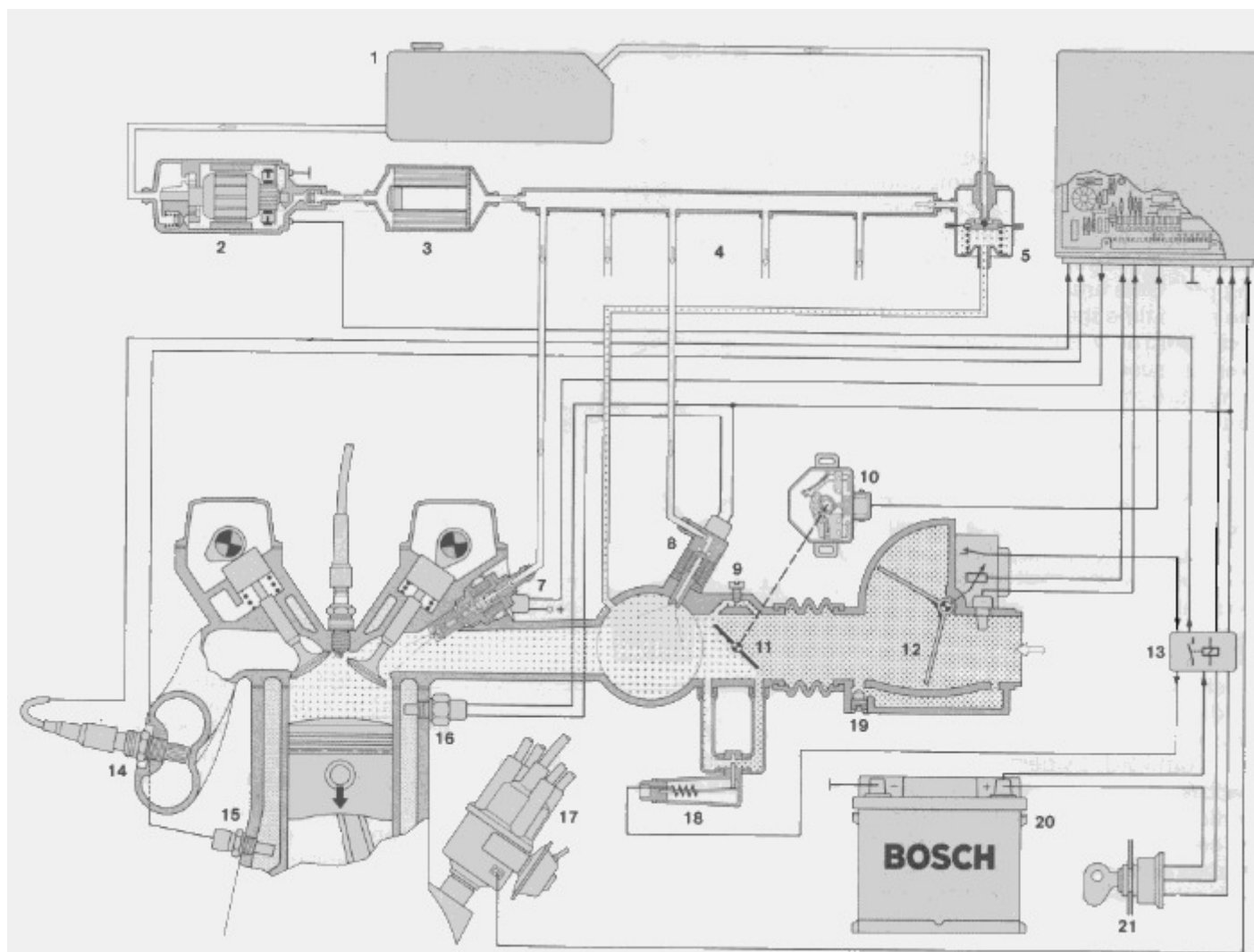


L-Jetronic Fuel Injection

The L-Jetronic is an electronically controlled fuel-injection system which injects fuel intermittently into the intake manifold. In North America it is equipped with an oxygen sensor (Lambda sond) to monitor the emission. The electronic module to which all switches, sensors and injectors are connected is called an ECU (electronic control unit). This unit will control the amount of fuel that is to be injected based on how much air (throttle and airflow sensor) is coming in.

The ideal ratio is about 14.7 gram of air for 1 gram of fuel. With more fuel, you would get more power, but it would burn less cleanly. This is called a rich mixture. With less fuel, the fuel consumption is less but the power is less. If the ratio of actual air intake on the theoretical amount is greater than 1.3 (19 grams at intake / 14.7 in our example) then the combustion will not take place anymore. The system is adjusted for a 1.0 ratio. Fooling the system it is at 1.0 when it's really at 0.9 could in theory bring the power up.

Other settings that affect the fuel-air mixture are the idle mixture adjusting screw on the air flow meter box, and the spring preloading ring wheel inside the box itself. The air flow meter on the L-jetronic system is a restrictive meter, but cant be adjusted much. By releasing the spring by 3 notch on the ring wheel, you will bring your power up a little, and the flap will open with less restriction, which will help the flow. In no way should this be moved by more than this or you will end up with either an overly rich mixture (or lean if you turn the other way). In any case, mark the wheel at the current setting before moving it. If the spring is broken or has detached itself or the AFM is not doing it's job properly, you will need a stoich meter, or at least connect an analog voltmeter to the O2 sensor to adjust the AFM at both idle and 2000+ rpm (the idle speed adjust on the intake manifold will help you raise the rpm to about 2000-2200 rpm if you are doing this on your own).



1 - Fuel tank

Fairly obvious, but there are a few things that can go wrong: it can rust and end up with holes and leak. To fix that, you can either replace it, or remove the gas, clean it with alcohol, then use a POR-15 kit to prep it and seal it. If there are leaks at a solder joint, have it resoldered. Check out Bruce's part bin in the links section, he sells this stuff. As for the application of POR-15 to a gas tank, that's something that Kevin Harper did to one of his Fiat 850 spider. The evaporative system is also fairly complex and could create a bunch of problems from fuel fumes in the cockpit to the car stalling. I will write up something on that subject another time.

2 - Electric fuel pump

Some cars have 2 electric fuels pumps; a pre-pump in the gas tank and a pump. The Lancia Beta only has 1. If the car doesn't start at all and doesn't smell like gas even after quite a few cranking, check the fuel pump fuse. Check also the power to the fuel pump when cranking. If you want to be sure, disconnect the fuel line after the fuel pump and crank. If there is no fuel coming out and the fuse is good, it's getting power (the green wire is +12v, the black is ground) you probably need a new pump. Do check the next element too...

3 - Fuel filter

the fuel filter needs to be changed on a regular basis. The Bosch part should be still available

from a Bosch dealer. If you cant find it, a VW scirocco fuel filter fits, but do check out the part suppliers in my links page. Where is it? Under the car, partly hidden, close to the rear right side wheel (passenger side).

4 - Distributor pipe

Also called a fuel rail, this is right in front of the front cam box, under the air filter. I dont have any tips on this part. Do check for the obvious however like stress marks or cracks. If there are, try to find a replacement, as this could be a serious fire hazard.

5 - Pressure regulator

Bosch part again, I'll try to have the number soon. Same as the one in a Fiat Spider 2000 FI, and cross reference to the 82+ Alfa Spider too. There are some replacement parts of higher performance available. A few companies in the UK and at least one in Italy make what is called a rising rate fuel regulator. James Seabolt has installed such a regulator on his spider.

6 - ECU

This is where the action is, but you cant rechip this to get better performance. Again dont have the number handy, but will have a section soon on this, including the pinout and things you can test.

7 - Injection valve

These are the valves that inject the fuel right behind the valves. On the Beta, the Bosch part number is 0 280 150 121. They should last forever, I wouldn't mess with them before I've tried everything else.

8 - Start valve

Also known as a cold start injector. If you have trouble starting your car when the engine is cold, this could be the problem (or it could also be the thermo-time switch).

9 - Idle-speed adjustment

10 - Throttle-valve switch

Bosch part number 0 280 120 300.

11 - Throttle-valve

12 - Air-flow sensor

Bosch part number 0 280 202 018.

drawings: [air side](#), [spring side](#)

13 - Relay combination

14 - Lambda sensor

15 - Engine temperature sensor

16 - Thermo-time switch

17 - Ignition distributor

18 - Auxiliary-air device

This is a little bugger. If you have idle troubles when cold, there is a good chance that this is the cause. 19 - Idle-mixture adjustment

See the comment on the AFM in the text before the graphic.

20 - Battery

In the beta, you need a low profile battery, else you risk having the positive terminal touching the hood. That would result in total meltdown...

21 - Ignition-starter switch

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