

INTRODUCTION

- Dimensions - Weights	1
- Identification data and location on vehicle	2
- Performance - Fuel consumption	3
- Capacities	4
- Characteristics of Fiat Lubricant products	5

TECHNICAL DATA

ENGINE

- Characteristics	6
- Typical curves	7
- Cylinder head assembly and valve gear components	8
- Fuel system	9
- Fuel system - Supercharging	10
- Wheels	11
- Electrical equipment	12
- Electronic injection/ignition	13

FREE SERVICE	14
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PLANNED MAINTENANCE	15
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For anything not dealt with in this publication refer to the 4WD 1st volume Manual (print n° 504.787/02/03/04/05/06/07/08/09/11/12) and to Manual 505.495/02.

DELTA HF integrale 16v

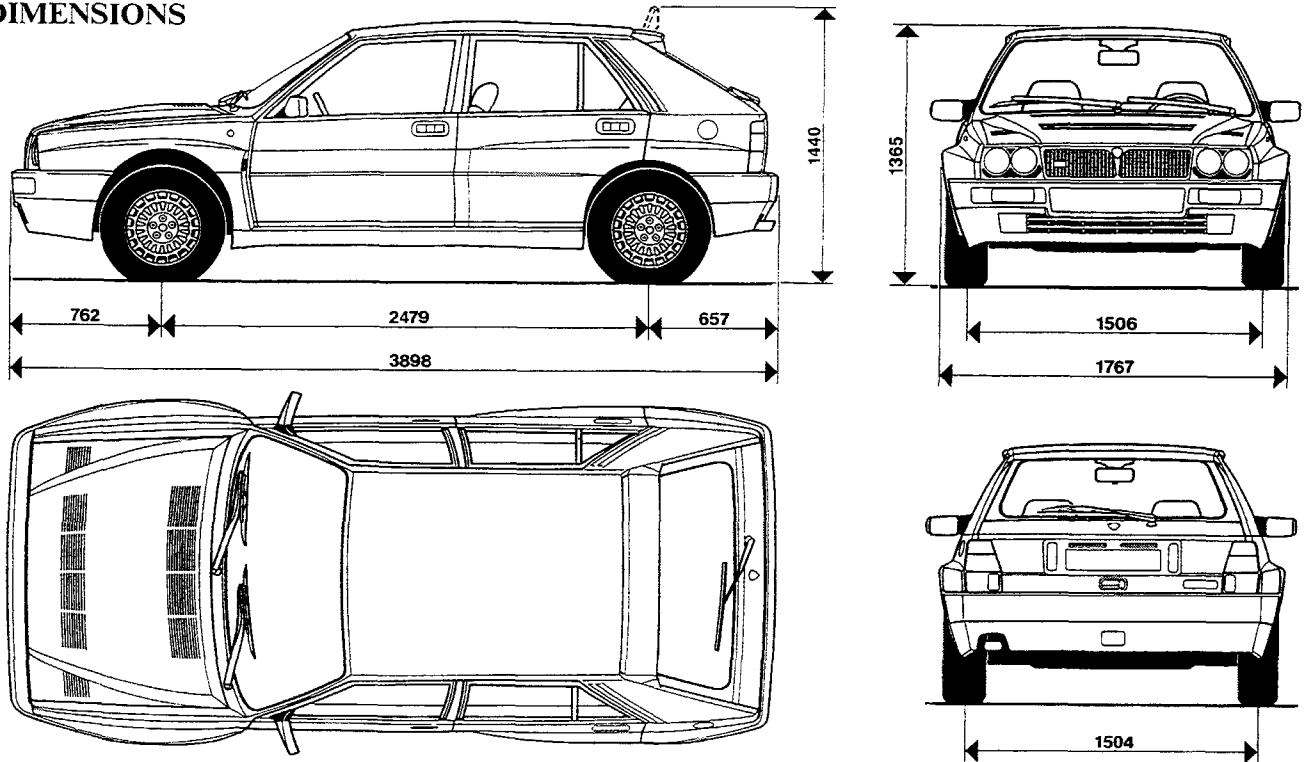
93 range

Introduction

Dimensions - Weights

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DIMENSIONS



The height refers to an unladen vehicle






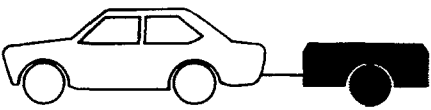
Luggage compartment capacity (VDA regulations): 200 dm³.

Load carrying compartment capacity (rear seat folded down)(VDA regulations): 940 dm³.

P30001A01

WEIGHTS

(in kg)

		1340
 + 450 = 		1790
Maximum permissible loads on the axles		1020
		1020
Maximum permissible load on the roof		80
Load on the tow hook (trailer with braking system)		70
	Without braking system	500
	With braking system	800

Loads which should never be exceeded

NOTE FOR ACCESSORIZED VERSIONS: Where there is special equipment (non standard air conditioner, sun roof, device for trailer), the weight of the vehicle when empty increases and therefore the carrying capacity may increase, compared with the maximum permissible loads.


Introduction

Identification data and location on vehicle

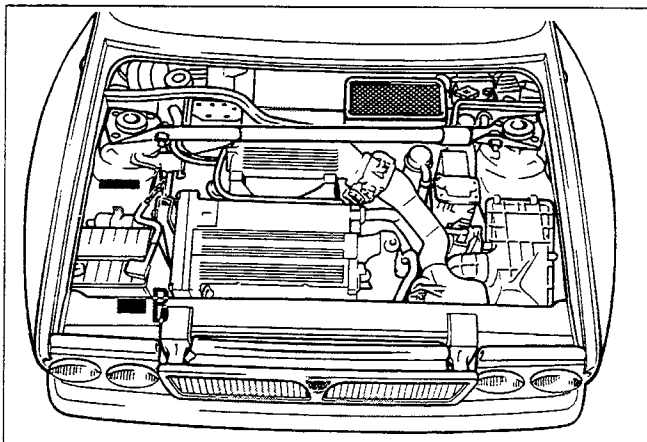
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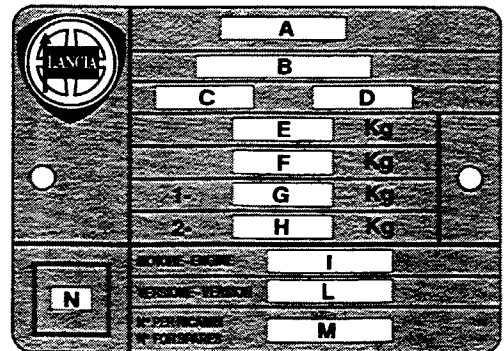
IDENTIFICATION DATA

	CHASSIS	ENGINE	VERSION	5 speed gearbox
	ZLA 831 ABO	831 E5.046	831 ABO 29	●

LOCATION OF IDENTIFICATION DATA ON VEHICLE



P30002A02 P30002A01



P30002A03

A Chassis number

- Type of vehicle: (ZLA 831 ABO)
- chassis manufacture number.

NOTE The engine type and number are stamped on the engine crankcase behind the engine oil cartridge filter.

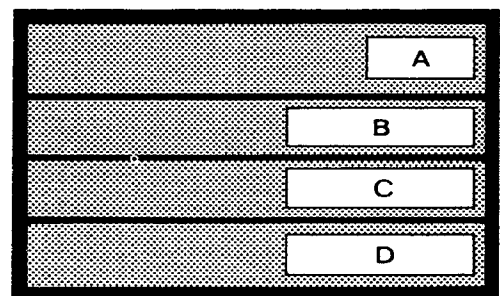
B V.I.N. Plate (EEC regulations)

- A. Name of manufacturer.
- B. Type approval number.
- C. Vehicle type identification code.
- D. Chassis manufacture number.
- E. Maximum authorized weight of vehicle fully laden.
- F. Maximum authorized weight of vehicle fully laden plus tow.
- G. Maximum authorized weight on first axle (front).
- H. Maximum authorized weight on second axle (rear).
- I. Bodywork version code.
- L. Engine type.
- M. Spares number.
- N. Correct value of smoke absorption coefficient (for diesel engine).
















Body paintwork identification plate

It is located inside the engine compartment cover

- A. Paint manufacturer
- B. Description of colour
- C. Colour code
- D. Colour code for retouches or spraying



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Speed kph 		62
		100
		142
		188
		220
		62
Maximum climbable gradient 		58
		40
		25
		17
		12
		68
EEC fuel consumption figures (litres/100 km) 	Urban cycle (A)	13
	Constant speed 90 km/h (B)	8,2
	Constant speed 120 km/h (C)	10,6
	Average consumption (CCMC proposal) $\frac{A+B+C}{3}$	10,6

The fuel consumption figures given in the table have been defined in the course of official tests and in accordance with EEC regulation procedures. In particular, the bench tests measure simulated urban cycle fuel consumption whilst fuel consumption at constant speeds of 90 and 120 km/h are measured both directly on a flat, dry road and in equivalent bench tests. These values can provide useful indications for a comparison between different vehicles. Traffic conditions, driving styles, atmospheric conditions and the general state of the vehicle can, in practice, lead to different fuel consumption figures from those established using the above procedures.














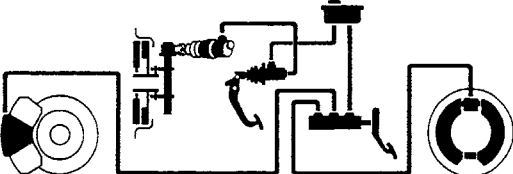






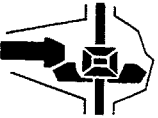


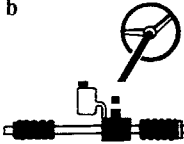
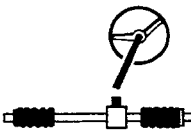





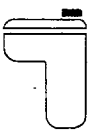



Introduction

Capacities

DELTA HF integrale 16v

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Capacities	Unit		Quantity				
			dm ³	(kg)			
 Petrol O.N. 95 unleaded			57	-			
 50% +    H ₂ O ▲ 	Total capacity of cooling system 		6.20	-			
 SELENIA SAE 15W40	Total capacity 		5.90	5.40			
	Partial capacity (periodic replacement) 		5.30	4.80			
 TUTELA TOP 4 (270° C)	Total capacity of hydraulic clutch and braking system 		0.56	-			
 a = TUTELA ZC 80S 			a	3.80	3.40		
 b = TUTELA GI/A 			b	-	-		
 TUTELA W 90/M DA	a		a	-	-		
	b	 Self-locking	b	1.1	1		
 a = TUTELA GI/A	a		a	0.75	-		
	b = K 854		b	-	-		
 c = TUTELA MRM2	c		c	-	0.10		
 H ₂ O + 		3%			2	-	
		~ - 10 °C					50%
		~ - 20 °C					100%

▲ Distilled water

Name of product	Description International designation	Usage
SELENIA SAE 15 W/40	Semi-synthetic multigrade engine oil. Exceeds specifications API SG, CCMC-G4 and UNI 20153	Temperature - 15°C ÷ 40°C
VS MAX SAE 15 W/40	Mineral based multigrade engine oil. Exceeds specifications API SG, CCMC-G4 and UNI 20153	Temperature - 15°C ÷ 40°C
SELENIA Turbo Diesel SAE 15 W/40	Semi-synthetic, multigrade engine oil. Exceeds specifications API CD, CCMC-PD2, UNI 20153	Temperature - 15°C ÷ 40°C
VS MAX Diesel SAE 15 W/40	Mineral based multigrade engine oil. Exceeds specifications API CD, CCMC and UNI 20153	Temperature - 15°C ÷ 40°C
TUTELA ZC 80S	EP SAE 80W oil. Satisfies standards MIL-L-2105 and API GL4	Manual gearboxes and differentials
TUTELA ZC 90	Non EP SAE 80 W/90 oil. for manual gearboxes. containing anti-wear additives.	Gearboxes and non hypoid differentials
TUTELA W 90/M DA	Special sae 80 w/90 ep oil for normal and self-locking differentials. Satisfies standards MIL-L-2105 D and API GL5	Hypoid differentials Self-locking differentials. Steering boxes
TUTELA GI/A	"DEXRON II" type oil for automatic transmissions.	Automatic gearboxes. Power assisted steering
TUTELA CVT Universal	Oil for continuous variation automatic transmissions.	Continuous variation automatic transmissions
TUTELA JOTA 1	Lithium soap based grease. consistency NLGI = 1	Greasing the vehicle except for components particularly exposed to water requiring special greases.
TUTELA MRM2	Water-repellant, lithium soap based grease containing molybdenum disulphide, consistency NLGI = 2	Constant velocity joints
TUTELA MR3	Lithium soap based grease. consistency NLGI = 3	Wheel hub bearings, steering rod, various components
TUTELA PLUS 3 (240 °C)	Synthetic fluid, F.M.V.S.S. n° 116 DOT 3 ISO 4925, CUNA NC 956-01	Hydraulic brakes and hydraulically operated clutches
TUTELA TOP 4 (270 °C)	Synthetic fluid, F.M.V.S.S. n° 116 DOT 4 ISO 4925, CUNA NC 956-01	Hydraulic brakes and hydraulically operated clutches
K 854	Lithium soap based grease. consistency NLGI = 000, containing molybdenum disulphide	Rack and pinion steering boxes
SP 349	Special grease compatible with brake fluid	Load proportioning valve Load proportioning valve rod bush
Arexons DP1	Mixture of alcohol, water and surface agents CUNA NC 956-11	To be used undiluted or diluted in windscreen washer systems
Paraflu"	Mono-ethylene glycol based anti-freeze for cooling system, CUNA NC 596 - 16	Cooling circuits. Percentage to be used 50% up to - 35°C
Diesel Mix Arexons	Additive for diesel fuel with protective action for diesel engines	To be mixed with the diesel fuel (25 cc per 10 litres)

Technical data

DELTA HF integrale 16v

Engine

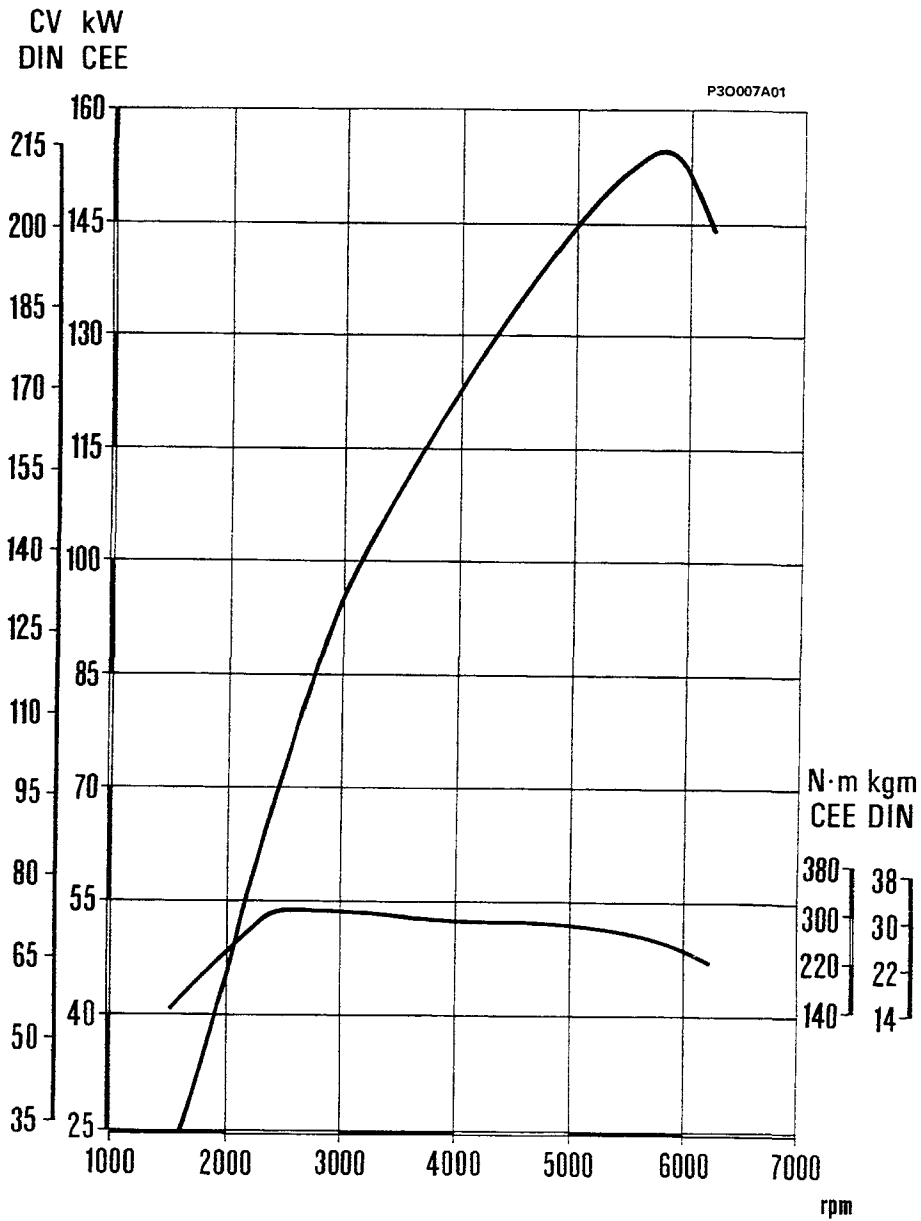
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CHARACTERISTICS

	Cycle	OTTO 4 stroke supercharged	
	Timing	with 2 overhead camshafts TOHC	
	Engine balancing	by means of 2 counter balance shafts	
	Fuel system type	Weber-Marelli I.A.W. electronic injection/ignition	
	Number of cylinders	4	
	Cylinder liner (bore)	mm	84
	Stroke	mm	90
	Capacity	cc	1995
	Compression ratio	8	
	Max power	kW (CEE) CV (DIN)	155 (215)
		rpm	5750
	Max torque	daNm (CEE) kgm (DIN)	30.8 (32)
		rpm	2500



Typical power curves obtained by EEC method

The power curve illustrated can be obtained with the engine overhauled and run in, without a fan, with a silencer and air filter fitted at sea level.

Technical data

DELTA HF integrale 16v

Engine: cylinder head assembly and valve gear components

93 range

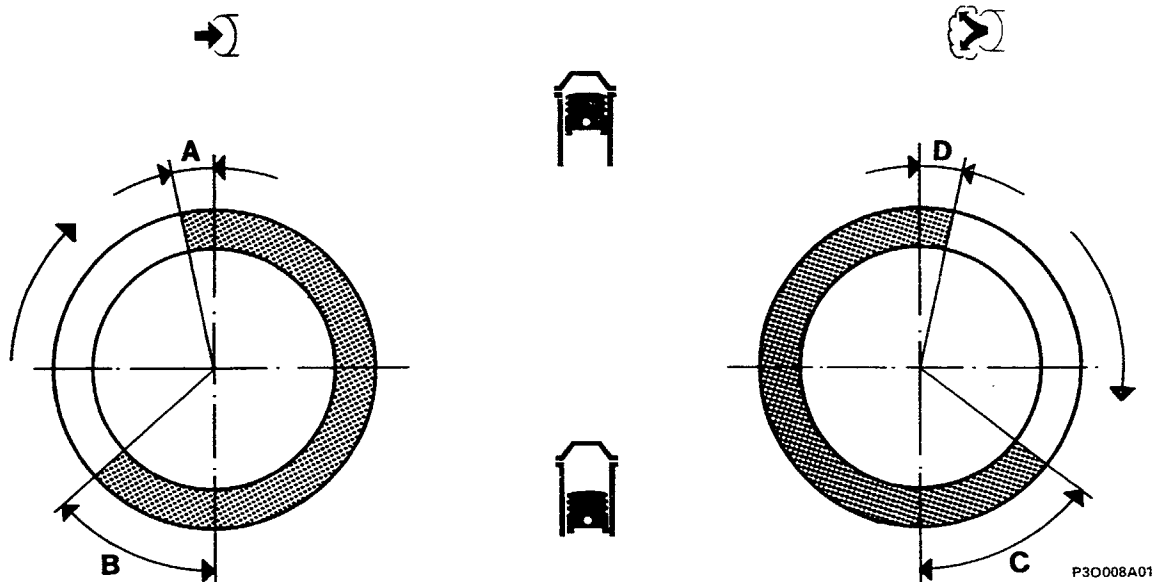
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DESCRIPTION

			Values in mm
17 - 20	<p>clearance for timing check</p>		0,80
			0,80
	<p>operational clearance</p>		$0,35 \pm 0,04$
			$0,40 \pm 0,03$

TIMING DIAGRAMS



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TIMING ANGLES

A	Inlet		opens BTDC	8°
B			closes ABDC	35°
C	Exhaust		opens BBDC	30°
D			closes ATDC	0°

WEBER - MARELLI (IAW) INTEGRATED ELECTRONIC INJECTION/IGNITION SYSTEM COMPONENTS

IAW-4WG injection/ignition system electronic control unit	
Throttle casing	56 CFL 95
Fuel pressure regulator	RPI/3 bar
Injector	IW 058
Automatic idle adjustment solenoid valve	VAE - 06
Electric fuel pump	PI-022
Fuel filter	FI-02/2
Absolute pressure sensor	PRT 06
Throttle valve position sensor (potentiometer)	PF-09
Coolant temperature sensor	WTS - 05
Intake air temperature sender unit	ATS - 04
Lambda sensor (Bosch)	0.258.003.009
Twin relay feed for electric pump and injection/ignition control unit	RSC 240 102
Waste-gate solenoid valve (Pierburg)	7.2105.00

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FUEL SYSTEM

Type	Weber Marelli I.A.W. integrated electronic injection/ignition
Pump	electrical
Capacity	about 120 l/h
Fuel pressure regulator calibration	3 bar

Checking concentration of idle exhaust emissions

	CO (%)	HC (p.p.m.)	CO ₂ (%)
Upstream of the catalytic converter	0.4 ÷ 1	≤600	≥ 12
Downstream of the catalytic converter	≤0,35	≤90	≥ 13

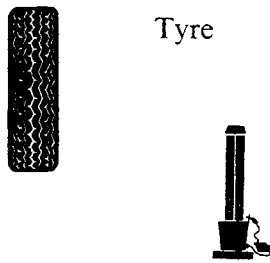

SUPERCHARGING

Turbocharger operated by exhaust gases, cooled by engine coolant and with waste-gate valve and air/air heat exchanger.

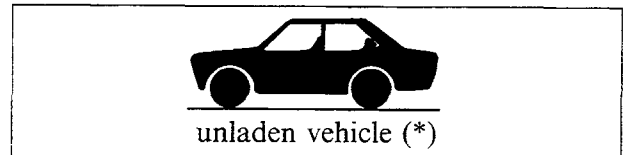
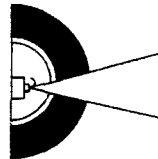
Cross section of turbocharger

Turbocharger: type	Garrett T3
Maximum supercharging pressure	1 bar

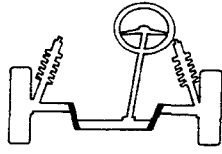


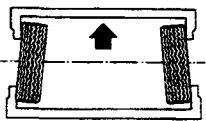
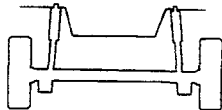

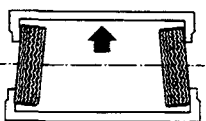
WHEELS

	Tyre	type	205/45 - ZR 16"	
			front	average load
	heavy load	2,5 bar		
	rear	average load	2,2 bar	
heavy load		2,5 bar		
	Rim	type	light alloy 7½Jx16"H2-37	

NOTE Spare wheel with 3,50 Bx16" H2-37 light alloy rim and T115/70 R16" tyre
Speed limit: 80 km/h. Inflation pressure: 4,2 bar



WHEEL GEOMETRY

 <p>Front suspension</p>	camber (**)		$- 1' \pm 30'$
	caster (**)		$4^{\circ}10' \pm 30'$
	toe in		$0 \pm 2 \text{ mm } (\bullet)$
 <p>Rear suspension</p>	camber (**)		$- 1^{\circ}30' \pm 30'$
	toe in		$3 \div 5 \text{ mm } (\bullet)$

(*) With tyres inflated to the correct pressure and vehicle in running order (with full fuel tank)

(**) Angles cannot be adjusted (●) Measured between the wheel rims

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SUMMARY OF DATA

STARTER MOTOR	M. Marelli E70R - 1,4 kW - 12 V (with reduction gear)
ALTERNATOR	M. Marelli AA125R - 14 V - 65 A
VOLTAGE REGULATOR	M. Marelli RTT 119 AC
BATTERY	12 V - 55 Ah - 225 A
IGNITION SYSTEM	Weber-Marelli (MPI) integrated electronic injection/ignition
IGNITION COIL	M. Marelli BAE 800 AK
POWER MODULE	M. Marelli AEI 450A
SPARK PLUGS	Bosch WR6 DTC (with three point electrode)

WEBER - MARELLI (IAW) INTEGRATED ELECTRONIC INJECTION/IGNITION CONTROL MODULE

Make and type	Weber-Marelli IAW - 4WG
Firing order	1 - 3 - 4 - 2

IGNITION COIL WITH 2 HIGH TENSION PICK UPS (n° 2)

Make	M. Marelli
Type	BAE 800 AK
Ohmic resistance of primary winding at 20 °C Ω	0,495 \div 0,605
Ohmic resistance of secondary winding at 20 °C Ω	6660 \div 8140

POWER MODULE

Make and type	M. Marelli AEI 450 A
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DETONATION SENSOR

Make	Bosch
Type	0.261.234.095

TDC AND RPM SENSOR

Make and type	M. Marelli SEN 8 D
Sensor winding resistance at 20 °C Ω	578 \div 782
Distance (gap) between the sensor and the crankshaft pulley tooth mm	0,4 \div 1

IGNITION TIMING SENSOR (HALL effect)

Make and type	M. Marelli SFA 100 A
---------------	----------------------

ADVANCE ON ENGINE

With engine idling (850 \pm 50 rpm)	10° \pm 2°
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SPARK PLUGS

Make and type	Bosch WR6 DTC
Thread	M 14 x 1,25
Electrode gap mm	0,8 \div 1

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FREE SERVICE

Together with the documents which LANCIA supply with every new vehicle, the Owner will receive a free service coupon to be used after 1000 - 1500 km which recommends carryint out the following "Systematic Checks" in accordance with the warranty methods given in the Service Booklet.

Tightening	- inlet and exhaust manifolds
Checks	- CO idle content
Inspections	- ignition advance - correct injector fitting - tyre wear - engine idle speed with possible adjustment - exhaust pipes/silencers with possible adjustments/alignment - door and lid knobs/locks, lubricating if necessary - tightening doors and lids and adjusting if necessary
Check seal of system seals, pipes and unions eliminating leaks and topping up levels, if necessary	- engine lubrication - engine cooling - fuel system - braking system and hydraulically operate clutch - power assisted steering
Check seal of gasket/boots	- gearbox - differential - steering - transmission - shock absorbers
Change	- engine oil - cartridge oil filter - gearbox oil - rear differential oil
Air conditioning system checks	- compressor belt tension - fixing of compressor bolts and pulley - system operation and refrigeration

Lubrication service

The engine oil should be changed every 15,000 Km, or, irrespective of the mileage, every 12 months.

The oil filter should be replaced at the same time as the engine oil is changed.

For the correct and optimum operation of the engine it is advisable to use the type of oil recommended in the table on page 4.



If the vehicle is constantly subject to heavy usage (a great deal of town driving, journies in dusty areas, constant mountain driving, towing a trailer or caravan, harsh climatic conditions, constant motorway driving at high speeds, etc.) then these lubrication services must be carried out at more frequent intervals. In the above mentioned conditions it is also advisable to carry out the Planned maintenance services and the intermediate checks more often.

PLANNED MAINTENANCE OPERATIONS

THOUSANDS OF KM	15	30	45	60	75	90
MONTHS	12	24	36	48	60	72

Check tightening of inlet and exhaust manifolds		☆		☆		☆
Check operation of Lambda sensor			☆			☆
Check idle CO content	☆	☆	☆	☆	☆	☆
Check anti-evaporation system			☆			☆
Check, adjustment tappet clearance		☆		☆		☆
Check condition and wear of tyres	☆	☆	☆	☆	☆	☆
Check operation of front brake pad wear indicator	☆	☆	☆	☆	☆	☆
Check condition and wear of rear brake pads		☆		☆		☆
Visual inspection bodywork exterior and underbody protection	☆	☆	☆	☆	☆	☆
Check condition of pipes (exhaust, supply, fuel system, braking system)	☆	☆	☆	☆	☆	☆
Check condition of rubber elements, boots, hoses, etc.	☆	☆	☆	☆	☆	☆
Check condition and tension of various drive belts and adjust if necessary						☆
Check crankcase ventilation system						☆
Replace fuel filter		☆		☆		☆
Replace air filter cartridge		☆		☆		☆
Changing engine oil and oil filter	☆	☆	☆	☆	☆	☆
Top up fluid levels (engine cooling, braking system, windscreen washer, power assisted steering, hydraulically operated clutch)	☆	☆	☆	☆	☆	☆
Check condition of timing belt				☆		
Check condition of counter balance shaft belt		☆		☆		☆
Check ignition cables	☆	☆	☆	☆	☆	☆
Replace spark plugs	☆	☆	☆	☆	☆	☆
Check ignition/injection system		☆		☆		☆
Change front differential and gearbox oil		☆		☆		☆
Change rear differential oil		☆		☆		☆

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Additional operations

In addition to the operations in the “Planned maintenance” programme the following checks are also needed

Every 500 km or before long journies check	- engine oil level - coolant level - brake fluid level - tyre inflation pressure
Every 60,000 km or 2 years change	- engine coolant
Every 105,000 km change	- timing belt - counter balance shaft drive belt
Every 120,000 km change	- gearbox oil
Every 2 years change	- brake fluid