

155 T.SPARK 16V

REPAIR MANUAL

VEHICLE CHARACTERISTICS AND MAINTENANCE



UPDATES CARD

155 T.SPARK 16V

REPAIR
MANUAL

- VEHICLE CHARACTERISTICS AND MAINTENANCE

UPDATES CARD			
UPDATE (DATE)	SECTION	PAGE	
		REPLACED	ADDED
	Vehicle characteristics and maintenance (PA4655A516V000)		
2(12/1995)		00-1 + 00-4	
2(12/1995)		00-6	
1(1/1995)		00-16	
1(1/1995)			00-17 + 00-28
2(12/1995)		00-18	
2(12/1995)		00-20	
2(12/1995)		00-20*1 + 00-20*2	
2(12/1995)		00-22	
2(12/1995)		00-28	

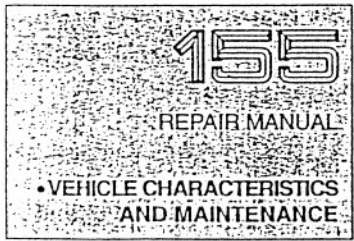

Insert this Update Card in volume * **155** Repair Manual - Vehicle Characteristics and Maintenance* at the beginning of the section concerning **155 T.SPARK 16V**

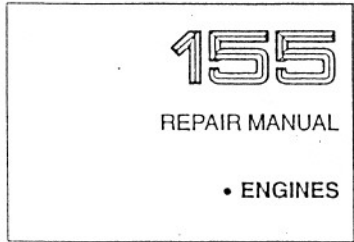
DIVISION OF
"REPAIR MANUAL"

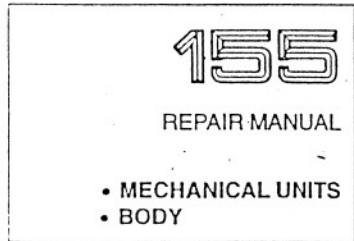
Models

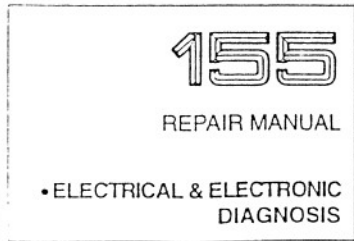
155

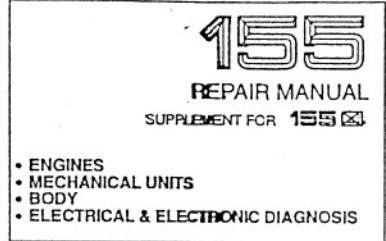
The documentation published by the Alfa Romeo Assistance Service for the "155" vehicle is composed of the following publications:

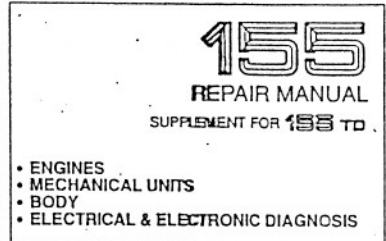
	155 T.SPARK V6 - PA4655A1000000: GROUP 00
	155  - PA4655A24x4000: GROUP 00
	155 TD - PA4655A3TD0000: GROUP 00
	155 TD 2.5 - PA4655A4TD2500: GROUP 00
	155 T. SPARK 16V - PA4655A516V000: GROUP 00

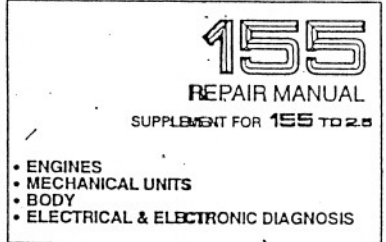
	- PA4655B1000000: GROUPS 01, 04, 05, 07 Engine 1995 cm ³ (code AR 67202) Engine 1773 cm ³ (code AR 67102) Engine 1749 cm ³ (code AR 67103)
	- PA4655B2000000: GROUPS 01, 04, 05, 07 Engine 2492 cm ³ (code AR 67301)

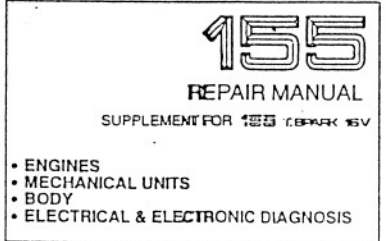
	- PA4655C1000000: MECHANICAL UNITS
	- PA4655D1000000: Electrical components, Bodywork, Trim, Heating and Ventilation

	- PA4655E1000000: Wiring diagrams and Troubleshooting
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	- PA4736B14x4000: GROUPS 01, 04, 05, 07 Engine 1995 cm ³ TURBO (code AR 67203)
	- PA4736C14x4000: MECHANICAL UNITS - PA4736D14x4000: Electrical components, Bodywork, Trim, Heating and Ventilation - PA4736E14x4000: Wiring diagrams and Troubleshooting

	- PA4805B1TD0000: GROUPS 01, 04, 05, 07 Engine 1929 cm ³ TURBO DIESEL (code AR 67502)
	- PA4805C1TD0000: MECHANICAL UNITS - PA4805D1TD0000: Electrical components, Bodywork, Trim, Heating and Ventilation - PA4805E1TD0000: Wiring diagrams and Troubleshooting

	- PA4830B1TD2500: GROUPS 01, 04, 05, 07 Engine 2.498 cm ³ TURBO DIESEL (code VM07B)
	- PA4830C1TD2500: MECHANICAL UNITS - PA4830D1TD2500: Electrical components, Bodywork, Trim, Heating and Ventilation - PA4830E1TD2500: Wiring diagrams and Troubleshooting

	- PA4978B116V000: GROUPS 01, 04, 05, 07 Engine T.SPARK 16v (code AR 67204)
	- PA4978C116V000: MECHANICAL UNITS - PA4978D116V000: Electrical components, Bodywork, Trim, Heating and Ventilation - PA4978E116V000: Wiring diagrams and Troubleshooting

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GROUP 00

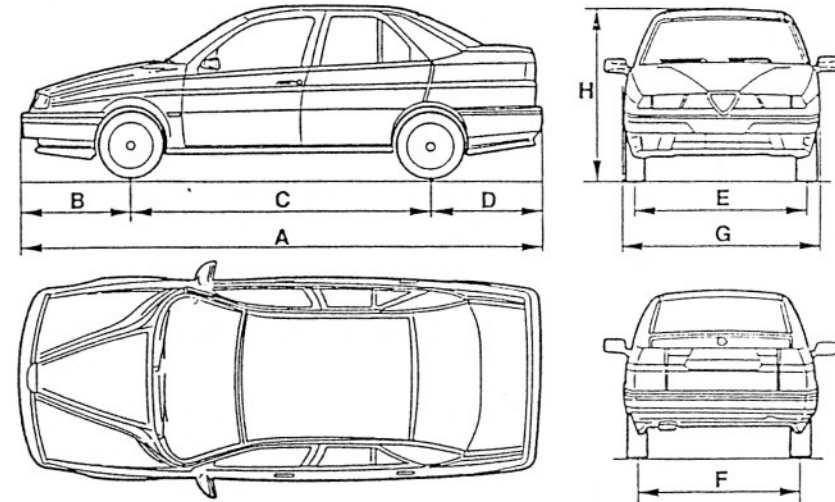
VEHICLE CHARACTERISTICS AND MAINTENANCE

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DIMENSIONS



Dimensions		Model	155 1.6	155 1.8	155 2.0	155 SUPER
			T. SPARK 16V	T. SPARK 16V	T. SPARK 16V	T. SPARK 16V
A	Maximum length	mm	4443	4443	4443	
B	Front overhang	mm	960	960	950	
C	Wheelbase	mm	2540	2540	2540	
D	Rear overhang	mm	943	943	943	
E	Front track (with static load)	mm	(*)	(*)	1493 (1) 1485 (2)	
F	Rear track (with static load)	mm	(*)	(*)	1427 (1) 1419 (2)	
G	Maximum width	mm	1730	1730	1730	
H	Maximum height	mm	1440	1440 1425 (3)	1440 1425 (3)	

(1): with 15" rims

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

(2): with 16" rims

(3): with lowered geometry



WEIGHTS AND LOADS

		Model			
		155 1.6 T. SPARK 16V	155 1.8 T. SPARK 16V	155 2.0 T. SPARK 16V	155 SUPER T. SPARK 16V
Weights and loads					
Kerb weight (without driver)	kg	1270	1270	1300	
Weight of vehicle fully laden	kg	(*)	(*)	1840	
Useful load	kg	(*)	(*)	540	
Max. permissible weight for axle	front	kg	(*)	(*)	900
	rear	kg	(*)	(*)	940
Towable weight	with braked trailer	kg	1300	1300	1300
	with unbraked trailer	kg	500	500	500
Maximum load on tow hitch ball	kg	50	50	50	

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



WHEELS AND TYRES

Specifications		Model			
		155 1.6 T. SPARK 16V	155 1.8 T. SPARK 16V	155 2.0 T. SPARK 16V	155 SUPER T. SPARK 16V
Rim size	standard	6J x 14*	6J x 14*	6.5J x 15*	6.5J x 15*
	optional	-	6.5J x 15* 7J x 16*	-	7J x 16*
Tyre size	standard	185/60 HR14* (▲) 195/60 VR14*	195/55 VR15* (▲) 185/60 HR14* 195/60 VR14*	195/55 VR15*	205/50 VR15*
	optional	-	205/50 VR15* 205/45 ZR16*	-	205/45 ZR16*
Tyre pressure bar (kg/cm ²)	reduced load (2 persons)	(*)	(*)	front 2.2 rear 2.0	front 2.5 rear 2.3
	fully laden	(*)	(*)	front 2.5 rear 2.5	front 2.8 rear 2.5
Compact spare wheel	rim size	4J x 15* 4B x 15*	4J x 15* 4B x 15*	4J x 15* 4B x 15*	4J x 15* 4B x 15*
	tyre size	115/70 R15* 90M	115/70 R15* 90M	115/70 R15* 90M	115/70 R15* 90M
	tyre pressure bar (kg/cm ²)	4.2	4.2	4.2	4.2

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

(▲) : For Versions/Markets.

WARNING:

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

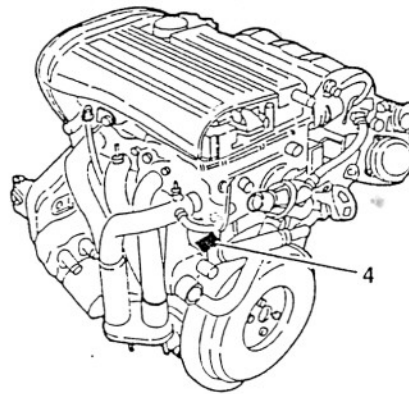
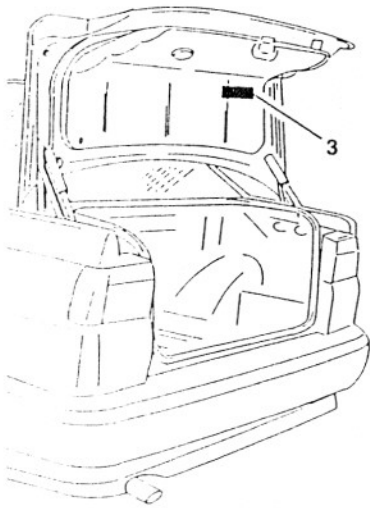
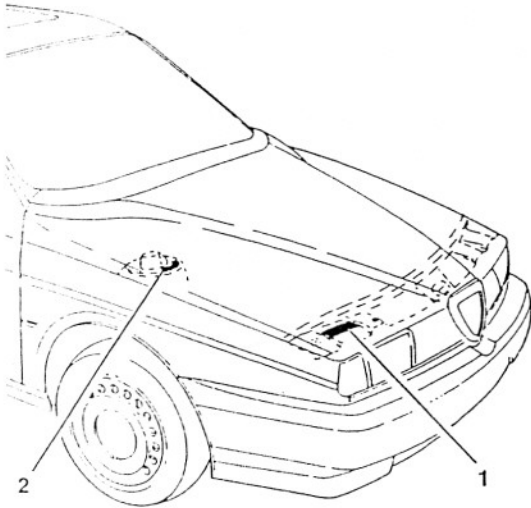
NOTE: To improve coupling between the wheels and the car body, the rims have a specific camber of each rim size. Therefore, in addition to the correct rim and tyre match, it is also necessary to check and maintain the camber of the rim.

RIM SIZE	RIM CAMBER
6J x 14*	31.5 mm
6.5J x 15*	37 mm
7J x 16*	41 mm



MODEL IDENTIFICATION

IDENTIFICATION PLATES



1. Data plate
2. Body code
3. Paint identification plate
4. Engine code (on crankcase)



IDENTIFICATION LABEL

Model		155 2.0 T. SPARK 16V	155 SUPER T. SPARK 16V
Trim level		4-door saloon	
Drive		LH + RH	
N° version	on identification label	167A2G	
	in the engine, compartment to one side of the right-hand upper shock absorber connection	167000	
N° chassis serial number (on two assembly lines)		121000 1022000	
N° engine type & serial number (intermittent)		AR 67204 from 3259	

Model		155 1.6 T. SPARK 16V	155 1.8 T. SPARK 16V
Trim level		4-door saloon	
Drive		LH + RH	
N° version	on identification label	167A6 167A6A (▲)	167A4N 167A4P (▲)
	in the engine, compartment to one side of the right-hand upper shock absorber connection	167000	
N° chassis serial number (on two assembly lines)		(*)	
N° engine type & serial number (intermittent)		AR 67601 from (*)	AR 67105 from (*)

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

(▲): For Versions/Markets.



DATA PLATE

This is located on the engine compartment crossmember.

It contains the data listed below:

	(F)
	(A)
	(B)
	(C)
1 -	(C)
2 -	(C)
MOTORE - ENGINE	(D)
VERSIONE - VERSION	(D)
N° PER RICAMBI	(D)
N° FOR SPARES	(D)
(E)	

- A. National homologation number
- B. Chassis serial number
- C. Any maximum weights authorized by different national regulations
- D. Vehicle version code (for example 167A2G) and any supplementary information.
- E. Smoke opacity index
- F. Name of manufacturer

PAINT IDENTIFICATION PLATE

This is located on the inner part of the bonnet and contains the data given below:

verniciatura originale Painture originale Original painting Originalanstrichung P - farve original	A
Colore Targa Colore Farbe ins Color	B
Colore Code Colore Farbe Code	C
PER RITOCCHIE REVERNCIATURE	D

- A. Paint manufacturer
- B. Colour name
- C. Colour code
- D. Colour code for touch-up or respray



SPECIFIC TOOLS

GENERALITIES

Specific tools play an important part in vehicle maintenance as they are able to guarantee accurate, reliable and quick service.

It should be noted that the times for the various operations have been calculated considering the use of the specific tools.

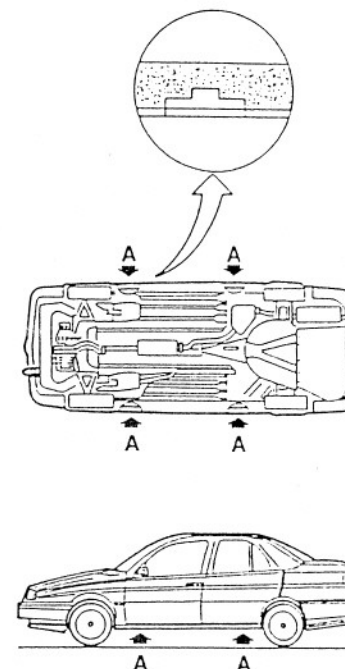
This manual lists and illustrates the special tools designed expressly by the Manufacturer for overhauling, maintenance and repair operations on the vehicle.

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

Es.: 1.820.088.000

(A.2.0461)

Tools manufactured recently only have the new number. The service network can supply particular specific tools, through Alfa Romeo Dealers following the existing procedures.



NOTE: These lifting points, two for each side of the car, are shown by an arrow on the under-door strips.

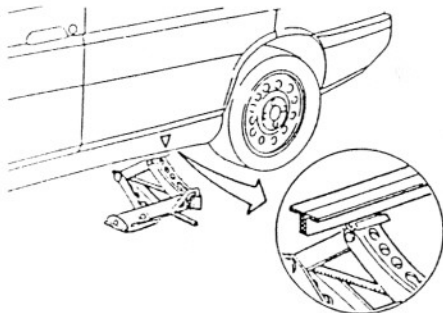
VEHICLE LIFTING POINTS

Use of the jack supplied with the vehicle

- If it is necessary to raise the vehicle using the car jack, place it in one of the points (A) shown in the illustration.

**CAUTION:**

Be careful to insert the groove of the upper part of the jack correctly on the protruding profile of the body.

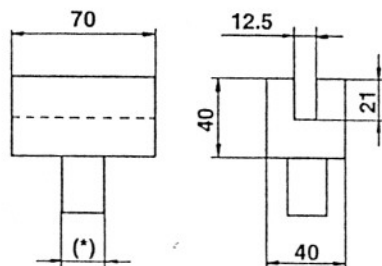
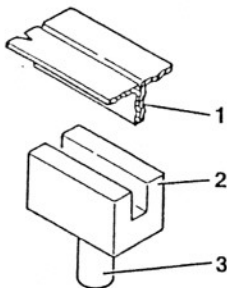
**CAUTION:**

- After raising the car with the jack, it must be supported by suitable safety stands.
- Before lifting the front of the vehicle, lock the rear wheels remaining on the ground using chocks; in the same way, when lifting the rear of the vehicle, chock the front wheels.
- NEVER CARRY OUT ANY WORK UNDER A VEHICLE LIFTED WITH THE CAR JACK !! THE JACK IS ONLY TO BE USED FOR CHANGING WHEELS.

Use of a workshop jack

- When needing to lift the car using a workshop jack, a suitable tool should be placed between arm of the jack and the vehicle body.

The tool must be made of steel and with the dimensions illustrated.



(*) dimension depending on the seat of the hydraulic jack used

1. Body
2. Tool
3. Centering pin



1. Position the tool described previously on the hydraulic jack.
2. Place the jack in one of the points shown previously.

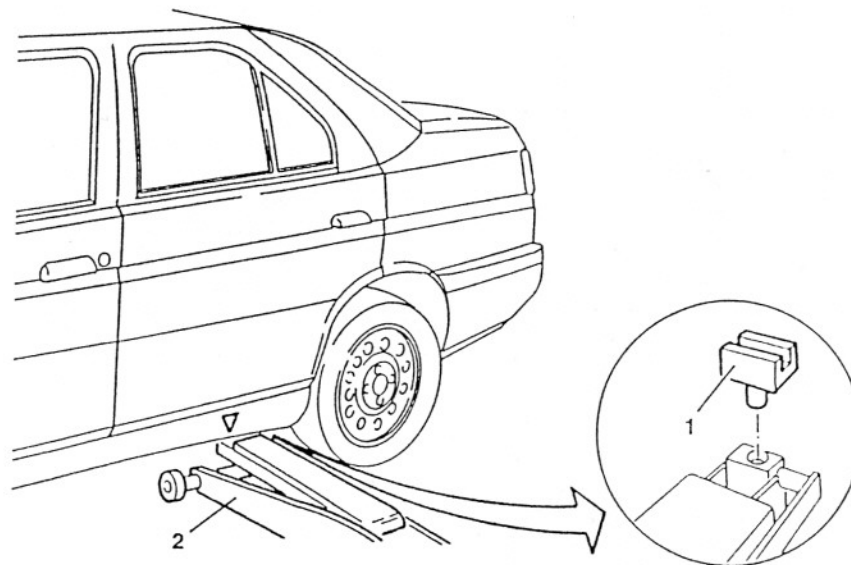
NOTE: These lifting points, two for each side of the car, are shown by an arrow on the under-door strips.

**CAUTION:**

Be careful to correctly insert the groove of the tool on the protruding profile of the body.

**CAUTION:**

- After lifting the vehicle with the jack, support it with suitable safety stands.
- Before lifting the front of the vehicle, lock the rear wheels remaining on the ground using chocks; in the same way, when lifting the rear of the vehicle, chock the front wheels.



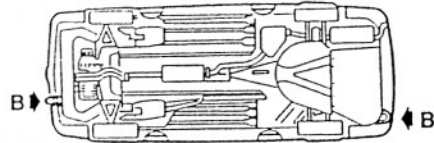


VEHICLE TOWING POINTS

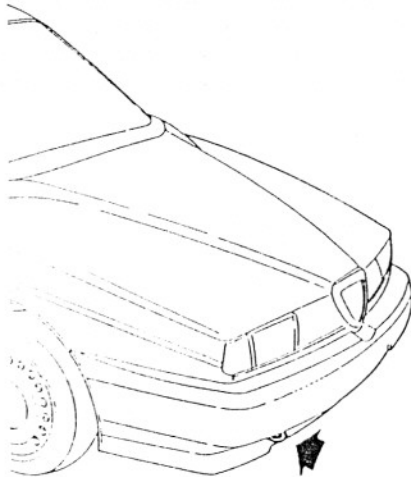
The car has two tow hooks (front and rear) located on the right-hand side of the bumpers.

When towing the vehicle, drive with care and closely adhere to current regulations.

- When needing to tow the car, fit the towing system in points (B) illustrated.



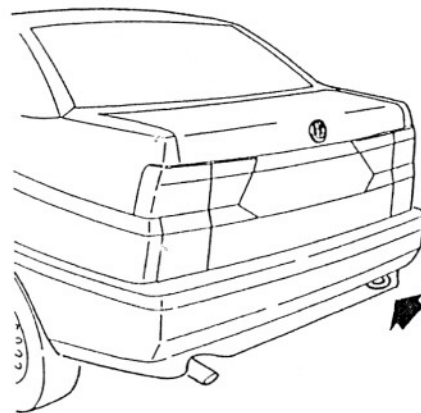
- Front tow hook



CAUTION:

- Before towing the car turn the ignition key to MARCIA, and then back to STOP without removing it; this will prevent the steering lock from engaging accidentally.
- You are reminded that when the vehicle is being towed the servobrake and power steering system are NOT operational !!

- Rear tow hook



SERVICING OPERATIONS

The maintenance operations consist in checking and restoring the efficiency of certain parts of the vehicle subject to wear and phase displacement following normal use.

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

WARNINGS:

Precautions to be observed before doing any work. The engine compartment contains many moving parts, high voltage cables and parts which become extremely hot and might be dangerous.

Carefully adhere to the following instructions:

- Turn off the engine and wait for it to cool down.
- Do not smoke or use naked flames. The presence of fuel may cause a fire.
- Keep a fire extinguisher handy.

Operations to be carried out at the mileage shown	km x 1000									
	20	40	60	80	100	120	140	160	180	200
Changing engine oil and filter (at all events once a year) and checking lubrication circuit for leaks	●	●	●	●	●	●	●	●	●	●
Changing timing gear drive belt						●				
Checking conditions of Poly V belts				●				●		
Changing air cleaner cartridge		●		●		●		●		●
Changing fuel filter cartridge (petrol versions)				●				●		
Checking operation of exhaust gas (Lambda probe) oxygen sensor				●				●		
Changing spark plugs					●					●
Changing antifreeze mixture				●				●		
Checking 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 circuits 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 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 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.

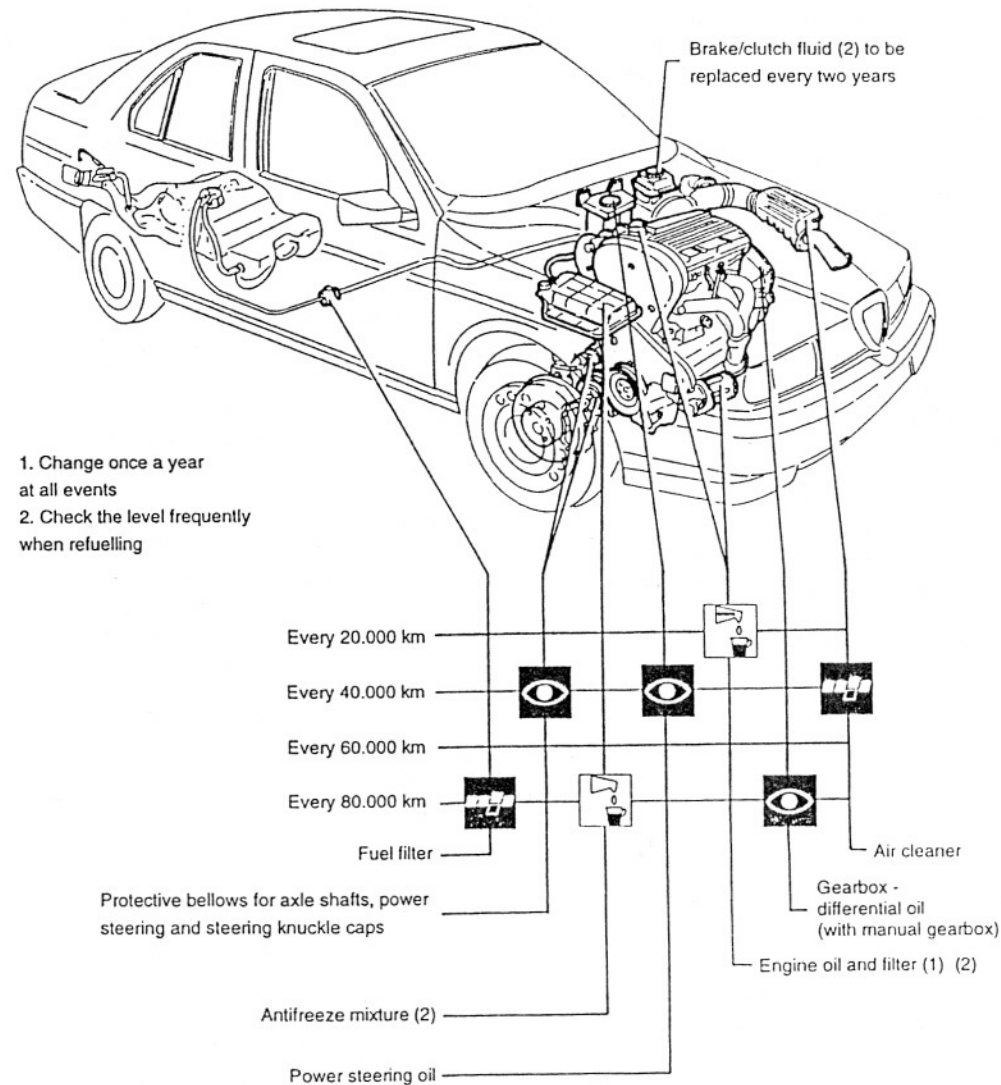
Anti-freeze

It is advisable to top up with **Alfa Romeo Climaf fluid 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.

**SCHEDULED CHECKS AND SERVICING OPERATIONS**



FLUIDS AND LUBRICANTS

Type	Group ref.	Application	Classification	Name
OIL	01 - Engine (*)	Engine (Refilling)	API SG CCMC G5 SAE 10W/40	SELENIA SPECIAL FORMULA ALFA ROMEO 10W/40
	13 - Gearbox and differential	Gearbox and differential (Refilling)	API GL-4	TUTELA ZC 80/S
	80 - Climate control	Compressor (Refilling)	-	NIPPONDENSO ND-9
FLUID	07 - Engine cooling	Cooling circuit (Refilling)	-	ALFA ROMEO CLIMAFLUID SUPER PERMANENT -40°C
	12 - Clutch	Brake and clutch hydraulic circuit (Refilling)	DOT 4	ALFA ROMEO BRAKE FLUID SUPER DOT 4
	22 - Brakes		SAE J1703 F	
	23 - Steering	Power steering system (Refilling)	G.M. DEXRON II	TUTELA G/A
	80 - Climate control	Air conditioner circuit (Refilling)	-	RIVOIRA: SUVA R134a HOECHST - TAZZETTI: FRIGEN R134a ICI - TAZZETTI: KLEA R134a
GREASE	SEE SPECIFIC FUNCTIONAL GROUPS			

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



APPROXIMATE SERVICING CAPACITIES

Capacity		Model	155 2.0 T. SPARK 16V	155 SUPER T. SPARK 16V
		Fuel tank	63 litres	
Fuel reserve	- 5 litres			
Engine oil	Total capacity	5.0 litres		
	Partial capacity (filter + sump) for periodical replacement	4.4 litres		
Gearbox - differential oil	2 litres			
Power steering system oil	(1)			
Brake - clutch circuit oil	(1)			
Engine cooling system fluid	8.4 litres			
Conditioner compressor oil	290 ± 30 cm ³ (2)			
Conditioner system fluid	(1)			

(1): Data not available at time of going to press.

(2): When changing components:

- the compressor is supplied with 160 ± 20 cm³ of oil
- the drier filter is supplied with 130 ± 10 cm³ of oil

SPECIFIED FUEL

The octane number of a fuel defines its resistance to detonation : it is essential to use fuel with the correct octane number as this will prevent knocking 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 operate 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 catalyst and prevent it from working properly.

The size of the filler neck has been reduced to prevent the nozzles used on leaded petrol pumps from being inserted.



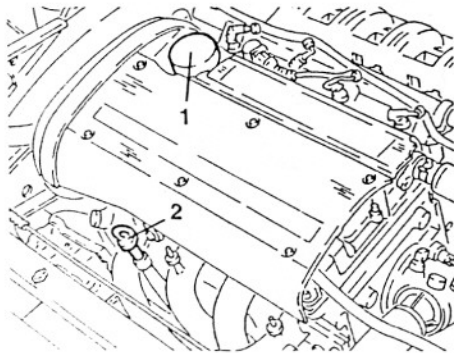
ENGINE MAINTENANCE OPERATIONS

CHANGING THE ENGINE OIL AND FILTER



WARNING:
Engine oil is harmful to the skin: minimise contact of the oil with the skin; if this does occur wash with soap and water.

1. With the engine warm, remove the filler cap.
2. Withdraw the dipstick.



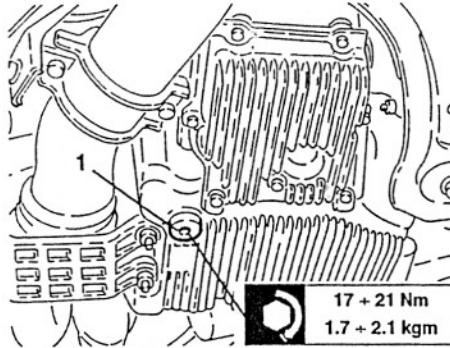
- Raise the car.
1. Remove the drain plug and drain off all the oil into a suitable recipient.



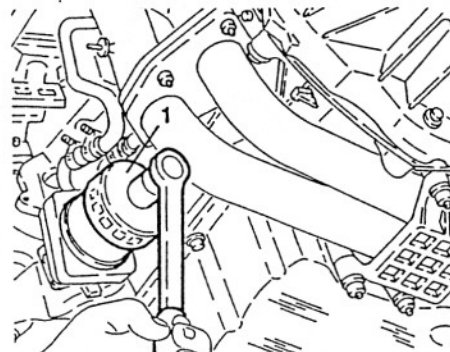
WARNING:
Be very careful when removing the drain plug; the oil might be very hot.



WARNING:
Never discard the oil in the environment as indiscriminate dumping causes pollution.



1. Working from underneath the car with the appropriate wrench, release the oil filter and remove it.



- Clean the drain plug and tighten it with the seal to the specified torque.
- Moisten the seal of the new filter and screw it on tightening fully by hand.
- Lower the car.
- Replenish the engine with oil of the type and in the quantity specified.
- Check that the oil level is correct with the dipstick.



WARNING:
The oil level should be checked with the car on level ground.
The oil level above the MAX mark can cause the oil to evaporate and loss of pressure.



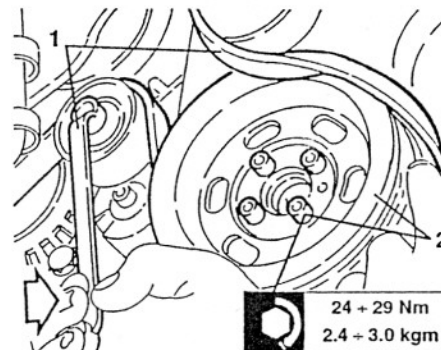
- Refit the filler cap, run the engine for appr. 2 minutes at idle speed, turn off the engine and wait for a few minutes.
- Check the oil level and make sure there are no leaks.



WARNING:
When refilling with oil, great care should be taken to prevent engine oil dripping into the alternator ventilation holes, as this could seriously damage the alternator and may cause fire.

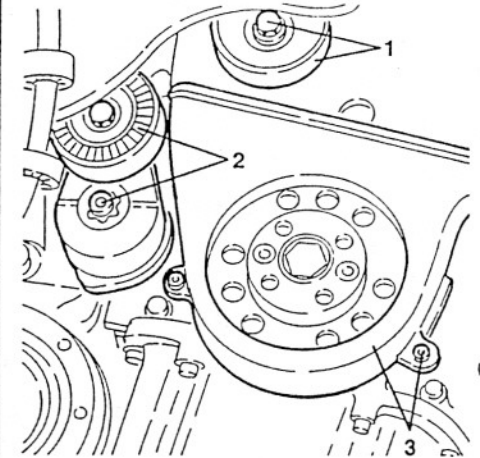
CHANGING THE TIMING GEAR BELT (For engines with counter-rotating shafts)

- Set the car on a lift.
 - Disconnect the battery (-) terminal.
 - Remove the right front wheel and mud flap.
1. Working as illustrated on the guide pulley, slacken the tension of the auxiliary components control belt and remove it.
 2. Slacken the four fastening screws and remove the auxiliary components control belt.

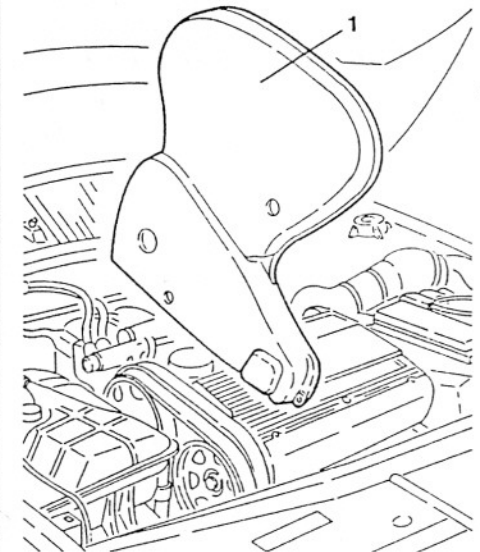


1. Slacken the fastening screw and remove the auxiliary components control belt guide pulley.
2. Slacken the fastening screw and remove the auxiliary components belt tensioner.

3. Slacken the fastening screws and remove the timing belts and counter-rotating shafts lower guard.

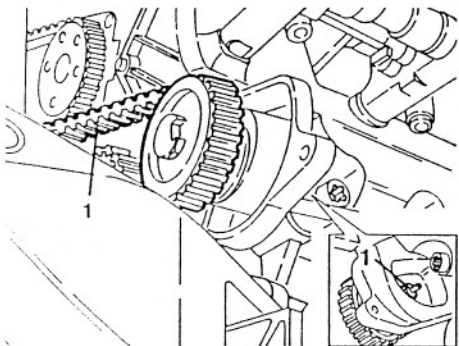


- Slacken the lower screws of the timing belts and counter-rotating shafts upper guard.
1. Lower the car, slackening the remaining fastening screws and remove the upper guard.

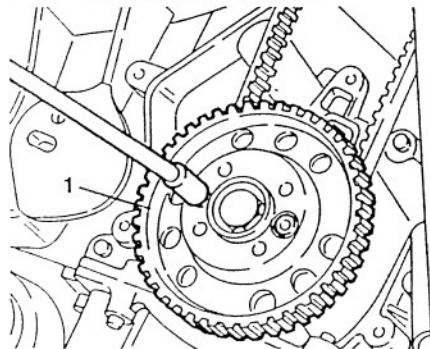




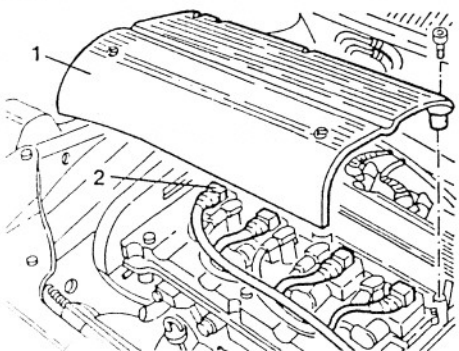
1. Slacken the tension of the counter-rotating shafts belt loosening the nut fastening the corresponding belt tensioner, then remove the belt.



1. Slacken the two fastening screws and remove the counter-rotating shafts driving pulley.

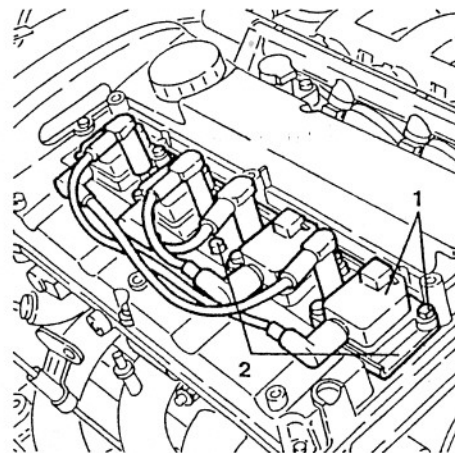


1. Slacken the fastening screws and remove the cover of the ignition coils.
2. Disconnect the electrical connections from the ignition coils.

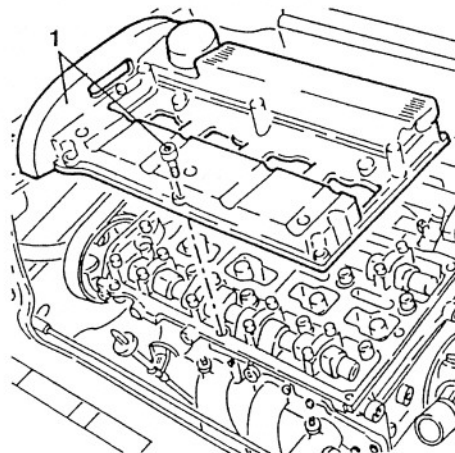


1. Slacken the fastening screws and remove the ignition coils.

2. Slacken the fastening screws and remove the ignition coils support bracket.



1. Slacken the fastening screws and remove the cylinder head cover complete with seal.



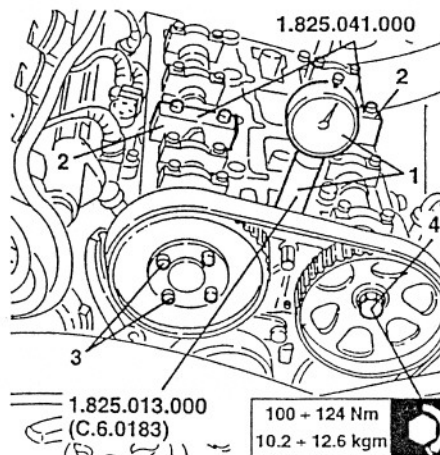
1. Install tool no. 1.825.013.000 (C.6.0183) fitted with dial gauge in the seat of the first cylinder spark plug.

- Turn the crankshaft in its direction of rotation, until the piston of the 1st cylinder reaches the T.D.C. in the bursting stroke.

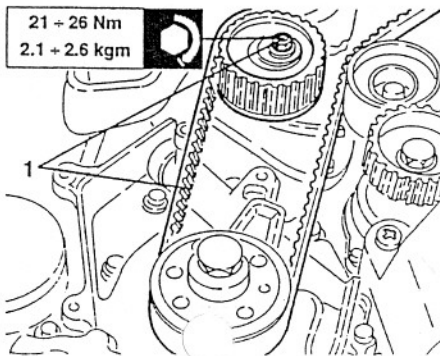
2. Remove the camshaft caps illustrated and in their place install templates no. 1.825.041.000 tightening the fastening screws to a maximum torque of 10 Nm (1 kgm) and ensuring correct coupling with the cams.

3. Slacken the four screws fastening the camshaft pulley on the intake side.

4. Slacken the screw fastening the timing pulley on the exhaust side.



1. Working on the timing belt tensioner slacken the tension of the belt, then remove it.



- Install a new timing belt proceeding as described in "ENGINE OVERHAULING" paragraph "Assembly of timing belt and checking timing".

- Install the counter-rotating shafts control belt proceeding as described in "ENGINE OVERHAULING" paragraph "Assembly of counter-rotating shafts control belt and timing".

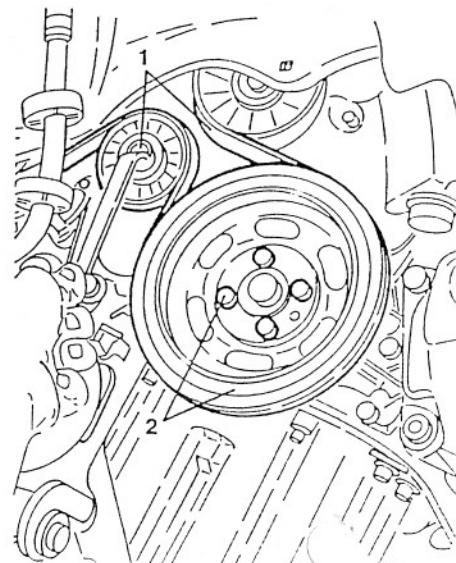
- Complete re-assembly reversing the sequence followed for removal.

CHANGING THE TIMING GEAR BELT (For engines without counter-rotating shafts)

- Set the car on a lift.
- Disconnect the battery (-) terminal.
- Remove the right front wheel and mud flap.

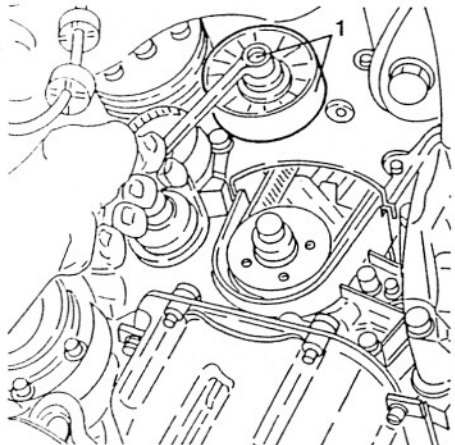
1. Working as illustrated on the guide pulley, slacken the tension of the auxiliary components control belt and remove it.

2. Slacken the four fastening screws and remove the auxiliary components control belt.



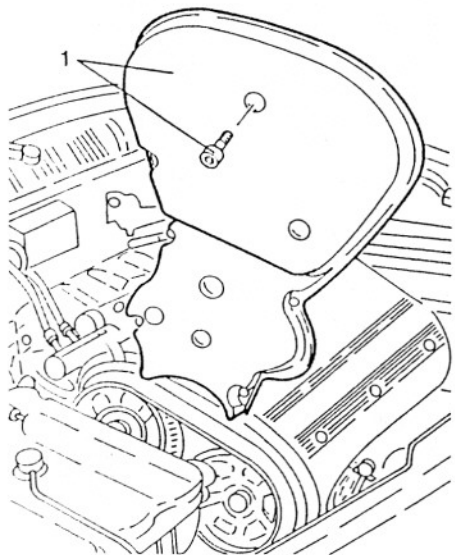


1. Slacken the fastening screw and remove the auxiliary components control belt guide pulley.



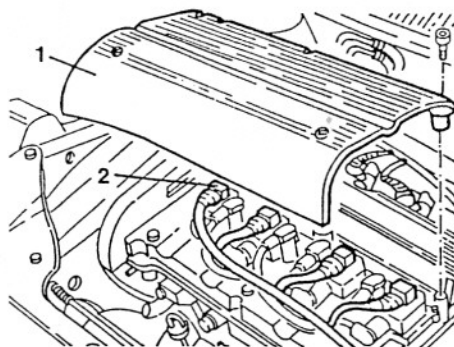
- Slacken the lower screws of the timing belt guard.

1. Lower the car, slackening the remaining fastening screws and remove the timing belt guard.

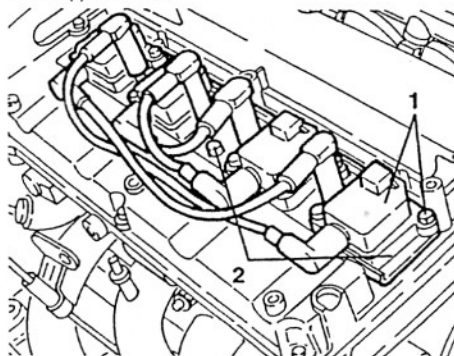


1. Slacken the fastening screws and remove the cover of the ignition coils.

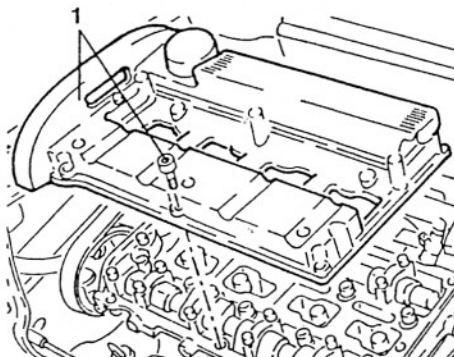
2. Disconnect the electrical connections from the ignition coils.



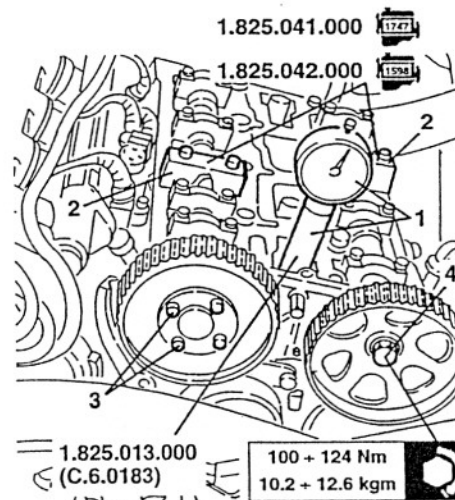
1. Slacken the fastening screws and remove the ignition coils.
2. Slacken the fastening screws and remove the ignition coils support bracket.



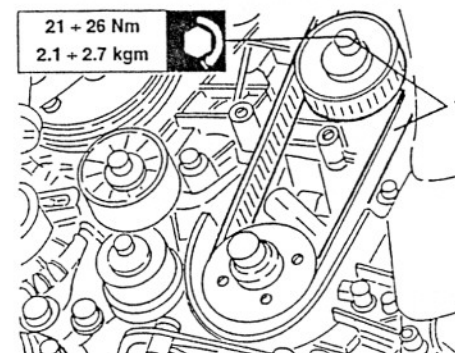
1. Slacken the fastening screws and remove the cylinder head cover complete with seal.



1. Install tool no. 1.825.013.000 (C.6.0183) fitted with dial gauge in the seat of the first cylinder spark plug.
- Turn the crankshaft in its direction of rotation, until the piston of the 1st cylinder reaches the T.D.C. in the bursting stroke.
2. Remove the camshaft caps illustrated and in their place install templates, tightening the fastening screws to a maximum torque of 10 Nm (1 kgm) and ensuring correct coupling with the cams.
3. Slacken the four screws fastening the camshaft pulley on the intake side.
4. Slacken the screw fastening the timing pulley on the exhaust side.



1. Working on the timing belt tensioner slacken the tension of the belt, then remove it.

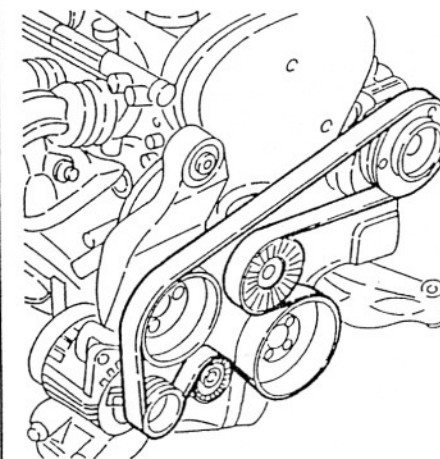


- Install a new timing belt proceeding as described in "ENGINE OVERHAULING" paragraph "Assembly of timing belt and checking timing".
- Complete re-assembly reversing the sequence followed for removal.

AUXILIARY COMPONENT BELT

The auxiliary components of the engine are driven by a single Poly V belt.

This belt is tensioned by an automatic tensioner; therefore checking the tension is unnecessary.



Checking and replacement

- Set the car on a lift.
- Remove the right front wheel and mud flap.
- Check visually that the belt is intact and that it is free of:
 - cuts and cracks
 - material surface wear (smooth and shiny)
 - dry or stiff parts (lack of adherence).

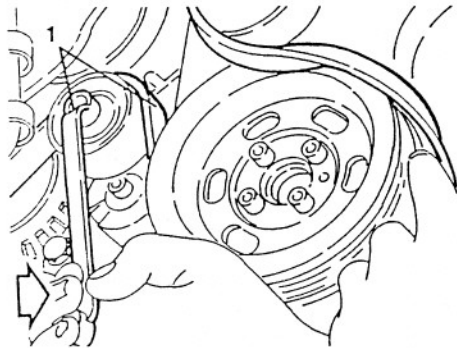


In the event of one of the above defects, change the belt.

**WARNING:**

The contact of the belt with oil or solvents can damage the elasticity of the actual belt rubber and reduce its adherence.

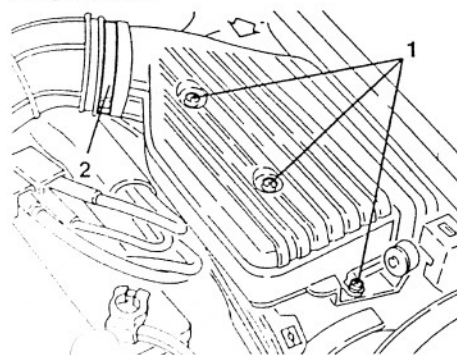
1. Proceeding as illustrated on the guide pulley, slacken the tension of the auxiliary components drive belt and remove it.



- Install a new belt reversing the sequence followed for removal.

CHANGING THE AIR CLEANER CARTRIDGE

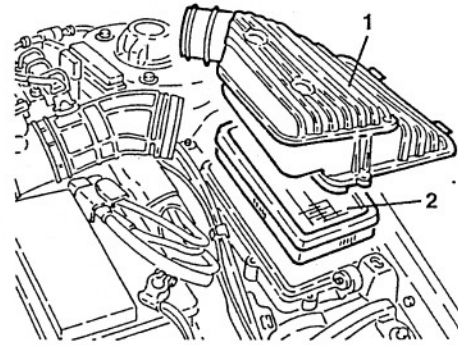
1. Slacken the four air cleaner cover fastening screws.
2. Slacken the clamp fastening the air cleaner cover to the corrugated sleeve.



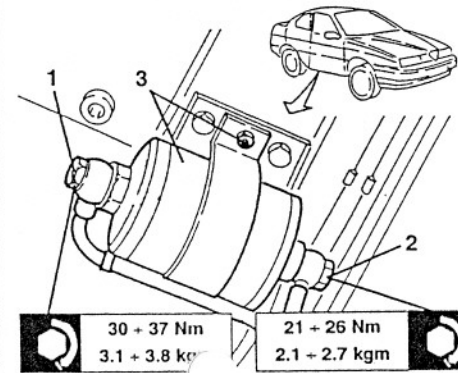
1. Remove the air cleaner cover.
2. Remove the air cleaner cartridge.

**WARNING:**

Any filter cleaning operation might damage it, thereby adversely affecting the correct operation of the engine.

**CHANGING THE FUEL FILTER**

- Set the car on a lift and raise it.
- Remove the fuel filter guard.
1. Disconnect the fuel inlet hose connection from the filter.
2. Disconnect the fuel outlet hose connection from the filter.
3. Slacken the fastening clamp and remove the fuel filter.



30 + 37 Nm
3.1 + 3.8 kgm

21 + 26 Nm
2.1 + 2.7 kgm



- Install the new filter reversing the sequence followed for removal and taking care to:

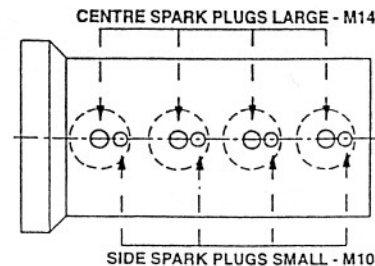
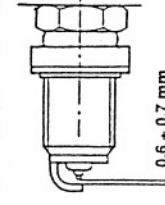
- change the copper gaskets of the connections;
- assemble the filter with the arrow stamped on it pointing in the direction of the flow of fuel.

CHECKING AND CHANGING SPARK PLUGS

The standard spark plugs are of the surface discharge type with one point and a centre electrode.

In order to operate correctly, the gap between the electrodes must be correct.

The spark plugs are positioned in the bursting chamber asymmetrically and they differ in size as illustrated below.



Spark plugs	
Centre spark plugs (large - M14)	NGK PFR6B (*) NGK BK6EKPA
Side spark plugs (small - M10)	NGK PMR7A

(*); Specific for T. SPARK 16V version.

- With the engine cold, remove the spark plugs, firstly blowing inside the spark plug openings to remove any impurities and traces of dirt.

- Check the spark plugs for dirt and the ceramic insulation for breaks. In this case replace the spark plugs.

**WARNING:**

The use of spark plugs with different characteristics or sizes than those specified can cause serious damage to the engine and change the level of harmful emissions at the exhaust.

**WARNING:**

A dirty or worn out spark plug is often the sign of a failure in the engine supply system.

For example:

- Traces of carbon dust: incorrect mixture, air cleaner very dirty.
- Spots of oil: oil leaking from the piston rings.
- Formation of ash: presence of aluminium materials, contained in the oil.
- Burnt electrodes: overheating due to unsuitable fuel, defects in the valves.
- High electrode wear: harmful additives in the fuel or in the oil, pinging in the cylinder head.
- Etc.

- When installing tighten the spark plugs to the following torque:



Centre spark plugs (large - M14)	25 + 35 Nm 2.5 + 3.6 kgm
Side spark plugs (small - M10)	10 + 12 Nm 1 + 1.2 kgm



CHECKING THE LEVEL AND CHANGING GEARBOX/DIFERENTIAL OIL

Checking the oil level

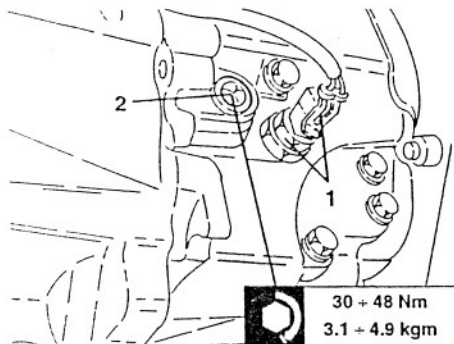
- Set the car on a lift.

1. Disconnect and unscrew the reversing light switch and check that the level of the oil reaches the lower edge of the filler hole.

2. If necessary, remove the filler cap and top up.

- Refit the filler cap and the switch.

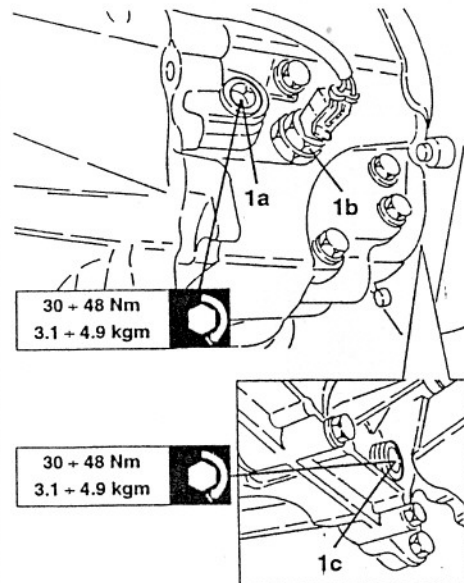
- Reconnect the electrical connection.



Changing the oil

- Set the car on a lift.

1. Remove the filler cap (1a), the reversing light switch (1b) and the drain cap (1c).



- Allow the oil to drain off completely.

- Clean the drain cap and screw it back on.

- Fill with oil of the specified type and quantity, through the filler hole.

- When the correct level has been reached (see previous paragraph) screw the filler cap and reversing light switch back on and reconnect the electrical connection.



TECHNICAL CHARACTERISTICS AND SPECIFICATIONS

SPARK PLUGS

Type (*)	Centre spark plugs (large - M14)	NGK PFR6B (▲) NGK BKR6EKPA
	Side spark plugs (small - M10)	NGK PMR7A

(*): Two different spark plugs for type are installed on each cylinder.

(▲): Specific for T. SPARK 16V version.

TIGHTENING TORQUES

Part	Nm	kgm
Oil sump drain plug	17 + 21	1.7 + 2.1
Auxiliary components drive pulley fastening screws	24 + 29	2.4 + 3.0
Exhaust side camshaft drive pulley fastening screw	100 + 124	10.2 + 12.6
Timing belt tensioner fastening nut	21 + 26	2.1 + 2.6
Filter fuel outlet fitting	21 + 26	2.1 + 2.7
Filter fuel inlet fitting	30 + 37	3.1 + 3.8
Spark plugs	Centre spark plugs (large - M14)	25 + 35
	Side spark plugs (small - M10)	10 + 12
Gearbox oil filler cap	30 + 48	3.1 + 4.9
Gearbox oil drain cap	30 + 48	3.1 + 4.9

SPECIAL TOOLING

1.825.013.000 (C.6.0183)	Tool for checking T.D.C.
1.825.041.000	Camshaft timing templates (For engines)
1.825.042.000	Camshaft timing templates (For engine)