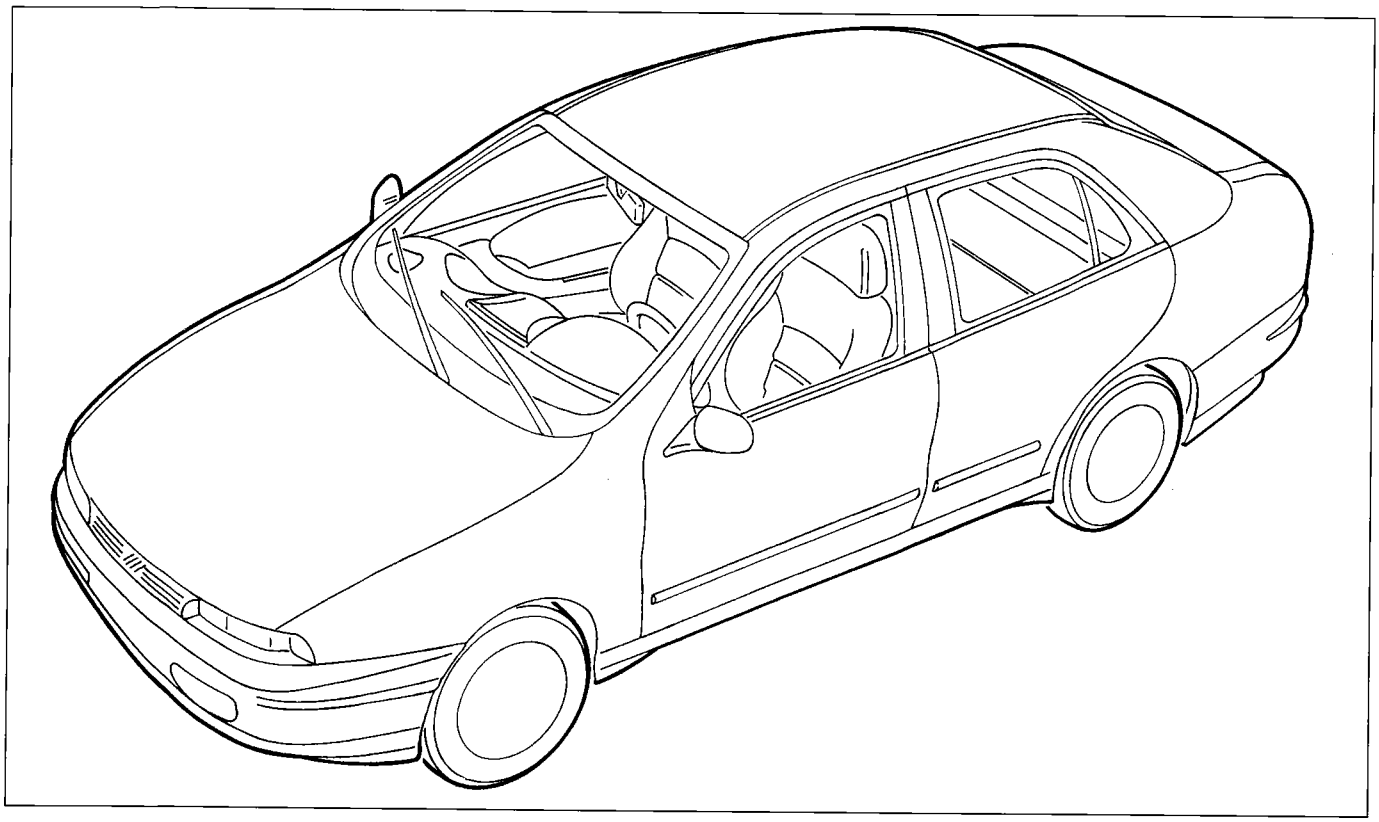
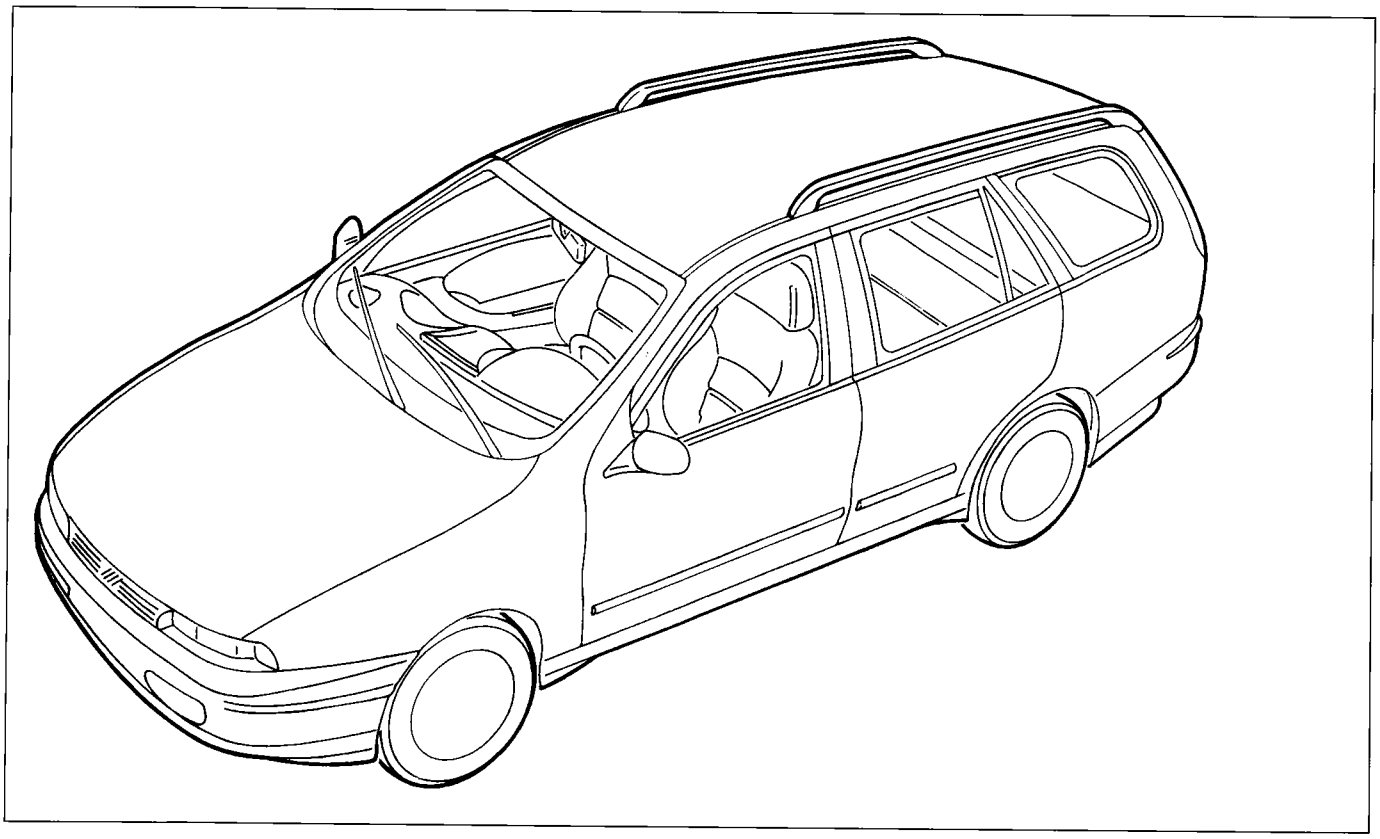
Index

00.



Marea 3/4 front view

P4F001A01



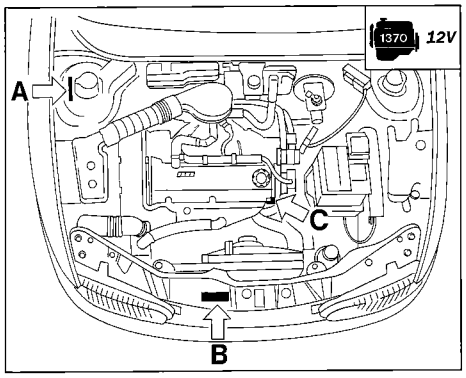
P4F001A02

Marea Weekend 3/4 front view

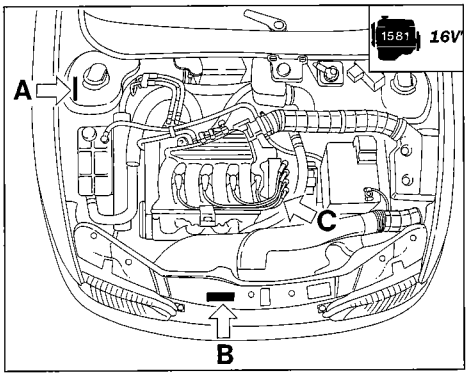
	CHASSIS	ENGINE	VERSION	MAREA	MAREA WEEKEND	GEARBOX	
						1 3 5 / 2 4 R	
1370 12V	ZFA 185 000	182 A3.000	185 AX A1A 00	●		●	
			185 BX A1A 04		●		
1581 16V		182 A4.000	185 AX B1A 01	●		●	
			185 AX B1A 01B(▲)	●			
			185 AX B1A 01C(■)	●			
			185 BX B1A 05		●		
			185 BX B1A 05B(▲)		●		
			185 BX B1A 05C(▲)		●		
			185 AX B11 08	●			●
			185 BX B11 12		●		
1747 16V		182 A2.000	185 AX C1A 02	●		●	
			185 AX C1A 02B(▲)	●			
			185 AX C1A 02C(■)	●			
			185 BX C1A 06		●		
			185 BX C1A 06B(▲)		●		
			185 BX C1A 06C(■)		●		
1998 20V		182 A1.000	185 AX D1A 03	●		●	
			185 AX D1A 03B(■)	●			
			185 BX D1A 07		●		
			185 BX D1A 07B(■)		●		
1910 TD 75		182 A8.000	185 AX F1A 10	●		●	
			185 AX F1A 14		●		
1910 TD 100		182 A7.000	185 AX E1A 09	●		●	
			185 BX E1A 13		●		
2387 TD		185 A2.000	185 BX G1A 11	●		●	
			185 BX G1A 15		●		

(▲) Versions for specific markets (France)

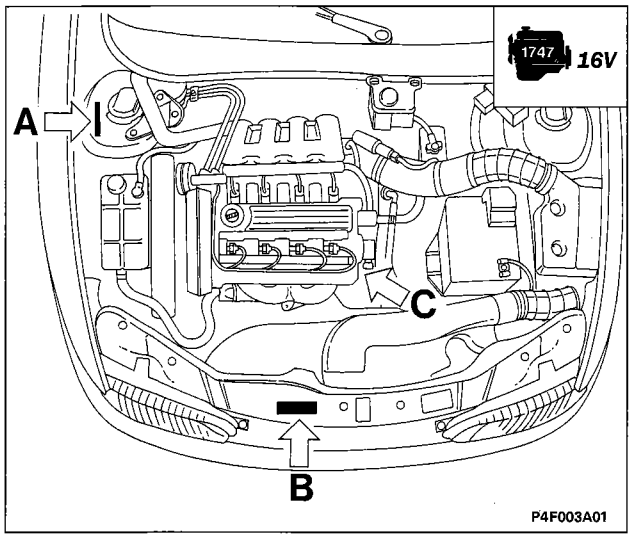
(■) Voluntary for Germany

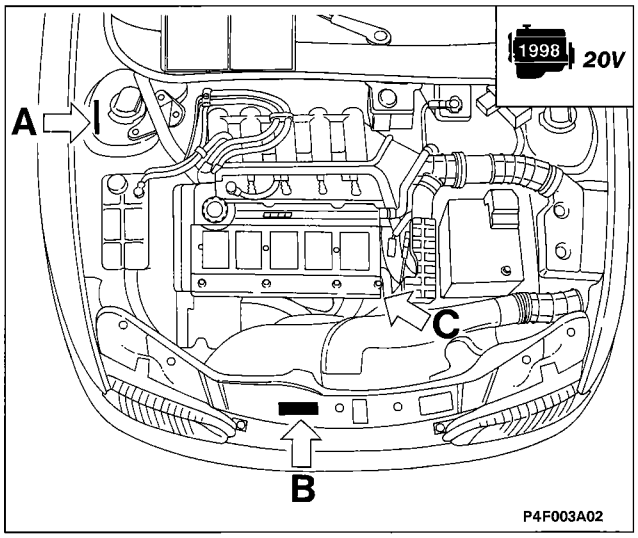


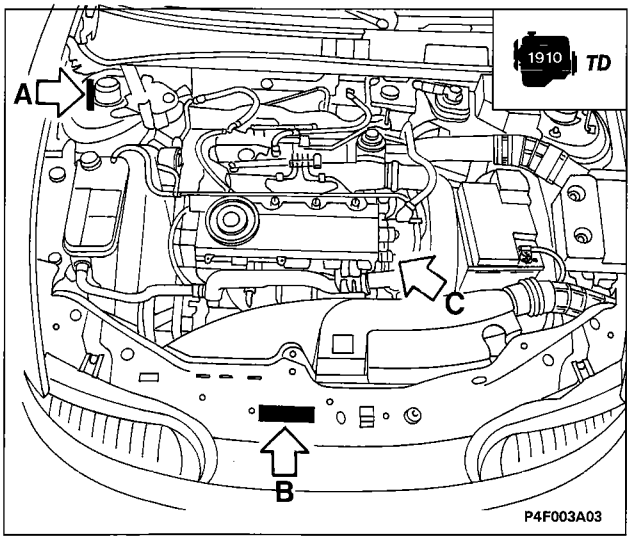
P4F002A01

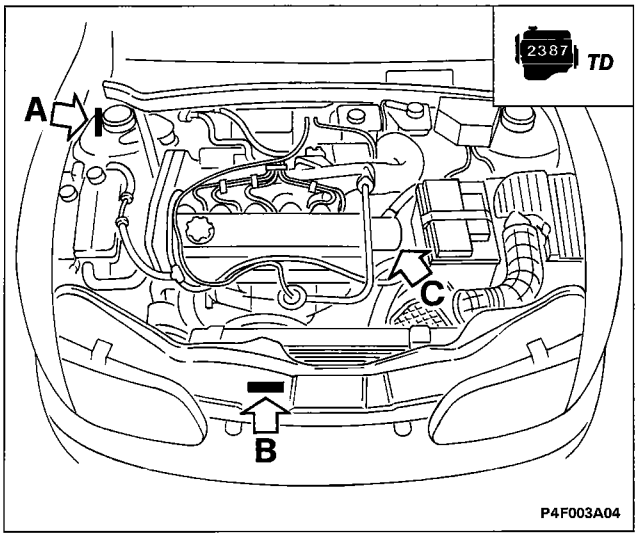


P4F002A02





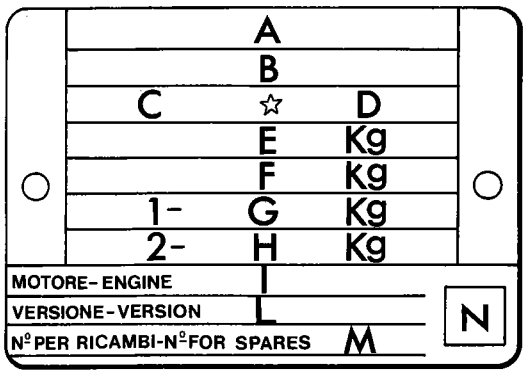




A. Vehicle type identification code and chassis manufacture number

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

C. Engine type and number



F4F003A01

A. Name of manufacturer
B. Homologation 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. Engine type
L. Bodywork version code
M. Spares number
N. Correct value of smoke coefficient (only for diesel engines)

WEIGHTS (in kg)

ENGINE TYPE	1370 12V	1581 16V	1581 16V C.A.	1747 16V	1998 20V
Marea	1085	1140	1165	1195	1255
Marea Weekend	1145	1200	1225	1255	1315
Marea +590 = (575)*	1675	1730	1755	1785	1830
Marea Weekend +595 = (580)*	1740	1795	1820	1850	1895
Maximum permissible loads on the axles ■	1000	1000	1000	1000	1000
	1000	1000	1000	1000	1000
Maximum permissible load on the roof	80	80	80	80	80
Load on the tow hook (trailer with braking system)	70	70	70	70	70
Without braking system	400	400	400	400	400
With braking system	1200	1200	1200	1200	1300

■ Loads which must never be exceeded

(*) Specific values for 1998 20v version

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

WEIGHTS (in kg)

ENGINE TYPE	1910 TD 75	1910 TD 100	2387 TD
Marea	1185	1190	1295
Marea Weekend	1245	1250	1355
Marea +590 = (5 persons + 240)	1775	1780	1885
Marea Weekend +595 = (5 persons + 245)	1840	1845	1950
Maximum permissible loads on the axles ■	1000	1000	1000
	1000	1000	1000
Maximum permissible load on the roof	80	80	80
Load on the tow hook (trailer with braking system)	70	70	70
Without braking system	400	400	400
With braking system	1300	1300	1400

■ Loads which must never be exceeded

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

ENGINE TYPE		1370 12V	1581 16V	1581 16V C.A.	1747 16V	1998 20V
Speed kph (average load)  (*) For Marea Weekend version	1	45	46	MAX 187 (185)*	49	56
	2	81	80		85	87
	3	118	124		125	129
	4	156	173		164	169
	5	172 (170)*	187 (185)*		195 (193)*	207 (205)*
	R	46	46		49	51
 Pendenza fully laden %	Marea	34	36	32	38	39
	Marea Weekend	31	33	30	35	36
Fuel consumption directive 80/1268/CEE (*) (litres/100 km) 	Urban cycle (A) – Marea	9,2	9,7(9,6)●	11,1	9,9(10)●	11,1
	Urban cycle (A) – Marea Weekend	9,4	9,7(9,6)●	11,1	10,1(10,2)●	11,1
	Constant speed 90 kph (B) – Marea	5,4	5,7(5,5)●	5,9	5,9(5,6)●	7,0
	Constant speed 90 kph (B) – Marea Weekend	5,5	5,9(5,7)●	6,1	6,0(5,7)●	7,2
	Constant speed 120 kph (C) – Marea	7,1	7,5(7,2)●	7,7	7,6(7,1)●	8,6
	Constant speed 120 kph (C) – Marea Weekend	7,2	7,8(7,5)●	8,0	7,8(7,3)●	8,8
	Average consumption (CCMC proposal) $\frac{A+B+C}{3}$ – Marea	7,2	7,6(7,4)●	8,2	7,8(7,6)●	8,9
	Average consumption (CCMC proposal) $\frac{A+B+C}{3}$ – Marea Weekend	7,4	7,8(7,6)●	8,4	7,9(7,7)●	9,0
Fuel consumption directive 93/116/CE (litres/100 km)	Urban – Marea	11,6	11,3	13,8	11,5(11,2)●	14,2
	Urban – Marea Weekend	11,9	11,5	14,1	11,8(11,5)●	14,3
	Extra-urban – Marea	6,1	6,6(6,5)●	8,3	6,6(6,3)●	7,3
	Extra-urban – Marea Weekend	6,3	6,6(6,5)●	8,5	6,8(6,5)●	7,4
	Combined – Marea	8,1	8,3(8,2)●	10,3	8,4(8,1)●	9,8
	Combined – Marea Weekend	8,4	8,4(8,3)●	10,6	8,6(8,3)●	9,9
CO_2 exhaust emissions (g/km)	Marea	193	197(195)●	246	199(192)●	234
	Marea Weekend	199	200(198)●	251	205(198)●	237

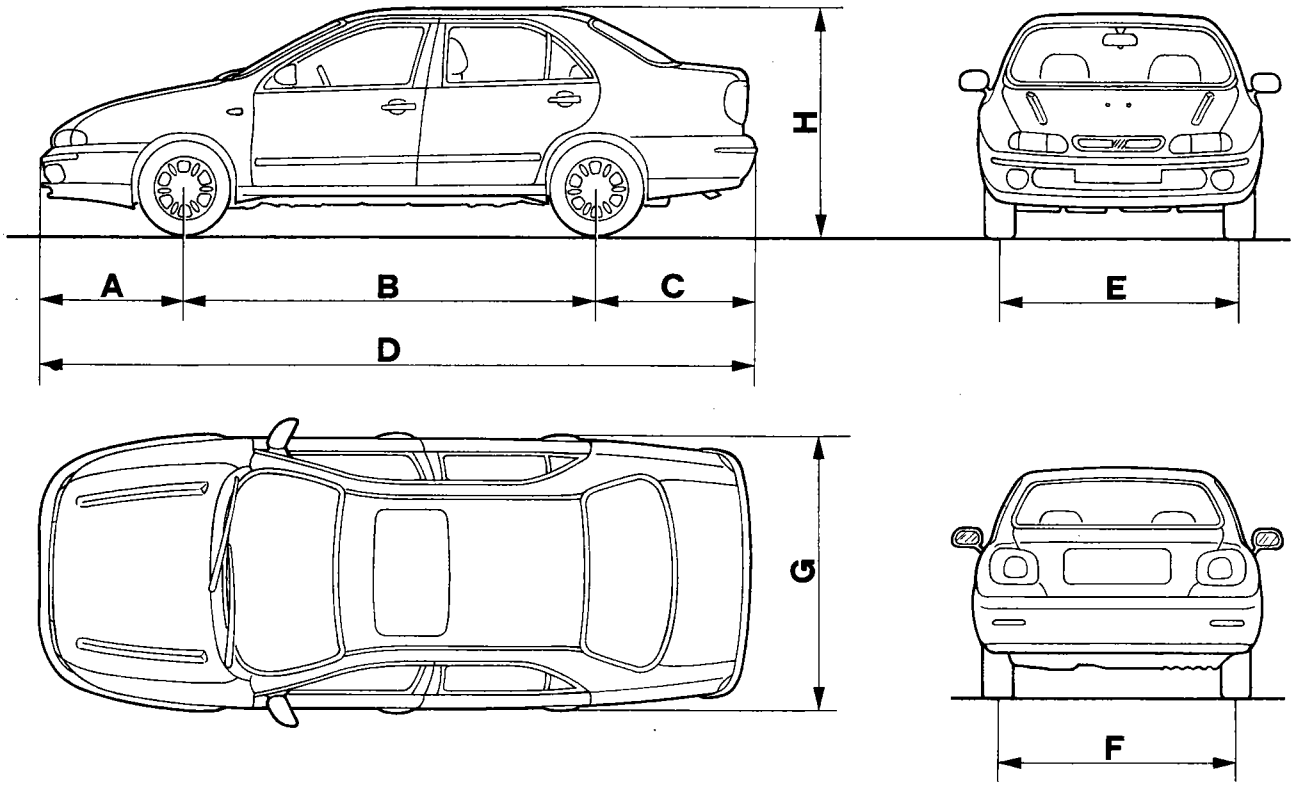
The fuel consumption figures according to directive 93/116/CE have been defined in the course of homologation tests involving:
- an urban cycle which includes a cold start followed by a varied urban cycle simulation.
- an extra-urban cycle which includes frequent acceleration in all gears simulating normal out of town usage. The speed varies between 0 and 120 kph.
- The average combined consumption includes 37% of the urban cycle and 63% of the extra-urban cycle.

The type of journey, traffic conditions, driving styles, atmospheric conditions, trim level/equipment/accessories, whether a roof rack is fitted, the presence of special equipment and the general state of the vehicle can lead to fuel consumption figures which differ from those obtained through the above mentioned procedures.
The CO_2 exhaust emissions (in g/km) are measured during the average combined cycle
(●) Versions for specific markets (France) (*) See specific figures at the foot of the next page

ENGINE TYPE			1910 TD 75	1910 TD 100	2387 TD
Speed kph (average load)		1	36	36	36
		2	62	62	61
		3	96	96	101
		4	135	135	141
		5	167 (165)*	180 (179)*	195 (193)*
(*) For Marea Weekend version		R	36	36	34
Maximum climable gradient fully laden %		*Marea*	37	40	41
		Marea Weekend	34	37	38
Fuel consumption directive 80/1268/CEE (litres/100 km)	Urban cycle (A)	*Marea*	7,6	7,6	8,1
		Marea Weekend	7,9	7,9	8,4
	Constant speed 90 kph (B)	*Marea*	4,5	4,5	5,2
		Marea Weekend	4,6	4,6	5,4
	Constant speed 120 kph (C)	*Marea*	6,5	6,5	7,0
		Marea Weekend	6,6	6,6	7,1
	Average consumption (CCMC proposal) $\frac{A + B + C}{3}$	*Marea*	6,2	6,2	6,8
		Marea Weekend	6,4	6,4	6,9
Fuel consumption directive 93/116/CE (*) (litres/100 km)	Urban	*Marea*	8,5	8,7	10,2
		Marea Weekend	8,7	8,9	10,3
	Extra-urban	*Marea*	5,1	5,4	6,0
		Marea Weekend	5,3	5,6	6,1
	Combined	*Marea*	6,4	6,7	7,5
		Marea Weekend	6,5	6,8	7,7
CO_2 exhaust emissions (g/km)		*Marea*	169	176	199
		Marea Weekend	173	180	203

The fuel consumption figures according to directive 80/1268/CEE have been defined in the course of official tests and in accordance with procedures established by legal regulations. In particular, the bench tests measure simulated urban cycle figures whilst consumption at constant speeds of 90 and 120 kph are measured directly on a flat, dry road and in equivalent bench tests.

(*) See specific figures at the foot of page 6

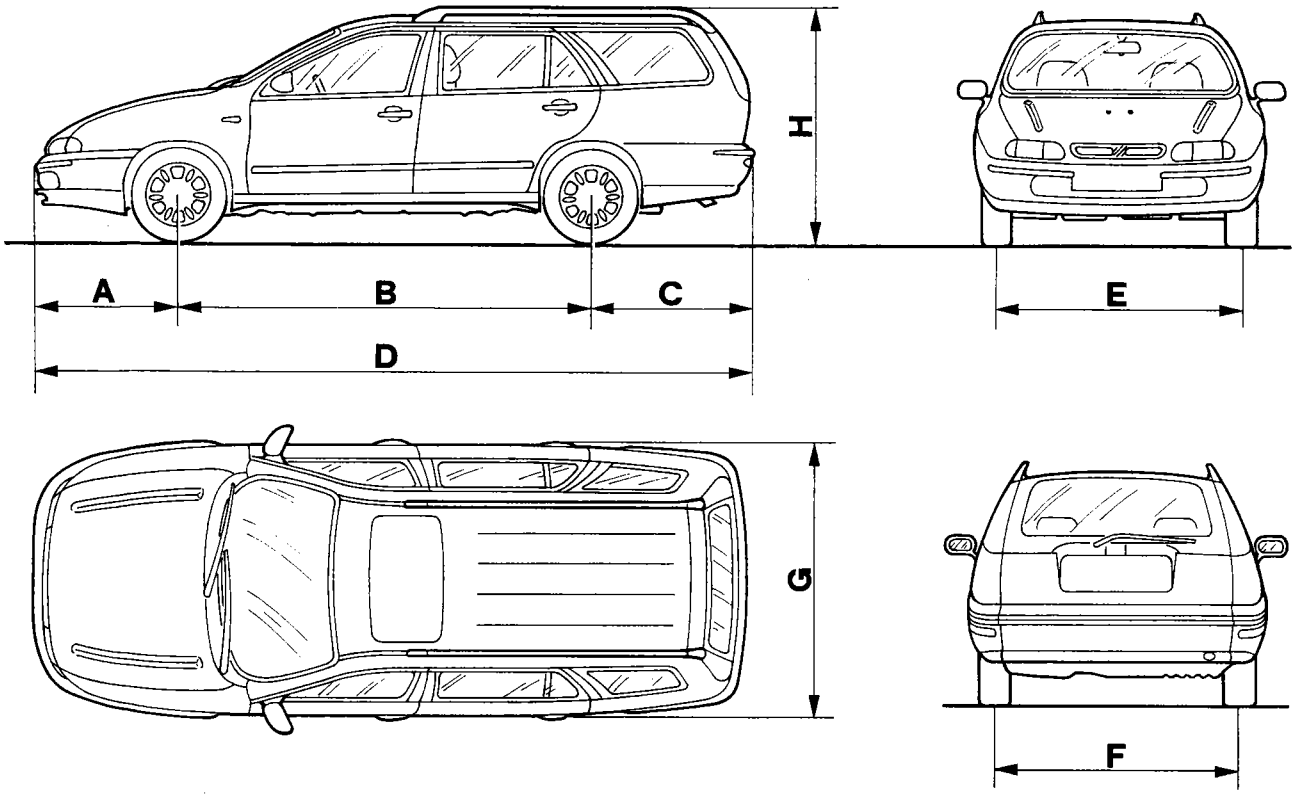


Volume of luggage compartment (VDA standards): 430 dm³
The height refers to an unladen car

P4F008A01

Engine type	DIMENSIONS (mm)							
	A	B	C	D	E	F	G	H
1370 12V	883	2540	955	4378	1473,5	1444,5	1741	1420
1581 16V	883	2540	955	4378	1473,5 (1461,5)*	1444,5 (1432,5)*	1741	1420
1581 16V C.A.	883	2540	955	4378	1461,5	1432,5	1741	1420
1747 16V	883	2540	955	4378	1461,5	1432,5	1741	1420
1998 20V	883	2540	955	4378	1461,5	1432,5	1741	1415
1910 TD 75	883	2540	955	4378	1473,5	1444,5	1741	1420
1910 TD 100	883	2540	955	4378	1473,5 (1461,5)*	1444,5 (1432,5)*	1741	1420
2387 TD	883	2540	955	4378	1461,5	1432,5	1741	1415

(*) With 185/65 R14 86H tyres



Volume of luggage compartment (VDA standards):
- with rear seat in normal usage position: 500 dm³
- with rear seat folded over: 1540 dm³

Engine type	DIMENSIONS (mm)							
	A	B	C	D	E	F	G	H
1370 12V	883	2540	1061	4484	1473,5	1444,5	1741	1500
1581 16V	883	2540	1061	4484	1473,5 (1461,5)*	1444,5 (1432,5)*	1741	1500
1581 16V C.A.	883	2540	1061	4484	1461,5	1432,5	1741	1500
1747 16V	883	2540	1061	4484	1461,5	1432,5	1741	1500
1998 20V	883	2540	1061	4484	1461,5	1432,5	1741	1495
1910 TD 75	883	2540	1061	4484	1473,5	1444,5	1741	1500
1910 TD 100	883	2540	1061	4484	1473,5 (1461,5)*	1444,5 (1432,5)*	1741	1500
2387 TD	883	2540	1061	4484	1461,5	1432,5	1741	1495

(*) With 185/65 R14 86H tyres

Capacities	Unit		Quantity dm³(l)	Quantity (kg)
Petrol ⩾ O.R. 95 Unleaded	1370-1581-1747-1998		63	–
Diesel	1910 TD-2387 TD		63	–
50% + (▲) Paraflu FIAT 11	Total capacity of cooling system	1370	6(5,6■)	–
		1581	7(6,4■)	–
		1747	6,7(6,2■)	–
		1910 TD 75	6,55(6,8■)	–
		1910 TD 100	6,3(6,55■)	–
		1998	7,35(7,2■)	–
		2387 TD	6,5(6,5■)	–
Petrol engines: SELENIA 20K (SAE 10 W/40)	Total capacity	1370	4,3	3,8
		1581	4,5	4
		1747	4,6	4,1
		1998	5,5	4,7
		1910 TD 75	4,7	4,2
		1910 TD 100	5	4,35
		2387 TD	5,8	5,1
Diesel engines SELENIA Turbo Diesel (SAE 15 W/40)	Partial capacity (periodic replacement)	1370	4,1(3,9●)	3,7(3,5●)
		1581	3,8(3,5●)	3,4(3,1●)
		1747	4,3(3,9●)	3,85(3,5●)
		1998	5(4,5●)	4,45(4●)
		1910 TD	4,5(4,2●)	4(3,75●)
		2387 TD	5,3(5●)	4,7(4,4●)
a= TUTELA ZC 75 Synth (1 3 5 2 4 R)	1370-1747-1910 TD	a	1,7	1,5
b = TUTELA GI/2	1581-1998 2387 TD	a	2	1,8
	1581	b	4,3	3,9
a = TUTELA GI/A	a	a	–	0,8
b = TUTELA MRM2	b	b	–	0,003
TUTELA TOP 4 (270°C)	Total capacity	w/out ABS	0,40	–
		with ABS	0,45	–
+ AREXONS DP1	3%		5	–
	~ - 10°C 50%		6,8	–
	~ - 20°C 100%			

(▲) Distilled water (●) Engine sump only (■) For versions with air conditioning

Service News

Copyright by Fiat Auto 10/97

Fiat Auto S.p.A
D.M.C. - M.P.S. - Servizi Post Vendita
Tecnologie Assistenziali

Various models

models: Fiat Bravo-Fiat Brava - Fiat Marea - Fiat barchetta - Coupé Fiat

00
15.97

0010 T 120 AA **CHANGING ENGINE OIL**

Service literature update with new oil capacity figures

Cancels and replaces the subject in question published in Service News 4/97 through the variation of the figures for the Fiat Bravo TD, Fiat Brava TD and Fiat Marea TD

TYPE OF PROBLEM

The oil capacity figures in the "Owner's Handbook" and the Service Manuals are not consistent with actual capacities of the engine.

OPERATIONS IN THE NETWORK

When changing the engine oil stick to the figures given below which update the corresponding ones in the Service Manual and the Owner's Handbook.
Provide the Customer with appropriate information on the subject, as necessary.

Model/version	Engine sump, filter and pipes (1st filling)		Engine sump		Engine sump and oil filter	
	dm³	Kg	dm³	Kg	dm³	Kg
Fiat Bravo 1.6	4,5	4,0	3,5	3,1	3,8	3,4
Fiat Brava 1.6	4,5	4,0	3,5	3,1	3,8	3,4
Fiat Marea 1.6	4,5	4,0	3,5	3,1	3,8	3,4
Fiat Bravo 1.8	4,6	4,1	3,9	3,5	4,3	3,85
Fiat Brava 1.8	4,6	4,1	3,9	3,5	4,3	3,85
Fiat Marea 1.8	4,6	4,1	3,9	3,5	4,3	3,85
Fiat barchetta	4,7	4,2	3,7	3,3	4,0	3,6
Coupé Fiat 1.8	5,0	4,5	4,0	3,6	4,4	3,9

IF14L7

Model/version	Engine sump, filter and pipes (1st filling)		Engine sump		Engine sump and oil filter	
	dm³	Kg	dm³	Kg	dm³	Kg
Fiat Bravo TD 75 and TD 100	5	4,35	4,2	3,75	4,5	4,0
Fiat Brava TD 75 and TD 100	5	4,35	4,2	3,75	4,5	4,0
Fiat Marea TD 75	4,7	4,2	4,2	3,75	4,5	4,0
Fiat Marea TD 100	5	4,35	4,2	3,75	4,5	4,0
Fiat Marea TD 125	5,8	5,1	5,0	4,4	5,3	4,7

Service News

Copyright by Fiat Auto 4/97

Fiat Auto S.p.A
D.M.C. - M.P.S. - Servizi Post Vendita
Tecnologie Assistenziali

Various models

models: Fiat Bravo-Fiat Brava - Fiat Marea - Fiat barchetta - Coupé Fiat

00
15.97

0010 T 120 AA **CHANGING ENGINE OIL**

service literature update with new oil figures.

TYPE OF PROBLEM

The oil figures given in the "Owner's Handbooks" and the Service Manuals are not consistent with the actual engine capacities

OPERATIONS IN THE NETWORK

When changing the engine oil, refer to the figures given below which update the corresponding figures given in the Service Manual and the Owner's Handbook.

Please provide the Customer with suitable information on this subject, as appropriate.

Model/version	Engine sump, filter and pipes (1st filling)		Engine sump		Engine sump and oil filter	
	dm³	Kg	dm³	Kg	dm³	Kg
Fiat Bravo 1.6	4,5	4,0	3,5	3,1	3,8	3,4
Fiat Brava 1.6	4,5	4,0	3,5	3,1	3,8	3,4
Fiat Marea 1.6	4,5	4,0	3,5	3,1	3,8	3,4
Fiat Bravo 1.8	4,6	4,1	3,9	3,5	4,3	3,85
Fiat Brava 1.8	4,6	4,1	3,9	3,5	4,3	3,85
Fiat Marea 1.8	4,6	4,1	3,9	3,5	4,3	3,85
Fiat barchetta	4,7	4,2	3,7	3,3	4,0	3,6
Coupé Fiat 1.8	5,0	4,5	4,0	3,6	4,4	3,9

IF11D7

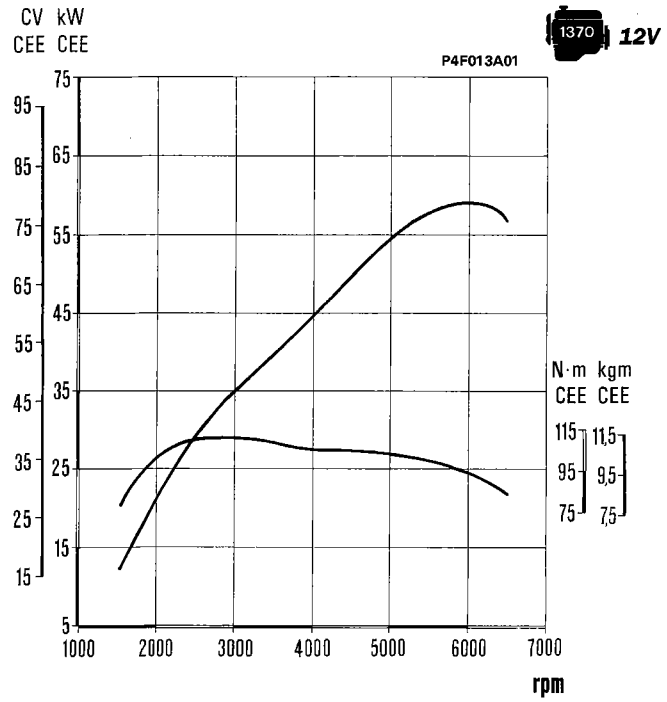
Model/version	Engine sump, filter and pipes (1st filling)		Engine sump		Engine sump and oil filter	
	dm³	Kg	dm³	Kg	dm³	Kg
Fiat Bravo TD 75 and TD 100	4,7	4,2	4,2	3,75	4,5	4,0
Fiat Brava TD 75 and TD 100	4,7	4,2	4,2	3,75	4,5	4,0
Fiat Marea TD 75 and TD 100	4,7	4,2	4,2	3,75	4,5	4,0
Fiat Marea TD 125	5,9	5,2	5,0	4,4	5,3	4,7

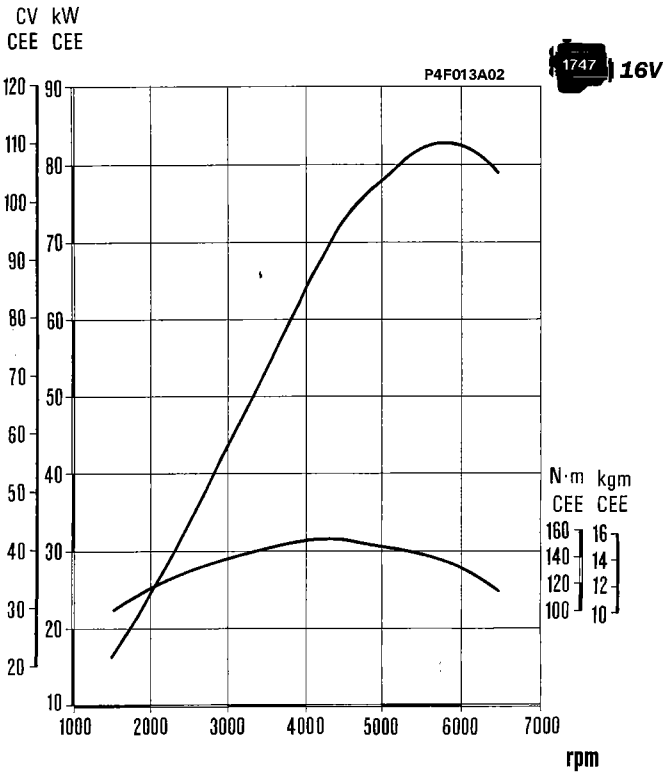
Name of product	Description International designation	Application
SELENIA 20K	Semi-synthetic multigrade engine oil grade SAE 10W40. Exceeds specifications ACEA A3-96/CCMC G5 and API SH	Temperature - 25°C ÷ 40°C
SELENIA Turbo Diesel SAE 15 W/40	Multigrade, mineral or semisynthetic engine oil grade SAE 15W40. Exceeds specifications ACEA B3-96/CCMC PD2 and API CD	Temperature - 15°C ÷ 40°C (*)
TUTELA ZC75 SYNTH	SAE 75W EP oil. Satisfies standards MIL-L-2105 and API GL4	Manual gearboxes and differentials
TUTELA W 90/MDA	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 hydraulic power steering.	Hydraulic power steering
TUTELA GI/2	"DEXRON II" type oil for automatic transmissions	Automatic gearboxes
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, st. rod, various comps.
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 hyd. op. 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	Mix. of alcohol, H20 & surf. act. agents CUNA NC 956-11	To be used neat or diluted in windscreen washer systems
Paraflu[11]	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 with protective action for diesel engines	To be mixed with diesel fuel (25 cc per 10 litres)

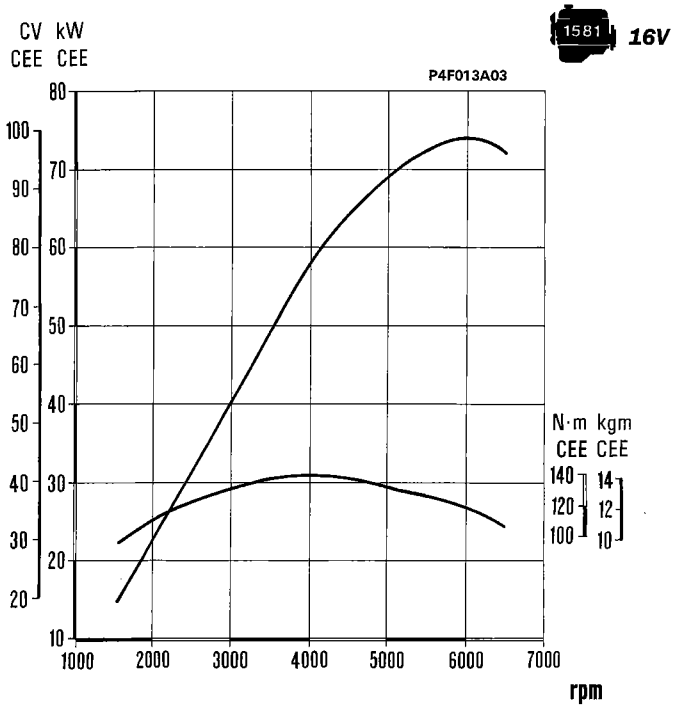
(*) For temperatures below -15°C use SAE 10W40 grade oils

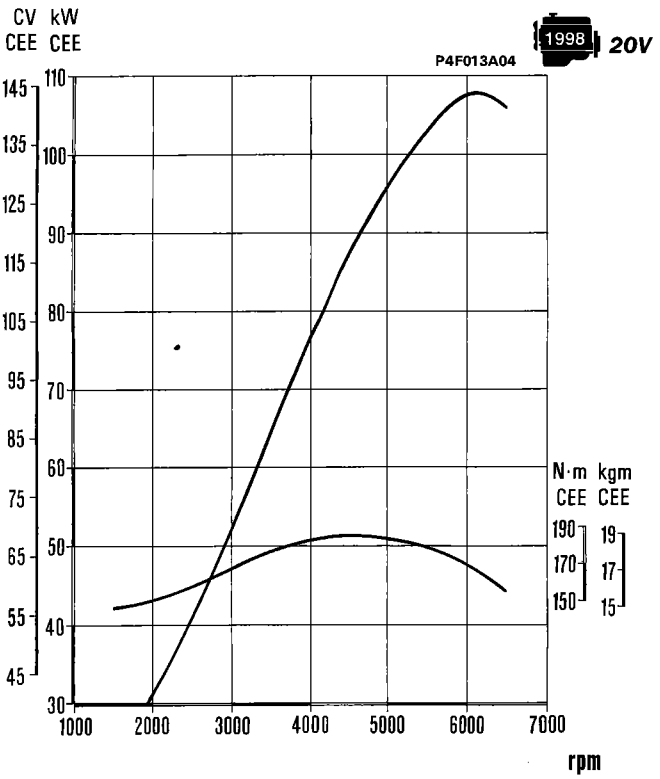
CHARACTERISTICS

			1370 12V	1581 16V	1747 16V	1998 20V
	Cycle		OTTO 4 stroke			
	Timing		single overhead cam	twin overhead cam		
	Type of fuel system		integrated electronic injection/ignition			
	Number of cylinders		4			5
	Cylinder liner (bore)	mm	82	86,4	82	82
	Stroke	mm	64,87	67,4	82,7	75,65
	Capacity	cc	1370	1581	1747	1998
	Compression ratio		9,85±0,15	10,15±0,15	10,3±0,15	10±0,15
	Max. power CEE	kW (CV)	59 (80)	76 (103)	83 (113)	108 (147)
		rpm	6000	5750	5800	6100
	Max. torque CEE	daNm (kgm)	11,2 (11,4)	14,4 (14,7)	15,4 (15,7)	18,6 (19)
		rpm	2750	4000	4400	4500



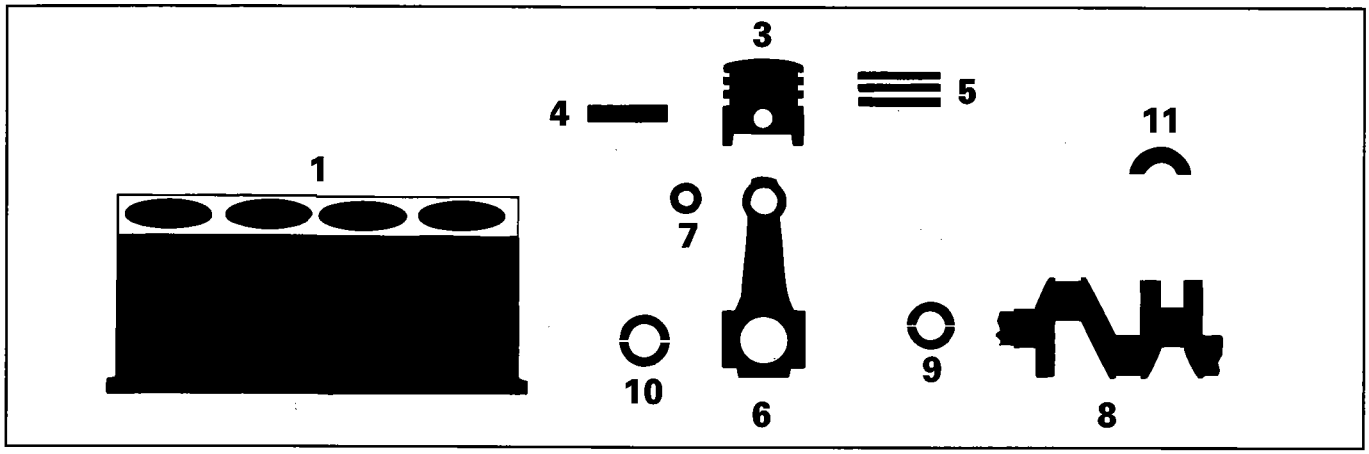


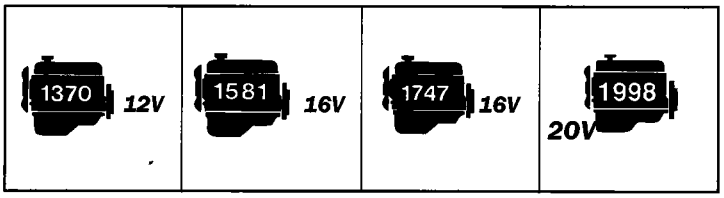


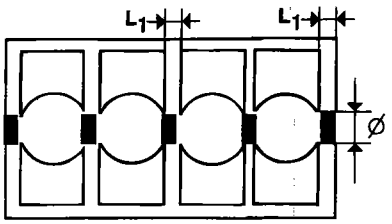
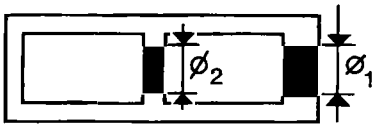
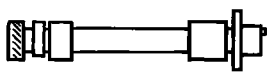
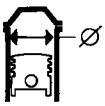
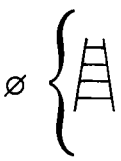


Engine power curves obtained by eec method

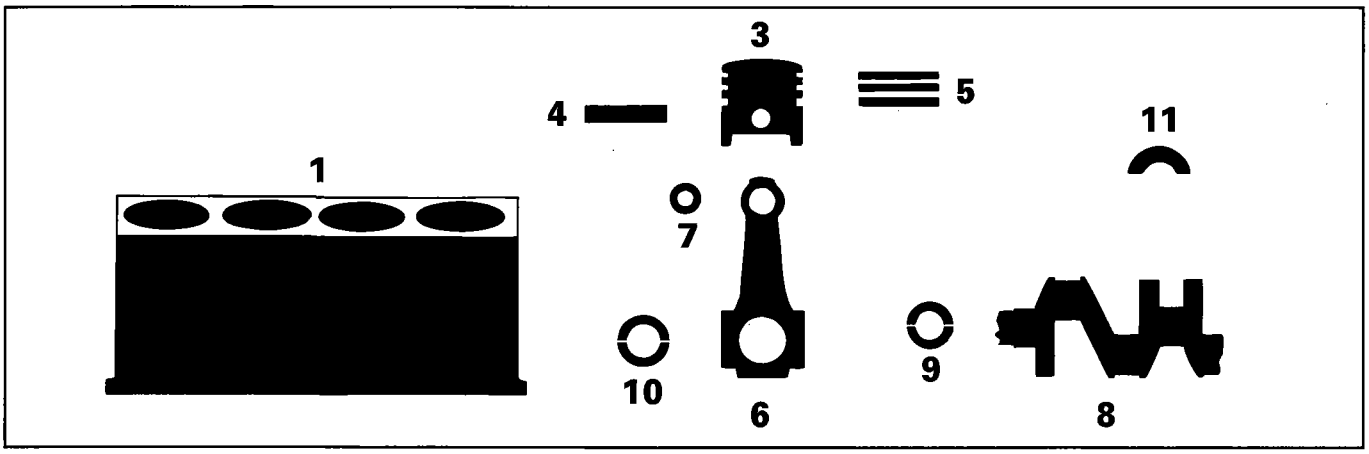
The power curves illustrated can be obtained with the engine overhauled and run in, without a fan and with a silencer and air filter fitted at sea level.





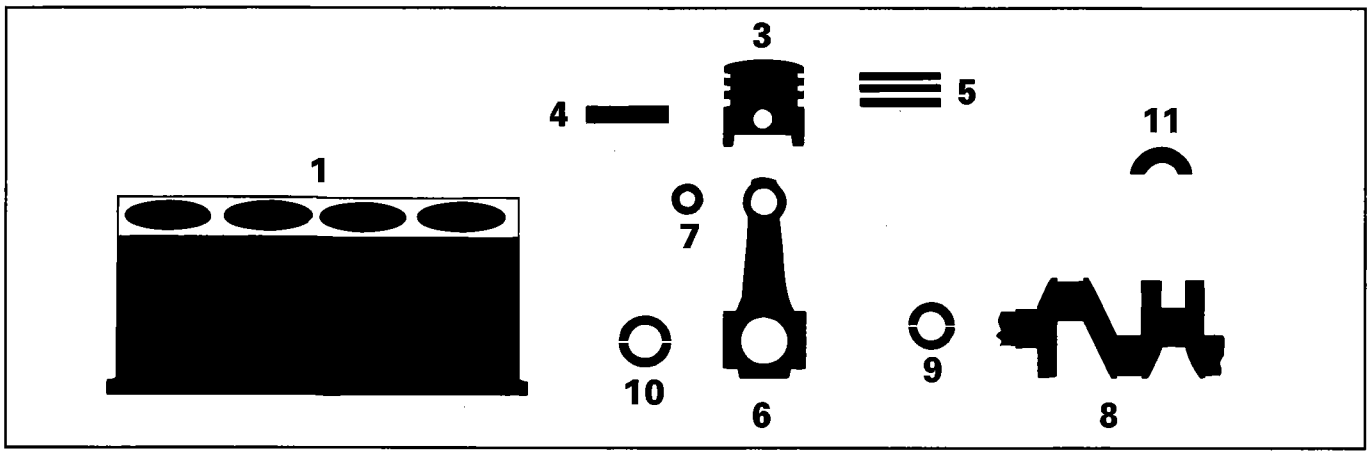
DESCRIPTION		Values in mm			
 Main bearing supports	L	21,72÷21,80	-	21,72÷21,80	
	L1	-	22,14÷22,20	-	
	Ø	56,705÷56,718	54,507÷54,520	56,705÷56,718	63,705÷63,718
1   Auxiliary shaft bush housings	Ø1	-	38,700÷38,730	-	-
	Ø2	-	35,036÷35,066	-	-
 Cylinder bore 	A	82,000÷82,010	86,400÷86,410	82,000÷82,010	
	B	82,010÷82,020	86,410÷86,420	82,010÷82,020	
	C	82,020÷82,030	86,420÷86,430	82,020÷82,030	

DESCRIPTION		1370 12V	1581 16V	1747 16V	1998 20V
		Values in mm			
3 Piston	X	12,5	13,2	12,5	
	A	81,952÷81,962	86,352÷86,362	81,952÷81,962	
	B	81,959÷81,971	86,359÷86,371	81,959÷81,971	
	C	81,968÷81,978	86,368÷86,378	81,968÷81,978	
Piston Ø FIAT >		0,4			
3 Difference in weight between pistons		±5 g			
3-1 Piston Cylinder bore Ø	A	0,038 ÷ 0,058			
	B	0,039 ÷ 0,061			
	C	0,042 ÷ 0,062			
3 Gudgeon pin housing Ø		20,002÷20,007	21,997÷22,001	20,002÷20,007	
4 Ø		19,996÷20,000	21,990÷21,995	19,996÷20,000	
Gudgeon pin Ø FIAT >		0,2			
4-3 Gudgeon pin - Housing		0,002 ÷ 0,011			
3 Piston ring grooves	1	1,540÷1,560	1,525÷1,545	1,540÷1,560	1,520÷1,540
	2	1,530÷1,550	1,510÷1,530	1,530÷1,550	1,510÷1,530
	3	3,020÷3,040	3,010÷3,030	3,020÷3,040	3,010÷3,030

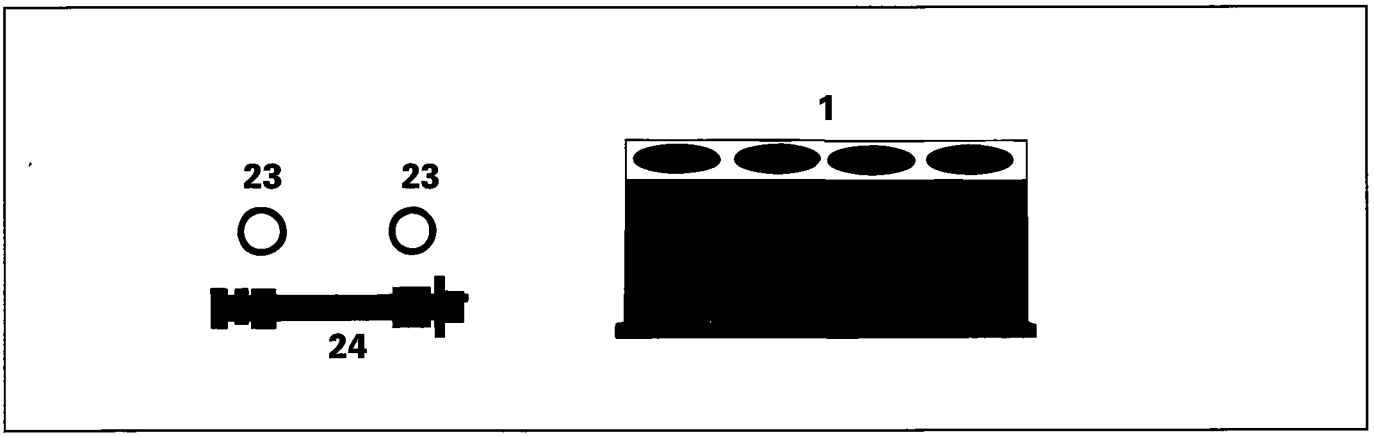


DESCRIPTION		1370 12V	1581 16V	1747 16V	1998 20V
		Values in mm			
5 Piston rings	1	1,470÷1,490		1,475÷1,490	
	2	1,475÷1,490	1,470÷1,490	1,475÷1,490	
	3	2,935÷2,945		2,975÷2,990	
	Ø FIAT >	0,4			
5-3 Piston rings / Piston ring grooves	1	0,050÷0,090	0,035÷0,075	0,050÷0,085	0,030÷0,065
	2	0,040÷0,075	0,020÷0,060	0,040÷0,075	0,020÷0,055
	3	0,075÷0,105	0,065÷0,095	0,030÷0,065	0,020÷0,055
5-1 Opening at end of piston rings in cylinder bore	1	0,250÷0,500	0,200÷0,450	0,300÷0,500	
	2	0,300÷0,500	0,250÷0,500	0,300÷0,500	
	3	0,400÷1,400	0,400÷1,400	0,250÷0,450	0,250÷0,500
6 Small end bush or pin housing	Ø1	22,939÷22,972	23,939÷23,972	22,939÷22,972	
Big end bearing housing	Ø2	44,000÷44,012	48,630÷48,646	53,897÷53,909	51,354÷51,366

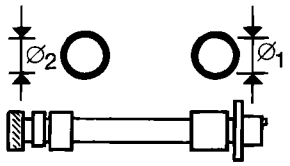
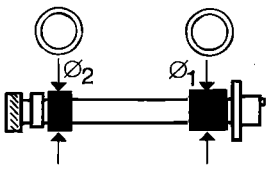
DESCRIPTION			1370 12V	1581 16V	1747 16V	1998 20V
			Values in mm			
7 Small end bush	$\varnothing_1$		23,007÷23,027	24,016÷24,041	23,007÷23,027	
	$\varnothing_2$		20,006÷20,012	22,004÷22,010	20,006÷20,012	
4-7 Gudgeon pin / Small end bush			0,006÷0,016	0,009÷0,020	0,006÷0,020	
7-6 Small end bush / Bush housing			0,035÷0.088	0,044÷0.102	0,035÷0,088	
8 Main journals	$\varnothing_1$	1	52,994÷53,000	50,790÷50,800	52,994÷53,000	59,994÷60,000
		2	52,988÷52,994	50,780÷50,790	52,988÷52,994	59,988÷59,994
		3	52,982÷52,988	-	52,982÷52,988	59,982÷59,988
Crank pins	$\varnothing_2$	A	40,884÷40,890	45,513÷45,523	50,799÷50,805	48,238÷48,244
		B	40,878÷40,884	45,503÷45,513	50,793÷50,799	48,232÷48,238
		C	40,872÷40,878	-	50,787÷50,793	48,226÷48232
	L		-	26,975÷27,025	-	
	L_1		26,575÷26,625	-	26,575÷26,625	
9 Crankshaft bearings	L	1	1,836÷1,840	1,840÷1,844	1,836÷1,840	
		2	1,839÷1,843	1,845÷1,849	1,839÷1,843	
		3	1,842÷1,846	-	1,842÷1846	
	$\varnothing$ FIAT <		0,254 - 0,508			
9-8 Crankshaft bearing - Main journals			0,025÷0,052	0,019÷0,050	0,025÷0,052	

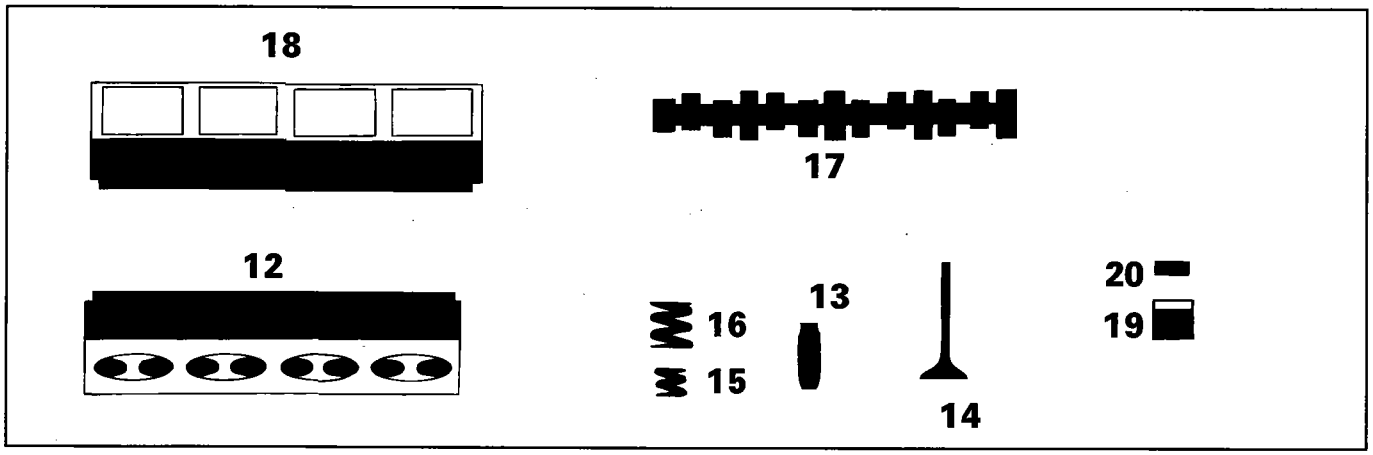


DESCRIPTION			1370 12V	1581 16V	1747 16V	1998 20V
			Values in mm			
10	Big end bearings	L A	1,536÷1,540	1,535÷1,541	1,527÷1,531	1,536÷1,540
		L B	1,539÷1,543	1,540÷1,546	1,530÷1,534	1,539÷1,543
		L C	1,542÷1,546	-	1,533÷1,537	1,542÷1,546
		⌀ FIAT <	0,254 - 0,508			
10–8	Big end bearings - Main journals		0,030÷0,056	0,025÷0,063	0,030÷0,056	
11	Thrust washers	S	2,342÷2,358	2,310÷2,360	2,342÷2,358	
		S FIAT >	0,127			
11–8	Crankshaft end float		0,059÷0,161	0,055÷0,265	0,059÷0,161	



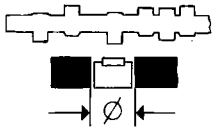
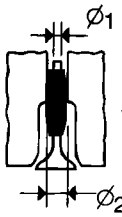
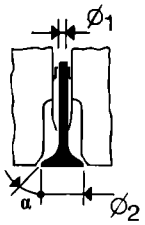
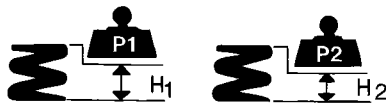
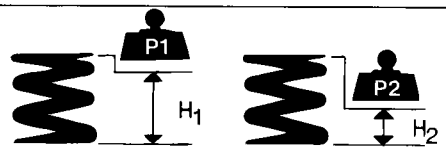
1581 16V

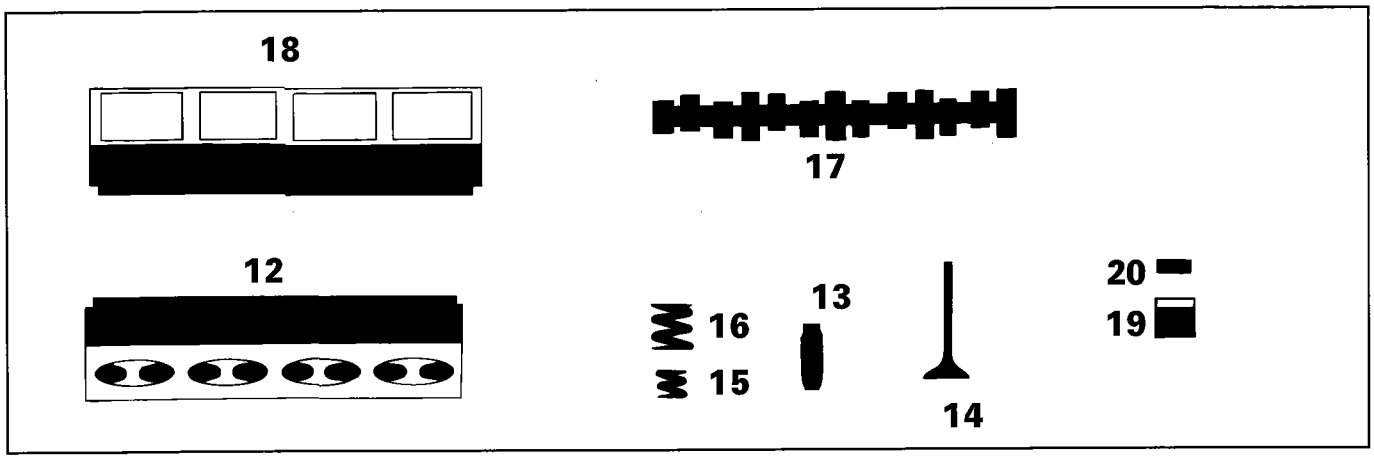
DESCRIPTION		Values in mm
23  Bushes for auxiliary shaft in housing	$\varnothing_1$	35,664 ÷ 35,684
	$\varnothing_2$	32,000 ÷ 32,020
24  Auxiliary shaft bearings	$\varnothing_1$	35,593 ÷ 35,618
	$\varnothing_2$	31,940 ÷ 31,960
23-1  Bushes for shaft Cylinder block seats		must be an interference fit
24-23  Shaft bushes Bushes	$\varnothing_1$	0,046 ÷ 0,091
	$\varnothing_2$	0,040 ÷ 0,080



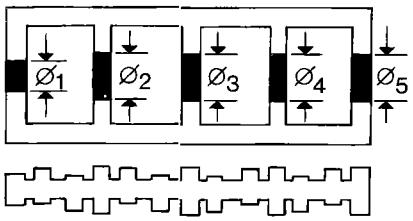
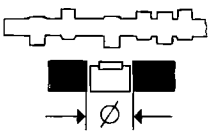
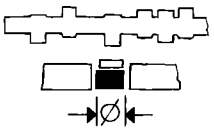
DESCRIPTION		1370 12V	1581 16V	1747 16V	1998 20V
		Values in mm			
Camshaft supports in cylinder head (1370 12V) — 12b	Ø	26,045÷26,070	-	26,045÷26,070	
Camshaft supports in cylinder head (1747 16V, 1998 20V) — 12c	L (*)	19,100÷19,150	-	19,100÷19,150	
Valve guide bore in cylinder head	Ø	12,950 ÷ 12,977			
12 — Valve seat	α (intake)	45° ± 5′			
	α (exhaust)	45° ± 5′			
	L	about 2			
Volume of combustion chamber in cylinder head	cm^3	-	37,5	39	39

(*) Measurement of cap

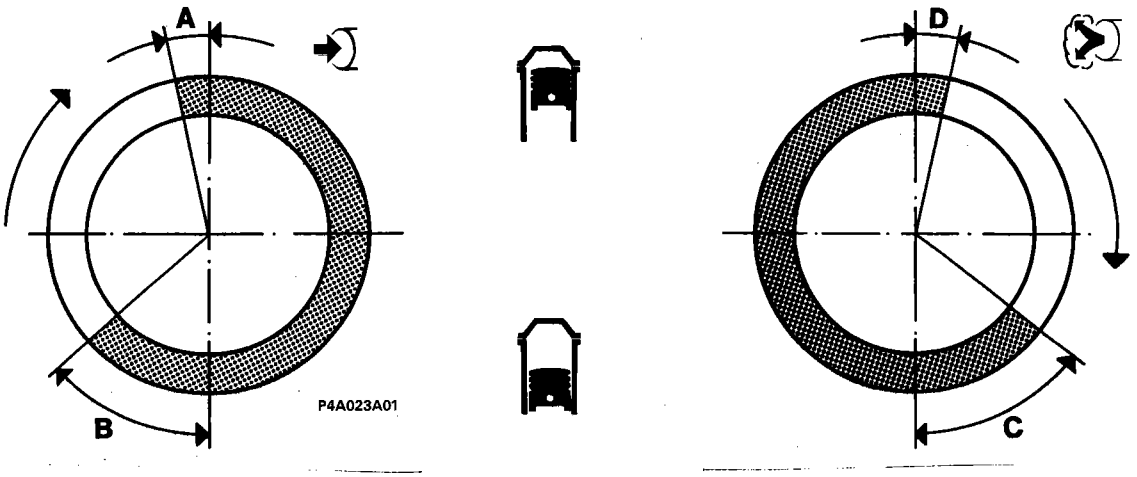
DESCRIPTION		1370 12V	1581 16V	1747 16V	1998 20V
		Values in mm			
12  Tap. housing in cyl. head	Ø	14,000÷14,027	-	33,000÷33,025	
13  Valve guide	Ø1	7,022 ÷ 7,040			
	Ø2	13,010 ÷ 13,030			
	Ø2 FIAT >	0,05 - 0,10 - 0,25			
13-12 Valve guide / Bore in cylinder head		0,033 ÷ 0,080			
14  Valve	Ø1	6,982÷7,000		6,975÷6,990	
	Ø2	30,200÷34,500		33,400÷37,700	29,900÷30,200
	α	45°30′ ± 5′			
	Ø1	6,982÷7,000	6,974÷6,992	6,960÷6,975	
	Ø2	34,500÷35,700	29,750÷30,050	27,900÷28,200	25,900÷26,200
	α	45°30′ ± 5′			
14-13 Valve / Valve guide		0,022÷0,058		0,032÷0,065	
		0,022÷0,058	0,030÷0,066	0,047÷0,080	
15  Internal valve spring	P1	-		9,61÷10,6 daN	11,08÷12,07daN
	H1	-		29,5	29,5
	P2	-		20,11÷22,07daN	21,58÷23,54daN
	H2	-		20	20
16  External valve spring	P1	33,35÷37,28 daN	23,54÷25,7 daN	27,07÷29,43 daN	
	H1	37	32	34	
	P2	55,42÷60,53 daN	46÷49,93 daN	48,46÷52,38 daN	
	H2	28,1	23,5	24,5	



DESCRIPTION		1370 12V	1581 16V	1747 16V	1998 20V
		Values in mm			
Camshaft bearings 1581 16V — 17a	$\varnothing_1$	-	29,944÷29,960	-	
	$\varnothing_2$	-	52,400÷52,415	-	
	$\varnothing_3$	-	52,800÷52,815	-	
1370 12V 1747 16V — 17b	$\varnothing_4$	-	53,200÷53,215	-	
	$\varnothing_5$	-	53,600÷53,615	-	
1998 20V — 17c	$\varnothing$	26,000÷26,015	-	26,000÷26,015	
	L	19,250÷19,330	-	19,250÷19,330	
17a 17b Cam lift		8,9	9	7,5	9
		8,9	8,5	7,5	8
12b-c 17b-c Camshaft bearings Cylinder head supports	radial	0,030÷0,070	-	0,030÷0,070	
	axial	0,100÷0,230	-	0,100 ÷ 0,230	

DESCRIPTION			1370 12V	1581 16V	1747 16V	1998 20V
			Values in mm			
18	 Camshaft bearings in camshaft housing	Ø1	–	29,989÷30,014	–	
		Ø2	–	52,445÷52,470	–	
		Ø3	–	52,845÷52,870	–	
		Ø4	–	53,245÷53,270	–	
		Ø5	–	53,645÷53,670	–	
	 Tappet housings	Ø	–	30,000÷33,025	–	
17-18	 Camshaft bearings Camshaft housing supports		–	0,030÷0,070	–	
19	 Tappet	Ø	13,972÷13,984	32,959÷32,975		
19-12	 Tappet Housing in cylinder head		0,016÷0,055	–	0,025 ÷ 0,066	
19-18	 Tappet - Housing in camshaft housing		–	0,025÷0,066	–	
17-20	 clearance for timing check 		0,45			
			0,45			
	operational clearance 		Hydraulic tappets			

TIMING DIAGRAMS

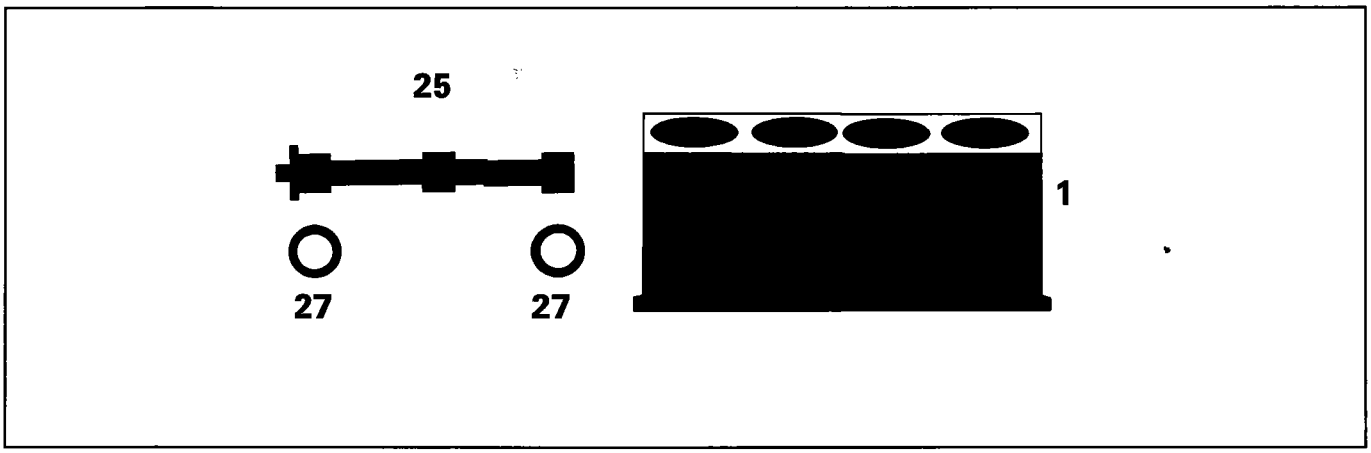


Timing angles

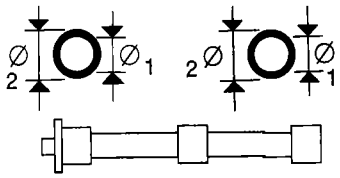
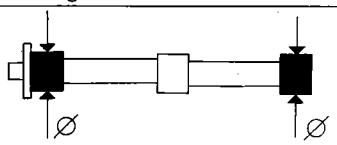
		1370 12V	1581 16V	1747 16V	1998 20V
A — Inlet	opens before TDC	3°	0°	0°	9° (*) after TDC
B	closes after BDC	30°	39°	27°	49° (*)
C — Exhaust	opens before BDC	34°	31°	29°	27°
D	closes after TDC	2°	3°	2° before TDC	2°

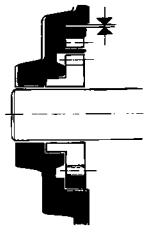
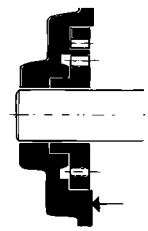
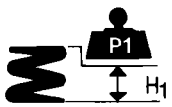
(*) With phase transformer on:

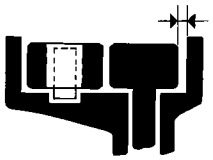
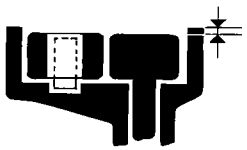
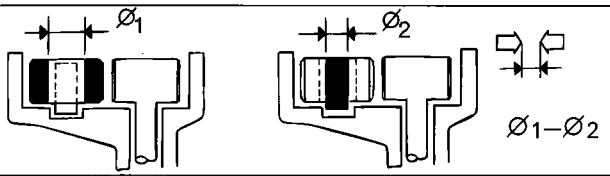
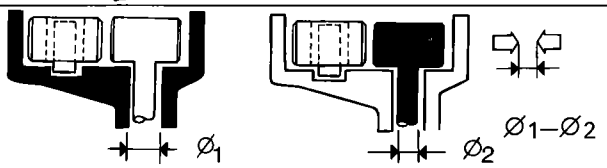
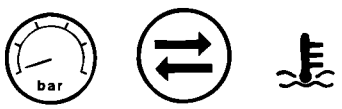
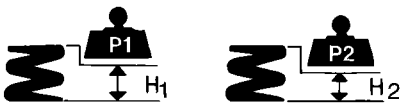
A - opens BTDC = 9°
B - closes ABDC = 31°

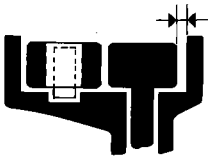
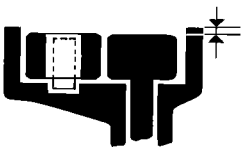
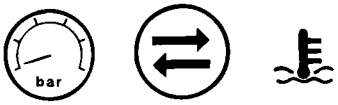
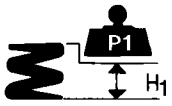


1998 20V

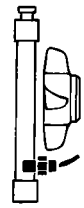
DESCRIPTION		Values in mm
25 Counter-balance shaft operation		through oil pump driven gear
27  Ball bearings for counter-balance shaft	$\varnothing_1$	19,900 ÷ 20,000
	$\varnothing_2$	46,989 ÷ 47,000
25  Counter-balance shaft bearings	$\varnothing$	19,980 ÷ 19,993
1 Bearing seats in cylinder block	$\varnothing$	46,975 ÷ 47,000
27-1 Ball bearings / Cylinder block seats		+0,011 ÷ – 0,025
25-27 Shaft bushes / Ball bearings		+0,020 ÷ – 0,003

		1370 12V	1747 16V
LUBRICATION - Description		Values in mm	
Engine lubrication system		forced circulation via lobe gear pump with cartridge filter in series	
Oil pump		lobe gears	
Pump operated		through crankshaft	
Oil pressure relief valve		incorporated in crankshaft front cover	
 between pump casing housing and driven gear		0,080 ÷ 0,186	
 between the upper side of the gears and the pump cover		0,025 ÷ 0,061	0,025 ÷ 0,070
Full flow filter		cartridge	
Insufficient oil pressure sender unit		electrical	
 Operating pressure at a temperature of 100°C		idling 1 bar at 4000 rpm 4 bar	idling 1,5 bar at 4000 rpm 4 bar
 Oil pressure relief valve spring	P_1	6,28 ÷ 7,03 daN	
	H_1	36	

	1581 16V
LUBRICATION – Description	Values in mm
Engine lubrication system	forced circulation via geared pump with cartridge oil filter in series
Oil pump: type	gears
Pump operated	through auxiliary shaft
Oil pressure relief valve	incorporated in oil pump
Full flow filter	cartridge
Insufficient oil pressure sender unit	electrical
 between the edge of the gears and the pump cover	0,110 ÷ 0,180
 between the upper side of the gears and the pump cover	0,040 ÷ 0,106
	0,015 ÷ 0,048
	0,016÷0,048
 between the drive gear and the driven gear	0,30
 Operating pressure at a temperature of 100°C	idling > 1 bar at 4000 rpm > 4,5 bar
 P1	6,52 ÷ 6,82 daN
H1	22,5
P2	6,92 ÷ 7,21 daN
H2	21

		1998 20V
LUBRICATION		Values in mm
Engine lubrication system		forced circulation, via geared pump with cartridge oil filter in series
Oil pump		geared, located in the crankshaft front cover
Pump operated		through chain operated by the crankshaft
Oil pressure relief valve		incorporated in crankshaft front cover
Full flow filter		cartridge
Insufficient oil pressure sender unit		electrical
 between the edge of the gears and the pump casing		0,110 ÷ 0,180
 between the upper edge of the gears and the pump cover		0,016 ÷ 0,086
 between the drive gear and the driven gear		0,30
 Operating pressure at a temperature of 100°C		idling 1 bar at 4000 rpm 4 bar
 Oil pressure relief valve spring	P_1	11,73 ÷ 12,51
	H_1	35

COOLING SYSTEM

		1370 12V	1581 16V	1747 16V	1998 20V
Cooling circuit		coolant circulation via centrifugal pump, radiator, expansion tank and electric fan operated by thermostatic switch			
Water pump operation		through belt			
 Thermal switch to engage fan (*)	1st stage	90° ÷ 94°C			
	2nd stage	95° ÷ 99°C (●)			
stop	1st stage	85° ÷ 89°C			
	2nd stage	90° ÷ 94°C (●)			
Engine coolant thermostat	opening	81° ÷ 85°C			
	max opening	101°÷105°C	99°÷103°C	98°÷102°C	101°÷105°C
	valve travel	9,5 mm		⩾7,5 mm	9,5 mm
Fitting clearance between impeller vanes and pump casing		-	0,3÷1,1 mm	-	-
Pressure for checking rad. water tightness		0,98 bar			
Pressure for checking calibration of exhaust spring on expansion tank		0,98 bar			

(●) For versions with air conditioning
(*) For the 1747 16v version the electric fan is operated by the control unit

FUEL SYSTEM

Type	Bosch Monomotronic SPI integrated electronic injection/ ignition	Weber-Marelli I.A.W. MPI integrated electronic injection/ ignition	HITACHIe-MPI integrated electronic injection/ ignition	Bosch Motronic MPI integrated electronic injection/ignition
Pump	Electrical, immersed in tank			
Capacity	⩾120 l/h			
Fuel pressure regulator setting	1 bar	3 bar		

CHECKING IDLE CONCENTRATION OF POLLUTANT 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

INTEGRATED ELECTRONIC INJECTION/IGNITION SYSTEM COMPONENTS	1370 12V
Electronic control unit	Bosch 0.261.203.868 Bosch 0.261.204.543 (*)
Butterfly casing	Bosch 0.438.201.523
TDC and rpm sensor	Bosch 0.281.002.102
Fuel vapour solenoid valve	Bosch 0.280.142.300
Detonation sensor	Bosch 0.261.231.007
Coolant temperature sensor	Bosch 0.280.130.026
Electric fuel pump	Bosch 0.580.453.514
Lambda sensor	Bosch 0.258.003.805
Fuel filter	Bosch

(*) From chassis n° 13101

INTEGRATED ELECTRONIC INJECTION/IGNITION SYSTEM COMPONENTS

Electronic control unit	Manual gearbox	I.A.W.–1AF.15	I.A.W.–1AF.1G (●)
	Auto. transmission	I.A.W.–1AF.25	I.A.W.–1AF.2G (□)
Absolute pressure sender unit (barometric capsule)		M. Marelli PRT 03/02	
Fuel vapour solenoid valve		SIEMENS EC1	
Butterfly casing		M. Marelli 54 CFA 26	
Idle adjustment actuator		M. Marelli B02 M. Marelli B25/00 (□)	
Injector		M. Marelli IWP 001	
Air temperature sender unit		JAEGER ATS-04	
Fuel pressure regulator		M. Marelli RPM 40	
Coolant temperature sender unit		JAEGER 401930-01	
TDC and rpm sensor		JAEGER CVM 01	
Butterfly valve position sensor (potentiometer)		M. Marelli PF 1C	
Twin relay supplying electric fuel pump and injection/ignition control unit		BITRON NDRS 240 113	
Electric fuel pump		MARWALL MSS 071/03	
Lambda sensor		NTK 0ZA112-A1	
Fuel filter		Bosch A.450.024.262	
Timing sensor		JAEGER SFA 200	
Ignition coils		COOPER BAE 920 A	

(●) From chassis no. 19295
(□) From chassis no. 34376

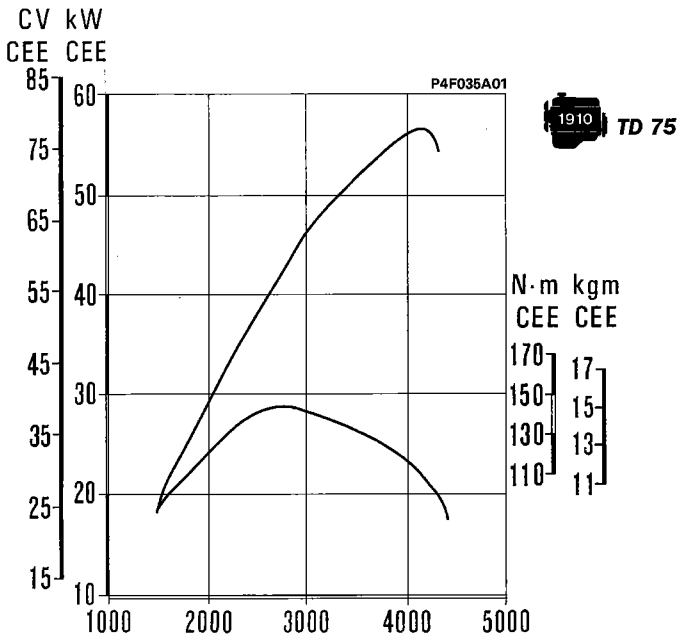
INTEGRATED ELECTRONIC INJECTION/IGNITION SYSTEM COMPONENTS

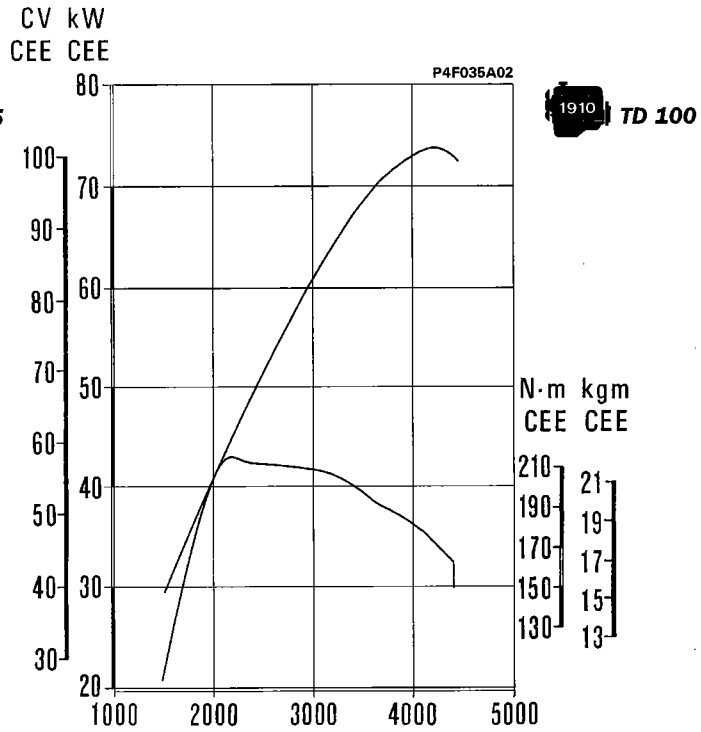
Electronic control unit	HITACHI MFI-009
Air flow meter (hot wire)	HITACHI GE 109381
Injector	HITACHI GL 212264
Fuel pressure regulator	RPM 40/3 bar
Coolant temperature sensor	Bosch 0.280.130.055
Electric fuel pump	WALBRO MSS 071/01
Lambda sensor	NTK 0ZA112-A3
Fuel filter	G.M. 25121074
Idle actuator	HITACHI GL 326716
Butterfly valve position sensor (potentiometer)	HITACHI GL 326686
Fuel vapour solenoid valve	BOSCH 0.280.142.300
Power module	HITACHI GE 107765 oppure HITACHI GE 108958
TDC and rpm sensor	HITACHI GE 108835
Detonation sensor	NGK KNE 03
Timing sensor	Bosch B.232.070.023
Butterfly casing	HITACHI GL 007817

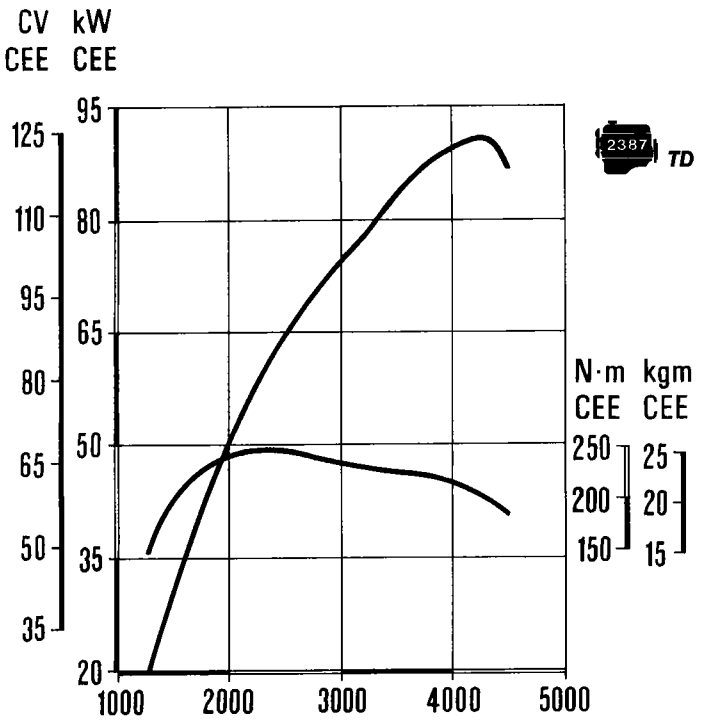
INTEGRATED ELECTRONIC INJECTION/IGNITION SYSTEM COMPONENTS	
Injection/ignition system electronic control unit	Bosch 0.261.204.381
Butterfly casing	–
Fuel pressure regulator	Bosch 0.280.160.515
Injector	Bosch 0.280.150.443
Idle adjustment actuator	Bosch 0.280.140.553
Electric fuel pump	Bosch 0.580.453.408
Air flow meter	Bosch 0.280.217.111
Fuel filter	Bosch A.450.024.262
Butterfly valve position sensor (potentiometer)	Bosch 0.280.122.001
Coolant temperature sensor	Bosch 0.280.130.026
Lambda sensor	Bosch 0.258.003.772
Fuel vapour solenoid valve	Bosch 0.280.142.300
Detonation sensor	Bosch 0.261.231.095
Hall effect injection timing sensor	Bosch 0.232.101.026
Intake air temperarture sender unit	Bosch 0.280.130.073
TDC and rpm sensor	Bosch 0.281.002.102

CHARACTERISTICS

		1910 TD 75	1910 TD 100	2387 TD
	Cycle	Diesel 4 stroke		
	Timing	single overhead camshaft		
	Engine balancing	–		through 1 counter-bal. shaft
	Type of fuel system	Indirect injection		
	Number of cylinders	4 in line		5 in line
	Cylinder liner (bore) mm	82		
	Stroke mm	90,4		
	Capacity cc	1910		2387
	Compression ratio	20,7 ± 0,5		
Max power	kW (CEE) (CV) (CEE)	55 (75)	74 (100)	91 (124)
	rpm	4200	4200	4000
Max torque	daNm (CEE) (kgm) (CEE)	14,7 (15)	20 (20,4)	26,5 (27)
	rpm	2750	2250	2000







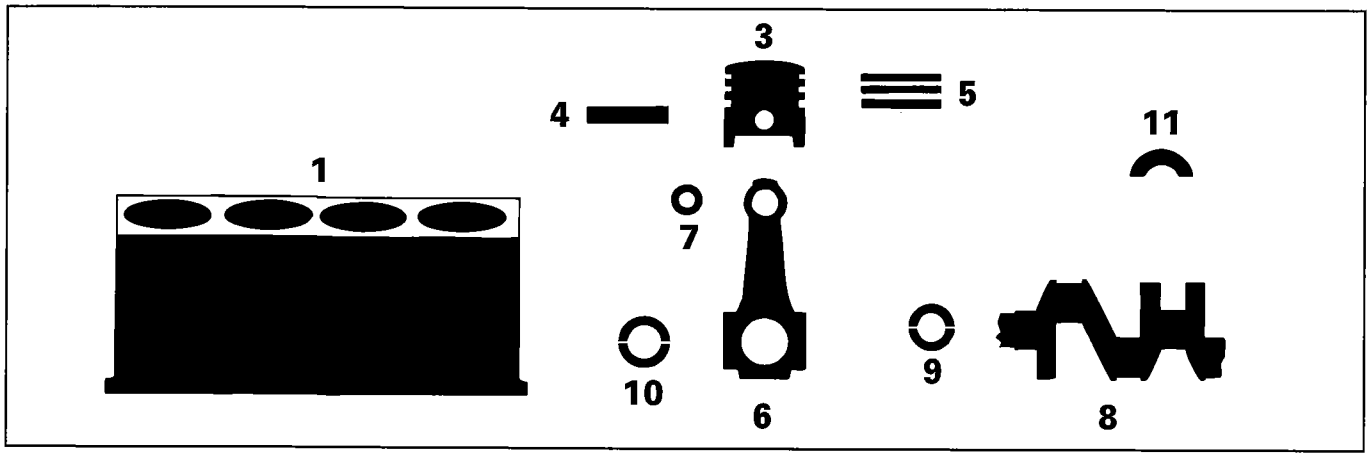
Test bench cycles of overhauled engines

During the bench test of the overhauled engine it is not advisable to run the engine at maximum speed, but to stick to the data given in the table; complete the running in of the engine in the vehicle.

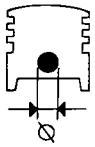
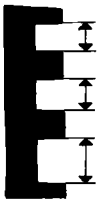
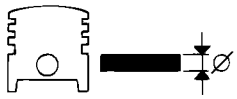
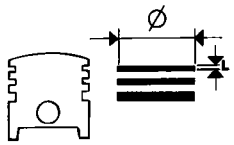
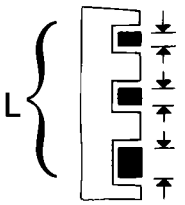
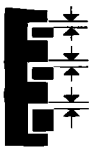
Test speed (rpm)	Time in minutes	Load on the brakes
800÷1000	10′	no load
1500	10′	no load
2000	10′	no load

Engine power curves obtained by EEC method

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

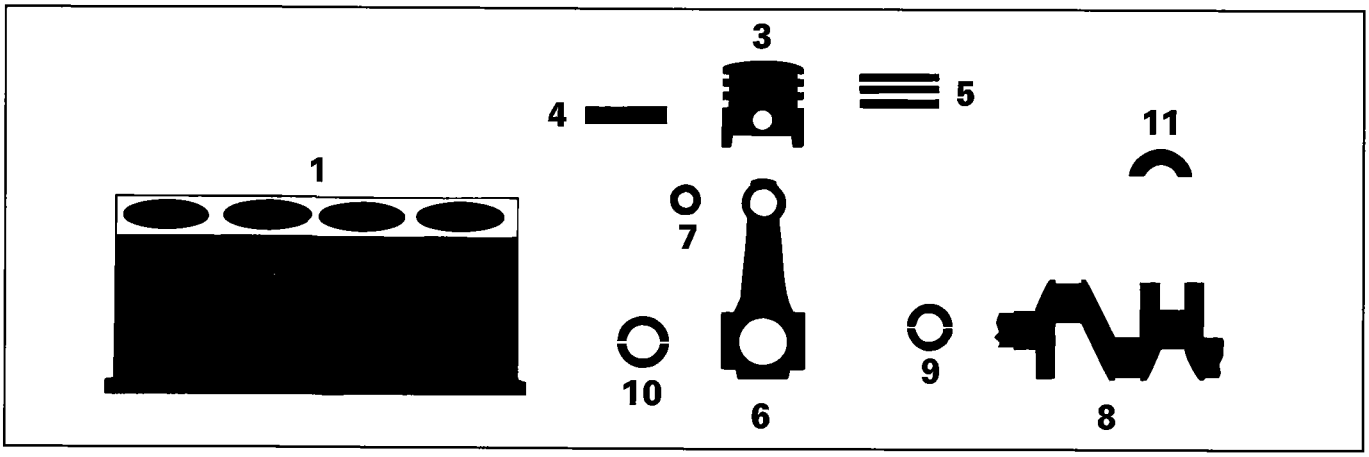


DESCRIPTION			1910 TD	2387 TD
			Values in mm	
1 Main bearing supports		L	21,720 ÷ 21,800	
		⌀	56,705 ÷ 56,718	63,705 ÷ 63,718
Cylinder bore	⌀	A	82,000 ÷ 82,010	
		B	82,010 ÷ 82,020	
		C	82,020 ÷ 82,030	
3 Piston		X	10	
	⌀	A	81,930 ÷ 81,940	
		C	81,940 ÷ 81,950	
		E	81,950 ÷ 81,960	
	⌀ FIAT		0,4	
3-1	Piston projection		0,637 ÷ 1,162	
3	Diff. in weight between pistons		± 5 g	
3-1	Piston Cylinder bore		0,060 ÷ 0,080	

DESCRIPTION		1910 TD	2387 TD
		Values in mm	
3  Gudgeon pin housing	⌀	25,991 ÷ 25,996	
3  Piston ring grooves 	1	2,675 ÷ 2,705 (*)	
	2	2,010 ÷ 2,030	
	3	3,020 ÷ 3,040	
4  Gudgeon pin	⌀	25,982 ÷ 25,987	
	⌀ FIAT >	0,2	
4-3  Gudgeon pin - Housing		0,004 ÷ 0,014	
5  Piston rings 	1	2,575 ÷ 2,595 (**)	
	2	1,970 ÷ 1,990	
	3	2,975 ÷ 3,010	
	⌀ FIAT >	0,4	
5-3  Piston rings Piston ring grooves 	1	0,080 ÷ 0,130 (**)	
	2	0,020 ÷ 0,060	
	3	0,010 ÷ 0,065	
5-1  Opening at end of piston rings in cylinder bore 	1	0,200÷ 0,400	
	2	0,250 ÷ 0,500	
	3	0,250 ÷ 0,500	

(*) Measured at the 79 mm diameter

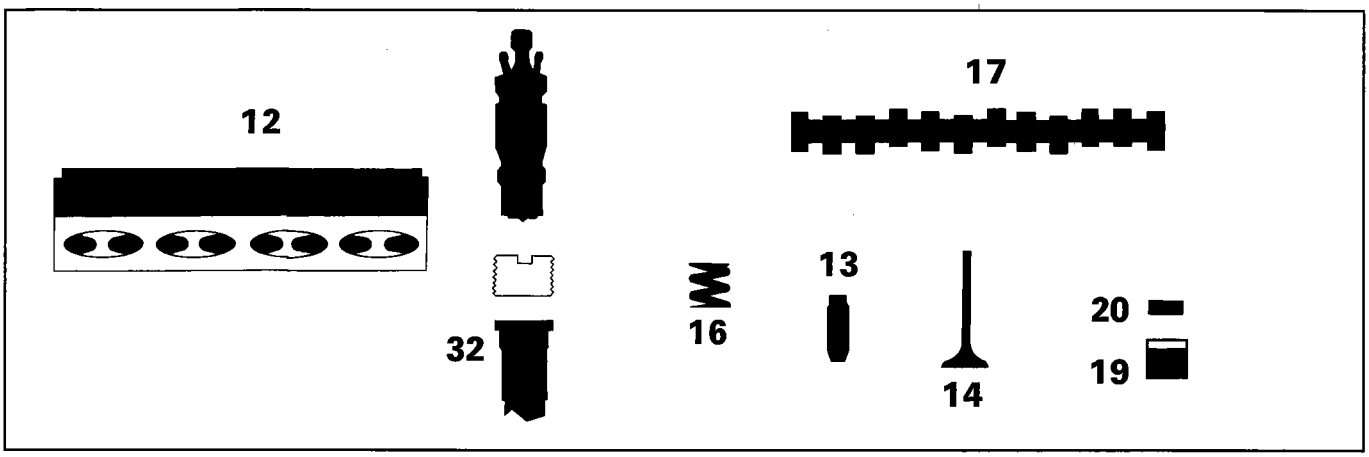
(**) Measured 1.5 mm from the outside edge



DESCRIPTION			1910 TD	2387 TD
			Values in mm	
6	Small end bush or pin housing	$\varnothing_1$	28,939 ÷ 28,972	
	Big end bearing housing	$\varnothing_2$	53,897 ÷ 53,909	
6	Difference in weight between con rods		± 2,5 g	
7	Small end bush	$\varnothing_1$	29,018 ÷ 29,038	
		$\varnothing_2$	26,006 ÷ 26,012	
4-7	Gudgeon pin Small end bush		0,019 ÷ 0,030	
7-6	Small end bush Bush housing		0,046 ÷ 0,099	
8	Main journals	$\varnothing_1$ A	52,994 ÷ 53,000	59,994 ÷ 60,000
		$\varnothing_1$ B	52,988 ÷ 52,994	59,988 ÷ 59,994
		$\varnothing_1$ C	52,982 ÷ 52,988	59,982 ÷ 59,988
	Crank pins	$\varnothing_2$ A	50,799 ÷ 50,805	
		$\varnothing_2$ B	50,793 ÷ 50,799	
		$\varnothing_2$ C	50,787 ÷ 50,793	
		L	26,575 ÷ 26,625	

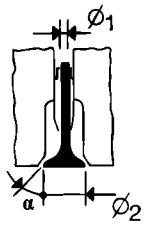
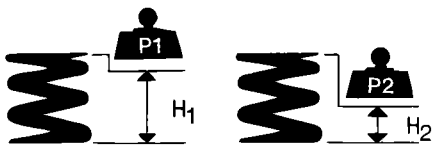
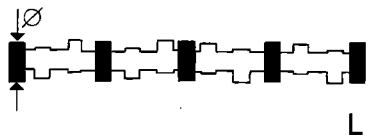
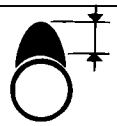
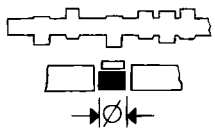
DESCRIPTION		1910 TD	2387 TD
		Values in mm	
9	Crankshaft bearings L A	1,836 ÷ 1,840	
	L B	1,839 ÷ 1,843	
	L C	1,842 ÷ 1,846	
	Ø FIAT <	0,254 - 0,508	
9–8	Crankshaft bearing - Main journals	0,025 ÷ 0,052	
10	Big end bearings L A	1,527 ÷ 1,531	
	L B	1,530 ÷ 1,534	
	L C	1,533 - 1,537	
	Ø FIAT <	0,254 - 0,508	
10–8	Big end bearings - Main journals	0,030 ÷ 0,056	
11	Thrust washers S	2,342 ÷ 2,358	
	S FIAT >	0,127	
11–8	Crankshaft end float	0,059 ÷ 0,179	

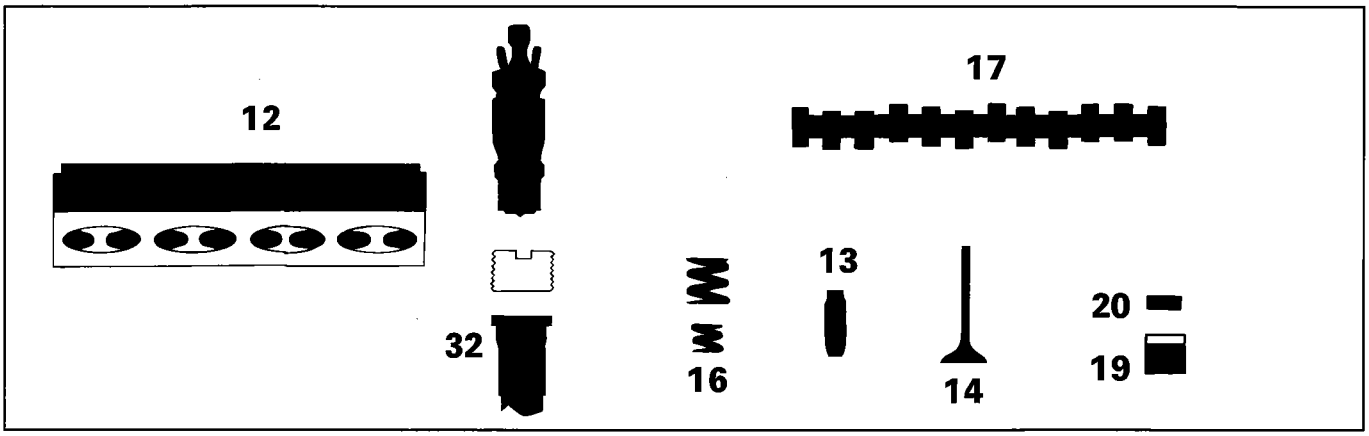
00.10



DESCRIPTION		1910 TD	2387 TD
		Values in mm	
Valve guide bore in cylinder head	⌀	13,950 ÷ 13,977	
Valve seats	α (intake)	45° ± 5′	
	α (exhaust)	45° ± 5′	
	L	about 2,7	
Camshaft supports	⌀	26,045 ÷ 19,070	
12	L (*)	19,100 ÷ 19,150	
Tappet housing	⌀	37,000 ÷ 37,025	
13 Valve guide	⌀1	8,022 ÷ 8,040	
	⌀2	14,010 ÷ 14,030	
	⌀2 FIAT >	0,05 - 0,10 - 0,25	

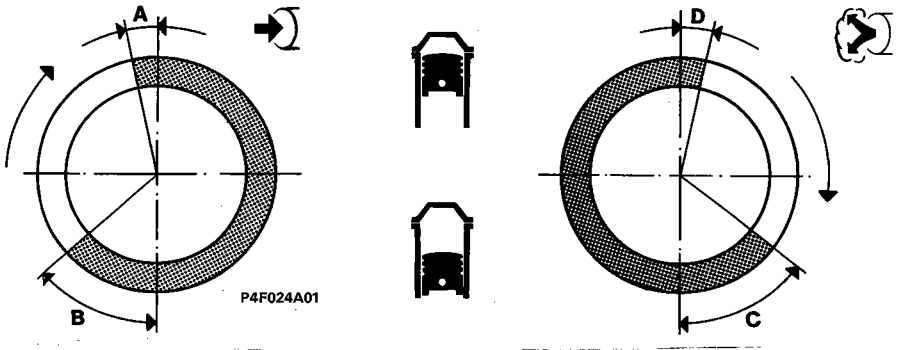
(*) Front cap measurement

DESCRIPTION			1910 TD	2387 TD
			Values in mm	
13-12	Valve guide Bore in cylinder head		0,033 ÷ 0,080	
14 	Valve	$\varnothing_1$	7,974 ÷ 7,992	
		$\varnothing_2$	37,30 ÷ 37,60	
		α	45°30′ ± 7′	
		$\varnothing_1$	7,974 ÷ 7,992	
		$\varnothing_2$	30,90 ÷ 31,20	
		α	45°30′ ± 7′	
14-13	Valve - Valve guide		0,030 ÷ 0,066	
16 	Valve spring	P_1	36,7 ÷ 39,6 daN	
		H_1	36	
		P_2	56 ÷ 61 daN	
		H_2	26,5	
17 	Camshaft bearings	$\varnothing$	26,000 ÷ 26,015	
		L	19,250 ÷ 19,330	
17-12		radial	0,030 ÷ 0,070	
		axial	0,100 ÷ 0,230	
17 	Cam lift		8,5	
			8,5	
19 	Tappet	$\varnothing$	36,975 ÷ 36,995	
19-12	Tappet - Cylinder head		0,005 ÷ 0,050	

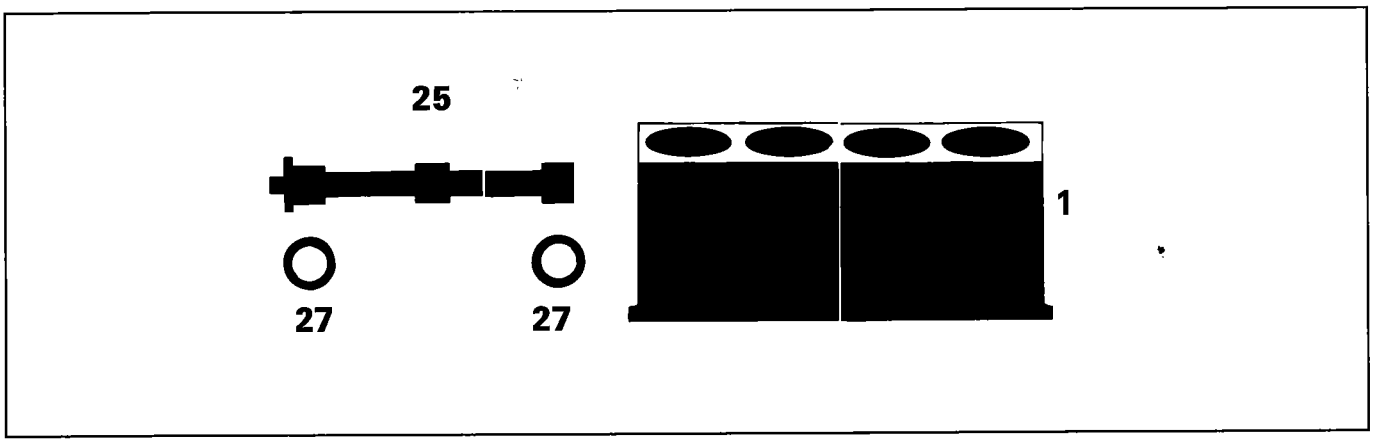


DESCRIPTION		1910 TD	2387 TD
		Values in mm	
20	Shim S (0,05)	3,25 ÷ 4,70	
17-20	clearance for timing check	0,50	
		0,50	
	operational clearance	0,30 ± 0,05	
		0,35 ± 0,05	
32-12	Variation between ante-chamber plane and cylinder head plane	- 0,150 ÷ -0,300	

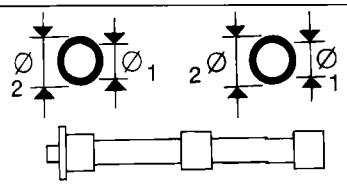
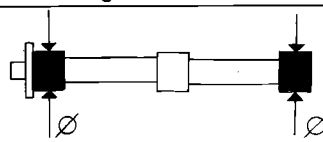
TIMING DIAGRAMS

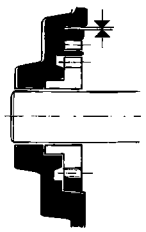
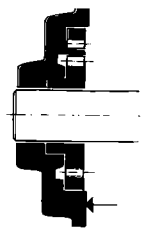
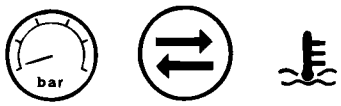
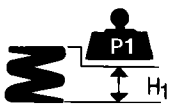


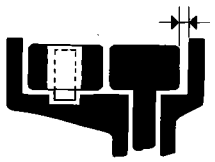
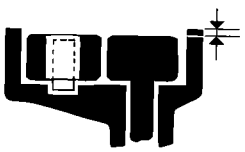
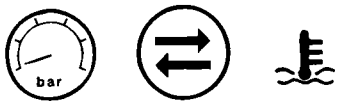
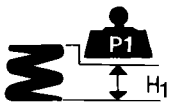
Timing angles	A	Inlet	opens before TDC	6°
	B		closes after BDC	26°
	C	Exhaust	opens before BDC	26°
	D		closes after TDC	6°



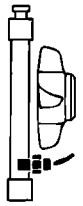
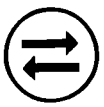
2387 TD

DESCRIPTION			Values in mm
25	Counter balance shafts		n° 1
	Shaft operated		through oil pump driven gear
27	 Ball bearings for counter balance shafts	$\varnothing_1$	19,900 ÷ 20,000
		$\varnothing_2$	46,989 ÷ 47,000
25	 Counter balance shaft bearings	$\varnothing$	19,980 ÷ 19,993
1	Bearing seats in cylinder block	$\varnothing$	46,975 ÷ 47,000
27-1	Ball bearings Cylinder block seats		+0,011 ÷ – 0,025
25-27	Shaft bearings Ball bearings		+0,020 ÷ – 0,003

		1910 TD
LUBRICATION		Values in mm
Engine lubrication system		forced circulation via lobe gear pump with cartridge filter in series
Oil pump		lobe gears
Pump operated		through crankshaft
Oil pressure relief valve		incorporated in the crankshaft front cover
 between pump casing housing and driven gear		0,080÷0,186
 between the upper side of the gears and the pump cover		0,025÷0,056
Full flow filter		cartridge
Insufficient oil pressure sender unit		electrical
 Operating pressure at a temperature of 100°C		idling > 2 bar at 4000 rpm > 5,5 bar
 Oil pressure relief valve spring	P_1	6,27÷7,06 daN
	H_1	36

	2387 TD
LUBRICATION	Values in mm
Engine lubrication system	forced feed, via geared pump with cartridge filter in series
Oil pump	geared, located in the crankshaft front cover
Pump operated	through chain driven by the crankshaft
Oil pressure relief valve	incorporated in the crankshaft front cover
 between the edge of the gears and the pump casing	0,110 ÷ 0,180
 between the upper side of the gears and the pump cover	0,016 ÷ 0,086
Full flow filter	cartridge
Insufficient oil pressure sender unit	electrical
 between drive gear and driven gear	0,30
 Operating pressure at a temperature of 100°C	when idling > 2 bar at 4000 rpm > 5,5 bar
 Oil pressure relief valve spring — P_1	11,73 ÷ 12,51 daN
Oil pressure relief valve spring — H_1	35

COOLING SYSTEM

		1910 TD 75	1910 TD 100	2387 TD
Cooling circuit		coolant circulation via centrifugal pump, radiator and two speed electrical fan operated by thermostatic switch		
Water pump operation		through belt		
 Thermal switch to engage fan		1st speed		2nd speed
		86°÷90°C		90°÷94°C
		81°÷85°C		85°÷89°C
Engine coolant thermostat	opening	78°÷82°C		
	max opening	86°÷90°C		
	valve travel	⩾7,5 mm		
Fitting clearance between impeller vanes and pump casing 		0,53÷1,37 mm		–
Pressure for checking rad. water tightness		0,78 bar		
Pressure for checking calibration of exhaust spring on expansion tank cap		0,78 bar		

FUEL SYSTEM

	1910 TD 75	1910 TD 100	2387 TD
Firing order	1 - 3 - 4 - 2		1 - 2 - 4 - 5 - 3
Rotary type injection pump	Bosch VER-679	Lucas DPC-FT09	Bosch VER-560
Nozzle holder type	Bosch KCA 30S 41	LCD-011R02AA1 (*) LCR-67342	Bosch VER SV 0.216.138
Nozzle type	Bosch DN 0 SD 321	Lucas RDN-SDC6888D	Bosch DN 12 SD 290
Injector setting pressure	150÷158 bar	143÷150 bar (●) 138÷150 bar (●●)	150÷158 bar
Injection pump timing: pumping piston travel for cylinder n° 1 at TDC (compression stroke)	0,92 mm	Electronic adjustment	0,75 mm
Engine idle speed	830÷870 rpm		
Maximum free running engine speed rpm	5000÷5100	4920÷5020	5050÷5150

(*) Specific for instrument injector fitted on cylinder n° 1
(●) New injector
(●●) Injector already bedded in

DATA FOR CHECKING BOSCH INJECTION PUMP TYPE VE R 679

GENERAL TEST CONDITIONS

- Test oil: ISO 4113
- Temperature of test oil: 45° ± 1°C (reflux outlet ●)
- Pump entry pressure: 0,35 bar
- Rotation: clockwise

SPECIFIC TEST CONDITIONS

- Bosch injectors 1.688.901.022
- Injectors: Bosch 1.688.901.922 (DNO SD 1510) set at 130 ÷ 133 bar
- Piping: 2x6x450 mm.

Type of check		Adjustment lever position	Rotation speed rpm	Advance check mm	Transfer pressure bar	Capacity per element mm³/cycle	Max discr. btwn ind. flow rates mm³/cycle	Reduction of total travel mm
Advance	1	Max	1000	2,4÷3,8	5,4÷6,4	–	–	–
	2	Max	1500	5,1÷6,3	6,8÷7,8	–	–	–
	3	Max	2100	8,2÷9,6	8,3÷9,3	–	–	–
Capacity	4	Max	600	–	–	39,3÷43,9	–	–
	5	Max	1000	–	–	40,3÷44,9	–	–
	6	Max	1500	–	–	41÷45	⩽2,5	–
	7	Max	2100	–	–	41,3÷45,9	–	–
	8	Max	2400	–	–	26,2÷36,2	–	–
	9	Max	2600	–	–	8,4÷18,4	–	–
	10	Max	2800	–	–	⩽3	–	–
Starting (enrichment)	11	Max	100	–	–	50÷80	–	–
End of enrichment	12	Max	400	–	–	52÷72	–	–
	13	Max	525	–	–	55÷65	–	–
Reflux cap. (●)	14	Max	600	–	–	15÷31 l/h	–	–
	15	Max	2100	–	–	20÷50 l/h	–	–
Idling	16	Min	425	–	–	10,3÷18,3	⩽2,5	–
Residual flow rate	17	Min	500	–	–	⩽3	–	–
Stop (●●)	18	Min	425	–	–	⩽3	–	–
Delay device (LFB)	19	1500	–	–	P. MAX (0,2±0,1)	Q. MAX (10±1)	–	–
	20	1500	–	–	–	–	–	0,7÷0,9

Fixed advance (after engine TDC) = 0,92±0,005 mm
Electrical stop control : minimum operating voltage 8 V. Rated voltage 11÷13 V

Maximum free running engine speed : 5050±50 rpm.
Engine idle speed: 850±20 rpm.
(●) Fuel return from the pump to the tank.
(●●) To be carried out with the electrical stop control switched off.

LUCAS FT09 INJECTION PUMP TEST DATA FOR 1910 TD 100 ENGINE

GENERAL TEST CONDITIONS

- Test oil: ISO 4113 (SHELL S-9365)
- Temperature of test oil: 40° ± 1°C
- Injectors ISO 9008-025A
- Injector setting 130÷133 bar
- Injectors RDNOSDC 6876
- Fuel supply pressure. 0.1 bar
- Direction of rotation. clockwise (seen from control side)
- Injection piping: 2,5×6×330 mm
- Max free running engine speed: 5000±50 rpm
- Engine idle speed 850±20 rpm
- Fitting: 0±1° with cyl. n° 1 at TDC

Type of check or adjustment	Op. N°	Adjustment lever position	Rotation speed rpm	Average capacity per cyl. mm³/cycle	Advance check α°	Max. discr. btwn flow rates mm³/cycle	Operations or checks to be carried out
Filling and bleeding	1	Max	0	–	–		Fill the pump with test fluid through the connector on the cover
Electrical supply	2	Max	0	–	–	–	With supply stablized at 11V the control unit and the interface
Advance instrument setting	3	Max	0	–	0	–	Adjust acting on the potentiometer located on the reader
Hydraulic continuity check	4	Max	1000	–	–	–	Let the pump run for 3 minutes checking that thereis no air in the fluid
Let oil reach op. temp.	5	Max	2000	–	–	–	Stabilize the temp. at 40÷40.5 °C (pump outlet)
Dynamic fitting	6	Max	1500	–	6°	–	Supercharging pressure 1 bar Act on variable pick-up
Max free running check	7	Max	2530	19±4	–	4	Supercharging pressure 1 bar
Regulator intervention check	8	Max	2330	405±4	–	4	Supercharging pressure 1 bar
Max flow rate check	9	Max	2100	56,5±2	7,5±0,5	4	Supercharging pressure 1 bar
Max flow rate check	10	Max	1250	55,4±2	4,5±0,5	4	Supercharging pressure 1 bar
Supercharging operation start	11	Max	750	40,2±2,5	1,5±0,5	4	Supply pressure 0,15 bar
Supercharging gradient	12	Max	750	Q12-Q11 =11±2	0	4	Supercharging pressure 0,45 bar

Type of check or adjustment	Op. N°	Adjustment lever position	Rotation speed rpm	Av. capacity per cyl. mm³/-cycle	Advance check α°	Max. discr. btwn flow rates mm³/cycle	Ops. or checks to be carried out
Max capacity check	13	Max	750	55,0±3	0	–	Supercharging pressure 1 bar
Max capacity check	14	Max	450	35,0±4	0	–	Supercharging pressure 0 bar
Max capacity check	15	Max	100	42,0±8	0	–	Supercharging pressure 0 bar
Idle setting	16	Min	450	6,5±2	0	4	Pull specific levers
Idle check when cold	17	Min	450	12,0±2	0	4	Release specific levers
Regulator status	18	Min	400	(Q16+9)±4	0	4	Levers pulled
Anti-stall capacity	19	Min	450	4,5±1,3	0	4	Pull STOP levers
Recirculation capacity	20	Max	2100	10÷40 l/h	0	–	Supercharging pressure 1 bar
Supply stop	21	Max	400	⩽3,0	0	–	Remove the supply to the electrostop

DATA FOR CHECKING BOSCH INJECTION PUMP TYPE VE R 560

GENERAL TEST CONDITIONS
- Test oil: ISO 4113
- Temperature of test oil: 45°±1°C (reflux outlet ●)
- Pump entry pressure: 0,35 bar
- Rotation - clockwise

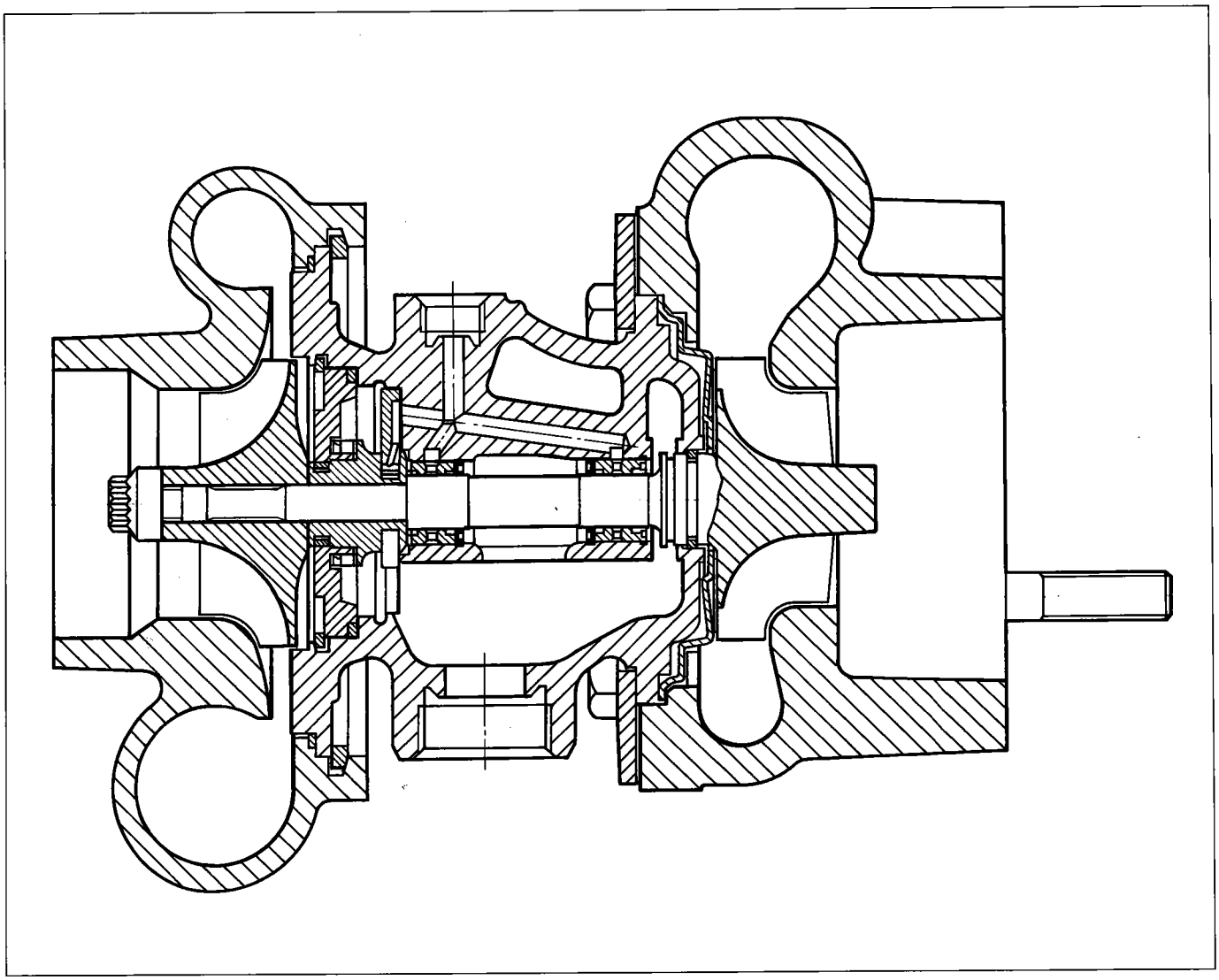
SPECIFIC TEST CONDITIONS
- Bosch injectors 1.688.901.022
- Injectors: Bosch 1.688.901.922 (DNO SD 1510) set at 130÷133 bar
- Piping: 2×6×450 mm
- Control panel type HM5-1-1

Type of check	Rotation speed rpm	Advance check mm	Uist voltage mV	Capacity per element mm^3/cycle	Max. disc. btwn ind. flow rates mm^3/cycle	Duty cyle TV%
Advance	500	4,8÷6,8	3000	–	–	0
	1250	6,6÷8,2	3000	–	–	0
	2250	⩽ 3,0	1850	–	–	100
	2250	9,4÷10,2	3000	–	–	0
Capacity	100	–	3290	48÷64	–	100
	400	–	1850	3,7÷8,3	⩽ 3	100
	500	–	3000	50,7÷55,3	–	0
	1250	–	2310	33÷36	⩽ 3	0
	2250	–	3000	61,4÷65,4	–	0
Reflux capacity (●)	2250	–	3000	20÷50 l/h	–	0
Stop (●●)	1000	–	3000	⩽ 3	–	0

Fixed advance = 0,75±0,05 mm after T.D.C.
Electrical stop control: minimum operating voltage 8V. Rated voltage 11÷13V
(●) Fuel return from the pump to the tank.
(●●) To be carried out with the electrical stop control switched off.

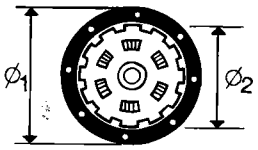
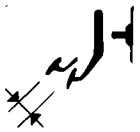
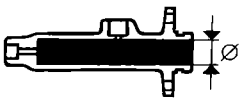
SUPERCHARGING Turbocharger operated by exhaust gases with waste-gate valve and air-air exchanger (intercooler)

	1910 TD	2387 TD
Turbocharger type	Garrett GT 15	IHI VL6
Maximum supercharging pressure	1,05 bar	



P4A046A01

CROSS SECTION OF TURBOCHARGER

	1370 12V	1581 16V	1747 16V	1910 TD	1998 20 v	2387 TD
	Values in mm					
Type	  dry, single plate with bearing					
 Operating mechanism	 diaphragm spring					
Spring loading daN	360	400	500	485	600	
 Lining $\varnothing_1$	190	200	215	215	228,6	
Lining $\varnothing_2$	130	137	145	145	155	
 Distance between pedal in end of travel position and rest position	163				136	
Clutch release	mechanical				hydraulic	
 Clutch pump operation ⌀	–				16,05 (3/4")	
 Operating cylinder ⌀	–				25,4 (1")	

	1370 12V	1581 16V	1747 16V	1998 20V
	1 3 5 / 2 4 R			
Type	C.514.5.13	C.513.5.13	C.510.5.17	C.510.5.21
GEARBOX				
Synchronizers — spring ring (Porsche type)	–			
Synchronizers — baulk ring type	1 3 5 / 2 4			
Gears — straight toothed	1 3 5 / 2 4 R			
Gears — helical toothed	1 3 5 / 2 4			
Gear ratios — 1	3,909			3,545
Gear ratios — 2	2,158	2,238		
Gear ratios — 3	1,480	1,444	1,520 (1,444) ●	1,520
Gear ratios — 4	1,121	1,029	1,156 (1,029) ●	1,156
Gear ratios — 5	0,902	0,872 (0,838) ●	0,946 (0,872) ●	0,919
Gear ratios — R	3,818	3,909		

(●) For specific markets

DIFFERENTIAL

		1370 12V	1581 16V	1747 16V	1998 20V
Ratio crown wheel & pinion reduction		4,071 (14,57)	3,823 (17/65) (3,765)●	3,562 (16/57) (3,353)●	3,562 (16/57)
Ratio at the wheels	1	15,914	14,944 (14,717)●	13,924 (13,107)●	12,627
	2	8,786	8,556 (8,426)●	7,972 (7,504)●	7,972
	3	6,025	5,520 (5,437)●	5,414 (4,842)●	5,414
	4	4,564	3,934 (3,874)●	4,118 (3,450)●	4,118
	5	3,672	3,334 (3,155)●	3,370 (2,924)●	3,273
	R	15,543	14,944 (14,717)●	13,924 (13,107)●	13,924
Differential internal casing bearing		conical roller bearings			
Adjustment of bearing pre-loading		by shims			
Thickness of shims	mm 0,05	–	1,70÷2,60		
	mm 0,10	2,00 ÷ 3,00	–		
Interference to obtain exact bearing pre-loading	mm	bearings not pre-loaded = 0,12 bearings pre-loaded (350 daN) = 0,08			
Clrnce between planet & satellite gears	mm	⩽ 0,10			
Adjustment of clrnce btwn planet/sat. gears		no adjustment is carried out	by shims	no adjustment is carried out	
Thickness of shims	(0,05) mm		0,80 ÷ 1,25	–	

(●) For specific markets

	1910 TD 75	1910 TD 100	2387 TD
	1 3 5 / 2 4 R		
Type	C.510.5.17		C.530.5.31

GEARBOX

Synchronizers	spring ring (Porsche type)	–	
	baulk ring type	1 3 5 / 2 4	
Gears	straight toothed	1 3 5 / 2 4 R	
	helical toothed	1 3 5 / 2 4	
Gear ratios	1st	3,909	3,800
	2nd	2,238	2,235
	3rd	1,444	1,360
	4th	1,029	0,971
	5th	0,838 / 0,767	0,763
	R	3,909	3,545
Ratio crown wheel and pinion reduction		3,353 (17/57)	3,176 (17/54)

DIFFERENTIAL

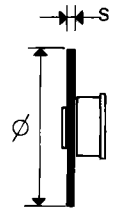
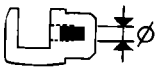
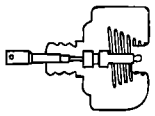
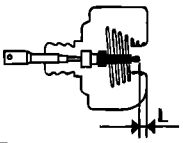
		1910 TD 75	1910 TD 100	2387 TD
Ratio at the wheels	1st	13,107		12,069
	2nd	7,504		7,098
	3rd	4,842		4,319
	4th	3,450		3,084
	5th	2,810	2,572	2,423
	R	13,107		11,259
Differential internal casing bearing		conical roller bearings		
Adjustment of bearing pre-loading		by shims		
Thickness of shims	mm 0,05	1,70÷2,60		1,25÷1,60
Bearing rolling torque		–		0,10÷0,14
Interference to obtain exact bearing pre-loading	mm	Bearings not pre-loaded = 0,12 bearings pre-loaded (350 daN) = 0,08		–
Clearance between planet & sat. gears	mm	⩽ 0,10		0,10÷0,20
Adjustment of clrnce btwn planet/sat. gears		no adjustment is carried out		by shims
Thickness of shims	(0,05) mm	–		1,8÷2,2

AISIN AUTOMATIC TRANSMISSION	ENGINE TYPE	1581 16v
Gears		❶❷❸❹Ⓡ
Gear ratios	❶	2,807
	❷	1,479
	❸	1,000
	❹	0,735
	Ⓡ	2,769
Idler ratio		1,019 (54/53)
Torque converter	⌀ mm	216
X Ratio (multiplication) engine torque		2,150
Quantity of oil GI/2	total, with gearbox, converter, radiator and pipes empty	6 litres (5,4 kg)
	replacement only	4,3 litres (3,9 kg)

DIFFERENTIAL

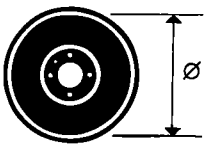
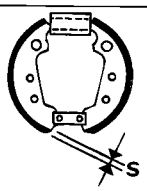
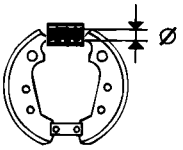
	Crown wheel and pinion reduction	3,505 (82/23)
	Final drive ratio	3,633 (54/53×82/23)
Ratio at the wheels	❶	10,197
	❷	5,373
	❸	3,633
	❹	2,670
	Ⓡ	10,059

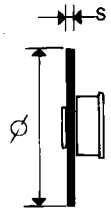
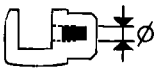
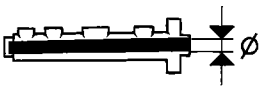
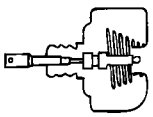
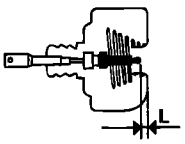
FRONT BRAKES

			1370 12V 1581 16V 1910 TD 75	(*) 1581 16V 1747 16V 1910 TD 100
			Values in mm	
	Disc	Ø	257	
		s	11,80 ÷ 12,10	19,80 ÷ 20,10
		s (worn)	11,10	18,55
		s allowed	10,20	18,20
	Brake pads	s allowed	1,5	
	Caliper	Ø	54	
	Master cylinder (pump)	Ø	22,225 (7/8")	
	Brake servo		Iso-Vac 8" pneumatic vacuum servo acting on all four wheels	
	Distance of hydralic piston push rod from master cylinder support plate	L	22,45 ÷ 22,65	

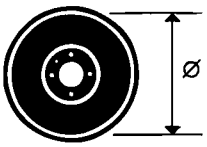
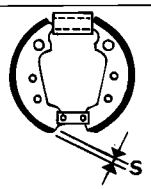
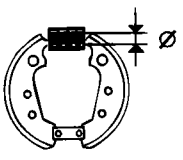
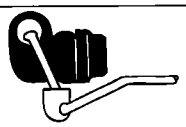
(*) For version with auto. trans.

REAR BRAKES

	Drum	Ø	203,10÷203,40	
		Ø (worn)	204,10	
		Ø allowed	204,70	
	Shoes	s allowed	1,5	
	Wheel cylinders	Ø	22,00	
	Reduction ratio	Pressure regulators	0,36	–
		Load proportioning valves	–	0,36

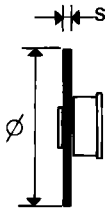
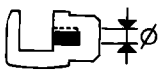
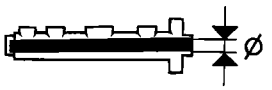
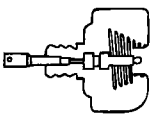
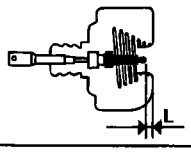
	1370 12V	1581 16V / 1747 16V / 1910 TD
FRONT BRAKES	Values in mm	
 Disc ⌀	257	
Disc s	19,80 ÷ 20,10	
Disc s (worn)	18,55	
Disc s allowed	18,20	
 Brake pads s allowed	1,5	
 Caliper ⌀	54	
 Master cylinder (pump) ⌀	22,225 (7/8")	
 Servo brake	Iso-Vac 8" pneumatic vacuum servo acting on all four wheels	
 Distance of hydraulic piston push rod from master cylinder support plate L	22,45 ÷ 22,65	

REAR BRAKES

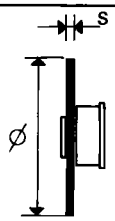
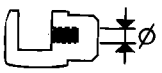
 Drum ⌀	203,10÷203,40	228,30÷228,60
Drum ⌀ (worn)	204,10	229,30
Drum ⌀ allowed	204,70	230,00
 Shoes s allowed	1,5	
 Wheel cylinders ⌀	22,00	
 Load proportioning valve	acting on rear wheels	
Ratio (reduction)	0,36	

	1998 20V	2387 TD

FRONT BRAKES

	Values in mm
 Disc Ø	283,800÷284,200
Disc s	21,800÷22,100
Disc s (worn)	20,55
Disc s allowed	20,20
 Brake pads s allowed	1,5
 Caliper Ø	54
 Master cylinder (pump) Ø	23,81 (15/16")
 Servo brake	ISO-VAC 8"+7" pneumatic vacuum servo acting on all four wheels
 Distance of hydraulic piston push rod from master cylinder support plate L	22,45 ÷ 22,65

REAR BRAKES

 Disc Ø	240
Disc s	10,80 ÷ 11,10
Disc s (worn)	10,10
Disc s allowed	9,20
 Brake pads s allowed	1,5
 Caliper Ø	34
 Load proportioning valve	acting on rear wheels
Ratio (reduction)	0,36

ENGINE TYPE	1370 12V 1581 16V 1747 16V 1910 TD	1998 20v	2387 TD
Type	rack and pinion power assisted		
Ratio — no. of turns lock to lock	3	2,9	2,8
Ratio — rack travel	142 ±1,5 mm	137 ±1,5 mm	132 ±1,5 mm
Turning circle (Ø)	10,7	11,1	11,5
Steering angle — outer wheel α_1	31° ± 30′		
Steering angle — inner wheel α_2	38° ± 30′		
Steering col.	with 2 universal joints		

ENGINE TYPE	Pressed steel wheel rim	Pressed steel light alloy	Radial, tubeless type ture	Tyre inflation pressure in bar			
				Front		Rear	
				average load	heavy load	average load	heavy load
1370 12V	5½J×14"– 37	6J×15"– 43	175/70 R14 84T 195/55 R15 84V	2,1 bar	2,2 bar	2,3 bar	2,5 bar
1581 16V	5½J×14"– 37 5½J×14"– 43	6J×15"– 43	175/70 R14 84H 185/65 R14 86H 195/55 R15 84V	2,1 bar	2,2 bar	2,3 bar	2,5 bar
1581 16V c.a.	5½J×14"– 43	6J×15"– 43	185/65 R14 86H 195/55 R15 84V	2,1 bar	2,2 bar	2,3 bar	2,5 bar
1747 16V	5½J×14"– 43	6J×15"– 43	185/65 R14 86H 195/55 R15 84V	2,1 bar	2,2 bar	2,3 bar	2,5 bar
1998 20V	-	6J×15"– 49	195/55 R15 84V	2,3 bar	2,5 bar	2,3 bar	2,5 bar
1910 TD 75	5½J×14"– 37	6J×15"– 43	175/70 R14 84T 195/55 R15 84V	2,1 bar	2,2 bar	2,3 bar	2,5 bar
1910 TD 100	5½J×14"– 37 5½J×14"– 37 5½J×14"– 43 5½J×14"– 43	6J×15"– 43	175/70 R14 84T (●) 175/70 R14 84H (■) 185/65 R14 86T (●) 185/65 R14 86H (■)(▲) 195/55 R15 84V	2,1 bar	2,2 bar	2,3 bar	2,5 bar
2387 TD	-	5½×15"– 46	195/55 R15 84V	2,4 bar	2,5 bar	2,3 bar	2,5 bar
SPARE WHEEL (*)	4B×15"– 35	5½×14"– 43 (▲)	185/65 R14 86H (▲) 125/80 R15 95M	4,2 bar			

For the Marea Weekend with a commercial load (1 person + 500 Kg) the inflation pressure for the front tyres is 2.3 bar for all versions excluding those fitted with the 1998 and 2387 TD engine for which it is 2.5 bar, whilst the inflation pressure for the rear tyres is 3 bar irrespectively for all versions.

(*) Speed limit: 80 km/h
(●) Special tyres for the Marea version
(■) Special tyres for the Marea Weekend
(▲) For the TAXI version

Service News

Copyright by Fiat Auto 2/97

Fiat Auto S.p.A
D.M.C. - M.P.S. - Servizi Post Vendita
Assistenza Tecnica

Fiat Marea

version: all versions

44
05.97

4450 A 401 AA **REAR WHEEL TOE IN**

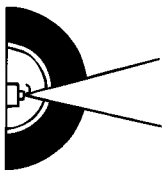
correction of toe in value given in the Service Manual

OPERATIONS IN THE NETWORK

As a correction to the information given on page 63 of Section 00.44 of the Service Manual, Print no. 506.761, we wish to point out that the exact value of the rear wheel toe in is as follows

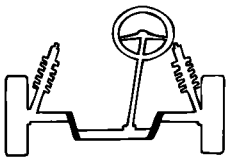
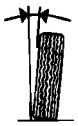
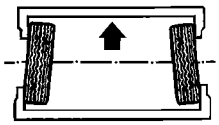
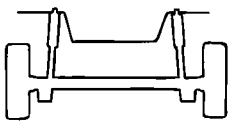
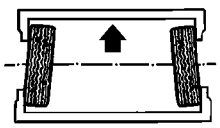
+ 2 ± 2mm rather than - 4÷0

Please be so kind as to make a note, by hand, of the correct figures in the above mentioned publication



unladen car (■)

WHEEL GEOMETRY

 Front suspension	camber (**) 	– 36′ 24″ ± 30′
	caster (**) 	1° 57′ ± 30′
	toe in 	-1 ÷ 1 mm
	front wheel offset ▲	0°
 Rear suspension	camber (**) 	– 0° 45′ ± 30′
	toe in (**) 	2 ± 2 mm
	rear wheel thrust angle ▲	0°

(**) Angles cannot be adjusted

(■) With tyres inflated to the correct pressure and vehicle in running order with 5 litres of fuel

(▲) Angular values which cannot be adjusted, used for the correct alignment of the vehicle

Front suspension independent, Mac Pherson type with lower transverse track control arms anchored to an auxiliary cross member. Offset coil springs and hydraulic, telescopic, double acting shock absorbers. Stabilizer bar connected to the telescopic damper.

Coil springs

ENGINE TYPE			1370 12V	1581 16V	1747 16V	1998 20V
Diameter of wire		mm	12,3±0,05	12,5±0,05 (12,7±0,05)* (12,9±0,05)**	12,7 ± 0,05 (12,9±0,05)*	12,9 ± 0,05
Number of turns			3,75			
Direction of coil			clockwise			
Height of spring released		mm	434	437 (436)* (434)**	436 (434)*	434
Height of spring under a load of:	290 ÷ 353 daN	mm	182	–	–	–
	312 ÷ 380 daN (330 ÷ 402 daN)* (347 ÷ 423 daN)**	mm	–	182	–	–
	330 ÷ 402 daN (347 ÷ 423 daN)*	mm	–	–	182	–
	347 ÷ 423 daN	mm	–	–	–	182
The springs are subdivided into two categories, identifiable by a mark						
yellow (1) for those under a load of:	321,8 daN	height of mm	>182	–	–	–
	346,3 daNm (366 daN)* (405 daN)**	height of mm	–	>182	–	–
	366 daN (405 daN)*	height of mm	–	–	>182	–
	405 daN	height of mm	–	–	–	>182
green (1) for those under a load of:	321,8 daN	height of mm	⩽182	–	–	–
	346,3 daNm (366 daN)* (405 daN)**	height of mm	–	⩽182	–	–
	366 daN (405 daN)*	height of mm	–	–	⩽182	–
	405 daN	height of mm	–	–	–	⩽182

(1) Springs of the same category must be fitted
(*) For vehicles with air conditioning or automatic transmission.
(**) For vehicles with air conditioning and automatic transmission.

Shock absorbers

Type		hydraulic, telescopic, double acting	
Open (start of damping action)	mm	508 ± 2,5	501 ± 2,5
Closed (metal against metal)	mm	361 ± 2,5	354 ± 2,5
Travel	mm	147	

Stabilizer bar

Diameter of stabilizer bar	mm	18

Coil springs

			1910 TD	2387 TD
Diameter of wire		mm	12,9±0,05	12,2±0,05
Number of turns			3,75	
Direction of coil			clockwise	
Height of spring released		mm	434	436
Height of spring under a load of:	347 ± 423 daN	mm	182	-
	374 ± 474 daN	mm	-	182
The springs are subdivided into two categories, identifiable by a mark				
yellow (1) for those under a load of:	405 daN	height of mm	>182	-
	405 daN	height of mm	-	>182
green (1) for those under a load of:	405 daN	height of mm	⩽182	-
	405 daN	height of mm	-	⩽182

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

Shock absorbers

Type: telescopic, double acting		low pressure gas
Open (start of damping action)	mm	508 ± 2,5
Closed (metal against metal)	mm	361 ± 2,5
Travel	mm	147

Stabilizer bar

Diameter of stabilizer bar	mm	17	19

00.21-27

Rear suspension independent with cast iron spheroid track control arms. Coil springs and shock absorbers with vulcanized bushes. Anti-roll torsion bar. Rigid H auxiliary frame made up of a transverse tubular element and two pressed side members connected to it.

Coil spring

ENGINE TYPE	1370 12V	1581 16V	1747 16V	1998 20V	1910 TD	2387 TD
Diameter of wire mm	12±0,05					
Number of turns	5					
Direction of coil	clockwise					
Height of spring released mm	308,8					
Height of spring under a load of: 268 ÷ 403 daN mm	184					
The springs are subdivided into two categories, identifiable by a mark						
yellow (1) for those under a load of: 335,5 daN height of mm	>184					
green (1) for those under a load of: 335,5 daN height of mm	⩽184					

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

Shock absorbers

Type: telescopic, double acting		low pressure gas
Open (start of damping action)	mm	320 ± 2
Closed (metal against metal)	mm	223 ± 2
Travel	mm	97

Stabilizer bar

Diameter of stabilizer bar	mm	17	19	17	19

Front suspension independent, Mac Pherson type with steel track control arms anchored to an auxiliary cross member. Offset coil springs and double acting telescopic shock absorbers. Anti-roll torsion bar.

Coil springs

ENGINE TYPE			1370 12V	1581 16V	1747 16V	1998 20V
Diameter of wire		mm	12,3±0,05	12,7±0,05 (12,9±0,05)*	12,7 ± 0,05 (12,9±0,05)**	13,1 ± 0,05
Number of turns			3,75			
Direction of coil			clockwise			
Height of spring released		mm	434	436 (434)*	436 (434)**	432
Height of spring under a load of:	290 ÷ 253 daN	mm	182	–	–	–
	330 ÷ 402 daN (347 ÷ 423 daN)*	mm	–	182	–	–
	330 ÷ 402 daN (347 ÷ 423 daN)**	mm	–	–	182	–
	364 ÷ 445 daN	mm	–	–	–	182
The springs are subdivided into two categories, identifiable by a mark						
yellow (1) for those under a load of:	321,8 daN	height of mm	>182	–	–	–
	366 daNm (405 daN)*	height of mm	–	>182	–	–
	366 daN (405 daN)*	height of mm	–	–	>182	–
	405 daN	height of mm	–	–	–	>182
green (1) for those under a load of:	321,8 daN	height of mm	⩽182	–	–	–
	366 daNm (405 daN)*	height of mm	–	⩽182	–	–
	366 daN (405 daN)*	height of mm	–	–	⩽182	–
	405 daN	height of mm	–	–	–	⩽182

(1) Springs of the same category must be fitted
(*) For vehicles with automatic transmission and air conditioning
(**) For vehicles with air conditioning

Shock absorbers

Type: telescopic, double acting		low pressure gas	
Open (start of damping action)	mm	508 ± 2,5	501 ± 2,5
Closed (metal against metal)	mm	361 ± 2,5	354 ± 2,5
Travel	mm	147	

Stabilizer bar

Diameter of stabilizer bar	mm	16	17

Coil springs

			1910 TD	2387 TD
Diameter of wire		mm	12,9±0,05	13,2±0,05
Number of turns			3,75	
Direction of coil			clockwise	
Height of spring released		mm	434	436
Height of spring under a load of:	347 ± 423 daN	mm	182	-
	374 ± 474 daN	mm	-	182
The springs are subdivided into two categories, identifiable by a mark				
yellow (1) for those under a load of:	405 daN	height of mm	>182	-
	405 daN	height of mm	-	>182
green (1) for those under a load of:	405 daN	height of mm	⩽182	-
	405 daN	height of mm	-	⩽182

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

Shock absorbers

Type: telescopic, double acting		low pressure gas
Open (start of damping action)	mm	508 ± 2,5
Closed (metal against metal)	mm	361 ± 2,5
Travel	mm	147

Stabilizer bar

Diameter of stabilizer bar	mm	17	19

Rear suspension independent with track control arms anchored to an auxiliary cross member. Variable flexibility coil springs and stabilizer bar. Gas shock absorbers with low friction coefficient lower bushes.

Coil spring

ENGINE TYPE	1370 12V	1581 16V	1747 16V	1998 20V	1910 TD	2387 TD
Diameter of wire mm	12,7±0,05					
Number of turns	5					
Direction of coil	clockwise					
Height of spring released mm	307					
Height of spring under a load of: 324 ÷ 490 daN mm	184					
The springs are subdivided into two categories, identifiable by a mark						
yellow (1) for those under a load of: 407 daN height of mm	>184					
green (1) for those under a load of: 407 daN height of mm	⩽184					

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

Shock absorbers

		1370 12V	1581 16V	1747 16V	1998 20V	1910 TD	2387 TD
Type		gas, telescopic, double acting					
Open (start of damping action)	mm	320 ± 2					
Closed (metal against metal)	mm	222 ± 2			223 ± 2	222 ± 2	223 ± 2
Travel	mm	98			97	98	97

Stabilizer bar

		1370 12V	1581 16V	1747 16V	1998 20V	1910 TD	2387 TD
Diameter of stabilizer bar	mm	17			19	17	19

	 1370 12V	 1581 16V	 1747 16V	 1998 20V
STARTER MOTOR	M. Marelli E80E-12v-0,9 kW	M. Marelli E80E-12v-1KW M. Marelli (*) M70R-12v-1,4 KW (with reduction gear)	M. Marelli M70R-12V-1,4kW (with reduction gear)	
ALTERNATOR	M. Marelli A115I-14V-38/65A M. Marelli A127IR-14V-50/85A (●)	M. Marelli A115I-14V-40/75A M. Marelli A127IR-14V-50/85A(●)		M. Marelli A127IR-14V-50/85A
VOLTAGE REGULATOR	BUILT IN ELECTRONIC			
BATTERY	12V-40Ah-200A	12V-50Ah-250A 12V-60Ah-380A(▲)	12V-50Ah-250A	
IGNITION SYSTEM	Bosch Monomotronic SPI integrated electronic injection/ignition system	Weber-Marelli I.A.W. MPI integrated electronic injection/ignition	HITACHI MPI integrated electronic injection/ignition	Bosch Motronic MPI integrated electronic injection/ignition
IGNITION COIL	Bosch 0.221.503.407	M. Marelli BAE 920 A	HITACHI CM14 - 301	Bosch 0.221.504.006
SPARK PLUGS	NGK BKR 6EKC GOLDEN LODGE 2HLDR CHAMPION RC7BNC FIAT 7GBMSR		NGK BKR 6EKC CHAMPION RC7BMC GOLDEN LODGE 2HLDR FIAT 7GBMSR	FIAT 7GBMSR CHAMPION RC7BMC

(●) For vehicles equipped with air conditioning
(*) North European versions
(▲) For TAXI version only

	1910 TD 75	1910 TD 100	2387 TD
STARTER MOTOR	M. Marelli E 95RL - 12V - 2,2 kW (with reduction gear)		
ALTERNATOR	M. Marelli A115I-14V-38/65A M. Marelli A127IR-14V-50/85A (●)		M. Marelli A115I-14V-40/75A M. Marelli A127IR-14V-50/85A (●)
VOLTAGE REGULATOR	Built in electronic		
BATTERY	12V-60Ah-380A	12V-60Ah-380A 12V-70Ah-450A(▲)	12V-70Ah-450A
PRE-HEATING ELECTRONIC CONTROL UNIT	SIPEA 2904 BITRON 151405.01	BOSCH 0.281.003.004	BOSCH 0.281.003.010
INJECTION ADVANCE ELECTRONIC CONTROL UNIT	–	LUCAS 41000087-101	BOSCH 0.281.001.517
EGR ELECTRONIC CONTROL UNIT	M. Marelli MCR 108	–	–
HEATER PLUGS	BERU 0.100.226.249		

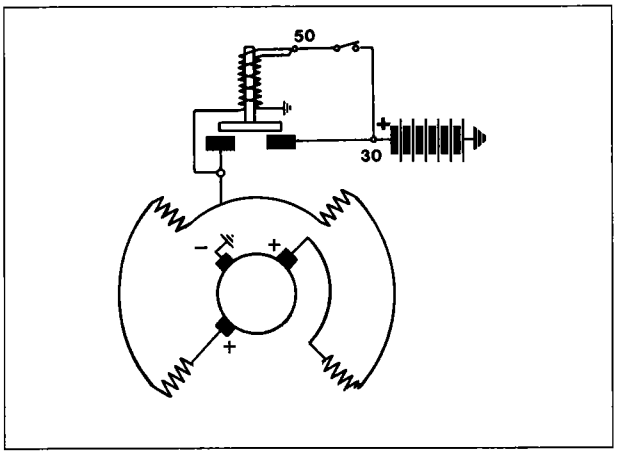
(●) For vehicles equipped with air conditioning
(▲) For TAXI version only

STARTER MOTOR		1370 12V	1581 16V
Type		M. Marelli E80 E-12V-0,9 kW	M. Marelli E80 E-12V-1 kW
Voltage	V	12	
Nominal power	kW	0,9	1
Rotation, pinion side		clockwise	
No. of poles		4	
Field coil		series winding	
Engagement		free wheel	
Operation		solenoid	
End float of armature shaft	mm	0,1 ÷ 0,5	0,1 ÷ 0,45
Data for bench test			
Operating test (*):			
current	A	180	200
speed	rpm	1720	2200
voltage	V	9,5	9,8 ÷ 10
torque developed	daNm	0,37	0,38
Engagement test (*):			
current	A	324	440
voltage	V	7,1	7,6
torque developed	daNm	⩾0,97	⩾1,25
Free running test (*):			
current	A	40	44 ÷ 48
voltage	V	11,4	11,4 ÷ 11,5
speed	rpm	8500 ÷ 9000	11400 ÷ 12300
Relay			
Winding resistance (*)	pull in Ω	0,30 ÷ 0,32	0,32
	hold in Ω	1,2 ÷ 1,3	1,9
Lubrication			
Internal splines and shaft bushes		VS⁺ SAE 10 W	
Sleeve and intermediate disc		TUTELA MR3	

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

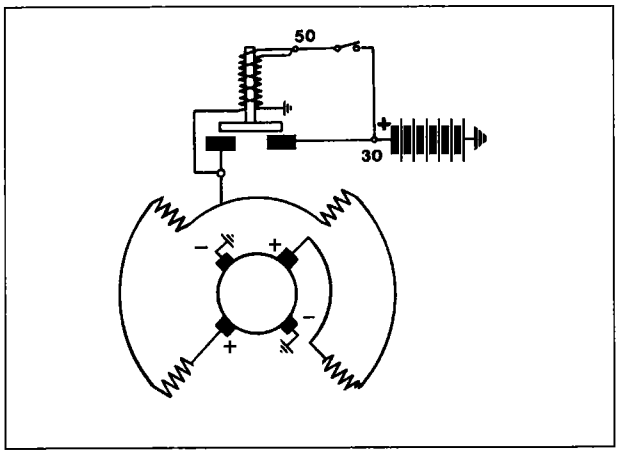
NOTE *When overhauling, it is not advisable to undercut the insulator between the commutator bars*

Wiring diagrams for starter motors



P4F073A01

M. Marelli E80E - 12V - 0,9 kW



P4F073A02

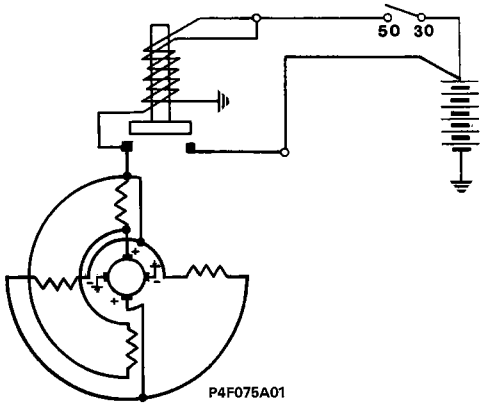
M. Marelli E80E - 12V - 1 kW

STARTER MOTOR

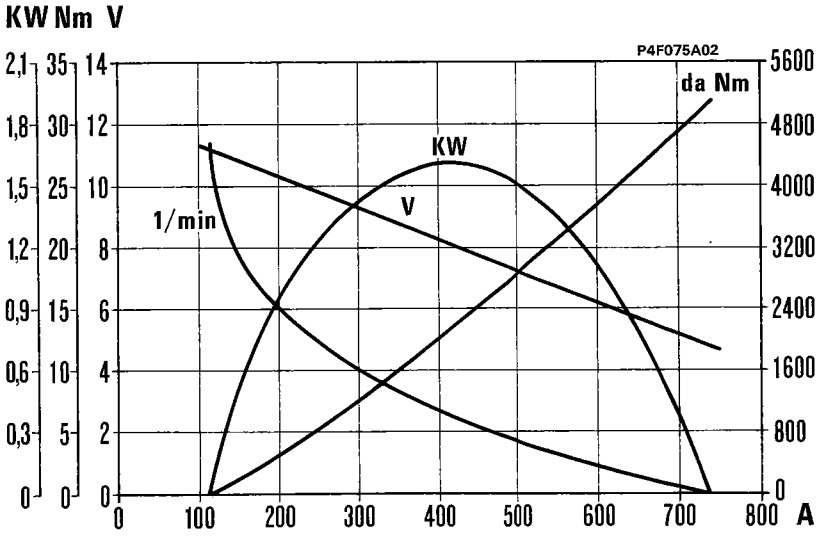
		(●) 1581 16V, 1747 16V, 1998 20V	1910 TD, 2387 TD
Type		M. Marelli M70R-12V-1,4 kW (with reduction gear)	M. Marelli E95RL-12V-2,2 kW
Voltage	V	12	
Nominal power	kW	1,4	2,2
Rotation, pinion side		clockwise	
No. of poles		4	
Field coil		series	series - parallel
Engagement		free wheel	
Operation		solenoid	
End float of armature shaft	mm	0,1 ÷ 0,5	0,15 ÷ 0,45
Data for bench test			
Operating test (*):			
current	A	360 ÷ 380	600
speed	rpm	1150	1400
voltage	V	8,15	7,9
torque developed	daNm	1,30	1,6
Engagement test (*):			
current	A	680 ÷ 700	1110 ÷ 1150
voltage	V	4,9	4,4 ÷ 4,6
torque developed	daNm	3,11	⩾3,9
Free running test (*):			
current	A	60 ÷ 80	120 ÷ 140
voltage	V	4,9	11
speed	rpm	4040	4500 ÷ 4750
Relay			
Winding resistance (*)	pull in Ω	0,33 ÷ 0,37	0,23 ÷ 0,27
	hold in Ω	1,13 ÷ 1,27	0,93 ÷ 1,07
Lubrication			
Internal splines and shaft bushes		VS⁺ SAE 10 W	
Sleeve and intermediate disc		TUTELA MR3	

(*) Data obtained at an ambient temperature of 20°C.
(●) Northern European version only
NOTE *When overhauling it is not necessary to under the insulator between the commutator bars*

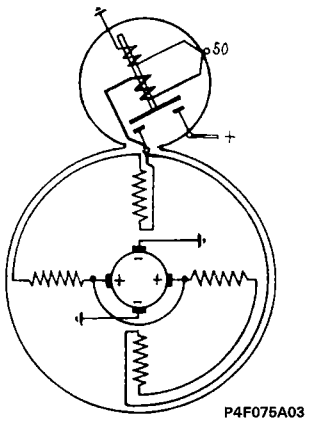
STARTER MOTOR WIRING DIAGRAMS AND TYPICAL CURVES



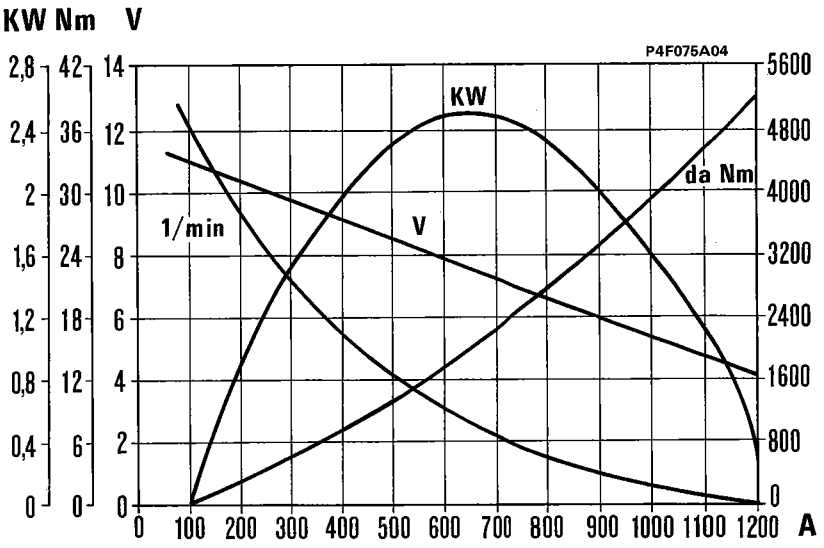
Starter motor wiring diagram M70R - 12V - 1,4 kW (with epicyclic reduction gear)



Typical curves for starter motor M. Marelli M70R 12V - 1,4 kW (with epicyclic reduction gear)



Starter motor wiring diagram M. Marelli E95RL - 12V - 2,2 kW



Typical curves for starter motor M. Marelli E95RL - 12V - 2,2 kW

ALTERNATOR

	1370 12V	1370 12V · 1910 TD · 1581 16V · 2387 TD · 1747 16V	1998 20V · 1910 TD (●) · 1581 16V (●) · 2387 TD (●) · 1747 16V (●)
Type	M.Marelli A115I-14V-38/65A	M.Marelli A115I-14V-40/75A	M.Marelli A127IR-14V-50/85A
Nominal voltage V	14		
Maximum current A	65	75	85
Nominal current at 1800 rpm rpm	38	40	50
Nominal current at 6000 rpm A	65	75	85
Field winding resistance between the slip rings (*) Ω	2,66 ÷ 2,94		2,47 ÷ 2,73
Direction of rotation (seen from control side)	clockwise		
Diode rectifiers	bridge		

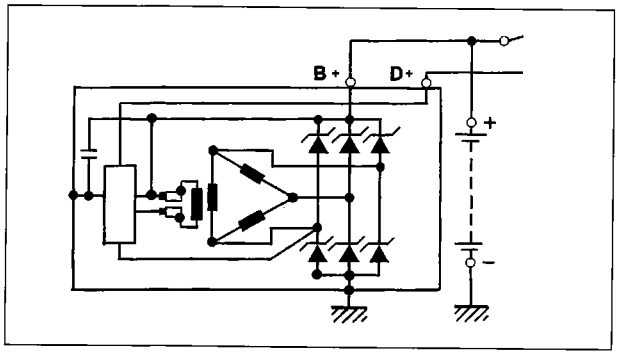
(*) Data obtained at an ambient temperature of 20°C.
(●) For vehicles equipped with air conditioning

VOLTAGE REGULATOR

	Built in electronic	
Type	RTM 151 A	RTM 151 B
Alternator speed for test rpm	7000	
Thermal stabilization current A	-	
Test current A	-	
Regulation voltage (*) V	14,3 ÷ 14,6	

(*) Data obtained at an ambient temperature of 23°C.

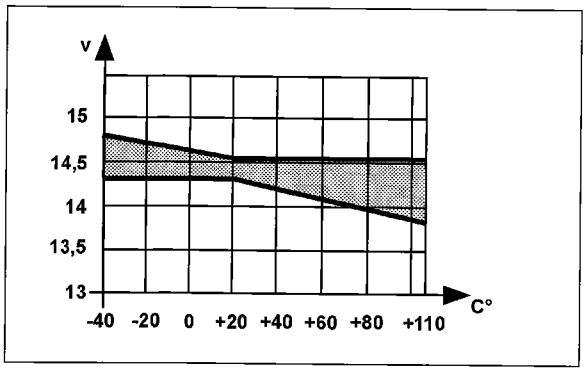
Wiring diagram for alternators



P4F077A01

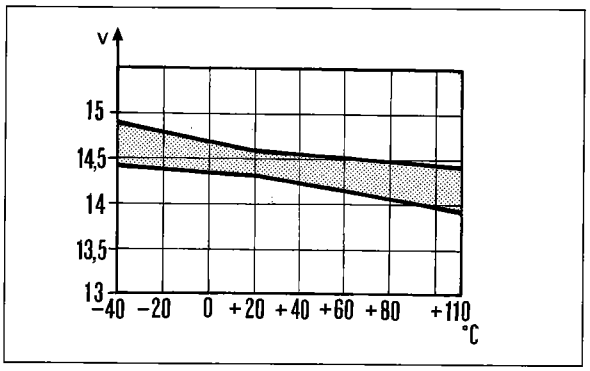
M. Marelli A115I - 14V - 38/65A
M. Marelli A115I - 14V - 40/75A
M. Marelli A127IR - 14V - 40/85A

Typical curves for voltage regulators



P4F077A02

M. Marelli RTM 151 A



P4F077A03

M. Marelli RTM 151 B

CONTROL MODULE FOR INTEGRATED ELECTRONIC INJECTION/IGNITION

12V

Type	Bosch 0.261.203.868 Bosch 0.261.204.543 (*)
Firing order	1 – 3 – 4 – 2

(*) From chassis n° 13101

IGNITION COIL WITH 4 HIGH TENSION SOCKETS

Make		Bosch
Type		0.221.503.407
Ohmic resistance of primary winding at 20°C	Ω	0,45 ÷ 0,55
Ohmic resistance of secondary winding at 20°C	Ω	12000 ÷ 14600

TDC AND RPM SENSOR

Make and type		Bosch 0.281.002.102
Sensor winding resistance at 20° C	Ω	486 ÷ 594
Distance (gap) between sensor and crankshaft pulley tooth	mm	0,8 ÷ 1,5

ADVANCE ON ENGINE

With engine idling (850 ± 50 rpm)	7° ± 2°

SPARK PLUGS

Make and type		NGK BKR6EKC GOLDEN LODGE 2HLDR CHAMPION RC8BYC (●)
Thread		M 14×1,25
Electrode gap	mm	0,8

(●) Excluding cold countries

INTEGRATED ELECTRONIC INJECTION/IGNITION SYSTEM

Type	I.A.W. M.P.I WEBER - MARELLI
Firing order	1-3-4-2

INJECTION/IGNITION CONTROL UNIT

Make and type	versions with manual gearbox	I.A.W. - 1AF.15	I.A.W. - 1AF - 1G (●)
	versions with automatic transmission	I.A.W. - 1AF.25 (●)	I.A.W. - 1AF - 2G (■)

(●) From chassis n° 19295 (■) From chassis n° 34376

IGNITION COIL WITH 4 HIGH TENSION SOCKETS

Make		M. Marelli
Type		BAE 920 A
Ohmic resistance of primary winding at 20°C	Ω	0,580
Ohmic resistance of secondary winding at 20°C	Ω	9100

SPARK PLUGS

Make and type		NGK BKR6EKC GOLDEN LODGE 2HLDR CHAMPION RC8BYC (▲)
Thread		M 14 x 1,25
Electrode gap	mm	0,8

(▲) Excluding cold countries

TDC AND RPM SENSOR

Make		JAEGER
Type		CVM 01
Sensor winding resistance	Ω	575 ÷ 750
Distance (gap) between sensor and crankshaft pulley teeth	mm	0,5÷1,5

ADVANCE ON ENGINE

With engine idling 850 ± 50 rpm	8°

INTEGRATED ELECTRONIC INJECTION/IGNITION SYSTEM	1747 16V
Make	HITACHI MFI-009
Firing order	1 – 3 – 4 – 2

IGNITION COIL (1 PER SPARK PLUG)

Make		HITACHI
Type		CM14-301
Ohmic resistance of primary winding at 20°C	Ω	0,495 ÷ 0,605
Ohmic resistance of secondary winding at 20°C	Ω	-

RPM AND TDC SENSOR

Make and type		HITACHI GE 108835
Sensor winding resistance	Ω	513 ÷ 627
Distance (gap) between sensor and crankshaft pulley tooth	mm	0,4 ÷ 1,2

DETONATION SENSOR

Make and type	NGK KNE-03

CYLINDER RECOGNITION AND TIMING SENSOR

Make and type	Bosch B 232.070.023

ADVANCE ON ENGINE

With engine idling (850±50 rpm)	9° ± 1°

SPARK PLUGS

Make and type		NGK BKR6EKC Golden Lodge 2HLDR Champion RC8BYC (●)
Thread		M 14×1,25
Electrode gap	mm	0,8

(●) Excluding cold countries

INTEGRATED ELECTRONIC INJECTION/IGNITINO SYSTEM	
Make	Bosch 0.261.204.381
Firing order	1 – 2 – 4 – 5 - 3

IGNITION COIL (1 PER SPARK PLUG)

Make		Bosch
Type		0.221.504.006
Ohmic resistance of primary winding at 20°C	Ω	0,4
Ohmic resistance of secondary winding at 20°C	Ω	8500

TDC AND RPM SENSOR

Make and type		Bosch 0.281.002.102
Sensor winding resistance at 20 °C	Ω	774 ÷ 946
Distance (gap) between sensor and crankshaft pulley tooth	mm	0,8 ÷ 1,5

DETONATION SENSOR

Make	Bosch
Type	0.261.231.095

SPARK PLUGS

Make and type		FIAT 7GBMSR CHAMPION RC7BMC
Thread		M 14×1,25
Electrode gap	mm	0,8

Tool number	DESCRIPTION OF TOOL	ENGINE TYPE					
		1370 12V	1581 16V	1747 16V	1998 20V	1910 TD	2387 TD
1840206000	Tool for removing counter-balance shaft front bearing (to be used with 1840207814)						●
1850132000	Spanner (13 mm), with 1/2" socket for removing inlet manifold fixings				●		
1842128000	Tool for removing injection pump pulley						●
1850184000	Spanner for removing and refitting spark plugs	●	●	●	●		
1852128000	Tool for removing and refitting injectors					●	●
1852138000	Spanner for adjusting injector pipe pressure connectors					●	●
1852154000	Spanner, 1/2" socket, for cylinder head fixing bolts	●		●	●	●	●
1852157000	Spanner, 1/2" socket, for cylinder head fixing bolts		●				
1852159000	Spanner for removing-refitting belt tensioner				●		●
1852160000	Tool for removing-refitting ante-chamber fixing bush						●
1852161000	Spanner for phase transformer				●		
1852162000	Spanner for alternator pulley				●		
1860054000	Drift (⌀ 22 mm) for removing and refitting gudgeon pin bush		●				
1860183000	Pliers (⌀ 75-110 mm) for removing and refitting piston circlips	●	●	●	●	●	●
1860224000	Tool for fitting oil seal on camshaft						●
1860251000	Drift for removing gudgeon pin from piston		●				
1860303000	Tool for fitting gudgeon pin circlips on piston		●				

Tool number	DESCRIPTION OF TOOL	ENGINE TYPE					
		1370 12V	1581 16V	1747 16V	1998 20V	1910 TD	2387 TD
1860313000	Drift for fitting oil seal on valve guide	●	●	●	●	●	●
1860395000	Drift for removing valve guide	●	●	●	●	●	●
1860443000	Lever to insert tappet retainer during valve clearance adjustment					●	●
1860443000	Tool for tensioning timing belt	●					
1860454000	Drift for fitting oil seal on valve guide		●	●			
1860460000	Drift for fitting valve guides		●				
1860470000	Support for cylinder head whilst overhauling	●	●	●	●	●	●
1860490000	Valve leakage test equipment 1895868000 retaining device (to be used with 1860470000)					●	
1860644000	Tool for removing and refitting valves (to be used with 1860877000 and 1860804000)	●					●
1860644000	Tool for removing and refitting valves					●	●
1860700000	Band (⌀ 60-125 mm) for fitting normal and oversize pistons in cylinders	●	●	●	●		
1860724000	Tool for retaining tappets whilst replacing shims					●	●
1860749000	Support for cylinder head whilst removing and refitting valves					●	
1860757000	Tool for removing cartridge oil filter					●	
1860758000	Tool for removing cartridge oil filter	●	●	●			●
1860765000	Tool for retaining toothed pullies and injection pump drive pulley		●				●
1860771000	Flywheel lock		●				

Tool number	DESCRIPTION OF TOOL	ENGINE TYPE					
		1370 12V	1581 16V	1747 16V	1998 20V	1910 TD	2387 TD
1860790000	Lever for removing and refitting valves (to be used with 1860786000-1860787000-1860788000-1860789000)		●	●			
1860804000	Support for cylinder head whilst removing and refitting valves	●					
1860810000	Dummy heater plug for ante-chamber (to be used when fitting ante-chamber fixing bush)					●	●
1860812000	Tool for refitting valve guides			●	●	●	●
1860813000	Guide for fitting oil seal on valve guides	●	●	●	●		
1860814000	Guide for fitting oil seal on valve guide					●	●
1860815000	Adaptor for rotating crankshaft	●	●	●	●	●	●
1860816000	Drift for fitting oil pump gasket			●	●	●	●
1860817000	Tool for centering gasket on crankshaft	●		●	●	●	●
1860818000	Tools for camshaft timing				●		
1860821000	Tool for removing small end bush			●	●	●	●
1860822000	Tool for timing oil pump				●		●
1860824000	Tool for fitting camshaft gasket			●	●	●	●
1860831000	Spanner for rotating camshaft pullies	●				●	●
1860833000	Spanner for removing-refitting oil sump	●		●	●	●	●
1860834000	Spanner for removing-refitting oil sump	●		●	●	●	●
1860835000	Tool for extracting oil seal on valve guide	●	●	●	●	●	●

Tool number	DESCRIPTION OF TOOL	ENGINE TYPE					
		1370 12V	1581 16V	1747 16V	1998 20V	1910 TD	2387 TD
1860836000	Tool for locking rotation of crankshaft			●	●		
1860844000	Tool for fitting camshaft gasket, inlet side			●			
1860845000	Spanner for tensioning timing belt			●			
1860846000	Flywheel lock (operations at the bench)	●	●	●	●	●	●
1860848000	Spanner for camshaft pulley, exhaust side			●			
1860856000	Spanner for timing pulley, inlet side			●			
1860859000	Supports for removing-refitting power unit (to be used with 1860860000)	●	●	●	●	●	●
1860859001	Bracket for removing-refitting power unit (to be used with 1860859000 and 1860860000)	●					
1860859002	Adaptor for removing-refitting power unit (to be used with 1860859000 and 1860860000)				●	●	●
1860860000	Support for removing-refitting power unit	●	●	●	●	●	●
1860874000	Tools for camshaft timing		●				
1860875000	Tools for camshaft timing			●			
1860876000	Tool for tensioning timing belt		●				
1860877000	Tool for dismantling valves	●					
1860878000	Tool for fitting gasket for crankshaft front cover		●				
1860879000	Grip for tool for fitting crankshaft rear cover gasket		●				
1860880000	Tool for fitting gasket for crankshaft rear cover (to be used with 1860879000)		●				

Tool number	DESCRIPTION OF TOOL	ENGINE TYPE					
		1370 12V	1581 16V	1747 16V	1998 20V	1910 TD	2387 TD
1860882000	Tool for fitting gasket for camshaft cover and auxiliary shaft cover		●				
1860883000	Pin for centering ante-chamber					●	●
1860884000	Spanner for removing-refitting combustion ante-chamber					●	●
1860885000	Spanner for rotating camshaft pullies		●				
1860886000	Tool for extracting injection pump pulley					●	
1860887000	Tool for positioning rpm sensor		●				
1860888000	Tool for extracting power steering pump support bearing				●		
1860892000	Tool for timing camshafts				●		
1860893000	Spanner for fuel pump cover	●	●	●	●		
1860895000	Vertical support for dial gauge for measuring T.D.C.		●				
1860896000	Graduated disc for engine timing		●				
1860898000	Flywheel lock (on vehicle)			●	●	●	●
1860899000	Tool for timing camshaft	●					
1860901000	Tool for positioning T.D.C.	●					
1860905000	Tool for determining T.D.C.					●	●
1860942000	Graduated disc for angular tightening of cylinder head fixing bolts	●	●	●	●	●	●
1860964000	Fork for rotating injection pump pulley					●	

Tool number	DESCRIPTION OF TOOL	ENGINE TYPE					
		1370 12V	1581 16V	1747 16V	1998 20V	1910 TD	2387 TD
1860965000	Pin for belt tensioner stop					●	
1860966000	Spanner for tensioning auxiliary shaft drive belt						●
1860967000	Spanner for removing-refitting lubrication connector					●	
1860968000	Lever for tensioning auxiliary shaft drive belt						●
1860969000	Connector for checking oil pressure					●	
1861001039	Pair of brackets for fixing engine to rotating stand				●	●	●
1861001041	Pair of brackets for fixing engine to rotating stand			●			
1861001042	Pair of brackets for fixing engine to rotating stand		●				
1865090000	Complete support for dial gauge for checking injection pump advance						●
1867019000	Drift for removing and refitting oil pump drive gear bush		●				
1867029000	Flywheel lock (at the bench)				●		●
1867030000	Flywheel lock (on vehicle)	●					
1870404000	Support for dial gauge for measuring cylinder liner/bore recesses and projections				●	●	
1890385000	Reamer for valve guide openings	●	●	●	●		
1895762000	Torque wrench for checking auxiliary shaft drive belt tension	●	●	●	●		
1895868000	Valve leakage test equipment	●	●	●	●	●	●
1895882000	Dial gauge for measurements (use a magnetic base 1870404000)						●

Tool number	DESCRIPTION OF TOOL	ENGINE TYPE					
		1370 12V	1581 16V	1747 16V	1998 20V	1910 TD	2387 TD
1895890000	Fuel pump delivery pressure gauge with unions	●	●	●	●		

CLUTCH

1870081000	Guide pin for centering clutch disc					●	●
1870447000	Guide pin for centering clutch disc		●				
1875084000	Tool for removing clutch disc thrust bearing						●
1875086000	Guide pin for centering clutch disc	●		●	●		

GEARBOX - DIFFERENTIAL

1842133000	Tool for removing differential bearing and gearbox gears	●					
1842134000	Tool for removing gearbox gears and hubs	●					
1845028000	Tool for removing differential bearings	●					
1845057000	Tool for removing lay shaft 5th speed gear bush	●					
1845062000	Tool to remove front axle shaft constant velocity joint (to be used with 1847017001)		●	●	●	●	
1847017001	Earth (to be used with 1860889000)	●	●	●	●	●	●
1847017004	Plate for removing flanged shaft from planet gear (to be used with 1847017001)		●	●	●	●	
1847056000	Tool for removing differential output shafts	●					
1850132000	Spanner for bolts fixing differential casing cover				●		
1850113000	Spanner (12 mm) for gearbox oil drain plug	●	●	●	●	●	

Tool number	DESCRIPTION OF TOOL	ENGINE TYPE					
		1370 12V	1581 16V	1747 16V	1998 20V	1910 TD	2387 TD
1855035000	Spanner (19 mm) for removing and refitting gearbox	●	●	●	●	●	
1860691000	Drift for removing and refitting gear hardening ball plug	●					
1860851000	Cross member for removing-refitting gearbox	●	● (*)	●	●	●	●
1860851001	Transverse adaptor for removing-refitting gearbox (to be used with 1860851000)	●	● (*)	●	●	●	●
1860870000	Connector for checking line pressure		● (*)				
1860873000	Bracket for removing-refitting gearbox	●	● ● (*)	●	●		
1860889000	Two-way connector for earth	●	●	●	●	●	●
1870007000	Universal handle	●	●	●	●	●	
1870152000	Drift for fitting hubs and gears on main and lay shafts	●	●				
1870419000	Tool for fitting gasket for main shaft on bell housing (to be used with 1870007000)	●	●	●	●	●	
1870448000	Tool for fitting front bearing inner race		●	●	●	●	
1870469000	Tool for fitting differential bearing (to be used with 1870007000)	●					
1870478000	Tool for fitting 4th speed gear bush and rear bearing		●	●	●	●	
1870629000	Drift for fitting differential casing cover seal (to be used with 1870007000)	●					
1870630000	Drift for fitting differential casing seal (to be used with 1870007000)	●					
1870631000	Drift for fitting main and lay shaft bearings and gears	●					
1870632000	Drift for fitting bearings	●					

(*) Tools for Aisin automatic transmission

Tool number	DESCRIPTION OF TOOL	ENGINE TYPE					
		1370 12V	1581 16V	1747 16V	1998 20V	1910 TD	2387 TD
1870633000	Drift for fitting clutch release shaft bush	●					
1871001014	Support for gearbox-differential unit whilst overhauling (to be fitted to 1861000000 or 1871000000)	●					
1874140005	Pair of tools for staking gearbox shaft nuts (to be used with 1874140001)	●					
1874541000	Tool for fitting differential bearing outer race				●		
1875016000	Drift for fitting seal on drive shaft flange		●	●	●	●	
1875017000	Tool for removing and refitting differential bearing races (to be used with 1840005003)		●	●	●	●	
1875088000	Drift for fitting main and lay shaft bearings	●					
1881124000	Pliers for adjusting main and lay shaft rear bearing circlips	●					
1895411000	Pipes and connectors (1/4") for checking automatic gearbox oil pressure		● (*)				
1895424000	Pressure gauge (0÷25 bar) for checking automatic gearbox oil pressure		● (*)				
1895655000	Tool for determining thickness of differential bearing adjustment shim (to be used with 1895884000)	●					

BRAKING SYSTEM

1856132000	Spanner (10-11 mm) for adjusting brake fluid pipe unions	●	●	●	●	●	●
1856133000	Spanner for adjusting rear brake caliper self-adjusting device				●		●
1872273000	Set of tools for retaining brake cylinder pistons whilst fitting shoes	●	●	●		●	
1895899000	Vacuum gauge with connectors for checking operation on vehicle of vacuum pump					●	●
1895873000	Tool for adjusting position of load proportioning valve	● (**)	●	●	●	●	

(*) Tools for Aisin automatic transmission
(**) Versions with ABS only

Tool number	DESCRIPTION OF TOOL	ENGINE TYPE					
		1370 12V	1581 16V	1747 16V	1998 20V	1910 TD	2387 TD
1881136000	Pliers to remove and refit rear brake shoes return springs	●	●	●		●	

STEERING

1847038000	Tool for removing steering track rod ends	●	●	●	●	●	●
1860888000	Tool for removing-refitting power steering pump support bearing				●		

SUSPENSION

1845028000	Tool for removing front hub bearing inner race from flange(to be used with 1840005003 and 1840005302)	●	●	●	●	●	●
1847014000	Percussion extractor for wheel hub caps	●	●	●	●	●	●
1874555000	Pneumatic tool for compressing suspension springs when removing shock absorber	●	●	●	●	●	●
1875055000	Drift for fitting front wheel hub bearings (to be used with 1870007000)	●	●	●	●	●	●
1875059000	Drift for fitting rear wheel hub caps	●	●	●	●	●	●

AUXILIARY UNITS

1860494000	Tool for removing air conditioning compressor electro-magnet coupling and pulley	●	●	●	●	●	●
1895655000	Plate for measuring air conditioning compressor electro--magnet coupling clearance	●	●	●	●	●	●

ELECTRICAL EQUIPMENT

1850167000	Spanner (13 mm) for adjusting starter motor fixing bolts			●			
1860893000	Tool for removing fuel level gauge ring nut	●	●	●	●		
1860897000	Tool for extracting radio	●	●	●	●	●	●

Tool number	DESCRIPTION OF TOOL	ENGINE TYPE					
		1370 12V	1581 16V	1747 16V	1998 20V	1910 TD	2387 TD
1876044000	Tool for extracting cigar lighter base	●	●	●	●	●	●

BODYWORK

1860890000	Spanner for removing-refitting door hinges	●	●	●	●	●	●
1878034000	Tool for removing window opening handles	●	●	●	●	●	●
1878077000	Tool for removing door panel or fixing buttons	●	●	●	●	●	●
1878080000	Tool for positioning door check strap whilst fitting flexible retaining pin (to be used with 1878081000)	●	●	●	●	●	●
1878081000	Pliers for removing-refitting door check strap flexible pin (to be used with 1878080000 during fitting)	●	●	●	●	●	●

ORDINARY TOOLS

1840005000	Universal extrator	●	●	●	●	●	●
1840005003	Three arm bridge (complete with brackets)	●	●	●	●	●	●
1840005302	Brackets (2) for removal	●	●	●	●	●	●
1840206000	Percussion extractor (to be used with specific tools)	●	●	●	●	●	●
1846017000	Base for puller half-rings	●	●	●	●	●	●
1847017001	Percussion extractor (to be used with specific tools)	●	●	●	●	●	●
1861000000	Rotating stand for overhauling engine (also used for gearboxes and differentials)	●	●	●	●	●	●
1861000001	Pair of sections for brackets supporting the engine on rotating stand 1861000000	●	●	●	●	●	●
1870007000	Universal handle	●	●	●	●	●	●

Tool number	DESCRIPTION OF TOOL	ENGINE TYPE					
		1370 12V	1581 16V	1747 16V	1998 20V	1910 TD	2387 TD
1870404000	Support for measuring recesses and projections (to be used with 1895881000)	●	●	●	●	●	●
1871000000	Rotating column for overhauling gearboxes and differentials	●	●	●	●	●	●
1874140001	Pliers for staking nuts (to be used with specific tools)	●	●	●	●	●	●
1876048000	Tool for extracting MINI HYLOK CONTACT type terminals (MHF) ⌀ 2,15 mm	●	●	●	●	●	●
1881138000	Adjustable pliers for pipe restricting bands and tabs	●	●	●	●	●	●
1882002010	Tool panel to be fixed to wall or stand 1882003000 (with hooks)	●	●	●	●	●	●
1882003000	Stand to hold two tool panels	●	●	●	●	●	●
1882011000	Set of additional hooks (50) for tool panel	●	●	●	●	●	●
1895113000	Gauge (0,05-0,10...0,80 mm) for checking various clearances	●	●	●	●	●	●
1895881000	Dial gauge to be used with specific tools (measuring capacity mm 10; shank length mm 16,7)	●	●	●	●	●	●
1895882000	Dial gauge to be used with specific tools (measuring capacity mm 10; shank length mm 88)	●	●	●	●	●	●
1895884000	Dial gauge to be used with specific tools (measuring capacity mm 5; shank length mm 16,5)	●	●	●	●	●	●

DESCRIPTION	Thread size	Tightening torques daNm	ENGINE TYPE 1370 12V	1581 16V	1747 16V	1998 20V	1910 TD	2387 TD
ENGINE								
Main bearing caps fixing, flanged bolt	M10	8		●				
	M12	2+100°	●		●	●	●	●
(Dust) shield fixing, bolt	M6	0,9	●		●	●	●	●
Sump oil drain plug	M14	2,5	●					
	M18	2			●	●	●	●
	M22	5		●				
Oil sump fixing, bolt	M6	0,9	●	●	●	●	●	●
	M8	2,5	●		●	●	●	●
Flywheel side and timing side cover fixing, bolt	M6	0,7		●				
		0,9	●		●	●	●	●
Timing belt shields fixing, bolt	M6	0,9	●	●	●	●	●	●
	M8	2,5		●				
	M10×1,25	5		●				
Cylinder head to crankcase fixing, bolt	M10×1,25	4+ 90°+90°	●	●				
Cylinder head to crankcase fixing, bolt	M10	4+ 90°+90°+90°			●	●		
Cylinder head to crankcase fixing, bolt	M12	6,5+ 90°+90°+90°						●
Cylinder head to crankcase fixing, bolt	M10	6,5+ 90°+90°+90°					●	
Engine support to crankcase fixing, bolt	M10	5				●		
	M10×1,25	7	●	●	●			
	M8	2,5		●				
Camshaft cap fixing, bolt and nut	M7	1,5	●		●	●	●	●
Tappet cover to cylinder head fixing, bolt	M6	0,9	●		●	●	●	●
Inlet manifold to cylinder head fixing, nut	M8	2,5	●		●		●	●
		3		●				
Exhaust manifold to cylinder head fixing, nut	M8	2,5	●		●	●	●	●
		3		●				
Flywheel to crankshaft fixing, bolt	M6	0,9	●		●	●		
Crankpin fixing, bolt	M8	2+40°	●					
	M8	2+60°			●	●	●	●

DESCRIPTION	Thread size	Tightening torques daNm	ENGINE TYPE 1370 12V	1581 16V	1747 16V	1998 20V	1910 TD	2387 TD
Engine flywheel fixing, bolt	M10	8,3		●				
	M12×1,25	16	●		●	●	●	●
Crankshaft gear fixing, bolt (*)	M16 left	36			●	●	●	●
Auxiliary pulley to crankshaft gear fixing, bolt	M8	2,5	●				●	●
		3,2			●			
Gear to camshaft fixing, bolt (inlet and/or exhaust)	M12	12	●	●	●	●	●	●
Butterfly casing to inlet manifold fixing, bolt	M6	0,9	●					
Accelerator bracket to inlet manifold fixing, bolt	M6	0,9	●					
Sensors to cylinder block/crankcase and cylinder head fixing, bolt	M6	0,9	↙		●	●	●	●
Detonation sensor to cylinder block/crankcase fixing, bolt	M8	2,5	●		●	●		
Coils support to cylinder head fixing, bolt	M6	0,9	●					
Connector mounting bracket to support for coils and inlet manifold fixing, bolt	M6	,9	●					
Oil pump to crankcase fixing, bolt	M6	0,9	●		●	●	●	●
	M8	2,5		●				
Oil dip stick fixing, nut and bolt	M6	0,9	●			●	●	●
Water pump fixing, bolt	M8	2,5	●	●	●	●	●	●
Water inlet pipe to cylinder head fixing, bolt	M6	0,9	●		●	●		
	M8	2,5	●	●				
	M10	5				●		
Thermostat to cylinder head fixing, bolt	M8	2,5	●	●	●	●		
Air conditioning compressor support to crankcase fixing, bolt	M10×1,25	5	●		●			
Alternator support to crankcase fixing, bolt	M8	2,5	●					
	M10×1,25	7	●					
	M10×1,25	5		●				

(*) The bolt should not be lubricated

DESCRIPTION	Thread size	Tightening torques daNm	ENGINE TYPE 1370 12V	1581 16V	1747 16V	1998 20V	1910 TD	2387 TD
Lower bracket to alternator mounting and alternator fixing, nut	M10	5		●				
	M12	7	●		●	●	●	
Upper and lower bracket to crankcase fixing, flanged bolt	M10×1,25	5	●					
Upper alternator fixing, nut	M10×1,25	5	●					
Compressor to support fixing, bolt	M8	2,5	●	●		●		
	M8	3,2			●			
	M10	5				●	●	●
Auxiliary shaft automatic belt tensioner and alternator mounting to crankcase fixing, bolt	M8	2,5	●					
Auxiliary shaft fixed belt tensioner fixing, flanged bolt	M8	2,5					●	●
	M10	5	●		●			
Timing belt tensioner fixing, nut for bolt	M8	2,5	●	●	●			
Power steering pump fixing, bolt	M6	2,5	●	●	●		●	●
	M10×1,25	5		●				
Power steering pump pulley shield fixing, bolt	M6	0,9	●					
Pulley to power steering pump fixing, bolt	M6	0,9		●				
	M8	2,5	●		●	●	●	●
Water temperature sender unit fixed to cylinder head	M16×1,5 tapered	2,5	●		●	●	●	●
		3		●				
Oil pressure switched fixed to crankcase	M14×1,5	2,2	●		●	●	●	●
		3,2		●				
Water temperature sender unit	M12×1,5	2	●		●	●	●	●
		2,4		●				
Ignition coil to support fixing, bolt	M5	0,4	●					
	M6	0,9		●				
Spark plug	M14×1,25	2,7	●	●	●	●		
Oil temperature sender unit on sump	M14×1,5	2,2			●	●		
Crankcase timing tensioner support plate fixing, bolt	M8	2,5		●				
	M10×1,25	5						
Rpm sensor support to front cover fixing, bolt	M6	0,9		●				

DESCRIPTION	Thread size	Tightening torques daNm	ENGINE TYPE 1370 12V	1581 16V	1747 16V	1998 20V	1910 TD	2387 TD
Auxiliary shaft cover to crankcase fixing, bolt	M6	1,1		●				
Engine breather to crankcase fixing, bolt	M8	2,5		●				
Tensioner bracket to engine support fixing, bolt (for versions with air conditioning)	M10×1,25	5		●		●		
Bearing to tensioner bracket fixing, nut (for versions with air conditioning)	M10	5		●				
Camshaft housing (inlet/exhaust) to cylinder head fixing, bolt	M8	1,5		●				
Inlet manifold to exhaust camshaft housing fixing, bolt	M7	1,5		●				
Connecting rod bolt, nut	M9×1	5,1		●				
Engine pulley fixing, nut	M20	19		●				
Coil holder bracket fixing, nut	M7	1,5		●				
Rpm sensor to support fixing, bolt	M6	0,9		●				
Timing tensioner bearing to cylinder head fixing, bolt	M12×1,25	8,7		●				
Oil pump shaft driven gear fixing, bolt	M10×1,25	8		●				
Alternator to mounting and bracket fixing, bolt	M12×1,25	8,5		●				
		9			●			
	M10×1,25	5		●				
		7			●			
Water pump - alternator tensioner bearing fixing, nut	M10	5		●				
Bearing mounting bracket to alternator mounting fixing, bolt	M10×1,25	5		●				
Power steering pump fixing, nut	M10×1,25	5		●				
Exhaust manifold to crankcase fixing, bolt	M8	2,5			●			

DESCRIPTION	Thread size	Tightening torques daNm	ENGINE TYPE 1370 12V	1581 16V	1747 16V	1998 20V	1910 TD	2387 TD
Bracket to engine support fixing, bolt	M8	2,5				●		
	M10×1,25	5				●		
Threaded, tapered plug	M16×1,5	2,5			●			
	M10×1,25	1			●			
Coils cover fixing, bolt	M5	0,5			●			
	M6	0,9			●	●		
Wiring support bracket fixing, bolt	M8	2,5			●			
Connecting rod support bracket fixing, bolt	M8	2,5			●			
	M10	5			●			
Fuel manifold fixing, bolt	M6	0,9			●			
Coils fixing bolt	M5	0,5			●			
	M6	0,9				●		
Oil pump element fixing, bolt	M7	1,5			●			
Oil dip stick holder extension fixing, bolt	M10×1,25	5			●			
Water-oil heat exchanger fixing connector	M20	3			●			
Rigid pipe to water manifold and water manifold to cylinder head fixing, bolt	M6	0,9			●			
Water manifold to cylinder head fixing, nut	M8	2,5			●			
Starter motor rear bracket fixing, bolt	M8	2,5			●			
Starter motor to bracket fixing, nut	M6	0,9			●			
Alternator/power steering mounting fixing, bolt	M8	3,2			●			
	M8 (*)	2,5 (*)			●			
	M10	7			●			
Alternator strut fixing, bolt	M8	2,5			●			
Drive shaft support fixing, bolt	M8	2,5			●			
	M10	7			●			
	M10	5				●		●

(*) Length 22 mm.

DESCRIPTION	Thread size	Tightening torques daNm	ENGINE TYPE 1370 12V	1581 16V	1747 16V	1998 20V	1910 TD	2387 TD
Oil level sender unit	M12×1,25	2			●	●	●	●
Automatic belt tensioner to alternator mounting fixing, bolt	M8	2,5				●	●	●
	M10	7				●	●	
Fixed belt tensioner to alternator mounting fixing, bolt	M8	2,5				●	●	
Fixed belt tensioner to air conditioning compressor support fixing, bolt	M10×1,25	5				●	↙	●
Belt tensioner to engine mounting fixing, bolt	M8	2,5				●		
	M10	5				●		
Connector under tappet cover fixing, bolt	M6	0,9				●		
Reaction bracket to duct and drive shaft support fixing, bolt	M8	2,5				●		
Inlet manifold bracket and wiring conduit fixing, nut	M8	2,5				●		
Flywheel damper to gear fixing, bolt	M8	2,5				●		
Timing belt tensioner fixing, bolt	M10	5				●	●	●
Inlet gear to phase transformer fixing, bolt	M6	0,9				●		
Pick up to cap fixing, bolt	M6	0,9				●	●	●
Heat exchanger connector, bolt	M20	3				●		
Water return pipe from heater to cylinder head fixing, bolt	M10×1,25	5				●		
Water supply pipe to crankcase fixing, bolt	M8×1,25	2,5				●		
Air conditioner shield fixing, bolt	M6	0,9				●		
Adjustment screw tightening, nut	M10	5				●		

DESCRIPTION	Thread size	Tightening torques daNm	ENGINE TYPE 1370 12V	1581 16V	1747 16V	1998 20V	1910 TD	2387 TD
Reaction bracket to drive shaft fixing, bolt	M10×1,25	5				●	●	
Nut for bolt btwn sump and drive shaft support	M8	2,5				●	●	●
Power steering pump to connecting rod support fixing, bolt	M8	2,5				●		●
Power steering pulley to shaft fixing, bolt	M16	10				●		
Oil vapour separator to inlet manifold fixing, nut	M6	0,9					●	●
Auxiliary support to crankcase fixing, flanged bolt	M8	2,5					●	●
	M10	5					●	●
Injector fixing, ring nut	M35	12					●	●
Exhaust manifold reaction bracket to crankcase, fixing	M8	2,5					●	●
Injection pump to mounting, crankcase and inlet manifold fixing, bolt	M8	2,5					●	●
Reaction bracket to injection pump fixing, nut	M8	2,5					●	●
Injection pump gear fixing, nut	M14	5					●	●
Complete injector	M24	5,5					●	●
Fuel filter to inlet manifold fixing, nut	M8	2,5					●	●
Turbo-charger to exhaust manifold fixing, nut	M8	2,5					●	●
Exhaust manifold connector to turbo-charger fixing, nut	M8	2,5					●	●
Filler for fixing oil supply pipe to turbo-charger	M10	1,5					●	●
	M12							
Thermostatic valve fixing, connector	M20	3					●	●

DESCRIPTION	Thread size	Tightening torques daNm	ENGINE TYPE 1370 12V	1581 16V	1747 16V	1998 20V	1910 TD	2387 TD
Complete jet to crankcase fixing, bolt	M6	0,9					●	●
Water outlet front filler to cylinder head fixing, bolt	M6	0,9					●	●
Thermostat to water outlet filler from cylinder head fixing, bolt	M7	1,5					●	●
Upper and lower alternator reaaction brackets fixing, bolt	M10×1,25	5					●	●
Air vacuum pump to cylinder head fixing, bolt	M8	2,5					●	●
EGR valve to exhaust manifold fixing, nut	M8	2,5					●	●
Pipe to EGR valve fixing, bolt	M8	2,5					●	●
Pipe to exhaust or inlet manifold fixing, nut	M6	0,9					●	●
Air pressure switch	M12	2					●	●
Heater plug	M12	1,5					●	●
Reaction bracket to exhaust manifold fixing, nut	M8	2,5						●

DESCRIPTION	Thread size	Tightening torques
		daNm
ENGINE EXHAUST		
Bracket connecting half brackets support front pipe to bracket anchored to differential support fixing, bolt	M8	2,5
Front section to catalytic converter fixing, bolt with unlosable flexible washer	M8	2,5
Bracket with mounting to differential side support fixing, bolt	M8	2,5
Front section of exhaust pipe to manifold fixing, nut for flange	M8	3,2
Front pipe supporting half bracket fixing, nut with metal insert	M8	2,5
Bracket to cylinder block/crankcase fixing, nut with unlosable tapered washer	M8	2,5
Rear pipe to catalytic converter fixing, nut	M10×1,25	4,2
Bracket to floor for supporting first rear silencer fixing, bolt	M8	2,8
Rear exhaust pipe final mounting bracket to floor fixing, bolt	M8	2,8
Bracket to silentbloc fixing, bolt	M10	3
POWER UNIT MOUNTING		
Support to gearbox-differential fixing, bolt	M12×1,25	8,5
Engine to bodyshell, engine and gearbox side fixing, bolt	M8	3,5
Bracket to gearbox-differential side fixing, bolt (1370 engine)	M10×1,25	4,5
Bracket to gearbox-differential side fixing, bolt (1370 engine)	M12×1,25	9
Connecting rod support to bodyshell fixing, bolt (1747 - 1998 engines)	M8	3,8

DESCRIPTION	Thread size	Tightening torques daNm
Connecting rod support to bodyshell fixing, tapered bolt (1747 - 1998 engines)	M8	2,8
Mounting to support - engine side fixing, nut (1370 engine)	M10×1,25	4,5
Mounting to engine side support fixing, nut (1998 engine)	M12×1,25	8
Support to gearbox fixing, bolt with flange (1370 engine)	M10×1,25	5
Differential support to gearbox fixing, nut (all versions with C510 gearbox)	M12×1,25	8
Reaction rod to bracket and engine support fixing, bolt (1747 - 1998 engines)	M10×1,25	5
Mounting to engine side support fixing, bolt (1581 engine)	M12×1,25	8
Support to engine sump, differential side, fixing, bolt (1747 - 1998 engines)	M12×1,25	8
Brace to differential side support fixing, bolt (1747 - 1998 engines)	M12×1,25	8
Differential side flexible mounting to cross member fixing, bolt	M8	4
Bracket to gearbox (gearbox side) fixing, bolt (1998 engine)	M10×1,25	5
Bracket to gearbox (gearbox side) fixing, bolt (1581 -1747 engines)	M10×1,25	5
Anti-bending strut to crankcase fixing, bolt (1581 engine)	M10×1,25	5
Anti-bending strut bracket to differential side support and strut joined to bracket fixing, bolt (1581 engine)	M8	2,8

PEDALS ASSEMBLY

Accelerator pedal to pedals assembly fixing, nut	M6	0,44
Brake and clutch pedals complete support to bodyshell fixing, nut	M8	1,5
Pedals assembly to dashboard fixing, bolt with wide flange	M8	2,6

DESCRIPTION	Thread size	Tightening torque
		daNm
Clutch cable to gearbox fixing and adjusting, nut	M6	0,44
Brake and clutch pedals hinged pin to pedals assembly fixing, nut	M8	3,2

EXTERNAL GEARBOX CONTROLS

Gear lever support to floor panel fixing, bolt	M6	0,74
Lower selector and engagement rod to gear lever fixing, bolt	M8	2,8
Intermediate idler pin fixing, nut	M8	1,7
Spherical heads to levers fixing, nut	M8	1,7
Selector idler to gearbox fixing, nut for bolt	M8	1,7
Reverse gear inhibitor to gearbox fixing, bolt	M8	1,7
Spherical heads to selector lever fixing, nut	M8	1,7
Reaction bracket to gearbox fixing, bolt	M8	2,7
Gearbox control to support fixing, nut	M6	0,74
Handbrake mounting and gear lever to bodyshell fixing, bolt	M8	3,5

GEARBOX AND DIFFERENTIAL

Speed control rod position spring fixing, nut	M14×1,5	3
Plate to gearbox casing fixing, bolt	M8	2,5
Gearbox casing cover and plate fixing, bolt	M8	2,5

DESCRIPTION	Thread size	Tightening torques daNm
Cover to gearbox casing support fixing, bolt	M6	1
Gearbox casing to bell housing fixing, bolt	M8	2,5
Reverse gear shaft fixing, bolt	M8	3,4
5th speed gear main and lay shaft fixing, ring nut	M20×1,5	11,8
Gear selector forks fixing, bolt	M6	1,8
Lever to gear selector and engagement shaft fixing, bolt	M8	2,5
Support for reverse gear control lever fixing, bolt	M6	1
Bush for gear control shaft fixing, bolt	M6	1
Front drive shaft reduction ring gear fixing, bolt	M10×1,25	8,8
Differential casing to gearbox casing retaining flange fixing, bolt	M10×1,25	4,9
	M8	2,5
Speedometer mounting fixing, bolt	M6	1,2
Tapered, threaded gearbox oil drain plug	M22×1,5	4,6
Tapered, threaded gearbox oil filler plug	M22×1,5	4,6
Right differential shaft support fixing, bolt	M6	1
Threaded, tapered plug for 1st - 2nd speed rod on gearbox casing	M18×1,5	2
Support for gear selector lever fixing, bolt	M8	1,5
Switch for reversing light	M14×1,25	3

DESCRIPTION	Thread size	Tightening torques daNm
BRAKING SYSTEM		
Brake back plate to suspension arm fixing, bolt with unlosable flexible washer	M8	2,4
Front brake caliper fixing, bolt	M10x1,25	5,7
Front brake caliper to steering knuckle fixing, bolt with unlosable tapered wahser (1998 20V only)	M12×1,25	10,5
Front brake disc, rear brake disc, rear brake drum fixing, bolt (with wheel centering function)	M8	1,2
Complete bracket for braking system fixing, bolt with unlosable tapered washer	M8	2,5
Flexible pipe to front brake caliper, connector	M10	1,4
Bleed screw on front brake caliper	M8	0,6
Bleed screw on rear brake caliper	M7	0,6
Flexible pipe to rear brake calilper, connector (versions with rear disc brakes only)	M10	1,4
Cylinder to rear brake back plate fixing, bolt (all versions with rear drum brakes)	M6	0,8
Bleed screw on rear drum brake cylinder	M8	0,65
Connector for brake pump (version with ABS)	M10	1,4
Male connector for pipes with inflated ends for fixing rigid pipe	M10	1,4
Load proportioning valve to bracket fixing, bolt with flange	M6	1
Load proportioning valve spring retaining bracket to rear stabilizer bar fixing, nut with polyammide ring for bolt	M6	0,6
Load proportioning valve adjustment lever, bolt	M8	2
Rear brake caliper to plate fixing, bolt (versions with rear disc brakes only)	M10×1,25	5,7

DESCRIPTION	Thread size	Tightening torques daNm

HANDBRAKE

Bolt fo supporting handbrake and gear lever to bodyshell	M8	2,8
Bolt for supporting handbrake and gear lever to bodyshell	M8	1,5
Handbrake lever mounting bracket to plate fixing, bolt	M8	2,8
Handbrake cable sliding plate to floor panel fixing, bolt	M6	0,85
Handbrake cable reaction bracket to floor panel fixing, bolt	M8	4
Handbrake support to front cross member fixing, nut for b olt (1998 20v version only)	M8	2,5
Handbrake lever complete support fixing, nut	M8	1,8

POWER ASSISTED STEERING AND STEERING

Power assisted steering bracket fixing, nuts and bolts	M6	0,5
	M8	15
Filler for return connector from power steering to reservoir	M12x1.25	2
Casing to cross member fixing, bolt with flange	M10×1,25	7
Filler for pump/power steering supply connector on power assisted steering	M14x1,5	3
Casing rod to steering knuckles fixing, nut	M10x1,25	4
Filler for pump/power steering supply connector on pump	M12	3,6
Universal joint fork fixing, bolt with unlosable tapered washer	M8	2
Steering wheel to steering column fixing, nut	M16x1,5	5
Steering column support fixing, bolts with tapered edges and unlosable washers	M8	2,2
AIR BAG module to steering wheel fixing, bolt with unlosable washer	M6	0,74

DESCRIPTION	Thread size	Tightening torques daNm
Reinforcement strut to steering colum support fixing, bolt with tapered edges and unlosable washers	M8	2,2
Reinforcement strut to pedals assembly fixing, nut	M8	2,2

FRONT SUSPENSION

Front cross member to bodyshell rear fixing, bolt for nut	M10×1,25	8
	M12×1,25	12
Front cross member to bodyshell front fixing, bolt with wide flange	M12×1,25	12
Track control arm to cross member front and rear U bolts outer fixing, bolt with flat tapered washer	M10×1,25	7,5
Track control arm to cross member front and rear U bolts inner fixing, bolt with flat tapered washer	M10×1,25	7,5
Upper shock absorber to mounting fixing, flanged nut	M12×1,25	10
Upper shock absorber mounting to bodyshell fixing, bolt with wide flange	M8	3,2
Shock absorber to steering knuckle fixing, nut	M10×1,25	7
	M12×1,25	10
Track control arm joint to steering knuckle fixing, nut for bolt	M10×1,25	7
Stabilizer bar supporting U bolt to cross member fixing, bolt with tapered, flat, unlosable washer	M8	4
Connecting rod to shock absorber and to stabilizer bar fixing, nut	M10×1,25	7
Front wheel hubs to joint fixing, nut	M22×1,5	7+55°
	M24×1,5	7+62°
Wheel bolts/nuts	M12×1,25	8,6

REAR SUSPENSION

Front flexible mounting to rear frame and bodyshell fixing, bolt with wide flange	M12×1,25	12
Rear flexible mounting to bodyshell fixing, bolt with wide flange	M12×1,25	12

DESCRIPTION	Thread size	Tightening torques daNm
Rear suspension track control arm to frame fixing, nut for bolt	M16×1,5	15
Lower shock absorber to suspension fixing, nut for bolt	M12×1,25	8,8
Upper shock absorber to support fixing, bolt	M10×1,25	6
Rear hub fixing stub axle, nut	M22×1,5	28
Stabilizer bar to rear suspension arm fixing, bolt	M10×1,25	5,6
Stabilizer bar supporting U bolts to rear suspension arm fixing, bolt	M8	3
Wheel bolts/nuts	M12×1,25	8,6

AIR CONDITIONING

Inlet and outlet ducts for drier filter, evaporator, compressor and condenser fixing, bolts	M6	0,55
Air conditioning pipe brackets fixing, bolts	M6	0,55
3 stage pressure switch fixing	M10	0,8

ELECTRICAL EQUIPMENT

Earth to bodyshell fixing, bolt	M8	2,4

BODYWORK

Door side fixed hinges fixing, bolt	M10×1,25	4,5
Belt adjuster to upper section of centre pillar fixing, bolt	7/16	2
Lock striker fixing, bolt	M8	2
Moving hinges to fixed hinges fixing, bolt	M6	1,5

DESCRIPTION	Thread size	Tightening torques daNm
Seat belt reels fixing, bolt	7/16"	4

AIR BAG SYSTEM

Air bag control unit fixing, bolt	M6	0,8
Driver's module to steering wheel fixing, bolt	M6	0,74
Passenger module to dashboard cross member fixing, bolt	M6	0,7

ABS

Control unit mounting bracket to bodyshell fixing, bolt with tapered edges	M8	2,4
Sensors to front and rear wheels fixing, bolts	M6	0,65
Rear ABS sensor cables mounting bracket fixing, nut	M8	2