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INSTALLATION OF SPECIAL V-6 CAMSHAFTS

CHANGING THE CAMSHAFTS

Removing the Camshafts

- Loosen the four retainers securing the air cleaner cover 10 and remove the cover. (see Fig. 1)
- Disconnect the potentiometer connector 1 from the air flow sensor assy.
- Remove the oil decanter 2 from the cylinder head.
- Detach: The air pipe 3 connecting the decel valve to the flow sensor duct; the pipe 4 from pressure regulator; the two pipes and the wire from the auxiliary air dévice 5; the pipe from the cold start valve 6; the pipe 7 from the idle by-pass adjuster; the two vacuum pipes 8 (upper and lower) from the throttle body.
- Loosen the strap 9 securing the air flow sensor duct and remove the duct. (note: see paragraph 5 for work to be performed on air flow sensor while it is removed)
- Take away the ignition distributor protective shells and remove distributor cap and the wire bundle as a unit.
- Loosen the two screws 11 and remove the ground cables.
- Remove the spark plugs.
- Loosen the screws and remove the valve covers.
- Rotate the crankshaft until the mark P-F on engine pulley and the reference pin are aligned (see Fig. 2). The marks on camshafts must be in line with the reference ones on the bearing caps.
- Remove the covers from the plastic housing of the timing belt.
- With the aid of tool A.2.0361, for holding the camshaft stationary, and a suitable wrench, unscrew the nut securing the pulley to the camshaft. (see Fig. 3)
- Loosen the three screws, fit tool A.3.0521 and remove the hub.
- Remove the camshaft bearing caps and take the camshaft away by raising it at the rear first and withdrawing it to the rear.
- Withdraw the intake valve cups and collect the adjusting pads below them.

Adjusting The Intake Valve Clearances

- Measure the thickness of the intake valve adjusting pads. Measure the diameter of the base circle (BC) of the new cam (Fig. 4). Subtract this dimension from 1.080 in. and divide the result by 2. Add this amount or less to the intake valve adjusting pad thickness for preliminary clearance check.

Example:

Standard Cam Base Circle =	1.080 in.
Base Circle of New Cam =	- 1.006 in.
Diffenence in Base Circle =	.074 in.
Difference in Pad Thickness .074 in. ÷ 2 =	.037 in.
Original Adj. Pad Thickness =	.091 in.
Use Adj. Pad for clearance check:	.128 in. or less

Note: do not use this method to try to get exact clearance the first time. It is only approximate.

- Install the new adjusting pads on the end of the valve stems.
- Lubricate the valve cups with engine oil and refit them; re-install the camshaft and the bearing caps.
- Tighten the bearing cap nuts to a torque of 15 lb-ft.
- Re-install the hub complete with the rubber ring and tighten the three screws. Make sure the crankshaft and camshaft timing marks line up as before removal.
- Screw in the nut securing the pulley to the camshaft; then, holding the pulley stationary with tool A.2.0361, torque the nut to 33-39 lb-ft.
- Check the intake valve clearances using bent type feeler gages. (K-D tool No. 163). Rotate the crankshaft until the cam lobe is pointing straight out from the camfollower as shown in the valve clearance diagram (Fig. 4)
- Intake valve clearances should be .015-.016 in. (cold)
- Adjust the intake valve clearances by removing the camshafts and changing the thickness of the valve pads.

VALVE ADJUSTING PADS TO USE FOR V-6

.059 in.-.118 in. (1.500mm-3.000mm) - Alfa Romeo V-6 Adj. pads
.119 in.-.138 in. (3.025mm-3.500mm) - Alfa Romeo 4 Cyl. Adj. pads
.139 in.-.150 in. (3.525mm-3.8mm) - Shankle 9mm Adj. pads, P/N 3863/siz

Adjusting the Exhaust Valve Clearances

- The Exhaust Valve clearance should be .008 in. to .009 in. measured at the tappet as shown in Fig-4.
- Use a feeler gage to determine the clearance.
- Adjust it by loosening the lock nut and turning the adjusting screw.
- After adjustment, lock the nut and check clearance.

ADJUSTING THE IDLE

The idle must be adjusted to compensate the increased duration of the camshafts. Four operations are required: 1) ground the lambda sensor; 2) adjust the auxiliary air device for increased air flow when the engine is cold; 3) adjust the ignition timing 4) adjust the idle fuel mixture and idle speed.

Ground the Lambda Sensor. Disconnect the green wire to the lambda sensor. Set aside and secure the wire that is connected to the sensor in the exhaust pipe. Connect the end of the lambda sensor wire that goes to the electric control box to a good ground on the engine or body of the car.

Adjust the Auxiliary Air Device for increased air flow when the engine is cold. a) Preliminary adjustment. Locate the Auxiliary air device on the right hand valve cover, see Fig. 5 and Fig. 6 (12). On the side of the device is a 7mm hex nut. Loosen the nut. Note that the nut and the stud it is screwed on will slide up and down with a spring tension forcing it down. Move the nut & stud to the furthest up position (against the spring)

and tighten the nut. On initial start up if the idle speed is too great loosen the nut and lower its position. b). Final adjustment. After the engine has been tuned for hot running let it cool down completely. Start the engine and loosen the 7mm nut, and adjust its position so that during cold running the engine operates at about 1200-1400 RPM. Tighten the nut.

Adjust the Ignition Timing. To check the ignition timing use a stroboscopic timing light and follow this procedure.

- Warm the engine up to operating temperature.
- The engine must run at idling speed.
- Connect a jumper across the timing light and the ignition distributor terminal for cylinder No. 1 spark plug; finally, connect the positive (+) and negative (-) leads of timing light to the relevant battery terminals.

1981-1983 (49 states)-Engines with mechanical advance distributors.

- Start the engine and check for the following:

With engine running at idle(1000-1200 RPM) see whether the mark P/F (on crankshaft pulley Fig. 2) is in line with the reference pointer (with vacuum hoses connected).

1983 (50 states)-1985-Engines with electronic advance, EZ-L Ignition. With engine running at idle (950±50 RPM) adjust ignition timing so that the reference pointer is lined up with an imaginary point two times the distance between F and P to the right of F as shown in Figure 8.

- If the timing requires adjustment proceed as follows: 1) Unscrew the distributor securing nut on the stud so as to allow the distributor to be rotated together with its supporting clamp; 2) Rotate the distributor body counter-clockwise or clockwise according to whether it is necessary to respectively advance or retard the ignition setting; 3) Retighten the nut, taking care not to move the distributor body; 4) Recheck timing.

Adjusting The Idle Speed. The idle adjustment must be performed with the engine at operating temperature, gearbox in neutral and all accessory equipment off. Loosen the idle by-pass adjuster locknut 1, (Fig.7); turn the adjuster ring until engine speed is 1000-1200 RPM; retighten locknut 1. If the idle is still below 1000 RPM after adjusting the CO, then screw in the butterfly by stop screw to increase the idle RPM.

Adjusting CO% At Idle. The reading of values of carbon monoxide must be taken from the tap upstream of the catalytic converter or from the tail pipe if the converter has been removed. Set the adjusting screw 3, Fig. 7 (hidden by the seal 2) on the air flow sensor assy. so that the CO is 3 percent. To gain access to the adjusting screw; 1) remove air flow sensor; 2) place unit in holding fixture (or vise) taking car not to warp or damage housing; 3) drill hole into idle adjustment aluminum plug but do not drill through completely as you will damage the adjuster; 4) blow out chips with air. 5) insert tap suitable for hole drilled; 6) twist tap until sufficient thread bite is achieved; 7) remove plug by pulling directly upward as if you were pulling a bottle cork. Adjuster screw is now accessible. Install air flow sensor on vehicle and make CO adjustment with engine running, after engine has reached normal operating temperature. Following adjustment reseal idle access hole by pressing in plug seal. Then, check whether the idle speed is 1000-1200 RPM; if not, re-adjust as directed in the preceeding paragraph.

If a CO meter is not available, screw in (clockwise) the adjuster screw 3. until the engine slows down, then slowly screw the adjusting screw out (counter clockwise) to smoothest idle.

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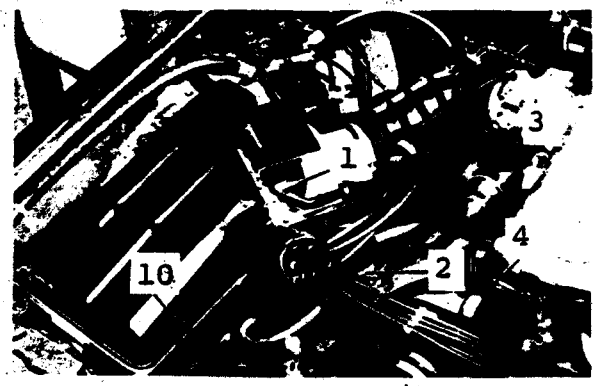


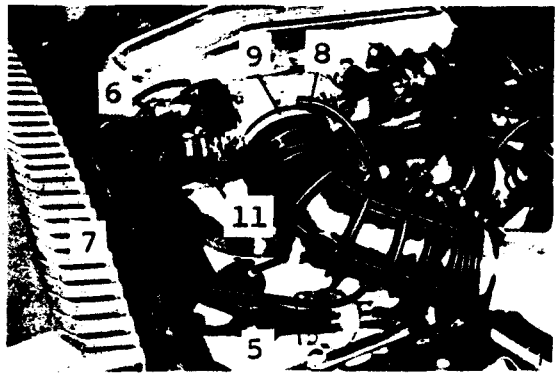


Fig. 1 Ancilliary Engine Equipment

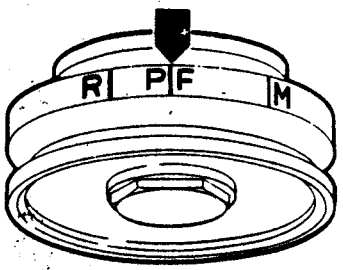


Fig. 2 Crankshaft Pulley Timing Marks '81-'83 (49 states)

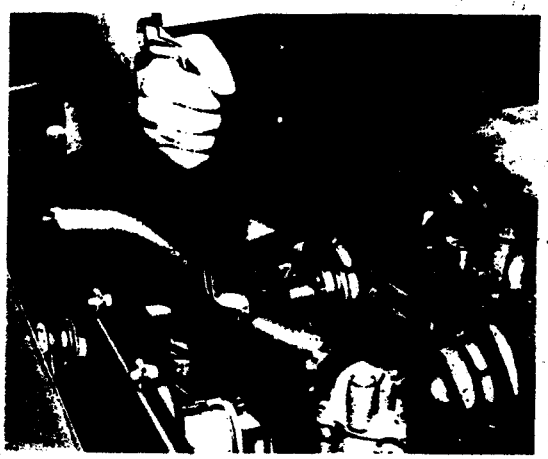
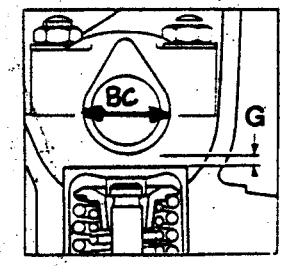
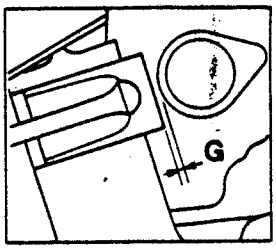


Fig. 3 Tools and Procedures Required to Losen the Camshafts from the Drive Sprockets



Intake valve clearance
G= .015-.016 in.



Exhaust valve clearance
G= .008-.009 in.

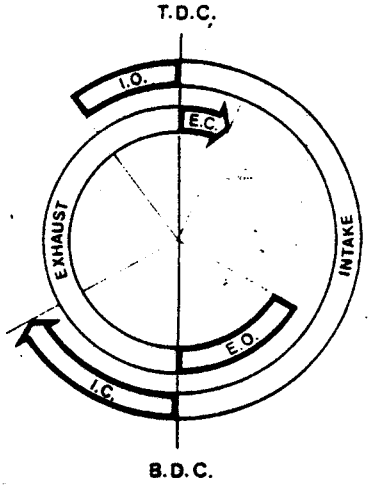
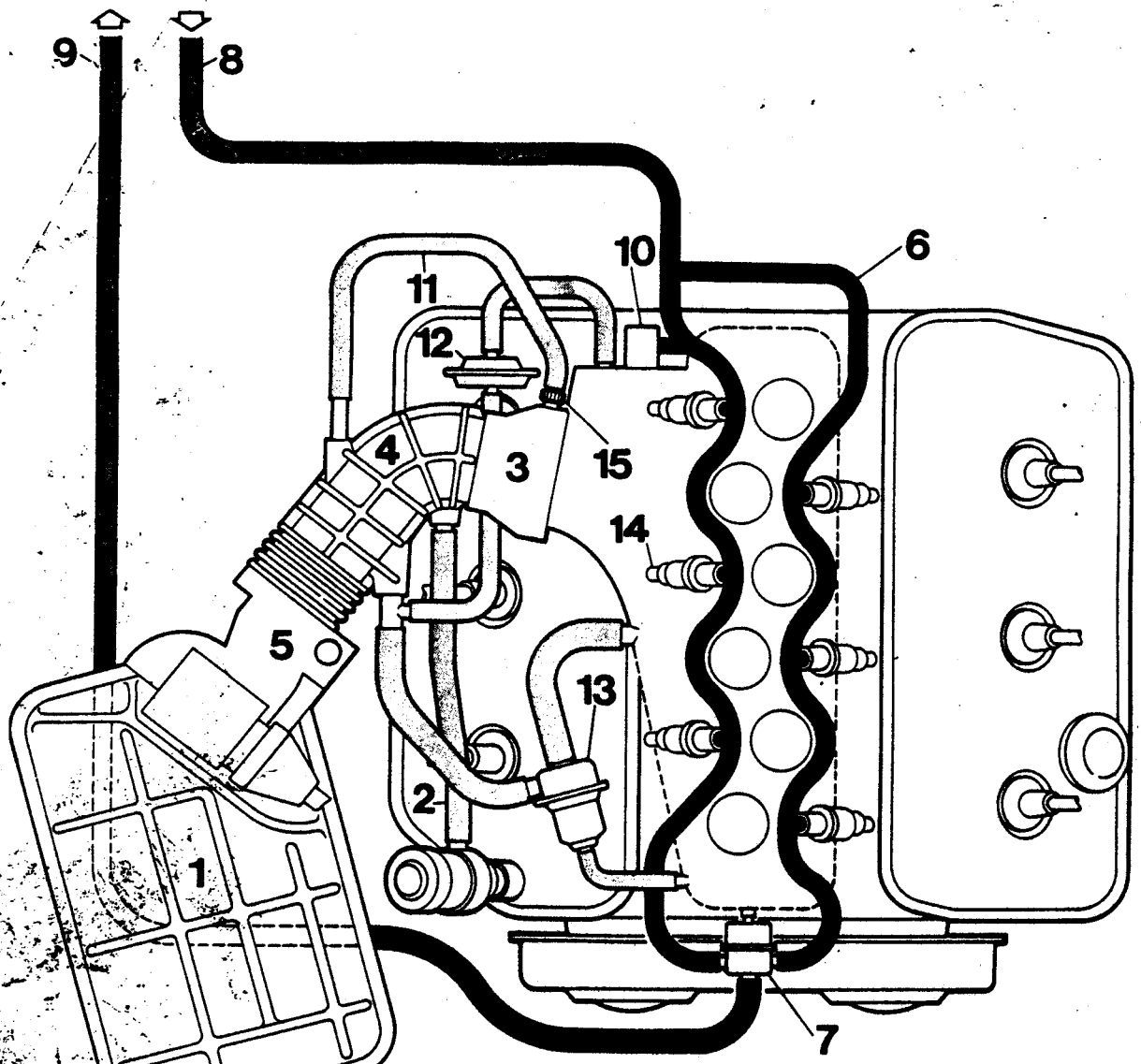


Fig. 4 Valve Clearance and Valve Timing Diagram

Fig. 5 Auxiliary Air Device

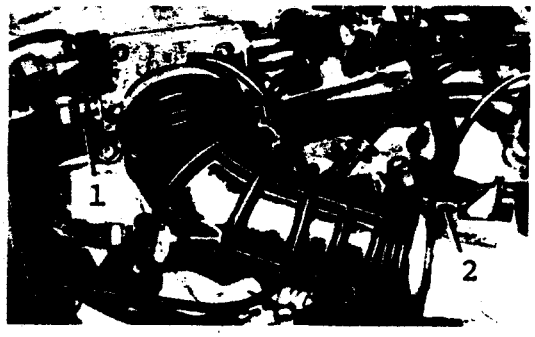
I.O.= Intake Opens 38° Before TDC.
E.O.= Exhaust Opens 72° Before BDC.
I.C.= Intake Closes 62° After BDC.
E.C.= Exhaust Closes 36° After TDC.

Induction Stroke=280°
Exhaust Stroke=288°



1	Air filter	9	Fuel return line
2	Crankcase ventilation hose	10	Start valve
3	Throttle body	11	Idle hose
4	Air-flow sensor to throttle duct	12	Auxiliary-air device
5	Air-flow sensor	13	Decel valve
6	Fuel ring (main supply)	14	Fuel injector (fuel-injection valve)
7	Pressure regulator	15	Nut for idle-speed adjustment
8	Fuel delivery line		

Fig. 6 Air and Fuel Hoses of the "L-Jetronic" Fuel Injection System



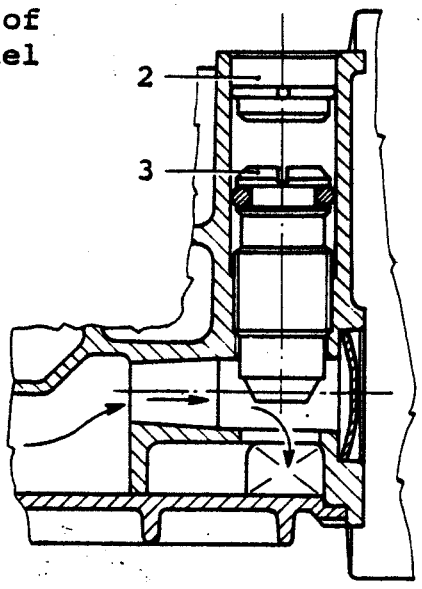


Fig. 7 Idle Speed and Idle Mixture Adjustment

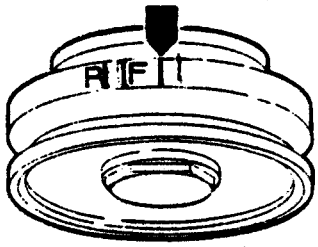


Fig. 8 Crankshaft Pulley Timing Marks '83 (50 states)-on.

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ENGINE SPECS

CO was set at .80%

AT IDLE HOT / NO FANS RUNNING

TIMING APX 9° with VAC ATACHED

BELTS are GATES

ALTERNATOR- 7330

A/C 9355

KEYS DOOR 2120

GAS ~~GLOVE~~ 8117

VID

ZARAA 669 XF1006682

1985 Fuel Injection

BOSCH AFC – EUROPEAN MODELS

Alfa Romeo: Graduate, GTV-6, Spider Veloce 2.0
BMW: 318i
Renault: Fuego, Sportwagon

NOTE: This article covers the Bosch AFC fuel injection system in general, with manufacturer's differences noted. For complete information on the Volkswagen Vanagon with Digijet System, see the BOSCH AFC DIGIJET article in this section.

DESCRIPTION

The Bosch Airflow Controlled (AFC) fuel injection system is an electronically-controlled system, operated by incoming airflow. The AFC fuel injection system also contains a feedback system which measures oxygen content of exhaust gases. It uses this information to maintain the air/fuel ratio at approximately 14.7:1.

The fuel injection system consists of an electric fuel pump, fuel pressure regulator, fuel injectors, Electronic Control Unit (ECU), airflow meter, air temperature sensor, throttle switch, coolant temperature switch, oxygen sensor, catalytic converter and electrical relays.

All models are equipped with a cold start system to aid in cold engine starts. The cold start system consists of an auxiliary air valve, cold start injector and thermo time switch. A/C equipped Renault models use an A/C solenoid valve to provide additional air when the compressor is activated.

In addition, GTV-6, Graduate and Spider Veloce 2.0 models are equipped with an EZ-L electronic ignition control. Graduate and Spider Veloce 2.0 models are equipped with a VSZ digital electronic ignition system.

ELECTRIC FUEL PUMP

The fuel pump (2 on Graduate and Spider Veloce 2.0 models) provides fuel under pressure to the fuel pressure regulator. Power for operation during cranking mode is provided from starter relay via the fuel pump relay. After the engine has started, control of the fuel pump is by a fuel pump circuit in the airflow meter.

The first movement of the airflow meter air measuring flap (about 5°) closes the fuel pump contacts and provides power to fuel pump after engine has started. With engine stopped, no airflow is present, measuring flap closes and fuel pump contacts are opened to cut power to fuel pump. This circuit reduces the risk of fire in a collision. The fuel pump is a sealed unit. No service is required.

FUEL PRESSURE REGULATOR

The pressure regulator consists of a sealed, spring-loaded diaphragm with a connection for intake manifold vacuum. Fuel is provided to fuel injectors under approximately 36 psi (2.5 kg/cm^2) pressure.

A connection for intake manifold vacuum provides a constant pressure differential which ensures that the amount of fuel injected is solely dependent upon injector "open" time. Excess fuel is returned to fuel tank. No service of pressure regulator is required.

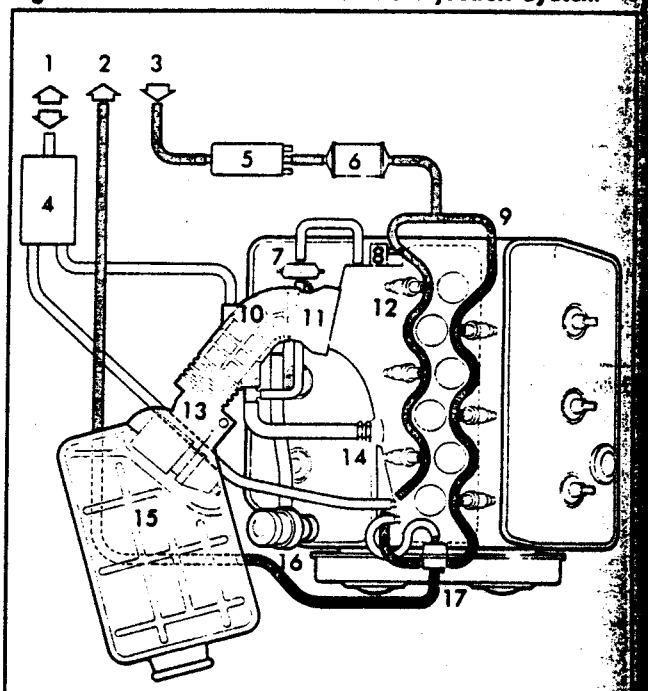
FUEL INJECTORS

A fuel rail links the fuel pressure regulator with the fuel injectors. Each cylinder is provided with a solenoid-operated injector which sprays fuel toward the back of each inlet valve. Each injector is energized through the ignition coil and grounded through the ECU to complete the circuit.

Each injector is linked to a resistor (resistor may be external or integral with injector or ECU) to reduce operating voltage to 3 volts and to protect injectors from power surges. The ECU controls the length of time each injector is open.

The "open" time of the injector governs the amount of fuel delivered. The injectors deliver 1/2 the amount of fuel required for an operating cycle each time they open (twice per cycle).

Fig. 1: Alfa Romeo GTV-6 AFC Fuel Injection System



1. Fuel Vapor Line
2. Fuel Return Line
3. Fuel Delivery Line
4. Canister
5. Fuel Pump
6. Fuel Filter
7. Auxiliary-Air Device
8. Start Valve
9. Fuel Distribution Line
10. Intake Airflow Boot
11. Throttle Body
12. Fuel Injector
13. Airflow Sensor
14. Idle Speed Adjuster
15. Air Filter
16. Oil Separator
17. Fuel Pressure Regulator

ELECTRONIC CONTROL UNIT (ECU)

All components of the control system are electrically connected to the ECU. *See Fig. 3.* The ECU is a preprogrammed computer that receives and interprets data from various sensors. It calculates the amount of fuel required by the engine to maintain efficiency with minimum exhaust emissions.

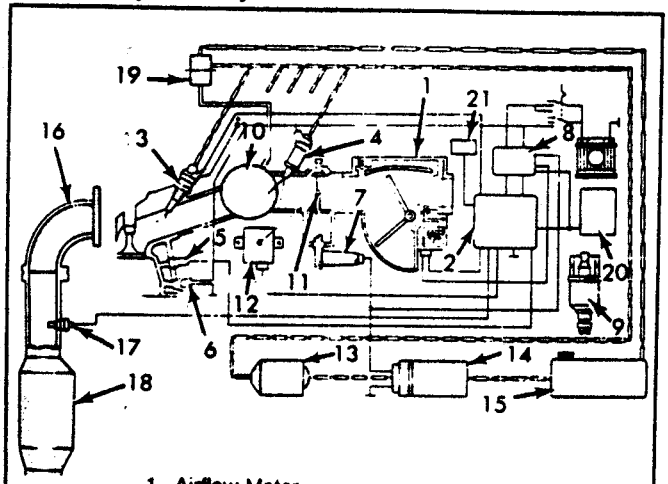
Impulses from the oxygen sensor inform the ECU of oxygen content of exhaust gases and the ECU constantly adjusts the air/fuel ratio by controlling the injector "open" time.

The ECU provides fuel enrichment whenever engine is cranked, regardless of engine temperature. This is activated by a direct electrical connection from the starter circuit to the ECU. The ECU is a sealed unit. No service is required.

BOSCH AFC – EUROPEAN MODELS (Cont.)

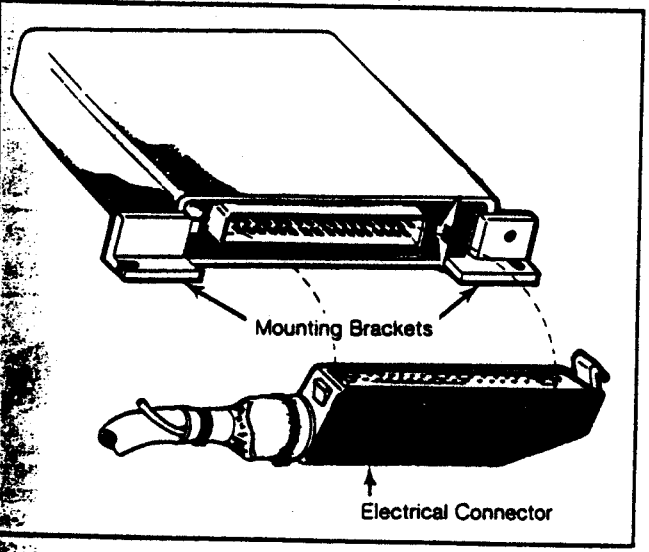
NOTE: The fuel injection system ECU of Graduate and Spider Veloce 2.0 models is not interchangeable with the VSZ electronic ignition system ECU. DO NOT confuse these 2 ECUs.

Fig. 2: Renault Fuego and Sportwagon AFC Fuel Injection System



1. Airflow Meter
2. Electronic Control Unit
3. Fuel Injector
4. Cold Start Injector
5. Coolant Temp. Sensor
6. Coolant Temp. Thermo-Time Switch
7. Air Control Valve
8. Control Relay
9. Ignition Distributor
10. Air Intake Manifold
11. Throttle Plate
12. Throttle Position Switch
13. Fuel Filter
14. Electric Fuel Pump
15. Fuel Tank
16. Exhaust Manifold
17. Oxygen Sensor
18. TWC Converter
19. Fuel Pressure Regulator
20. Ignition Control Module
21. Atmospheric Pressure Sensor

Fig. 3: Electronic Control Unit (ECU)



AIRFLOW METER

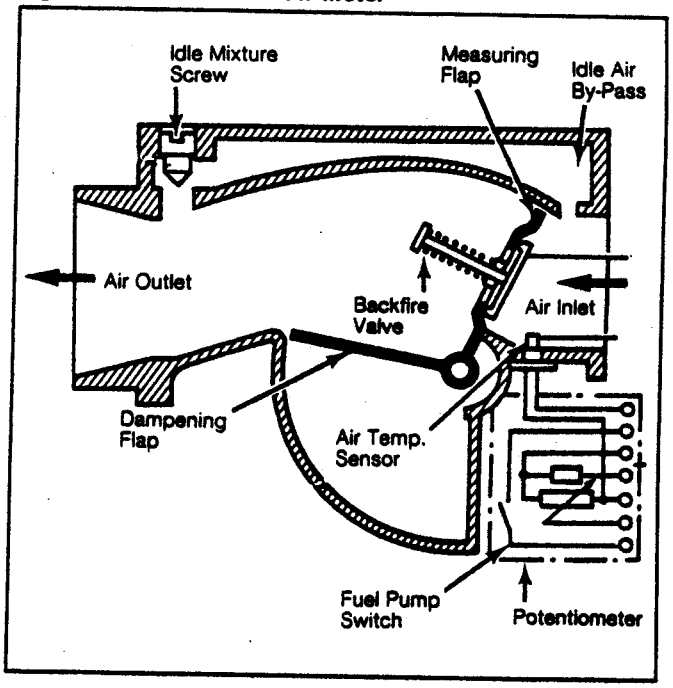
All engine air is drawn through the airflow meter. The meter contains a tunnel with measuring flap and dampening flap (offset 90° on same casting). The measuring flap swings in air stream against pressure of a spiral spring and is connected to a potentiometer.

The potentiometer transmits an electrical signal determined by measuring flap position to inform the ECU of engine load. *See Fig. 4.* In addition to monitoring the airflow, the meter also controls fuel pump operation and idling. At idle, the measuring flap is almost closed due to spiral spring pressure.

The potentiometer within the airflow meter prevents loss of engine power during sudden acceleration/deceleration by signaling the ECU of necessary fuel enrichment requirements.

An idle air by-pass receives air from main airflow through a small hole, the size of which is controlled by the idle mixture screw. This adjustable air by-pass influences CO levels at low engine speeds.

Fig. 4: Bosch AFC Airflow Meter



AIR TEMPERATURE SENSOR

The air temperature sensor is part of airflow meter. It converts the temperature of incoming air into electrical signals. These signals are received by the ECU and used to adjust the amount of fuel injected. The air temperature sensor is a non-serviceable device.

THROTTLE SWITCH

A contact-type throttle switch is installed on the throttle chamber of all models. It converts throttle position into electrical signals to inform ECU of throttle position. *See Fig. 5.*

COOLANT TEMPERATURE SENSOR

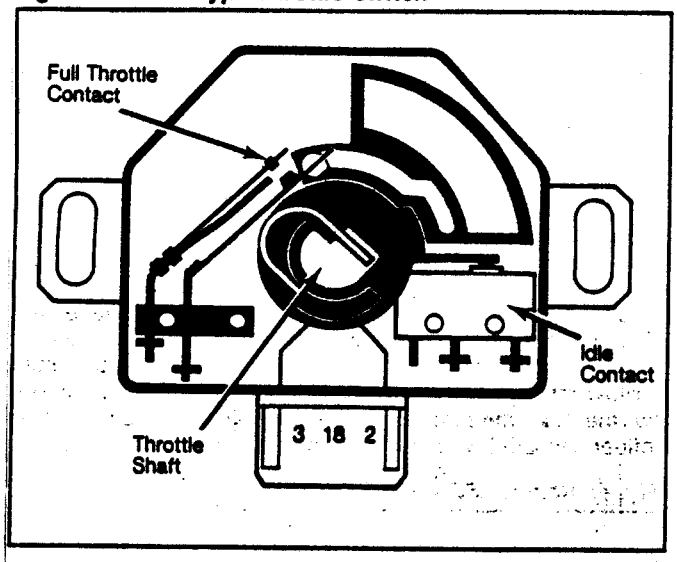
This sensor provides ECU with engine temperature information relating to warm-up enrichment operation. During warm-up period after a cold engine start, additional fuel is required to maintain engine performance. As engine

1985 Fuel Injection

BOSCH AFC – EUROPEAN MODELS (Cont.)

temperature increases, the ECU decreases fuel enrichment until normal operating temperature is reached.

Fig. 5: Contact-Type Throttle Switch



ELECTRICAL RELAYS

The main relay activates the ECU, injector circuit and starting circuit when ignition is switched to start mode. The fuel pump relay activates the fuel pump during the start mode and is then controlled by airflow during operating mode. Some models incorporate all relays within a single relay set or dual relay. The cold start system is also activated through the relay set.

Relay set is located in following positions:

- Alfa Romeo GTV-6, right side of firewall; Graduate and Spider Veloce 2.0, under floor behind passenger seat.
- Renault Fuego and Sportwagon, under passenger seat.

COLD START SYSTEM

The cold start system provides additional air and fuel during cold engine starts. It consists of an auxiliary air valve which provides additional air, cold start injector which delivers additional fuel and a thermo time switch which controls operation. The thermo time switch has a bi-metallic contact surrounded by a heating coil which is energized during engine cranking.

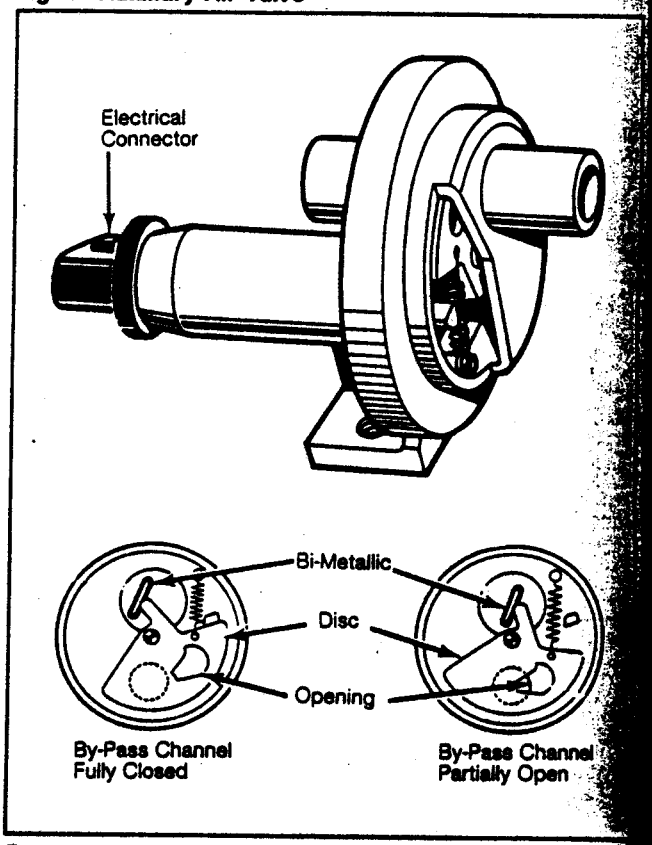
This switch limits cold start system operation to 5-12 seconds during extremely cold engine starts. When engine temperature is above 95°F (35°C), bi-metallic contact breaks ground circuit of cold start injector and cold start enrichment is by-passed.

AUXILIARY AIR VALVE

The auxiliary air valve provides additional air during cold engine starts and warm-up. The valve consists of an electrically heated bi-metallic strip, movable disc and air by-pass channel. The heater coil on the bi-metallic strip is energized by the fuel pump relay.

Control of the valve is based upon engine temperature. The air by-pass channel is open when engine is cold and gradually closes as temperature rises. At predetermined temperatures, air by-pass channel is blocked and additional airflow stops. *See Fig. 6.*

Fig. 6: Auxiliary Air Valve



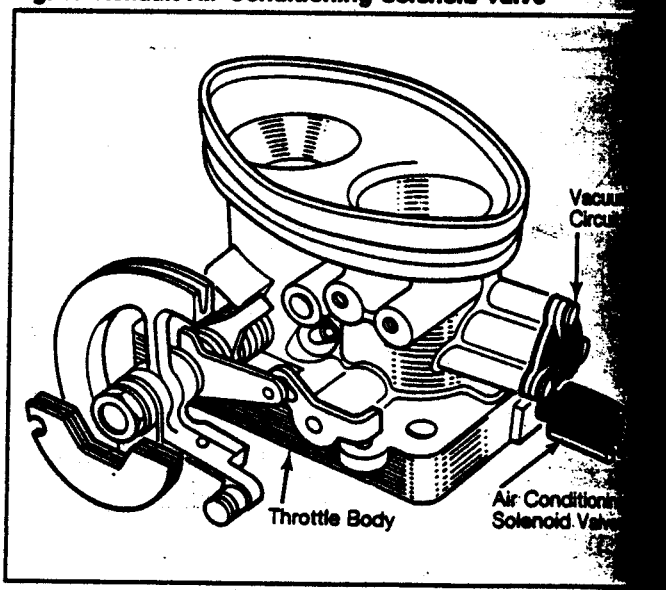
By-pass channel closes as engine temperature rises.

AIR CONDITIONING SOLENOID VALVE

Renault

On vehicles equipped with A/C, a solenoid valve delivers additional air to compensate for drop in idle speed when air conditioner is activated. The solenoid is electrically actuated through the compressor clutch circuit to apply vacuum to a circuit behind throttle plate.

Fig. 7: Renault Air Conditioning Solenoid Valve



BOSCH AFC – EUROPEAN MODELS (Cont.)

The applied vacuum opens the vacuum diaphragm which opens the additional air circuit. The diameter of the air circuit on manual transmission models is 0.12" (3.0 mm) and 0.14" (3.5 mm) on automatic transmission models. *See Fig. 7.*

ACCESSORIES

Alfa Romeo

GTV-6, Graduate and Spider Veloce 2.0 models use a different ECU for the EZ-L electronic ignition control. Its components include a power module, ECU advance and temperature sensor.

Graduate and Spider Veloce 2.0 models use a different control unit for the VSZ digital ignition system. Its components include vacuum sensor (Black connector), temperature sensor (White connector), ignition ECU, revolution transmitter and reference point transmitter.

TESTING

NOTE: The Bosch AFC fuel injection system maintains constant fuel pressure in fuel lines and component parts at all times. Be sure to relieve pressure before attempting to open system at any point for testing. Testing of the BMW 318i, requires Special Test Unit (12 6 400 and 11 78 010)

ELECTRONIC CONTROL UNIT

Do not attempt to test ECU, as permanent damage could result. It is possible to check plug wires for continuity. The ECU should only be judged faulty after compression is checked, ignition system has been tested and found free of problems, and all other fuel injection components have been thoroughly tested (including wiring).

FUEL PRESSURE

1) Release fuel system pressure. Remove fuel supply line at cold start injector and connect fuel pressure gauge. Disconnect vacuum hose from pressure regulator and connect hand vacuum pump to regulator. Turn ignition on and check pressure reading. See FUEL PRESSURE SPECIFICATIONS chart.

2) Apply 16 in. Hg to pressure regulator. Reading should drop about 7 psi (0.5 kg/cm²). If pressure is too low, check fuel pump delivery rate. If pressure is too high, check fuel return line. If readings are still not as specified, replace regulator.

FUEL PRESSURE SPECIFICATIONS

Application	psi (kg/cm²)
All Models	33-39 (2.3-2.8)

FUEL PUMP CIRCUIT

Alfa Romeo GTV-6 and Renault Fuego & Sportwagon

1) Remove electrical connector from airflow meter. Connect terminals 36 and 39 with jumper wire. Disconnect fuel input line at fuel pressure regulator and place in container. Turn ignition on and push air measuring flap open.

2) Fuel should flow into container. If fuel does not flow but clicking sound is heard, replace fuel pump. Fuel circuit is good. If no clicking sound is heard, replace airflow meter assembly and repeat test.

AIR TEMPERATURE SENSOR

NOTE: Testing procedures are not available for Renault.

Turn ignition off. Disconnect electrical connector at airflow meter and connect ohmmeter between terminals 6 and 27. Readings should be as follows. If not, replace temperature sensor and airflow meter as an assembly.

TEMPERATURE/RESISTANCE RELATIONSHIP

Temperature	Ohms
68°F (20°C)	2,000-3,000
122°F (50°C)	760-970

AIRFLOW METER POTENTIOMETER

NOTE: Alfa Romeo models require use of a special Bosch tester.

Renault

Turn ignition switch off. Unplug electrical connector from airflow meter. Using an ohmmeter, note first reading between terminals 7 and 8. Record a second reading between terminals 6 and 9. Divide the first reading by the second reading. The result should equal .48-.52 ohms. Replace airflow meter if results are not as specified.

AUXILIARY AIR VALVE

Alfa Romeo

On cold engine, valve must be open. On warm engine, valve must be closed. If not, warm engine to normal operating temperature. Disconnect electrical leads and measure internal resistance between terminals 34 and 48. Resistance should be about 30 ohms. If not, replace auxiliary air valve.

Renault

1) Warm engine to temperature of about 68°F (20°C) and stop engine. Disconnect air hoses and electrical connector from valve. Visually check that diaphragm is partially open. Connect battery power to valve terminals. After 8 minutes, diaphragm should be completely closed.

2) If not, check internal resistance of valve with an ohmmeter connected to both terminals. Resistance should be 40 ohms on turbocharged models, and 46 ohms on all others. If valve does not respond as outlined, replace auxiliary air valve.

THERMO TIME SWITCH

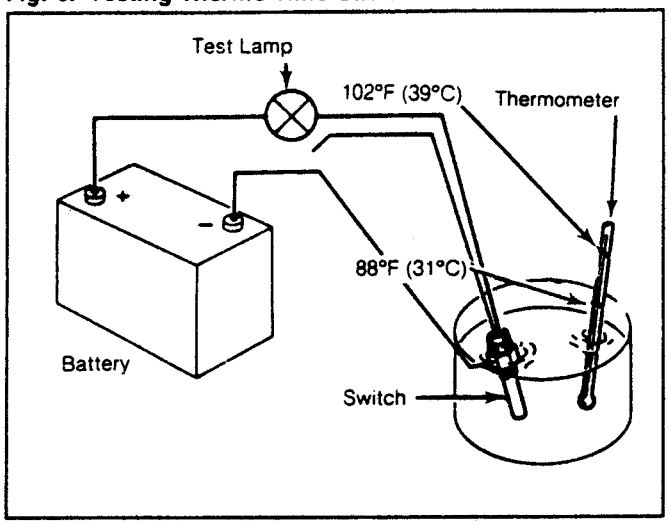
1) Remove thermo time switch and install plug to prevent loss of coolant. Cool thermo time switch by immersing in cold water. Connect positive wire of switch to a test lamp and battery positive terminal. Connect battery negative terminal to switch body. Test lamp should glow. *See Fig. 8.*

2) Insert thermometer in water and gradually heat water. Test lamp should glow until temperature reaches 88-102°F (31-39°C). If switch does not respond as outlined, continue testing as follows:

1985 Fuel Injection

BOSCH AFC – EUROPEAN MODELS (Cont.)

Fig. 8: Testing Thermo Time Switch



3) Cool switch to temperature below that stamped on side of switch. Connect ohmmeter between terminals shown in table and note readings. Heat switch to temperature above 104°F (40°C) and again note readings in table. If readings are not to specifications, replace thermo time switch.

THERMO TIME SWITCH RESISTANCE

Temperature °F (°C)	Terminal Nos.	Ohms
Below 86 (30)	G & Ground	25-40
Below 86 (30)	W & Ground	0
Below 86 (30)	G & W	25-40
Above 104 (40)	G & Ground	50-80
Above 104 (40)	W & Ground	100-160
Above 104 (40)	G & W	50-80

COLD START INJECTOR

1) Disconnect electrical connector from cold start valve. Connect voltmeter leads between harness terminals and crank engine. Voltage readings should be battery voltage when engine is cold and zero volts when engine is warm. If not, check thermo time switch and electrical circuit.

2) Turn engine off and remove voltmeter. Measure resistance of cold start injector. Resistance should be about 4-5 ohms. If not, replace cold start injector.

COOLANT TEMPERATURE SENSOR

Warm engine to normal operating temperature and stop engine. Using a thermometer, measure temperature of coolant. Disconnect electrical connector from temperature sensor and connect 1 lead of ohmmeter to terminal in sensor and other lead to ground. Ohmmeter reading should be as specified in table. If not, replace temperature sensor.

TEMPERATURE/RESISTANCE RELATIONSHIP

Temperature	Ohms
14°F (-10°C)	7,000-12,000
68°F (20°C)	2,000-3,000
176°F (80°C)	250-400

COLD START INJECTOR
THERMAL TIME S/W
TEMPERATURE SENSORS
AIR MASS METER
PUMP RELAY.
&
SYSTEM RELAY