TECHNICAL SERVICE MANUAL COMPOSITION

As of January 2001, the **Fiat barchetta** manual, **volume 2, is made up of the** following sections:

Publication no.	Sections	Page numbers	Notes
506.586/05 (VI/98)	**00**	1 - 14	Technical data 98 range version
	10	1 - 66	Fuel system 98 range version
	55	1 - 4	Electrical equipment wiring diagrams for 98 range version
506.586/09 (IX/98)	**55**	1 - 2	Clarion radio
506.586/10 (X/98)	**55**	1 - 2	Electrical equipment: predisposition cell phone
506.586/12 (V/99)	**10**	31 - 32	Update: fuel system
506.586/13 (VI/00)	**55**	1 - 4	Electrical equipment: exterior lighting and brake lights - radio receiver
506.586/14 (01/01)	**00**	1 - 47	2000 range Euro 3 + EOBD technical data
	10	1 - 9	2000 range Euro 3 + EOBD engine procedure
	55	1 - 2	Various devices
		1 - 48	2000 range Euro 3 + EOBD wiring diagrams

For aspects not covered, refer to the preceding edition (Publication no. 506.586)

MAIN CHARACTERISTIC DATA OF THE "'98 RANGE" VERSION WITH "RETURNLESS" FUEL SYSTEM

The "'98 range" version comprises a modified fuel system which has no fuel return pipe.
The update has led to a change in some technical data, which are given in the tables below.

PERFORMANCE - FUEL CONSUMPTIONS

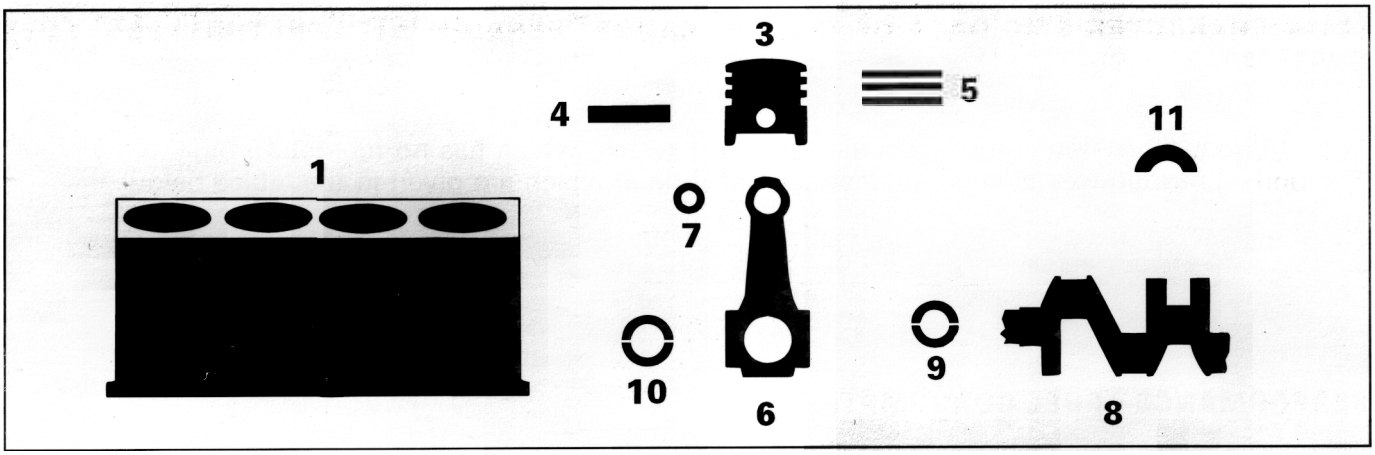
 % Maximum gradient fully laden		39
 Fuel consumption as per Directive93/116/CE (litres/100 km)	**Urban**	11.6
	Non-urban	6.5
	Combined	8.4
CO_2 emissions in exhaust (g/km)		198

The fuel consumption values as per 93/116CE standards have been defined during homologation tests which include:

- an urban cycle which includes a cold start followed by a simulated varied urban journey;
- a non-urban cycle which includes frequent accelerations in all gears, simulating normal non-urban use of the vehicle. The speed varies between 0 and 120 km/h.
- The average combined consumption is for 37% urban cycle and 63% non-urban cycle.

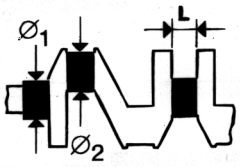
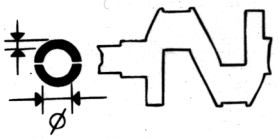
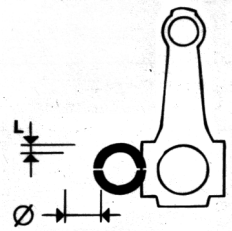
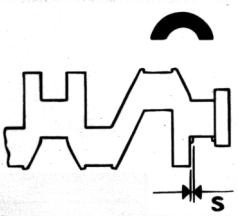
The type of journey, traffic situations, driving style, atmospheric conditions, version/accessories, presence of roof rack, presence of special equipment and the general condition of the vehicle can lead to different fuel consumption values from those established by the above-mentioned procedures.

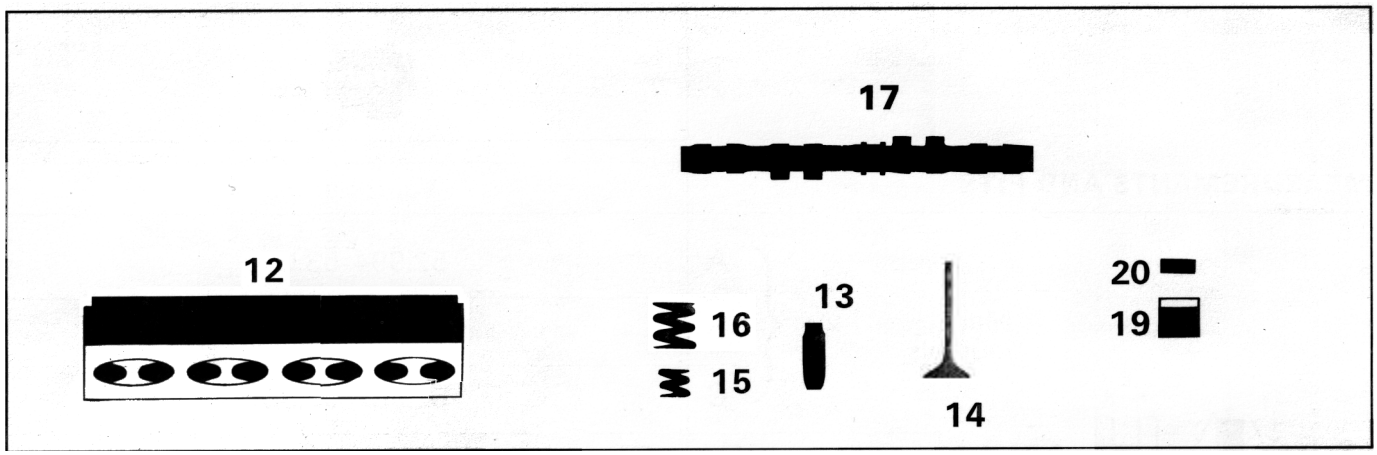
The CO_2 emissions in the exhaust (in g/km) are measured in the average combined cycle.



MEASUREMENTS AND FITS		Values in mm
3 Piston ring grooves	1	1.220-1.240
	2	1.205 - 1.225
	3	2.010-2.030
5 Piston rings	1	1.160-1.180
	2	1.170-1.190
	3	1.970-1.990
	⌀ FIAT >	0.4
5-1 Piston ring end gap in cylinder bore	1	0.200-0.350
	2	0.250-0.500
	3	0.250-0.500
5-3 Piston rings Piston ring grooves	1	0.040-0.080
	2	0.015-0.055
	3	0.020-0.060

1747 16V

			1747 16V
MEASUREMENTS AND FITS			Values in mm
8 	Main journals $\varnothing_1$	A	52.994-53.000
		B	52.988-52.994
		C	52.982-52.988
	Crank-pins $\varnothing_2$	A	50.799-50.805
		B	50.793-50.799
		C	50.787-50.793
		L	26.829-26.879
9 Main bearings 	L	A	1.831-1.837
		B	1.836-1.844
		C	1.843-1.849
	$\varnothing$ FIAT	<	0.254 - 0.508
9–8 	Main bearings-Journals	A	0.031-0.062
		B	0.023-0.058
		C	0.019-0.050
10 	Big end bearings L	1	1.527-1.531
		2	1.530-1.534
		3	1.533-1.537
	$\varnothing$ FIAT	<	0.254-0.508
11 	Thrust washers	S	2.469-2.485
	S FIAT	>	0.127



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MEASUREMENTS AND FITS			Values in mm
	Valve guide seat in cylinder head	⌀	12.950-12.977
12	Valve seat	α	45° ± 5′
		α	45° ± 5′
		L	about 2
	Volume of combustion chamber in cylinder head	cm^3	39±0.5
13	Valve guide	⌀1	7.022-7.040
		⌀2	13.010-13.030
		⌀2 FIAT	0.05 - 0.10 - 0.25
13-12	Valve guide Seat in cylinder head		0.033-0.080
14	Valves	⌀1	6.975-6.990 (6.976-6.990)*
		⌀2	33.400-33.700
		α	45° 30′ ± 5′ (44° 30′ ± 5′)*
		⌀1	6.960-6.975 (6.961-6.975)*
		⌀2	27.900-28.200
		α	45° 30′ ± 5′ (44° 30′ ± 5′)*

(*) Values relating to TRW valves

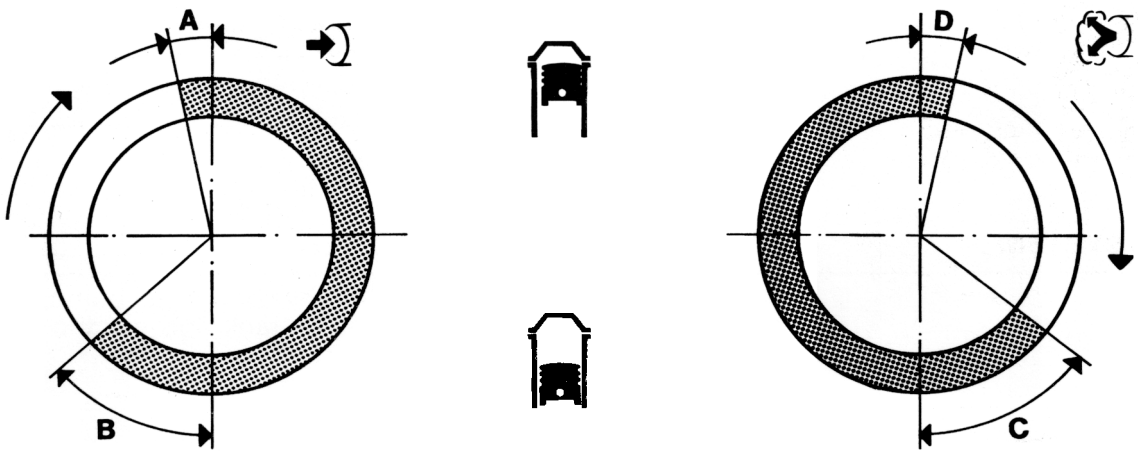
1747 16V

MEASUREMENTS AND FITS

			Values in mm
14-13	Valve guide	Valve	0.032-0.065 (0.032-0.064)*
			0.047-0.080 (0.047-0.079)*
17	Cam lift		9
			8.5

(*) Values relating to TRW valves

TIMING DIAGRAMS



A	Inlet	start after TDC	3°
B		end after BDC	41°
C	Exhaust	start before BDC	32°
D		end after TDC	2°

Timing variator intervention:
22° BTDC 16° after BDC

LUBRICATION

		1747 16V
		Values in mm
Engine lubrication system		artificial circulation, by gear pump with cartridge filter in series
Oil pump		gear type
Pump operation		through crankshaft
Oil pressure regulating valve		built into crankshaft front cover
	when idling	> 1.5 bar
Operating pressure at temperature of 100°C	at 4000 rpm	> 4 bar

COOLING SYSTEM

		1747 16V
Cooling system		coolant circulation by centrifugal pump, radiator, additional expansion tank and electric fan controlled by control unit
Water pump operation		belt driven
Engine coolant thermostat	opens at	86° - 90 °C
	fully open at	101° - 105 °C
	valve travel	9.5 mm
Radiator leak test pressure		0.98 bar
Test on calibration of discharge spring on expansion tank		0.98 bar

COMPONENTS OF THE ELECTRONIC FUEL INJECTION

Electronic control unit	HITACHI MFI-103	HITACHI MFI-106 (*)
Pencil Coil	HITACHI CM 11-201	
Fuel injector	M. MARELLI PICO IWP 006	
Coolant temperature sensor	ELTH 2690350/JAEGER 40218301	
Fuel pump cage	MARWAL	
Lambda probe	NTK 0ZA334-A3	
Idle speed actuator	HITACHI GL 108771	
Thottle valve position sensor (potentiometer)	HITACHI GL 212875	
Fuel vapour control solenoid	M. MARELLI EC1	
Variable geometry control solenoid	HITACHI GL 212999	
Top dead centre and rpm sensor	HITACHI GE 110492	
Knock sensor	NGK KNE 03-A	
Timing sensor	Bosch B.232.070.023	
Throttle body with integrated flowmeter	HITACHI GL 008234	

(*) Germany voluntary

N.B. *The pump cage is complete with pressure regulator and fuel filter*

			1747 16v
			1 3 5 / 2 4 R
GEARBOX		Type	**C.510.5.17**
Synchronizers	spring ring (Porsche type)		–
	free ring		1 3 5 / 2 4
Gears	spur teeth		R
	helical teeth		1 3 5 / 2 4
Gear ratios		1	3.909
		2	2.238
		3	1.520
		4	1.156
		5	0.971
		R	3.909

DIFFERENTIAL		
Crown-wheel and pinion ratio		3.353 (17/57)

GEARBOX
DIFFERENTIAL

		1747 16V
Ratio at the wheels	C 1	13.106
	2	7.504
	3	5.096
	4	3.876
	5	3.255
	R	13.106
Inner differential case bearing		tapered roller
Bearing preload adjustment		by shims
Spare shim thickness	mm 0.07	1.70 - 2.89
Bearing rolling torque	daNm	0.10 - 0.14
Specified interference for obtaining correct bearing preload	mm	bearings not preloaded = 0.12 bearings preloaded (350 daN) = 0.08
Sun gear-planet gear backlash	mm	⩽ 0.10
Sun gear-planet gear backlash adjustment		no adjustment is made

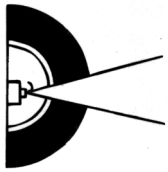
00.44

WHEELS

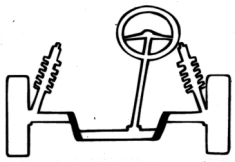
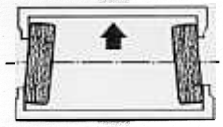
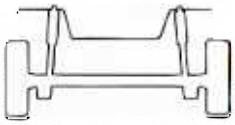
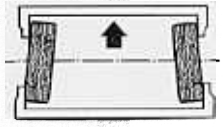
Tyre	type	195/55 - R15 or 185/55 - R15
	front	2.4 bar
	rear	2.0 bar
 Rim		6½ Jx15H2

NOTE Spare wheel with 4.00 Bx14" rim and 135/80 B14" tyre. Speed limit: 80 km/h. Inflation pressure: 2.8 bar.

WHEEL GEOMETRY



vehicle unladen (*)

 Front suspension	camber (**) 	-1° ± 30′
	caster (**) 	3° ± 30′
	toe-in 	0 ± 1 mm
	front wheel offset (▲)	0°
 Rear suspension	camber (**) 	– 0°40′ ± 30′
	toe-in (**) 	-0.7-3.3 mm
	rear wheel thrust angle (▲)	0°

(*) With tyres inflated to the correct pressure and vehicle in running order
(**) Non-adjustable angles
(▲) Non-adjustable angles used for correct alignment of the vehicle

	1747 16v
STARTER MOTOR	BOSCH ⌀ 74.5 - 1.1/12
ALTERNATOR	M. Marelli A115I-14V-38/65A M. Marelli A127I-14V-55/100A (●)
VOLTAGE REGULATOR	Built in electronic
BATTERY	12V-50 Ah-250A
IGNITION SYSTEM	HITACHI integrated electronic fuel injection-ignition
IGNITION COIL	HITACHI GE 212331
SPARK PLUGS	CHAMPION RC7BMC CHAMPION RC7BYC NGK BKR6EKC COOPER 2HLDR

(●) For vehicles with air conditioner

	1747 16v
STARTER MOTOR	
Type	Bosch ø 74.5 - 1.1/12
Voltage V	12
Nominal power kW	1.1
Rotation, pinion side	right-hand
No. of poles	6
Field coil	-
Engagement	-
Control	solenoid
Armature shaft endfloat mm	0.15 - 0.45
Data for bench test	
Operating test (*):	
current A	360 - 380
speed rpm	1150
voltage V	8.15
torque developed daNm	1.30
Engagement test (*):	
current A	680 - 700
voltage V	4.9
torque developed daNm	3.11
Free running test (*):	
current A	60 - 80
voltage V	11.1
speed rpm	4040
Contactor	
Winding resistance (*) pull-in Ω	0.33 - 0.37
Winding resistance (*) hold-in Ω	1.13 - 1.27
Lubrication	
Internal splines and shaft bushes	VS⁺ SAE 10 W
Engagement sleeve and intermediate disc	TUTELA MR3

(*) Data measured at an ambient temperature of 20°C.

NOTE *During overhaul, the insulation between the commutator segments need not be undercut*

		1747 16v
ALTERNATOR		
Tipo		M.Marelli A115I-14V-38/65A	M. Marelli A127IR-14-55/100A (●)
System nominal voltage	V	14	14
Maximum current	A	65	100
Nominal current at 1800 rpm	A	38	55
Nominal current at 6000 rpm	A	65	100
Field winding resistance between the slip rings (*)	Ω	2.8±5%	2.6 ± 5%
Direction of rotation (viewed from drive side)		clockwise	
Power rectifier diodes		preconstituted bridge	

(*) Data measured at an ambient temperature of 20°C.
(●) For vehicles with air conditioner.

		Built in electronic
VOLTAGE REGULATOR		
Model		RTM 151 B
Test alternator speed	rpm	7000
Temperature stabilization current	A	-
Test current	A	-
Regulation voltage (*)	V	14.05 - 14.35

(*) Data measured at an ambient temperature of 20°C.

ENGINE

1850184000 Wrench for removing/refitting spark plugs

1852154000 Special wrench with hex-slotted head for securing cylinder head

1852161000 Tool for removing timing variator

1860183000 Piston ring compressor (⌀75-110 mm) for removing/refitting piston rings

1860395000 Drift for dismantling valve guides

1860454000 Tool for fitting valve guide seals

1860470000 Tool for resting cylinder head during overhaul

1860494000 Too for removing and refitting air conditioner compressor electromagnetic coupling

1860644020 Part for removing and refitting valves

1860700000 Band (⌀60-125 mm) for installing normal and oversize pistons in cylinders

1860758000 Tool for removing cartridge oil filter

1860786000 Tool for supporting valves

1860787000 Special tool for supporting valves

1860788000 Part for removing and refitting valves

1860790000 Lever for removing and refitting valves (to be used with 1860644020, 1860786000, 1860787000 and 1860788000)

1860812000 Drift for fitting valve guides

1860813000 Guide for fitting oil seal on valve guides

1860815000 Adaptor for rotating crankshaft

1860816000 Drift for fitting crankshaft front oil seal

1860817000 Tool for centring crankshaft rear oil seal

1860821000 Drift for removing and refitting small end bush

1860824000 Tool for fitting camshaft seal, exhaust side

1860831000 Wrench for rotating timing sprockets

1860833000 Hex-slotted wrench for removing-refitting oil sump

1860834000 Hex-slotted wrench for removing-refitting oil sump

1860835000 Valve guide oil seal puller

1860836000 Crankshaft pulley locking tool

1860844000 Tool for fitting camshaft seal, inlet side

1860845000 Wrench for tensioning timing belt

1860846000 Flywheel locking tool

1860848000 Wrench for camshaft sprocket, exhaust side (to be used with 1860831000)

1860856000 Wrench for camshaft sprocket, inlet side

1860859000 Adaptors for removing-refitting power unit (to be used with 1860860000)

1860860000 Support for removing-refitting power unit

1861001041 Pair of bracket for securing engine to rotary stand

1870697000 Camshaft timing tool

1890385000 Reamer for valve guide bores

1895868000 Valve leak tester

1895897000 Goniometric wrench for angle tightening

CLUTCH

1870447000 Clutch disc centering pin