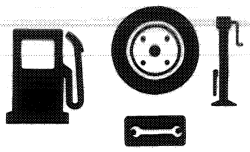
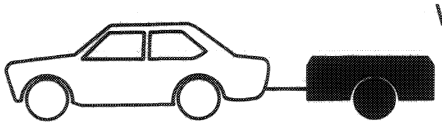
IDENTIFICATION DATA

	CHASSIS	ENGINE	VERSION	TRIM LEVEL	3 DOOR	5 DOOR	GEARBOX	
							5 speed	6 speed
1108 SPI	ZFA 176.000	176 A6.000	176 AH 55 F	S 55		●	●	
			176 AH 55 P	SX 55		●	●	

WEIGHTS (in kg)

		865/875 (*)
 +450 = 		1315/1325 (*)
Maximum permissible loads on the axles ■ 		700
		700
Maximum permissible load on the roof		75
Maximum load on the tow hook	Minimum	-
(trailer with braking system)	Maximum	70
	Without braking system	400
	With braking system	900

■ Loads which must never be exceeded

NOTE FOR VERSIONS WITH ACCESSORIES: Where there is special equipment (non standard air conditioner, sun roof, trailer towing device), the kerb weight increases and therefore the carrying capacity may decrease in relation to the maximum permissible loads.

(*) The first figure refers to the vehicle without optional equipment; the second, complete with optional equipment.

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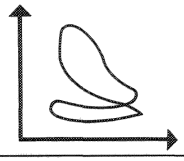
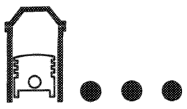
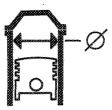
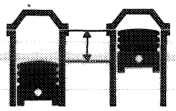
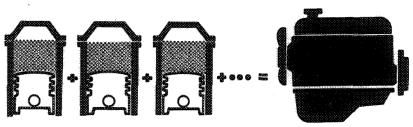
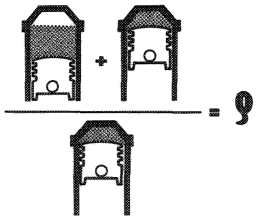
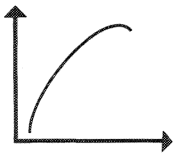
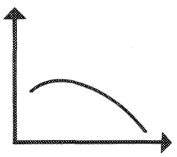
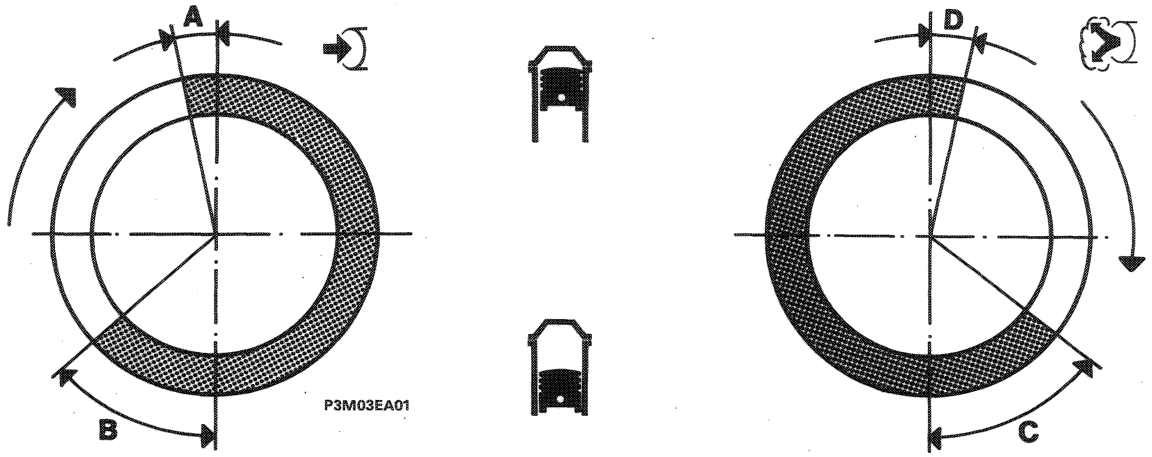
CHARACTERISTICS		1108 SPI
	Cycle	OTTO 4 stroke
	Timing	single overhead camshaft
	Type of fuel system	I.A.W. WEBER-MARELLI integrated electronic injection/ignition
	Number of cylinders	4
	Cylinder liner (bore) mm	70
	Stroke mm	72
	Capacity cc	1108
	Compression ratio	9,6±0,2
	Max power kW (CEE) (CV) (DIN)	40 (54)
	rpm	5500
	Max torque daNm (CEE) (kgm) (DIN)	8,5 (8,7)
	rpm	3500

TIMING DIAGRAMS



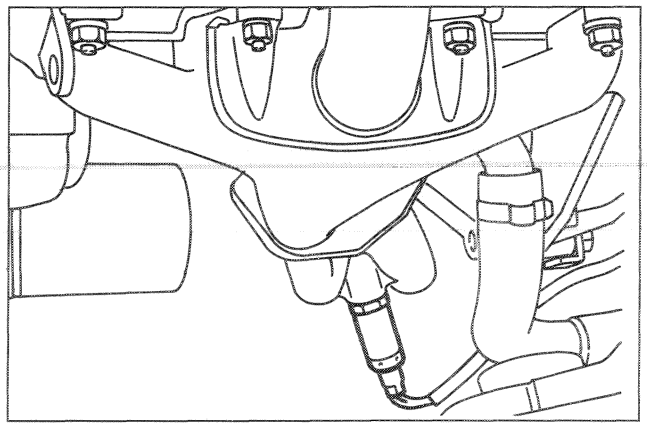
	1108 SPI

Timing angles

A	Inlet	opens before TDC	7°
B		closes after BDC	35°
C	Exhaust	opens before BDC	37°
D		closes after TDC	5°

clearance for timing check		0,80
		0,80
operational clearance		0,40 ± 0,05 mm
		0,50 ± 0,05 mm

ELECTRONIC INJECTION SYSTEM COMPONENTS	1108 SPI
Electronic control unit	I.A.W. 16F.ST
Butterfly casing (with fuel pressure regulator incorporated)	30 MM 12
Absolute pressure sensor	M.Marelli PRT-03/02
Butterfly valve position sensor	M.Marelli PF 2C/00
Injector	Weber IWM 523/00
Air temperature sensor	M. Marelli ATS 05/00
Coolant temperature sensor	ELTH 269032
Twin relay for electric pump and injection/ignition control unit	WEBER DRS 240 103/00
Electric fuel pump	MARWAL MSS 070/01
Lambda sensor	Bosch 0.258.003.560
Fuel filter	Bosch A450024.198



P3M04EA01

LAMBDA SENSOR

The lambda sensor which is fitted on this vehicle is the heated type and is resistant to the lead contained in the petrol.
This sensor, known as lean($\gamma>1$) works with air coefficients (γ) between 1-1.5 compared with conventional ones ($\gamma=1$). The maximum amount of lead in the petrol is 0.15 - 0.4 g/l.

WEBER-MARELLI I.A.W. 16F.ST. S.P.I. INTEGRATED INJECTION/IGNITION SYSTEM

The Weber-Marelli systems fitted on the "Punto" 1108 cc engines destined for markets with hazardous road conditions (so-called "dusty areas") are similar, in the main, to the systems belonging to the category of integrated systems: digital, static advance electronic ignition systems integrated with single point (i.e. only one injector), intermittent, petrol injection systems.

The essential characteristics of the air/fuel mixture, which should be kept under control for the smooth operation of the engine, are always dictated by metering (air/fuel ratio) which is as close as possible to the stoichiometric value (15 parts of air to 1 part of petrol), and good atomization of the petrol.

In the system, the injector nozzle is responsible for distributing the petrol, atmozing it into minute droplets. As far as the optimum metering is concerned, on the other hand, it is achived using the information which the electronic control unit receives from the butterfly opening sensor, the rpm sensor and a Lambda sensor which is resistant to the lead contained in the petrol.

The use of leaded petrol is made possible by the fact that the exhaust gas system IS NOT EQUIPPED WITH A CATALYTIC CONVERTER, therefore the harmful content of the exhaust gases is managed totally by the detections made by the Lambda sensor.
The concentration of carbon monoxide (CO) and unburnt hydrocarbons (HC) in the exhast is measured by inserting a suitably calibrated tester sensor at least 30 cm into the end of the exhaust pipe.

- Check that the idle CO and HC concentrations at a speed of 850 +/-50 rpm is between 0.4 % and 1.0 %.
- If the HC figure is outside of the recommended limit, the fault may lie in the fact that one of the system components is not working properly (for example the Lambda sensor, injector, etc).

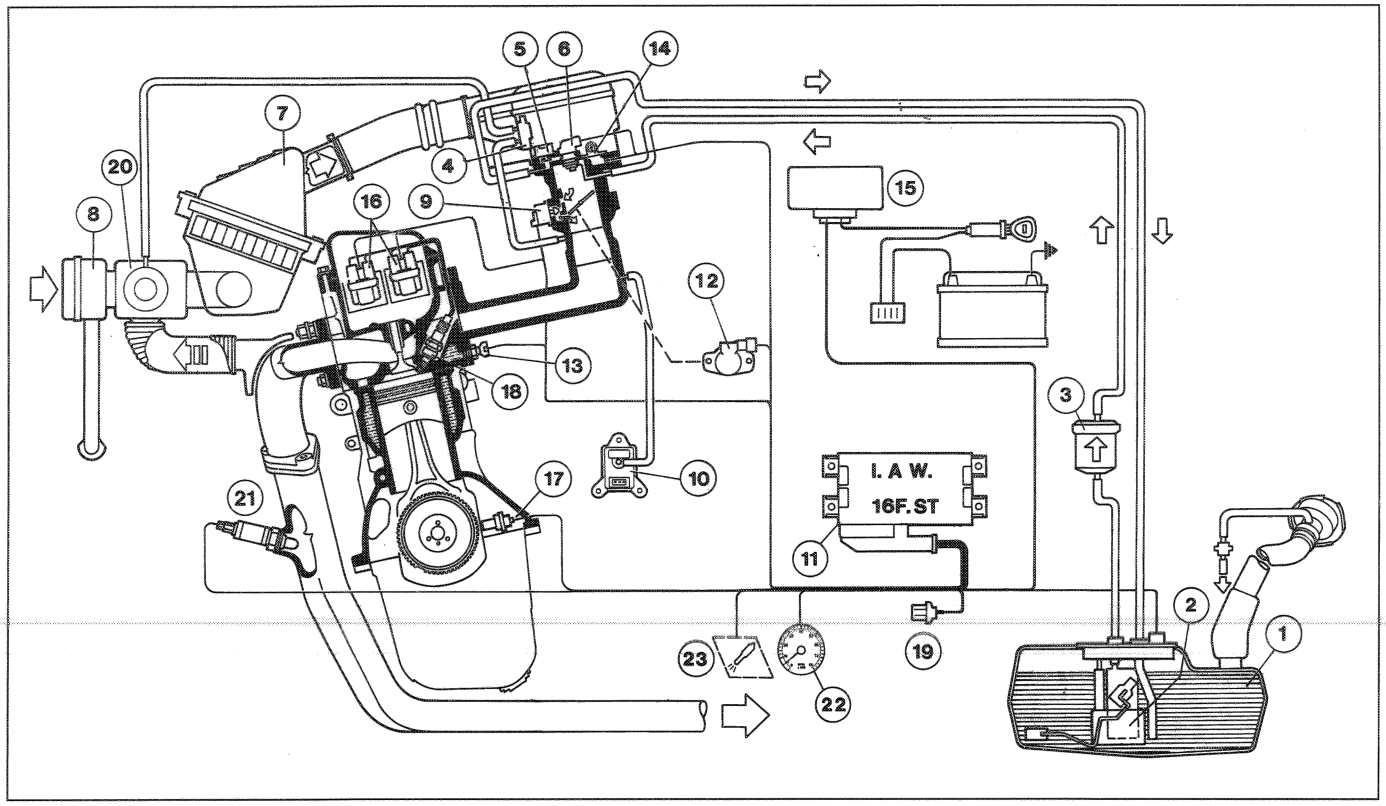
NOTE *Do not carry out the check whilst addtional consumers are switched on (radiator cooling fan, air conditioner).*

The tank ventilation system does not include the recovery of petrol vapours, therefore the tank has a fuel filler with an aerated cap and a two way safety valve.

The fuel supply circuit is made up of the following components:
- tank;
- electric pump immersed in the tank;
- gauze pre-filter, located on the pump inlet;
- supply line;
- injector;
- fuel pressure regulator, integrated with the injector holder turret;

A very important feature on this version is in the air intake circuit where there is a device strictly connected to the injection system placed before the filter which has the task of preventing the intake of all the impurities present in the air (fine dust, sand, etc). into the air intake circuit. The pages which follow contain descriptions of the features of this system which differ from the ones on the versions in the rest of the range.

DIAGRAM SHOWING WEBER-MARELLI I.A.W. 16F.ST. S.P.I. INJECTION/IGNITION SYSTEM

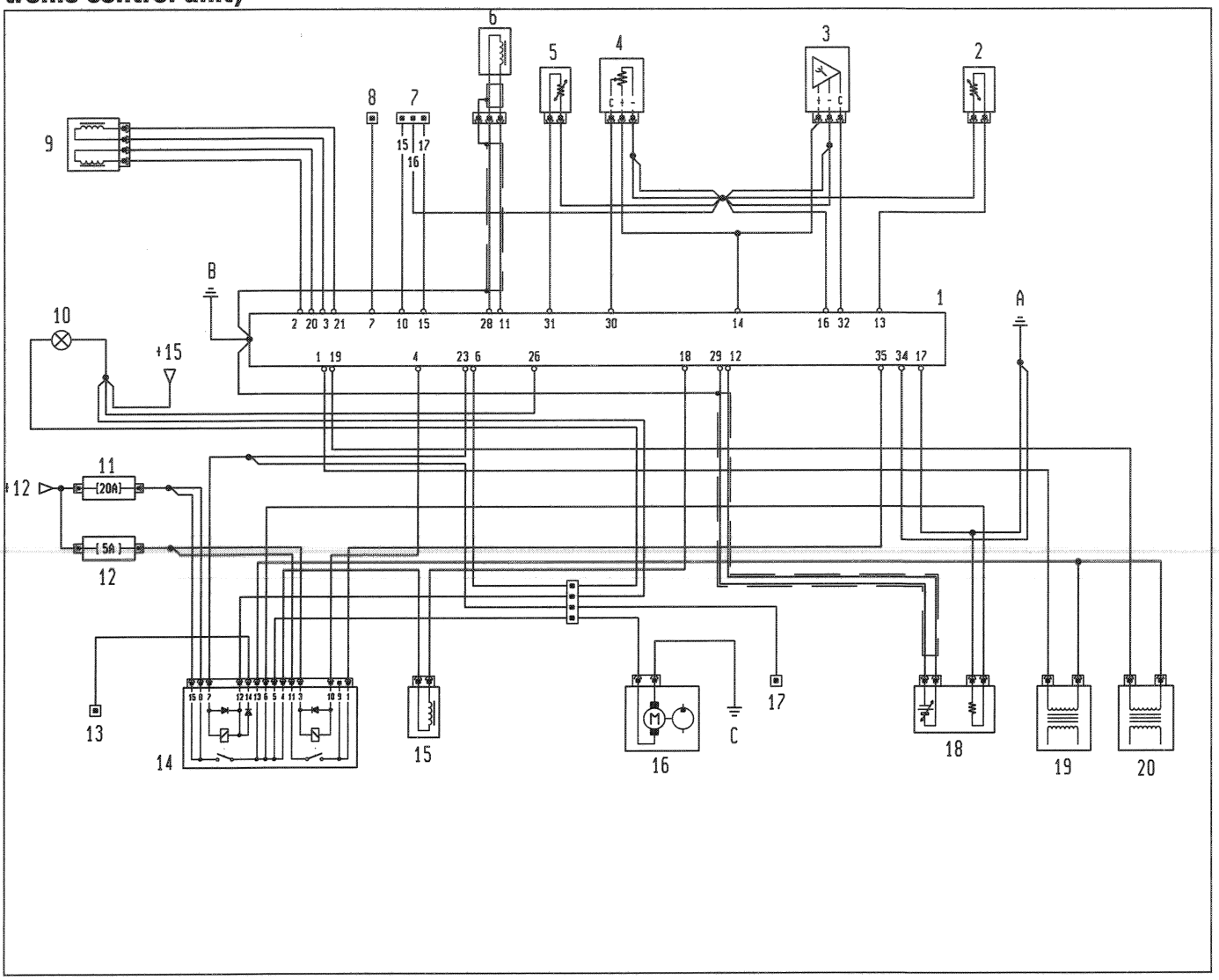


P3M06EA01

Integrated injection/ignition system key

1. Fuel tank
2. Electric fuel pump
3. Fuel filter
4. Thermostatic valve
5. Fuel pressure regulator
6. Injector
7. Air filter
8. Air duct
9. Engine idle adjustment actuator
10. Absolute pressure sensor
11. Injection/ignition system electronic control unit
12. Butterfly valve position sensor
13. Engine coolant temperature sensor
14. Intake air temperature sensor
15. Injection/ignition system twin relay
16. Ignition coils
17. Rpm and TDC sensor
18. Spark plugs
19. Diagnostic socket for FIAT/LANCIA Tester
20. Air mixer
21. Lambda sensor
22. Rev counter (if fitted)
23. I.A.W. system failure warning light

I.A.W. INJECTION/IGNITION SYSTEM WIRING DIAGRAM (showing connections with the electronic control unit)



P3M07EA01

Key

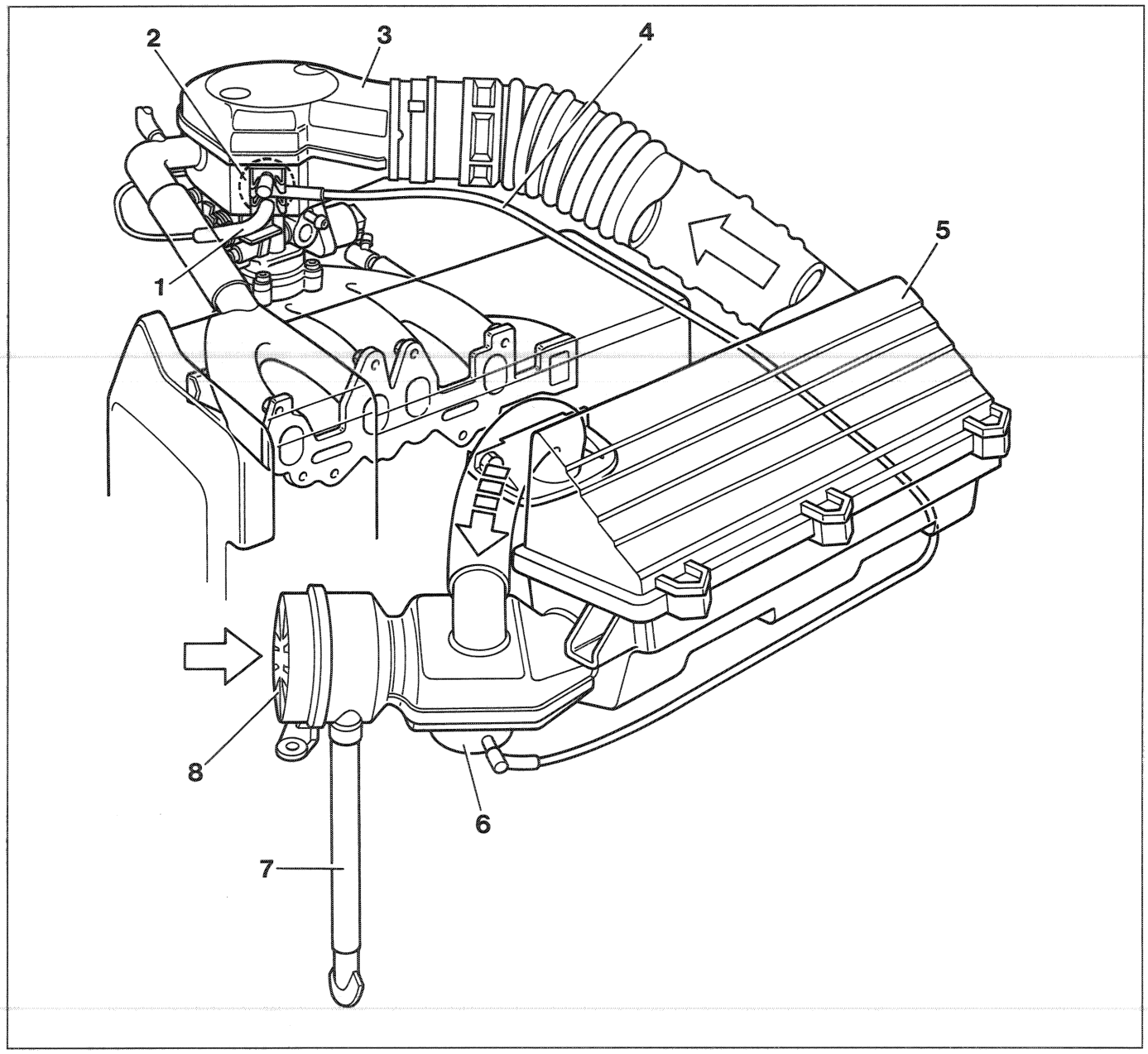
1. I.A.W. injection/ignition system electronic control unit
2. Engine coolant temperature sender unit
3. Absolute pressure sensor
4. Accelerator butterfly position sensor (potentiometer)
5. Air temperature sender unit
6. Rpm and T.D.C. sensor. with sheathed cable
7. Diagnostic socket for FIAT/LANCIA tester
8. Signal for anti-theft device
9. Idle speed adjustment stepping motor
10. Injection system failure warning light
11. 20A protective furse for injection/ignition system
12. 5A protective fuse for electronic control unit
13. Bulb connection for contact type ignition switch
14. Twin relay feed for injection/ignition system
15. Injector
16. Electric fuel pump
17. Rev counter signal (if fitted)
18. Heated Lambda sensor with sheathed cable
19. Ignition coil for cylinders 1 and 4
20. Ignition coil for cylinders 2 and 3

A Power earth on engine
B Power earth on bodywork
C Power earth on chassis

AIR INTAKE CIRCUIT

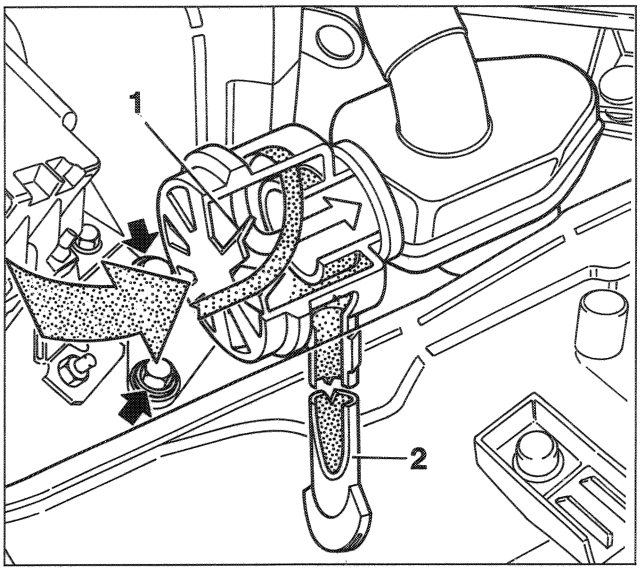
It is made up of various components (see diagram) which ensure that the air required by the engine in the different operating conditions is correctly conveyed.

The air intake circuit is the thermostatic type with a thermostatic valve (2) located above the injector holder turret cover (3). The switching to the hot air or cold air position takes place via a mixture valve (6) operated by the vacuum in the pipe (4) connected to the thermostatic valve (2) which, in turn, transmits the vacuum via the pipe (1).



P3M08EA01

1. Vacuum pick up pipe from butterfly casing
2. Thermostatic valve
3. Butterfly casing cover
4. Vacuum supply pipe to mixer
5. Air filter
6. Hot/cold air mixer
7. Waste collection pipe
8. Centrifugal dust separator air filter



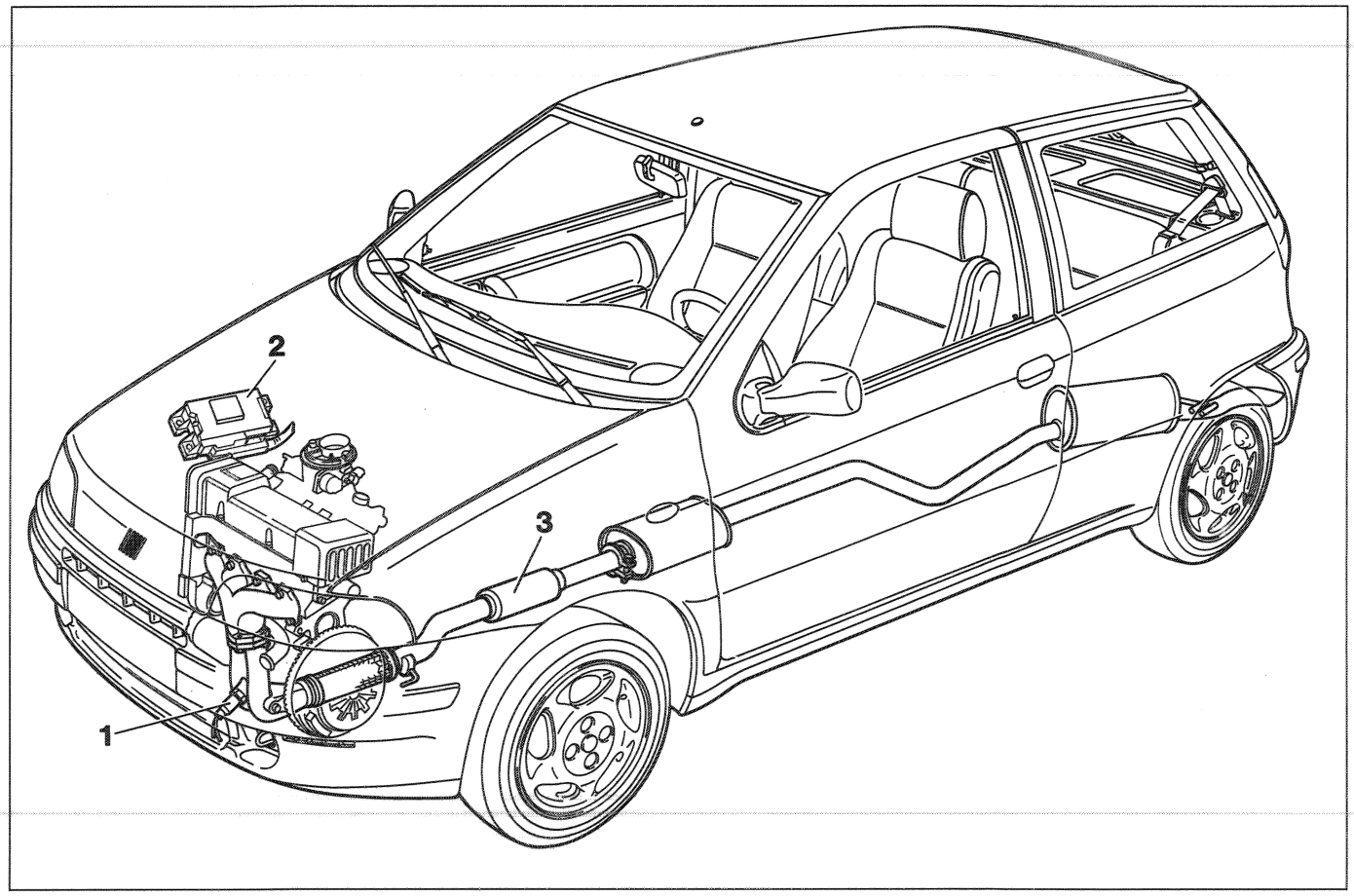
P3M09EA01

Centrifual dust separator air filter

- For vehicles destined for "dusty area" markets a centrifugal dust separator filter has been fitted before the conventional filter. The air coming in, via the obliquely positioned vanes (1), acts like a centrifugal vortex against the internal walls of the filter so that the heavier particles (sand, fine dust) fall and accumulate in the pipe (2) which is cut at the end in such a way that it can be periodically emptied. The air cleaned in this way reaches the conventional filter and then goes on its normal route.

- In order to remove the centrifugal dust separator filter, undo the bolts shown by the arrows.

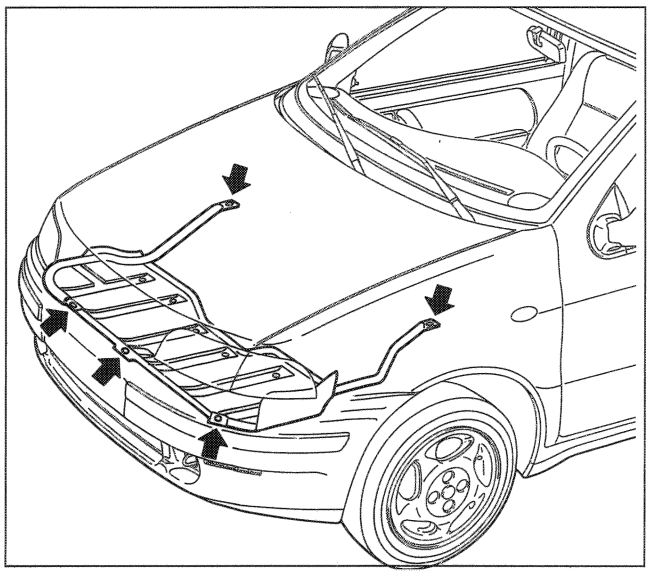
DIAGRAM SHOWING EXHAUST SYSTEM



P3M12EA01

The diagram shows several fuel and exhaust system components:

1. lambda sensor
2. Weber-Marelli 16F SPI injection/ignition control unit
3. exhaust pipe without catalyzer

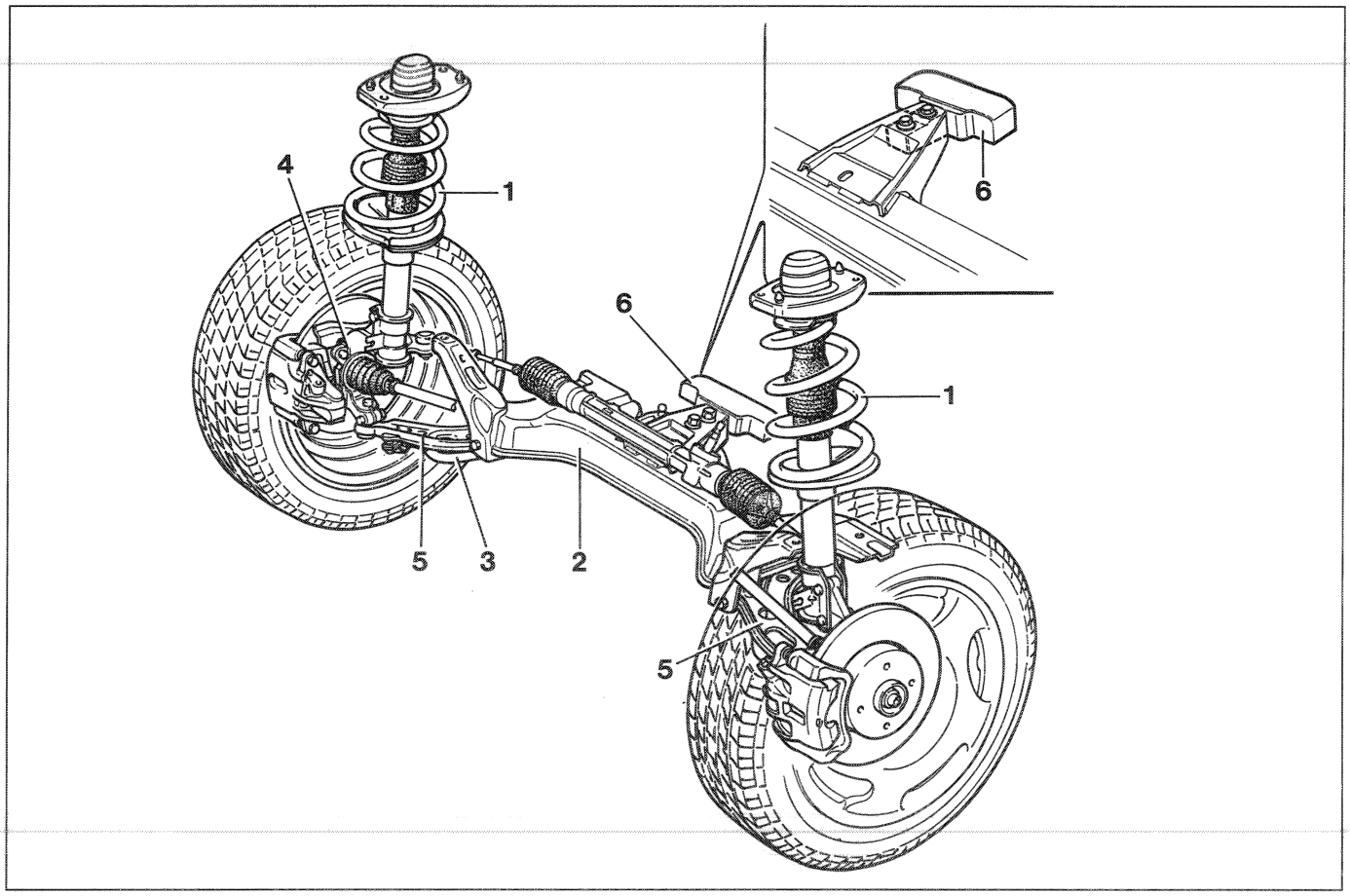


P3M10EA01

LOCATION OF ENGINE SHIELD

- Given the special nature of the market where the vehicle is destined for (dusty areas), a shield has been added to protect the area under the engine compartment.
- The shield is fixed to the vehicle at five points, threeon the front bumper and the remaining two on the bodyshell.

DIAGRAM SHOWING FRONT SUSPENSION ASSEMBLY



P3M10EA02

1. Shock absorber
2. Cross member
3. Stabilizer bar
4. Wheel hub
5. Track control arm
6. Balancing mass

The height of the springs and the shock absorbers is increased.
A counter-weight (6) has been fitted at the centre of the cross member/front suspension with the aim of zeroing any possible vibrations. This mass has been added on the entire Punto range with the exception of the Cabrio version.

Front suspension independent, Mac Pherson type with track control arms connected by means of two flexible bushes to a cross member.
Offset coil springs and double acting hydraulic shock absorbers. For-life joints.

COIL SPRINGS

	1108 SPI
Part number	46400817
Diameter of wire mm	12,5 ± 0,1
Number of turns	4,25
Direction of coil	clockwise
Height of spring released mm	331
Height of spring under a load of: 304 ± 10 daN mm	210,5
The springs are subdivided into two categories, identifiable by a mark	
yellow (1) for those under a load of: 304±10 daN height of mm	>210,5
green (1) for those under a load of: 304±10 daN height of mm	⩽210,5

(1) Springs of the same category must be fitted.

SHOCK ABSORBERS

Type: telescopic, double acting	low pressure gas
Part number	7778834
Open (start of damping action) mm	466 ± 2,5
Closed (metal against metal) mm	295 ± 2,5
Travel mm	171

Rear suspension independent, with coil springs.
Cast iron arms with bearings.
Stabilizer bar,rubber buffers

COIL SPRINGS

	1108 SPI
Part number	46400818
Diameter of wire mm	12,5±0,1
Number of turns	4,75
Direction of coil	clockwise
Height of spring released mm	272,7
Height of spring under a load of: 336 ± 10 daN mm	185
The springs are subdivided into two categories, identifiable by a mark	
yellow (1) for those under a load of: 336±10 daN height of mm	>185
green (1) for those under a load of: 336±10 daN height of mm	⩽185

(1) Springs of the same category must be fitted.

SHOCK ABSORBERS

Type: telescopic, double acting (low pressure gas)			BOGE or WAY-ASSAUTO
Part number	BOGE		7789197
	WAY-ASSAUTO		7736585
Open (start of damping action)	BOGE	mm	293 ± 2
	WAY-ASSAUTO	mm	
Closed (metal against metal)	BOGE	mm	209 ± 2
	WAY-ASSAUTO	mm	
Travel	BOGE	mm	84
	WAY-ASSAUTO	mm	

	1108 SPI
STARTER MOTOR	M. Marelli E80-12V-0,8kW
ALTERNATOR	M. Marelli A115I-14V-38/65A
VOLTAGE REGULATOR	Built in electronic
BATTERY	12V-50 Ah-250A
IGNITION SYSTEM	I.A.W. integrated electronic injection/ignition
IGNITION COIL	M. Marelli BAE 800 AK
SPARK PLUGS	Fiat/Lancia 9GYSSR Champion RC9YCC M. Marelli L7LCR

Key to components:

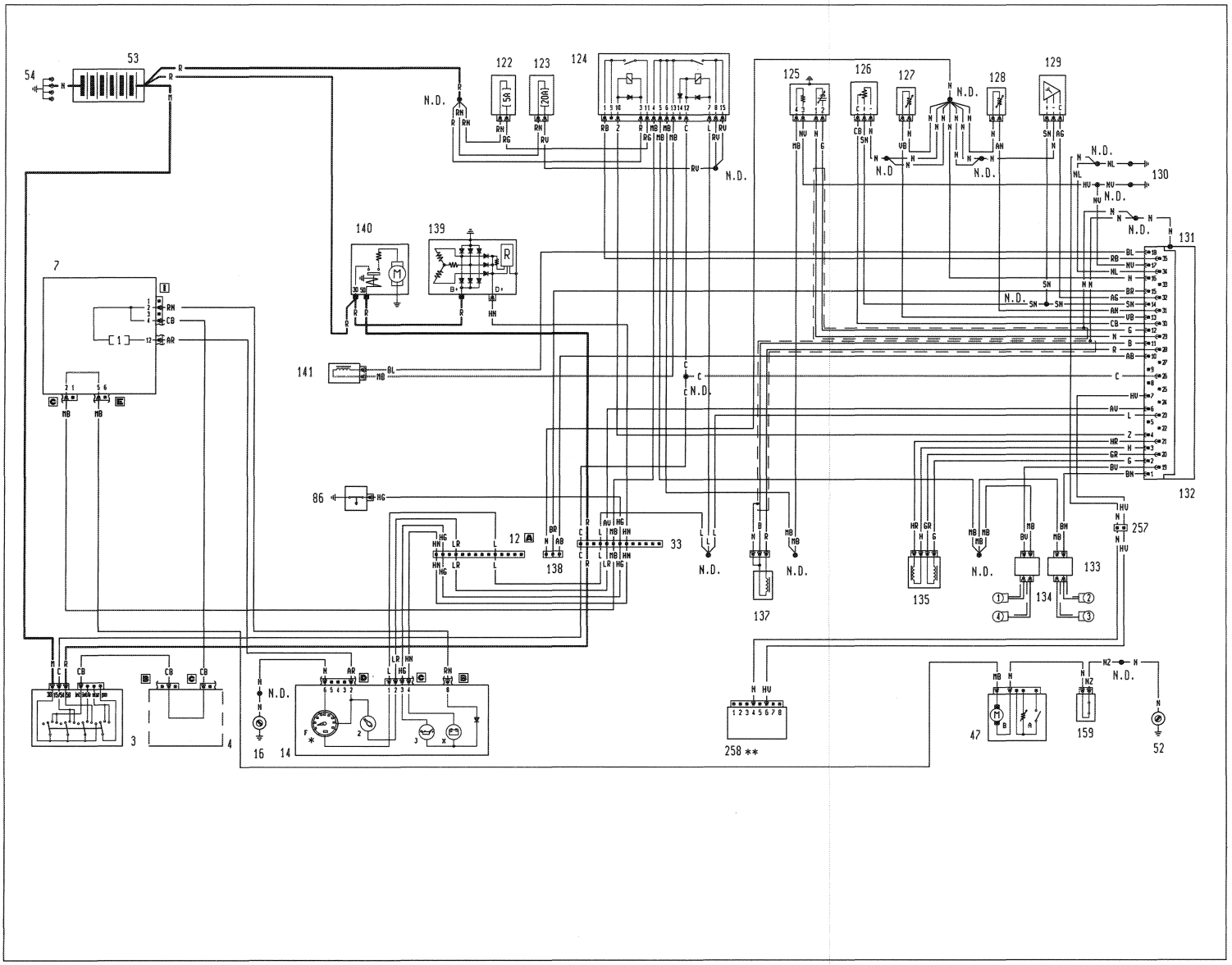
3 Ignition switch
4 Steering column switch unit
7 Junction unit
12 Connection between dashboard cables and front cables
14 Instrument panel:
- F Electronic rev counter
- J Insufficient engine oil pressure warning light
- X Battery recharging warning light
- Z Injection system failure warning light

16 Left dashboard earth
33 Connection for front cables
47A Fuel level gauge
47B Electric fuel pump
52 Right rear earth
53 Battery
54 Earth for battery
86 Switch signalling insufficient engine oil pressure
122 5A protective fuse for injection system
123 20A protective fuse for injection electric pump, lambda sensor and injectors
124 Multiple relay
125 Heated Lambda sensor
126 Potentiometer on butterfly valve
127 Water temperature sensor
128 Air temperature sensor
129 Absolute pressure sensor
130 Earth on engine
131 Earth on control unit
132 I.A.W. electronic injection/ignition system control unit
133 Ignition coils assembly
134 Spark plugs
135 Stepping motor actuator
136 Canister solenoid valve
137 Rpm and T.D.C. sensor
138 Diagnostic socket for injection system
139 Alternator
140 Starter motor
141 Injector
159 Inertia switch for disengaging electric fuel pump
255 Electro stop for Fiat CODE
256 Diagnostic socket for Fiat CODE system
257 Front cable connection for Fiat CODE device
258 Fiat CODE control unit
N.D. Ultrasound welding taped in cable loom

Cable colour code:

A Light blue
B White
C Orange
G Yellow
H Grey
L Blue
M Brown
N Black
R Red
S Pink
V Green
Z Violet
AB Light blue-White
AG Light blue-Yellow
AN Light blue-Black
AR Light blue-Red
AV Light blue-Violet
BG White-Yellow
BL White-Blue
BN White-Black
BR White-Red
BV White-Green
BZ White-Violet
CA Orange-Light blue
CB Orange-White
CN Orange-Black
GN Yellow-Black
GL Yellow-Blue
GR Yellow-Red
GV Yellow-Green
HG Grey-Yellow
HN Grey-Black
HR Grey-Red
HV Grey-Green
LB Blue-White
LG Blue-Yellow
LN Blue-Black
LR Blue-Red
LV Blue-Green
MB Brown-White
MN Brown-Black
NZ Black-Violet
RB Red-White
RG Red-Yellow
RN Red-Black
RV Red-Green
SN Pink-Black
VB Green-White
VN Green-Black
VR Green-Red
ZB Violet-White

Starting - Weber electronic injection and ignition - Recharging and warning light - Insufficient engine oil pressure warning light - Injection system failure warning light - Electronic rev counter - (see key)



* Non existent for the S trim level

** See Fiat CODE wiring diagram

P3M15EA01