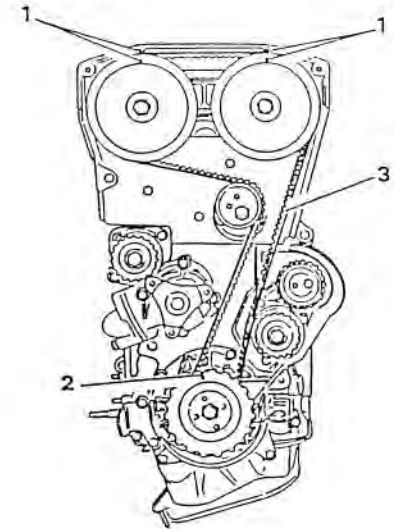
1. Pull off the timing belt from the pulley and remove it.



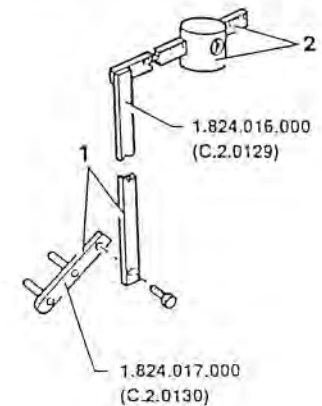
 Refit by reversing the procedures followed for removal and note the following:

- Refit the counter-shaft drive belt and timing belt tensioner.
1. Check that the notches on the timing pulley coincide with those of the timing cover.
 2. Check that the notch on the counter-shaft pulley faces upwards.
 3. Install the timing belt ensuring that the teeth of the pulleys are coupled correctly.

 **CAUTION:**
As the belt is made of fibre it must in no way be bent when being fitted to the vehicle.



1. Fit tool N° 1.824.016.000 (C.2.0129) onto tool N° 1.824.017.000 (C.2.0130).
2. Position the weight, without the milled part, at a distance of 100 mm on the rule and lock it into position.

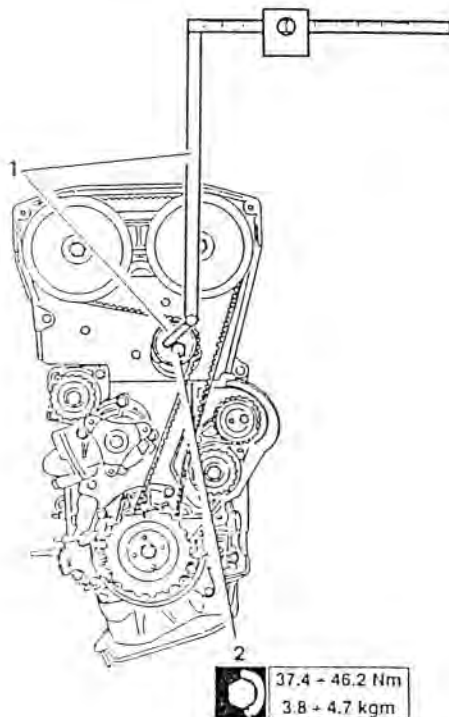




1. Apply the tool assembled in this way, onto the belt tensioner as shown in the illustration and, acting on the articulation, move the rule until it is horizontal.
- Settle the toothed belt by rotating the crankshaft twice in the normal direction of rotation.
2. Tighten the nut securing the belt tensioner to the correct torque.

**CAUTION:**

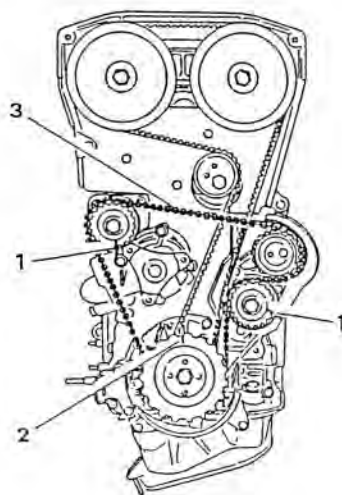
During this operation the rule may move from its horizontal position. In this case it is necessary to act once again on the belt tensioner, return the rule to its original position and repeat the operation.



1. Move the counter-shaft pulley so that the reference notch marked on it is in line with the reference mark located on the intake side of the counter-shaft water pump and the reference mark located on the exhaust side of the counter-shaft sheet metal cover.
2. Ensure that the reference located on the counter-shaft drive pulley faces upwards.
3. Fit the toothed belt ensuring that the teeth on all the toothed pulleys are correctly coupled.

**CAUTION:**

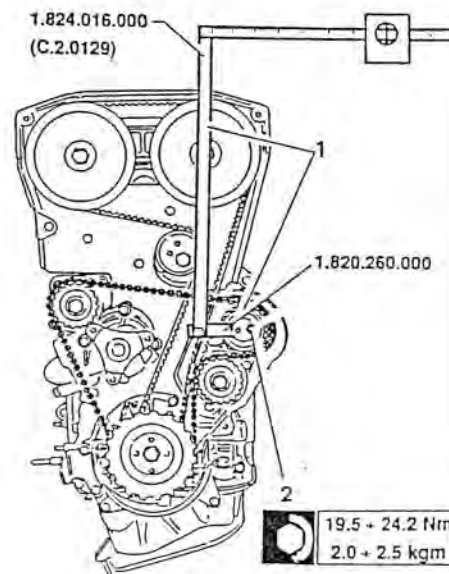
As the belt is made of fibre it must in no way be bent when being fitted to the vehicle



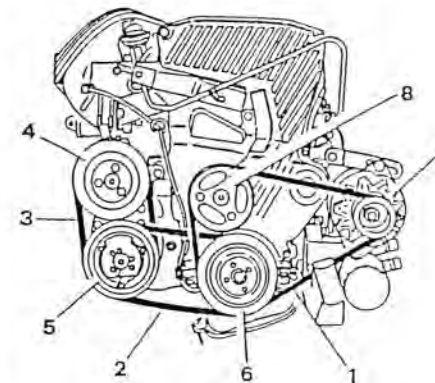
- Fit support tool N° 1.820.260.000 on tool N° 1.824.016.000 (C.2.0129) and position the weight without the milled part, at a distance of 205 mm on the millimeter rule, and lock it in position.
1. Apply the tool assembled in this way, onto the belt tensioner as shown in the illustration and, acting on the articulation, move the rule until it is horizontal.
 - Settle the toothed belt by rotating the crankshaft twice in the normal direction of rotation.
 2. Tighten the belt tensioner retaining nut to the correct torque.

**CAUTION:**

During this operation the rule may move from its horizontal position. In this case it is necessary to act once again on the belt tensioner, return the rule to its original position and repeat the operation.



- Remove the belt tensioner tools.
- Tension the auxiliary unit drive belts (see specific paragraphs).

AUXILIARY UNIT BELTS

1. Alternator - water pump drive belt
2. Air conditioning compressor drive belt
3. Power steering pump drive belt
4. Power steering pump
5. Air conditioning compressor
6. Auxiliary unit control pulley
7. Alternator
8. Water pump.

NOTE: When checking the tension of the belt also check the belt for damage especially:

- cuts
- cracks
- superficial wearing of material (shows up as smooth and shiny)
- dry or hardened parts (loss of traction).

If one of the above is discovered, replace the belt.

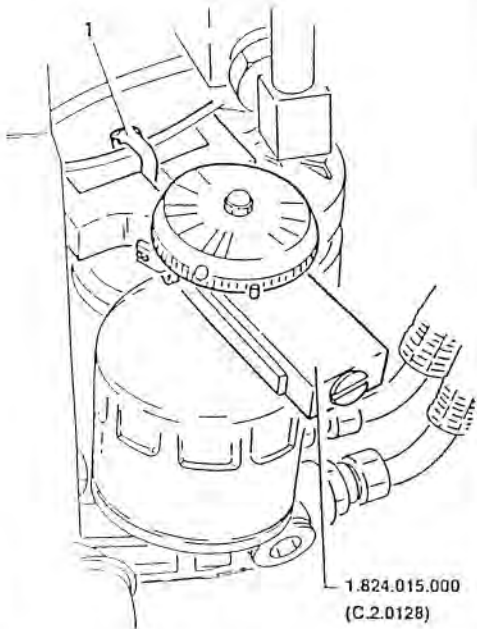
**CAUTION:**

If the belt comes into contact with oil or solvents its elasticity may be affected leading to a loss of traction.

**WATER PUMP ALTERNATOR DRIVE BELT**

Checking and tensioning

- Place the vehicle on a lift and raise it.
- Operating as shown in the diagram, measure the tension of the belt using tool N 1.824.015.000 (C.2 0128).



- Check that the tension values measured using the appropriate tool are as specified.

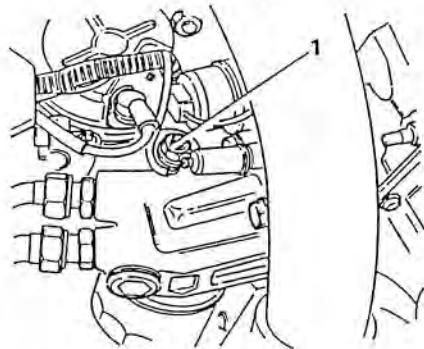
**Water pump - alternator
POLY-V drive belt tension**

When relaiting	520 - 670 N
Minimum	300 N
Re-tensioning	300 - 450 N

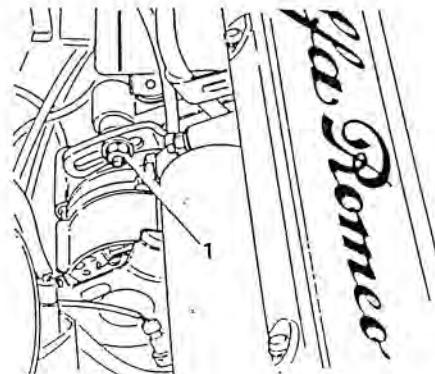
NOTE: The belt can be re-tensioned after a short trial period operating as follows:

- warm the engine to normal running temperature
- switch off the engine and wait until it cools
- re-tension the belt to the correct value.

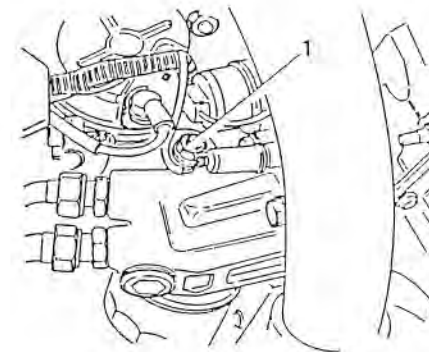
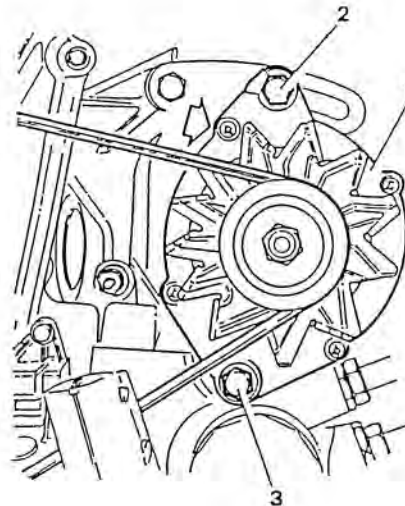
- If the values are incorrect, operate as follows:
- Working from under the vehicle loosen the lower bolt (fulcrum) securing the alternator.



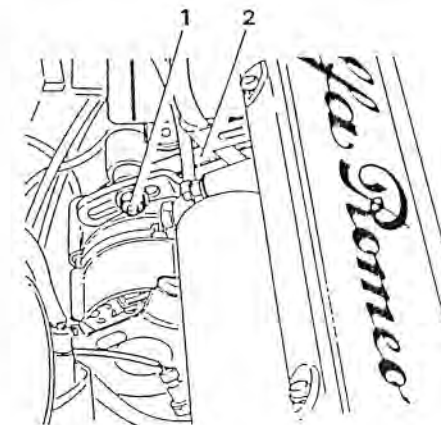
- Lower the vehicle.
- Loosen the upper bolt securing the alternator to the slotted tensioning bracket.



- Move the alternator to one side to increase the tension on the belt.
- Tighten the upper bolt securing the alternator, and after raising the vehicle, check the tension of the belt.
- If the tension is correct also tighten the lower bolt securing the alternator.



- Lower the vehicle.
- Loosen the upper bolt securing the alternator to the slotted tensioning bracket.
- Remove the alternator - water pump drive belt.
- Fit a new belt by reversing the procedure followed for removal and tension it following the procedure given in the preceding paragraph.

**Substitution**

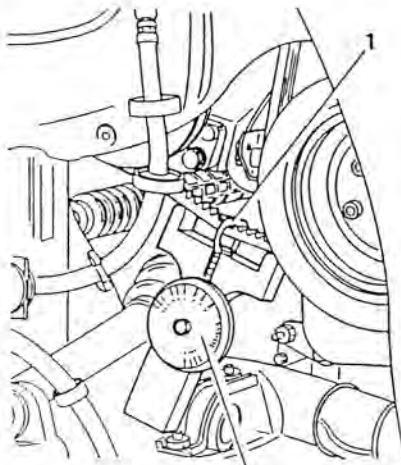
- Place the vehicle on a lift.
- Remove the front right-hand wheel.
- Remove the spray guard from the front right-hand wheel housing.
- Raise the vehicle.
- Loosen the lower bolt (fulcrum) securing the alternator.



AIR CONDITIONING COMPRESSOR DRIVE BELT

Checking and tensoning

- Place the vehicle on a lift.
 - Remove the front right-hand wheel.
 - Remove the spray guard from the front right-hand wheel housing.
 - Raise the vehicle.
1. Using tool N° 1.824.015.000 (C.2.0128) measure the tension on the belt as shown in the illustration.



1.824.015.000
(C.2.0128)

- Check that the tension values measured using the appropriate instrument are within the specified limits.

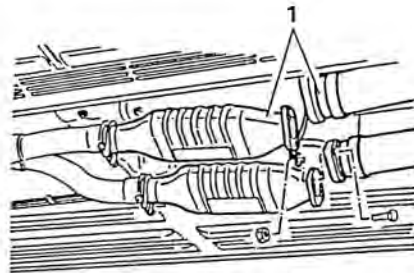
Air conditioning compressor trapezoidal drive belt tension	
when fitting	500 - 650 N
Minimum	350 N
Re-tensioning	350 - 450 N

NOTE: The belt can be re-tensioned after a short test period operating as follows:

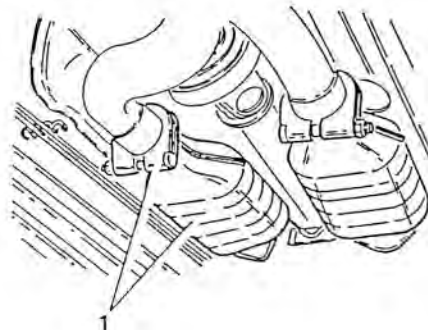
- warm the engine to normal running temperature
- switch off the engine and wait until it cools
- re-tension the belt to the correct value.

- If the tension values are incorrect, operate as follows:

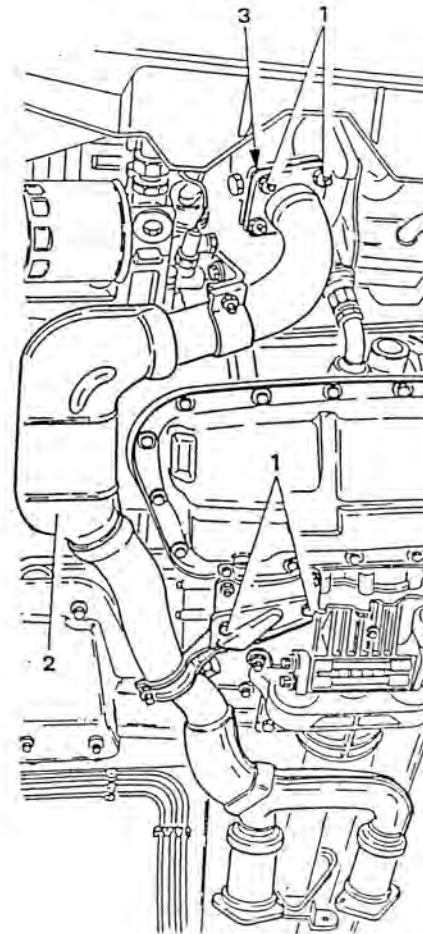
1. Disconnect the two flanges on the front section of the exhaust pipe from the two catalytic converters.



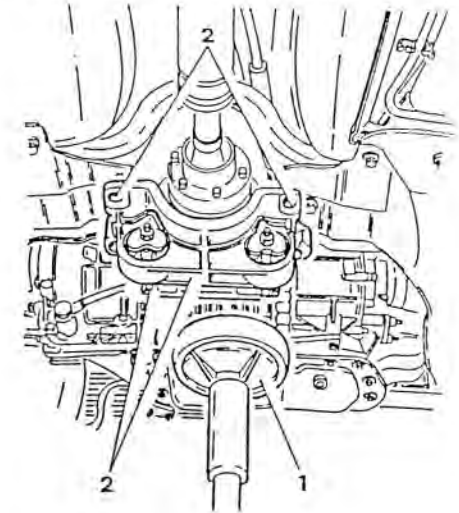
1. Loosen the collars and remove the two catalytic converters.



1. Loosen the screws and the nuts securing the front section of the exhaust pipe to the turbocharger and to the support brackets.
2. Remove the front section of the exhaust pipe.
3. Remove the gasket.

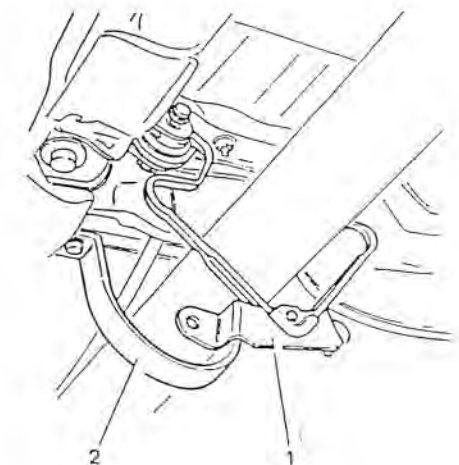


1. Position a suitable column lift under the central section of the exhaust pipe to the turbocharger and to the support brackets.
2. Loosen the screws and the bolts securing the engine unit rear support and remove the support.



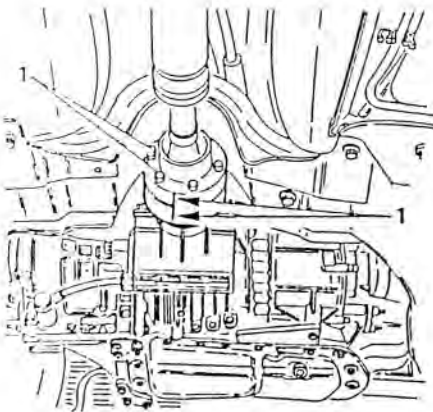
- Remove the column lift.

1. Remove the flexible support securing the exhaust pipe.
2. Remove the drive shaft safety bracket.

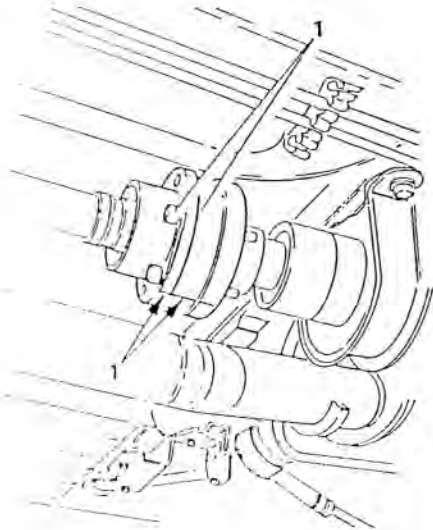




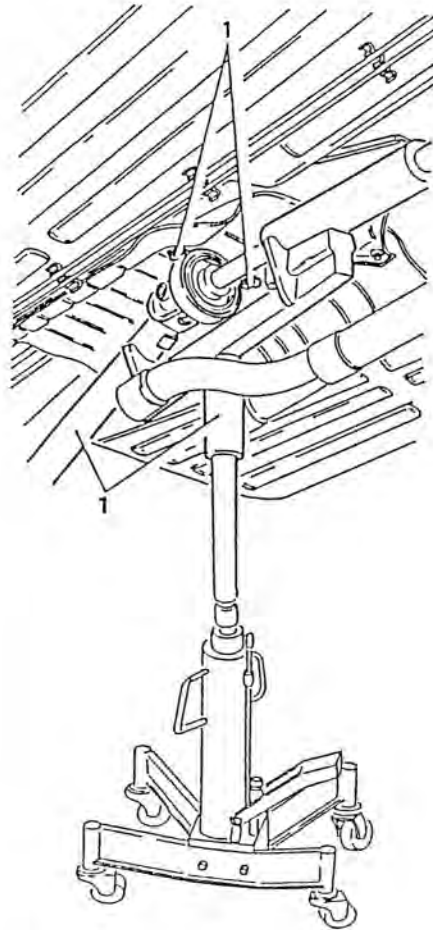
1. Make reference notches on the flanges of the coupling between the front section of the drive shaft and the central differential and separate them by unscrewing the relative screws.



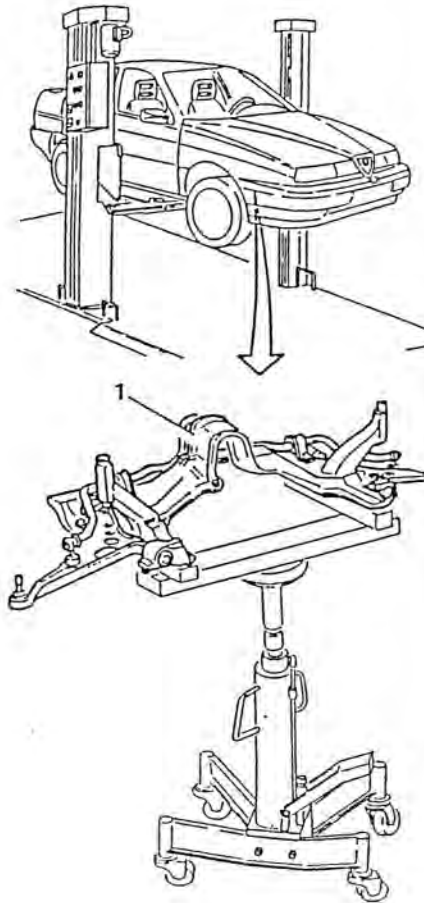
1. Make reference notches on the flanges of the coupling between the front and rear sections of the drive shaft and separate them by unscrewing the relative screws.



1. Support the front and central sections of the drive shaft using an appropriate tool and after unscrewing the screws securing the central flexible support, remove them.



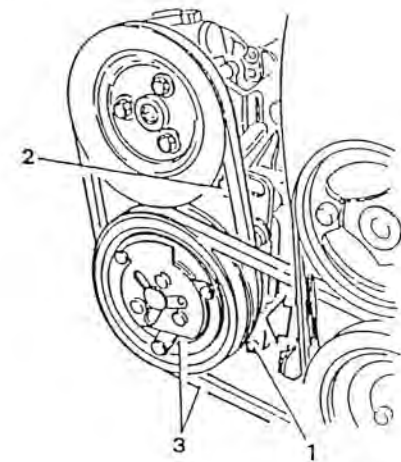
1. Loosen the retaining screws and remove the cross-member and swinging arms (see GROUP 21).



1. Loosen the two lower bolts (tutcrum) securing the air conditioning compressor to the supporting bracket.
2. Loosen the two screws securing the air conditioning compressor slotted bracket to the supporting bracket.

NOTE: The front screw securing the air conditioning compressor slotted bracket also secures the power steering pump.

3. Move the air conditioning compressor sideways in order to increase the tension of the drive belt.



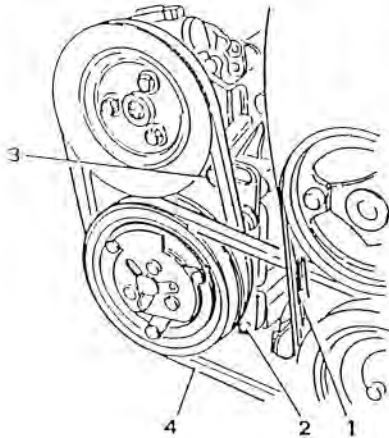
- Tighten the two screws securing the air conditioning compressor and check the tension of the belt.
- If the tension is correct tighten the two lower bolts securing the air conditioning compressor to its support bracket.
- Finish refitting by reversing the procedures followed for disassembly ensuring that the power steering pump drive belt is tensioned correctly (see specific paragraph).

**Substitution**

- Place the vehicle on a lift.
- Remove the crossmember (see previous paragraph).
- 1. Remove the alternator - water pump drive belt (see specific paragraph).
- 2. Loosen the two lower bolts (tulcrum) securing the air conditioning compressor to the supporting bracket.
- 3. Loosen the two screws securing the slotted brackets of the air conditioning compressor to the supporting bracket.

NOTE: The front screw of the air conditioning compressor slotted bracket also secured the power steering pump.

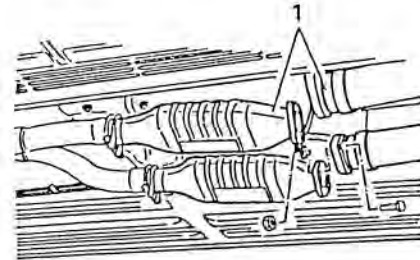
- 4. Remove the air conditioning compressor drive belt.



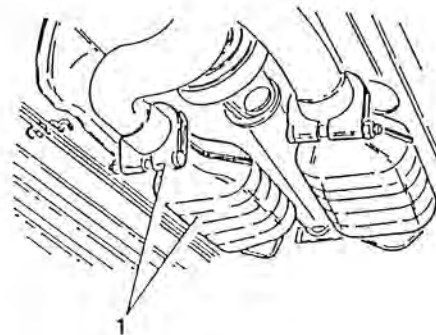
- Fit a new belt by reversing the procedure followed for removal and tension following the instructions given in the previous paragraph.
- Finish the refitting operation by reversing the procedure followed for disassembly ensuring that the power steering pump drive belt and the alternator - water pump drive belts are tensioned correctly (see specific paragraphs)

POWER STEERING PUMP DRIVE BELT**Checking and tensoning**

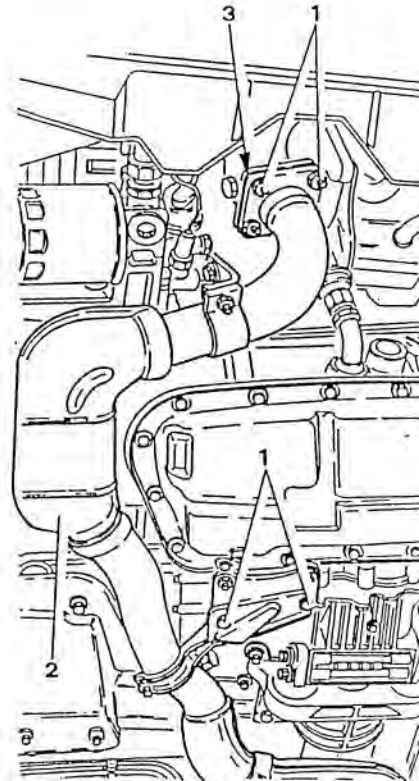
- Place the vehicle on a lift and raise it.
- 1. Disconnect the two flanges of the front section of the exhaust pipe from the two catalytic converters.



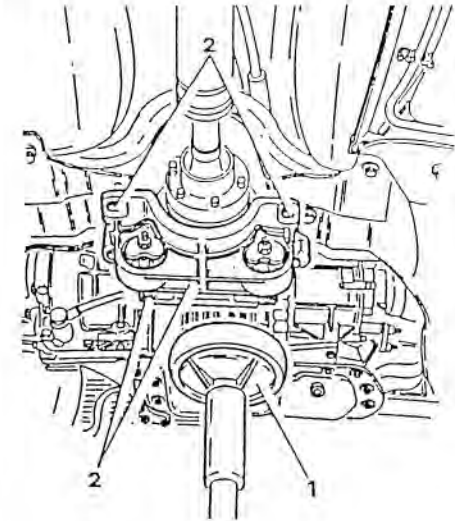
- 1. Loosen the collars and remove the two catalytic converters.



- 1. Loosen the screws and the nuts securing the front section of the exhaust pipe to the turbocharger and to the support brackets.
- 2. Remove the front section of the exhaust pipe.
- 3. Remove the gasket.



- 1. Position a suitable column lift under the central section of the differential.
- 2. Loosen the screws and the bolts securing the rear support of the engine unit and remove it.

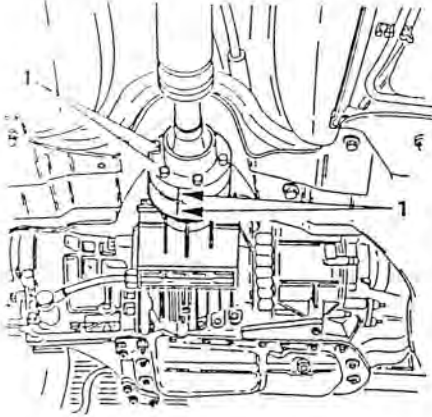


- Slowly remove the column lift.
- 1. Remove the flexible support supporting the exhaust pipe.
- 2. Remove the drive shaft safety bracket.

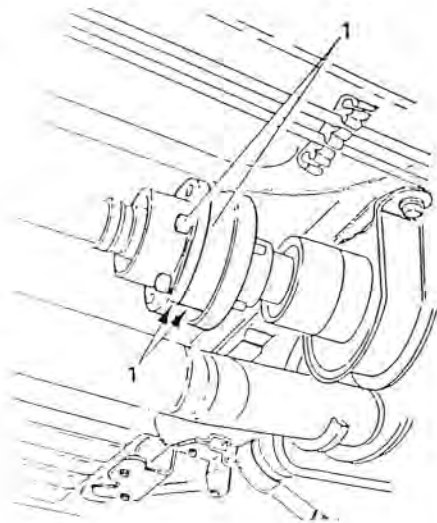




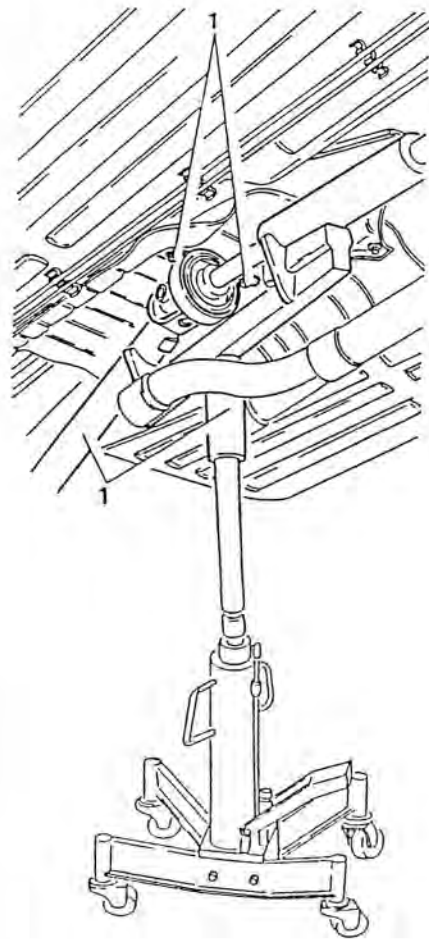
1. Make reference notches on the flanges of the coupling between the front section of the drive shaft and the central differential and separate them by unscrewing the relative screws.



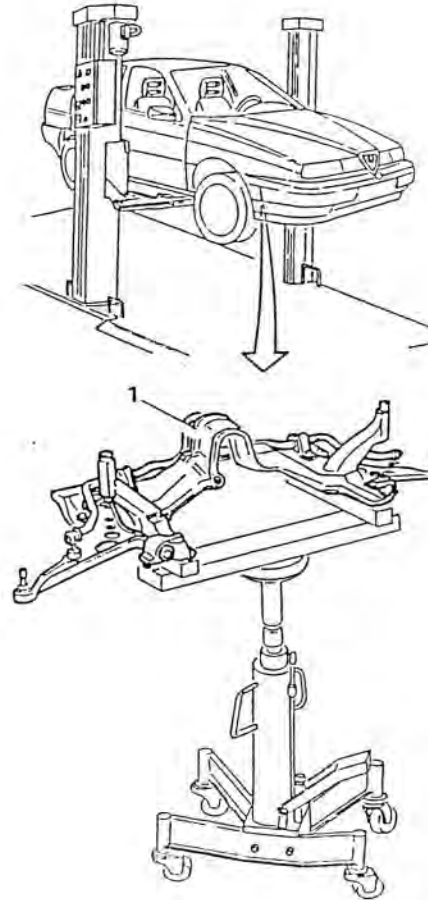
1. Make reference notches on the flanges of the coupling between the front and rear sections of the drive shaft and separate them by unscrewing the relative screws.



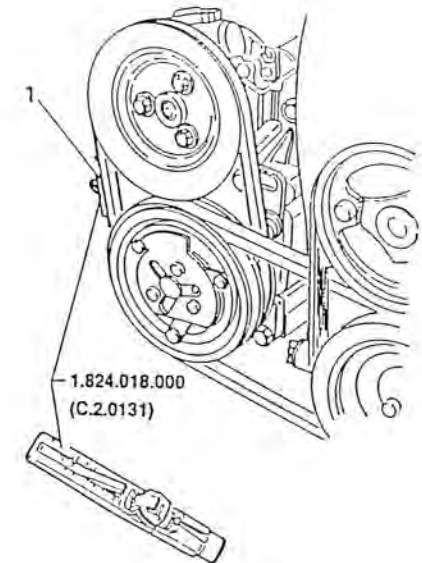
1. Support the front and central sections of the drive shaft using an appropriate tool and after unscrewing the screws securing the central flexible support remove them.



1. Loosen the retaining screws and remove the cross-member and swinging arms (see GROUP 21).



1. Working under the vehicle, measure the tension on the drive belt using N° 1.824.018.000 (C.2.0131), as shown in the illustration.



- Check that the tension values detected using the appropriate tool are within the specified limits.

Tension of trapezoidal belt controlling power steering pump	
During installation	500 - 650 N
Minimum	350 N
Re-tensioning	350 - 450 N



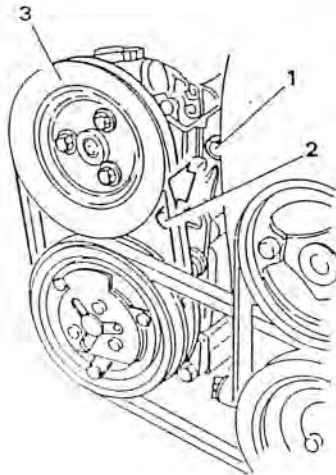
NOTE: The belt can only be re-tensioned as described below after a brief trial period.

- run the engine to normal operating temperature
- switch off the engine and wait until it cools
- re-tension to the specified value.

- If the correct values are not obtained, proceed as follows:
1. Loosen the upper bolt (fulcrum) securing the power steering pump to the supporting bracket.
 2. Loosen the lower screw securing the slotted edge of the power steering pump to the supporting bracket.

NOTE: The lower screw securing the power steering pump also secures the air conditioning compressor.

3. Move the power steering pump sideways to increase the tension on the drive belt.



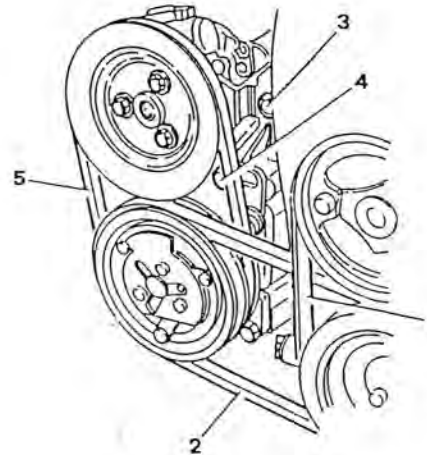
- Tighten the lower screw securing the power steering pump and check the tension of the belt.
- If the tension is correct, also tighten the upper bolt-securing the power steering pump to the supporting bracket.
- Complete the refitting operations by reversing the procedures followed for disassembly.

Substitution

- Place the vehicle on a lift.
 - Remove the crossmember (see preceding paragraph).
1. Remove the alternator - water pump drive belt (see specific paragraph).
 2. Remove air conditioning compressor drive belt (see specific paragraph).
 3. Loosen the upper bolt (fulcrum) securing the power steering pump to the supporting bracket.
 4. Loosen the lower screw securing the slotted edge of the power steering pump to the supporting bracket.

NOTE: The lower screw securing the power steering pump also secures the air conditioning compressor.

5. Remove the power steering pump drive belt.



- Install a new belt by reversing the procedures followed for removal and tension it by following the procedure given in the preceding paragraph.
- Complete the refitting operation by reversing the procedure followed for removal ensuring that the air conditioning compressor drive belt and the the alternator - water pump drive belt is correctly tensioned (see specific paragraphs).

CHECKING PRESSURE AND SEALING OF FUEL CIRCUIT

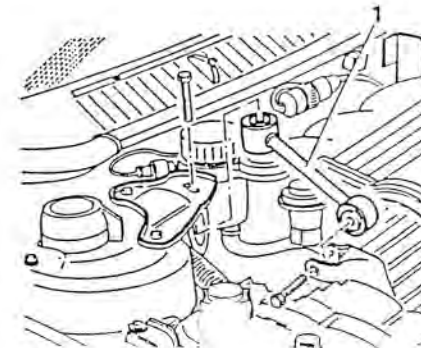
- Release the pressure in the fuel system as follows:
 - disconnect the fuel pump supply relay
 - run the engine until it cuts out, and then reconnect the relay.
- Disconnect the negative cable from the battery.



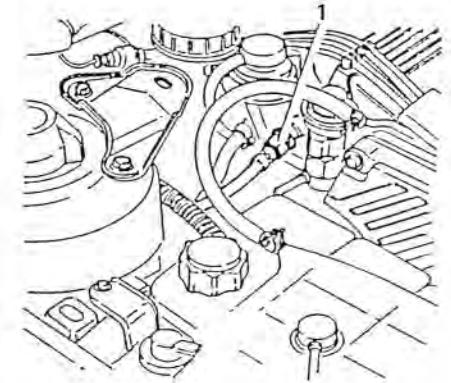
CAUTION

Keep a fire extinguisher handy in case of fuel leaks.
Do not smoke.

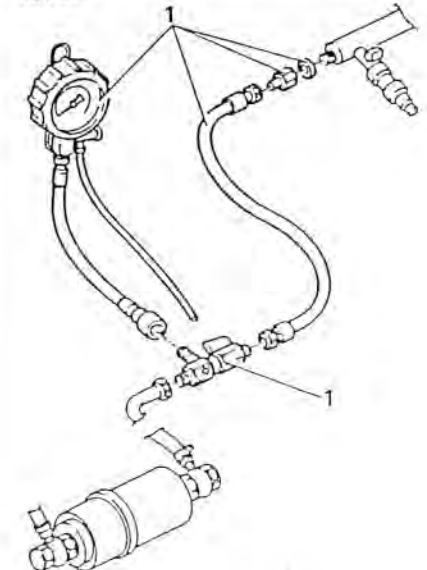
1. Remove the the engine damping rod.



1. Disconnect the fuel delivery hose connection from the fuel-to- electroinjectors distribution manifold.



1. Assemble the apparatus for checking the pressure and sealing of the fuel system as shown in the diagram.

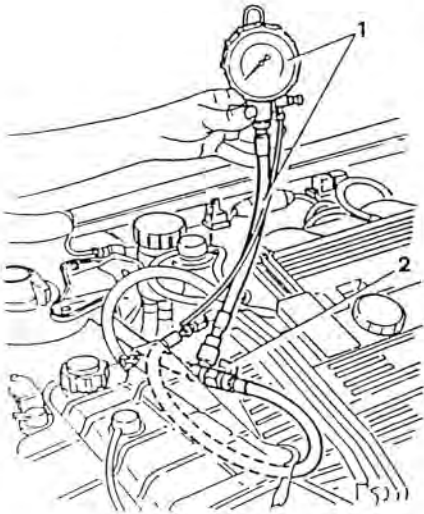




1. Insert the test equipment as shown in the illustration.

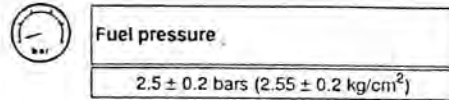
NOTE: The pressure gauge must be between the pressure regulator and the cock. The pressure gauge must be installed with the greatest care in order to prevent foreign bodies from getting into the circuit.

2. Open the cock on the test apparatus.



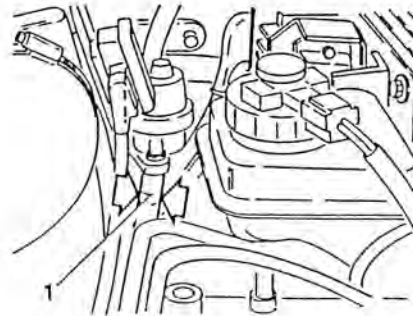
- Reconnect the negative cable of the battery and rotate the ignition key to the MAR position without though starting the engine, so that the fuel pump is activated for a few seconds.

- Repeat this test and check that the fuel pressure is within the specified limits.



NOTE: If there are visible leaks or if there is a persistent smell of petrol, carry out the fuel circuit sealing test.

1. When the engine is at idle speed, squeeze the excess fuel return hose just after the pressure regulator and check that the pressure increases to about 4 bars. Prevent the pressure from exceeding this value.



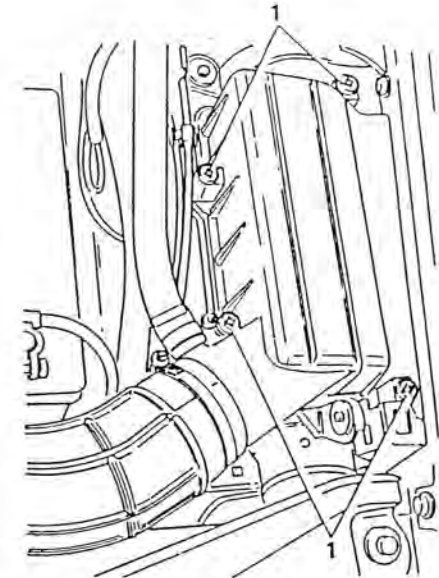
- After the tests have been completed, disassemble the pressure gauge and restore the fuel system connections ensuring that there are no leaks.



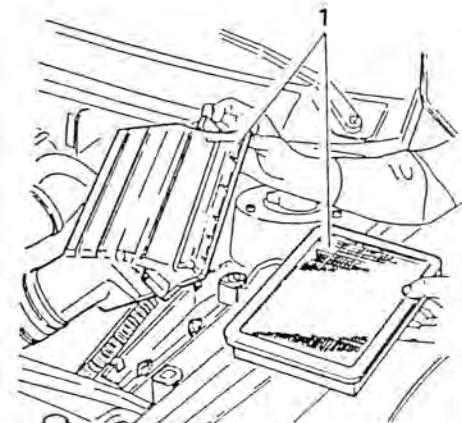
CHECKING SEALING OF THE FUEL VAPOUR RECOVERY SYSTEM

REPLACING AIR CLEANER CARTRIDGE

1. Loosen the screws securing the air cleaner cover.



1. Raise the air cleaner cover just enough to permit the removal of the cartridge.



**DUE FOR
PUBLICATION**

**CAUTION:**

Any attempt to clean the cartridge may result in its damage, which would compromise the correct operation of the engine supply system.

- Carefully clean the container of the air cleaner cartridge.
- Position a new cartridge.
- Refit the cover and secure it with the screws.

NOTE: If there are signs of oil, check for possible leaks over the entire air circuit.

CHECKING SEALING OF AIR
SUPPLY SYSTEM AND
OVER-BOOST VALVE
CONTROL CIRCUIT

DUE FOR
PUBLICATION

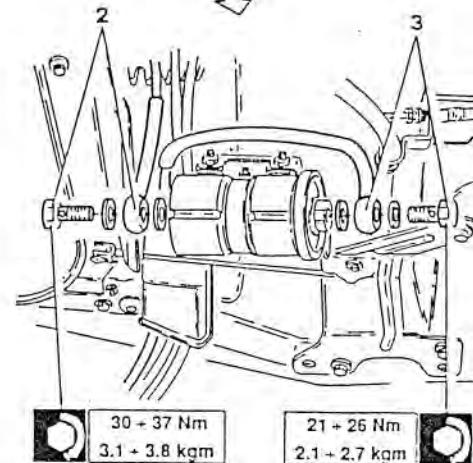
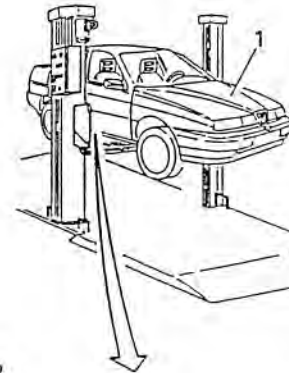
CHECKING SEALING OF BLOW-BY SYSTEM

DUE FOR
PUBLICATION

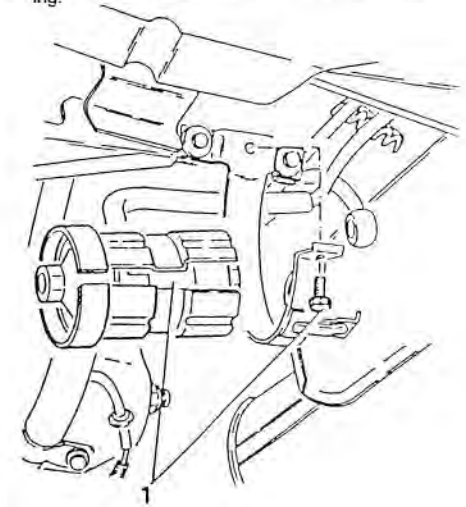


REPLACING FUEL FILTER

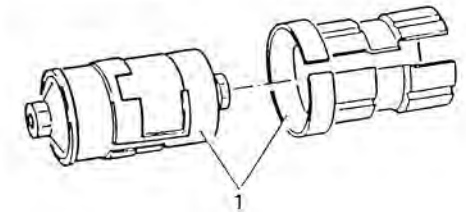
- Place the vehicle on a lift.
 - Release the pressure in the fuel delivery system as follows:
 - disconnect the fuel pump supply relay.
 - run the engine until it cuts out.
1. Raise the vehicle.
 2. Disconnect the fuel delivery connection from the filter.
 3. Disconnect the fuel outlet connection from the filter.



1. Loosen the screw closing the fuel filter support clamp and remove it together with the plastic covering.



1. Working on a bench, separate the fuel filter from the plastic covering.



- Refit a new filter by reversing the procedure followed for removal and note the following:
 - replace the copper gaskets of the connections
 - fit the filter so that the arrow printed on it points in the direction of the flow of fuel.

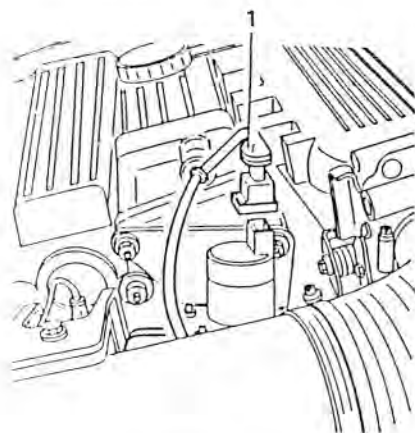


CHECKING AND REGISTRATION OF IDLE SPEED

NOTE: This test must be carried when the engine is at normal running temperature (i.e. when the electric cooling fan has cut in and then cut out again).

The idle speed must be adjusted when the fan is off. If it cuts during adjustment, interrupt all operations until it is completely still again.

- Connect the engine to a rev counter.
- 1. Disconnect the electrical connection from the constant idle speed actuator.

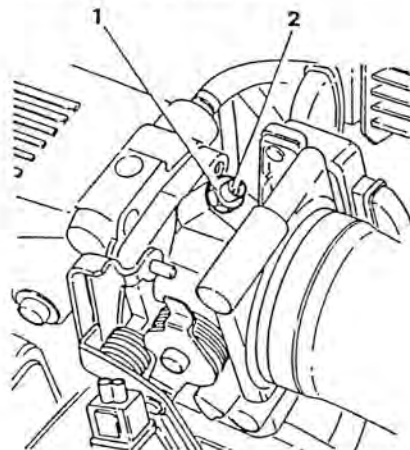


- Check that the idle speed is within the specified values.



Idle speed
850 ± 30 r.p.m.

- If the idle speed is not within the specified limits, proceed as follows:
 1. Loosen the by-pass valve counter nut on the throttle body.
 2. Acting on the by-pass screw, adjust the idle speed until it reaches the specified value.



- Connect the previously disconnected electrical connection to the constant idle speed actuator and check that the idle speed is within the specified limits.



Idle speed
850 ± 30 r.p.m.

CHECKING OPERATION OF THE LAMBDA PROBE

See ELECTRICAL - ELECTRONIC DIAGNOSIS manual.



CHECKING EXHAUST EMISSIONS



CAUTION:

The exhaust emissions must be checked in the open or where this is not possible, in a suitable environment equipped in accordance with the current safety laws.

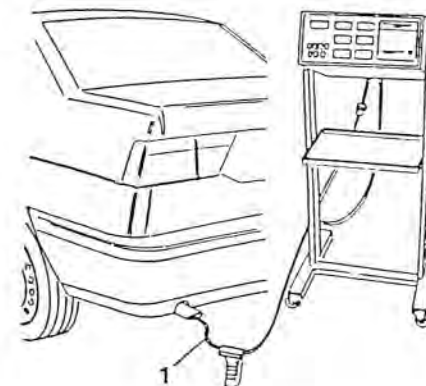
NOTE: This test must be carried when the engine is at normal running temperature (i.e. when the electric cooling fan has cut in and then cut out again).

If the idle speed is not within the specified limits, check that the constant idle speed actuator is functioning correctly.

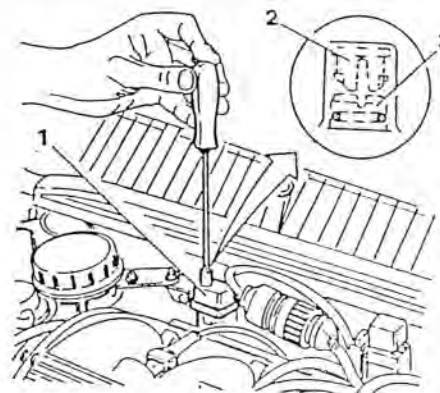
Downstream of the catalytic converters

- Check that the oil is at the correct level and that the air cleaner cartridge is clean.
- Start the engine and run it at idle speed.
- 1. Insert the probe of the analyzer into the end of the exhaust pipe and check that the percentage of CO and the quantity of unburnt hydrocarbons (HC) are within the specified limits.

Idle speed		850 ± 30 r.p.m.
Exhaust CO	% vol.	≤ 0.35
Exhaust HC	p.p.m.	≤ 90



- If the test results in values which are not within the specified limits, make the necessary adjustments by using a screwdriver to move the trimmer after removing the the sealed cap with an appropriate tool.

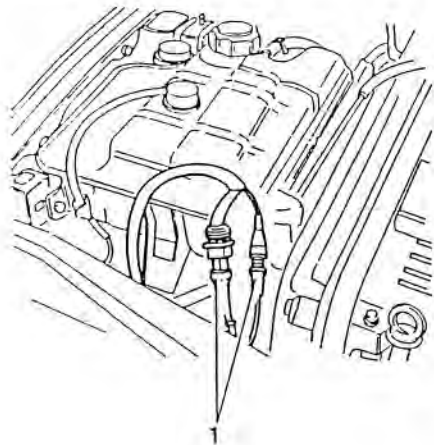


1. Idle CO trimmer
2. Sealed cap
3. Regulation screw

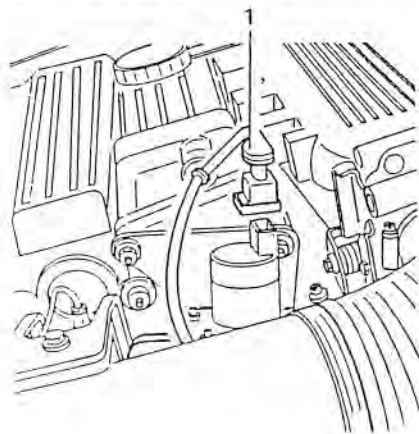
- When the adjustment has been made, check that the idle speed has not been altered and if it has, restore it to its original value by moving the by pass screw on the throttle body. Check that the CO and HC values have not been altered.

**Upstream of the catalytic converters**

- Check that the oil is at the correct level and that the air cleaner cartridge is clean.
- Start the engine and run it to idle speed.
- 1 Disconnect the electrical connections from the lambda probe.



- 1 Disconnect the electrical connection from the constant idle speed actuator and check that the idle speed is within the specified limits.

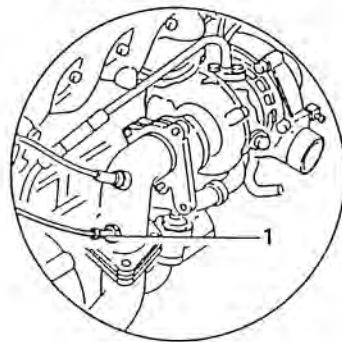
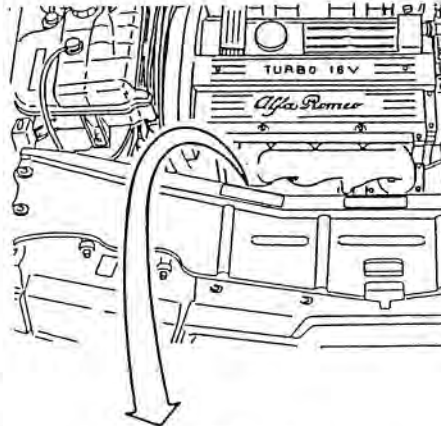


Idle speed

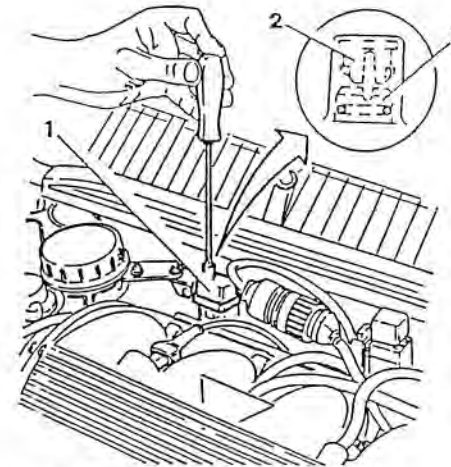
850 ± 30 r.p.m.

1. Insert the probe of the exhaust gas analyzer into the socket in front of the catalyzers and check that the percentage of CO is within the specified limits.

CO upstream of the catalyzers % vol. 0.4 - 0.8



- If the test results on values which are not within the specified limits, make the necessary adjustment by using a screwdriver on the trimmer after removing the sealed cap with the appropriate tool.



1. Idle CO trimmer
2. Sealed cap
3. Regulation screw

- When the adjustment has been made, check that the idle speed has not been altered and if it has, restore it to its original value by moving the by-pass screw on the throttle body.
Check that the CO value has not been altered.

CHECKING IGNITION ADVANCE

- Place the vehicle on a lift and remove the front right-hand wheel and relative dust-guard.
- Connect a strobe gun to the high voltage cable of the cylinder N° 1 spark plug.
Connect the positive and negative cables of the strobe gun to the relative terminals of the battery.

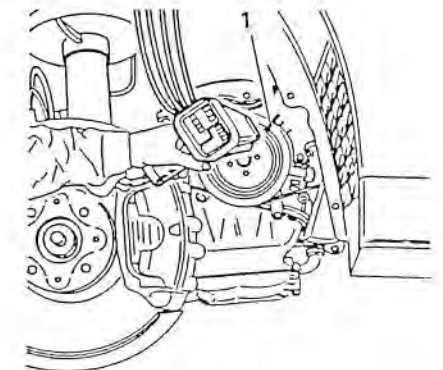
1. Start the engine and warm it to normal running temperature and, at idle speed (850 ± 30 r.p.m.), check that the notches on the auxiliary organs control pulley is in line with that on the timing belt cover. Check that the advance is within the specified limits as shown below.



Fixed advance

10° ± 3'

NOTE: Using a strobe gun which is suitable for ignition systems of the "lost spark" type, the value read off the instrument corresponds to the actual value.
If a "traditional" strobe gun is used instead, the value read off the instrument will be halved as a spark is produced at each revolution of the engine.

**CAUTION:**

The system will not permit and does not require any adjustment of the Ignition advance.

If the advance values are incorrect, refer to ELECTRICAL - ELECTRONIC DIAGNOSIS.

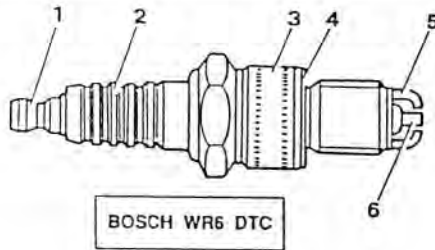


CHECKING AND REPLACING SPARK PLUGS

The spark plugs fitted as standard to this vehicle are of the superficial discharge type with three peripheral earth electrodes and a single central electrode.

The distance between the electrodes on this type of spark plug does not require adjustment.

Firing order	1 - 3 - 4 - 2
--------------	---------------



1. Terminal
2. Ceramic insulation
3. Body
4. Gasket
5. Central electrode
6. Peripheral earth electrodes

MAINTENANCE

Periodically check the state of the electrodes to see if they are worn or broken and if the ceramic insulation is intact. If there is any sign of damage, replace the spark plugs.

During installation lubricate the thread with engine oil and tighten the spark plugs to a torque of:



23 - 28.4 Nm (2.3 + 2.9 kgm)



CAUTION:
Do not use spark plugs which are of a different size or with different characteristics from the specified type as this may cause serious damage to the engine and alter the level of toxic exhaust fumes.



CAUTION:
A dirty or burnt out spark plug is often symptomatic of a malfunction in the engine's supply system.
For example:

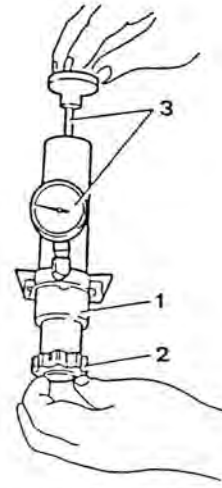
- traces of carbon powder: incorrect mixture, air cleaner very dirty
- oil stains: infiltrations of oil from the piston rings
- ash build-up: presence of aluminium material especially in oil
- melted electrodes: overheating due to unsuitable combustion, valve defects
- Fast-wearing electrodes: damaging additives present in the fuel or oil, pinging, overheating

For greater detail regarding these problems, refer to the fault diagnoses in GROUPS 01 and 04.



TESTING THE SEAL ON THE ENGINE COOLING SYSTEM PRESSURIZED CAP

1. Screw the connection onto the lower end of the seal test instrument.
2. Fit the pressurized cap of the expansion tank onto the connection.
3. Pressurize the piston manually and check that the release valve opens at the correct pressure which can be read off the instrument.

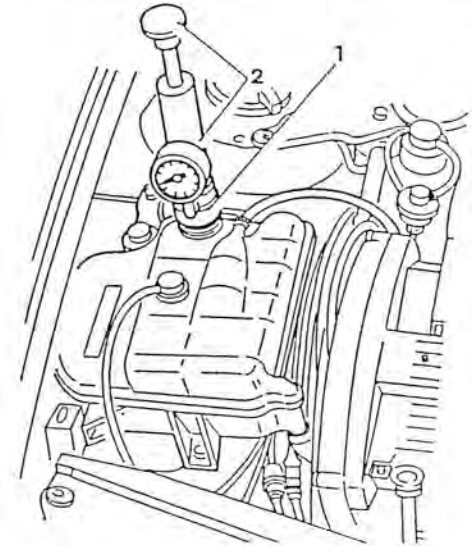


Pressure setting of pressurized cap

0.98 ± 0.1 bar (1 ± 0.1 kg/cm²)

CHECKING THE SEALING OF THE ENGINE COOLING SYSTEM

- Loosen and remove the pressurized cap from the expansion tank.
1. Screw the connection of the test instrument onto the neck of the expansion tank.
 2. Pressurize the system manually and check that the pressure is maintained at the specified level. If the pressure varies, check that there are no leaks in the sleeves or radiator.



Hydraulic system control pressure

1.08 bar (1.1 kg/cm²)



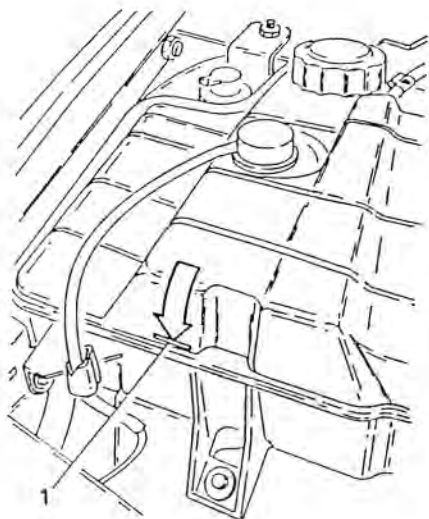
CAUTION:
For safety reasons the pressure during these tests using the test instrument must not exceed 1.38 bars (1.4 kg/cm²).



CHECKING LEVEL AND REPLACING ENGINE COOLANT

Check

1. When the engine is cold, visually check that the level of the engine coolant reaches the arrow on the expansion tank. If not, top-up the system with the specified fluid.

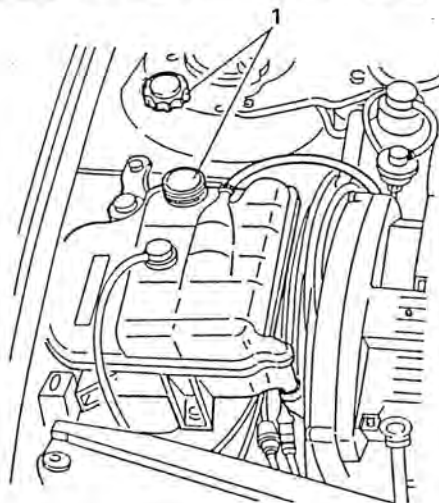


Substitution

- Place the vehicle on a lift.
1. Loosen and remove the cap from the expansion tank.



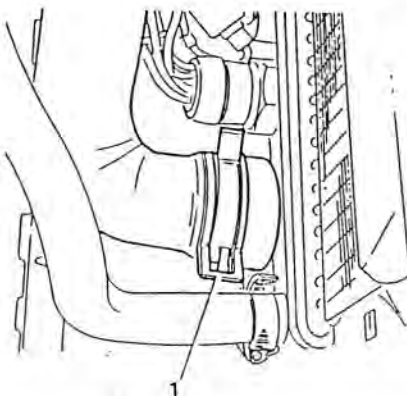
CAUTION:
Never remove the cap from the expansion tank when the engine is warm!



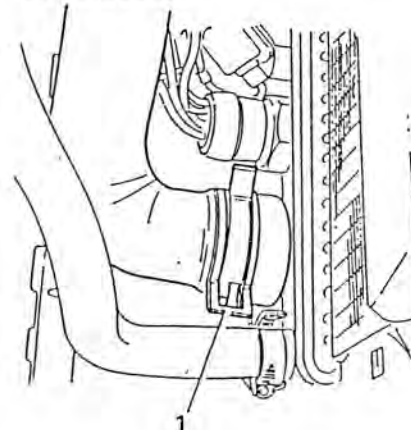
- Raise the vehicle on a lift.
1. Loosen the clamp securing the sleeve carrying engine coolant away from the radiator and disconnect the sleeve. Drain off the engine coolant into a suitable container placed under the vehicle.



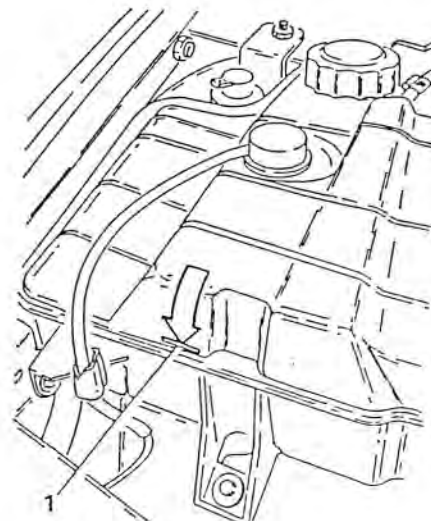
CAUTION:
The antifreeze mixture used as an engine coolant will damage paintwork. Prevent it from coming into contact with painted surfaces.



1. Reconnect the sleeve to the radiator and any hoses which were previously disconnected. Check that all the clamps are tight.



1. Refill the system up to the reference mark on the expansion tank.



- The recommended quantity and quality of the engine coolant is given in the following table.

Minimum temperature: -40°C		
Concentrated antifreeze	Alfa Romeo Antifreeze	5.0 Litres (55%)
Distilled water		4.1 Litres (45%)
Ready-for-use antifreeze	Alfa Romeo Climafluid Permanent -40°C	9.1 Litres

- Start the engine and warm it to normal running temperature until the thermostat frees the residual air trapped in the system.
- When the engine is cold, top-up the system to the level indicated on the expansion tank.
- Screw the pressurized cap back on.



CAUTION:
It is inadvisable to mix different types of antifreeze!
Do not use rust-proofing additives as they may not be compatible with the antifreeze!



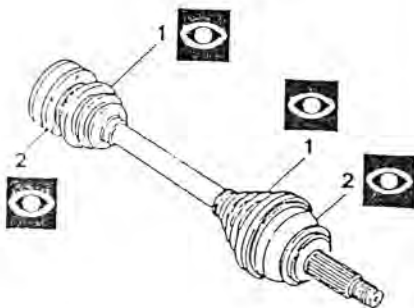
MAINTENANCE OF MECHANICAL UNITS

CHECKING FOR DAMAGE OF THE HALF-SHAFTS, POWER STEERING BELLOWS, STEERING KNUCKLE COVERS AND DRIVE SHAFT.

DRIVE HALF-SHAFTS

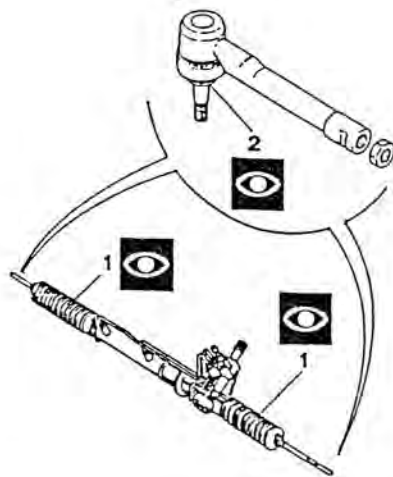
NOTE: Check the front and rear half-shafts.

1. Check that the rubber boots are not damaged and that grease is not seeping from them. Overhaul the entire joint if any breakage is discovered as foreign matter may have penetrated which would result in serious malfunctions.
2. Visually check the condition of the constant speed joints
- If necessary, overhaul the components, see: REPAIR INSTRUCTIONS - MECHANICAL UNITS - GROUP 17.



STEERING ROD

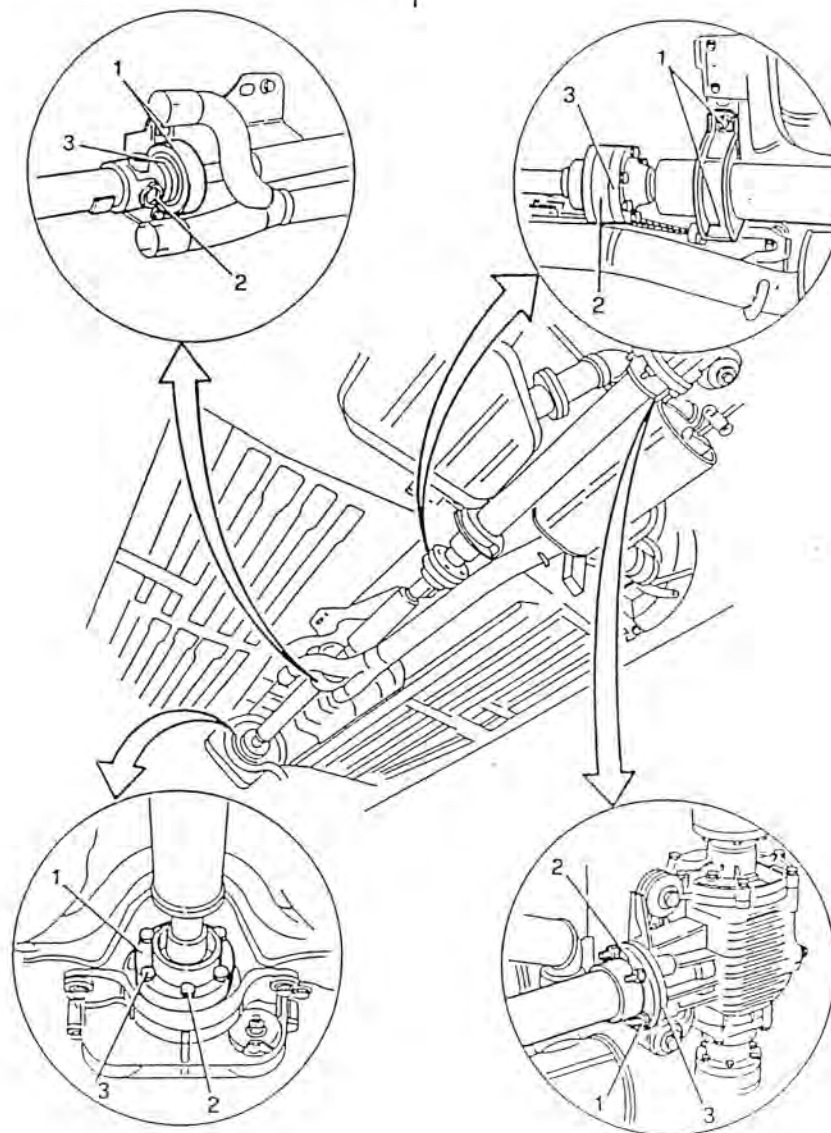
1. Ensure that the protective boots are not damaged. Replace them if they show signs of cracking or cuts.
2. Check that the spherical joints are not damaged or worn.
- If necessary, replace the components, see: REPAIR INSTRUCTIONS - MECHANICAL UNITS - GROUP 23.



DRIVE SHAFT

1. Check the drive shaft safety support and fittings for damage.
2. Ensure that the joints and flanges securing the shaft to the differential are not damaged.

3. Check that no oil or grease is leaking from the cross of the cardan joint or from the differentials.
- If necessary, overhaul the damaged components, see: REPAIR INSTRUCTIONS - MECHANICAL UNITS - GROUP 15.





CHECKING SEALING OF BRAKING SYSTEM

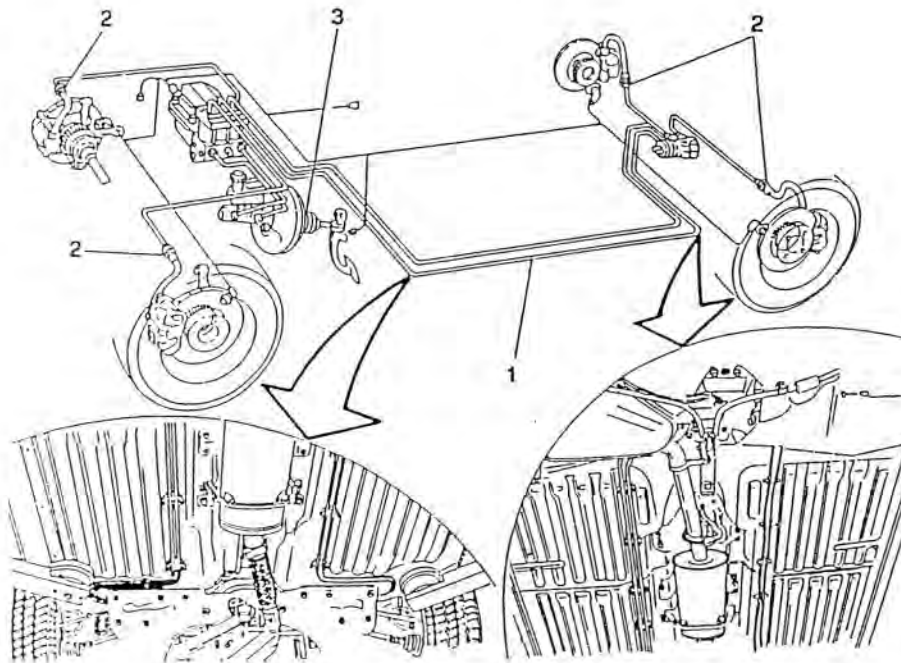
1. Check piped and hoses; they must not be damaged or show signs of swelling or corrosion. Also check that they are installed correctly.
2. Check the connections; there must be no leaks. If necessary tighten to the correct torque.
3. Check that the servo-brake vacuum intake hose is correctly installed and not cracked or pinched.

- Replace any damaged parts and bleed the system (see: REPAIR INSTRUCTIONS - MECHANICAL UNITS - GROUP 22).



CAUTION:
Clutch/brake fluid will damage paintwork and should be handled with care.

NOTE: The brake system must be bled if any part is disassembled or replaced (see: GROUP 22).



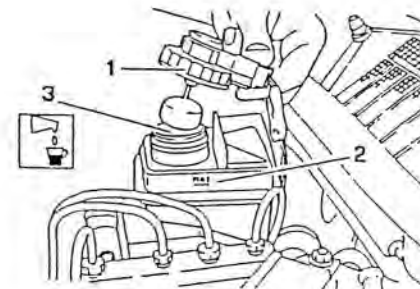
CHECKING LEVEL OF CLUTCH/BRAKE FLUID



WARNING:
Ensure that the fluid does not come into contact with the paintwork.

NOTE: When checking the clutch/brake fluid, the vehicle must be resting on a level surface.

1. Remove the cap from the brake/clutch fluid reservoir.
 2. Ensure that the fluid reaches the MAX mark.
 3. If necessary fill the reservoir with the specified fluid.
- If the level is very low, carefully check the system for leaks.

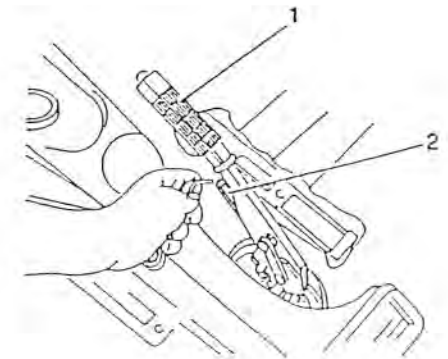


WARNING:
The clutch/brake fluid is hygroscopic and quickly absorbs water when in contact with humid environments.
Top-up with fluid contained in sealed cans which should not be opened until they are ready to be used.

NOTE: The braking system must be bled if any part is disassembled or replaced (see: REPAIR INSTRUCTIONS - MECHANICAL UNITS - GROUP 22).

CHECKING HANDBRAKE TRAVEL

1. Raise the handbrake to the third detent on the sector gear and check that the wheels are locked.
 2. If they are not locked, tighten the regulation nut until they are.
- Applying a force of approximately 40 kg to the control lever, check that the number of detents does not exceed 7.
 - Ensure that when the handbrake is disengaged the wheels rotate freely.

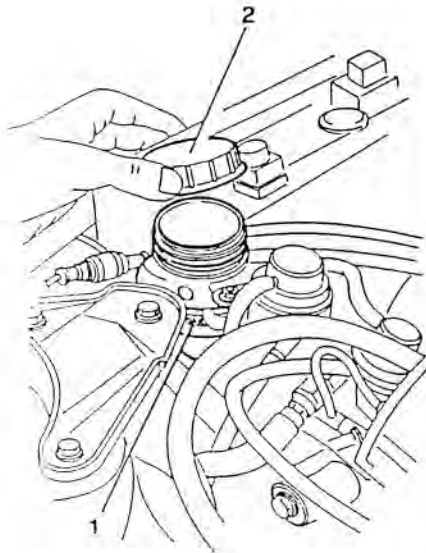




CHECKING POWER STEERING FLUID

NOTE: The following operations should be carried out when the vehicle is on a level surface.

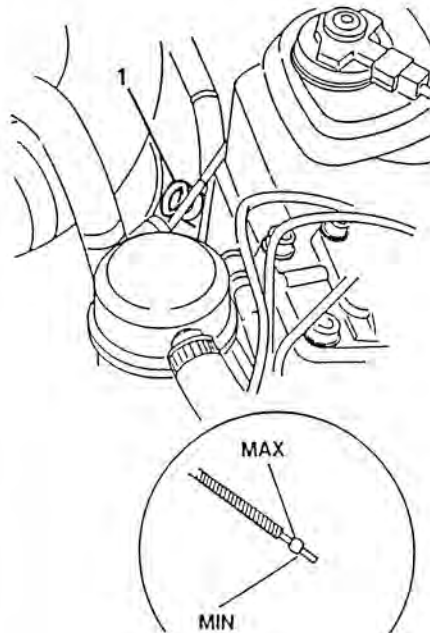
1. Check that the level reaches the maximum mark on the reservoir.
2. If it does not, unscrew and remove the filler cap and top-up with the specified oil.
 - Start the engine and wait until it is running smoothly, rotate the steering wheel a number of times from left lock to right lock.
 - Top-up the system to the MAX mark and screw on the cap.



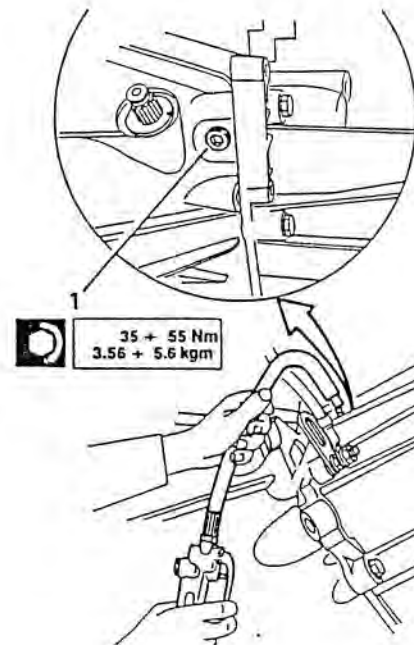
CHECKING LEVEL AND REPLACING GEARBOX AND FRONT DIFFERENTIALS OIL

NOTE: This check should be performed when the vehicle is on a level surface and on a vehicle lift.

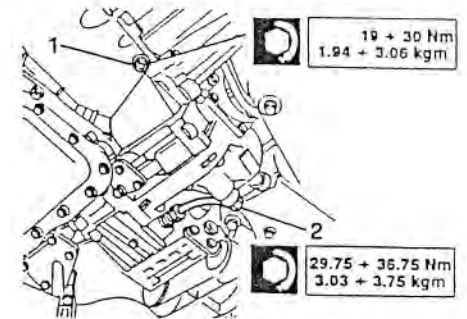
1. Check the gearbox-differentials oil level using the dipstick with the red eyelet which can be found in the engine compartment under the brake/clutch fluid reservoir.



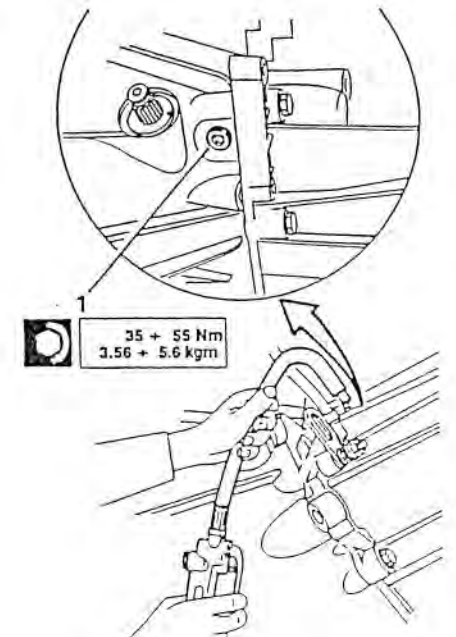
1. If necessary top-up the system by unscrewing the filler cap located on the upper part of the gearbox and using a suitable pump, refill the circuit with the specified oil.



- When replacing the oil, place a suitable container under the vehicle and proceed as described below.
1. Unscrew the drain screw located on the gearbox bell and allow the oil to drain off for at least 15 minutes.
 2. Unscrew the connection located on the distributor between the distributor connection hose - and front differential and allow the oil to drain off for at least 15 minutes.
- Clean the cap and the connection and tighten to the specified torque.



1. Unscrew the filler cap located on the upper part of the gearbox and using a suitable pump, refill the system with the specified oil (see: TECHNICAL CHARACTERISTICS AND SPECIFICATIONS - REFILLING FLUIDS AND LUBRICANTS), and tighten the filler cap to the correct torque.

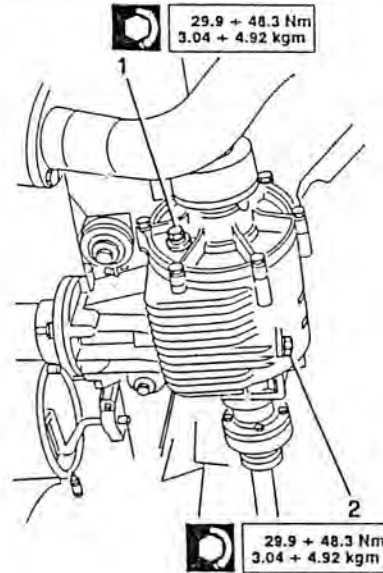




CHECKING AND REPLACING REAR DIFFERENTIAL OIL

NOTE: The rear differential oil must be checked or replaced when the vehicle is on a lift and perfectly level.

- When checking the rear differential oil level, unscrew the oil filler cap and check that the oil comes up to the lower edge of the hole.
 - Top up with the specified oil through the filler hole and then clean the cap and tighten it to the correct torque.
- When replacing the oil in the rear differential, place a suitable container under the vehicle, remove the drain screw and allow the oil to drain off for at least 15 minutes.
 - Clean the drain screw, screw it back on and refill with the specified oil through the hole until it reaches the lower edge. Clean the cap and tighten it to the correct torque.



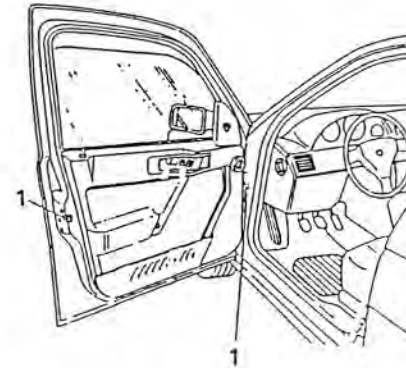
LUBRICATING THE DOOR, BONNET AND BOOT HINGES AND THE BONNETS/BOOTS CATCHES DEVICES

Apply a suitable amount of grease to the parts indicated below to prevent wear and corrosion.

- Clean the affected parts.
- Grease.
- Remove excess grease.

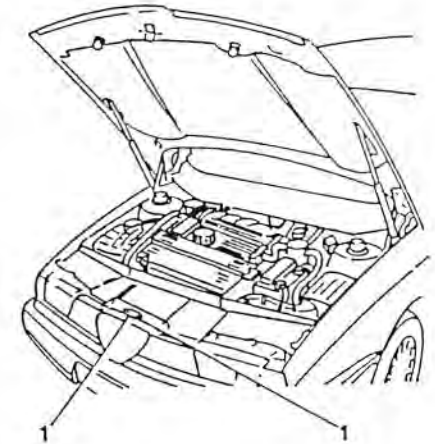
DOORS

- Lubricate the hinges, check strap and the door locks.



BONNET

- Lubricate the catches and the bonnet release cable.



BOOT

- Lubricate the boot catch.





TECHNICAL CHARACTERISTICS AND SPECIFICATIONS

BELT TENSIONING

Belt	Alternator Water pump	Air conditioning compressor	Pump power steering
Tension			
Upon refitting	520 - 670 N	500 - 650 N	500 - 650 N
Minimum	300 N	350 N	350 N
Re-tensioning	300-450 N	350-450 N	350- 450 N

VALVE CLEARANCE

NOTE: Check/adjust valve clearance only when the engine is cold.

Valve clearance	Intake	0.36 - 0.44 mm
	Exhaust	0.46 - 0.54 mm

CHECKING FUEL SUPPLY PRESSURE

Fuel pressure	2.5 ± 0.2 bar (2.55 ± 0.2 kg/cm ²)
Maximum control pressure	4 bar



CHECKING IDLE SPEED

Idle speed	850 ± 30 r.p.m.
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CHECKING EXHAUST EMISSIONS

CO	% vol.	At end of exhaust pipe	≤ 0.35
		Upstream of catalyzers	$0.4 + 0.8$
HC	p.p.m.	At end of exhaust pipe	≤ 90

IGNITION

Spark plugs	BOSCH WR6 DTC
Firing order	1-3-4-2
Fixed advance (at idle speed)	$10' \pm 3'$

COOLING SYSTEM

Control pressure of hydraulic circuit	1.08 bar (1.1 kg/cm ²)
Pressure setting of pressurized cap	0.98 ± 0.1 bar (1 ± 0.1 kg/cm ²)

HANDBRAKE

LEVER

Number of detents of the handbrake lever before the rear wheels lock: 3



FILLING WITH FLUIDS AND LUBRICANTS

See "FLUIDS AND LUBRICANTS" PAGE 00-15 and "APPROXIMATE SERVICING CAPACITIES" page 00-18.



TIGHTENING TORQUES

ENGINE

Part	Nm	kgm
Oil sump drain plug	32.5 + 52.5	3.3 + 5.4
Spark plugs	23 + 28,4	2.3 + 2.9
Water pump pulley fastening screw	21.3 + 26.3	2.2 + 2.7
Nut fastening timing belt guide pulley	37.4 + 46.2	3.8 + 4.7
Nut fastening counter-rotating shafts belt guide pulley	19.5 + 24.2	2.0 + 2.5
Fuel inlet union in filter	30 + 37	3.1 + 3.8
Fuel outlet union from filter	21 + 26	2.1 + 2.7

GEARBOX AND DIFFERENTIAL

Part	Nm	kgm
Threaded cap for filling gearbox oil	35 + 55	3.56 + 5.6
Magnetic plug on gearbox for draining oil	19 + 30	1.94 + 3.06
Union for swivel fitting fastening oil delivery pipe to bevel pinion support	29.75 + 36.75	3.03 + 3.75

REAR DIFFERENTIAL

Part	Nm	kgm
Threaded oil filler cap	29.9 + 48.3	3.04 + 4.92
Threaded oil drain cap	29.9 + 48.3	3.04 + 4.92



BRAKING SYSTEM

Part	Nm	kgm
Connection for pipe on brake pump	15.3 - 18.9	1.55 - 1.93
Drain screw on brake calipers	3.71 - 5.9	0.38- 0.61
Connection for hose connection on brake calipers	15.3 - 18.9	1.55 -1.93
Connection for pipe connection of braking manifold	9.35 - 11.55	0.95 - 1.18

SPECIFIC TOOLS

1.820.260.000	Tip for tensioning counter-shaft belt
1.820.261.000	Valve cap attachment
1.820.262.000	Lever for replacing pads
1.820.263.000	Rear engine support support
1.824.015.000 (C.2.0128)	Tool for checking tension of belts
1.824.016.000 (C.2.0129)	Rod for tensioning timing belts and counter-shafts
1.824.017.000 (C.2.0130)	Tip for tensioning timing belt
1.824.018.000 (C.2.0131)	Tool for checking belt tension