P3M001A01

3/4 front view, 3 door version

P3M001A02

3/4 rear view, 3 door version

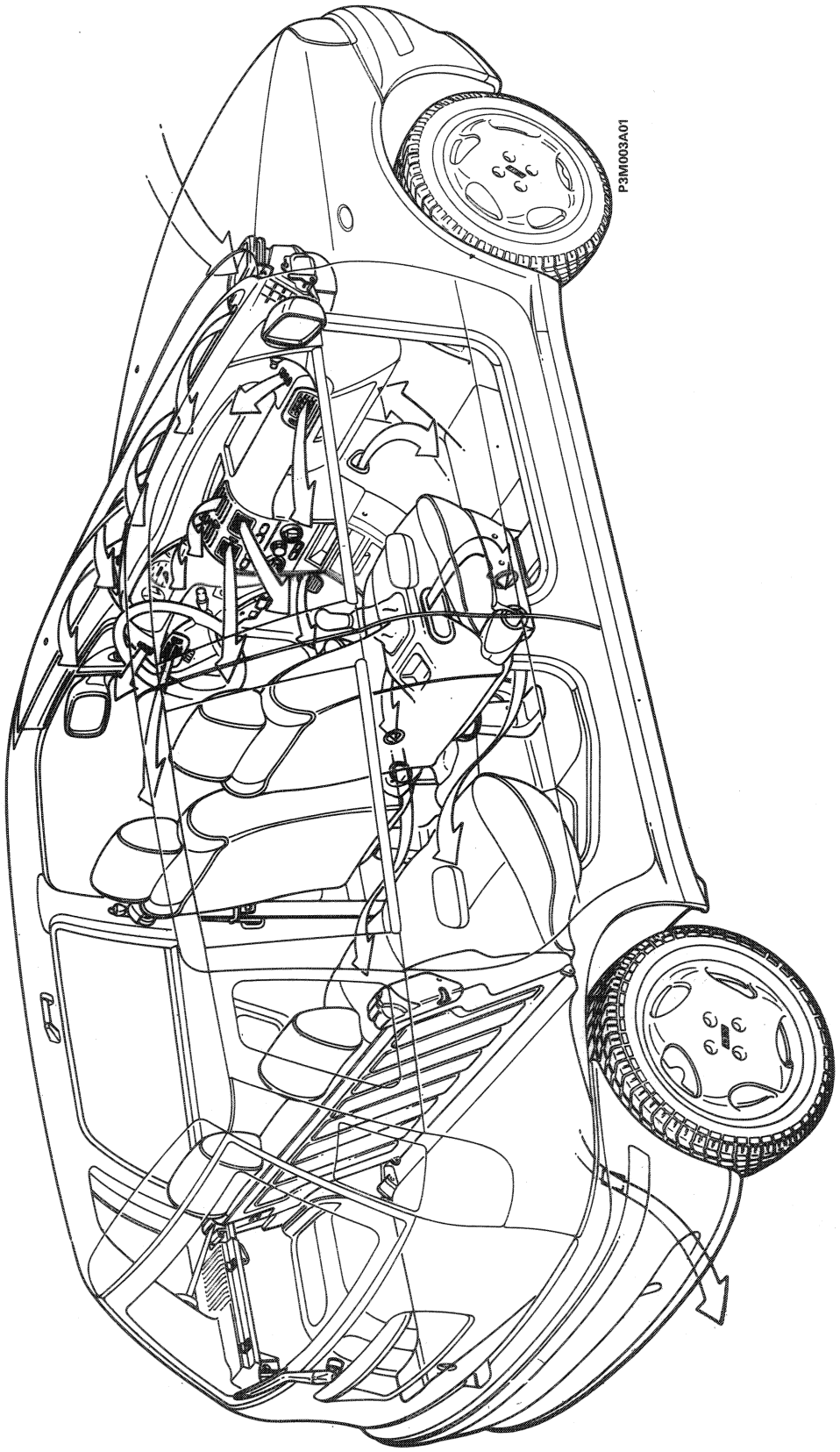
P3M002A01

3/4 front view, 5 door version

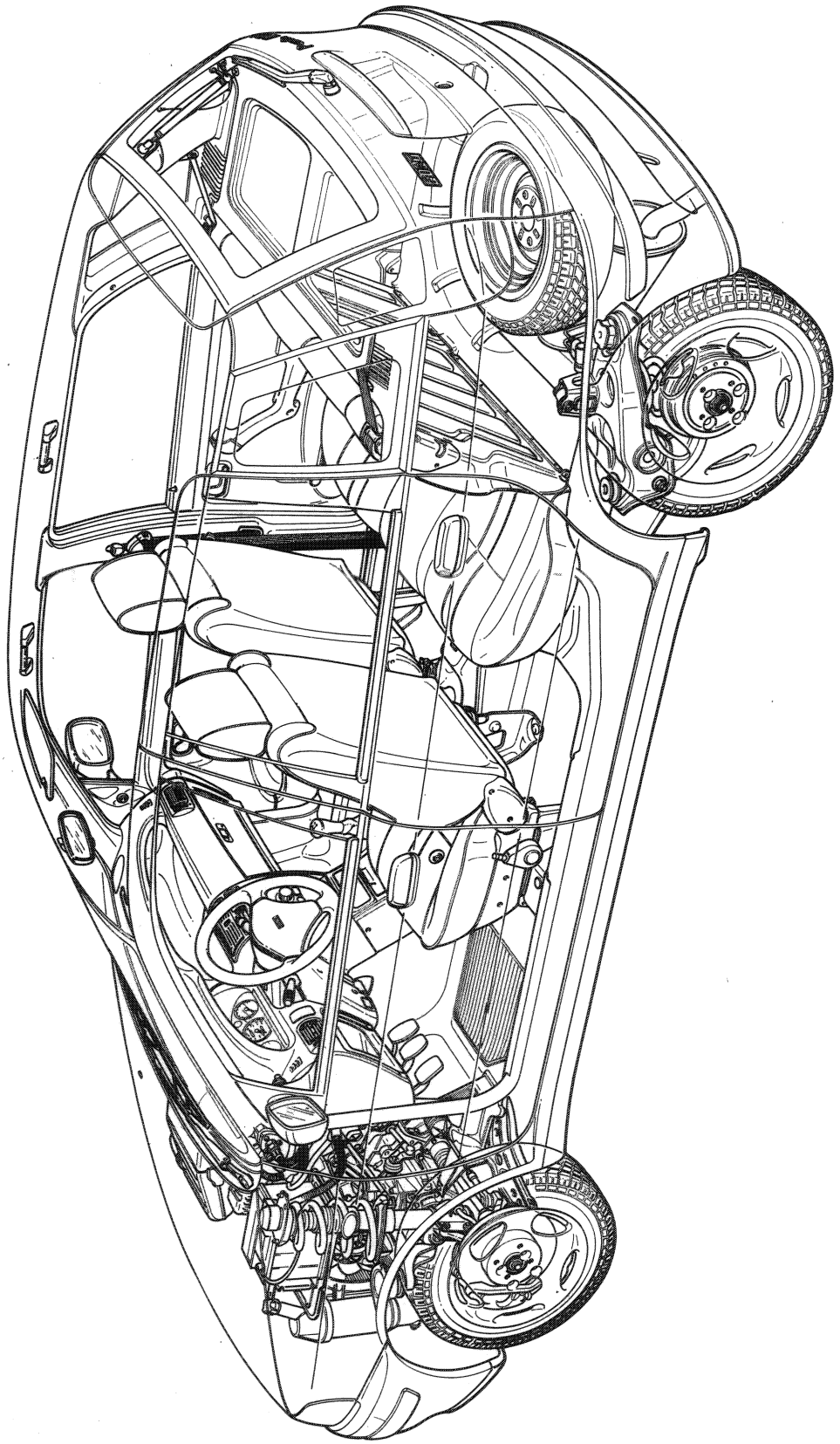
P3M002A02

3/4 rear view, 5 door version

DIAGRAM SHOWING CAR INTERIOR VENTILATION



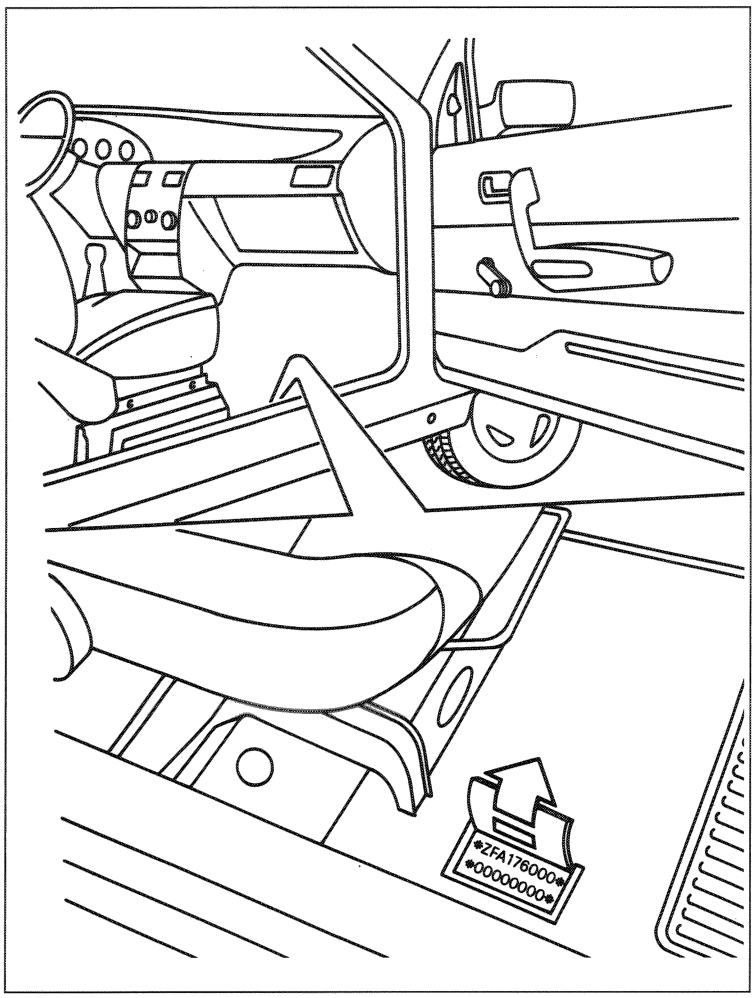
LAYOUT ON VEHICLE OF MECHANICAL COMPONENTS FOR 1242 VERSION



P3M0004A01

	CHASSIS	ENGINE	VERSION	TRIM LEVEL	3 door	5 door	GEARBOX	
							5 speed	6 speed
1108	ZFA 176.000	176 A6.000	176 AA 53F	S 55	●		●	
			176 BA 53F (*)		●		●	
			176 AA 55F			●	●	
			176 BA 55F (*)			●	●	
			176 BA 53F	S E.D.	●		●	
			176 BA 55F			●	●	
			176 AA 53P	SX 55	●		●	
			176 BA 53P (*)		●		●	
			176 AA 55P			●	●	
			176 BA 55P (*)			●	●	
			176 AA 63E	6 Speed	●			●
1242 SPI		176 A7.000	176 AB 53F	S 60	●		●	
			176 BB 53F (*)		●		●	
			176 AB 55F			●	●	
			176 BB 55F (*)			●	●	
			176 AB 53P	SX 60	●		●	
			176 BB 53P (*)		●		●	
			176 AB 55P			●	●	
			176 BB 55P (*)			●	●	
1242 MPI		176 A8.000	176 AC 53F	S 75	●		●	
			176 AC 55F			●	●	
			176 AC 53P	SX 75	●		●	
			176 AC 55P			●	●	
			176 AC 53E	EL 75	●		●	
			176 AC 53A	ELX 75	●		●	
			176 AC 55A			●	●	
1372 turbo		176 A4.000	176 AD 53H	GT	●		●	
1697 TD		176 A5.000	176 AF 53F	S TD (EM 08)	●		●	
			176 AF 55F			●	●	
		176 A3.000	176 AG 53F	S TD (USA 87)	●		●	
		176 A5.000	176 AF 53P	SX TD (EM 08)	●		●	
			176 AF 55P			●	●	
		176 A3.000	176 AG 53P	SX TD (USA 87)	●		●	
			176 AG 55P			●	●	
		176 A5.000	176 AF 53A	ELX TD (EM 08)	●		●	
			176 AF 55A			●	●	

(*) For French market

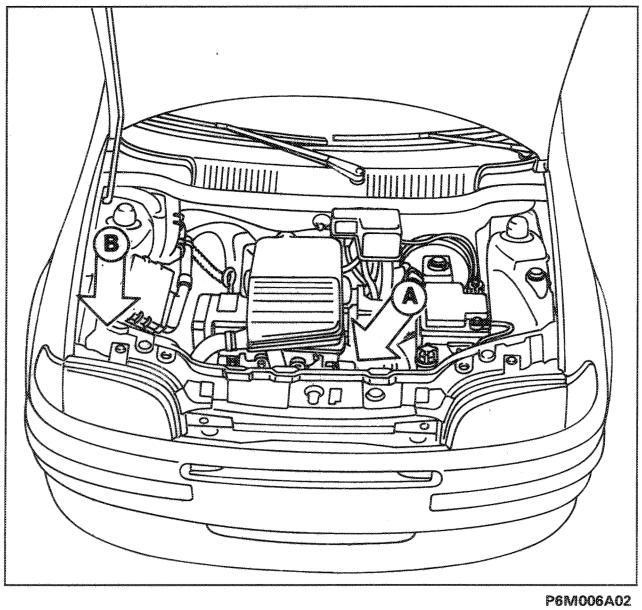


P3M006A01

Vehicle type identification code and chassis manufacture number

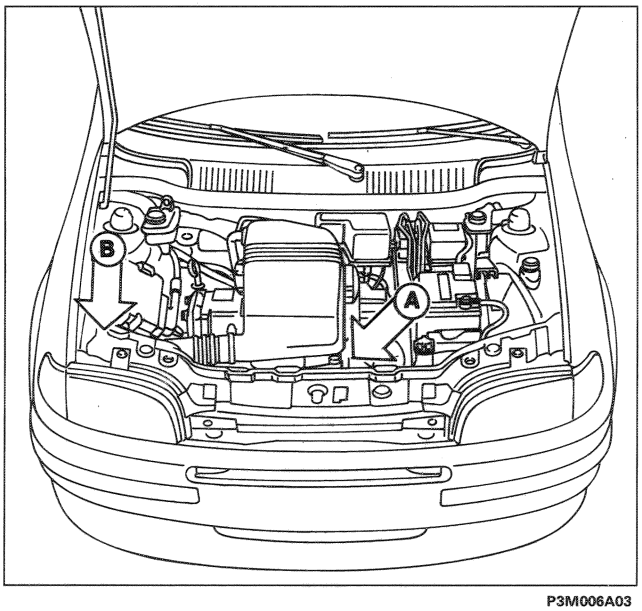
Printed on the passenger compartment floor panel, near the right front seat.
Access to it is gained by lifting the special window in the carpet.

1108 1242 SPI



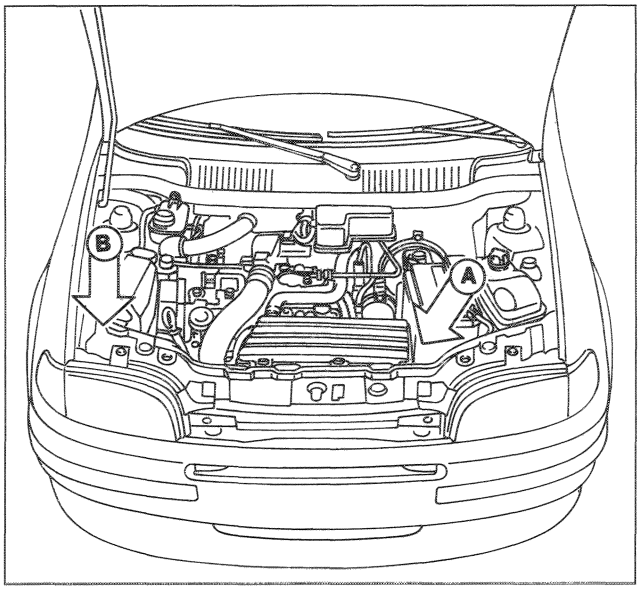
P6M006A02

1242 MPI



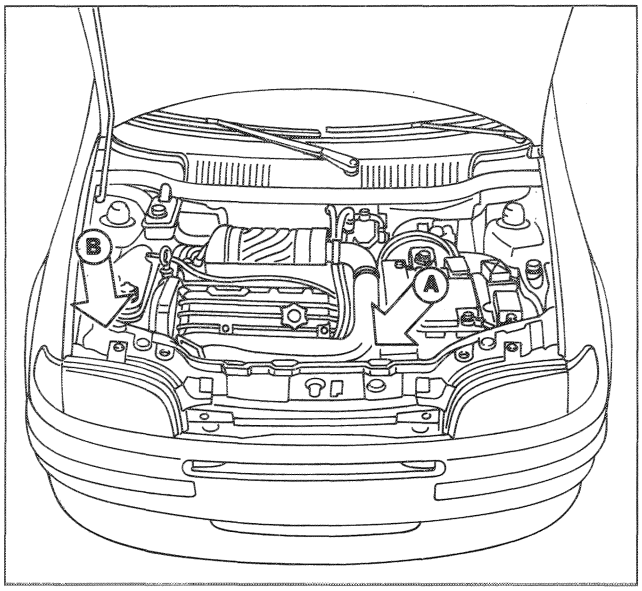
P3M006A03

1372 turbo



P3M007A01

1697 TD

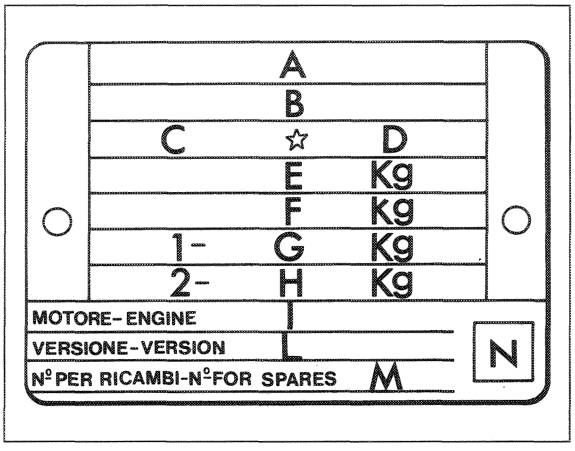


P3M007A02

A. Engine type and number

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

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 absorption coefficient (Diesel engines only))



F3M007A01

WEIGHTS (in kg)

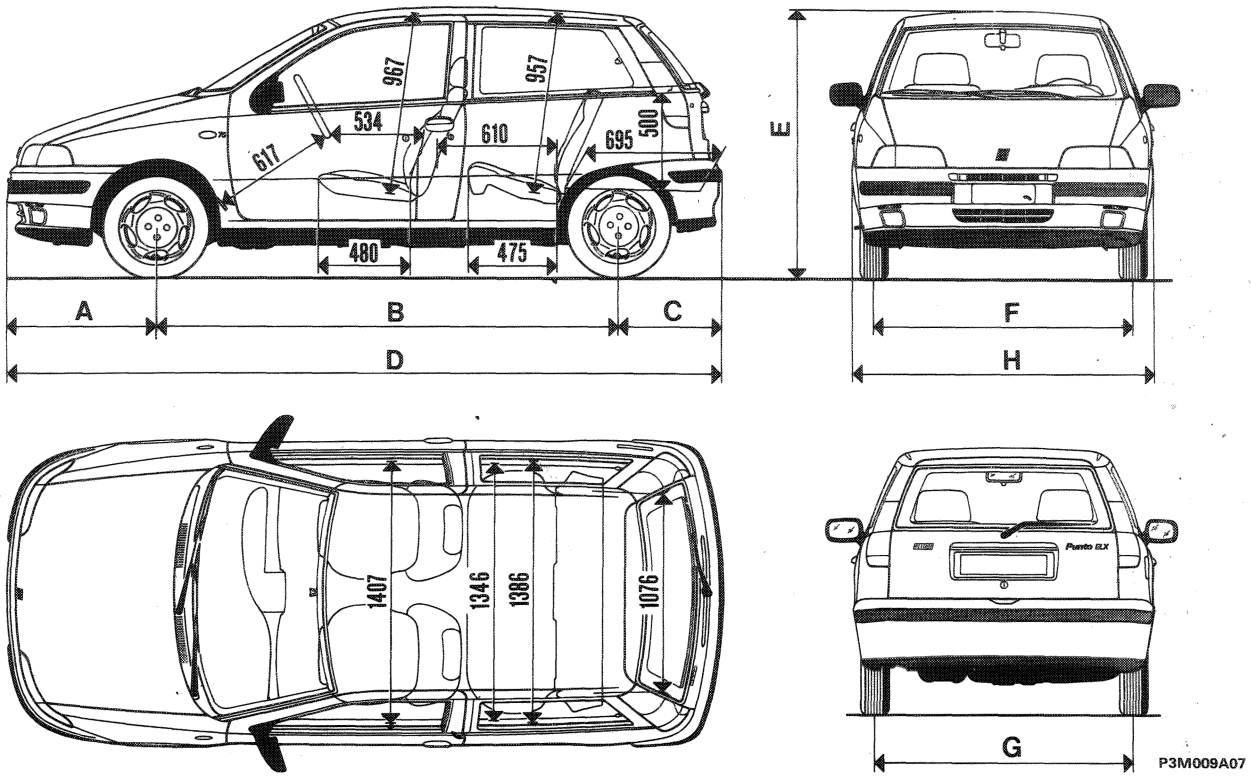
ENGINE	1108		1242 SPI	1242 MPI	1372 turbo	1697 TD
GEARBOX	5	6	5	5	5	5
3 door	840/860 (*)	865	865/875 (*)	880/920 (*)	1000	1000/1035 (*)
5 door	865/875 (*)	–	880/890 (*)	895/935 (*)	–	1015/1050 (*)
+450 = 3 door	1290/1310 (*)	1315	1315/1325 (*)	1330/1370 (*)	1450	1450/1485 (*)
+450 = 5 door	1315/1325 (*)	–	1330/1340 (*)	1345/1385 (*)	–	1465/1500 (*)
Maximum permissible loads on the axles ■ 3 door	700	700	720	750	820	850
Maximum permissible loads on the axles ■ 5 door	700	–	720	750	–	850
Maximum permissible loads on the axles ■ 3 door	700	700	700	700	700	700
Maximum permissible loads on the axles ■ 5 door	700	–	700	700	–	700
Maximum permissible load on the roof	75	75	75	75	75	75
Load on the tow hook (trailer with braking system) Minimum	–	–	–	–	–	–
Load on the tow hook (trailer with braking system) Maximum	70	70	70	70	70	70
Without braking system	400	400	400	400	400	400
With braking system	900	900	900	1000	1000	1100

■ Loads which must never be exceeded

NOTE FOR ACCESSORISED VERSIONS: Where there is special equipment (non standard air conditioner, sun roof, trailer towing device), the empty weight incerases and therefore the carrying capacity may be decreased as far as the maximum permissible loads are concerned.

(*) The first value refers to the vehicle without optional equipment; the second with it fully equipped.

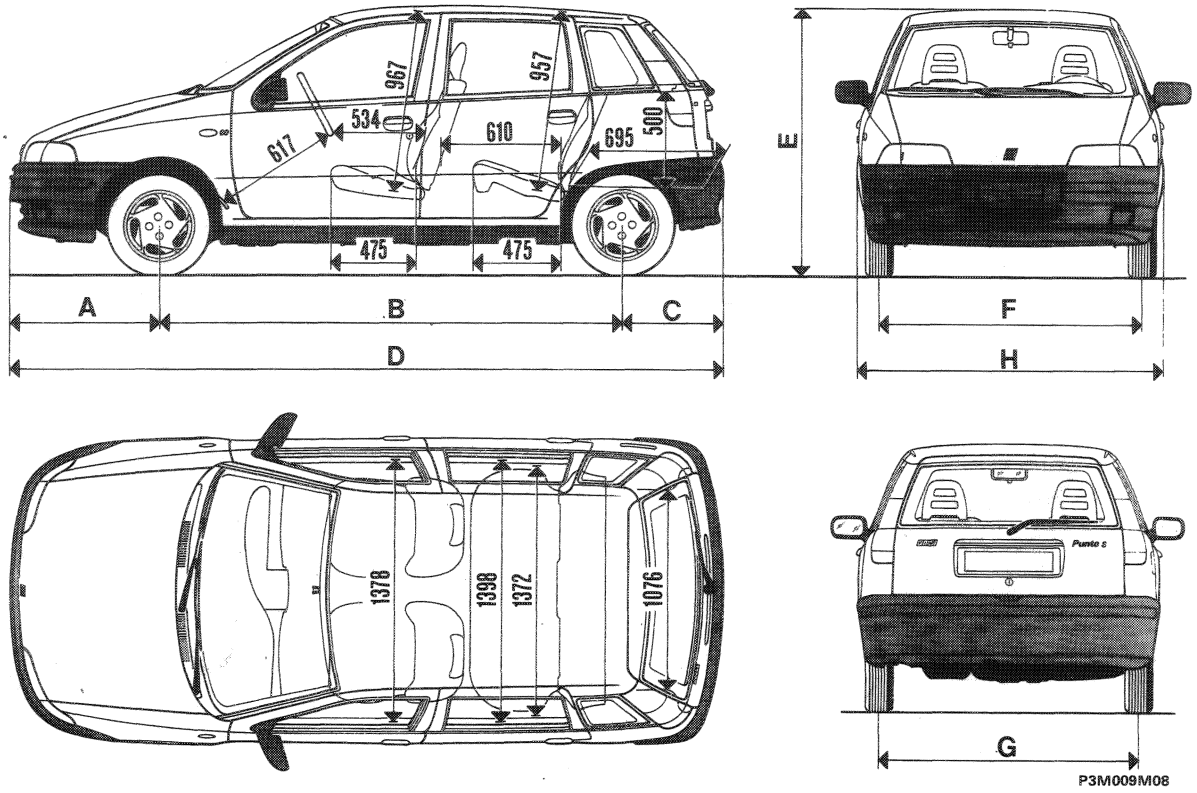
3 DOOR VERSION



TRIM LEVELS	DIMENSIONS (mm)							
	A	B	C	D	E	F	G	H
S 55	775	2450	535	3760	1450	1395	1377	1625
ED	775	2450	535	3760	1450	1395	1377	1625
S 60	775	2450	535	3760	1450	1395	1377	1625
S 75	775	2450	535	3760	1460	1369	1352	1625
S TD	775	2450	535	3760	1460	1366	1352	1625
SX 55	775	2450	535	3760	1450	1369	1352	1625
SX 60	775	2450	535	3760	1455	1369	1352	1625
SX 75	775	2450	535	3760	1455	1369	1352	1625
SX TD	775	2450	535	3760	1460	1366	1352	1625
6 speed	775	2450	545	3770	1450	1369	1352	1625
EL 75	775	2450	545	3770	1450	1369	1352	1625
ELX 75	775	2450	545	3770	1450	1369	1352	1625
ELX TD	775	2450	545	3770	1455	1366	1352	1625

The height E refers to an unladen car

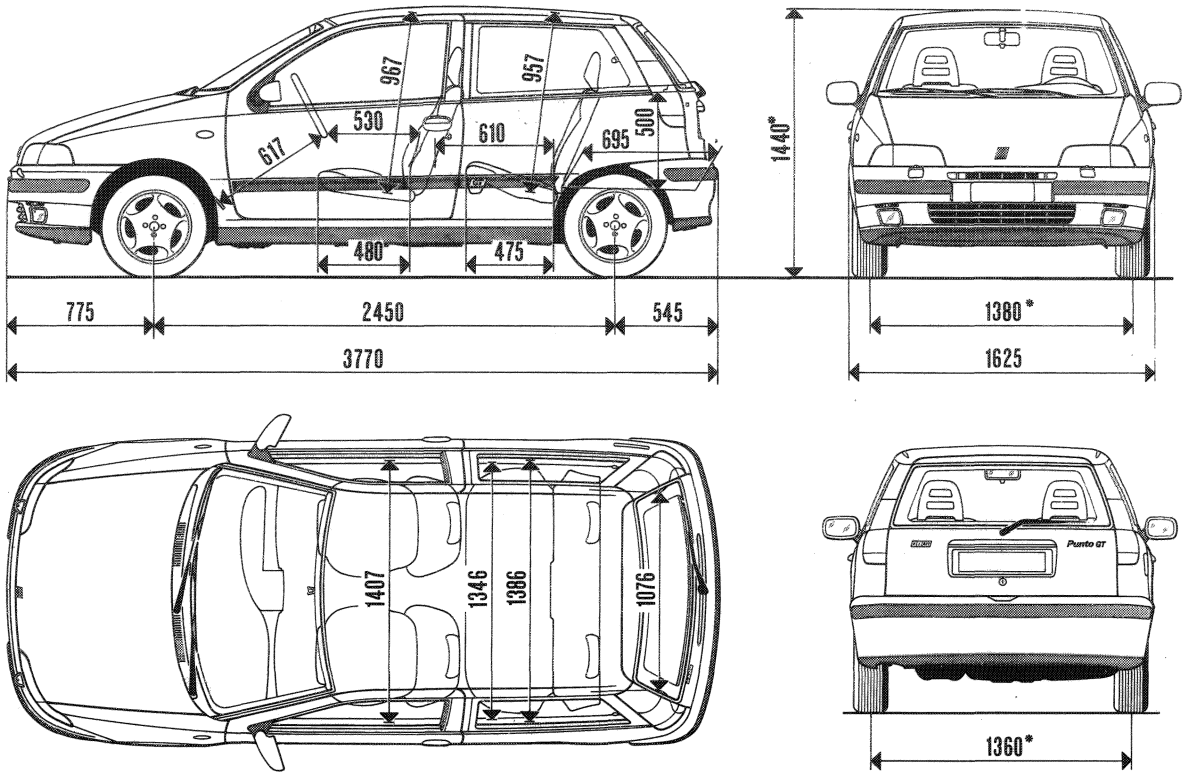
5 DOOR VERSION



TRIM LEVELS	DIMENSIONS (mm)							
	A	B	C	D	E	F	G	H
S 55	775	2450	535	3760	1445	1395	1377	1625
AND	775	2450	535	3760	1445	1395	1377	1625
S 60	775	2450	535	3760	1445	1395	1377	1625
S 75	775	2450	535	3760	1450	1369	1352	1625
S TD	775	2450	535	3760	1455	1366	1352	1625
SX 55	775	2450	535	3760	1445	1369	1352	1625
SX 60	775	2450	535	3760	1440	1369	1352	1625
SX 75	775	2450	535	3760	1440	1369	1352	1625
ELX 75	775	2450	545	3770	1445	1369	1352	1625
ELX TD	775	2450	545	3770	1450	1366	1352	1625

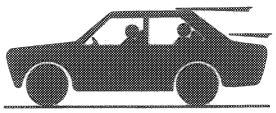
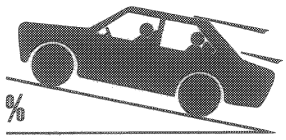
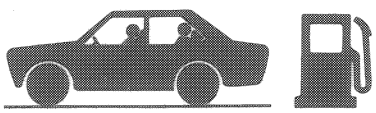
The height E refers to an unladen vehicle

1372 turbo GT VERSION



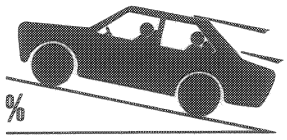
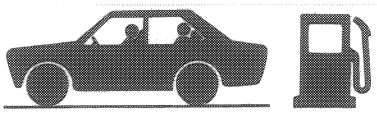
P3M009A06

(*) Car unladen

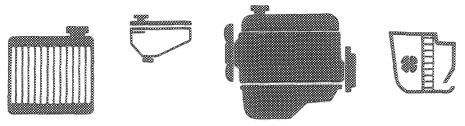
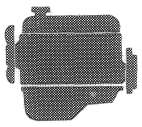
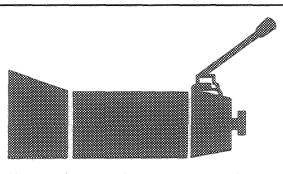
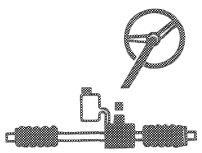
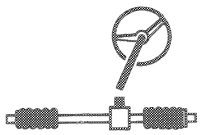
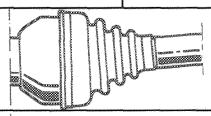
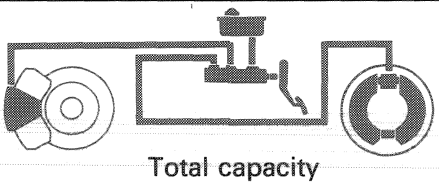
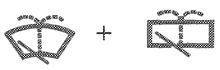
ENGINE	1108		1242 SPI	1242 MPI
GEARBOX	1 3 5 / 2 4 R	1 3 5 / 2 4 6 R	1 3 5 / 2 4 R	1 3 5 / 2 4 R
Speed kph (average load)  — 1st	40 (43●)	35	45	46
2nd	72 (78●)	57	81	84
3rd	105 (125●)	83	118 (130▲)	122
4th	138 (150●)	109	155 (160▲)	161
5th	150 (145●)	136	160 (154▲)	170
6th	–	150	–	–
Maximum climable gradient  % — 1st	33 (31●)	37	35	38
2nd	17 (15,5●)	21	18,5	20
3rd	11 (9,3●)	14	12,5 (10,7▲)	12,5
4th	7,4 (6,5●)	10	8,7 (7,3▲)	8,5
5th	5,5 (4,4●)	7	6,2 (5,2▲)	6
6th	–	5,5	–	–
EEC fuel consumption figures (litres/100 km)  — Urban cycle (A)	7,9 (7,4●)	7	7,5 (7,2▲)	7,8
Constant speed 90 km/h (B)	4,7 (4,3●)	5	4,8 (4,4▲)	5,3
Constant speed 120 km/h (C)	6,5 (6,1●)	6,9	6,4 (6,2▲)	6,9
Average consumption (CCMC proposal) $\frac{A+B+C}{3}$	6,4 (5,9●)	6,3	6,2 (6▲)	6,7

The fuel consumption figures in the table have been defined in the course of official tests and in accordance with procedures laid down by EEC regulations. In particular, the consumption figures for the simulated urban cycle are measured during the bench test whilst the figures for constant speeds of 90 and 120 kph are measured directly on a dry, flat road as well. These figures may be useful for comparisons between different vehicles. Traffic conditions, driving styles, atmospheric conditions and the general state of the vehicle may, in practice, lead to fuel consumption figures which differ from those obtained through the above mentioned procedures.

(●) For the E.D. version and the French market (▲) For the French market

ENGINE		1372 turbo	1697 TD
GEARBOX		1 3 5 / 2 4 R	1 3 5 / 2 4 R
Speed kph (average load) 	1	53	33
	2	83	58
	3	121	90
	4	162	127
	5	>200	163
	R	48	33
Maximum climable gradient 	1	40	41
	2	34	24,5
	3	22	15
	4	15	9,5
	5	9,8	6,4
	R	40	41
EEC fuel consumption figures (litres/100 km) 	Urban cycle (A)	9,7	6,9
	Constant speed 90 km/h (B)	6,1	4,5
	Constant speed 120 km/h (C)	8,3	6,4
	Average consumption (CCMC proposal) $\frac{A + B + C}{3}$	8	5,9

The fuel consumption figures in the table have been defined in the course of official tests and in accordance with procedures laid down by EEC regulations. In particular, the simulated urban cycle figures are measured during bench tests whilst the figures for constant speeds of 90 and 120-kph are measured both directly on a dry, flat road and in equivalent bench tests. These figures may be useful for comparisons between different vehicles. Traffic conditions, driving styles, atmospheric conditions and the general state of the vehicle may, in practice, lead to fuel consumption figures which differ from those obtained through the above procedures.

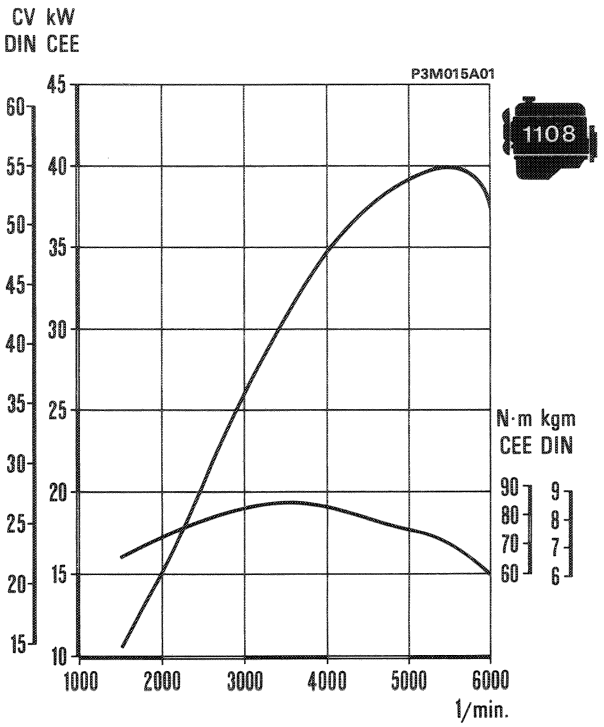
Capacities	Unit		Quantity dm³(l)	Quantity (kg)
Petrol ⩾ O.N. 95 (●)		1108-1242 1372 turbo	47 51	–
Diesel		1697 TD	47	–
50% + (▲)	 Total capacity of cooling system	1108-1242	4,6	–
		1372 turbo	6	–
		1697 TD	7,2	–
Petrol engines: SELENIA (SAE 15 W/40)	Total capacity 	1108	3,58	3,25
		1242	3,85	3,5
		1372 turbo	4,4	4
		1697 TD	5,5	5
Diesel engines SELENIA Turbo diesel (SAE 15 W/40)	 Partial capacity (periodic replacement)	1108	3,47 3,08*	3,15 2,8*
		1242	3,74 3,3*	3,4 3*
		1372 turbo	3,96 3,63*	3,60 3,3*
		1697 TD	4,84 4,4*	4,4 4*
a = TUTELA ZC 80S		1108-1242	a	2,37	2,15
b = TUTELA GI/A		1372 turbo 1697 TD	a	1,98	1,8
			b	–	–
a = TUTELA GI/A			a	–	0,65
b = K 854			b	–	0,126
c = TUTELA MRM2			c	–	0,080
TUTELA TOP 4 (270°C)	 Total capacity	without ABS	0,4 (0,5)■	–
		with ABS	0,5 (0,55)■	–
+ AREXONS	3%				2,5 (7 with headlamp washers)	–
	~ - 10°C	50%				
	~ - 20°C	100%				

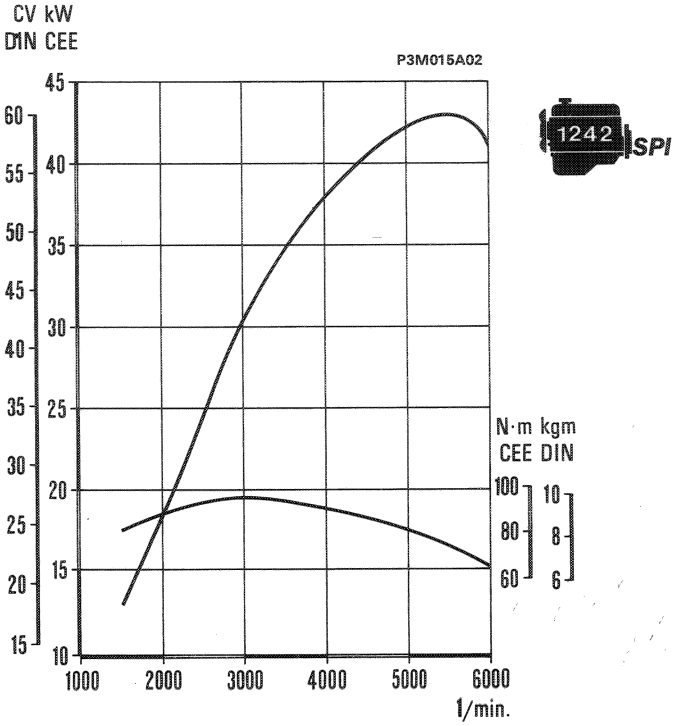
(▲) Distilled water
■ For the 1372 turbo version
(●) Unleaded petrol only may be used
* Engine sump only

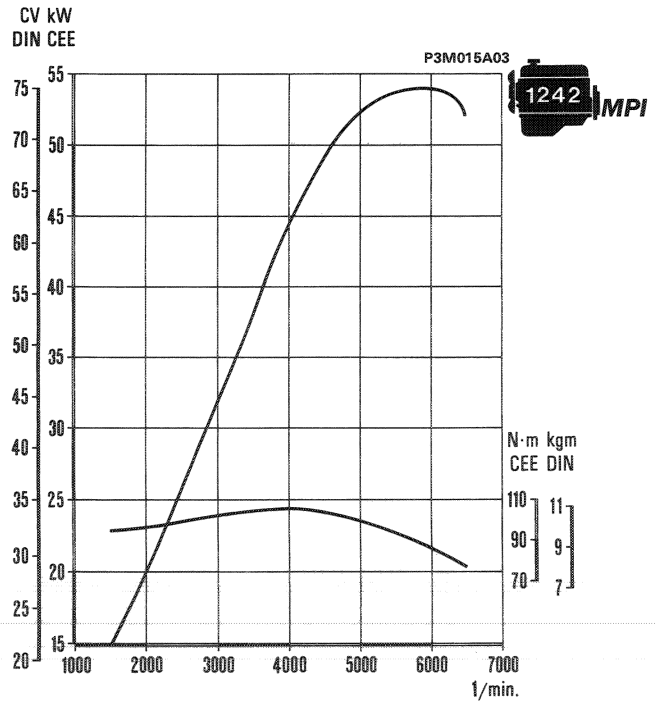
Product name	Description International designation	Usage
SELENIA SAE 10 W/40	Semisynthetic multigrade engine oil. Better than API SH, CCMC-G5 and UNI 20153 specifications	Temperature - 25°C - 40°C
VS MAX SAE 15 W/40	Multigrade mineral oil. Better than API SG, CCMC-G4 and UNI 20153 specifications	Temperature - 15°C - 40°C
SELENIA Turbo Diesel SAE 15 W/40	Semi-synthetic multigrade oil. Better than API CD, CCM-C-PD2, UNI 20153 specifications	Temperature - 15°C - 40°C
VS MAX Diesel SAE 15 W/40	Multigrade mineral-based oil. Better than API CD, CCMC and UNI 20153 specifications	Temperature - 15°C - 40°C
TUTELA ZC 80S	SAE 80W EP oil. Meets MIL-L-2105 and API GL4 specifications	Manual gearboxes and differentials
TUTELA ZC 90	Non EP SAE 80 W/90 oil for manual gearboxes, containing antiwear additives.	Gearboxes and non hypoid differentials
TUTELA W 90/M DA	Special SAE 80 W/90 EP oil for ordinary and limited-slip differentials. Meets MIL–L–2105 D and API GL5 specifications	Hypoid differentials Limited-slip diffs. Steering boxes
TUTELA GI/A	"DEXRON II" oil for automatic transmissions	Automatic transmissions Power assisted steering
TUTELA CVT Universal	Fluid for continuous variation automatic transmissions	Continuously variable automatic transmissions
TUTELA JOTA 1	Lithium soap based grease, NLGI consistency = 1	Greasing the vehicle except for components particularly exposed to water requiring special greases
TUTELA MRM2	Water-repellent, lithium soap based grease containing molybdenum disulphide, consistency NLGI = 2	Constant velocity joints
TUTELA MR3	Lithium soap based grease, NLGI consistency = 3	Wheel bearings, steering rod, various components
TUTELA PLUS 3 (240 °C)	Synthetic fluid, F.M.V.S.S. n° 116 DOT 3 ISO 4925, CUNA NC 956-01	Hydraulic brake and clutch systems
TUTELA TOP 4 (270 °C)	Synthetic fluid, F.M.V.S.S. n° 116 DOT 4 ISO 4925, CUNA NC 956-01	Hydraulic brake and clutch systems
K 854	Lithium soap based grease, NLGI consistency = 000, containing molybdenum disulphide	Rack and pinion steering boxes
SP 349	Special grease compatible with brake fluid	Load proportioning valve Load proportioning valve rod bush
Arexons DP1	Mixture of alcohols, water and surfactants CUNA NC 956-11	To be used undiluted or diluted in windscreen washer systems
Paraflu[11]	Mono-ethylene glycol based anti-freeze for cooling systems, CUNA NC 596 - 16	Cooling systems Concentration 50% down to - 35°C
Diesel Mix Arexons	Diesel fuel additive with protective action for diesel engines	To be mixed with diesel (25 cc per 10 litres)

CHARACTERISTICS

			1108	1242 SPI	1242 MPI
	Cycle		OTTO, 4-STROKE		
	Timing gear		single camshaft		
	Fuel system type		WEBER-MARELLI I.A.W. integrated electronic ignition/fuel injection		
	Number of cylinders		4		
	Cylinder bore (bore)	mm	70	70.8	
	Stroke	mm	72	78.86	
	Capacity	cm^3	1108	1242	
	Compression ratio		9.6±0.2	9.6	9.8±0.2
	Maximum power	kW (EEC) (bhp) (DIN)	40 (55)	43 (60)	54 (75)
		rpm	5500	5500	6000
	Maximum torque	daNm (EEC) (kgm) (DIN)	8.5 (8.7)	9.6 (10)	10.6 (11)
		rpm	3500	3000	4000

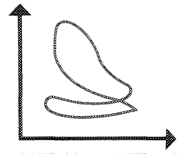
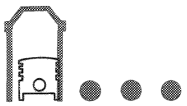
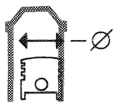
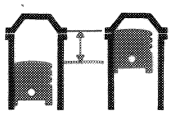
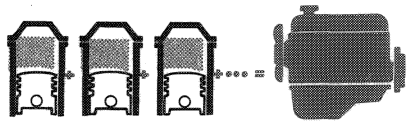
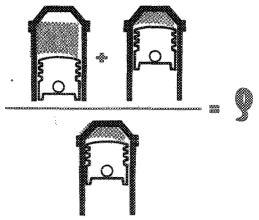
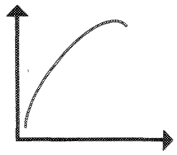
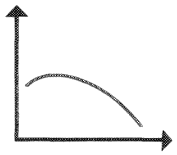


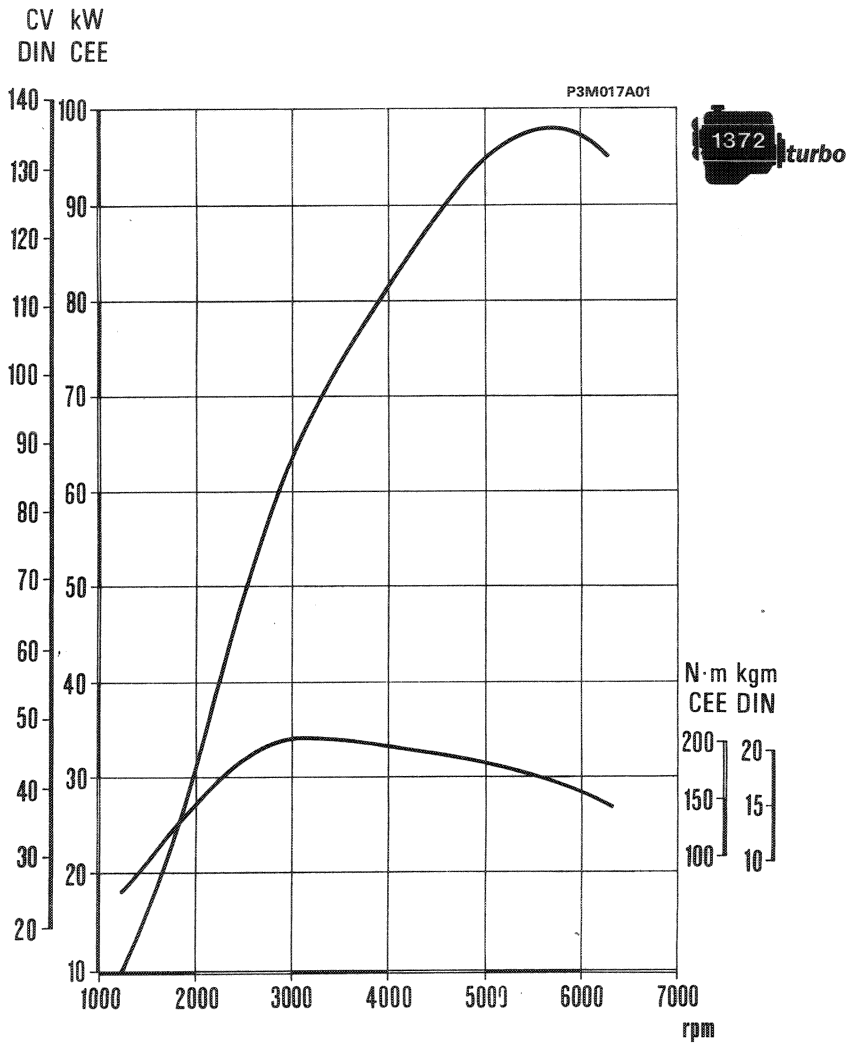




Engine power curves obtained by eec method

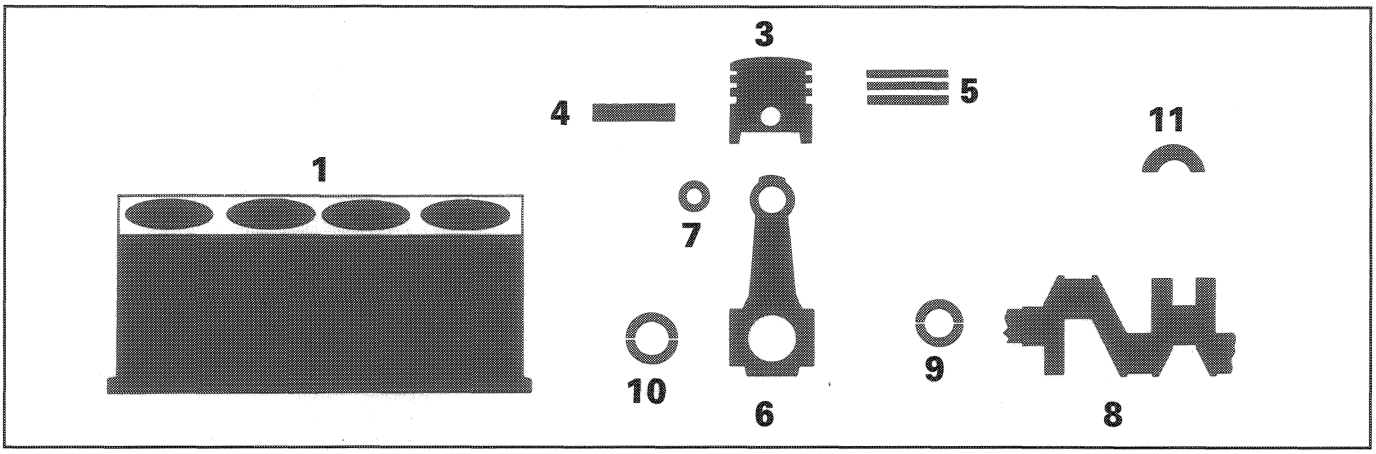
The power curves illustrated can be obtained with the engine overhauled and run it, without a fan, with an exhaust silencer and air filter fitted, at sea level.

CHARACTERISTICS		1372 turbo
	Cycle	OTTO 4 stroke
	Timing	single overhead cam
	Type of fuel system	Bosch Motronic integrated electronic injection/ignition
	Number of cylinders	4
	Cylinder liner (bore) mm	80,5
	Stroke mm	67,4
	Capacity cc	1372
	Compression ratio	7,8 $^{+\ 0,1}_{-\ 0,2}$
	Max power kW (CEE) (CV) (DIN)	98 (136)
	Max power rpm	5750
	Max torque daNm (CEE) (kgm) (DIN)	20,4 (21,2)
	Max torque rpm	3000

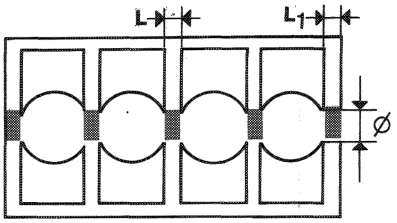
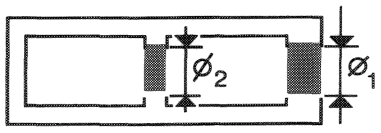
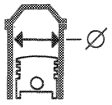


Engine power curves obtained by EEC method

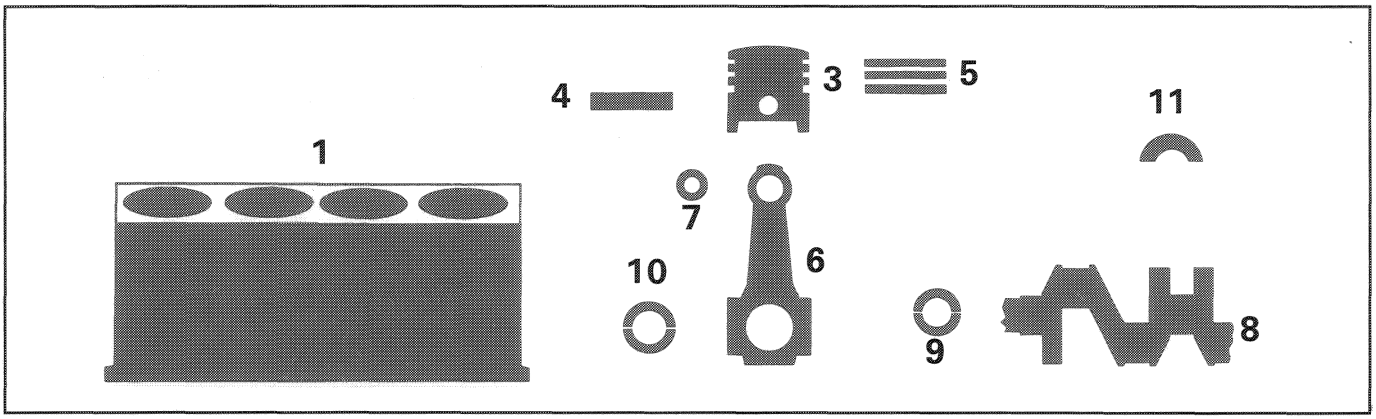
The power curve illustrated can be obtained with the engine overhauled and run in, without a fan, with a silencer and air filter fitted, at sea level.



1108	1242 SPI	1242 MPI	1372 turbo

DESCRIPTION		Values in mm		
	L	19,140 ÷ 19,200		–
	L_1	–	–	22,140÷22,200
Main bearing supports	Ø 1	47,705÷47,709	51,705 ÷ 51,709	
	Ø 2	47,709÷47,713	51,709 ÷ 51,713	54,507÷54,520
	Ø 3	47,713÷47,717	51,713 ÷ 51,717	
1 	$Ø_1$	–	–	38,700÷38,730
	$Ø_2$	–	–	35,036÷35,066
Auxiliary shaft bush housings				
 Cylinder bore Ø (0,010)		70,000÷70,030	70,800 ÷ 70,830	80,500÷80,550

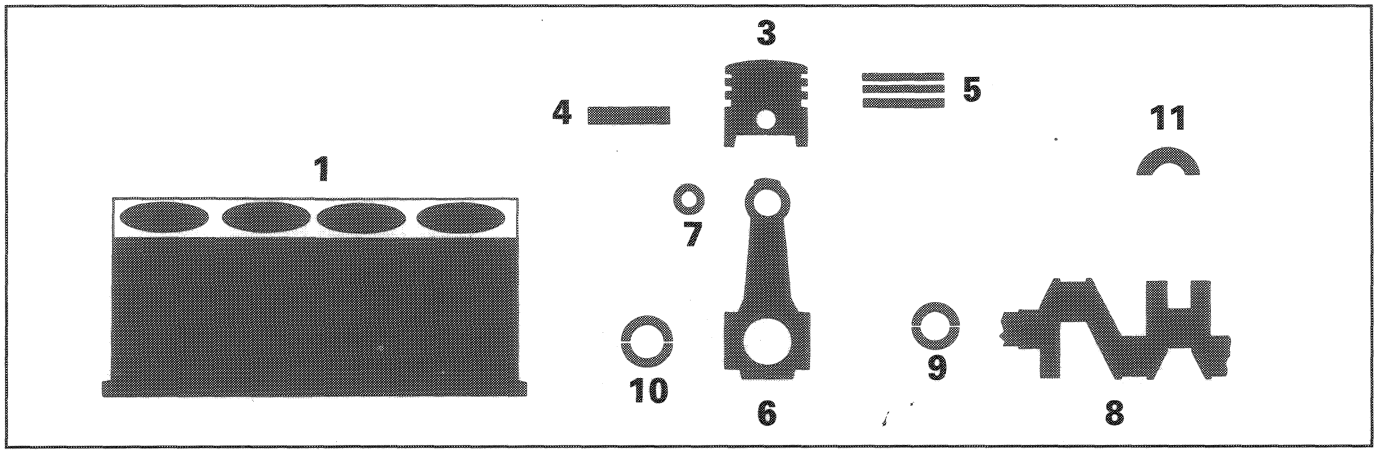
DESCRIPTION			1108	1242 SPI	1242 MPI	1372 turbo
			Values in mm			
3 Piston	X		8	6	8,5	10,5
	⌀	A	69,960÷69,970	70,760 ÷ 70,770		80,450÷80,460
	⌀	B	69,970÷69,980	70,770 ÷ 70,780		-
	⌀	C	69,980÷69,990	70,780 ÷ 70,790		80,470÷80,480
	⌀	E	-			80,490÷80,500
	⌀ FIAT >		0,4			
3	Difference in weight between pistons		±5 g			±2,5 g
3-1	Piston - Cylinder bore		0,030 ÷ 0,050			0,040÷0,060
3	Gudgeon pin housing	⌀ 1	17,982 ÷ 19,986			21,999÷22,002
		⌀ 2	-			22,002÷22,005
4 Gudgeon pin		⌀ 1	17,970 ÷ 17,974			21,991÷21,994
		⌀ 2	-			21,994÷21,997
		⌀ FIAT >	0,2			
4-3	Gudgeon pin - Housing		0,008 ÷ 0,016			0,005÷0,011
3	Piston ring grooves	1	1,230 ÷ 1,250			1,535÷1,555
		2	1,210 ÷ 1,230			2,010÷2,030
		3	2,510 ÷ 2,530			3,020÷3,040



1108	1242 SPI	1242 MPI	1372 turbo

DESCRIPTION		Values in mm		
5 Piston rings	1	1,175÷1,190	1,170 ÷ 1,190	1,478÷1,490
	2	1,175 ÷ 1,190		1,978÷1,990
	3	3,475 ÷ 2,490		2,975÷2,990
	Ø FIAT >	0,4		
5-3 Piston rings Piston ring grooves	1	0,040÷0,075	0,040 ÷ 0,080	0,045÷0,067
	2	0,020 ÷ 0,055		0,020÷0,052
	3	0,020 ÷ 0,055		0,030÷0,065
5-1 Opening at end of piston rings in cylinder bore	1	0,25 ÷ 0,45	0,20 ÷ 0,40	0,30 ÷ 0,50
	2	0,25 ÷ 0,45		0,30 ÷ 0,50
	3	0,20 ÷ 0,45		0,25 ÷ 0,50
6 Small end bush or pin housing	Ø1	17,939 ÷ 17,956		23,939÷23,972
Big end bearing housing	Ø2	41,128÷41,138	45,128 ÷ 45,138	48,630÷48,646

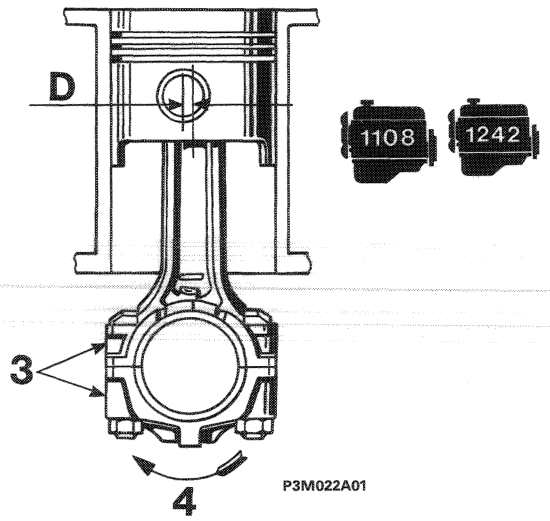
DESCRIPTION			1108	1242 SPI	1242 MPI	1372 turbo
			Values in mm			
7	Small end bush	$\varnothing_1$		-		24,016÷24,041
		$\varnothing_2$ 1		-		22,004÷22,007
		$\varnothing_2$ 2		-		22,007÷22,010
4-6	Gudgeon pin Small end			0,014 ÷ 0,035		-
4-7	Gudgeon pin Small end bush			-		0,010÷0,016
7-6	Small end bush Bush housing			-		0,044÷0,102
8	Main journals	$\varnothing_1$ 1	43,994÷44,000	47,994 ÷ 48,000		50,790÷50,800
		$\varnothing_1$ 2	43,988÷43,994	47,988 ÷ 47,994		50,780÷50,790
		$\varnothing_1$ 3	43,982÷43,988	47,982 ÷ 47,988		–
	Crank pins	$\varnothing_2$ A	38,001÷38,008	42,001 ÷ 42,008		45,513÷45,523
		$\varnothing_2$ B	37,995÷38,001	41,995 ÷ 42,001		45,503÷45,513
		$\varnothing_2$ C	37,988÷37,995	41,988 ÷ 41,995		–
		L		-		26,975÷27,025
		L_1		23,975 ÷ 24,025		-
9	Crankshaft bearings	L 1		1,836 ÷ 1,840		1,840÷1,844
		L 2		1,841 ÷ 1,845		1,845÷1,849
		L 3		1,846 ÷ 1,850		–
		$\varnothing$ FIAT <		0,254 - 0,508		
9-8	Crankshaft bearings - Main journals			0,025 ÷ 0,049		0,019÷0,050
10	Big end bearings	L A		1,544 ÷ 1,548		1,535÷1,541
		L B		-		1,540÷1,546
		$\varnothing$ FIAT <		0,254 - 0,508		

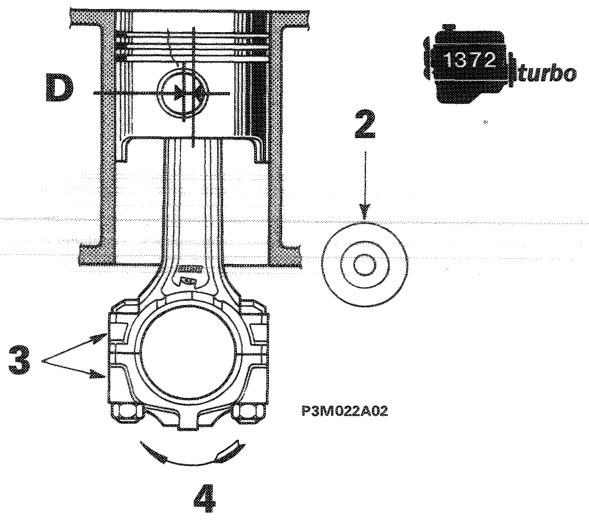


1108	1242 SPI	1242 MPI	1372 turbo

DESCRIPTION		Values in mm	
10–8	Big end bearings - Main journals	0,024 ÷ 0,062	0,025÷0,063
11	Thrust washers S	2,310 ÷ 2,360	
	S FIAT >	0,127	
11–8	Crankshaft end float	0,055 ÷ 0,265	

Diagram showing connecting rod-piston assembly and direction of rotation in engine

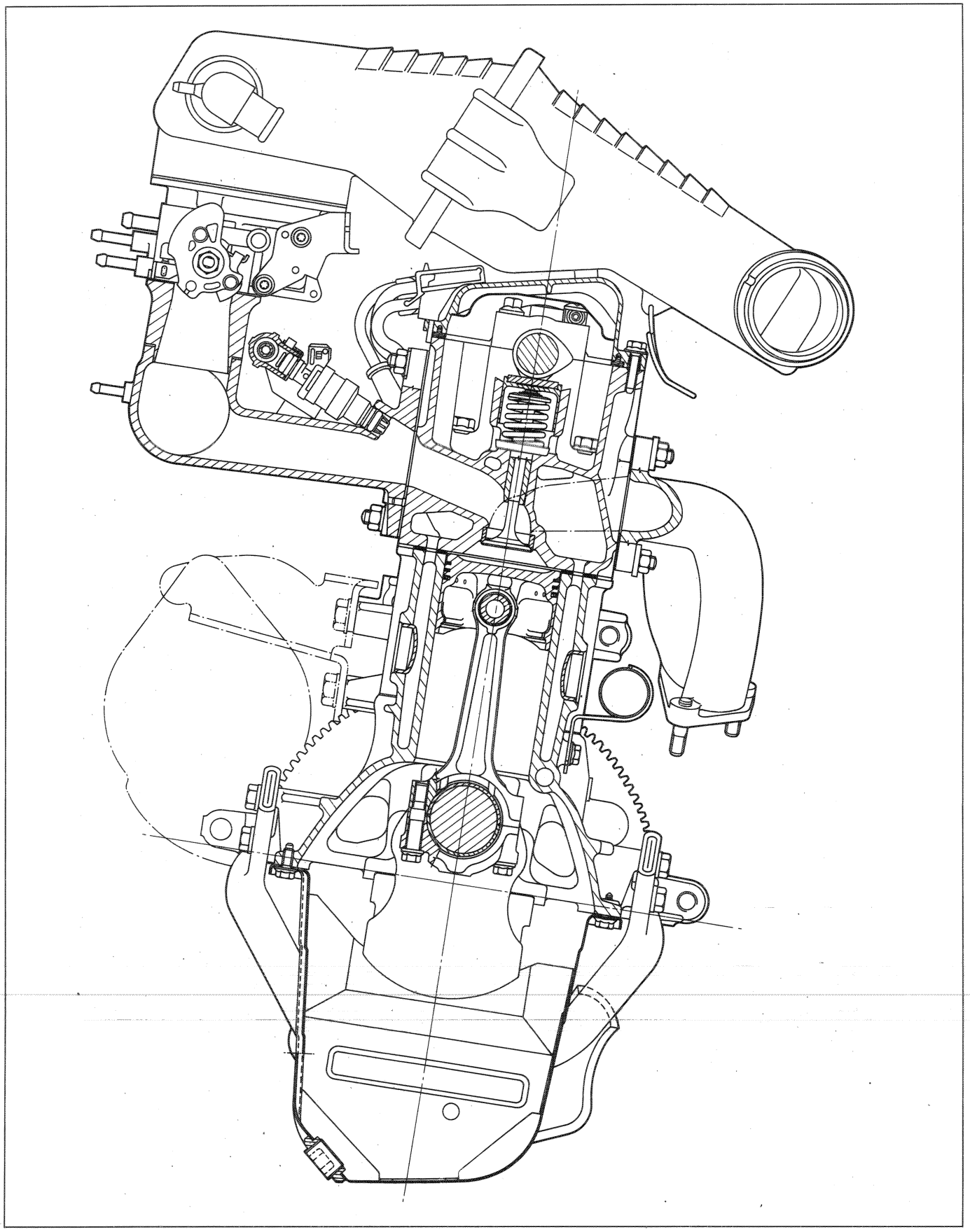




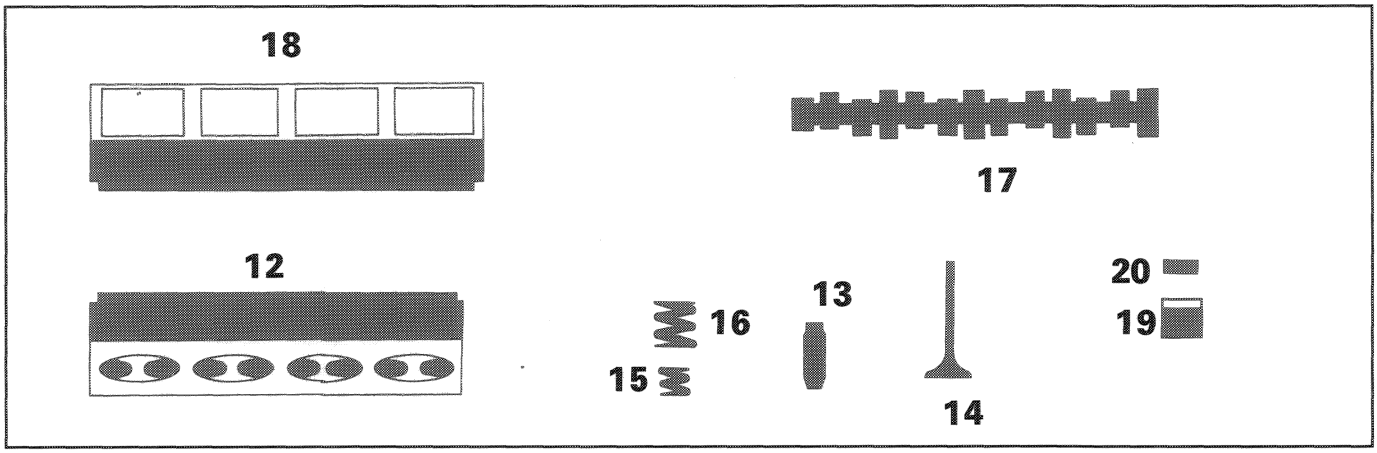
2. Auxiliary shft
3. Stamp on connecting rod
4. Direction of engine rotation

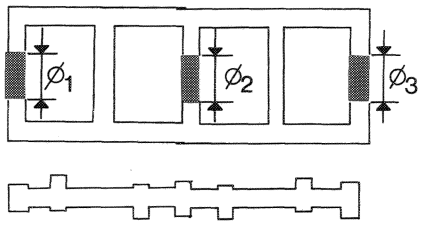
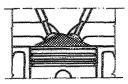
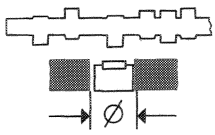
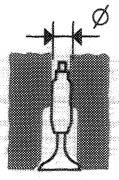
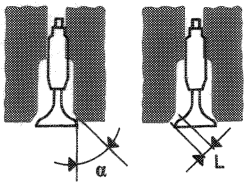
D. Offset between connecting rod axis and piston axis = 1 mm.

CROSS SECTION OF 1242 MPI ENGINE



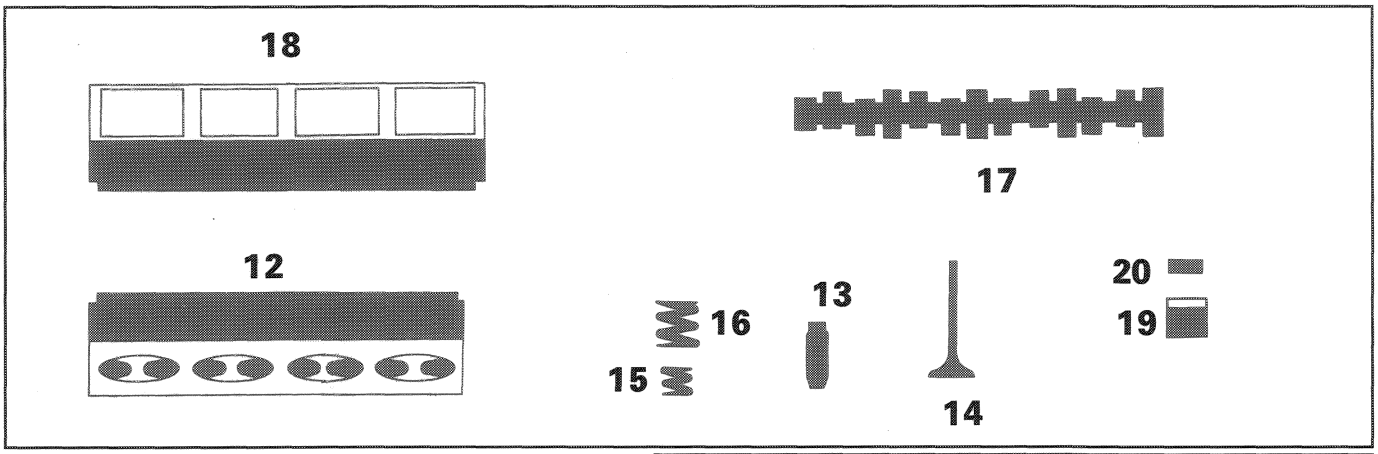
P3M023A01



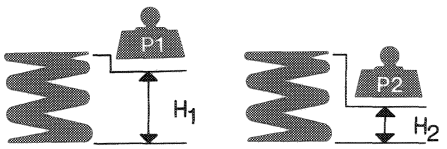
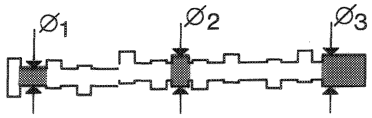
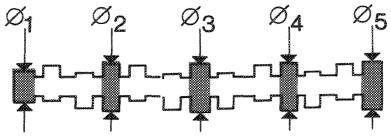
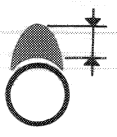
DESCRIPTION		1108	1242 SPI	1242 MPI	1372 turbo
		Values in mm			
 Camshaft bearing housings in cylinder head	$\varnothing_1$	24,045 ÷ 24,070			-
	$\varnothing_2$	23,545 ÷ 23,570			-
	$\varnothing_3$	24,025 ÷ 24,070			-
 Volume of combustion chamber in cylinder head	cc	23,41			36,42
12  Tappet housing in cylinder head	⌀	35,000 ÷ 35,025			-
 Valve guide bore in cylinder head	⌀	12,950 ÷ 12,977			13,950÷13,977
 Valve seats	α	45° ± 5′			
	α	45° ± 5′			
	L	about 2			

DESCRIPTION		1108	1242 SPI	1242 MPI	1372 turbo
		Values in mm			
13 Valve guide	Ø1	7,022 ÷ 7,040			8,022÷8,040
	Ø2	13,010 ÷ 13,030			14,040÷14,058
	Ø2 FIAT >	0,05 - 0,10 - 0,25			
13-12 Valve guide-Bore in cylinder head		0,033 ÷ 0,080			0,063÷0,108
		0,033÷0,080	0,021÷0,066	0,033÷0,080	0,021÷0,066
14 Valves	Ø1	6,982 ÷ 7,000			7,974÷7,992
	Ø2	–			
	Ø3	30,20 ÷ 30,50		31,20÷31,50	35,85÷36,15
	X	–			
	Y	–			
	α	45°30′ ±5′			
	Ø1	6,982 ÷ 7,000			7,974÷7,992
	Ø2	–			7,954÷7,972
	Ø3	27,20 ÷ 27,50			32,85÷33,45
	X	–			31
	Y	–			61
	α	45°30′ ±5′			
14-13 Valve / Valve guide		0,022 ÷ 0,058			0,030÷0,066
		0,022 ÷ 0,058			0,030÷0,086
15 Internal valve spring	P1	16,1 ÷ 18,7 daN		21,2÷23,8 daN	18,4÷20,6 daN
	H1	31			
	P2	42,6 ÷ 46,8 daN		61,4÷65,5 daN	29÷32 daN
	H2	24		21,5	23

NOTE The exhaust valves for the 1372 turbo engine are made from sodium.

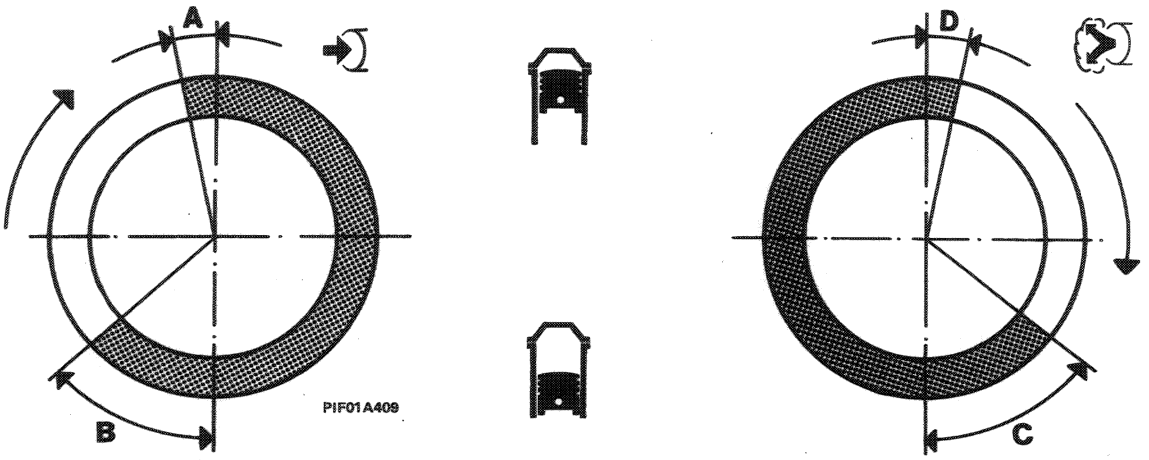


1108	1242 SPI	1242 MPI	1372 turbo

DESCRIPTION		Values in mm		
16 External valve spring 	P_1	-		39÷44 daN
	H_1	-		36
	P_2	-		57÷62,5 daN
	H_2	-		28
17  17a  Camshaft bearings	$Ø_1$	24,000 ÷ 24,015		29,444÷29,960
	$Ø_2$	23,500 ÷ 23,515		47,935÷47,950
	$Ø_3$	24,000 ÷ 24,015		48,135÷48,150
	$Ø_4$	-		48,335÷48,350
	$Ø_5$	-		48,535÷48,550
17  Cam lift		8,8	9,5	9,564
				8,8
17-12  Camshaft bearings Housing in cylinder head	$Ø_1$	0,030 ÷ 0,070		-
	$Ø_2$	0,030 ÷ 0,070		-
	$Ø_3$	0,030 ÷ 0,070		-

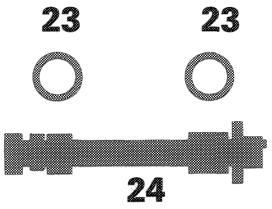
DESCRIPTION		1108	1242 SPI	1242 MPI	1372 turbo
		Values in mm			
18 Camshaft bearings in camshaft housing	Ø1	-			29,990÷30,014
	Ø2	-			47,980÷48,005
	Ø3	-			48,180÷48,205
	Ø4	-			48,380÷48,405
	Ø5	-			48,580÷48,605
Tappet housings	Ø	-			37,000÷37,025
17-18 Camshaft bearings Camshaft housing		-			0,030÷0,070
19 Tappet	Ø	34,975 ÷ 34,995			36,975÷36,995
19-12 Tappet Bore in cylinder head		0,005 ÷ 0,050			-
19-18 Tappet - Housing in camshaft housing		-			0,005÷0,050
20 Shim	S (0,05)	3,20 ÷ 4,70			3,25÷4,70
17-20 clearance for timing check		0,80			
		0,80			
operational clearance		0,40 ± 0,05	0,40 ± 0,05		0,40 ± 0,05
		0,50 ± 0,05	0,45 ± 0,05		0,50 ± 0,05

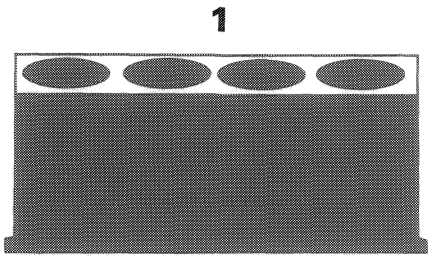
TIMING DIAGRAMS



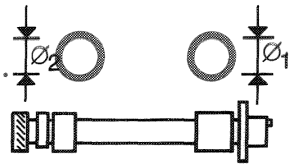
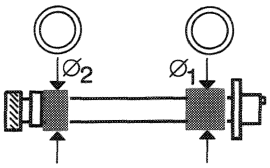
Timing angles

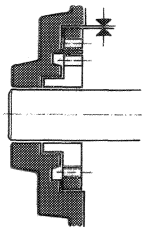
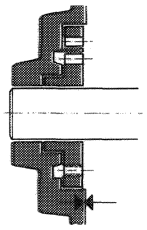
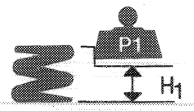
		1108	1242 SPI	1242 MPI	1372 turbo
A — Inlet	opens before TDC	7°	7°	7°	14°
B — Inlet	closes after BDC	37°	37°	41°	44°
C — Exhaust	opens before BDC	37°	37°	43°	36°
D — Exhaust	closes after TDC	7°	7°	5°	6°

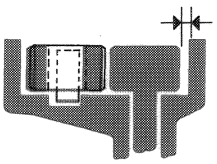
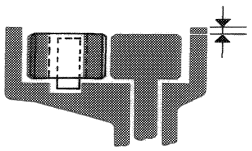
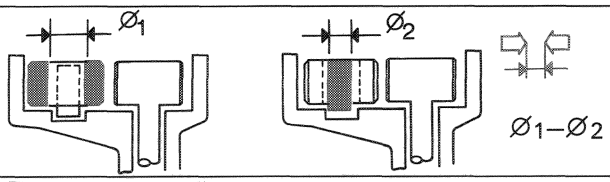
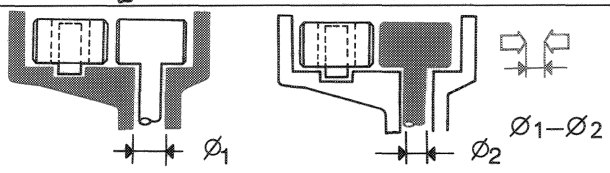
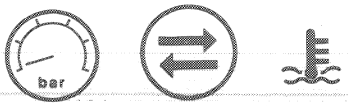
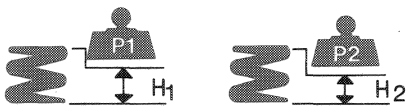




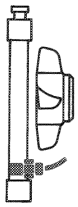
1372 turbo

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

LUBRICATION - Description		1108	1242 SPI	1242 MPI
		Values in mm		
Engine lubrication system		forced feed, through 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 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		3,43 ÷ 4,9 bar		
 Oil pressure relief valve spring	P_1	4,45 ÷ 4,94 daN		
	H_1	34,1		

	1372 turbo
LUBRICATION – Description	Values in mm
Engine lubrication system	forced feed through 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 > 3,7 bar
 P1	5,25 ÷ 5,54 daN
H1	22,5
P2	5,64 ÷ 5,93 daN
H2	21

COOLING SYSTEM

			1108	1242 SPI	1242 MPI	1372 turbo
 Thermostatic switch to engage fan		1st stage	90° ÷ 94°C			86° ÷ 90°C
		2nd stage	–			90° ÷ 94°C
	stop	1st stage	85° ÷ 89°C			81° ÷ 85°C
		2nd stage	-			85° ÷ 89°C
Engine coolant thermostat		opening	85° ÷ 89°C			80° ÷ 84°C
		max opening	100°C			98°C
		valve travel	⩾7,5 mm			7,5 mm
Fitting clearance between impeller vanes and pump casing 			0,4 ÷ 0,9 mm			0,8÷1,3 mm
Pressure for checking radiator water tightness			0,98 bar			
Checking exhaust spring calibration on expansion tank			0,98 bar			

FUEL SYSTEM

Type	I.A.W. Weber-Marelli integrated electronic injection/ignition			Bosch Motronic integrated electronic injection/ignition
Pump	Electrical, immersed in tank			
Capacity	⩾110 l/h		120 l/h	120 l/h
Fuel pressure regulator calibration	1 ± 0,2 bar		2,5 bar	3 bar

CHECKING CONCENTRATION OF POLLUTANT EMISSIONS DURING IDLING	CO (%)	HC (p.p.m.)	CO_2 (%)
Upstream of the converter	0,4 ÷ 1	⩽600	⩾12
Downstream of the converter	⩽0,35	⩽90	⩾13

ELECTRONIC INJECTION SYSTEM COMPONENTS	1108	1242 SPI
Electronic control unit	I.A.W. 6F.SB	I.A.W. 6F.S3
Throttle casing (with fuel pressure regulator incorporated)	30 MM 12	32 MM 17
Absolute pressure sensor	PRT-03/03	
Throttle valve position sensor	PF 0C	
Injector	IWM 523	
Air temperature sensor	ATS 05	
Coolant temperature sensor	WTS 05	
Twin relay for electric pump and injection/ignition control unit	DRS 240 103/00	
Electric fuel pump	MSS 070/00	
Lambda sensor	Bosch 0.258.003.222	
Fuel filter	FI-03	

ELECTRONIC INJECTION SYSTEM COMPONENTS

Electronic control unit	I.A.W. 8F.5T
Throttle casing	36 CFF 1
Air temperature sensor	ATS 05
Injector	IWO 52
Fuel pressure regulator	RPM 40
Coolant temperature sender unit	WTS 05
Twin relay for electric pump and injection/ignition control unit	DRS 240 103/00
Electric fuel pump	MSS 071/00
Lambda sensor	Bosch 0.258.003.222
Fuel filter	FI-03

Bosch Motronic M2.7 INTEGRATED ELECTRONIC INJECTION SYSTEM COMPONENTS

1372 turbo

Electronic control unit	0.261.203.099
Absolute pressure sender unit (barometric capsule)	0.280.101.001
Petrol vapour solenoid valve	0.280.142.150
Air flow meter	0.280.212.019
Idle adjustment actuator	0.280.140.505
Injector	0.280.718.020
Air temperature sender unit	0.280.130.060
Fuel pressure regulator	0.280.160.515
Coolant temperature sender unit	0.280.130.026
Waste-gate solenoid valve (Pierburg)	7.21493.00
Throttle valve position sensor (potentiometer)	0.280.122.001
Electric fuel pump relay feed	0.332.014.140
Electric fuel pump	0.580.453.980
Lambda sensor	0.258.003.222
Fuel filter	A.450.024.142

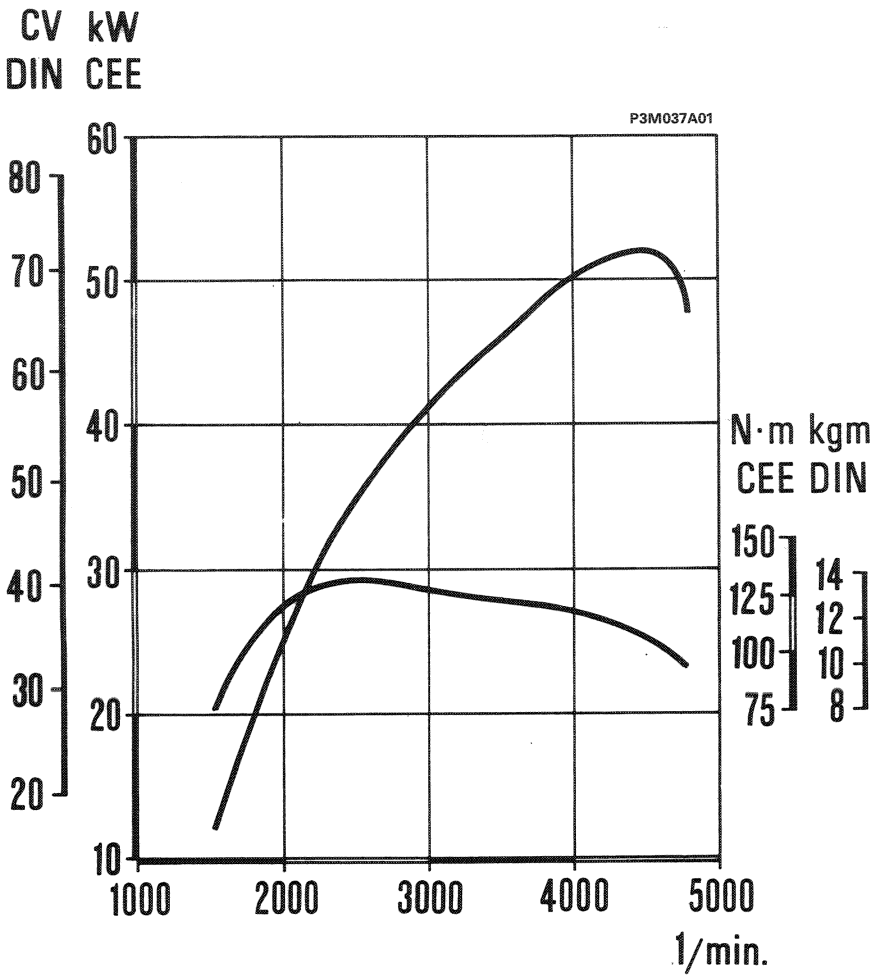
SUPERCHARGING

Turbocharger operated by exhaust gases with waste-gate valve and air/air heat exchanger

1372 turbo

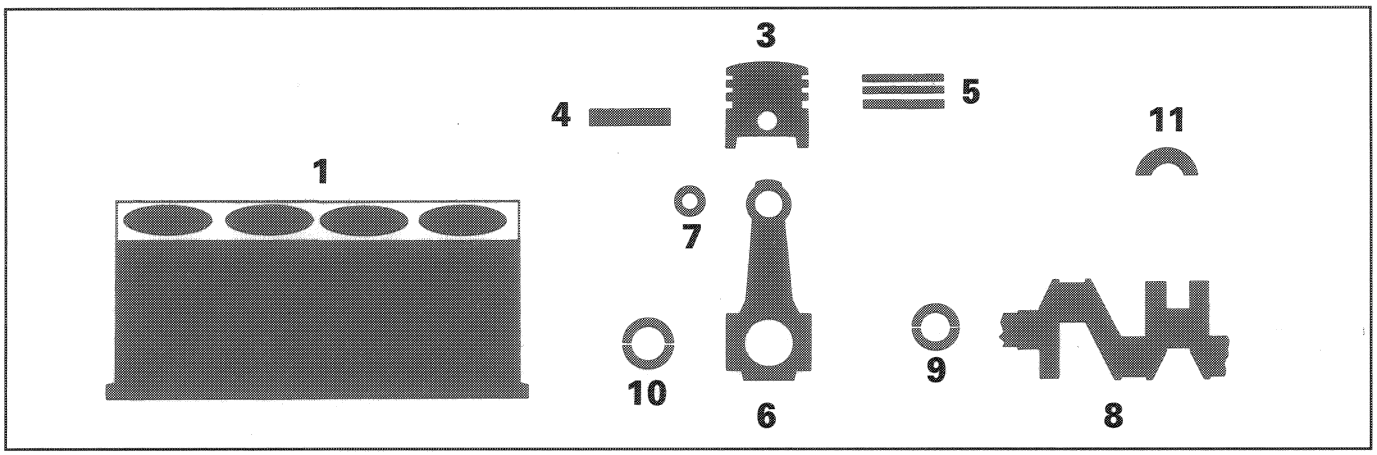
Turbocharger	I.H.I. VL7
Maximum supercharging pressure	1,3 bar

CHARACTERISTICS		1697 TD (em 08)	1697 TD (USA 87)
	Cycle	DIESEL 4 stroke	
	Timing	single overhead cam	
	Engine balancing	–	
	Type of fuel system	Indirect mechanical injection	
Number of cylinders		4	
Cylinder liner (bore)	mm	82,6	
Stroke	mm	79,2	
Capacity	cc	1698	
Compression ratio		19	
Max power	kW (EEC) (CV) (DIN)	52 (72)	51 (70)
	rpm	4500	
Max torque	daNm (EEC) (kgm) (DIN)	13,4 (14)	
	rpm	2500	



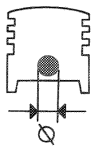
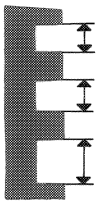
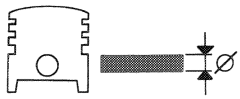
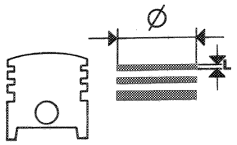
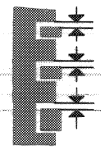
Typical engine curves

The power curve illustrated can be obtained with the engine overhauled and run in (50 hours of operation), without a fan, with a silencer and air filter fitted, at sea level.



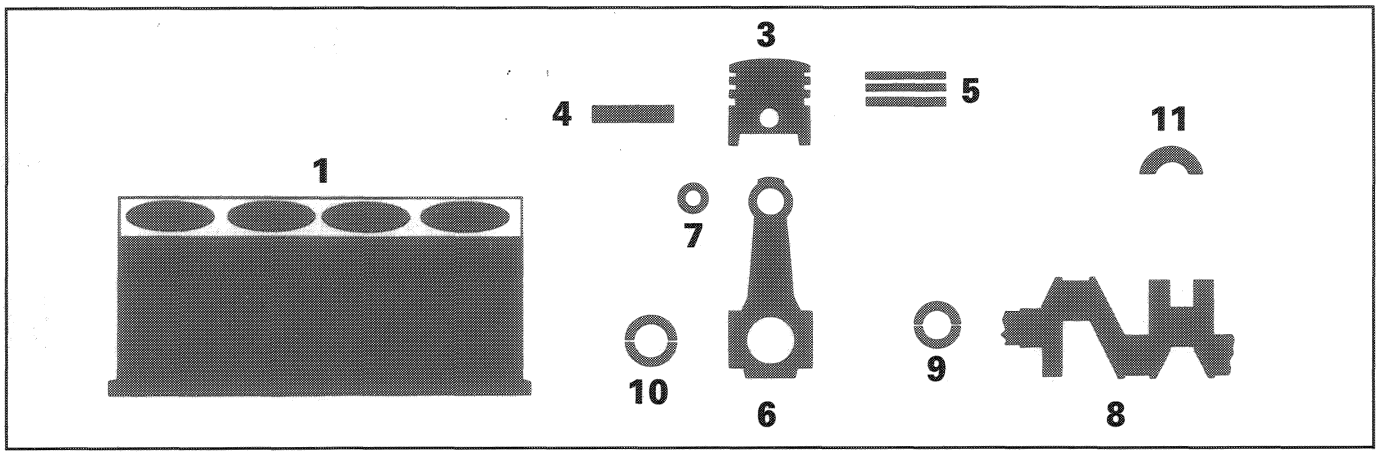
1697 TD

DESCRIPTION		Values in mm
1 Main bearing supports	L	23,100 ÷ 23,200
	Ø	56,717 ÷ 56,735
Cylinder bore	Ø (0,010)	82,600 ÷ 82,650
3 Piston	X	15
	Ø A	82,530 ÷ 82,540
	Ø C	82,550 ÷ 82,560
	Ø E	82,570 ÷ 82,580
	Ø FIAT >	0,4
3-1 Piston projection		0,637 ÷ 1,162
3 Difference in weight between pistons		± 5 g
3-1 Piston Cylinder bore		0,060 ÷ 0,080

DESCRIPTION		Values in mm
		1697 TD
3  Gudgeon pin housing	⌀ 1	25,993 ÷ 25,996
	2	25,996 ÷ 25,999
3  Piston ring grooves	 1	2,675 ÷ 2,705 (*)
	2	2,010 ÷ 2,030
	3	3,020 ÷ 3,040
4  Gudgeon pin	⌀ 1	25,987 ÷ 25,990
	2	25,990 ÷ 25,993
	⌀ FIAT >	0,2
4-3  Gudgeon pin - Housing		0,003 ÷ 0,009
5  Piston rings	L 1	2,575 ÷ 2,595 (**)
	2	1,978 ÷ 1,990
	3	2,975 ÷ 2,990
	⌀ FIAT >	0,4
5-3  Piston rings Piston ring grooves	 1	0,080 ÷ 0,130 (**)
	2	0,020 ÷ 0,052
	3	0,030 ÷ 0,065
5-1  Opening at end of piston rings in cylinder bore	 1	0,200÷ 0,350
	2	0,300 ÷ 0,500
	3	0,250 ÷ 0,500

(*) Measured at the 79.6 mm diameter

(**) Measured 1.5 mm from the outside edge

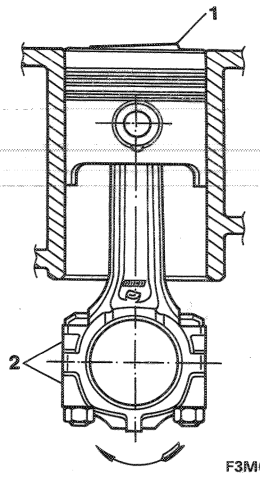


1697 TD

DESCRIPTION			Values in mm
6	Bush or small end pin housing	$\varnothing_1$	27,939÷27,972
	Big end bearing housing	$\varnothing_2$	53,897 ÷ 53,913
6	Difference in weight between con rods		± 2,5 g
7	Small end bush	$\varnothing_1$	28,020 ÷ 28,060
		$\varnothing_2$ 1	26,004 ÷ 26,007
		$\varnothing_2$ 2	26,007 ÷ 26,010
4-7	Gudgeon pin Small end bush		0,014 ÷ 0,020
7-6	Small end bush Bush housing		0,048 ÷ 0,121
8	Crankshaft bearings	$\varnothing_1$ 1	52,995 ÷ 53,004
		$\varnothing_1$ 2	52,986 ÷ 52,995
	Crank pins	$\varnothing_2$ A	50,796 ÷ 50,805
		$\varnothing_2$ B	50,787 ÷ 50,796
		L	27,975 ÷ 28,025

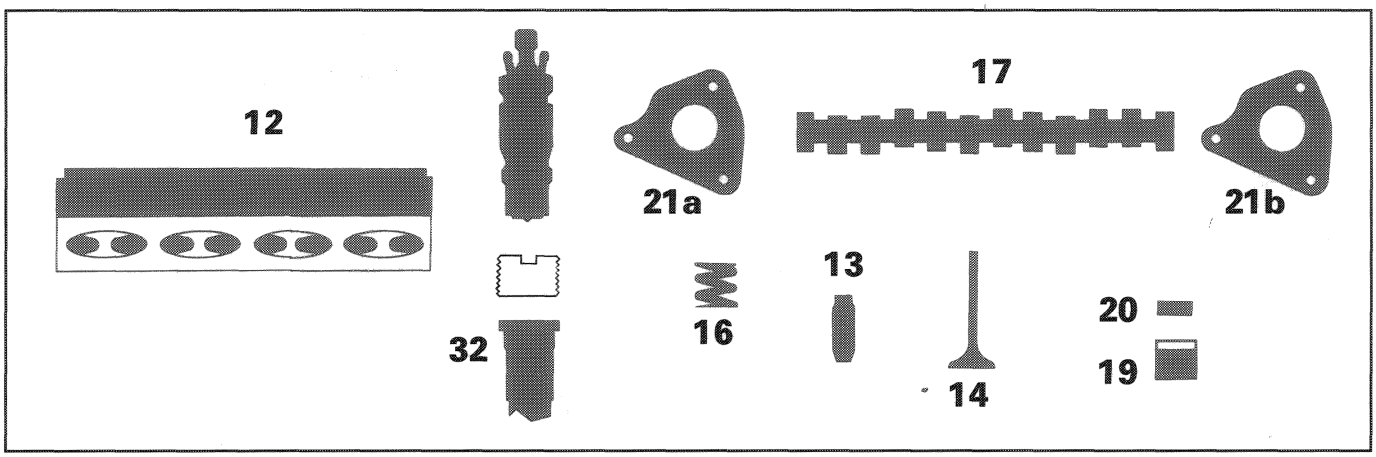
DESCRIPTION		Values in mm
		1697 TD
9	Crankshaft bearings L 1	1,837 ÷ 1,843
	L 2	1,843 ÷ 1,849
	Ø FIAT <	0,254 - 0,508
9–8	Crankshaft bearings - Main journals	0,027 ÷ 0,066
10	Crank pins L A	1,527 ÷ 1,533
	L B	1,533 ÷ 1,539
	Ø FIAT <	0,254 - 0,508
10–8	Big end bearings - Main journals	0,026 ÷ 0,063
11	Thrust washers S	2,347 ÷ 2,363
	S FIAT >	0,127
11–8	Crankshaft end float	0,049 ÷ 0,231

Diagram showing fitting of connecting rod-piston assemby and direction of rotation in engine



1. Projection on piston crown
2. Area where matching number of cylinder bore to which connecting rod belongs is stamped

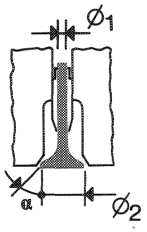
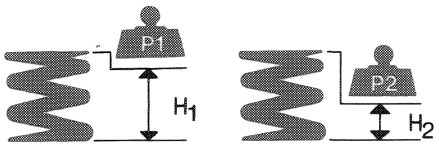
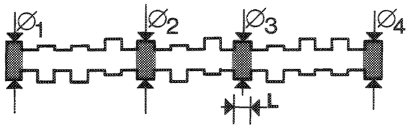
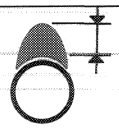
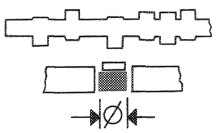
The arrow indicates the direction of rotation of the engine seen from the timing side

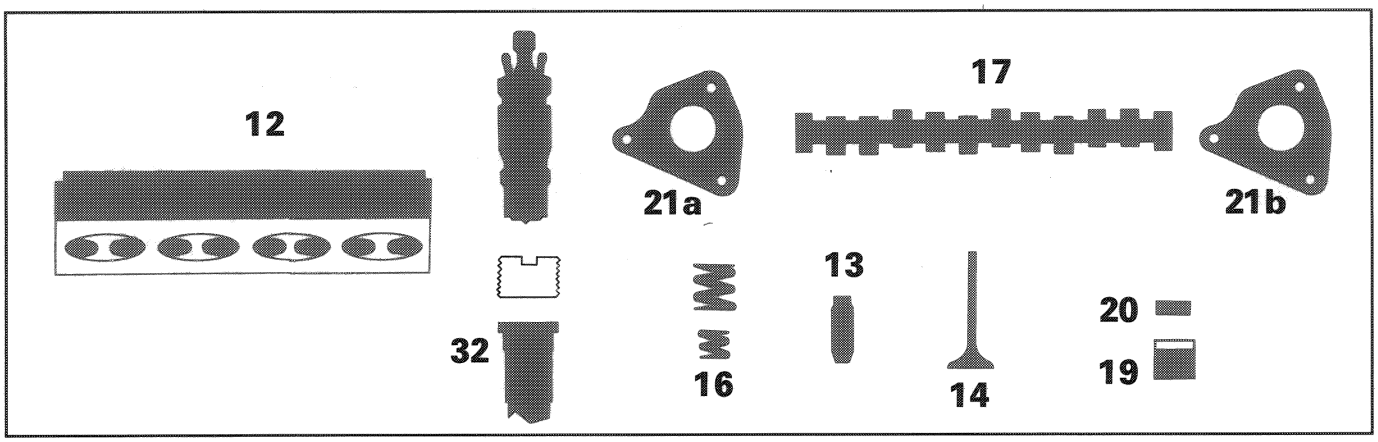


1697 TD

DESCRIPTION		Values in mm
Valve guide bore in cylinder head	Ø	13,950 ÷ 13,977
Valve seats	α (inlet)	45° ± 5′
	α (exhaust)	45° ± 5′
	L	about 2,7
Camshaft bearing housings in cylinder head (12)	$Ø_1$	43,020 ÷ 43,040
	$Ø_2$	25,545 ÷ 25,570
	$Ø_3$	24,045 ÷ 24,070
	$Ø_4$	43,020 ÷ 43,040
	L*	18,950 ÷ 19,030
Tappet housing	Ø	37,000 ÷ 37,025
Valve guide (13)	$Ø_1$	8,022 ÷ 8,040
	$Ø_2$	14,040 ÷ 14,058
	$Ø_2$ FIAT >	0,05 - 0,10 - 0,25

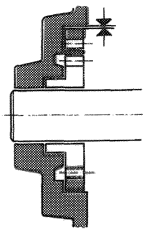
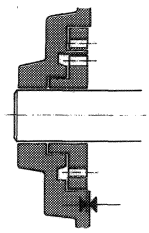
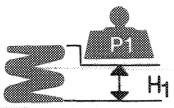
(*) Rear cap measurement

				1697 TD
DESCRIPTION				Values in mm
13-12		Valve guide Bore in cylinder head		0,061 ÷ 0,108
14		Valve	$\varnothing_1$	7,974 ÷ 7,992
			$\varnothing_2$	37,30 ÷ 37,60
			α	45°30' ± 7'
			$\varnothing_1$	7,974 ÷ 7,992
			$\varnothing_2$	33,30 ÷ 33,60
			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	$\varnothing_1$	29,945 ÷ 29,960
			$\varnothing_2$	25,500 ÷ 25,515
			$\varnothing_3$	24,000 ÷ 24,015
			$\varnothing_4$	23,945 ÷ 23,960
			L	19,100 ÷ 19,200
17-12			radial	0,030 ÷ 0,070
			axial	0,070 ÷ 0,250
17		Cam lift		8,8
				8,8
19		Tappet	$\varnothing$	36,975 ÷ 36,995
19-12		Tappet - Cylinder head		0,005 ÷ 0,050

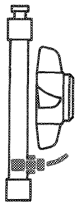


1697 TD

DESCRIPTION		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
21a-21b Camshaft supports	$\varnothing_1$	23,990 ÷ 24,015
	$\varnothing_2$	29,990 ÷ 30,015
17-21a **17-21b** Camshaft Supports		0,030 ÷ 0,070
32-12 Variation between ante-chamber plane and cylinder head plane		- 0,765 ÷ 0,055
Timing angles — Inlet	opens before TDC	4°
	closes after BDC	32°
Exhaust	opens before BDC	32°
	closes after TDC	4°

	1697 TD
LUBRICATION	Values in mm
Engine lubrication system	forceed feed, through 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 the pump casing and the 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	3,43 ÷ 4,9 bar
 Oil pressure relief valve spring — P_1	6,27 ÷ 7,06 daN
H_1	36

COOLING SYSTEM

	1697 TD
Cooling circuit	coolant circulation via centrifugal pump with radiator, expansion tank and two speed electric fan operated by thermostatic switch
Water pump operation	through belt
 Thermal switch to engage fan 	1st speed: 86° ÷ 90°C
	2nd speed: 90° ÷ 94°C
	1st speed: 81° ÷ 85°C
	2nd speed: 85° ÷ 89°C
Engine coolant thermostat — opening	78° ÷ 82°C
Engine coolant thermostat — max opening	88°C
Engine coolant thermostat — valve travel	7,5 mm
Clearance between impeller vanes and pump casing 	0,53 ÷ 1,37 mm
Pressure for checking radiator water tightness	0,98 bar
Checking calibration of spring on expansion tank	0,98 bar

FUEL SYSTEM

Firing order	1 - 3 - 4 - 2
Rotary type injection pump	BOSCH VE R 537 (USA 87) BOSCH VE R 538 (Em 08)
Injector	BOSCH 0.432.217.195
Nozzle holder type	BOSCH KCA 30 S 41
Nozzle type	BOSCH DN 12 SD 290
Injector setting pressure	150 ÷ 158 bar
Injection pump timing: with cylinder no. 1 piston at TDC (compression stroke)	piston stroke = 0,93 ± 0,05 mm
Engine idle speed	880 ÷ 920 rpm
Maximum free running engine speed	5200 ÷ 5300 rpm

CHECK DATA FOR BOSCH VE R 537 (USA 87) - VE R 538 (EM 08) FUEL INJECTION PUMP

GENERAL TEST CONDITIONS

- Test fluid: ISO 4113
- Test fluid temperature: 45° ± 1°C (backflow outlet ●)
- Pump inlet pressure: 0.35 bar
- Rotation: clockwise

SPECIFIC TEST CONDITIONS

- Injectors: Bosch 1.688.901.022
- Nozzles: Bosch 1.688.901.922 (DNO SD 1510) calibrated at 130 - 133 bar
- Pipes: 2x6x450 mm.

Type of check	Regulator lever position	Rotation speed rpm	Advance check mm	Transfer pressure bar	Flow rate per stage mm³/cycle	Max.spread between flow rates mm³/cycle	Turboch. pressure bar
Advance	Max	1000	0.9-1.9	3.9-4.5	–	–	1
	Max	1500	3.6-4.6	5.2-8.8	–	–	1
	Max	2300	7.7-8.7	7.2-8	–	–	1
Flow rate	Max	750	–	–	26.5-30.5	–	0
	Max	1100	–	–	27.5-33.5	–	0
	Max	1100	–	–	35.5-39.5	–	0.35
	Max	1500	–	–	39.5-43.5	⩽3	1
	Max	2300	–	–	38.5-44.5	–	1
	Max	2500	–	–	27-33	–	1
	Max	2700	–	–	4.5-12.5	–	1
	Max	2950	–	–	⩽3	–	1
Starting (enrichment)	Max	100	–	–	35-59	–	0
End of enrich-ment	Max	300	–	–	37-57	–	0
	Max	500	–	–	17-37	–	0
Backflow rate (●)	Max	750	–	–	15-30 l/h	–	1
	Max	2300	–	–	20-50 l/h	–	1
Idle speed	Min	450	–	–	9-15	⩽3	0
Residual flow	Min	400	–	–	20-26	–	0
	Min	550	–	–	⩽3	–	0
Stop (●●)	Max	450	–	–	⩽3	–	0

cont. ☞

Type of check	Regulator lever position	Rotation speed rpm	Advance check mm	Transfer pressure bar	Flow rate per stage mm³/ciclo	Max.spread between flow rates mm³/cycle	Turboch. pressure bar
Automatic (■) cold advance device (KSB)	Max	400	1.1-3.1	–	–	–	0
	Min	1000	2-4	–	–	–	0
(▲) 3rd stop calibration	Choked	1000	–	–	18-23	–	0

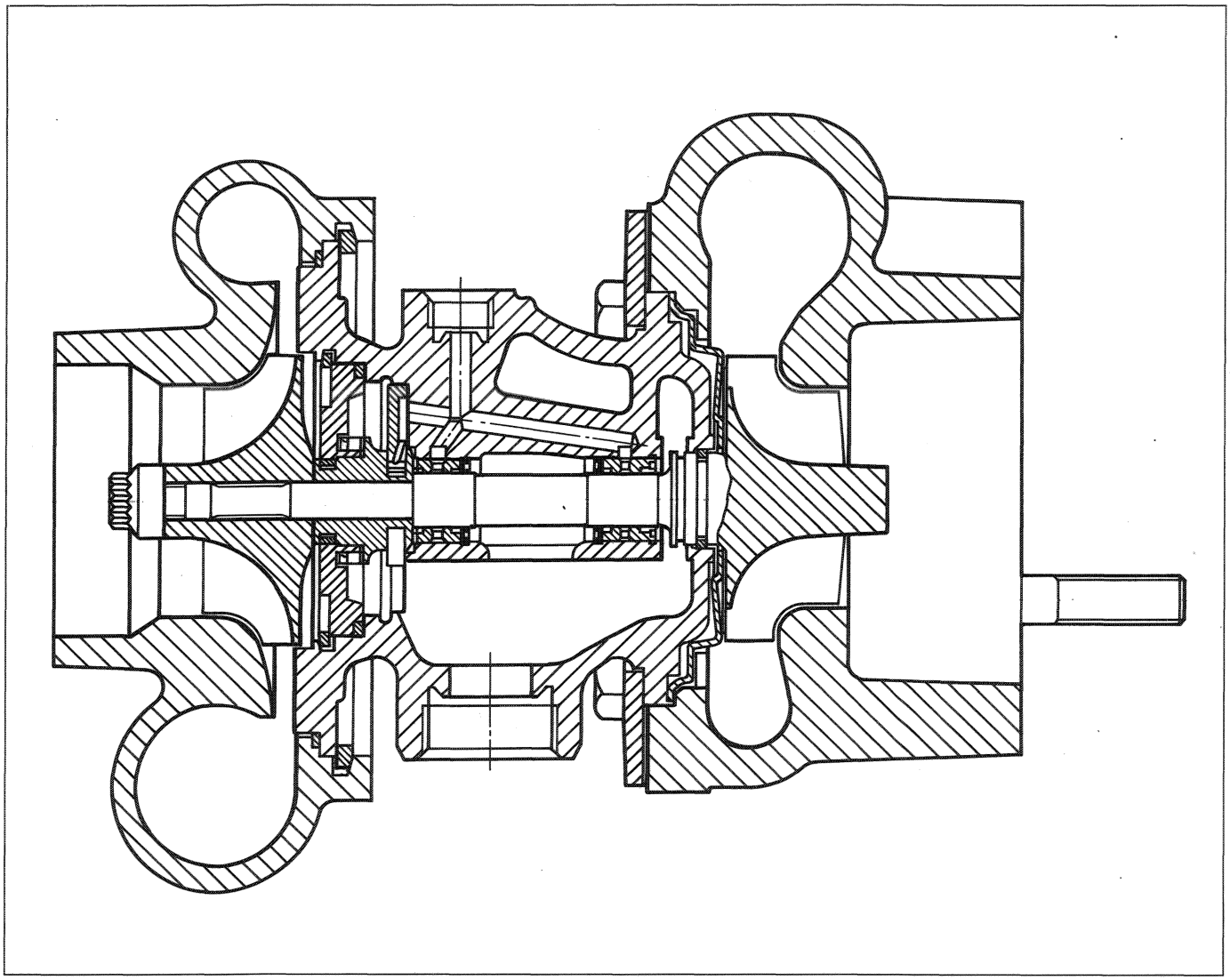
Fixed installation advance = 1° ± 1°
Electrical cut-off control: minimum operating voltage 8 V. Working voltage 11 - 13 V
Maximum engine rpm without load: 5250 ± 50 rpm
Engine idle speed: 880-920 rpm
(●) Fuel return from pump to fuel tank.
(●●) To be done with electrical cut-off control off
(■) Dismantle the KSB thermostatic bulb, fitting the special tool
(▲) Supply the potentiometer with a voltage of 3.70 V DC; place a 12 mm shim between the throttle lever and the 3rd stop screw; if necessary adjust the screw and check that the potentiometer's output voltage is 2.4±0.05 V DC (only for USA 87).

To check the advance, make sure that the KSB thermostatic bulb is supplied with 12 V for at least 2 minutes before the test.

COMPONENTS OF THE EXHAUST EMISSION CONTROL SYSTEM	1697 TD USA 87
Exhaust emissions control unit	M. Marelli MCR 102 A
Modulating solenoid	Borg-Warner
Rpm sensor	M. Marelli SEN 8 I
Coolant temperature sensor	Weber WTS-05/01
Fuel injection pump with engine load potentiometric sensor	Bosch VE R 537
Exhaust gas recirculation E.G.R. valve	Pierburg 7.21303.00

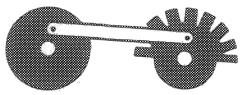
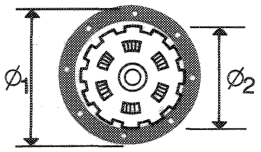
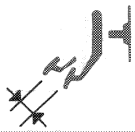
SUPERCHARGING (with turbocharger operated by exhaust gases with waste-gate valve)

Turbocharger type	Garrett T2
Maximum supercharging pressure	0,75 bar

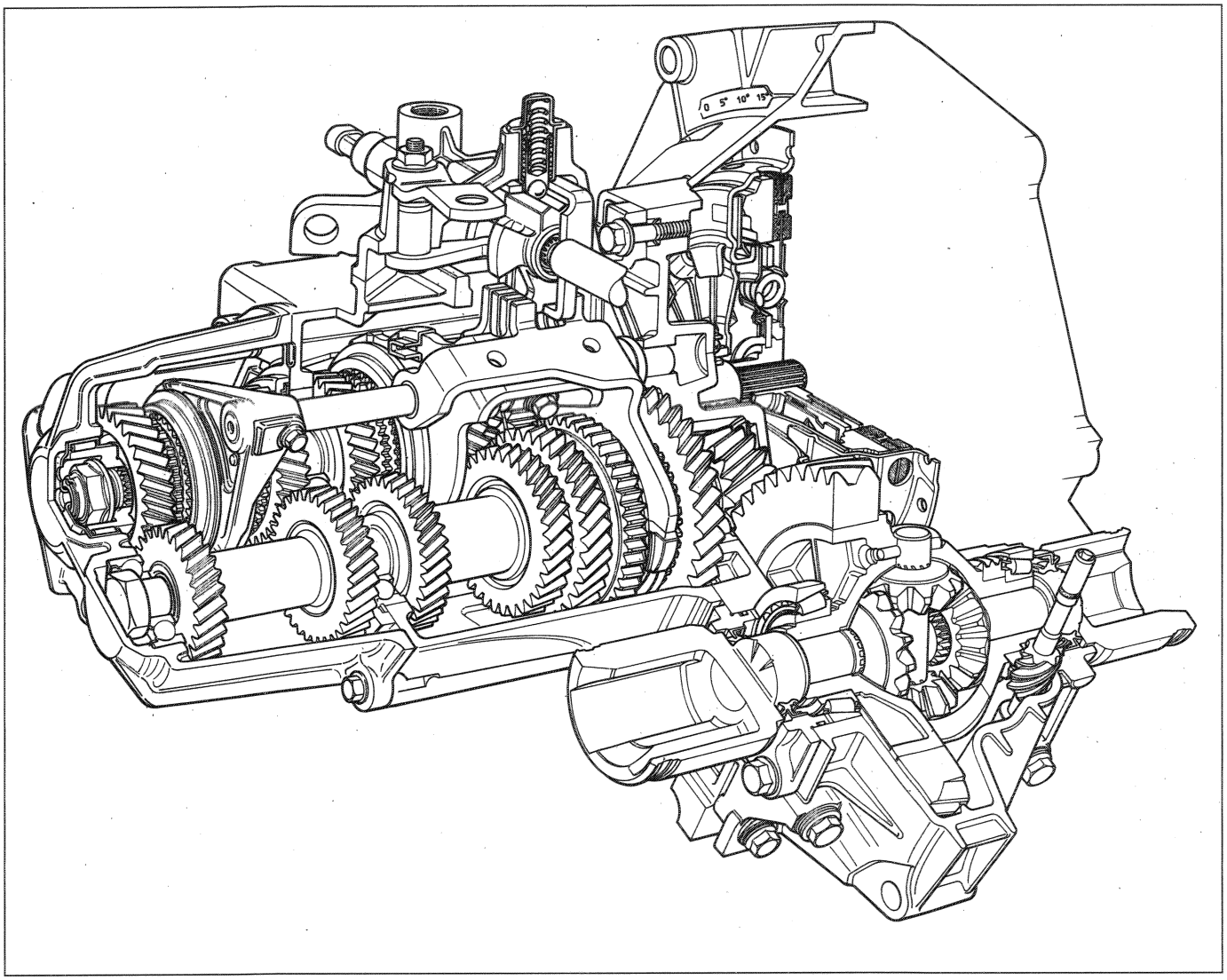


P3M049A01

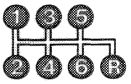
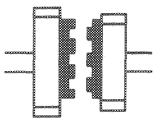
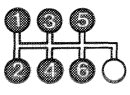
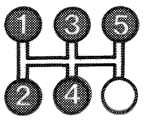
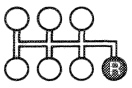
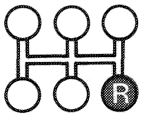
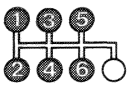
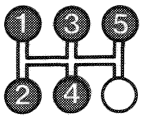
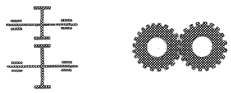
CROSS SECTION OF TURBOCHARGER

	1108 / 1242 SPI / 1242 MPI	1372 turbo	1697 TD
	Values in mm		
Type	 dry, single plate with bearing		
 Operating mechanism	 diaphragm spring		
Spring loading daN	350	500	425
 Lining — $\varnothing_1$	181,5	215	200
Lining — $\varnothing_2$	127	145	137
 Distance between pedal in end of travel position and pedal in rest position	140 ± 5		
Clutch release	mechanical		

Cross section of 6 speed gearbox



P3M051A01

				
				
GEARBOX	Type	**C.514.6.10**	**C.514.5.10**	**C.514.5.13**
 Synchronizers	spring ring (Porsche type) 			
	baulk ring 			
 Gears	straight toothed 			
	helical toothed 			
 Gear ratios		3,545	3,909	
		2,157	2,157	
		1,480	1,480 (1,345 ●)	
		1,121	1,121 (0,974 ●)	
		0,902	0,902 (0,808 ●)	
		0,744	-	
		3,818	3,818	

(●) For E.D. version and for French market

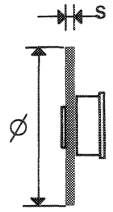
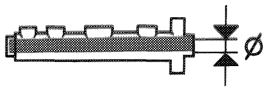
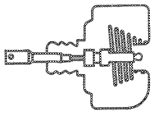
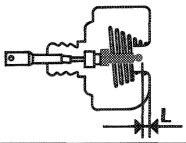
	1108	1108	1242 SPI	1242 MPI
DIFFERENTIAL				
Ratiocrown wheel & pinion reduction	4,923 (13/64)	3,866 (15/58) 3,563● (16/57●)	3,563 (16/57)	3,733 (15/56)
Ratio at the wheels – 1st	17,452	15,112 (13,928●)	13,928	14,592
Ratio at the wheels – 2nd	10,619	8,339 (7,685●)	7,685	8,052
Ratio at the wheels – 3rd	7,286	5,722 (4,792●)	5,273 (4,792●)	5,525
Ratio at the wheels – 4th	5,518	4,334 (3,470●)	3,994 (3,470●)	4,185
Ratio at the wheels – 5th	4,923	3,487 (2,879●)	3,214 (2,879●)	3,367
Ratio at the wheels – 6th	3,633	-	-	-
Ratio at the wheels – rev	18,796	14,760 (13,603●)	13,603	14,252
Differential internal casing bearing	conical roller bearings			
Adjustment of bearing pre-loading	by shims			
Thickness of shims (mm)	2,00 ÷ 3,00			
Interference to obtain exact bearing pre-loading (mm)	0,12			

(●) For E.D. version and for French market

			1372 turbo	1697 TD
			1 3 5 / 2 4 R	
GEARBOX		Type	**C.510.5.21**	**C.510.5.17**
Synchronizers	spring ring (Porsche type)		–	
	baulk ring		1 3 5 / 2 4	
Gears	straight toothed		1 2 3 4 R	
	helical toothed		1 3 5 / 2 4	
Gear ratios		1	3,545	3,909
		2	2,238	
		3	1,541	1,440
		4	1,156	1,029
		5	0,891	0,794
		R	3,909	

DIFFERENTIAL

	1372 turbo	1697 TD
Ratio crown wheel and pinion reduction	3,353 (17/57)	3,733 (15/56)
Ratio at the wheels	11,887	15,592
	7,504	8,354
	5,167	5,375
	3,876	3,841
	2,987	2,964
	13,107	14,592
Differential internal casing bearing	conical roller bearings	
Adjustment of bearing pre-loading	by shims	
Thickness of shims mm 0,07	1,70 ÷ 2,89	
Interference to obtain exact bearing pre-loading mm	bearings not pre-loaded = 0,12 bearings pre-loaded (350 dan) = 0,08	
Clearance between planet/satellite gears mm	⩽0,10	
Adjustment of clearance between planet and satellite gears	no adjustment is carried out	

	1108	1242 SPI	1242 MPI	1697 TD
FRONT BRAKES	Values in mm			
 Disc ⌀	240 (257*)			257
Disc s	10,80 ÷ 11,10 (11,80 ÷ 12,10*)			11,80÷12,10
Disc s 	9,55 (10,55*)			10,55
Disc s allowed	9,20 (10,20*)			10,20
 Brake pads s allowed	1,5			
 Caliper ⌀	48			
 Master cylinder (pump) ⌀	20,65 (13/16")			
 Servo brake	Isovac 8" vacuum acting on all four wheels			
 Distance of hydraulic piston push rod from master cylinder support plate L	22,45 ÷ 22,65			

* For the 1242 MPI version with ABS

REAR BRAKES

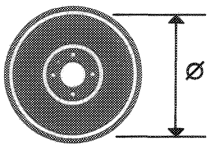
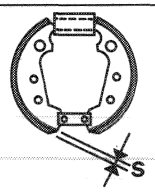
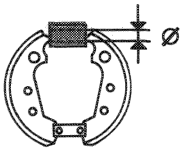
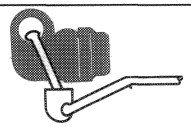
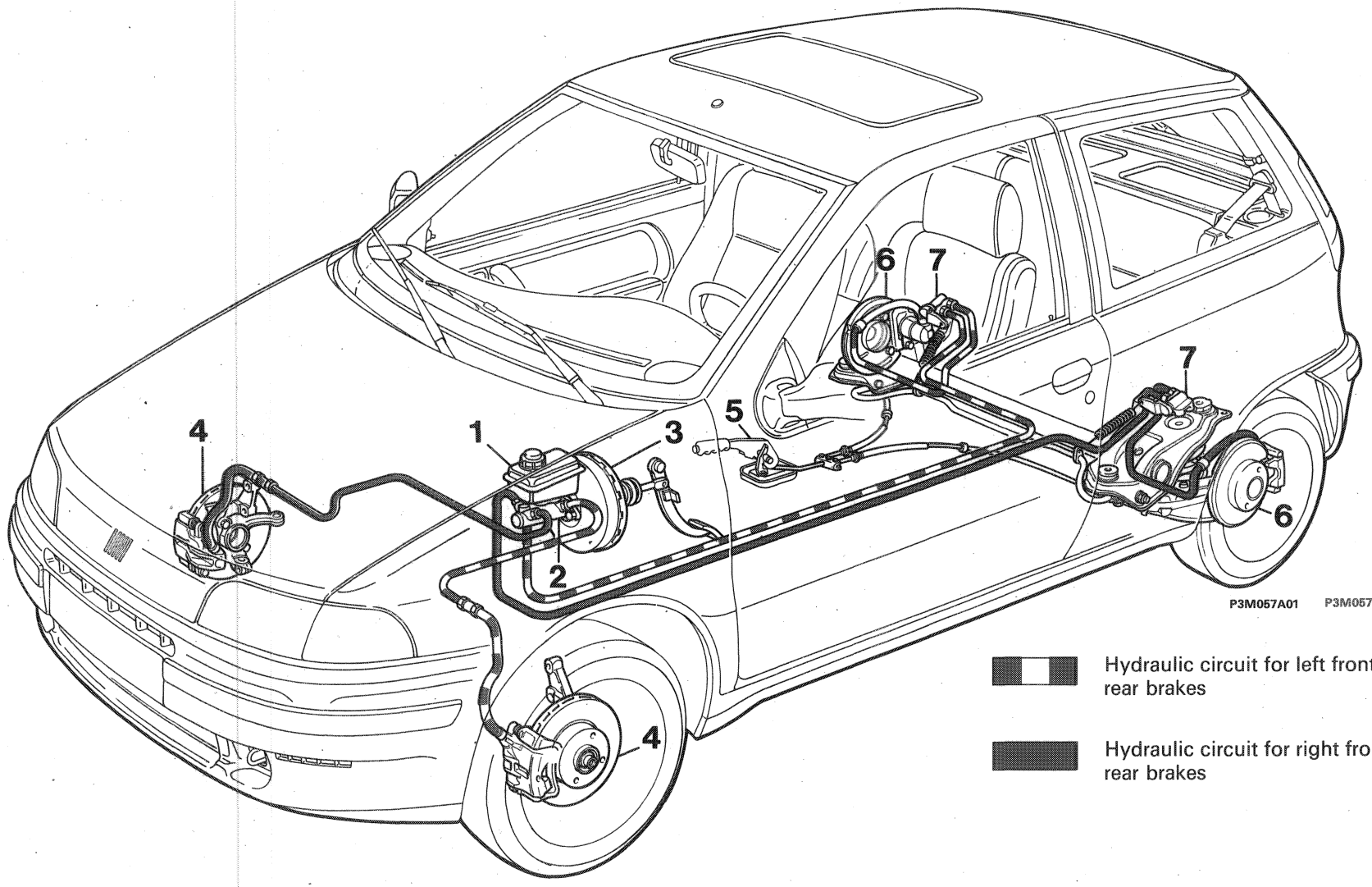
 Drum ⌀	⌀		180,00 ÷ 180,25	
Drum ⌀ 			180,85	
Drum ⌀ allowed			181,35	
 Shoes s allowed			1,5	
 Wheel cylinders ⌀			20,65 (13/16")	
 Reduction ratio	Pressure regulators		0,25	-
Reduction ratio	Load proportioning valves		-	0,30

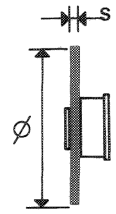
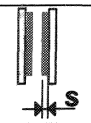
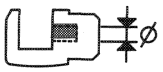
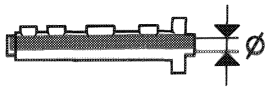
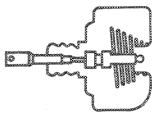
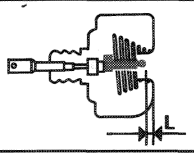
DIAGRAM SHOWING OPERATION OF HYDRAULIC BRAKING SYSTEM AND MANUAL HANDBRAKE



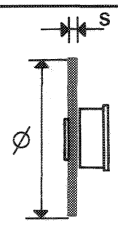
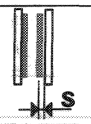
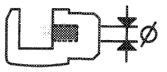
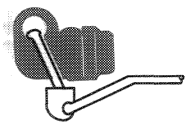
Hydraulic circuit for left front and right rear brakes

Hydraulic circuit for right front and left rear brakes

1. Brake fluid reservoir
2. Master cylinder for front and rear wheel brake circuit
3. Vacuum servo brake
4. Front disc brakes
5. Handbrake control lever
6. Rear disc brakes
7. Load proportioning valves for rear wheels

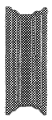
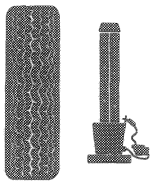
	1372 turbo
FRONT BRAKES	Values in mm
 Disc ø	257
Disc s	19,80 ÷ 20,10
Disc s (worn)	18,55
Disc s allowed	18,2
 Brake pads s allowed	1,5
 Caliper ø	54
 Master cylinder (pump) ø	22,225 (7/8")
 Servo brake	Isovac 8" pneumatic vacuum acting on all four wheels
 Distance of hydraulic piston push rod from master cylinder support plate d	22,45 ÷ 22,65

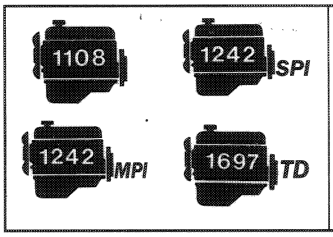
REAR BRAKES

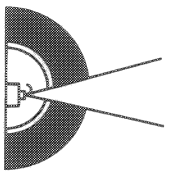
 Disc ø	240
Disc s	10,80 ÷ 11,10
Disc s (worn)	9,55
Disc s allowed	9,2
 Brake pads s allowed	1,5
 Caliper ø	34
 Load proportioning valves	acting on the rear wheels
Ratio (reduction)	0,30

	ENGINE	1108 / 1242 SPI / 1242 MPI	1242 MPI ▲ / 1372 turbo / 1697 TD
Type		rack and pinion with variable ratio	rack and pinion power assisted
Ratio	no. of turns lock to lock	about 4,4	about 2,9
	rack travel	137 mm	
Minimum turning circle (Ø)		9,7 m 10,5 m ●	
Steering angle	outer wheel α_1	33°14′	33°24′
	inner wheel α_2	39°24′	39°
Steering column		with 2 universal joints	

▲ available on request ● for 1697 TD version with air conditioning

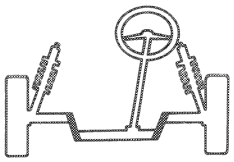
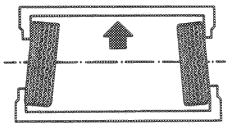
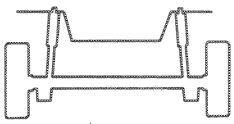
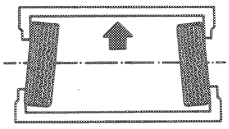
VERSION	 Wheel rim pressed steel, type	 Tubeless, radial type tyre	 Tyre inflation pressure			
			Front		Rear	
			average load	full load	average load	full load
S 55	4.5 B x 13"	155/70 R 13"	2 bar	2,2 bar	1,9 bar	2,2 bar
S E.D.						
S 60						
S 75	5.0 B x 14"	165/65 R 14"				
S TD			2,4 bar		2 bar	
SX 55	5.0 B x 13"	165/60 R 13"	2 bar	2,2 bar	1,9 bar	
SX 60						
SX 75	5.0 B x 14"	165/65 R 14"				
SX TD			2,4 bar		2 bar	
6 Speed	5.0 B x 14"	165/60 R 14"	2 bar	2,2 bar	1,9 bar	
EL 75		165/65 R 14"				
ELX 75	5.0 B x 14"	165/65 R 14"				
ELX TD		175/60 R 14"	2,4 bar		2 bar	
GT	5 ½ J x 14"	185/55 R 14"				
Spare wheel	4.5 B x 13" 4.5 B x 14"	135/80 B 13" 135/80 B 14"	2,8 bar			





unladen vehicle (*)

WHEEL GEOMETRY

 Front suspension	camber (**) 	– 15′ ± 30′	– 50′ ± 30′
	caster (**) 	1° 20′ ± 30′ (2° 50′ ± 30′ ■)	
	toe in 	0 ± 1 mm	
	front wheel offset ▲	0°	
 Rear suspension	camber (**) 	– 15′ ± 30′	– 35′ ± 30′
	toe in (**) 	1 ± 2 mm	2,2 ± 2 mm
	rear wheel thrust angle ▲	0°	

(*) With tyres inflated to the correct pressure and vehicle in running order
(**) Angles cannot be adjusted
(▲) Angles, which cannot be adjusted, used for the correct alignment of the vehicle
(■) Versions with power assisted steering

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

Coil springs

			1108	1242 SPI	1242 MPI
Part number			7756591		7756594
Diameter of wire		mm	12,9±0,05		12,1±0,05
Number of turns			3,25		4,25
Direction of coil			clockwise		
Height of spring released		mm	338		448
Height of spring under a load of:	275 ± 10 daN	mm	213		-
	319 ± 11 daN	mm	-		213
The springs are divided into two categories, identifiable by a mark:					
yellow (1) for those under a load of:	275±10 daN	height mm	>213		-
	319±11 daN	height mm	-		>213
green (1) for those under a load of:	275±10 daN	height mm	⩽213		-
	319±11 daN	height mm	-		⩽213

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

Shock absorbers

Type:		telescopic, hydraulic double acting
Part number		7752624
Travel (start of damping action)	mm	171
Maximum extension	mm	466 ± 2

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

Coil springs

			1372 turbo	1697 TD
Part number			7756597	7756596
Diameter of wire		mm	13,5±0,05	12,6±0,05
Number of turns			3,25	4,25
Direction of coil			clockwise	
Height of spring released		mm	328	440
Height of spring under a load of:	339 ± 12 daN	mm	198	-
	358 ± 13 daN	mm	-	213
The springs are divided into two categories, identifiable by a mark:				
yellow (1) for those under a load of:	339±12 daN	height of mm	>198	-
	358±13 daN	height of mm	-	>213
green (1) for those under a load of:	339±12 daN	height of mm	⩽198	-
	358±13 daN	height of mm	-	⩽213

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

Shock absorbers

Type: telescopic, double acting			low pressure gas
Part number			7752626
Travel (start of damping action)		mm	171
Maximum extension		mm	466 ± 2

00.44

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

Coil springs

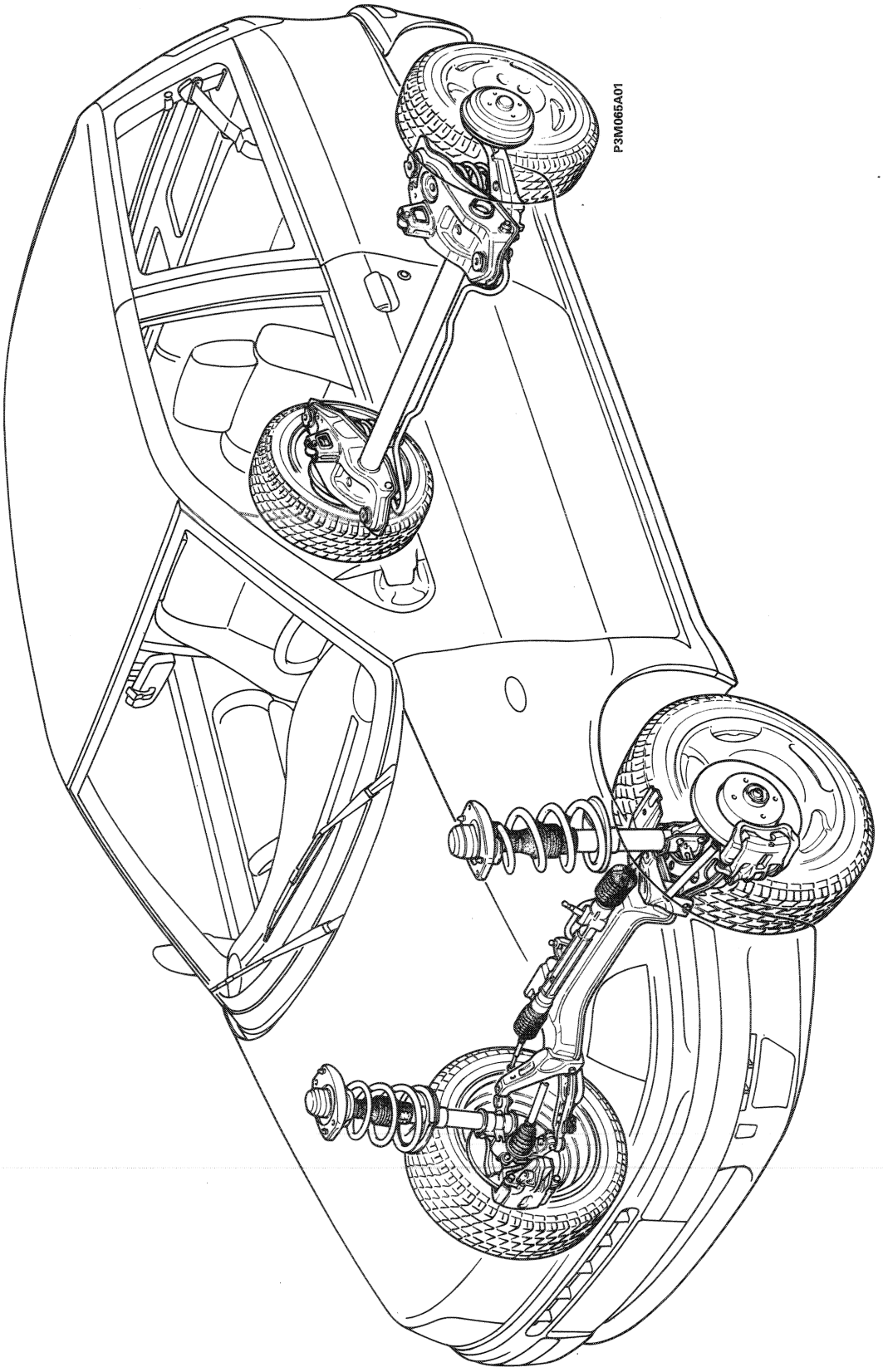
			1108 / 1242 SPI	1242 MPI / 1697 TD	1372 turbo
Part number			7756588	7756559	7756590
Diameter of wire		mm	12,3±0,05	11,9±0,05	12,2±0,05
Number of turns			4,5	4,75	4,25
Direction of coil			clockwise		
Height of spring released		mm	264	277	254
Height of spring under a load of:	299 ± 11 daN	mm	185	-	-
	294 ± 10 daN	mm	-	185	-
	305 ± 11 daN	mm	-	-	175
The springs are divided into two categories, identifiable by a mark:					
yellow (1) for those under a load of:	299±11 daN	height of mm	>185	-	-
	294±10 daN	height of mm	-	>185	-
	305±11 da	height of mm	-	-	>175
green (1) for those under a load of:	299±11 daN	height of mm	⩽185	-	-
	294±10 daN	height of mm	-	⩽185	-
	305± 11 daN	height of mm	-	-	⩽175

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

Shock absorbers

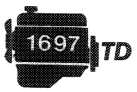
Type: telescopic, double acting		low pressure gas	
Part number		7719070	7736585
Travel (start of damping action)	mm	88	85
Maximum extension	mm	300±2	294±12

DIAGRAM SHOWING FRONT AND REAR SUSPENSION FITTED ON VEHICLE



				
STARTER MOTOR	M. Marelli E80-12V-0,8kW	M. Marelli E80-12V-1kW		
ALTERNATOR	M. Marelli A115I-14V-38/65A	M. Marelli A115I-14V-38/65A M. Marelli ● A115I-14V-40/75A	M. Marelli A115I-14V-38/65A	Bosch K1-14V-23/65A
VOLTAGE REGULATOR	Built in electronic			
BATTERY	12V-32 Ah-150A	12V-40 Ah-200A (12V-50 Ah-250A●)		12V-50 Ah-200A
IGNITION SYSTEM	I.A.W. integrated electronic injection/ignition			Bosch Motronic integrated electronic injection/ignition
IGNITION COIL	M. Marelli BAE. 800 AK			Bosch 0.221.503.407
POWER MODULE	–			Bosch 0.227.100.201
SPARK PLUGS	Fiat/Lancia 9GYSSR Champion RC9YCC]. Marelli L7LCR			Fiat/Lancia 7GBYSR4 Champion RC7BYC4

(●) For vehicles equipped with air conditioning

	
STARTER MOTOR	Bosch DW-12V-1,7 kW
ALTERNATOR	M. Marelli A115I-14V-38/65A M. Marelli A127I-14V-50/85A ●
VOLTAGE REGULATOR	Built in electronic
BATTERY	12V-60 Ah-320A
PRE-HEATING SYSTEM ELECTRONIC CONTROL UNIT	SIPEA 2406
HEATER PLUGS	Beru 9.800.207.220-A Bosch A.250.001.538

(●) For vehicles equipped with air conditioning

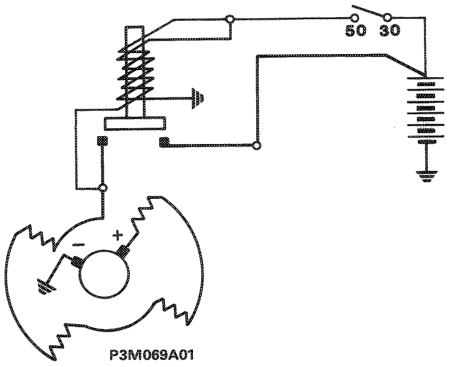
STARTER MOTOR

		1108	1242 SPI / 1372 turbo / 1242 MPI	1697 TD
Type		M.Marelli E80-12V-0,8kW	M.Marelli E80-12V-1kW	Bosch DW 12V-1,7
Voltage	V	12		
Nominal power	kW	0,8	1	1,7
Rotation, pinion side		clockwise		
No. of poles		4		6
Field coil		series		permanent magnets
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	180	200	480
speed	rpm	1720	2200	1760
voltage	V	9,5	9,8 ÷ 10	8,85
torque developed	daNm	0,37	0,38	1,3
Engagement test (*):				
current	A	324	440	1000 ÷ 1050
voltage	V	7,1	7,6	5,2 ÷ 5,4
torque developed	daNm	⩾0,97	⩾1,25	⩾2,7
Free running test (*):				
current	A	40	44 ÷ 48	30÷40
voltage	V	11,4	11,4 ÷ 11,5	11,7
speed	rpm	8500 ÷ 9000	11400 ÷ 12300	3600
Relay				
Winding resistance (*) pull in	Ω	0,30 ÷ 0,32	0,32	0,37 ÷ 0,40
Winding resistance (*) hold in	Ω	1,2 ÷ 1,3	1,09	1,60 ÷ 1,80
Lubrication Internal splines and shaft bushes		VS⁺ SAE 10 W		
Engagement sleeve and intermediate disc		TUTELA MR3		

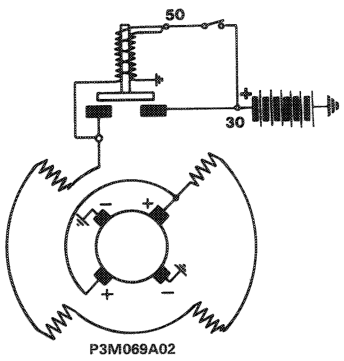
(*) Data obtained at an ambient temperature of 20°C.

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

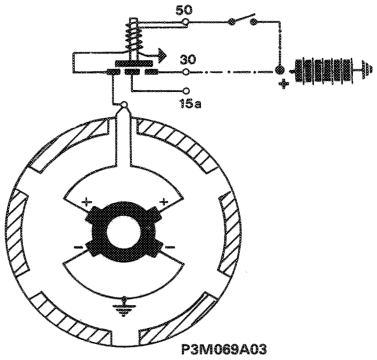
Wiring diagrams for starter motors



M. Marelli E80-12V-0,8kW

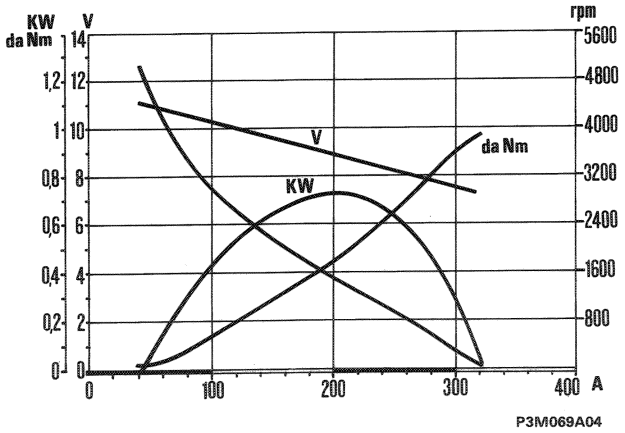


M. Marelli E80-12V-1kW

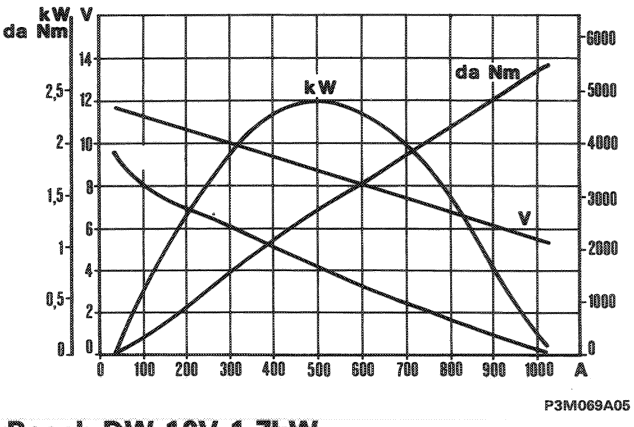


Bosch DW-12V-1,7kW

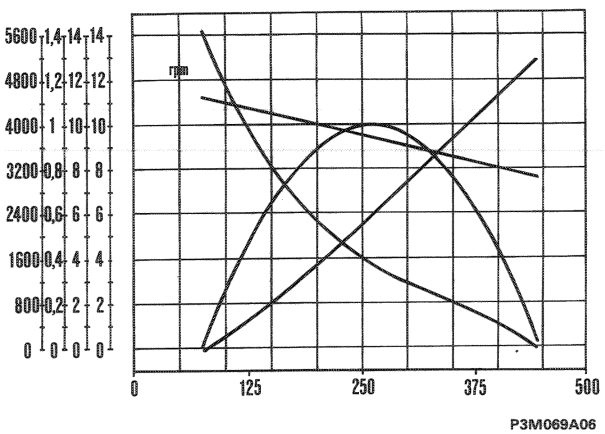
Typical curves for starter motor



M. Marelli E80-12V-0,8kW

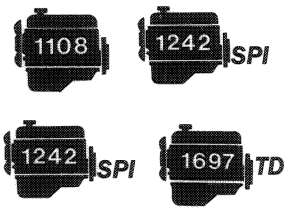


Bosch DW-12V-1,7kW



M. Marelli E80-12V-1kW

ALTERNATOR

			
Type		M.Marelli A115I-14V-38/65A	Bosch K1-14V-23/65A
Nominal voltage	V	14	
Maximum current	A	65	65
Cut in speed when warm	rpm	–	1050
Current delivery on the battery at 7000 rpm at op. temp.	A	–	⩾65
Nominal current at 1800 rpm	A	38	–
Nominal current at 6000 rpm	A	65	–
Field winding resistance between the slip rings (*)	Ω	2,4	2,61 ÷ 3,19
Direction of rotation (seen from control side)		clockwise	
Diode rectifiers		bridge	

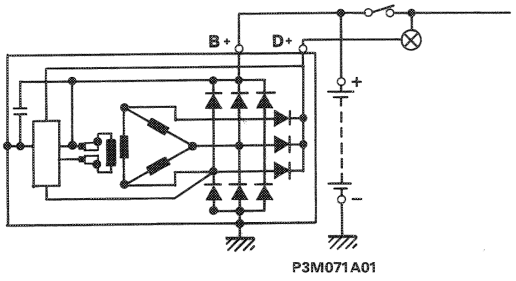
(*) Data obtained at an ambient temperature of 20°C.

VOLTAGE REGULATOR

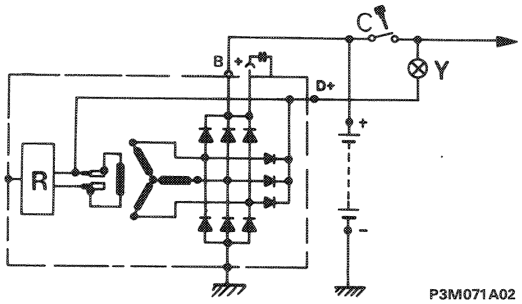
		Built in electronic	
Type		RTM 121 A	BOSCH EL 14V 4C
Alternator speed for test	rpm	7000	
Thermal stabilization current	A	-	30 ÷ 35
Test current	A	-	5 ÷ 50
Regulation voltage (*)	V	14,3 ÷ 14,6	14 ÷ 14,3

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

Alternator wiring diagrams

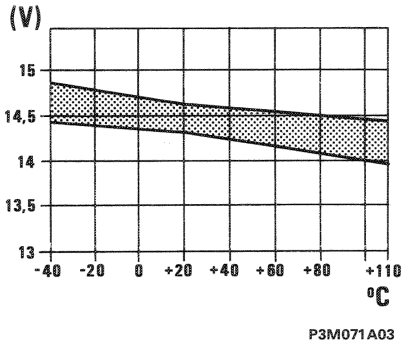


M. Marelli A115I - 14V - 38/65A

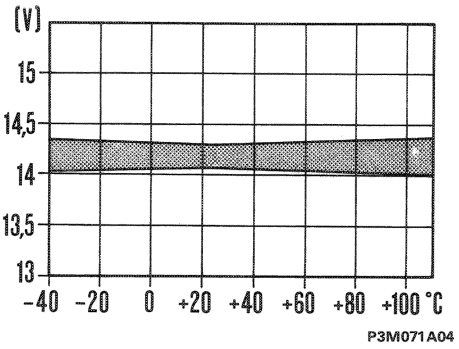


Bosch K1 - 14V - 23/65A

Typical voltage regulator curves

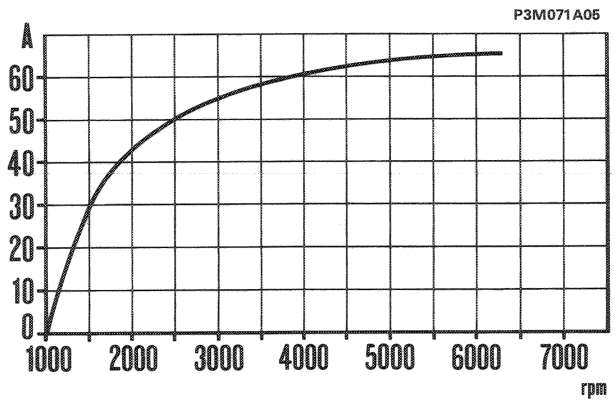


M. Marelli RTM 121 A

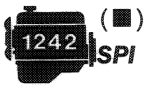


Bosch EL 14V 4C

TYPICAL OUTPUT CURVES
(at operating temperature at a constant voltage of 13.5 V with bedded in brushes)



Bosch K1 - 14V - 23/65A

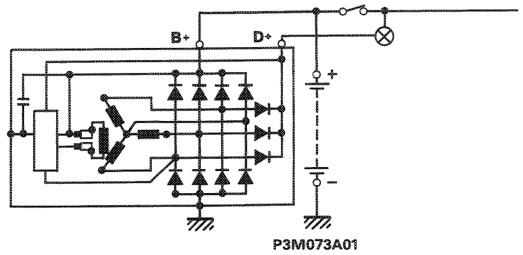
		 (■)	 (■)
ALTERNATOR			
Type		M.Marelli A115I-14V-40/75A	M.Marelli A115I-14V-50/85A
Nominal voltage	V	14	
Maximum current	A	75	85
Nominal current at 1800 rpm	A	40	50
Nominal current at 6000 rpm	A	75	85
Field winding resistance between the slip rings (*)	Ω	2,587 ÷ 2,613	2,587 ÷ 2,613
Direction of rotation (seen from control side)		clockwise	
Diode rectifiers		bridge	

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

		Built in electronic	
VOLTAGE REGULATOR			
Type		RTM 121 A	24 TR/B
Alternator speed for test	rpm	7000	
Thermal stabilization current	A	–	
Test current	A	–	
Regulation voltage (*)	V	14,3÷14,6	

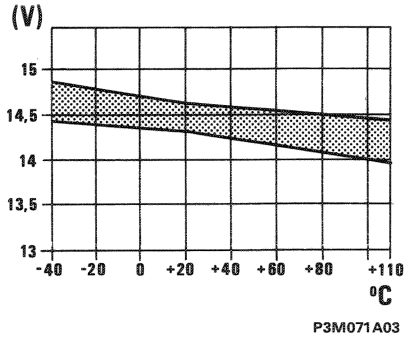
(*) Data obtained at an ambient temperature of 20°C.

Alternator wiring diagrams



M. Marelli A115I - 14V - 40/75A
M. Marelli A115I - 14V - 50/85A

Typical voltage regulator curves



M. Marelli RTM 121 A
M. Marelli 24 TR/B

STATIC ADVANCE ELECTRONIC INJECTION/ IGNITION

			
Type	Lost spark static advance electronic ignition integrated with Weber - Marelli injection system		
Make	IAW 6F.SB	IAW 6F. S3	IAW 8F. 5T
Firing order	1 – 3 – 4 – 2		

IGNITION COIL WITH 2 HIGH TENSION PICK UPS

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

RPM AND TDC SENSOR

Make and type		M. Marelli /Jaeger CVM
Sensor winding resistance	Ω	670 ÷ 750
Distance (gap) between sensor and crankshaft pulley tooth	mm	0,5 ÷ 1,5

ADVANCE ON ENGINE

With engine idling	10° ± 3°	13° ± 3°

SPARK PLUGS

Make and type	Champion	RC9YCC
	Fiat/ Lancia	9GYSSR
	M. Marelli	L7LCR
Thread		M 14×1,25
Electrode gap	mm	0,85 ÷ 0,95

BOSCH MOTRONIC M2.7 INTEGRATED ELECTRONIC INJECTION/IGNITION CONTROL MODULE

1372 turbo

Make and type	Bosch 0.261.303.099
Firing order	1 – 3 – 4 – 2

IGNITION COIL WITH 4 HIGH TENSION PICK UPS

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

POWER MODULE

Make	Bosch
Type	0.227.100.201

RPM AND TDC SENSOR

Make and type		Bosch B 335.545.329
Sensor winding resistance	Ω	610 ÷ 750
Distance (gap) between sensor and crankshaft pulley tooth	mm	0,5 ÷ 1,5

DETONATION SENSOR

Make and type	Bosch 0.261.231.007

ADVANCE ON ENGINE

With engine idling (850±50 rpm)	5° ± 2°

SPARK PLUGS

Make and type		Champion RC7BYC4 Fiat/Lancia 7GBYSR4
Thread		M 14×1,25
Electrode gap	mm	0,8 ÷ 1

Tool number	DESCRIPTION OF TOOL	ENGINE				
		1108	1242 SPI	1242 MPI	1372 turbo	1697 turbo d
ENGINE						
1842128000	Tool for removing injection pump toothed pulley and retaining whilst replacing belt					●
1850088000	Spanner (13 mm) for adjusting manifold fixing nuts	●	●	●	●	●
1850095000	Spanner (13 mm) for removing-refitting starter motor (operation on vehicle)					●
1850113000	Spanner (14 mm) for engine oil drain plug	●	●	●	●	●
1850132000	Spanner (13 mm), with 1/2" socket, for camshaft housing fixing bolts	●	●	●	●	
1850150000	Spanner (32-36 mm) for crankshaft pulley fixing nut				●	
1850160000	Spanner (13 mm) for adjusting Bosch injection pump fixing nut, crankcase side					●
1850167000	Spanner (13 mm) for adjusting bolts fixing water pump piping				●	
1850172000	Pair of spanners (17 mm), 1/2" socket, for cylinder head fixing bolts				●	
1850177000	Bush (27 mm) for injector removal and refitting					●
1850178000	Spanner for adjusting ante-chamber retaining ring nut					●
1850184000	Spanner for spark plugs	●	●	●		
1850193000	Spanner for spark plugs				●	
1852148000	Spanner (24 mm) for removing and refitting cut-off valve on Bosch fuel injection pump					●
1852154000	Spanner, 1/2" socket, for cylinder head fixing bolts					●
1854041000	Spanner for adjusting ring nut on fuel tank	●	●	●	●	●
1854043000	Spanner for adjusting fuel level sender unit on tank	●	●	●	●	●

Tool number	DESCRIPTION OF TOOL	ENGINE				
		1108	1242 SPI	1242 MPI	1372 turbo	1697 turbo d
1858013000	Spanner for retaining Bosch alternator pulley whilst adjusting fixing nut	●	●	●		●
1860054000	Drift (⌀22 mm) for removing and refitting con rod bush				●	
1860162000	Pressure gauge and unions for checking oil pump	●	●	●	●	●
1860183000	Pliers (⌀ 75-110) for removing and refitting piston rings	●	●	●	●	●
1860251000	Drift for removing and refitting gudgeon pin					●
1860303000	Tool for fitting gudgeon pin circlips on piston				●	
1860313000	Drift for fitting oil seal on valve guide				●	●
1860372000	Drift for removing and refitting auxiliary control shaft bushes				●	
1860395000	Drift for removing valve guides	●	●	●	●	●
1860442000	Support for cylinder head whilst removing and refitting valves				●	
1860443000	Pressure lever for inserting tool for retaining tappets whilst adjusting valve clearance	●	●	●		●
1860454000	Drift for fitting oil seal on valve guide	●	●	●		
1860455000	Support for cylinder head whilst replacing tappet shims (operation in the vice)				●	
1860462000	Drift for fitting engine valve guides				●	
1860470000	Tool for retaining cylinder head whilst overhauling	●	●	●	●	●
1860486000	Drift for fitting valve guides					●
1860490000	Tool for retaining valve leakage test equipment 1895868000 (to be used with 1860470000)	●	●	●	●	●
1860592000	Universal hook for lifting and moving engine/gearbox unit	●	●	●	●	●

Tool number	DESCRIPTION OF TOOL	ENGINE				
		1108	1242 SPI	1242 MPI	1372 turbo	1697 turbo d
1860642000	Tool for retaining tappets whilst replacing shim during adjustment of valve clearance				●	
1860644000	Tool for removing and refitting valves	●	●	●	●	●
1860647000	Flywheel lock (at the bench)					●
1860662000	Tool for removing cartridge oil filter or fuel filter	●	●	●		●
1860666000	Tool for retaining camshaft whilst removing and refitting side supports					●
1860672000	Drift for fitting rear crankshaft oil seal (to be used with 1870007000)	●	●	●		
1860699000	Drift for fitting crankshaft rear oil seal (to be used with 1870007000)					●
1860700000	Band (⌀60 ÷ 125 mm) for fitting normal and oversize pistons in cylinders	●	●	●	●	●
1860724000	Tool for retaining tappets whilst replacing shim during adjustment of valve clearance (to be used with 1860443000)					●
1860744000	Tool for rotating crankshaft (at the bench)	●	●	●	●	●
1860745100	Tool for tensioning toothed belts (to be used with specific tools)	●	●	●	●	●
1860745200	Tool for tensioning timing system toothed belt (to be used with 1860745100)					●
1860745300	Tool for tensioning timing system toothed belt (to be used with 1860745100)	●	●	●	●	
1860747000	Tool for retaining tappets whilst replacing shim during adjustment of valve clearance (to be used with 1860443000)	●	●	●		
1860748000	Tool for removing and refitting gudgeon pin and piston at the press (to be used with 1895615000)	●	●	●		
1860749000	Support for cylinder head whilst removing and refitting valves	●	●	●		
1860750000	Drift for fitting valve guides	●	●	●		
1860758000	Tool for removing cartridge oil filter	●	●	●		

Tool number	DESCRIPTION OF TOOL	ENGINE				
		1108	1242 SPI	1242 MPI	1372 turbo	1697 turbo d
1860765000	Tool for retaining camshaft pulley or auxiliary shaft pulley whilst adjusting fixing bolt				●	●
1870766000	Flywheel lock (on vehicle)					●
1860767000	Drift for removing and refitting connecting rod bush					●
1861001011	Pair of brackets to secure engine on rotating stand 1861000000					●
1861001032	Bracket to secure engine (distribution side) on rotating stand 1861000000	●	●	●	●	
1861001034	Bracket to secure engine (flywheel side) on rotating stand 1861000000	●	●	●	●	
1865090000	Tool for checking start of delivery of fuel injection pump during timing on engine (to be used with 1895884000)					●
1867019000	Drift for removing and refitting bush on crankcase for oil pump and ignition distributor drive gear				●	
1867029000	Flywheel lock	●	●	●	●	●
1876036000	Cable with contacts for rotating engine whilst adjusting valve clearance				●	●
1887001000	Pliers for extracting engine valve tappet shims	●	●	●	●	●
1890310000	Reamer (⌀8 mm) for engine valve guide openings				●	●
1890313000	Reamer (⌀7 mm) for engine valve guide openings	●	●	●		
1890365000	Reamer for auxiliary shaft bushes				●	
1895376000	Cooling system leakage test equipment	●	●	●	●	●
1895615000	Tool to check piston pin unseating load (to be used with 1895884000)	●	●	●		
1895615013	Tool to check piston pin unseating load (to be used with 1895615000)	●	●	●		
1895682001	Equipment for checking engine cylinder compression (scale 10,1 - 40,5 bar)					●

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Tool number	DESCRIPTION OF TOOL	ENGINE				
		1108	1242 SPI	1242 MPI	1372 turbo	1697 turbo d
1895682007	Cards for tool 1895682001					●
1895682127	Dummy injector for checking cylinder compression (to be used with 1895682001)					●
1895683000	Equipment for checking engine cylinder compression (scale 4,05 - 18,2 bar)	●	●	●	●	
1895683002	Cards for tool 1895683000	●	●	●	●	
1895762000	Dynamometer for checkign trapezoid and poly-V belt tension	●	●	●	●	●
1895868000	Valve leakage test equipment	●	●	●	●	●
1895890000	Pressure gauge with unions for measuring electric pump supply pressure	●	●	●	●	
1895890020	Pipe with union for measuring electric pump supply pressure (to be used with 1895890000)	●	●	●	●	
1895890040	Unions for measuring electric pump supply pressure (to be used with 1895890000)	●	●	●	●	
1895895000	Tool for positioniong static advance ignition sensor carrier plate (timing side)				●	
1896219000	Gauge for checking valve stem height after refacing seats				●	
1896245000	Gauge for checking valve stem height after refacing seats					●

CLUTCH

1870081000	Guide pin for centering clutch plate				●	●
1875086000	Guide pin for centering clutch plate	●	●	●		

GEARBOX - DIFFERENTIAL

1842133000	Tool for removing differential bearing and gearbox gears	●	●	●		
1842134000	Tool for removing gearbox gears and hubs	●	●	●		

Tool number	DESCRIPTION OF TOOL	ENGINE				
		1108	1242 *SPI*	1242 *MPI*	1372 *turbo*	1697 *turbo d*
1845028000	Mounting for removing differential bearings	●	●	●		
1845057000	Tool for removing lay shaft 5th speed gear bush	●	●	●		
1845062000	Tool for removing constant velocity joint from front wheel drive shaft (to be used with 1847017001)				●	●
1847017004	Plate for extracting flanged shaft from planet gear (to be used with 1847017001)				●	●
1847056000	Differential output shaft extractor	●	●	●		
1850113000	Spanner (12 mm) for gearbox oil drain plug	●	●	●	●	●
1855035000	Spanner (19 mm) for removing and refitting gearbox	●	●	●	●	●
1860691000	Drift for removing and refitting gear hardening ball	●	●	●		
1860770000	Drift for fitting roller bearing on cover	● (*)				
1870007000	Grip for drifts and fitting tools	●	●	●		
1870152000	Drift for fitting hubs and gears on main and lay shafts	●	●	●		
1870419000	Tool for fitting main shaft seal on bell housing (to be used with 1870007000)	●	●	●		
1870469000	Tool for fitting differential bearing (to be used with 1870007000)	●	●	●		
1870595000	Cross member for supporting engine whilst removing and refitting gearbox-differential	●	●	●	●	●
1870600000	Support for gearbox-differential unit whilst removing and refitting	●	●	●	●	●
1870601000	Pair of supports for engine cross member whilst removing-refitting gearbox/differential unit (to be used with 1870595000)	●	●	●	●	●
1870629000	Drift for fitting differential casing cover seal (to be used with 1870007000)	●	●	●		

(*) For 6 speed gearbox only

Tool number	DESCRIPTION OF TOOL	ENGINE				
		1108	1242 SPI	1242 MPI	1372 turbo	1697 turbo d
1870630000	Drift for fitting differential casing seal (to be used with 1870007000)	●	●	●		
1870631000	Drift for fitting main and lay shaft gears and bearings	●	●	●		
1870632000	Drift for fitting bearings	●	●	●		
1870633000	Drift for fitting clutch release shaft bush	●	●	●		
1871001014	Support for gearbox-differential unit whilst overhauling (to be fitted to 1861000000 or to 1871000000)	●	●	●	●	●
1874140005	Pair of tools for stakign gearbox shaft nuts (to be used with 1874140001)	●	●	●	●	●
1875016000	Drift for fitting seal on drive shaft flange				●	●
1875017000	Tool to remove and refit differential bearing rings (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	●	●	●	●	●
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	●	●	●	●	●
1856134000	Spanner, with 1/2" socket, for adjusting rear brake caliper self-adjusting device				●	
1872273000	Set of tools to hold cylinder pistons when installing brake shoes	●	●	●		●
1895899000	Vacuum gauge with unions for checking operation on vehicle of vacuum pump					●
1895901000	Dynamometer for checking pos. of load prop. valve				●	●

Tool number	DESCRIPTION OF TOOL	ENGINE				
		1108	1242 *SPI*	1242 *MPI*	1372 *turbo*	1697 *turbo d*
STEERING						
1847035000	Tool for removing steering rod pins	●	●	●	●	●
1874556000	Tool for adjusting power assisted steering track rod end			●	●	●
SUSPENSION AND WHEELS						
1845028000	Tool for removing front hub bearing inner race from flange (to be used with 1840005002, 1840005301 and 1840005400)	●	●	●	●	●
1847014000	Percussion extractor for wheel hub caps	●	●	●	●	●
1857170000	Spanner (32 mm) for tightening rear wheel hub fixing nut to torque	●	●	●	●	●
1857509000	Spanner (18 mm) for adjusting nut fixing front shock absorbers on vehicle and vehicle to ground (to be used with 1874551000 and 6 mm spanner	●	●	●	●	●
1860627000	Drift for fitting bearings	●	●	●	●	●
1874372000	Drift for fitting front wheel bearings (to be used with 1870007000)	●	●	●	●	●
1874551000	Tool for retaining front shock absorber stem whilst adjusting fixing nut (to be used with 1857509000 and 6 mm spanner)	●	●	●	●	●
1874552000	Drift for fitting front wheel hub bearings	●	●	●	●	
1874555000	Pneumatic tool for compressing suspension springs when removing shock absorber	●	●	●	●	●
1875059000	Drift for fitting rear wheel hub caps	●	●	●	●	●
ELECTRICAL EQUIPMENT						
1876044000	Pliers for extracting cigar lighter housing	●	●	●	●	●
1876046000	Lever to disconnect tag terminals from block	●	●	●	●	●
BODYWORK						
1878017000	Pliers to clamp seat spring hooks	●	●	●	●	●

Tool number	DESCRIPTION OF TOOL	ENGINE				
		1108	1242 SPI	1242 MPI	1372 turbo	1697 turbo d
1878031000	Set of clamps (4) for lifting windscreen glass and rear windscreen	●	●	●	●	●
1878033000	Steel wire with grips for removing windscreen and rear-screen glass bonding bead	●	●	●	●	●
1878034000	Tool for removing window opening handles	●	●	●	●	●
1878076000	Tool to cut internal trimming plastic protection	●	●	●	●	●
1878077000	Tool to remove door trim panels or plastic buttons	●	●	●	●	●
1878079000	Tool to insert wire of tool 1878033000 into glass bonding bead	●	●	●	●	●
1878080000	Tool for positioning door check strap whilst refitting flexible retaining pin (to be used with 1878081000)	●	●	●	●	●
1878081000	Pliers for removing-refitting door check strap flexible retaining pin (to be used with 1878080000 during refitting)	●	●	●	●	●
1878082000	Bush to be fitted to dynamometer 1895697000 for checking manual window opening torque	●	●	●	●	●
1878086000	Tool for removing-refitting side door glass trims	●	●	●	●	●
1878087000	Tool for removing button fixing side door opening glass	●	●	●	●	●

ORDINARY TOOLS

1840005000	Universal extractor	●	●	●	●	●
1840005003	Three arm bridge (complete with brackets)	●	●	●	●	●
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)	●	●	●	●	●

Tool number	DESCRIPTION OF TOOL	ENGINE				
		1108	1242 SPI	1242 MPI	1372 turbo	1697 turbo d
1861000001	Pair of tools for attaching engine mounting brackets to rotating stand 1861000000	●	●	●	●	●
1870007000	Grip for drifts and fitting tools	●	●	●	●	●
1870404000	Support for measuring depths 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)	●	●	●	●	●
1874550000	Support for lifting side of vehicle (to be used with hydraulic jack)	●	●	●	●	●
1876048000	Extractor for MINI HYLOK CONTACT (MHF) ⌀2,15 mm terminals	●	●	●	●	●
1882001010	Tool panel to be fixed to wall or stand 1882003000 (with hooks)	●	●	●	●	●
1882003000	Stand to hold two tool panels	●	●	●	●	●
1895113000	Gauge (0,05 - 0,10 ... 0,80 mm) for checking various clearances	●	●	●	●	●
1895684000	Dial gauge with magnetic base	●	●	●	●	●
1895697000	Dynamometer (0-4, 90 Nm) for measuring bearing rolling torque	●	●	●	●	●
1895881000	Dial gauge to be used with specific tools (measuring capacity 10mm; shank length 16.7 mm)	●	●	●	●	●
1895884000	Dial gauge to be used with specific tools (measuring capacity 5 mm; shank length 16.5 mm)	●	●	●	●	●
1895885000	Dial gauge to be used with specific tools (measuring capacity 25 mm; shank length 17 mm)	●	●	●	●	●

DESCRIPTION	Thread size	Tightening torques daNm	ENGINE 1108	1242 SPI	1242 MPI	1372 turbo	1697 turbo d
ENGINE							
Main bearing cap, bolt	M10×1,25	4+90°	●	●	●		
	M10×1,25	8				●	
Intermediate and centre caps to crankcase fixing, bolt	M12×1,25	11,3					●
Front and rear caps to crankcase fixing, bolt	M12×1,25	11,3					●
Engine breather body to crankcase fixing, bolt	M8×1	2					●
Engine breather to crankcase fixing, bolt	M8	2,3				●	
Power unit mounting support to crankcase fixing, bolt	M10×1,25	5,9				●	
Cylinder head to crankcase fixing, bolt	M9	3 +90°+90°	●	●	●		
	M10×1,25	4 +90°+90°				●	
	M12×1,25	10 +90°+90°					●
Cylinder head to crankcase side fixing, bolt	M8	3				●	●
Camshaft housing to cylinder head fixing, bolt	M8	2,8				●	
Inlet and exhaust manifold to cylinder head fixing, nut	M8	2,5				●	●
Exhaust manifold to crankcase connecting bracket fixing, nut	M8	2,9				●	
Big end fixing, nut for bolt	M8×1	4,1	●	●	●		
	M8×1	5,1				●	
Big end cap fixing, bolt	M10×1	2,5+50°					●

Tightening torques

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DESCRIPTION	Thread size	Tightening torques daNm	ENGINE 1108	1242 SPI	1242 MPI	1372 turbo	1697 turbo d
Flywheel to crankshaft fixing, bolt	M8	4,4	●	●	●		
	M10×1,25	8,3				●	
Flywheel to crankshaft fixing, bolt	M12×1,25	14,2					●
Drive gear to crankshaft fixing, bolt	M10×1,25	10	●	●	●		
Crankshaft pulley fixing, nut	M20×1,5	15,5				●	
Drive gear to crankshaft fixing, bolt (without lubrication)	M14×1,5 left	19					●
Camshaft driven gear fixing, bolt	M10×1,25	7	●	●	●		
	M10×1,25	8,3				●	
	M12×1,25	11,8					●
Crankshaft front and rear covers to crankcase fixing, bolt	M6	1	●	●	●		
Power unit lifting bracket fixing, nut	M8	2,5					●
Camshaft caps fixing, bolt	M8×1,25	2	●	●	●		
	M8	1					
Camshaft caps fixing, nut for stud	M8	1,9					●
Front and rear support for camshaft and vacuum pump fixing, nut	M8	1,9					●
Belt tensioner fixing, nut	M8	2,8	●	●	●		
Bearing to belt tensioner mounting fixing, nut	M8	2,5				●	
Moving belt tensioner bearing fixing, nut	M10×1,25	4,4					●

DESCRIPTION	Thread size	Tightening torques daNm	ENGINE 1108	1242 SPI	1242 MPI	1372 turbo	1697 turbo d
Fixed belt tensioner bearing fixing, bolt	M10×1,25	4,4					●
Auxiliary shaft driven gear fixing, bolt	M10×1,25	8,3				●	
Injection pump fixing, nut for stud	M8	2,5					●
Injection pump fixing, bolt	M8	2,5					●
Injection pump drive gear fixing, nut	M12×1,75	4,9					●
Rear bracket to injection pump mounting fixing, bolt	M8	2,9					●
Upper oil filter mounting and injection pump fixing, nut	M12×1,25	9,8					●
Lower oil filter mounting and injection pump fixing, bolt	M10×1,25	7,1					●
Ante-chamber to head fixing, ring nut	M32×1,5	11,8					●
Damper flywheel to damper gear fixing, bolt	M8	2,8					●
Complete injector	M24×2	5,5					●
Heater plugs	M12×1,25	1,5					●
Coolant inlet pipe to water pump fixing, bolt	M6	1	●	●	●		
Tappet cover fixing, bolt	M6	0,8	●	●	●		
Water pump to crankcase fixing, bolt	M6	0,8	●	●	●		
Water pump to crankcase fixing, nut	M6	1	●	●	●		
Alternator drive pulley fixing, bolt	M8	2,5	●	●	●		
Plate to oil pump casing fixing, bolt	M6	0,7	●	●	●		

DESCRIPTION	Thread size	Tightening torques daNm	ENGINE 1108	1242 SPI	1242 MPI	1372 turbo	1697 turbo d
Oil sump to crankcase fixing, bolt	M6	1	●	●	●		
Oil sump to covers fixing, nut	M6	1	●	●	●		
Oil pump to crankcase fixing, bolt	M8	2,5				●	
Cover and bracket to water pump casing fixing, bolt	M8	2,3					●
Alternator to crankcase fixing and adjustment, bolt	M10×1,25	6	●	●	●		
Water pump to crankcase fixing, bolt	M8	2,5				●	
Water pump casing fixing, bolt	M8	1,5				●	
Alternator mounting to crankcase fixing, bolt	M10×1,25	4,9				●	
Alternator adjustment bracket to water pump casing fixing, bolt	M8	2				●	
Alternator to mounting fixing, nut	M10×1,25	4,9				●	
Alternator to bracket fixing, nut	M10×1,25	4,9				●	
Ignition distributor housing cover to crankcase fixing, bolt	M8	2,5				●	
Alternator to mounting fixing, nut	M12×1,25	6					●
Alternator to upper bracket fixing, nyloc nut	M10×1,25	4,3					●
Engine mounting fixing, nut	M10×1,25	5,9	●	●	●		
	M8	2,5					
Engine mounting fixing, bolt	M10×1,25	5,9	●	●	●		
Mounting to support fixing, nut	M10×1,25	5,9	●	●	●		

DESCRIPTION	Thread size	Tightening torques daNm	ENGINE 1108	1242 SPI	1242 MPI	1372 turbo	1697 turbo d
Inlet manifold to cylinder head fixing, bolt	M8	2,7	●	●	●		
Accelerator bracket to inlet manifold fixing, bolt	M8	2,5	●	●	●		
Union on inlet manifold for brake servo vacuum pick up	14×1,5 tapered	3,5	●	●	●		
Butterfly casing to inlet manifold fixing, bolt	M6	0,7	●	●	●		
Accelerator idler mounting bracket fixing, bolt	M8	2,5				●	
Accelerator control shaft fixing, nut	M8	2,5				●	
Turbocharger to exhaust pipe and to cylinder head fixing, nut	M8	2,9				●	
Coolant circulation pipe union to turbocharger fixing, nut	M16×1	4				●	
Coolant circulation pipe to turbocharger fixing, bolt	M8	2,5				●	
Coolant circulation pipe to crankcase fixing, bolt	M8	2,5				●	
Pressure regulator to injector supply pipe fixing, nut	M14×1,5	2,85				●	
Water pump mounting to crankcase fixing, bolt	M8×1	2,5					●
Water pump pulley fixing, bolt	M8	2,3					●
Union on injection pump	M12×1,5	3,2					●
Fuel supply union on injection pump	M12×1,25	2,9					●
Fuel supply pipe on injection pump and injector fixing, nut	M12×1,5	3					●
Oil filter mounting union	M20×1,5	5					●
Turbocharger to exhaust manifold fixing, nut	M8	4					●

DESCRIPTION	Thread size	Tightening torques daNm	ENGINE 1108	1242 SPI	1242 MPI	1372 turbo	1697 turbo d
Filler for oil supply union to crankcase	M12×1,5	3,2					●
Union for oil drain hose from turbocharger to sump	M16×1,5	4					●
Filler for LDA pipe union on inlet manifold and injection pump	M8×1	1,5					●
Spark plugs	M14×1,5	2,7	●	●	●		
	M14×1,25	2,7				●	
Oil pressure switch	M14×1,5	3,2	●	●	●	●	●
Oil temperature sender unit	M16×1,5 tapered	4,9				●	
Oil pressure sender unit	M14×1,5	3,7				●	●
Coolant temperature sender unit	M16×1,5 tapered	3,4				●	●

ENGINE EXHAUST

Exhaust manifold fixing, self-locking nut	M8	2,4	●	●	●	●	●
Flange to exhaust pipe fixing, self-locking nut	M8	2,4	●	●	●	●	
Nut for studs on cylinder head fixing exhaust manifold to engine	M8	2,4	●	●	●	●	●
Exhaust pipe to cross member securing bolts	M8	2,7	●				
Exhaust pipe end mounting support bracket fixing, bolt	M8	3,5	●	●	●	●	●
Lambda sensor	M18×1,5	5,3	●	●	●	●	●
CO socket, bolt	M12×1,5	6	●	●	●	●	●
Self-locking nut for collar fixing rear section of pipe to catalytic converter	M8	4	●	●	●		●

DESCRIPTION	Thread size	Tightening torques daNm	ENGINE 1108	1242 SPI	1242 MPI	1372 turbo	1697 turbo d
Heat shield on rear pipe fixing, bolt	M6	0,8	●	●	●	●	●
Front section of catalytic converter fixing, nut	M8	2,4	●	●	●	●	●
Catalytic converter to rear section fixing, nut	M10×1,25	4	●	●	●	●	●
Heat shield on handbrake mounting fixing, nut	M8	1,6	●	●	●	●	●

EXTERNAL GEARBOX CONTROLS

Lower support to bodyshell fixing, bolt with wide flange	M8	3,5	●	●	●		
Upper support to bodyshell fixing, bolt with flat unlosable washer	M8	2,7	●	●	●		
Cable reaction bracket to gearbox fixing, bolt	M8	2,4	●	●	●		
Selector rod to gear lever fixing, nut	M8	1,7	●	●	●		
Reverse engagement inhibitor cable on gearbox fixing, ring nut	M20×1,5	1,7	●	●	●		
U-bolt supporting gear selector lever fixing, nut with border	M6	0,6	●	●	●		
Control rod to gear selector lever fixing, nut	M6	1	●	●	●		
Cable reaction support to gearbox fixing, bolt with flange	M8	2,7				●	●
Idler selector to gearbox fixing, nut for bolt	M8	2,2				●	●
Gear lever support bridge fixing, nut	M6	0,44				●	●
Complete selector rod to gear lever fixing, nut for bolt	M6	0,74				●	●
Selector rod support bracket fixing, bolt	M8	2,4				●	●
Gear lever to mounting fixing, nut	M10×1,25	4,9				●	●

DESCRIPTION	Thread size	Tightening torques	ENGINE				
		daNm	1108	1242 SPI	1242 MPI	1372 turbo	1697 turbo d
GEARBOX AND DIFFERENTIAL							
5th speed mounting fixing, bolt with flange	M6	1,2	●	●	●		
5th speed selector fork fixing, bolt with flange	M6	1,2	●	●	●		
Reverse support fixing, bolt	M8	1,5	●	●	●		
5th speed gears to main and lay shafts fixing, ring nut	M20×1,5	11,8	●	●	●	●	●
Controls support to gearbox casing fixing, bolt with flange	M8	2	●	●	●		
Speedometer drive shaft fixing, bolt with flange	M6	1	●	●	●		
Selector lever to controls support fixing, nut with flange	M8	2	●	●	●		
Differential casing to complete support retaining flange fixing, bolt	M8	2	●	●	●		
Gearbox casing to engine support fixing, bolt	M8	2	●	●	●		
Cover to gearbox casing fixing, bolt with flange	M6	0,5	●	●	●		
Differential cover to engine mounting fixing, bolt with flange	M8	2	●	●	●		
	M10×1,25	3,5					
Gearbox casing threaded oil filler plug	M22×1,5 tapered	2,5	●	●	●		
Engine-gearbox reinforcement to gearbox lower fixing, nut	M10×1,25	3,5	●	●	●		
Engine-gearbox reinforcement to gearbox lower fixing, bolt	M12×1,25	5	●	●	●		
Engine-gearbox reinforcement to crankcase upper fixing, bolt	M8	2,8	●	●	●		
6th speed gears to main shaft fixing, nut (6 speed gearbox)	M16×1,5	11,5	●				

DESCRIPTION	Thread size	Tightening torques daNm	ENGINE 1108	1242 SPI	1242 MPI	1372 turbo	1697 turbo d
6 speed gears to lay shaft fixing, bolt (left hand thread) (6 speed gearbox)	M12×1	10,5	●				
Cover fixing, bolt with flange (6 speed gearbox)	M6	0,7	●				
Threaded plug for draining oil from gearbox casing	M16×1,5 tapered	1,8	●	●	●		
Bearing retaining plate to gearbox casing fixing, bolt	M8	2	●	●	●		
Reverse shaft fixing, bolt	M8	2,6	●	●	●		
Gearbox to engine fixing, stud bolt	M12×1,25	8,5	●	●	●		
Gearbox to engine fixing, bolt	M12×1,25	8,5	●	●	●	●	●
Gearbox to engine fixing, nut	M12×1,25	8,5	●	●	●	●	
Gearbox to engine fixing, bolt with flange	M12×1,25	8,5				●	●
Starter motor fixing, bolt with flange	M8	2,6	●	●	●		
Plate to gearbox casing fixing, bolt	M8	2,5				●	●
Plate and cover to gearbox casing fixing, bolt	M8	2,5				●	●
Magnetic plug for draining oil from gearbox casing	M22×1,5 tapered	4,6				●	●
Gear selector rod retaining spring cover fixing, bolt	M8	2,5				●	●
Lower cover to plate fixing, nut	M6	1				●	●
Plate to gearbox casing fixing, bolt	M6	1				●	●
Cover and plate to gearbox casing fixing, bolt	M6	1				●	●
Cover and plate to gearbox casing fixing, bolt	M8	2,4				●	●

DESCRIPTION	Thread size	Tightening torques daNm	ENGINE 1108	1242 SPI	1242 MPI	1372 turbo	1697 turbo d
Cover to bell housing fixing, bolt with unlosable flexible washer	M6	0,8				●	●
Gearbox casing to bell housing fixing, bolt	M8	2,5				●	●
Reverse gear shaft retaining plate fixing, bolt	M6	1				●	●
Selector forks and gear selectors fixing, bolt	M6	1,8				●	●
Complete lever on selector rod and gear engagement fixing, bolt	M6	1,8				●	●
Gear engagement lever support fixing, bolt	M6	1				●	●
Front reduction crown wheel fixing, bolt	M10×1,25	8,8				●	●
Flange retaining differential casing to gearbox casing fixing, bolt	M8	2,5				●	●
Speedometer mounting fixing, bolt	M6	1,2				●	●
Plug for introducing oil into gearbox casing	M22×1.5 tapered	4,6				●	●
Gear selector spring fixing, bolt	M6	0,74				●	●
Reversing light switch	M14×1,5	4				●	●

POWER UNIT MOUNTING

Bracket to flexible mounting fixing, bolt (engine side)	M8	4	●	●	●		
Bracket to side member fixing, bolt (engine side)	M10×1,25	5	●	●	●		
Support to engine fixing, nut	M10×1,25	6	●	●	●		
Support to engine fixing, bolt with unlosable tapered washer	M10×1,25	6	●	●	●		
Support to engine fixing, nut	M8	2,5	●	●	●		

DESCRIPTION	Thread size	Tightening torques daNm	ENGINE 1108	1242 SPI	1242 MPI	1372 turbo	1697 turbo d
Flexible mounting to engine support fixing, nut	M10×1,25	5	●	●	●		
Mounting and complete bracket to side member fixing, bolt (engine side)	M10×1,25	5	●	●	●	●	●
Support to engine fixing, bolt	M10×1,25	5				●	
Flexible mounting to engine support fixing, nut	M12×1,25	9				●	●
Flexible mounting to side member fixing, bolt (gearbox side)	M10×1,25	5	●	●	●	●	●
Support to gearbox fixing, bolt	M10×1,25	5	●	●	●		
Flexible mounting to gearbox support fixing, nut	M10×1,25	5	●	●	●	●	●
Support to gearbox fixing, nut	M10×1,25	5				●	●
Flexible mounting to cross member fixing, bolt with flange (differential side)	M8	4	●	●	●	●	●
Support to gearbox fixing, nut (differential side)	M12×1,25	9	●	●	●	●	●
Flexible mounting to support fixing, bolt (differential side)	M10×1,25	5	●	●	●	●	●
Support to gearbox fixing, bolt (differential side)	M12×1,25	9				●	●

FRONT SUSPENSION

Complete support to shock absorber fixing, nut	M12×1,25	5,9	●	●	●	●	●
Steering knuckle to shock absorber fixing, nut	M10×1,25	7	●	●	●	●	●
Brakes to hub fixing, bolt	M8×1,25	1,2	●	●	●	●	●
Brake caliper to steering knuckle fixing, bolt	M10×1,25	5,7	●	●	●	●	●
Brake shield to steering knuckle fixing, flanged bolt	M6	0,5	●	●	●	●	●

DESCRIPTION	Thread size	Tightening torques daNm	ENGINE 1108	1242 SPI	1242 MPI	1372 turbo	1697 turbo d
Wheel to fixing fixing, bolt	M12×1,25	8,6	●	●	●	●	●
Front wheel hub fixing, nut	M22×1,5	24	●	●	●		
Front track control arm bush fixing, bolt	M12×1,25	9,5	●	●	●	●	●
Rear track control arm bush fixing, bolt with tapered, flat, unlosable washer	M10×1,25	7	●	●	●	●	●
Ball joint to steering knuckle fixing, nut	M8	3,2	●	●	●	●	●
Front and rear cross member fixing, bolt with tapered, flat, unlosable washer	M12×1,25	11,5	●	●	●	●	●
Shock absorber support to turret fixing, flanged bolt	M10×1,25	6	●	●	●	●	●
Anti-roll bar to track control arm fixing, flanged bolt	M8	3,5	●	●	●	●	●
Anti-roll bar to cross member fixing, flanged bolt	M8	3,5	●	●	●	●	●
Front wheel hub to joint fixing, nut to be staked with unlosable flat washer	M24×1,5	28				●	●

REAR SUSPENSION

Track control arm to chassis fixing, nut with flange	M14×1,5	15,5	●	●	●	●	●
Lower shock absorber fixing, bolt with normal flange	M12×1,25	9	●	●	●	●	●
Upper shock absorber fixing, bolt with normal flange	M10×1,25	6,2	●	●	●	●	●
Flexible mounting fixing, bolt with flange with flat, tapered unlosable washer	M12×1,25	10	●	●	●	●	●
Anti-roll bar front fixing, bolt with normal flange	M10×1,25	5,6	●	●	●	●	●
Anti-roll bar rear fixing, bolt with normal flange	M8	3	●	●	●	●	●
Nut for stub axle fixing rear hub	M22×1,5	28	●	●	●	●	●

DESCRIPTION	Thread size	Tightening torques daNm	ENGINE 1108	1242 SPI	1242 MPI	1372 turbo	1697 turbo d
Wheel fixing, bolt	M12×1,25	8,6	●	●	●	●	●
Handbrake cable support to suspension arm fixing, bolt with unlosable washer	M8	1,6	●	●	●	●	●

STEERING

Filler for oil pipe	M12×1,5	2			●	●	●
Filler for oil pipe	M14×1,5	4			●	●	●
Filler for oil pipe	M16×1,5	4					
Bracket fixing, bolt with flange	M6	0,8	●	●	●	●	●
Support fixing, nut with border	M6	0,45	●	●	●	●	●
Ball joint to stub axle fixing, nut	M10×1,25	4	●	●	●	●	●
Steering box to cross member fixing, bolt with flat, unlosable washer	M12×1,5	7	●	●	●	●	●
Steering wheel to steering control shaft fixing, nut (adjustable steering column)	M16×1,25	5	●	●	●	●	●
Lower and upper joint fixing, nut (adjustable steering column)	M8	2,2	●	●	●	●	●
Steering wheel to steering control shaft fixing, nut	M12×1,25	5,5	●	●	●	●	●
Adjustment lever fixing, nut	M12×1,25	2	●	●	●	●	●
Ignition cam fixing, bolt	M6	0,45÷0,6	●	●	●	●	●
Steering contorl shaft to bodyshell fixing, nut	M6	0,75	●	●	●	●	●

BRAKING SYSTEM

Support to floor fixing, bolt with normal flange	M8	2,4	●	●	●	●	●

DESCRIPTION	Thread size	Tightening torques daNm	ENGINE 1108	1242 SPI	1242 MPI	1372 turbo	1697 turbo d
Handbrake to bodyshell fixing, bolt with wide flange	M8	2,7	●	●	●	●	●
Support to toothed sector fixing, bolt with normal flange	M8	2,7	●	●	●	●	●
Handbrake lever to support fixing, bolt	M8	2	●	●	●	●	●
Load proportioning valve to side member fixing, bolt	M8	2,6	●	●	●	●	●
Lever for adjusting load proportioning valve fixing, bolt	M6	0,8	●	●	●	●	●
Load proportioning valve adjusting, bolt	M6	0,8	●	●	●	●	●
Load proportioning valve casing to chassis fixing, bolt	M8	2,6				●	●
Discs and drums to hubs fixing, bolt	M8	1,2	●	●	●	●	●
Flexible pipe to front brake caliper union	M10×1	1,4	●	●	●	●	●
Bleed screw on front brake calipers and rear shoe wheel cylinders	M8	0,64	●	●	●	●	●
Bleed screw on rear brake caliper	M8	0,64				●	
Flexible pipe to rear brake caliper connecting union	M10×1	1,5				●	
Cylinder to brake back plate fixing, bolt	M6	1	●	●	●		●
Male union for pipes with inflated ends on pipes; pump; 2 way; load proportioning valve; flexible pipe; rear cylinders	M10×1	1,4	●	●	●	●	●
Hanbrake cable retaining bracket to rear suspension fixing, bolt with washer	M8	1,6	●	●	●	●	●
Rear brake caliper attachment plate to track control arm fixing, bolt (disc brakes)	M8	2,4				●	
Brake back plate to rear suspension arm fixing, bolt (drum brakes)	M8	2,4	●	●	●		●

DESCRIPTION	Thread size	Tightening torques daNm	ENGINE 1108	1242 SPI	1242 MPI	1372 turbo	1697 turbo d
ANTISKID							
Control unit mounting bracket to bodyshell fixing, nut	M8	2,4	●	●	●	●	●
Control unit bracket fixing, bolt with unlosable tapered washer	M8	2	●	●	●	●	●
Control unit to bracket fixing, nut with unlosable tapered washer	M6	0,44	●	●	●	●	●
Brake fluid reservoir to control unit support bracket fixing, bolt	M6	0,55	●	●	●	●	●
Filler for pipe union on control unit	M10×1	1,1	●	●	●	●	●
Male union with inflated end fixing pipes to control unit and pump and control unit union	M10×1	1,4	●	●	●	●	●
Male union for two outlets on pump	M10×1	1,4	●	●	●	●	●
Sensor cable retaining bracket to bodyshell fixing, bolt with unlosable, tapered washer	M8	0,6	●	●	●	●	●
Sensor retaining cable to shock absorber fixing, nut with washer	M6	0,55	●	●	●	●	●
Mass on control unit connecting cable, nut	M5	0,25	●	●	●	●	●
FUEL CIRCUIT							
Tank and filler to bodyshell fixing, bolt with wide flange	M8	2,8	●	●	●	●	●
Support for unions for supply recirculation and breather to tank fixing, ring nut	131×6	6	●	●	●	●	●
Tank fixing, bolt with wide flange	M8	3,5	●	●	●	●	●
Fuel filter collar, nut	M6	0,5	●	●	●	●	
Fuel pipe to filter fixing, union (filter inlet)	M14×1,5	3,1	●	●	●	●	
Fuel pipe to filter fixing, union (filter outlet)	M12×1,5	1,5	●	●	●	●	

DESCRIPTION	Thread size	Tightening torques daNm	ENGINE 1108	1242 SPI	1242 MPI	1372 turbo	1697 turbo d
Union for fuel system	M22×1,5	3,8	●	●	●	●	
Filler bracket fixing, bolt with flange	M6	0,9	●	●	●	●	●
Diesel filter to bracket fixing, nut	M8	2,4					●
Diesel filter mounting bracket to bodyshell fixing, bolt	M8	1,8					●
Filler for adjustable union for diesel inlet and oulet pipes on filter	M14×1,5	3,5					●

PEDALS

Upper strut to bodyshell fixing, nut	M6	0,55	●	●	●	●	●
Upper and lower brake servo to dashboard fixing, nut	M8	2,2	●	●	●	●	●
Brake and clutch pedals to pedals fixing, nut for bolt	M8	2,2	●	●	●	●	●
Plate fixing, bolt with flange	M8	1,8	●	●	●	●	●
Accelerator plate fixing, bolt with flange	M6	0,6	●	●	●	●	●
Brake servo to pedals fixing, nut with border	M8	1,5	●	●	●	●	●

ELECTRICAL EQUIPMENT

Injection control unit fixing, bolt with flange	M6	0,8	●	●	●	●	●
Injection control unit fixing, nut with border	M6	0,5	●	●	●	●	●
Injection control unit fixing, nut	M8	1,9	●				
Injection control unit fixing, nut	M6	0,5	●	●	●	●	●
EGR valve fixing, nut	M6	0,8					●

DESCRIPTION	Thread size	Tightening torques	ENGINE				
		daNm	1108	1242 SPI	1242 MPI	1372 turbo	1697 turbo d
EGR valve fixing, bolt with flange	M6	0,8					●
EGR module and pre-heating unit fixing, nut	M6	0,5					●
Battery drip tray to bodyshell fixing, bolt	M8	2,9	●	●	●	●	●
Windscreen wiper arm fixing, nut	M8	1,6	●	●	●	●	●
Mass for rear light clusters fixing, bolt with flange	M8	2,4	●	●	●	●	●
Battery earth cable fixing, bolt with flange	M8	2,4	●	●	●	●	●
Electronic injection components bracket fixing, nuts	M8	1,9	●	●	●	●	
Anti-skid hydraulic control unit earth cable to bodyshell fixing, bolt with flange	M8	2,4			●	●	●
Front earth cables fixing, bolt with flange	M8	2,4	●	●	●	●	●
Earth connection under dashboard, bolt with flange	M8	2,4	●	●	●	●	●
Speedometer sensor fixing	M14	2,5	●	●	●	●	●
Earth connection on gearbox, nut	M8	2,4	●	●	●	●	●
Battery retaining bracket fixing, bolt with flange	M8	1,7	●	●	●	●	●

BODYWORK

Seats to floor fixing, bolt with tapered, unlosable washer	M8	2,5	●	●	●	●	●
Seat backrest lower fixing, bolt with flange	M8	2,5	●	●	●	●	●
Tailgate hinges fixing, bolt with wide flange	M8	2,4	●	●	●	●	●
Bonnet hinges fixing, bolt with wide flange	M8	2,4	●	●	●	●	●

DESCRIPTION	Thread size	Tightening torques daNm	ENGINE 1108	1242 SPI	1242 MPI	1372 turbo	1697 turbo d
Idler rings and front seat belt reel to damper and side member fixing, bolts	7/16"	4	●	●	●	●	●
Rear seat belts to floor and reel to upper partition fixing, bolts	7/16"	4	●	●	●	●	●
Locks on side doors fixing, bolt	M8	1,6	●	●	●	●	●

AIR-BAG SYSTEM

Air-Bag module to steering wheel fixing, bolt	M6	0,75	●	●	●	●	●
Air-Bag control unit to bracket fixing, bolt with flange	M6	0,5	●	●	●	●	●
Air-Bag control unit to bodyshell fixing, nut	M6	0,5	●	●	●	●	●

PLANNED MAINTENANCE PROGRAMME

THOUSANDS OF KM	15	30	45	60	75	90
MONTHS	12	24	36	48	60	72
Check tyres for condition and wear	☆	☆	☆	☆	☆	☆
Check operation of front brake pad wear sensor	☆	☆	☆	☆	☆	☆
Check rear brake discs for condition and wear (1372 turbo)		☆		☆		☆
Check rear brakes (drums) for condition and wear				☆		
Visual inspection condition of bodywork and underbody protection	☆	☆	☆	☆	☆	☆
Check condition of pipes (exhaust, supply, fuel, brakes)	☆	☆	☆	☆	☆	☆
Check condition of rubber elements, boots, hoses, etc.	☆	☆	☆	☆	☆	☆
Check tension and if necessary adjust various drive belts		☆		☆		☆
Check free play or clutch pedal height		☆		☆		☆
Check, adjust tappet clearance		☆		☆		☆
Check inlet and exhaust manifold tightengine (petrol engines)		☆		☆		☆
Check operation of Lambda sensor (**)			☆			☆
Check exhaust gas emissions (▲)	☆	☆	☆	☆	☆	☆
Check and if necessary adjust engine idle speed and idle CO content (where possible)	☆	☆	☆	☆	☆	☆
Check anti-evaporation system			☆			☆
Check crankcase ventilation system						☆
Replace fuel filter (petrol engines)		☆		☆		☆
Replace fuel filter (diesel engines)	☆	☆	☆	☆	☆	☆
Replace air filter cartridge (petrol engines)		☆		☆		☆
Replace air filter cartridge (diesel engines)	☆	☆	☆	☆	☆	☆
Top up fluid levels (coolant, braking sys., w/screen washer, power assis. steering)	☆	☆	☆	☆	☆	☆
Change engine coolant (or every 2 years)				☆		
Check condition of timing belt				☆		
Replace spark plugs and check cables		☆		☆		☆
Replace spark plugs and check cables (1372 turbo)	☆	☆	☆	☆	☆	☆
Check ignition/injection system (using autodiagnostic socket)		☆		☆		☆
Check gearbox/differential oil level			☆			☆
Change engine oil and oil filter (*)	☆	☆	☆	☆	☆	☆
Replace pollen filter (excluding 1372 turbo)	☆	☆	☆	☆	☆	☆

(*) For diesel engines the oil should be changed every 7500 km
(**) The check should be carried out using the digital multimeter checking the millivolt variation
(▲) Using equipment for emission control with adjustment

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PLANNED MAINTENANCE

Appropriate maintenance constitutes a decisive factor in prolonging the working life of the vehicle and ensuring optimum efficiency. With this in mind, FIAT has set out a series of checks and maintenance operations listed in the six service coupons in the "Owner's Handbook" which are collected in the "Planned maintenance operations" table. Each replacement or repair operation which is necessary during each planned maintenance service will be carried out with the Owner's prior approval.

The planned maintenance service is offered by the entire FIAT Service Network.

It is advisable that any minor operating problems (such as, for example even slight leaks of essential fluids, etc.) should be brought to the attention of our Service Departments straight away and seen to rather than waiting for the next service. The intervals between the services should not exceed one year, even if the recommended mileage has not been reached.

Lubrication service

In order to ensure the smooth running of the engine it is advisable to use the type of oil recommended in the table on page 12.

WARNING - Engine oil

If the vehicle is used mainly in one of the following particularly severe conditions:

- towing a trailer or caravan
- dusty roads
- repeated short journies (less than 7 - 8 km) with the outside temperature below zero
- engine often idling or driving long distances at low speeds (e.g. taxi or door to door deliveries)

change the engine oil and the air filter more often than indicated in the Planned Maintenance programme. If you have any doubts on how often to change the engine oil and filter in relation to the usage of the vehicle, consult the Fiat Service Network.

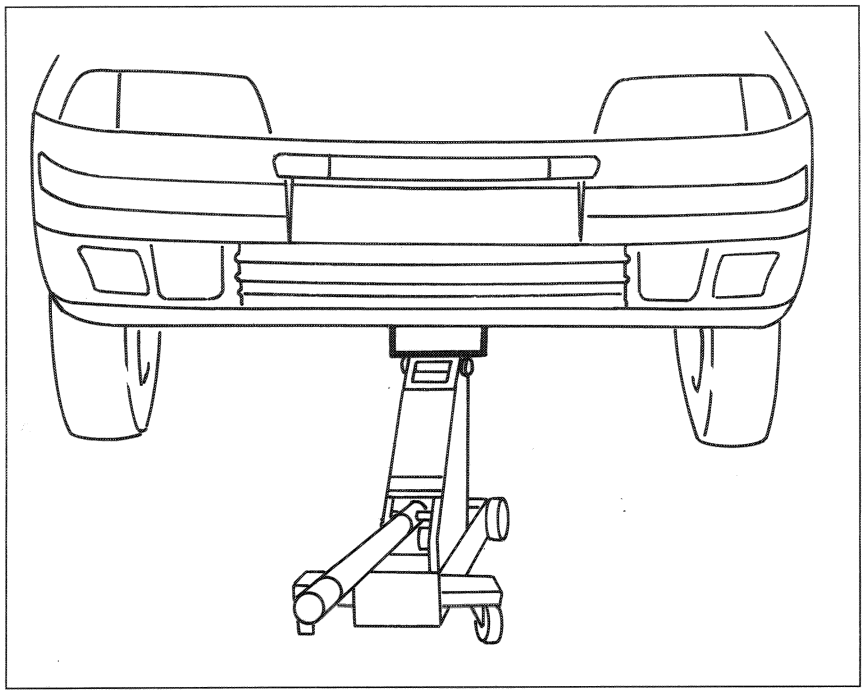
WARNING- Diesel filter

The variety in the degree of purity of commercial diesel fuel may make it necessary to change the diesel filter mor often than indicated in the Planned Maintenance programme. If the engine is not running smoothly then this is a sign to change it.

Check evey 500 Km or before long journies	- engine oil level - coolant level - brake fluid level - pressure and condition of tyres - windscreen washer fluid level
Carry out every 5,000 Km (Diesel engines only)	- bleeding water from fuel filter
Replace every 105,000 Km	- timing belt
Replace every 120,000 Km	- manual gearbox oil
Replace every 2 years	- brake fluid

After 100,000 km
When the mileage reaches 105,000 km, the maintenance starts again with the operations planned for 15 -30 - 45..... thousand kilometres together with the replacement operations outside of the plan.

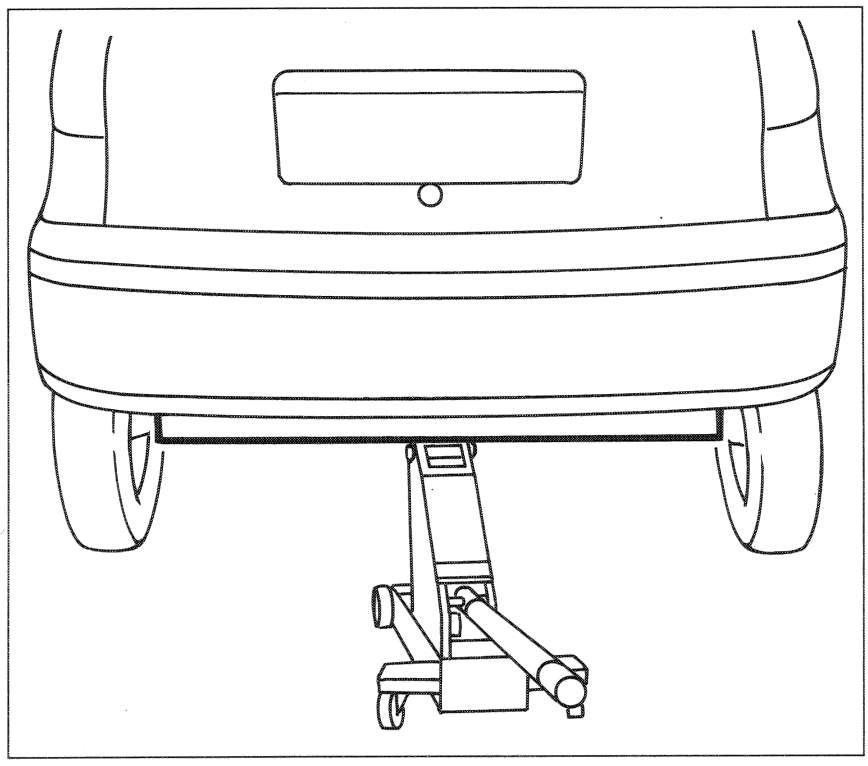
LIFTING VEHICLE WITH WORKSHOP JACK



P3M107A01

Front

In order to raise the vehicle from the front, fit a wooden or rubber block (dimensions 150 X 150 mm, 65 mm thick) on the lifting plate positioning it **exclusively** by the lower part of the gearbox/differential unit.

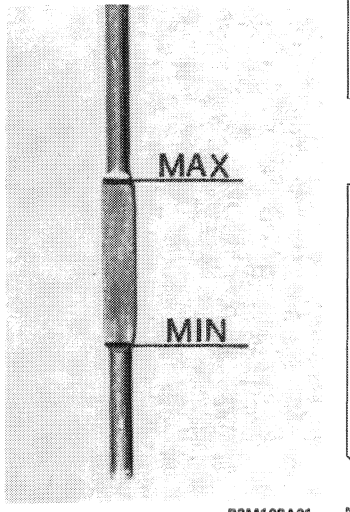


P3M107A02

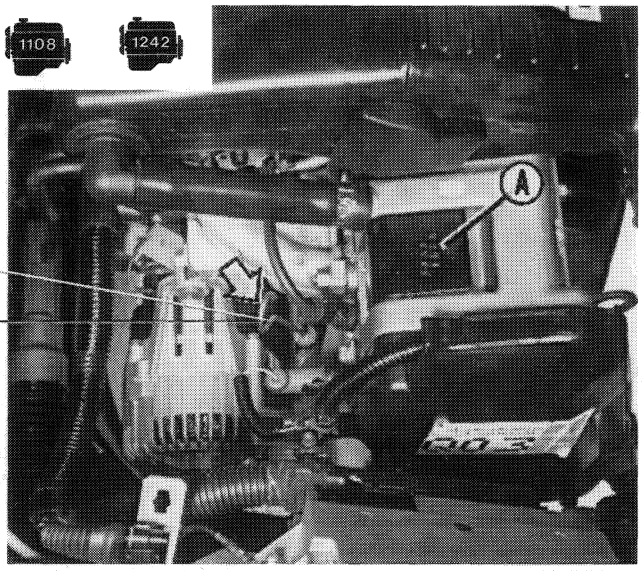
Rear

In order to raise the vehicle from the back, fit a compact wooden block (dimensions 60 X 60 mm, length 1050 mm) on the lifting plate, positioning it **exclusively** at the side points of the rear bumper.

CHECKING ENGINE OIL LEVEL



P3M108A01



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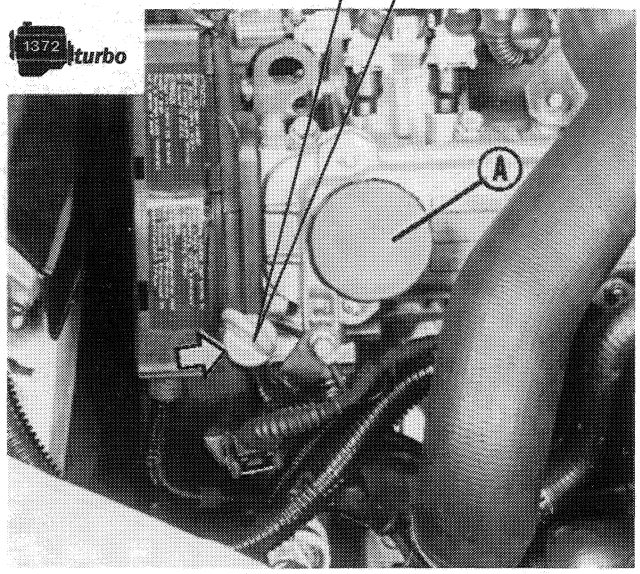
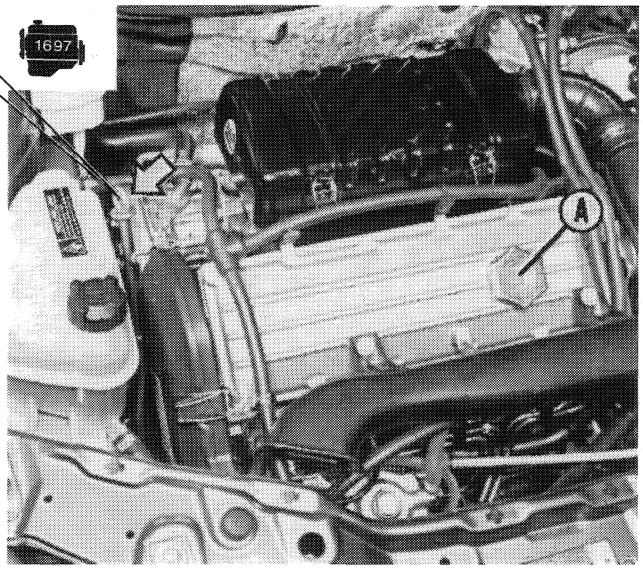


P3M108A03

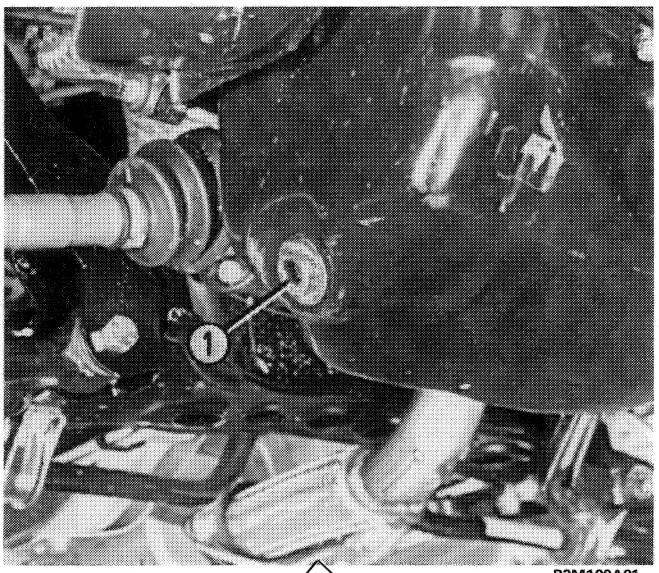


P3M108A04

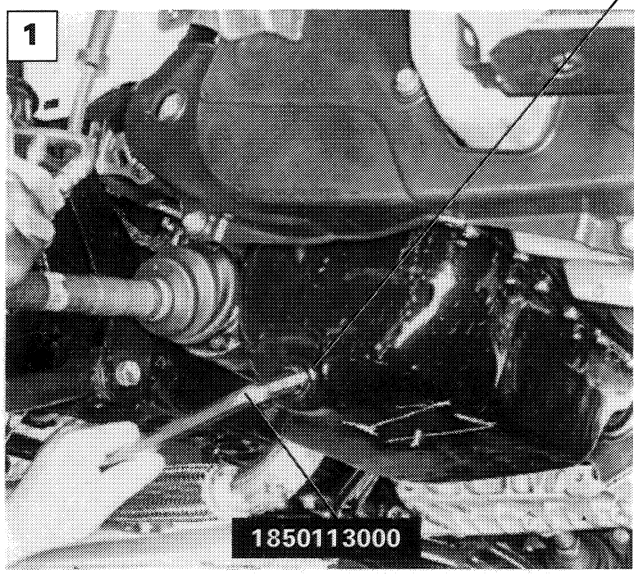
The engine oil level should be checked with the vehicle on a flat surface and the engine still warm (after 10 minutes after it has been switched off).
The level of the oil should be between the **MIN** and **MAX** limits on the dip stick. When the level is close to **MIN**, or actually lower than it, it should be topped up adding the amount of oil required to reach the **MAX** limit through the filler (A). The distance between**MIN** and **MAX** corresponds to about 1 litre of oil.

Never exceed the MAX level.

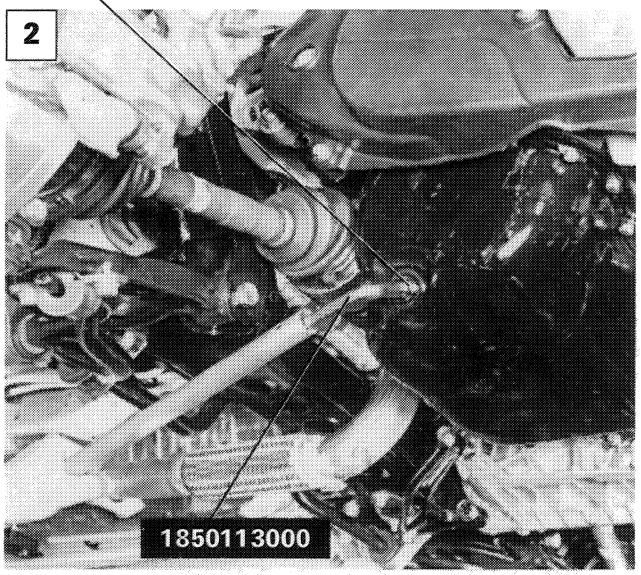
CHANGING ENGINE OIL



P3M109A01



P3M109A02



P3M109A03

The oil is drained by removing the cap (1) from the sump using tool 1850113000 (figure 1) and letting it drain for about ten minutes.

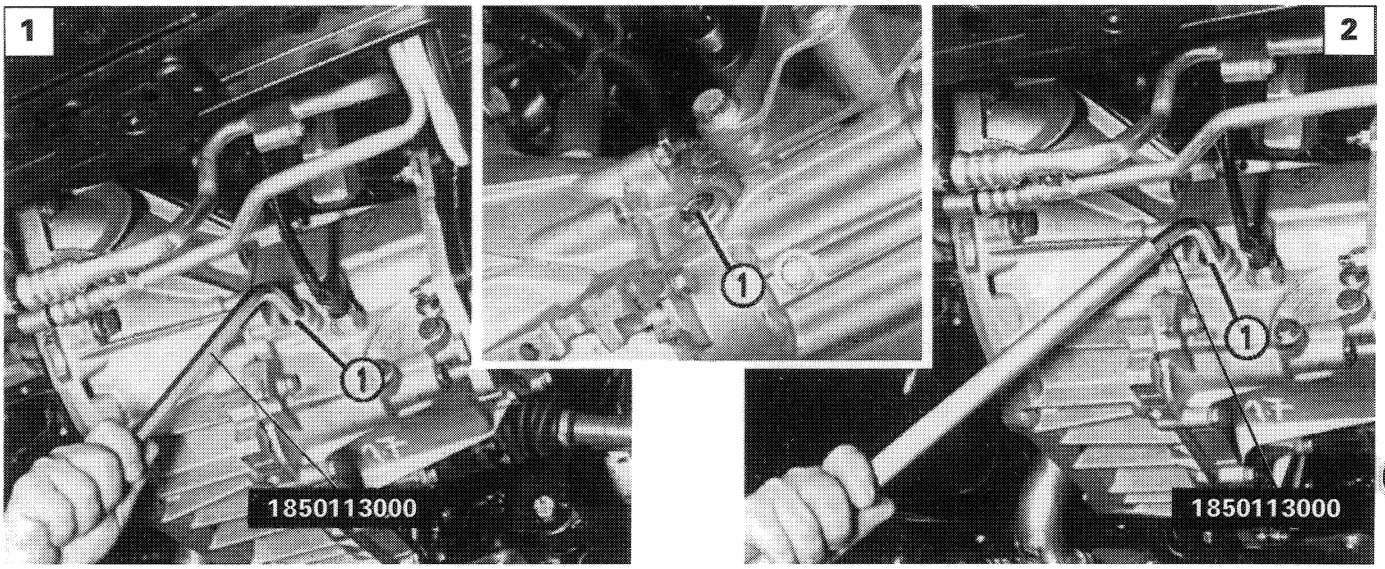
If there is a lot of difficulty in undoing the cap (1) **only use** an extension for tool 1850113000 as illustrated in figure 2. **Avoid under all circumstances** using percussion tools because the vibrations could damage the safety belt pre-tensioners.

In order to facilitate the draining of the oil, remove both the filler plug and the dip stick.

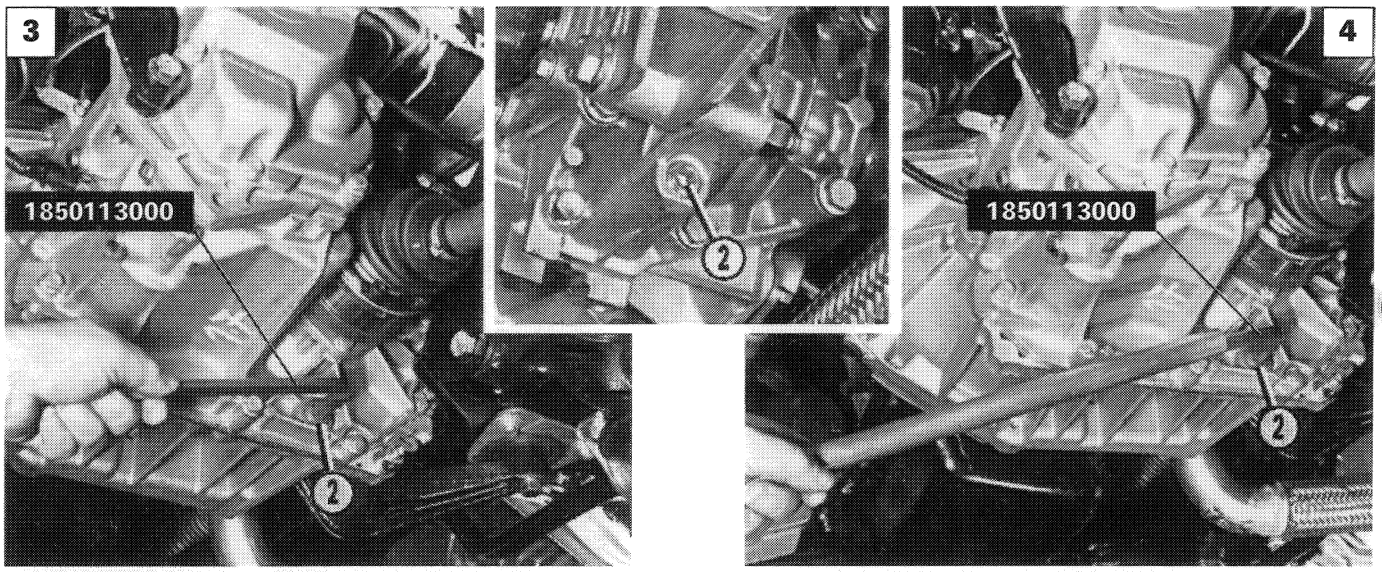
The oil should be drained with the engine warm.

After the operations of topping up or changing the oil, before checking the level, let the engine run for several seconds and wait several minutes after switching it off.

CHECKING GEARBOX-DIFFERENTIAL OIL LEVEL AND CHANGING OIL



NOTE *The insets in the centre illustrate the gearbox plugs fitted on the 1108-1242 versions; the large illustrations show the plugs for the 1372 turbo and 1697 TD versions.*



With the vehicle on a flat surface, the oil should reach the lower edge of the filler plug (1) housing.
If the oil has to be changed, drain it by undoing the plug (2) and leave it to drain for about 10 minutes bofore replacing the cap.
The filler (1) and drain (2) plugs are removed using tool 1850113000 (figures 1 and 3).

If there is a great deal of difficulty in undoing the caps (1 and 2), **only use** an extension for tool 1850113000 (figures 2 and 4). **Avoid under all circumstances** using percussion tools because the vibrations could damage the safety belt pre-tensioners.