

Fiat X1/9 five speed

Data and Characteristics Servicing Instructions



Settore Automobili
Gruppo Veicoli Fiat
Assistenza Tecnica

Fiat X1/9 five speed

PATRIZI MOTORS
 **FIAT**
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Data and Characteristics Servicing Instructions



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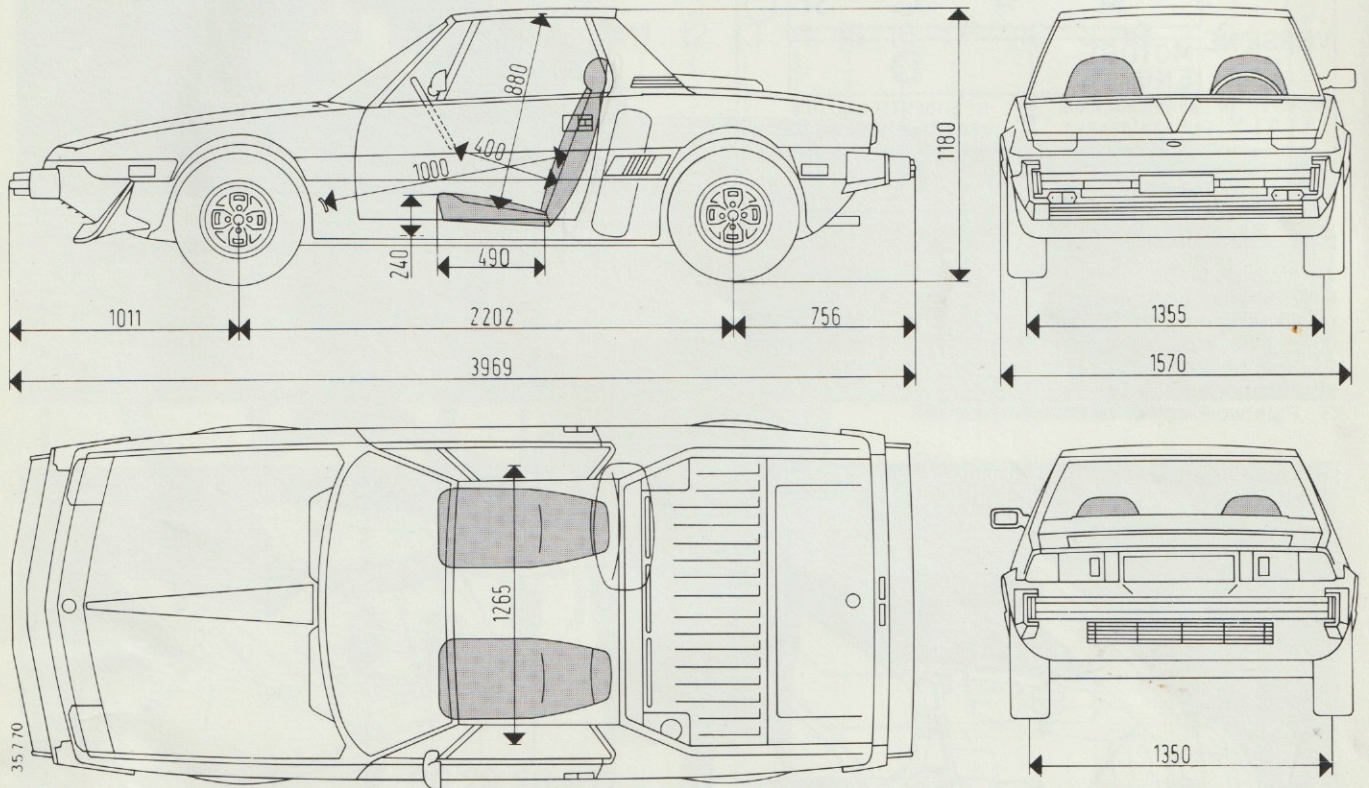
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MAIN DATA DIMENSIONS



The height refers to an unladen car

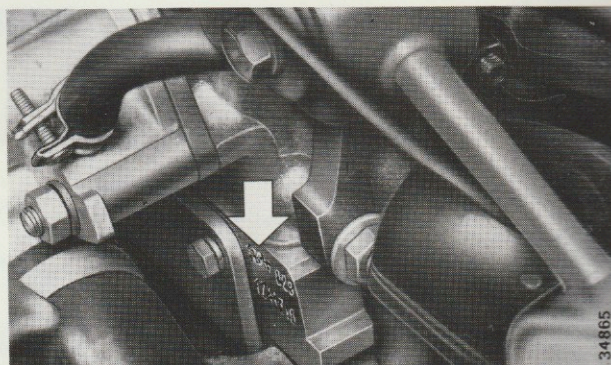


IDENTIFICATION DATA

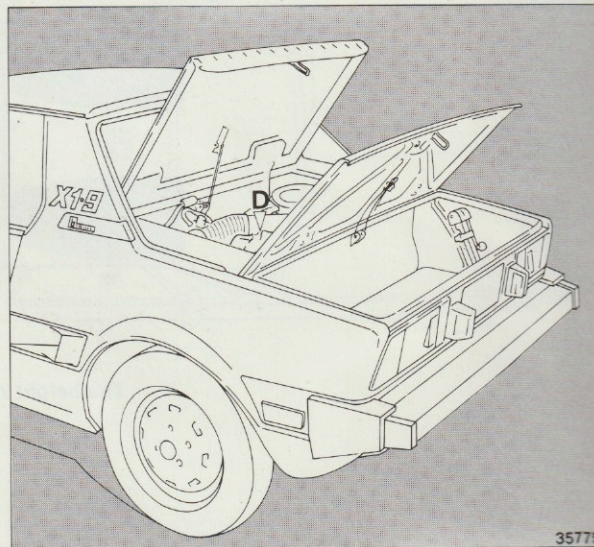
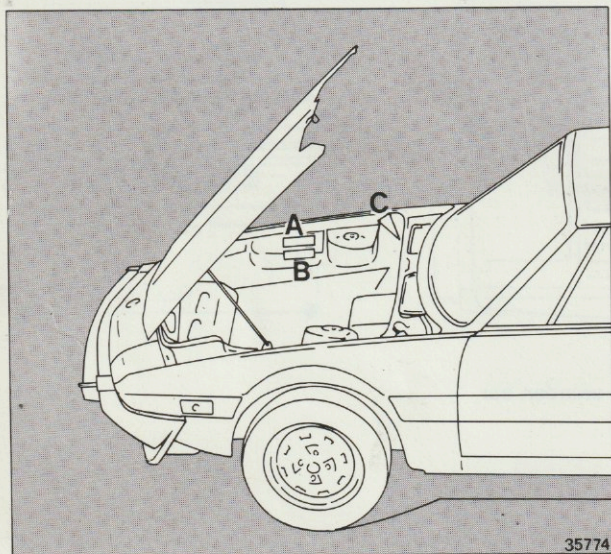
FIAT		OMOLOGAZIONE	
		DGM	B
AUTOTELAIO - CHASSIS			
○	A	☆	C ☆ ○
VERSIONE	MOTORE ENGINE		
E	D		
MADE IN ITALY	N° PER RICAMBI N° FOR SPARES	F	N° D'IDENTIFICATION ORD N° FÜR ERSATZZWECKE
N° colore carrozzeria Body color No		G	
29825			

Data plate, including:

- A Chassis type
- B Homologation number
- C Chassis number
- D Engine type
- E Version code
- F Number for spares
- G Paintwork colour reference



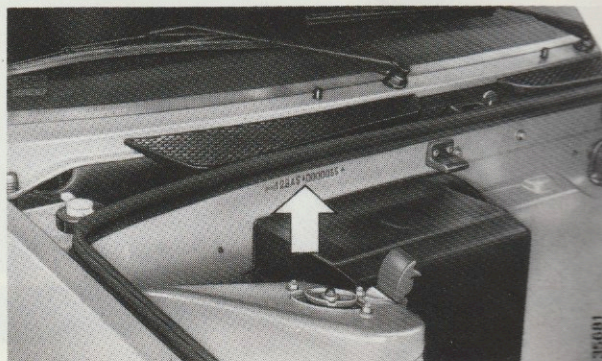
Engine type and No. stamped onto the crankcase



Location of identification data on car

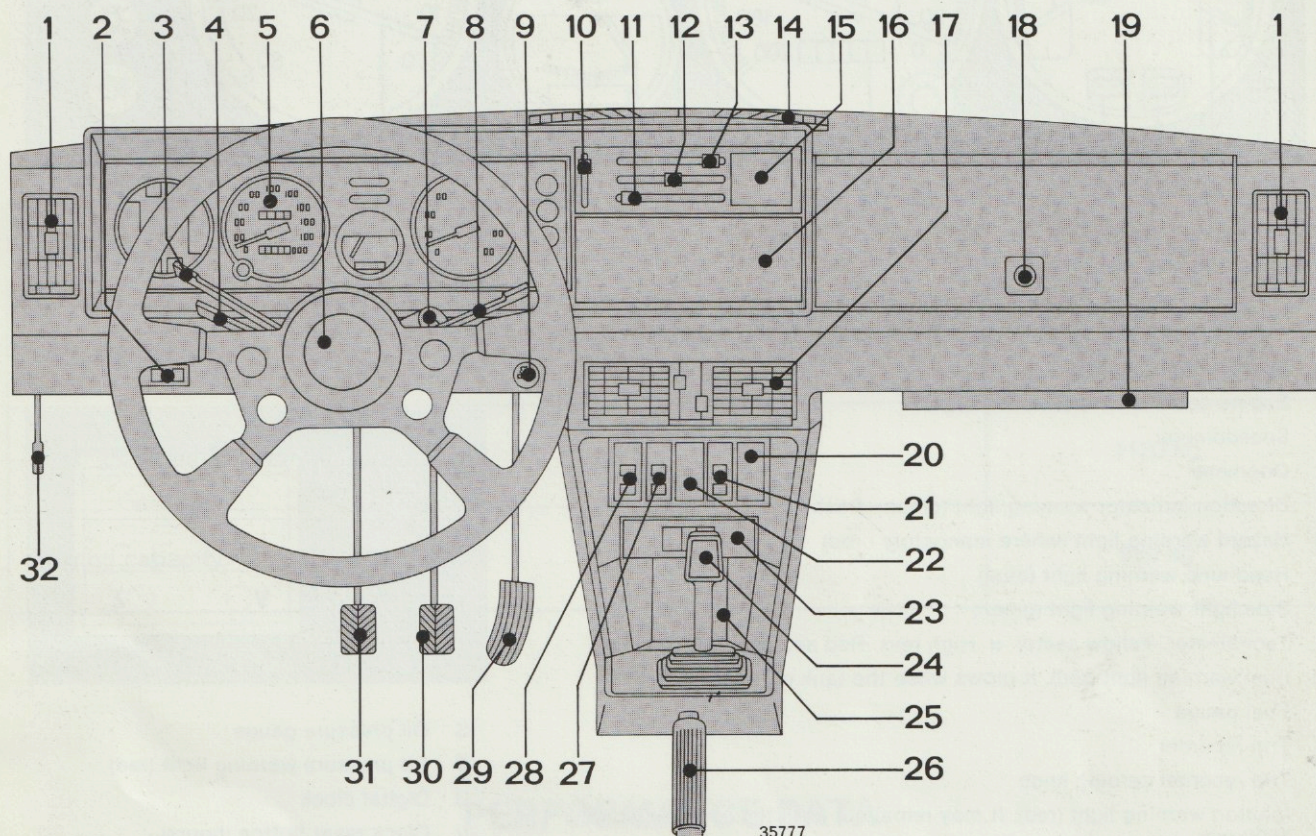
- A Chassis type and number
- B Data plate

- C ECE homologation plate
- D Engine type and number

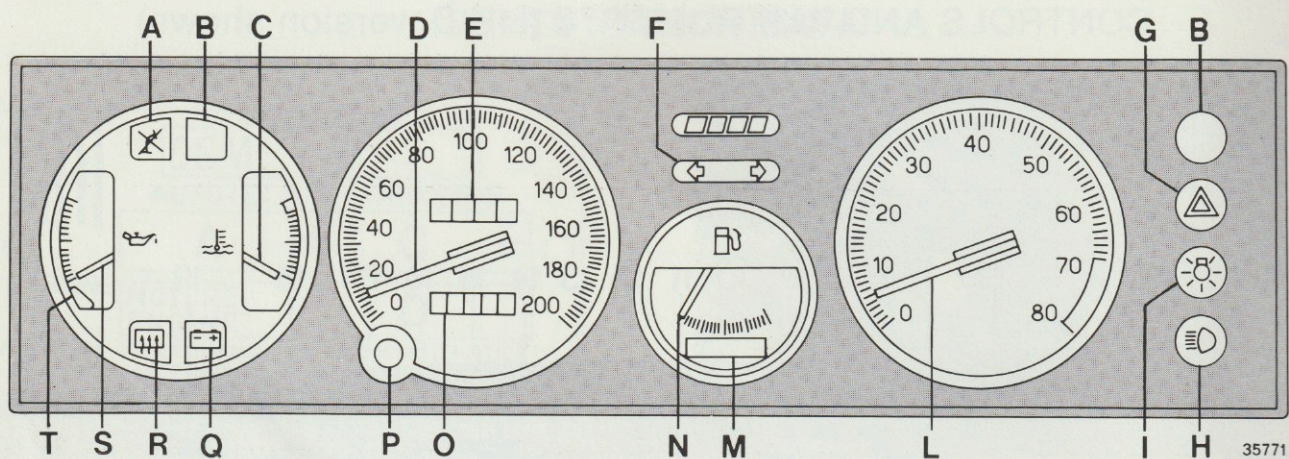


Chassis type and number

CONTROLS AND INSTRUMENTS (L.H.D. version shown)



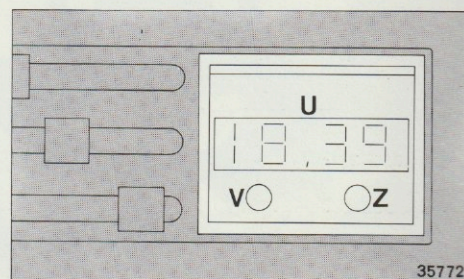
- | | |
|---------------------------------|---|
| 1 Side vents | 17 Centre vents |
| 2 Lighting switch | 18 Drop tray button |
| 3 Headlamp lever | 19 Fuse unit |
| 4 Direction indicator lever | 20 Supplementary headlamp/Fog lamp switch housing |
| 5 Instrument panel | 21 Panel light switch |
| 6 Horn control | 22 Spare switch recess cover |
| 7 Steering lock ignition switch | 23 Ashtray |
| 8 Wiper/Washer lever | 24 Gear lever |
| 9 Cigar lighter | 25 Tray |
| 10 Heater fan switch | 26 Handbrake lever |
| 11 Fresh air control | 27 Heated backlight switch |
| 12 Heater temperature control | 28 Hazard warning switch (where mandatory) |
| 13 Air distribution control | 29 Accelerator pedal |
| 14 Screen vents | 30 Brake pedal |
| 15 Digital clock (if fitted) | 31 Clutch pedal |
| 16 Radio recess | 32 Front boot release |



35771

Reading the Instruments

- A Handbrake/low brake fluid warning light (red). Lights up when the handbrake is applied or in case of line failure or low brake fluid level
- B Spare warning lights
- C Engine coolant temperature gauge
- D Speedometer
- E Odometer
- F Direction indicator warning light (green - flashing)
- G Hazard warning light (where mandatory - red)
- H Headlamp warning light (blue)
- I Side light warning light (green)
- L Tachometer. Yellow sector = High revs. Red sector = Over-revving
- M Fuel warning light (red). It glows when the tank content is 7,5 dm³
- N Fuel gauge
- O Trip recorder
- P Trip recorder zeroing knob
- Q Ignition warning light (red). It may remain lit until the engine reaches 1500 rpm.
- R Heated backlight warning light (yellow - if fitted)



35772

- S Oil pressure gauge
- T Oil pressure warning light (red)
- U Digital clock
- V Clock reset button (hours)
- Z Clock reset button (minutes)



35703

IDENTIFICATION DATA

X1/9 - five speed	Chassis Type	Engine Type
	128 AS1	138 AS.000

WEIGHTS

Kerb weight	920 kg
Carrying capacity	2 persons + 60 kg
Max. gross vehicle weight	1120 kg
Towing capacity	990 kg

PERFORMANCE DATA

Speeds (*): <ul style="list-style-type: none"> — 1st gear — 2nd gear — 3rd gear — 4th gear — 5th gear — Reverse 	45 km/h 75 km/h 115 km/h 165 km/h ~ 180 km/h 45 km/h
Gradients (*) <ul style="list-style-type: none"> — 1st gear — 2nd gear — 3rd gear — 4th gear — 5th gear — Reverse 	48% 28% 17% 10% 8% 48%

(*) Maximum speeds and climbable gradients refer to a fully laden vehicle, on good surface road.

CAPACITIES

Description	dm ³	kg	Recommended Fluid
Fuel tank including a reserve of	49 7,5	— —	Premium (4-star) petrol
Cooling system (incl. heater)	11,6	—	Solution of water Paraflu and 11 fluid ⁽²⁾
Engine (incl. filter) ⁽¹⁾	4,500	4,000	Oliofiat VS + (see table below)
Transaxle	3,000	2,700	Oliofiat ZC 90
Constant-velocity joint cavity and boot (each)	—	0,100	Grassofiat MRM 2
Steering box	0,140	0,127	Oliofiat W 90/M
Front brake circuit Rear brake circuit Clutch circuit	0,161 0,160 0,180	0,161 0,160 0,180	Liquido FIAT Etichetta Azzurra DOT 3
Screen washer bottle	2	—	Water and Fiat DP 1 liquid ⁽³⁾

⁽¹⁾ Total lubricating capacity is 5 dm³ (4,5 kg). The tabulated value is the requirement for periodic oil changing.

⁽²⁾ The system is factory filled with a solution of water and **Paraflu 11** fluid with a 50% concentration, which allows a drive-away temperature of —35°C.
Paraflu 11 incorporates oxidation, corrosion, foam and scale control properties.

⁽³⁾ In warm climates use 30 cm³ of **DP 1** liquid per dm³; in cold climates (down to —10°C) use a 50-50 mixture of water and **DP 1**. Below —10°C use exclusively **DP 1**.

ENGINE OIL GRADE DESIGNATIONS

Atmospheric Temperature	Oliofiat VS +	
	Above CCMC Sequence	
Below —15°C	VS + Artic (SAE 10 W)	—
—15°C to 0°C	VS + Inverno (SAE 20 W)	VS + QuattroStagioni (SAE 15 W/40)
Up to 35°C	VS + MezzaStagione (SAE 30)	
Above 35°C	VS + Estate (SAE 40)	

Do not mix different brands or grades

ENGINE GENERAL

Type	138 AS 000
Cycle	Four-stroke, petrol-fed
Number of cylinders	four, in-line
Bore	86,4 mm
Stroke	63,9 mm
Capacity	1498 cm ³
Compression ratio	9,2 to 1
Power (DIN — at	62,5 kW (85 HP) 6000 rev/min
Torque (DIN — at	118 Nm (12 kgm) 3200 rev/min
Camshaft	Overhead
Valve gear drive	Toothed belt
Fuel system	Mechanical pump and twin-choke downdraught carburettor
Air cleaner	Dry, paper element
Lubrication system	Gear pump, pressure relief valve
Oil filter	Disposable cartridge, full-flow
Cooling system	Centrifugal water pump, radiator and expansion tank, thermostat and electric fan controlled by temperature switch

CYLINDER BLOCK-CONNECTING RODS

All dimensions in mm unless otherwise stated

Cylinder bore diameter (Cylinder bores are graded and have a variation of 0,01 mm between each grade)	86,400 to 86,450
Main bearing housing bore diameter	54,507 to 54,520
Width of rear main bearing cap between thrust washers	22,140 to 22,200
Connecting rod big-end diameter	48,630 to 48,646
Connecting rod small-end diameter	23,939 to 23,972
Small-end bush O.D.	24,016 to 24,041
Small-end bore (bushed): — Grade 1 — Grade 2	22,004 to 22,007 22,007 to 22,010
Big-end bearing shell thickness	1,531 to 1,538
Big-end bearing shell undersize range	0,254-0,508-0,762-1,016
Small-end bush interference fit	0,044 to 0,102
Gudgeon pin fit clearance in small-end (bushed)	0,010 to 0,016
Crankpin to bearing fit clearance	0,036 to 0,086
Max. misalignment between big- and small-end axes, measured 125 mm from con rod	± 0,08

PISTON - RINGS - PINS

All dimensions in mm unless otherwise stated

Standard piston diameter (*): — Grade A — Grade C — Grade E	86,360 to 86,370 86,380 to 86,390 86,400 to 86,410
Range of oversize pistons	0,2-0,4-0,6
Piston boss diameter: — Grade 1 — Grade 2	21,996 to 21,999 21,999 to 22,002
Ring groove width: — Top groove — Centre groove — Bottom groove	1,535 to 1,555 2,030 to 2,050 3,967 to 3,987
Standard gudgeon pin diameter: — Grade 1 — Grade 2	21,991 to 21,994 21,994 to 21,997
Piston ring thickness: — 1st compression ring — 2nd oil control ring — 3rd oil scraper ring	1,478 to 1,490 1,978 to 1,990 3,925 to 3,937
Piston to bore fit clearance (*)	0,030 to 0,050
Gudgeon pin fit clearance in piston boss	0,002 to 0,008
Piston ring side clearance in groove: — 1st compression ring — 2nd oil control ring — 3rd oil scraper ring	0,045 to 0,077 0,040 to 0,072 0,030 to 0,062
Piston ring end gap: — 1st compression ring — 2nd oil control ring — 3rd oil scraper ring	0,30 to 0,45 0,30 to 0,45 0,25 to 0,40
Piston rings oversize range	0,2-0,4-0,6
Max. permissible weight variation per piston set	±2,5 cN (±2,5 g)

(*) Measured 27.5 mm (Borgo pistons) or 20 mm (Mondial pistons) from piston crown.

CRANKSHAFT

All dimensions in mm unless otherwise stated

Main bearing journal diameter	50,775 to 50,795
Standard main bearing shell thickness	1,834 to 1,840
Main bearing shell undersize range	0,254-0,508-0,762-1,016
Standard crankpin diameter	45,498 to 45,518
Main bearing journal fit clearance	0,032 to 0,077
Width of rear main bearing cap between thrust washers	26,975 to 27,025
Standard thrust washers thickness	2,310 to 2,360
Thrust washers oversize range	2,437 to 2,487
Crankshaft end float	0,055 to 0,265
Max. misalignment of main bearing journals	0,03
Max. misalignment of main bearing journals to crankpins	$\pm 0,35$
Max. ovality of crankpins and main bearing journals, after grinding	0,005
Max. taper of crankpins and main bearing journals, after grinding	0,005
Max. run-out of crankshaft flange from crankshaft axis (*)	0,025
Max. run-out between flywheel face and crankshaft flange and between flywheel face and crankshaft axis	0,10

(*) With dial gauge stylus at some 34 mm from crankshaft rotational axis.

CYLINDER HEAD

All dimensions in mm unless otherwise stated

Standard valve guide housing bore	13,950 to 13,977
Standard valve guide O.D.	14,040 to 14,058
Oversize valve guide	0,05-0,10-0,25
Valve guide interference fit	0,063 to 0,108
Fitted valve guide I.D.	8,022 to 8,040
Valve stem diameter	7,974 to 7,992
Valve stem fit clearance in guide	0,030 to 0,066
Angle of valve seat	$45^{\circ} \pm 5'$
Angle of valve face	$45^{\circ}30' \pm 5'$
Valve head diameter: — Inlet — Exhaust	35,850 to 36,150 32,850 to 33,450
Valve seat width	~ 2
Valve seat I.D.: — Inlet — Exhaust	30,90 to 31,10 28,50 to 28,70

VALVE SPRINGS

	Inner Spring	Outer Spring
Part Nos.	4145143 4134900	4170458 4170469 4388679
Compressed height under a load of 141 to 151 N ($14,9 \pm 0,5$ kg)	31 mm	—
Compressed under height a load of 366 to 396 N ($38,9 \pm 1,5$ kg)	—	36 mm
Minimum permissible load to compress to above heights	132 N (13,5 kg)	352 N (36 kg)

VALVE GEAR

All dimensions in mm unless otherwise stated

Camshaft	Camshaft journal diameter: — Valve gear end — Intermediate, valve gear end — Centre — Intermediate, flywheel end — Flywheel end	29,944 to 29,960 47,935 to 47,950 48,135 to 48,150 48,335 to 48,350 48,535 to 48,550
	Camshaft bearing bore diameter in head: — Valve gear end — Intermediate, valve gear end — Centre — Intermediate, flywheel end — Flywheel end	29,990 to 30,014 47,980 to 48,005 48,180 to 48,205 48,380 to 48,405 48,580 to 48,605
	Camshaft journal fit clearance in head	0,030 to 0,070
	Cam lift: — Inlet — Exhaust	9,85 9,90
	Valve clearance: — Inlet opens — Inlet closes — Exhaust opens — Exhaust closes	24° B.T.D.C. 68° A.B.D.C. 64° B.B.D.C. 28° A.T.D.C.
Tappets	Standard tappet bore diameter	37,000 to 37,025
	Standard tappet O.D.	36,975 to 36,995
	Tappet fit clearance	0,005 to 0,050
	Shim thickness	from 3,25 to 4,70 in steps of 0,05
	Valve clearance: — for checking valve timing { Inlet Exhaust — for general operation, { Inlet adjusted cold { Exhaust	0,60 0,65 0,45 0,60
Auxiliary Shaft	Diameter of bush bores in crankcase: — front — rear	38,700 to 38,730 35,036 to 35,066
	Fitted bush I.D.: — front — rear	35,664 to 35,684 32,000 to 32,020
	Diameter of shaft journals: — front — rear	35,593 to 35,618 31,940 to 31,960
	Bush interference fit	0,088 to 0,152
	Auxiliary shaft journal fit clearance: — front — rear	0,044 to 0,091 0,040 to 0,080

FUEL SYSTEM

All dimensions in mm unless otherwise stated

Carburettor type	Weber 34 DATR 7/250	
	1st Throat	2nd Throat
Diameter of Venturi	23	26
Diameter of auxiliary Venturi	4	4
Main jet size	1,07	1,30
Air correction jet size	1,60	1,50
Emulsion tube type	F 30	F 30
Slow running jet size	0,47	0,70
Slow running air bleed size	1,10	0,70
Accelerator pump jet size	0,40	—
Accelerator pump excess fuel discharge orifice size	0,40	—
Power fuel jet diameter	—	0,80
Power air jet diameter	—	—
Power mixture outlet diameter	—	2,00
First progression hole diameter	0,80	1,00
Second progression hole diameter	1,10	1,00
Third progression hole diameter	1,00	—
Needle valve seat	1,75	
Anti-siphon bleed	1,00	—
Slow running speed adjustment hole	1,40	—
Mixture bush size	1,10	—
Float level	$7 \pm 0,25$	
Throttle valve minimum opening	1,00	
Strangler valve minimum opening (pneumatic weakening valve)	$4,5 \pm 0,25$	
Strangler valve maximum opening (pneumatic weakening valve)	$6,5 \pm 0,25$	

continued

continued: **FUEL SYSTEM**

Fuel pump, output	75 l/h
Control lever stroke	2,85
Delivery pressure at 4000 engine rpm	0,176 bar (0,18 kg/cm ²)

LUBRICATION

OIL PUMP	Gear type
Oil pump drive	Auxiliary shaft
Oil pressure relief valve	In pump body
Pump gear end float	0,020 to 0,105 mm
Gear running clearance in pump body	0,110 to 0,180 mm
Backlash between drive and driven gears	0,15 mm
Lubricating pressure at 100°C	3,4 to 4,9 bar (3,5 to 5 kg/cm ²)

COOLING SYSTEM

Radiator fan thermal switch: — cuts in between — cuts out between	92° ± 2°C 87° ± 2°C
Thermostat: — Starts to open at — Fully open at — Valve travel	73° to 77°C 85°C 7,5 mm
Fit clearance between impeller vanes and pump body	0,80 to 1,30 mm
System leak test pressure	0,98 bar (1 kg/cm ²)
Additional radiator cap relief pressure	0,78 bar (0,8 kg/cm ²)

CLUTCH

All dimensions in mm unless otherwise stated

Type	Dry, single plate
Facing O.D.	190
Facing I.D.	134
Max. run-out of driven plate facings	0,20
Diaphragm spring travel (*)	8,5

(*) Corresponding to a minimum travel of pressure plate of 1,8 mm

TRANSAXLE

All dimensions in mm unless otherwise stated

GEARBOX Gears		5 forward - 1 reverse
Synchronizers		1st and 2nd, blocker type, conventional cone 3rd, 4th and 5th Porsche type
Gear ratios	First	3,583 to 1
	Second	2,235 to 1
	Third	1,454 to 1
	Fourth	1,042 to 1
	Top	0,863 to 1
	Reverse	3,714 to 1
Backlash between gears		0,10
Alignment tolerance of shafts		0,05
Clearance between reverse gear shaft and bush fitted to gear		0,08 to 0,15
FINAL DRIVE Type		Helical
Reduction ratio		13/53
Differential case bearings		two
Type of bearings		tapered roller
Adjustment for preload of differential case bearings		through shims
Planetary-to-sun gears backlash adjustment		None
Rear wheel drive		Through half shafts and ball type constant-velocity joints

BRAKES

All dimensions in mm unless otherwise stated

Type:	Disc-all-round, split circuits
FRONT Disc diameter	227
Disc thickness: — when new — minimum after regrinding — minimum allowed for wear	10,7 to 10,9 9,35 9
Max. run-out allowed (checked with dial gauge 2 mm from outer edge)	0,025
Calipers	Floating type, single cylinder
Caliper piston diameter	48
Adjustment	Automatic
REAR Disc diameter	227
Disc thickness: — when new — minimum after regrinding — minimum allowed for wear	10,7 to 10,9 9,35 9
Max. run-out allowed (checked with dial gauge 2 mm from outer edge)	0,025
Calipers	Floating type, single cylinder
Caliper piston diameter	34
Adjustment	Automatic
Master cylinder diameter	19,050 (3/4'')
Handbrake for parking	mechanical, acting on rear wheels
Emergency or safety brake	achieved by dual line circuit

STEERING

Type: Rack-and-pinion, twin equal length track rods, sealed-for-life joints, collapsible steering column with two universal joints	
No. of pinion bearings	two, ball type
Bearing adjustment	through shims
Pinion-to-rack backlash adjustment	through shims
Track rods	Ball pins, articulated and adjustable heads, hub support side
Number of steering wheel turns	~ 3
Total rack movement	117 mm
Ball joint pin articulation angle	60° to 66°
Minimum diameter of turning circle	~ 10 m
Steering angles — inner wheel — outer wheel	33°30' 30°
Front wheel toe-in — unladen — laden (*)	2 to 6 mm 1 to 5 mm
Front track	1355 mm

(*) Laden to the equivalent of 2 adults and 60 kg of luggage, with tyres correctly inflated.

SUSPENSIONS AND WHEELS

FRONT SUSPENSION Independent, strut-and-link, tie-rods, coil springs, sealed-for-life joints		
Hub support — caster	{ laden (*) { unladen	6°30' to 7°30' 6°20' to 7°20'
Wheels — camber — toe-in — Adjustment: through threaded pins of track rods Suspension locking: with laden car (*)	{ laden (*) { unladen { laden (*) { unladen	—0°30' to —1°30' 0° to —1° 1 to 5 mm 2 to 6 mm
Coil springs — Part No. — yellow-marked spring (°) length under a load of 2110 N (215 kg) — green-marked spring (°) length under a load of 2110 N (215 kg) — lowest load permissible to compress spring to a length of 170 mm		4288938 > 170 mm ≤ 170 mm 1960 N (200 kg)
REAR SUSPENSION Independent, strut-and-link, lower wishbones, coil springs, rubber-cushioned joints, adjustable transverse links		
Wheels — camber — toe-in — Adjustment: through threaded pins on semi-trailing links	{ laden (*) { unladen { laden (*) { unladen	—0°30' to —1°30' —0°45' to —1°45' 4 to 8 mm 5 to 9 mm
Coil springs: — Part No. — yellow-marked spring (°) length under a load of 2500 N (255 kg) — green-marked spring (°) length under a load of 2500 N (255 kg) — lowest permissible load to compress spring to a length of 200 mm		4292214 > 200 mm ≤ 200 mm 2305 N (235 kg)
WHEELS Wheel rim type Tyres: — type — inflation pressure	{ front { rear	5 J x 13" 165/70 SR 13" 1,76 bar (1,8 kg/cm²) 1,96 bar (2 kg/cm²)

(*) Car laden to the equivalent of 2 adults plus 60 kg of luggage.

(°) Springs must always be fitted in matched pairs.

IGNITION SYSTEM

Firing order				1-3-4-2	
Ignition Distributor	Type			M. MARELLI	DUCELLIER
	Code			S 135 LX	5251 A
	Static advance			5°	5°
	Automatic advance			23° ± 2°	23° ± 2°
	Contact breaker point pressure			5,39 ± 0,49 N (550 ± 50 g)	4,41 ± 0,49 N (450 ± 50 g)
	Contact breaker point gap			0,40 ± 0,03 mm	0,40 ± 0,03 mm
	Condenser capacity (50 to 1000 Hz)			0,25 ± 0,025 µF	0,25 ± 0,025 µF
	Open point period			35° ± 3°	35° ± 3°
	Dwell angle			55° ± 3°	55° ± 3°
Ignition Coil	Type	POL-MOT	M. MARELLI	O.E.M.	BOSCH
	Code	BE 200 B	BE 200 B	G 52 S	0.221.119.048
	Primary coil resistance at 20°C	3,1 to 3,4 Ω	3,168 to 3,432 Ω	3 to 3,3 Ω	2,6 to 3,1 Ω
	Secondary coil resistance at 20°C	6750 to 8250 Ω	9000 to 11000 Ω	6500 to 8000 Ω	8500 to 12000 Ω
Spark Plugs	Type	CHAMPION	M. MARELLI	BOSCH	FIAT
	Code	RN 7 Y	CW 78 LPR	WR 6 D	1L45 JR
	Thread and pitch	14 × 1,25	M 14 × 1,25	M 14 × 1,25	M 14 × 1,25
	Electrode gap	0,7 to 0,8 mm	0,7 to 0,8 mm	0,7 to 0,8 mm	0,7 to 0,8 mm

STARTER MOTOR

Make and type		M. MARELLI E 95-0,9/12
Voltage		12 V
Rated output		0,9 kW
Direction of rotation, pinion end		clockwise
Poles		4
Field winding		series
Pignion engagement		free-wheel
Control		solenoid
Internal diameter of expanded shoes		60,85 to 61,02 mm
Internal diameter of armature		59,95 to 60,00 mm
Mechanical Data	Brush spring pressure (new brushes)	1,15 to 1,30 kg
	Armature end float	0,15 to 0,45 mm
	Depth for commutator recutting	0,5 to 0,7 mm
Data for Bench Testing	Running test (*): — Current — Speed — Voltage — Torque developed	200 A 1900 to 100 rev/min 10 V 5,4 N · m (0,55 kgm)
	Lock test (*): — Current — Voltage — Torque developed	440 to 460 A 7,5 to 0,1 V ≥ 13,75 N · m (1,4 kgm)
	Light running torque test (*): — Current — Voltage — Speed	35 to 5 A 11,4 to 11,7 V 6000 ± 500 rev/min
Solenoid	Winding resistance at 20°C: — Pull-in — Hold-in	0,37 to 0,01 Ω 1,25 to 0,05 Ω
	Travel of contact plate	3,25 to 3,95 mm
	Magnetic plunger travel	12,58 to 15,48 mm
Lubri- cation	Pinion splines	Oliofiat Vs + Artic (SAE 10 W)
	Contact surface of pinion sleeve	Grassofiat MR 3

(*) At 20°C.

CHARGING SYSTEM

Alternator Charging System	Make and type	MAGNETI MARELLI AA 125-14 V-45 A	BOSCH K 1-14 V-45 A 20
	Voltage	12 V	
	Maximum current drawn	~ 50 A	
	Cut-in speed	900 ± 50 rev/min	1100 ± 50 rev/min
	Battery current flow a 7000 rpm balanced thermally	≥ 45 A	
	Field winding resistance across slip rings (*)	3,1 ± 0,1 Ω	3,36 ± 0,3 Ω
	Direction of rotation (drive side)	clockwise	
	Engine/alternator driving ratio	1 to 2	
	Rectifier diodes	Built-in diode plate	
Voltage Regulator	Make and type:	FIMM «RTT 114 A» Electronic, integral with alternator	BOSCH
	Alternator speed for adjustments	6000 rev/min	
	Current for thermal balance	20 to 22 A	
	Current for checks	25 A	4,5 to 40,5 A
	Regulating voltage (*)	13,65 to 14 V	
Battery	Voltage	12 V	
	Capacity (at 20-hour discharge rate)	162 KC (45 Ah)	

(*) At 25°C.

LIGHTING SYSTEM

(12 Volts)

Headlamps	Two, circular, concealed
Dipped beam bulb	40 W
Main beam bulb	45 W
Front direction indicator bulb	21 W
Repeater light bulb	4 W
Rear direction indicator bulb	21 W
Side light bulb	5 W
Rear light bulb	5 W
Stop light bulb	21 W
Reversing light bulb	21 W
Number plate light bulb	5 W
Courtesy light bulb	5 W
Cigar lighter light bulb	3 W
Panel light bulb	3 W
Ideogram illumination bulb	3 W
Heater bulb	3 W
Fuel warning light bulb	1,2 W
Oil pressure warning light bulb	1,2 W
Spare warning light bulb	—
Side light warning light bulb	1,2 W
Headlamp warning light bulb	1,2 W
Direction indicator warning light bulb	1,2 W
Brake warning light bulb	1,2 W
Heated backlight warning light bulb	1,2 W
Hazard warning light bulb	1,2 W
Ignition warning light bulb	1,2 W

FUSES

Two 3-A fuses Nine 8-A fuses Six 16-A fuses	PROTECTED CIRCUITS
A (*) (8 A)	<ul style="list-style-type: none"> — Heated backlight relay winding — Heater fan motor — Tachometer — Windscreen wiper motor — Fuel guage and warning light — Oil pressure gauge and warning light — Stop lights — Direction indicators and warning light — Brake warning light — Engine coolant temperature gauge — Windscreen washer pump — Heater ideogram lamp — Clock light — Reversing light
B (8 A)	— Carburettor fan motor
C (*) (8 A)	<ul style="list-style-type: none"> — L.H. main beam — Headlamp warning light
D (*) (8 A)	— R.H. main beam
E (*) (8 A)	— L.H. dipped beam
F (*) (8 A)	— R.H. dipped beam
G (*) (8 A)	<ul style="list-style-type: none"> — L.H. side light — R.H. rear light — L.H. number plate light — Cigar lighter light
H (*) (8 A)	<ul style="list-style-type: none"> — Clock light dimmer (optional) — R.H. side light — L.H. rear light — R.H. number plate light
I (16 A)	— R.H. concealed headlamp motor
L (16 A)	— L.H. concealed headlamp motor
M (16 A)	<ul style="list-style-type: none"> — Heated backlight (optional) — Hazard warning light
N (16 A)	<ul style="list-style-type: none"> — Radiator fan motor — Horn and horn relay
O (16 A)	— Preset for additional circuit
P (16 A)	— Preset for additional circuit
Q (3 A)	— Relay for closing headlamp
R (*) (3 A)	— Relay for raising headlamp
In-line fuse (8 A)	<ul style="list-style-type: none"> — Cigar lighter — Courtesy light - Clock (optional)
Unprotected circuits: ignition, charging, starting	

(*) With ignition key at MAR.

TIGHTENING TORQUES - ENGINE

Description	Part No.	Thread	Material	Torque Figure	
				N · m	kgm
Main bearing cap self-locking bolt	4263780	M 10 × 1,25	R 100	80,4	8,2
Cylinder head to block retaining bolt	4223901	M 12 × 1,25	R 100	93,2	9,5
Cylinder head to block retaining stud nut	1/61015/21	M 12 × 1,25	R 80 Znt (Stud R 100)	93,2	9,5
Cambox bolt	1/11011/21 1/60967/21	M 8	R 80 Znt	19,6	2
Manifolds to head retaining stud nut	1/61008/11	M 8	R 50 Znt (Stud R 80 Znt)	27,5	2,8
Big-end cap nut	1/25550/20	M 9 × 1	R 80 (Bolt R 100)	51	5,2
Flywheel to crankshaft self-locking bolt	1/43486/70	M 10 × 1,25	R 120	83,4	8,5
Driven gear to camshaft retaining bolt	1/12279/70	M 10 × 1,25	R 120	83,4	8,5
Nut securing bearing to belt tensioner support	1/21647/11	M 10 × 1,25	R 50 Znt (Stud R 100)	44,1	4,5
Bolt retaining oil pump/fuel pump shaft driven gear	1/12279/70	M 10 × 1,25	R 120	83,4	8,5
Nut securing water pump/alternator drive pulley	4179194	M 20 × 1,5	R 50 Znt (crank- shaft Gh 90-75-05)	137	14
Bolt retaining alternator lower support to cylinder block	1/59708/21	M 10 × 1,25	R 80 Znt	49	5
Self locking nut with nylon for bolt retaining alternator to upper bracket	1/25745/11	M 10 × 1,25	R 50 Znt (Bolt R 80 Znt)	49	5
Nut securing alternator to lower support	1/21647/11	M 10 × 1,25	R 50 Znt (Bolt R 80 Znt)	49	5
Spark plugs	—	M 14 × 1,25	—	37,3	3,8
Bolt securing power unit support to crankcase	1/12347/21 1/59709/21	M 10 × 1,25	R 80 Znt	58,8	6

continued

continued: TIGHTENING TORQUES - ENGINE

Description	Part No.	Thread	Material	Torque Figure	
				N · m	kgm
Nut for bolt retaining rubber mount to body, engine side	1/21647/11	M 10 × 1,25	R 50 Znt (bolt R 100 Cdt)	34	3,5
Bolt securing rubber mount	1/38260/11	M 8	5,8 Znt/ec	15	1,5
Bolt securing side member, gearbox side, to body	1/60436/31	M 8	R 100 Cdt	20	2
Bolt retaining lower support and mount to gearbox support	1/60427/31	M 8	R 100 Cdt	25	2,5
Nut securing upper support and mount to gearbox support	1/61008/11	M 8	R 50 Znt (stud R 80 Znt)	25	2,5
Bolt retaining power unit link	1/61365/21	M 8	R 80 Znt	25	2,5

TIGHTENING TORQUES - CHASSIS

Description	Part No.	Thread	Material	Torque Figure	
				N · m	kgm
CLUTCH					
Bolt retaining clutch plate to flywheel	1/09022/31	M 6	R 100 Cdt	16	1,6
Bolt retaining clutch release fork	4200713	M 8	R 80 Znt	26	2,7
Nut for pushrod head for clutch release lever	1/61023/11	M 8	R 50 Znt (pushrod R 50 Ind Znt)	26	2,7
Bolt retaining clutch slave cylinder	1/60441/21	M 8	R 80 Znt	26	2,7
Bolt retaining clutch slave cylinder support to gearbox	1/61359/21	M 8	R 80 Znt	26	2,7
Nut for stud securing clutch slave cylinder support to gearbox	1/61008/11	M 8	R 50 Znt (stud R 80 Znt)	26	2,7
TRANSAXLE					
Bolt retaining selector rod spring cover	4212140	M 8	R 80 Znt	25	2,5
Bolt retaining bell housing and exhaust manifold	4313005	M 8	R 80 Znt	25	2,5
Nut for bolt retaining bell housing to engine	1/61015/11	M 12 × 1,25	R 50 Znt	78	8
Bolt retaining gearbox cover	1/09026/21	M 6	R 80 Znt	10	1
Bolt retaining bell housing to engine	1/55411/21	M 12 × 1,5	R 80 Znt	78	8
Bolt retaining gearbox front cover	1/38243/18	M 6	R 50 Cdt/Deidr.	7,8	0,8
Bolt retaining bell housing to gearbox	1/60423/21	M 8	R 80 Znt	25	2,5
Bolt retaining reversing shaft plate	1/09023/21	M 6	R 80 Znt	10	1
Ring nut for 5-speed main and layshaft	4411737	M 20 × 1,5	30 CD 4 Rct (shaft 20 NCD 2 carbon 4)	118	12

continued

continued: **TIGHTENING TORQUES - CHASSIS**

Description	Part No.	Thread	Material	Torque Figure	
				N · m	kgm
Bolt retaining gearshift fork and lug	813149	M 6	R 100	18	1,8
Bolt retaining gearshift lever	4170541	M 6	R 100	18	1,8
Bolt retaining gearshift lever support	1/09029/21 1/60505/21	M 6	R 80 Znt	10	1
Bolt retaining axle ring gear	4250995	M 10 × 1,25	R 100	68	7
Bolt retaining differential case flange to gearbox housing	1/60437/21	M 8	R 80 Znt	25	2,5
Bolt retaining tie rod with flexible coupling to gearbox rod	1/38260/21	M 8	8.8 Znt/ec	30	3
Bolt retaining boot cover to differential case flange	1/38240/21	M 6	8.8 Znt/ec	10	1
Nut securing boot cover to bell housing	1/58962/11	M 6	R 50 Znt (stud R 80 Znt)	10	1
Bolt retaining gearshift lever to body	1/38246/21	M 6	8.8 Znt/ec	10	1
Bolt retaining constant-velocity joint	4393157	M 8	38 NCD4 Bon Phosph	34	3,5
FRONT SUSPENSION					
Wheel bolt	4288432	M 12 × 1,25	C 35 R Bon Znt Black	86,3	8,8
Nut securing front wheel hub	4307325	M 20 × 1,5	C 40 Norm Cdt	216	22
Self-locking nut with nylon securing track control arm to body	1/25745/21	M 10 × 1,25	R 80 Znt	3,92	4
Self-locking nut with nylon securing tie rod to track control arm and support	1/61050/11	M 12 × 1,25	R 50 Znt	68,6	7
Self-locking nut securing track control arm to hub carrier	1/61051/11	M 12 × 1,25	R 50 Znt (pin 40NiCrMo 2 Bon R 9 to 105)	54	5,5
Self locking nut with nylon for bolt securing damper to body hub carrier	1/25745/21	M 10 × 1,25	R 80 Znt	59	6
Nut for bolt retaining damper rubber mount flange to body	1/58962/21	M 6	R 80 Znt (bolt R 100 Znt)	12	1,2
Self-locking nut with nylon securing damper	1/61050/21	M 12 × 1,25	R 80 Znt	59	6

continued

continued: **FRONT SUSPENSION**

Description	Part No.	Thread	Material	Torque Figure	
				N · m	kgm
Nut for bolt retaining tie rod bracket to track control arm	1/61008/11	M 8	R 50 Znt (bolt R 50 Znt)	15	1,5
Bolt retaining tie rod support	1/09232/21	M 10 × 1,25	R 80 Znt	39	4
Bolt retaining brake caliper to hub carrier	4369039	M 10 × 1,25	R 80 Phosph black	47	4,8
Inlet union for front brake cylinder	4207393	M 10 × 1,25	C 4 MF Trf Bon Cdt/Bright	27	2,8
REAR SUSPENSION Ring nut retaining rear wheel bearing	4354049	M 75 × 1,5	R 50 Znt or AB 40 P Znt	59	6
Nut securing rear wheel bearing	4307325	M 20 × 1,25	C 40 Norm Cdt (hub 38 CD 4 Stp Bon Nitr Morb)	216	22
Self-locking nut securing ball joint to hub carrier	1/25748/21	M 14 × 1,5	R 80 Znt (pin 40 Ni Cr Mo 2 Bon R 90 to 105)	83	8,5
Wheel bolt	4288432	M 12 × 1,25	C 35 R Bon Znt Black	86	8,8
Self locking nut with nylon for track control arm pin	1/25748/21	M 14 × 1,9	R 80 Znt (pin R 8 Znt)	98	10
Self-locking nut with nylon for damper	1/61050/21	M 12 × 1,25	R 80 Znt	59	60
Nut for bolt retaining clamp to transverse link sleeve	1/61008/11	M 8	R 50 Znt (Bolt R 80 Znt)	20	2
Self-locking nut with nylon securing damper to hub carrier	1/25745/21	M 10 × 1,25	R 80 Znt	58,8	6
Nut securing damper rubber pad to body	1/58962/21	M 6	R 80 Znt (Bolt R 100 Cdt)	12	1,2
Nut securing transverse link ball joint	with head	M 14 × 1,5	—	5,9	6
Bolt retaining caliper to hub support	4369039	M 10 × 1,25	R 80 Phosph black	47	4,8
Union for brake hose	4161631	3/8-24UNF-3A	AB 40 PRD Cdt or 00 CR Cdt	18	1,8

Description	Part No.	Thread	Material	Torque Figure	
				N · m	kgm
STEERING					
Nut securing steering wheel	1/07914/11	M 16 × 1,5	R 50 Znt (shaft C 30 Norm)	49	5
Nut securing steering column joint yoke	1/61044/21	M 8	R 80 Znt (bolt R 100 Cdt)	27	2,7
Nut for bolt securing steering box to body	1/61008/1	M 8	R 50 Znt (bolt R 80 Znt)	25	2,5
Nut securing track rod ball joint	4191151	M 14 × 1	R 50 Znt (pin 40 Ni Cr Mo 2 Bon R 90 to 105 or 40 Cr Mo 4 R)	49	5
Self-locking nut securing ball joint to hub support	1/25756/11	M 10 × 1,25	R 50 Znt (pin 12 Ni 3 Carbon)	34	3,5
Nut for bolt retaining steering column upper section support	1/61008/11	M 8	R 50 Znt (bolt R 50 SD Stab)	15	1,5
HANDBRAKE					
Bolt retaining handbrake support	1/38258/11	M 8	5.8 Znt/Ec	15	1,5
CONTROL PEDALS					
Nut securing brake/clutch/steering column support	1/61008/11	M 8	R 50 Znt (bolt R 50 Sd Stab)	15	1,5
Nut securing clutch pedal	1/61008/11	M 8	R 50 Znt (shaft R 50 Trf Znt)	15	1,5
Nut securing brake master cylinder to pedal support	1/61008/11	M 8	R 50 Znt (bolt R 80 Znt)	25	2,5

SERVICING INSTRUCTIONS

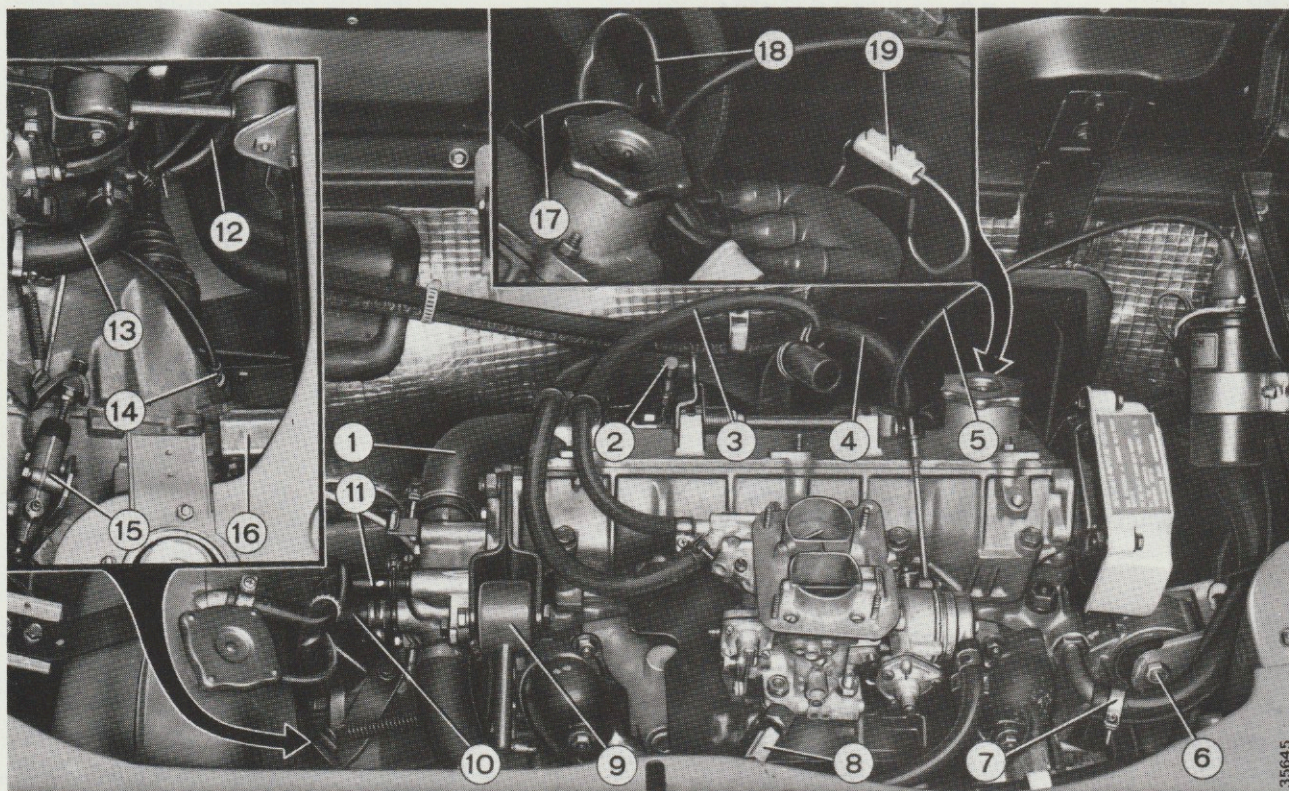
ENGINE

TO REMOVE AND REFIT

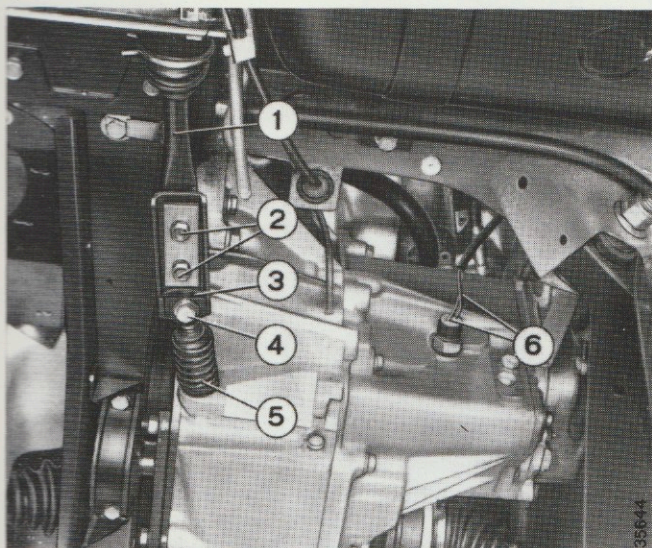
If the engine is to be removed all electrical, hydraulic and mechanical connections must be disconnected first; this also applies to the elements shown in the following figures.

Hoist the engine and hook in to the **A. 60511** sling, remove retaining nuts, exhaust pipe and clutch master cylinder with pushrod.

To refit, merely apply the reverse procedure. Fill radiator and expansion tank with coolant and start the engine. Inspect all lines and hoses for tightness.

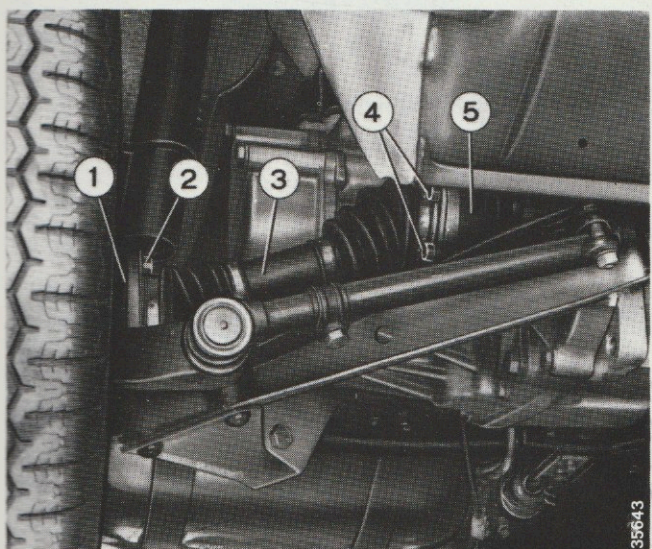


- | | |
|----------------------------------|--|
| 1 Coolant hose to engine | 11 Line to expansion tank |
| 2 Accelerator linkage | 12 Coolant line from radiator |
| 3 Excess fuel recirculation line | 13 Pump-to-thermostat hose |
| 4 Fuel feed line | 14 Speedo drive cable |
| 5 Ignition coil H.T. lead | 15 Clutch cylinder |
| 6 Bolt | 16 Exhaust pipe upper bracket |
| 7 Line to heater | 17 Oil pressure transmitter lead |
| 8 Carburettor fan motor leads | 18 Engine coolant temperature transmitter lead |
| 9 Reaction rod | 19 Ignition coil L.T. lead |
| 10 Coolant pipe | |



Removing and Refitting the Power Unit

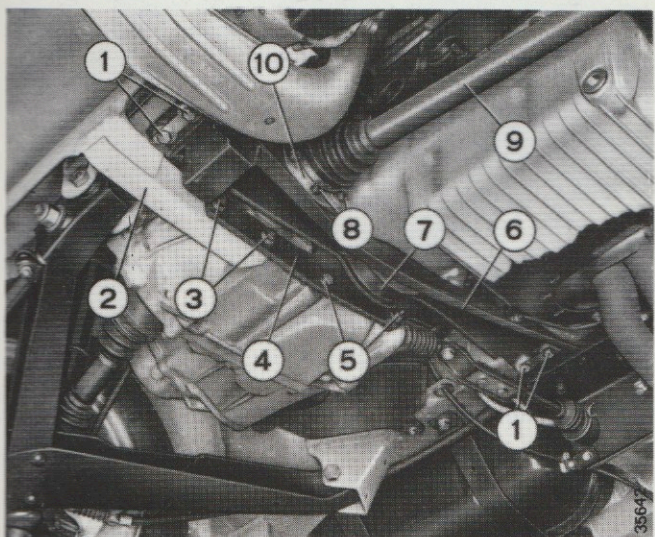
- 1 Gearshift linkage
- 2 Bolts
- 3 Flexible coupling
- 4 Bolt
- 5 Boot
- 6 Reversing light leads



NOTE - To remove the power unit simply disconnect half shafts, gearbox side, by removing constant-velocity joints.

Showing the L.H. half shaft

- 1 Constant-velocity joint
- 2 Bolt
- 3 Half shaft
- 4 Bolts
- 5 Constant-velocity joint



Showing the Power Unit Support Bracket

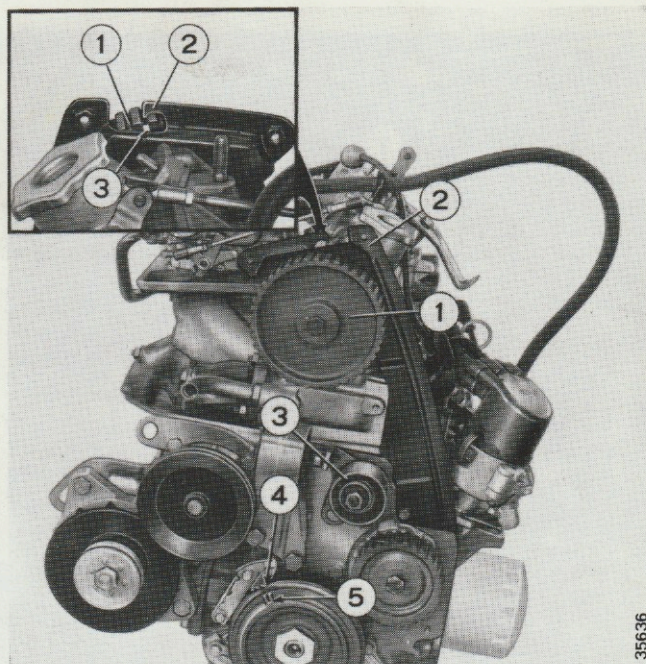
- 1 Bolts
- 2 Exhaust pipe lower bracket
- 3 Bolts
- 4 Rubber mount bracket
- 5 Bolts
- 6 Power unit centre bracket
- 7 Rubber mount
- 8 Bolts
- 9 Half shaft
- 10 Constant-velocity joint

VALVE TIMING

The timing procedure is as follows:

- Using handle **A. 60459** rotate crankshaft until crankshaft sprocket (5) coincides with mark (4);
- Rotate camshaft sprocket until mark (3) coincides with pointer (2) on belt guard;
- Check that timing belt teeth are perfectly coupled with driving and driven sprockets;
- Slacken belt tensioner nut; belt tension spring will stretch the belt;

NOTE - The correct valve clearance for timing check is 0,60 mm (inlet valves) or 0,65 mm (exhaust valves).



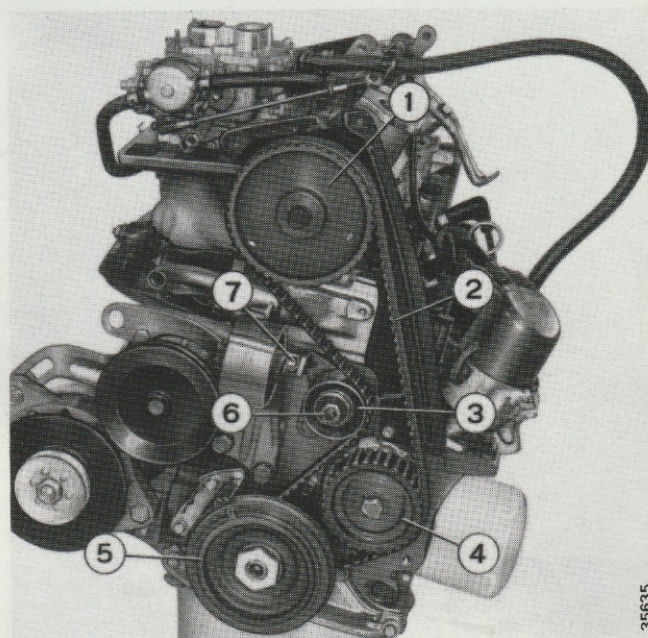
Valve Timing

- 1 Camshaft drive sprocket
- 2 Pointer on toothed belt guard
- 3 Reference mark
- 4 Reference for alternator/water pump drive pulley
- 5 Reference on alternator/water pump drive pulley

RENEWING THE TOOTHED TIMING BELT

Proceed as follows:

- Using flywheel lock **A. 60369**, prevent crankshaft rotation;
- Remove timing cover;
- Remove the belt driving alternator and water pump;
- Check valve timing;
- Slacken belt tensioner nut and remove toothed belt;
- Replace the timing belt making sure that the belt and gear sprockets coincide;
- Reinstall water pump/alternator drive belt;
- Reinstall timing cover;



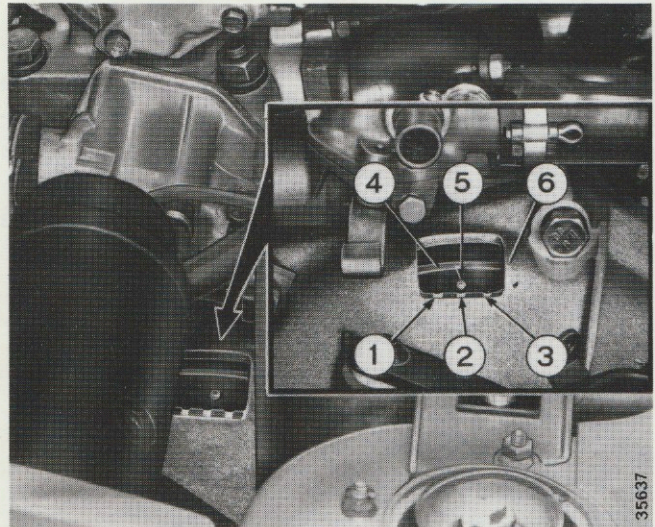
Renewing the Toothed Belt

- 1 Camshaft drive sprocket
- 2 Toothed belt
- 3 Tensioner pulley
- 4 Auxiliary shaft drive sprocket
- 5 Alternator/water pump drive pulley
- 6 Nut securing tensioner pulley
- 7 Tensioner

- Lock tensioner pulley nut (6)
- using handle **A. 60186** rotate crankshaft at least once;
- Slacken nuts (3) so that timing belt is properly set, then tighten nuts as required;
- Check timing once more
- Check ignition timing and, if necessary, correct, ensuring that mark (5) on flywheel is lined up with mark (2) on gearbox case.

Ignition Timing References

- 1 0° reference
- 2 5° reference
- 3 10° reference
- 4 Flywheel
- 5 Mark
- 6 Gearbox case

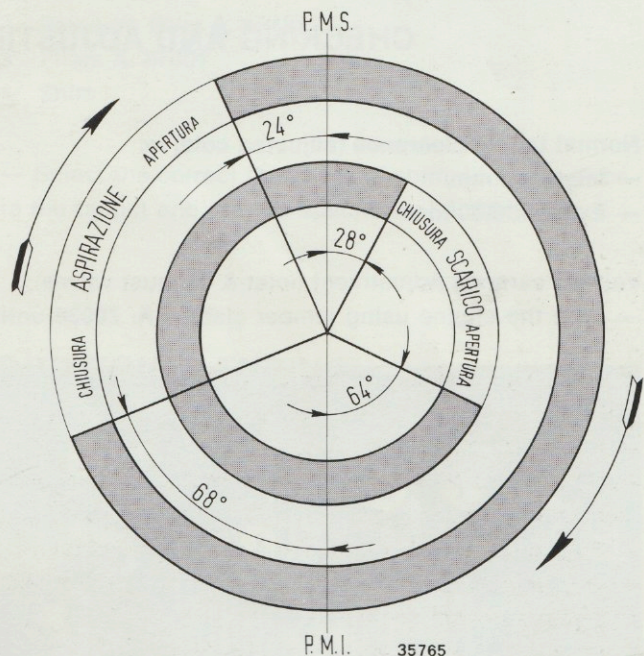


Valve Timing Diagram

Tappet clearance:

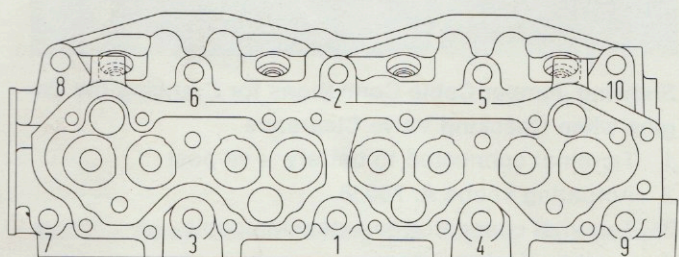
- Inlet valves 0,60 mm
- Exhaust valves 0,65 mm

ASPIRAZIONE = Inlet
 SCARICO = Exhaust
 Chiusura = Closing
 Apertura = Opening
 P.M.S. = TDC
 P.M.I. = BDC



Cylinder Head Torque Tightening

Tighten the cylinder head retaining bolts gradually, to a torque of **93,2 N · m ((9,5 kgm))** in the order shown in the figure.



Cylinder Head Torque Tightening Sequence

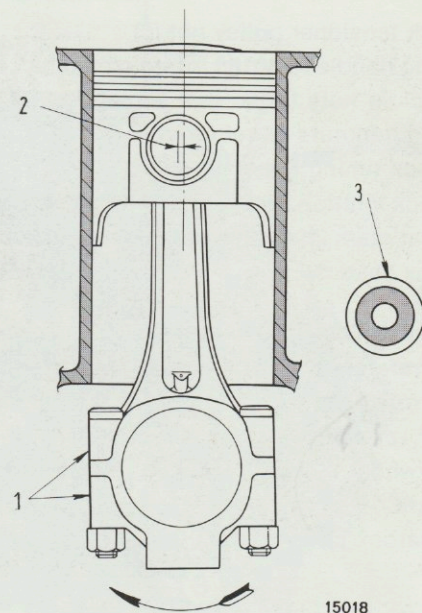
Fitting Piston/Connecting Rod Assembly

When assembling piston and connecting rod make sure the piston pin hole is offset towards the side of the reference number (1) for corresponding cylinder, stamped on con rod. When fitting piston/con rod assembly to the engine, make sure reference number (1) on con rod faces away from auxiliary shaft.

Showing Piston/Con Rod Assembly Position

- 1 Location of reference number for corresponding cylinder
- 2 Piston pin offset
- 3 Auxiliary shaft

Arrow indicates engine direction of rotation as seen from valve gear.



15018

CHECKING AND ADJUSTING THE VALVE CLEARANCE

Normal tappet clearance (adjusted cold) is:

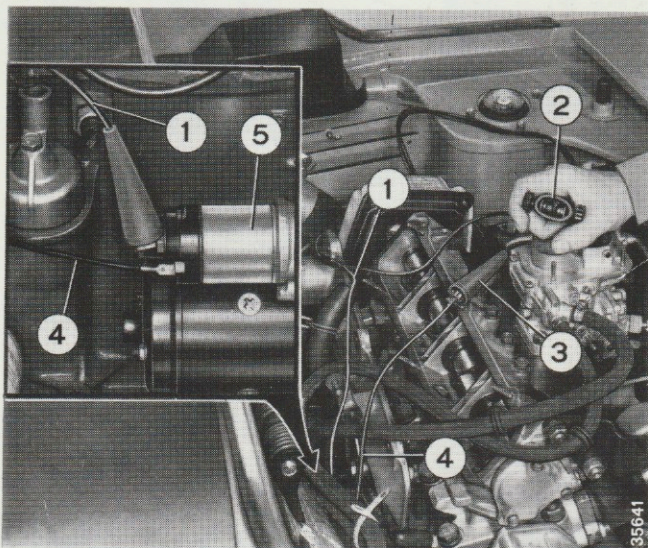
- Inlet 0,45 mm
- Exhaust 0,60 mm.

Valve Clearance Adjustment (inlet & exhaust valves):

- Turn the engine using jumper cables A. 76036 until

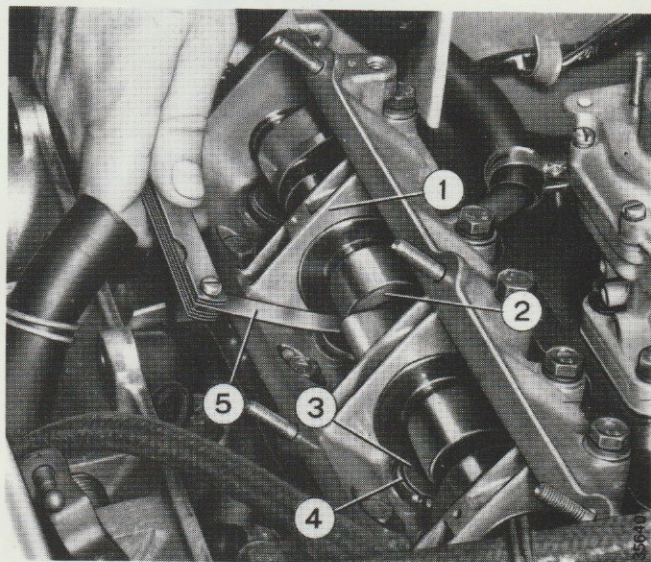
the cam lobe over the valve to be checked is pointing upwards, away from the tappet.

- Using feeler gauges A. 95113 check the clearance between the cam and the tappet.



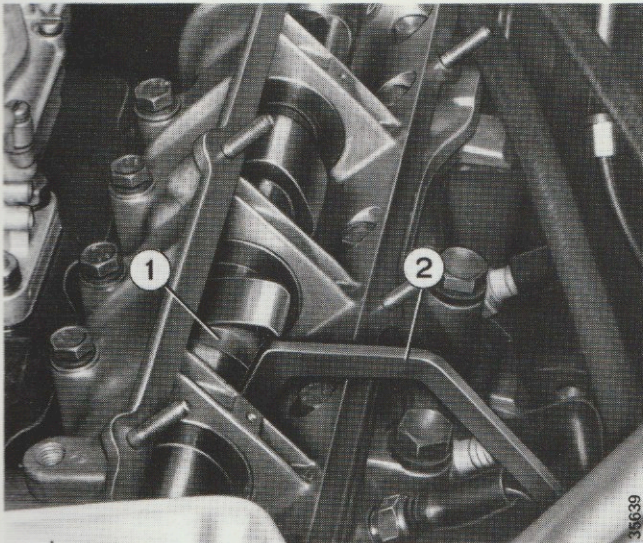
Showing Jumper Cable Connections for Cranking the Engine when Checking Valve Clearance

- 1 Terminal connected to battery +ve post
- 2 Actuating knobs A. 76036
- 3 Terminal connected to extension cable
- 4 Lead to starter motor
- 5 Solenoid



Checking Valve Clearance

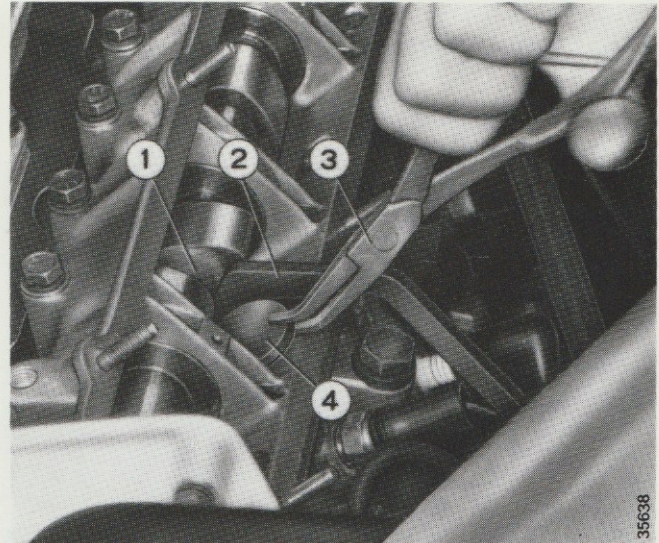
- 1 Cambox
- 2 Camshaft
- 3 Shim
- 4 Tappet
- 5 Gauge A. 95113



Using Pressure Lever A. 60421 to Push the Tappet away from the Camshaft

- 1 Camshaft
- 2 Pressure lever A. 60421

— If adjustment is needed, use pressure lever **A. 60421** to lever the tappet away from the camshaft, and remove the shims.

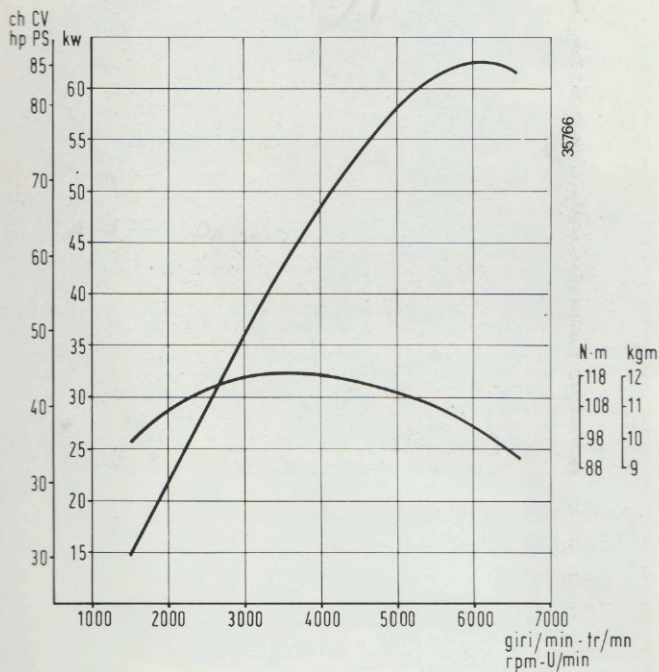


Removing Tappet Shims

- 1 Camshaft
- 2 Pressure lever A. 60421
- 3 Pliers A. 87001
- 4 Shim

— Select the correct thickness of shim, fit it into place in the tappet and remove special tool **A. 60421**

BENCH TEST OF A RECONDITIONED ENGINE



Characteristic Curves of Engine (DIN method)

The power curve shown is that obtainable with the engine overhauled and run-in, with fan, exhaust silencer and air cleaner fitted, at sea level.

Adhere to the data indicated hereunder:

Rev/min	Time in minutes	Brake load
800 to 1000	10	No load
1500	10	No load
2000	10	No load

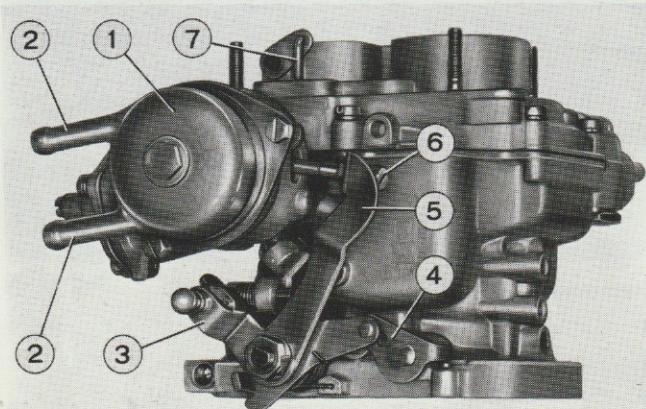
NOTE - When bench testing the engine, no attempt should be made to run the engine to its maximum rpm. The engine must be run-in while fitted to the car.

CARBURETTOR

Float Level Setting

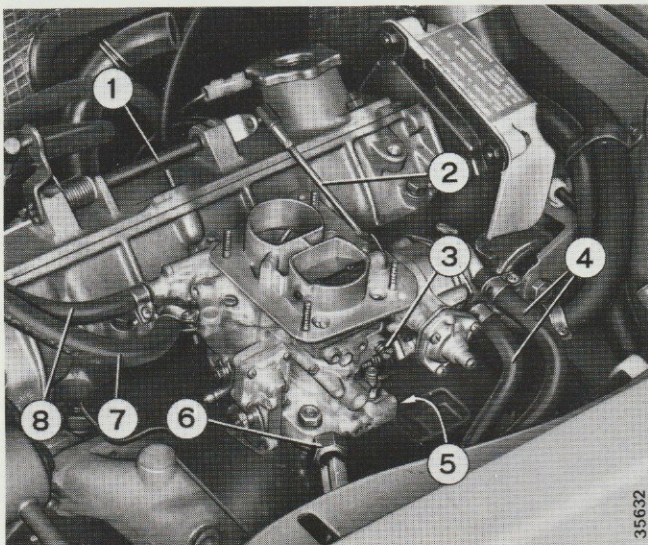
The float level setting must be carried out each time the float of the needle valve assemblies are replaced and when carburettor flooding is experienced.

Check the float level by using special gauge A. 95121: it should be $7 \pm 0,25$ mm as shown in the diagram.



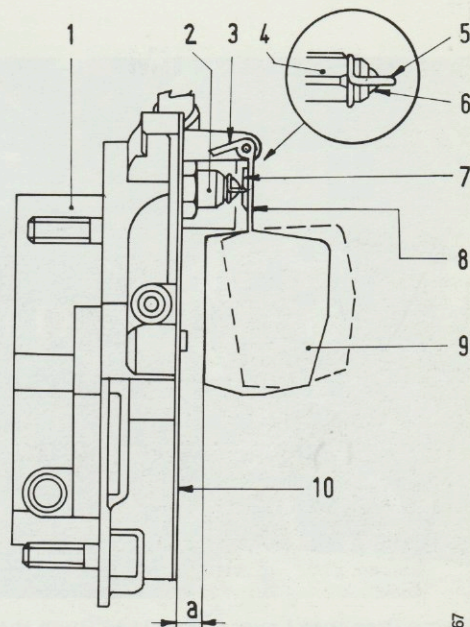
Showing Weber Carburettor, Cold Starting Device Side

- 1 Cold starting device
- 2 Heated water duct
- 3 Main throttle valve control lever
- 4 Auxiliary throttle valve control lever
- 5 Cold starting device control lever
- 6 Adjustment screw
- 7 Strangler valve control linkage



Showing Weber Carburettor, Accelerating Pump Side

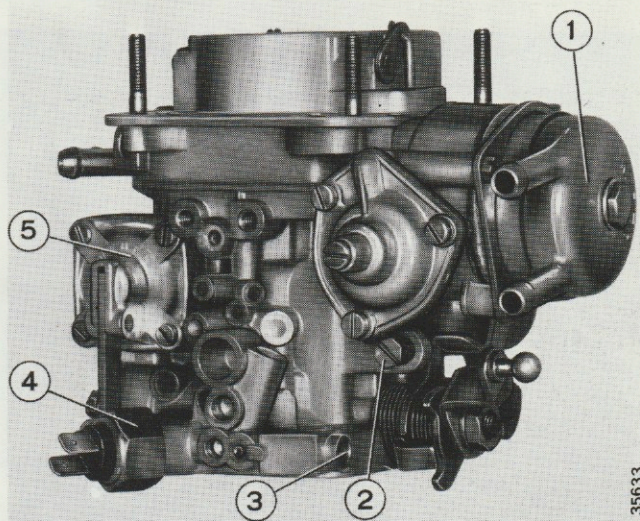
- 1 Cold starting device
- 2 Adjustment screw
- 3 Slow running speed adjustment screw with plastic plug
- 4 Carburettor fan motor switch
- 5 Accelerating pump



Carburettor Float Setting Diagram

- | | |
|---------------------|----------------|
| 1 Carburettor cover | 6 Movable ball |
| 2 Needle valve | 7 Tongue |
| 3 Float lug | 8 Float arm |
| 4 Needle | 9 Float |
| 5 Return hook | 10 Gasket |

$a = 7 \pm 0,25$ mm - distance between the float and the underface of the cover with gasket in the vertical position.

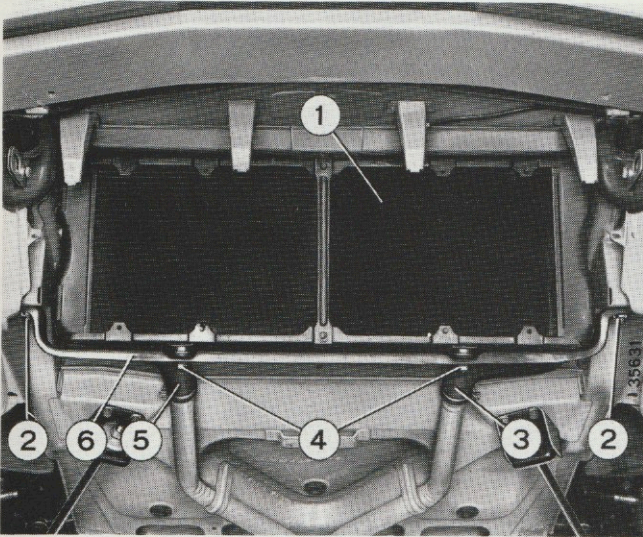


Showing a Weber Carburettor in Situ

- 1 Relay spindle
- 2 Throttle valve control spindle
- 3 Throttle valve adjustment screw
- 4 Heated water ducts
- 5 Slow running volume adjustment screw seat
- 6 Carburettor fan motor switch
- 7 Fuel feed pipe
- 8 Excess fuel recirculation pipe

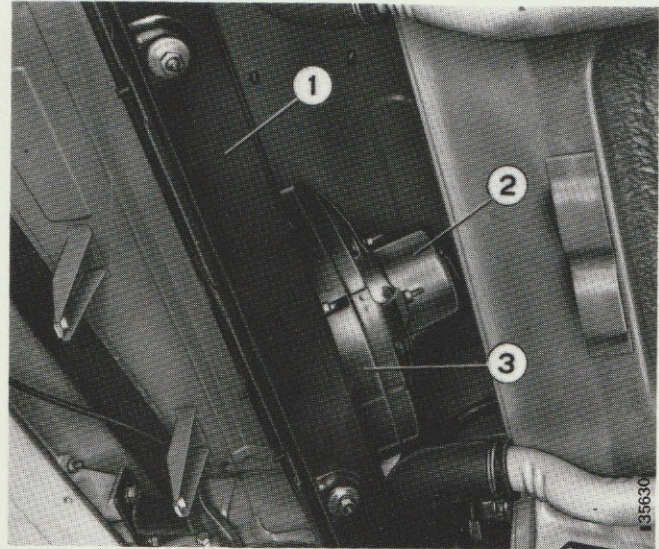
COOLING SYSTEM

RADIATOR



The Radiator on Car

- 1 Radiator
- 2 Nuts
- 3 Coolant pipe to engine
- 4 Nuts
- 5 Coolant pipe to radiator
- 6 Bracket



Location of Radiator Cooling Fan

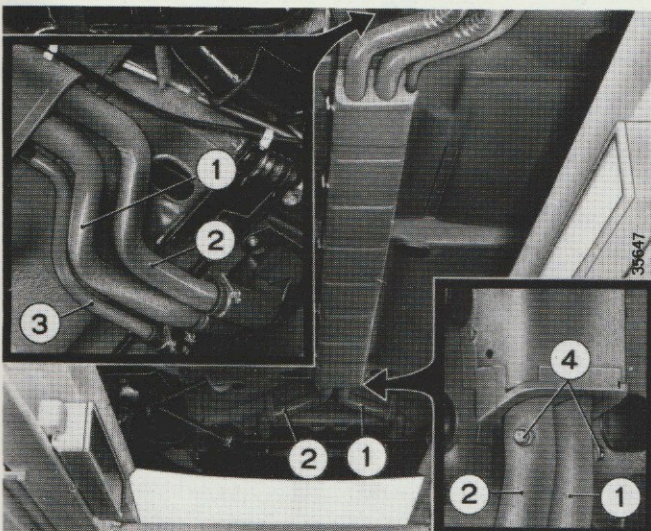
- 1 Bracket
- 2 Radiator fan
- 3 Air conveyor

The radiator is located in car front end. To remove, discorrect the bracket from the body.

To drain the cooling system remove plugs 4 from pipings

and slacken the cock on cylinder block.

To fill the system pour the coolant into the expansion tank.



Coolant Pipings

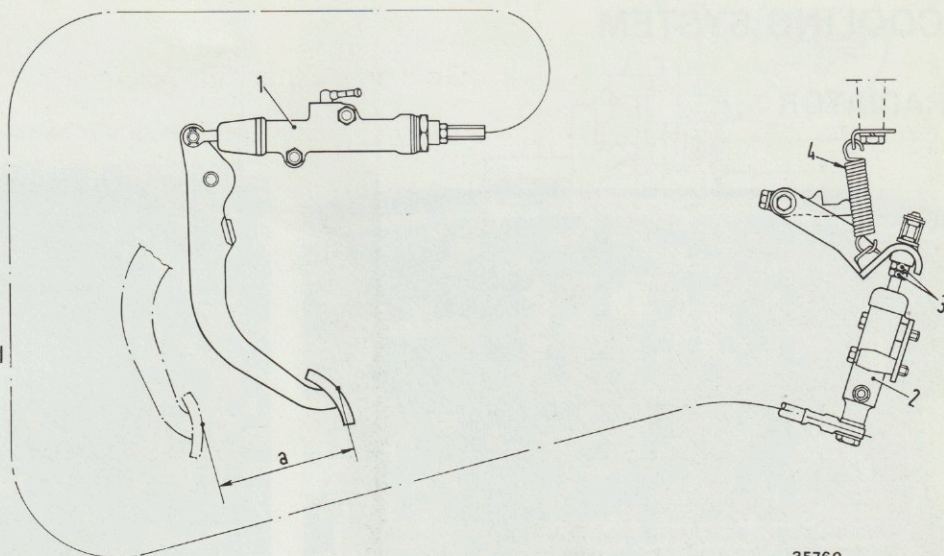
- 1 Coolant pipe to radiator
- 2 Coolant pipe to engine
- 3 Heater pipe
- 4 Drain plugs

CLUTCH

Diagram Showing Clutch Hydraulic Circuit

- 1 Master cylinder
- 2 Slave cylinder
- 3 Nut and locknut
- 4 Thrust bearing return spring

a = 120 mm: clutch pedal travel



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The clutch is hydraulically-operated with the thrust bearing in contact with disc spring.

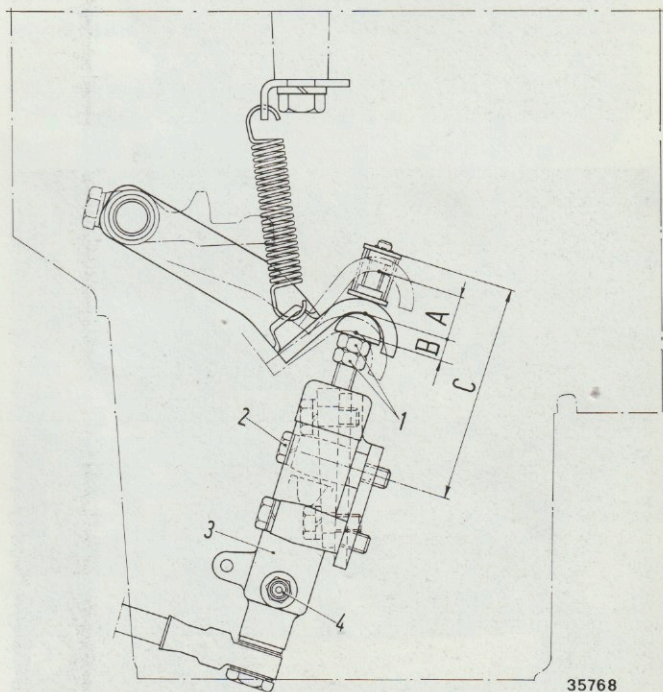
When refitting the clutch assembly be careful to dimension C.

After replacement of hydraulic components bleed the system through screw 4 of the slave cylinder.

Section of Clutch through the Forked Lever and the Slave Cylinder

- A = 19,66 mm Declutching travel corresponding to a minimum clutch disc separation of 1,8 mm.
- B = 9,1 mm Displacement of clutch release lever following disc facing wear.
- C = 95 mm Dimension for a correct fit.

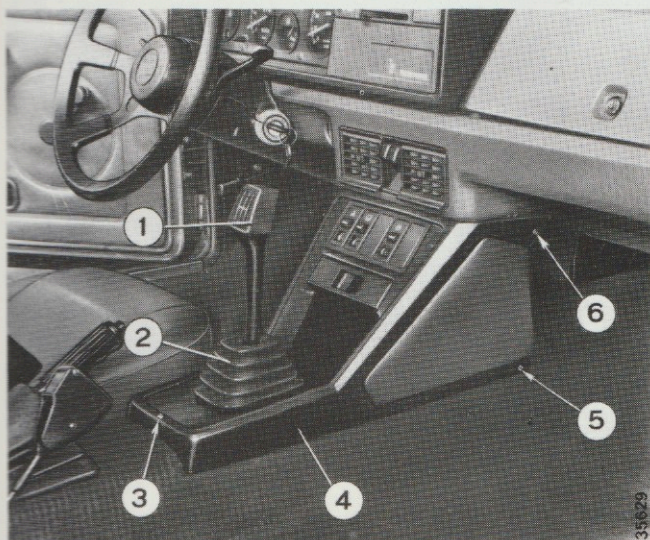
- 1 Nut and locknut
- 2 Slave cylinder retaining bolt
- 3 Slave cylinder
- 4 Bleed screw



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TRANSAXLE

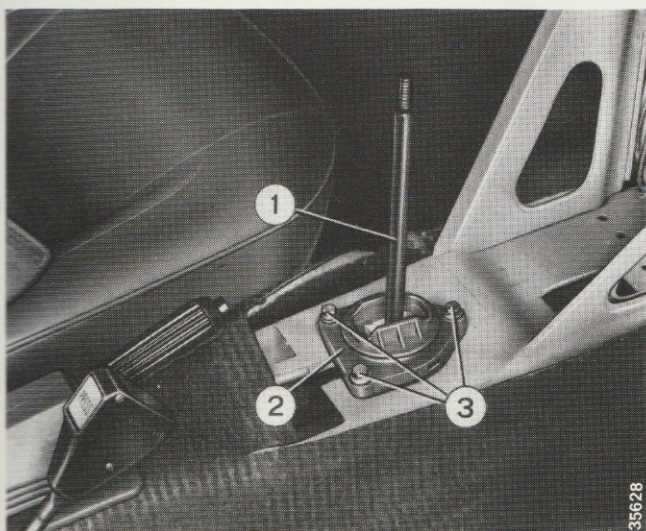
Gearbox External Control



To remove tunnel covering remove handle (1) boot (2) and covering retaining screws.

Removing Gearshift Lever, Boot and Tunnel Covering

- 1 Handle
- 2 Boot
- 3 Covering retaining screw
- 4 Tunnel covering
- 5 Screw
- 6 Screw

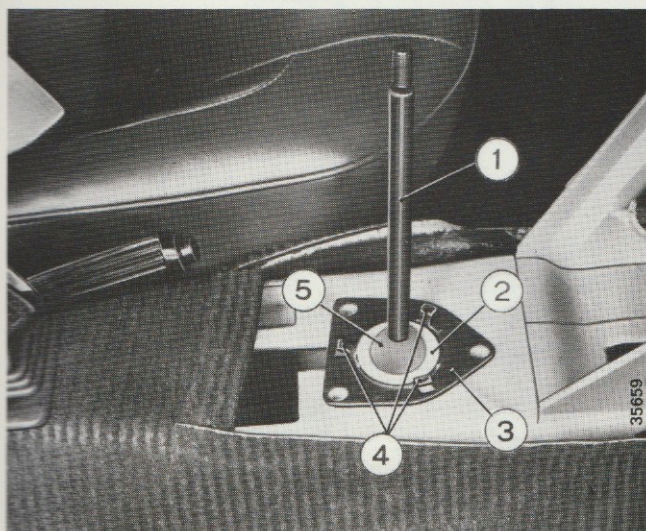


To remove the gearshift lever proceed as follows:

— Remove tunnel covering, boot and handle then remove the screws securing upper plate (3) to body.

Removing the Gearshift Lever

- 1 Gearshift lever
- 2 Plate
- 3 Retaining screws



— Separate the upper plate from the lower one (2) by rotating the upper plate until it comes free from fasteners (4).

Removing the Lower Plate

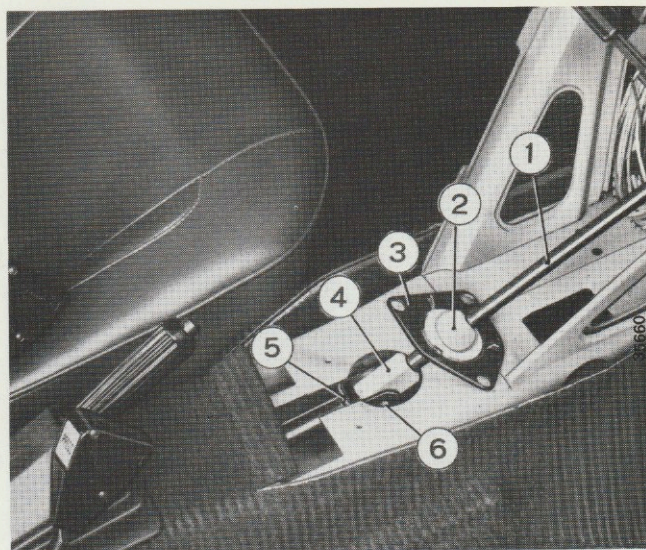
- 1 Gearshift lever
- 2 Eyeball seat
- 3 Lower plate
- 4 Upper plate fasteners
- 5 Eyeball

Disconnecting the Gearshift Lever from Linkage

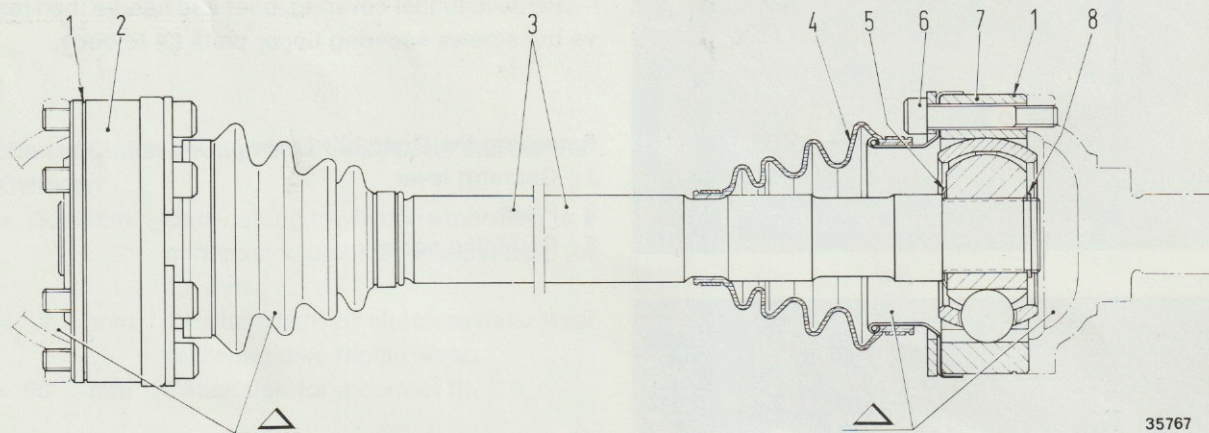
- 1 Gearshift lever
- 2 Eyeball
- 3 Lower plate
- 4 Bush
- 5 Linkage
- 6 Bolt and nut

NOTE - When an incorrect gearshifting is detected adjust the gearbox control system.

Make sure the neutral position of the lever is correct. If necessary adjust through the slots of control linkage.



Half Shaft



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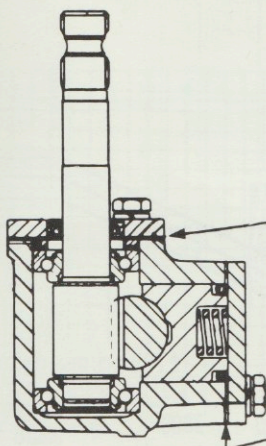
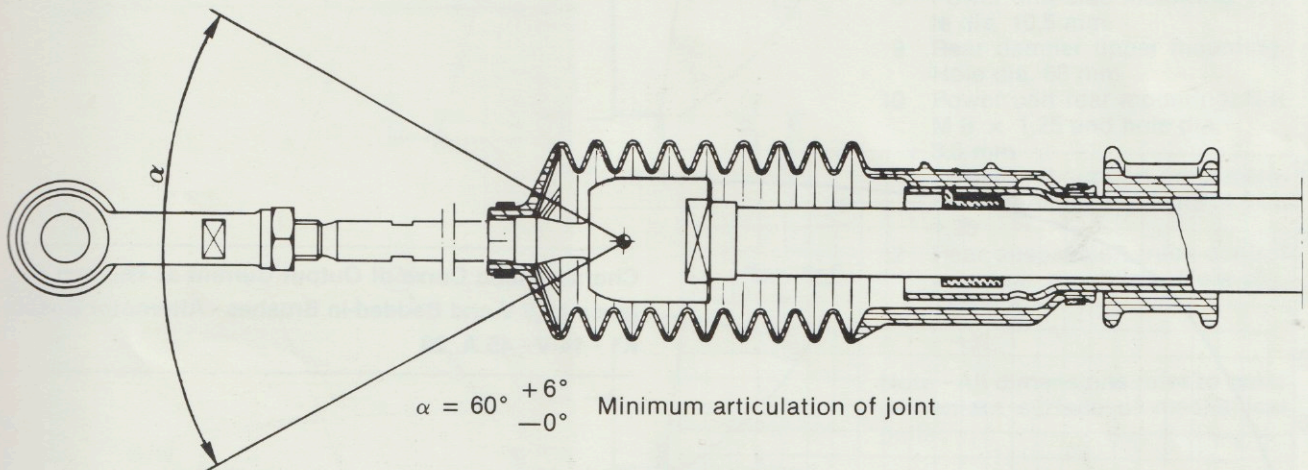
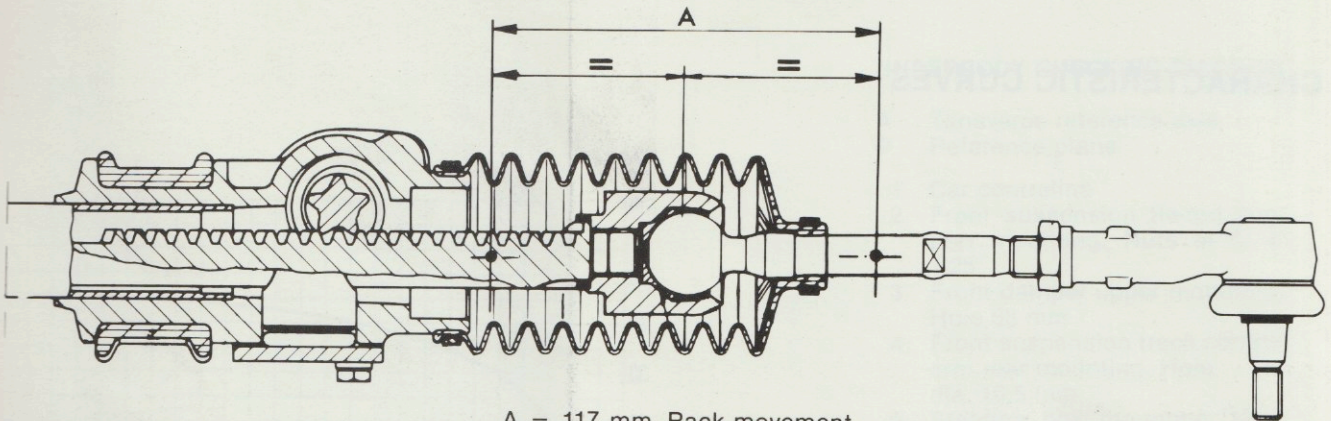
- 1 Reference splines
- 2 Constant-velocity joint, gearbox side
- 3 Half shaft
- 4 Boot

- 5 Spring washer
- 6 Screw
- 7 Constant-velocity joint, wheel side
- 8 Snap ring

△ Lubricate with Grasso fiat MRM2

Splines (1) of constant-velocity joints must be facing the associated flanges.

STEERING



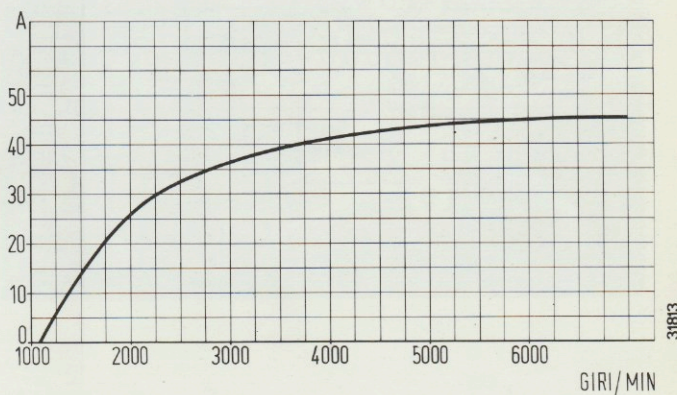
Adjust pinion bearings with shims available in the following sizes: 0,12 - 0,20 - 0,25 - 0,50 mm

Adjust rack-to-pinion play with shims available in the following sizes: 0,10 - 0,15 mm

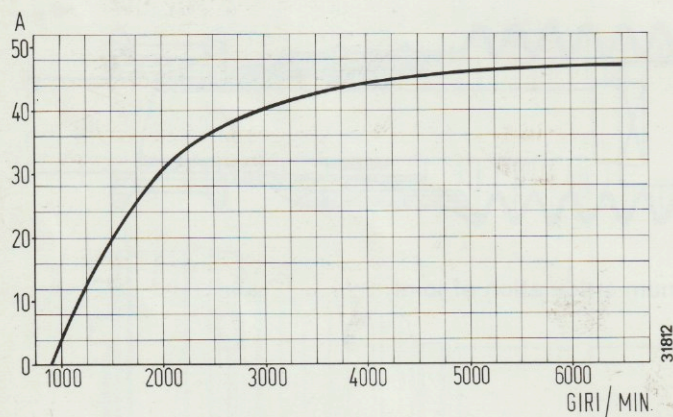
ELECTRICAL SYSTEM

CHARACTERISTIC CURVES

Characteristic Curve of Starter Motor Magneti Marelli
AA 125 - 14 V - 45 A



GIRI/MIN = rev/min

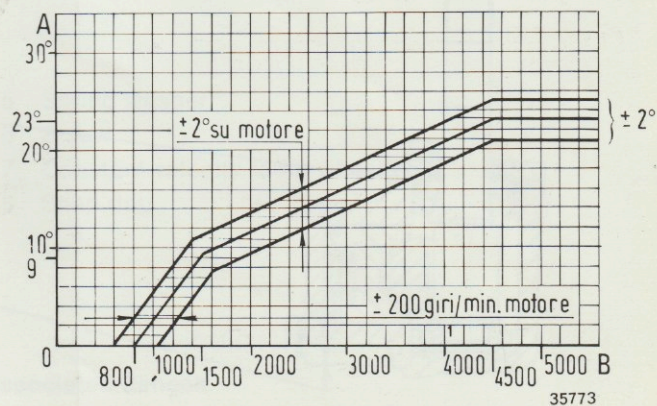


Characteristic Curve of Output Current at Thermal Balance 13,5 V and Bedded-in Brushes - Alternator Bosch
K1 - 14 V - 45 A. 20

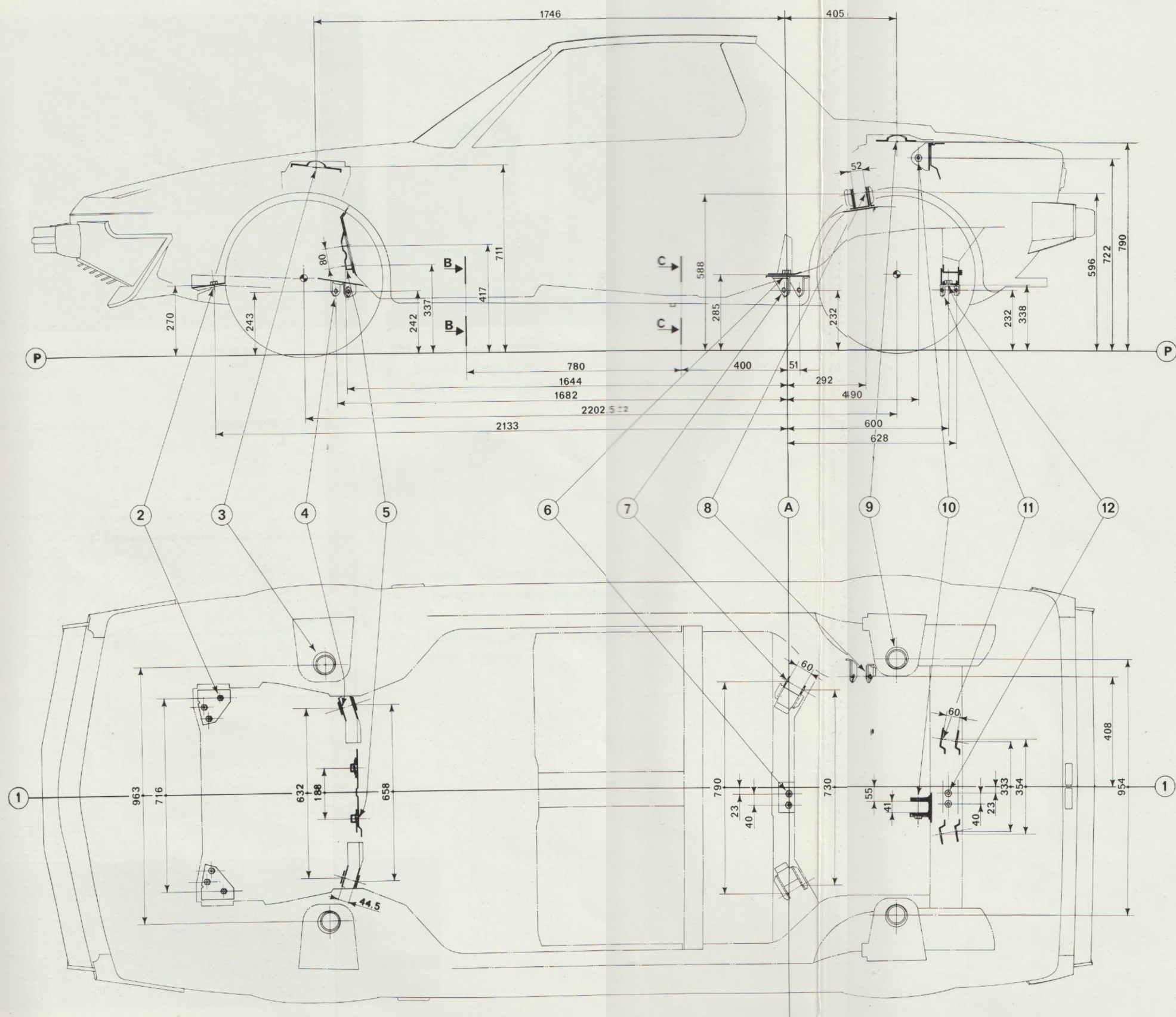
GIRI/MIN = rev/min

Chart Showing the Automatic Centrifugal Advance Curves of the Ignition Distributor in Place

A = Advance degrees versus engine
B = Engine rev/min

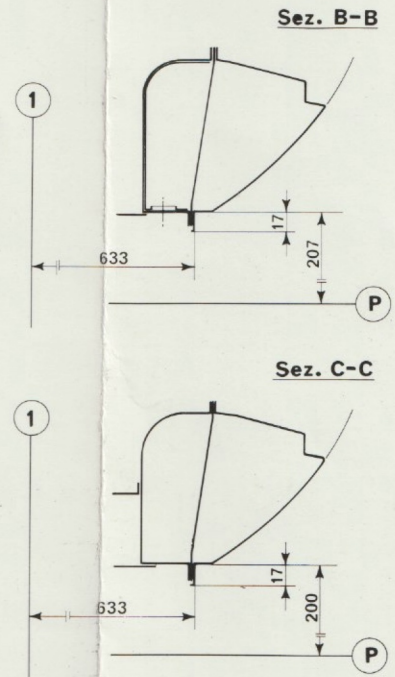


UNDERBODY CHECKING DIAGRAM



UNDERBODY CHECKING DIAGRAM

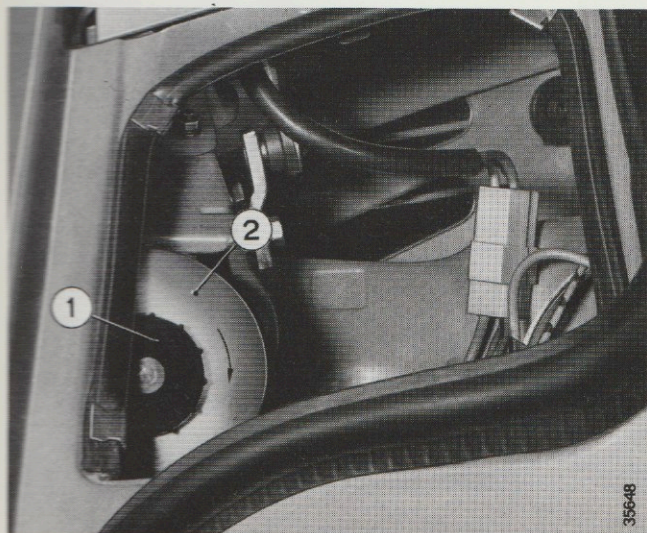
- A Tansverse reference axis
- P Reference plane
- 1 Car centreline
- 2 Front suspension tie-rod support mounting. Nuts M 8 x 1,25
- 3 Front damper upper mounting. Hole 68 mm
- 4 Front suspension track control arm rear mounting. Hole dia. 10,5 mm
- 5 Steering box mounting. Hole dia. 8,5 mm
- 6 Power unit support crossmember front mounting. Nuts M 8 x 1,25
- 7 Rear suspension track control arm front mounting. Holes dia. 14,5 mm
- 8 Power unit side mounting. Hole dia. 10,5 mm
- 9 Rear damper upper mounting. Hole dia. 68 mm
- 10 Power unit rear mounting. Nut M 8 x 1,25 and hole dia. 8,5 mm
- 11 Power unit support crossmember rear mounting. Nuts M 8 x 1,25
- 12 Rear suspension track control arm rear mounting. Hole dia. 14,5 mm



Note - All dimensions refer to outer or contact surface of mechanical units.

Note - All dimensions refer to outer or contact surface of mechanical units.

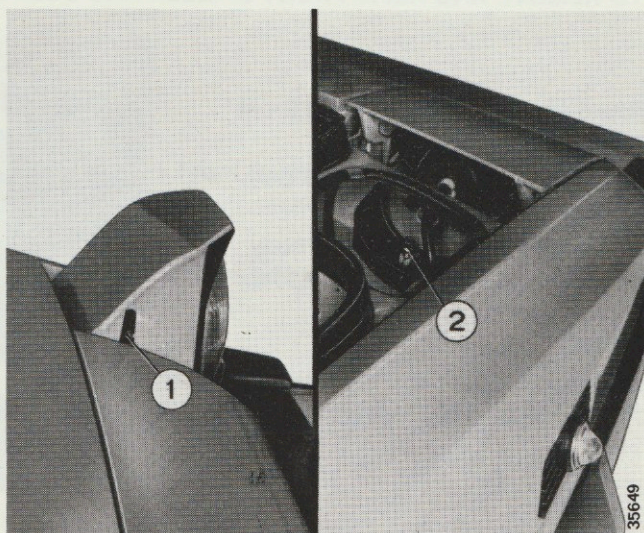
HEADLAMP ALIGNMENT



Concealed Headlamp Controls Housing

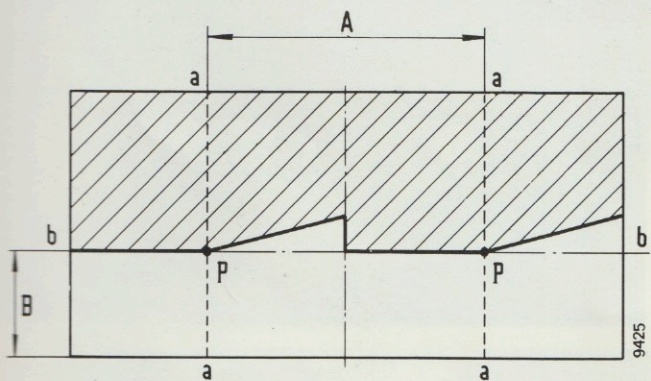
- 1 Manual control
- 2 Motor

The arrow on motor casing indicates how to turn the control knob



Headlamp Adjustment Screws

- 1 Dipped beam horizontal adjustment screw
- 2 Main beam vertical adjustment screw

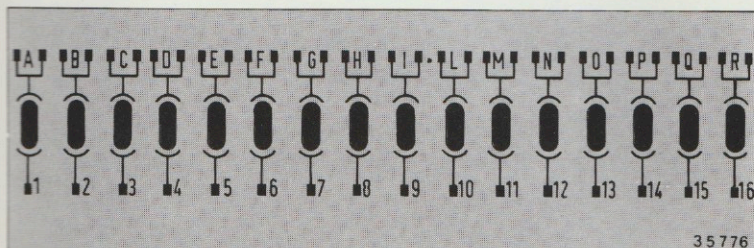


Headlamp Alignment Diagram

- A = Distance between headlamps centre
- B = C — 3,5 cm
- C = Headlamp centre height above ground as measured when aligning

FUSES

See also page 27

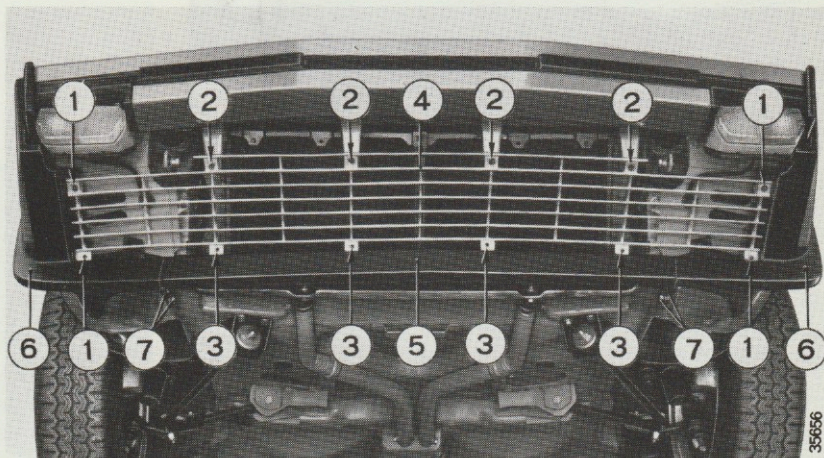


BODY

TO REMOVE AND REFIT FRONT SPOILER AND BUMPER COMPLETE WITH CAPS

Removing Radiator Grille and Front Spoiler

- 1 Screws retaining grille to bumper caps
- 2 Screws retaining grille to body
- 3 Screws retaining grille to spoiler
- 4 Radiator grille
- 5 Front spoiler
- 6 Bumper caps
- 7 Screws retaining spoiler to body

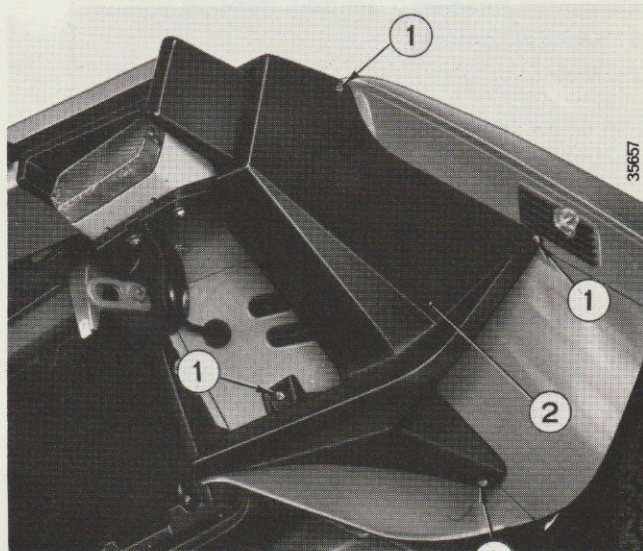


The X1/9 - five speed is fitted with a front spoiler acting also as air conveyor for the radiator, and with bumper caps mating spoiler design, made from expanded foam.

To remove the front spoiler first remove the radiator grille; the same applies when removing front bumper caps.

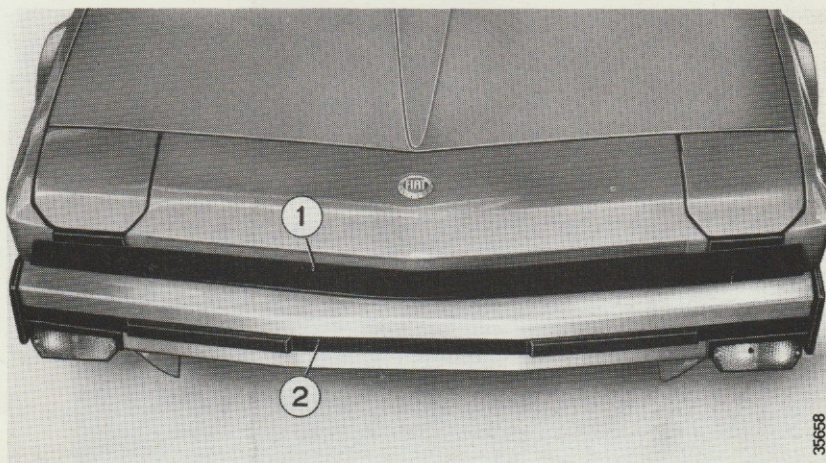
Removing Bumper Caps

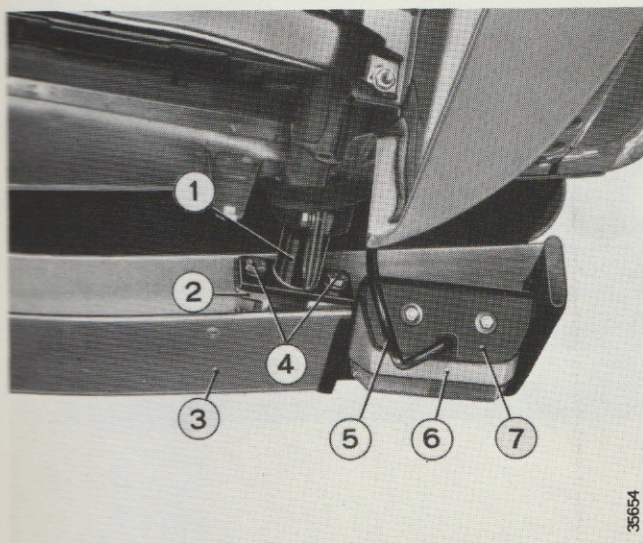
- 1 Screws
- 2 Cap



Front Bumper

- 1 Bumper moulding
- 2 Front bumper complete with side lights and direction indicators

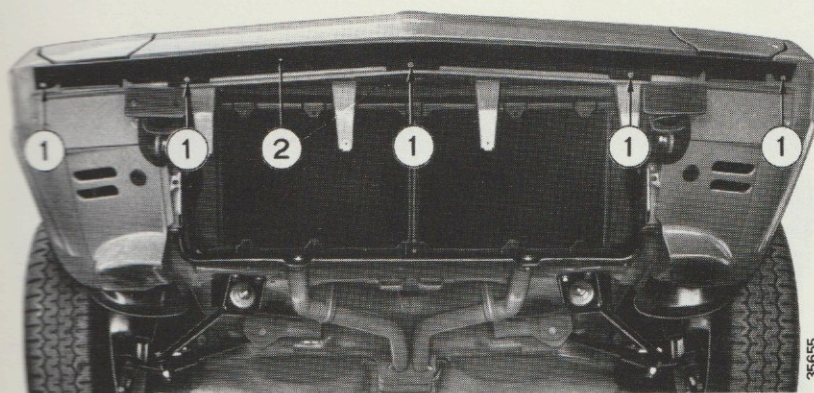




To remove the front bumper disconnect side/direction indicator cable (5).
Refitting is the reverse of the removal procedure.

Removing the Front Bumper

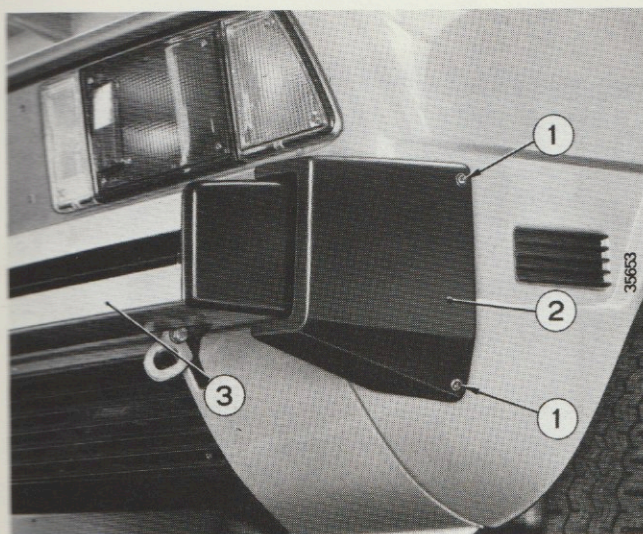
- 1 Bumper support, anchored to the body
- 2 Bumper support
- 3 Front aluminium bumper
- 4 Bolts
- 5 Cable
- 6 Side/direction indicator lamps
- 7 Side/direction indicator lamp support



Removing Front Bumper Moulding

- 1 Bolts
- 2 Upper moulding

REMOVING AND REFITTING REAR BUMPER COMPLETE WITH CAPS



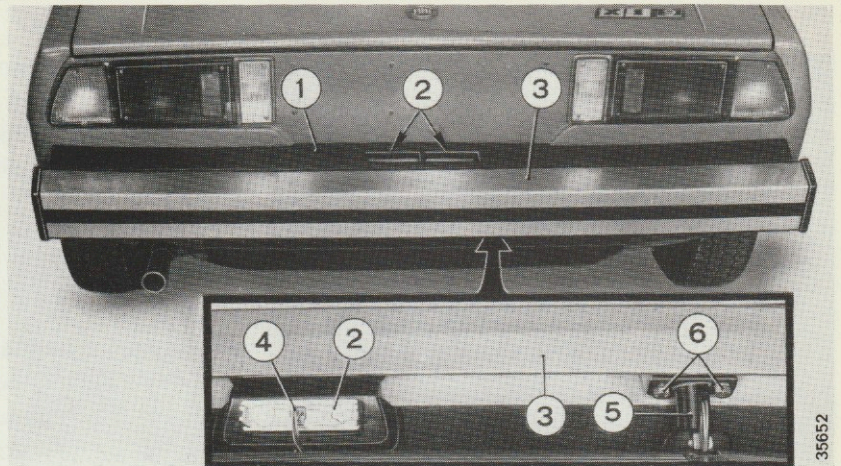
Rear damper is made from anodised aluminium and caps are made from expanded foam.
Caps are secured to the body by means of two bolts (1).

Removing Rear Bumper Caps

- 1 Bolts
- 2 Cap
- 3 Rear bumper

Removing the Rear Bumper

- 1 Bumper moulding
- 2 Number plate lamps
- 3 Rear bumper
- 4 Number plate lamp cable
- 5 Rear bumper support anchored to the body
- 6 Bolts



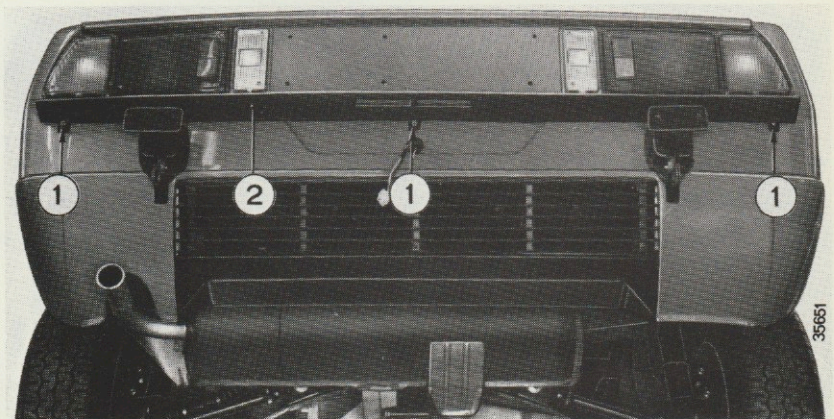
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To remove the rear bumper first disconnect number plate lamp cable (4).

Bumper refitting is the reverse of the removal procedure.

Removing Rear Bumper Moulding

- 1 Bolts
- 2 Moulding



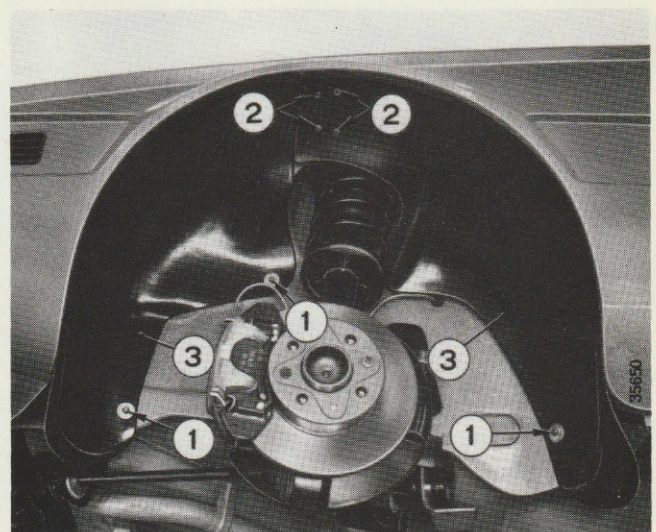
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FRONT WHEELBOX LINING

Front wheelboxes are provided with linings in two sections, secured to the body with bolts (1) and rivets (2).

Front Wheelbox Lining

- 1 Bolts
- 2 Rivets
- 3 Lining



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