

Notes		Specified value	Measured value
<b>Vehicle identification</b>			
No. of cylinders	Type	4/OHC	
Capacity	cc	1905	
Compression ratio	:1	21,8	
<b>Injection system</b>			
Fuel/injection pump assembly	Make	Bosch	
Fuel/injection pump assembly	Type	VER 445.2	
Pump type		Rotary	
Injection sequence		1-3-4-2	
Injector nozzle	Make	Bosch	
<b>Tuning and emissions</b>			
Plunger travel (pump)	mm ABDC	0,66±0,02	
Crankshaft position (n = ATDC)	°BTDC	0	
Adjusting method	Engine/Pump	Special Tool/ Dial gauge	
Dynamic timing	v = BTDC, n = ATDC	v	
- AVL, Bosch, Souriau, Sun, VLT4139, Hermann	°/rpm	11±1	
Idle speed	rpm	750-800	
Idle speed - alternative	rpm	AC=800-850	
Rated no load speed	rpm	5100±80	
Oil temperature	°C	80	
Idle speed - for smoke test	rpm	675-875	
Governed speed range - for smoke test	rpm	5000-5200	
Maximum time at governed speed	secs	1,0	
Test mode	A/B	B	
Probe type	1/2	1	
Smoke opacity - EU limit	m-1 (%)	3,00 (73)	
<b>Starting and charging</b>			
Battery	V/RC(Ah)	12/95 (62)	
Maximum cranking amps	A	167-205	
Alternator output	A/V/rpm	76/14/3000	
<b>Glow plugs</b>			
Glow plug nominal rating	V/A	11	
Glow plug - part no.	Beru	909 MJ	
Glow plug - part no.	Bosch	0 250 201 033	
Glow plug - part no.	Champion	CH163	
Glow plug - part no.	Lucas/CAV	HDS274	
<b>Service checks and adjustments</b>			
Valve clearance - INLET	mm	0,15±0,07 cold	
Valve clearance - EXHAUST	mm	0,30±0,07 cold	
Oil pressure	bar/rpm	5,0/4000	
Radiator cap	bar	1,4	
Thermostat (primary/secondary) open	°C	83	
<b>Lubricants and capacities</b>			
Engine oil grade - cold climate	SAE	5W/30 Semi-synthetic	
Engine oil grade - moderate climate	SAE	10W/40 Semi-synthetic	
Engine oil grade - hot climate	SAE	15W/50 Semi-synthetic	

	Engine oil classification	API/ACEA	CF/B3-96	
	Engine oil grade - alternative - moderate climate	SAE	5W/40 Synthetic	
	Engine oil classification - alternative - moderate climate	API/ACEA	CF/B3-96	
89	Engine with filter(s)	litres	4,5	
	Manual gearbox oil grade	SAE	75W/80	
	Manual gearbox 4/5 speed	litres	2,0	
	Cooling system	litres	9,0	
	Brake fluid	Type	DOT 4	
	Power steering fluid	Type	Dexron II	
	Power steering fluid	litres	1,0	

### Tightening torques

	Cylinder head instructions			
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### Cylinder head

52		Maximum bolt length		
	Stage 1	Tighten	20 Nm	
	Stage 2	Tighten	60 Nm	
	Stage 3	Tighten	220°	

### Other tightening torques

	Main bearings	Renew bolts/nuts	No	
	Main bearings	Stage 1	35 Nm	
	Main bearings	Stage 2	70 Nm	
	Big end bearings	Renew bolts/nuts	No	
	Big end bearings	Stage 1	25 Nm	
	Big end bearings	Stage 2	50 Nm	
	Oil pump to cylinder block		20 Nm	
	Sump bolts		20 Nm	
	Sump drain bolt		30 Nm	
	Flywheel/driveplate		50 Nm	
	Clutch to flywheel		20 Nm	
	Crankshaft pulley/damper centre bolt		40 Nm+51°	
	Camshaft sprocket/gear		45 Nm	
	Camshaft carrier/cap		20 Nm	
	Camshaft/rocker cover		10 Nm	
	Inlet manifold to cylinder head		25 Nm	
	Exhaust manifold to cylinder head		30 Nm	
	Injector/clamp		90 Nm	
	Fuel/injection pump sprocket/gear		50 Nm	
	Fuel/injection pump flange		20 Nm	
	Fuel/injection pump mounting		20 Nm	
45	Front hub			
	Rear hub		190 Nm	
	Steering track rod end		35 Nm	
	Brake disc to hub	Front	10 Nm	
	Brake caliper to carrier	Front	30 Nm	
	Brake caliper carrier to hub	Front	110 Nm	
	Back plate to hub	Rear	40 Nm	
	ABS sensor	Front	10 Nm	
	ABS sensor	Rear	10 Nm	
	Road wheels		80 Nm	

### Brake disc and drum dimensions

	Minimum disc thickness - ventilated	Front	18,4 mm	
	Disc thickness variation	Front	0,010 mm	
	Disc runout	Front	0,05 mm	
79	Maximum drum diameter	Rear	181,7 mm	
	Minimum pad thickness	Front	2 mm	
	Parking brake travel	No. of notches	6-8	

### Air conditioning

	Air conditioning refrigerant	Type	R134a	
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Air conditioning refrigerant quantity	grams	725±25	
Air conditioning oil	Type	SP10	
Air conditioning oil quantity	cm <sup>3</sup>	135±15	
Air conditioning oil viscosity	ISO	46	

#### Autodata Note 89

Aluminium sump = 4 litres

#### Autodata Note 52

A: L = 146,5 mm Max

B: L = 150,5 mm Max

+ Molykote G Rapid Plus

Fig. 82626

#### Autodata Note 45

M20 → VIN 808980 = 265 Nm

M20 VIN 808981 → = 245 Nm

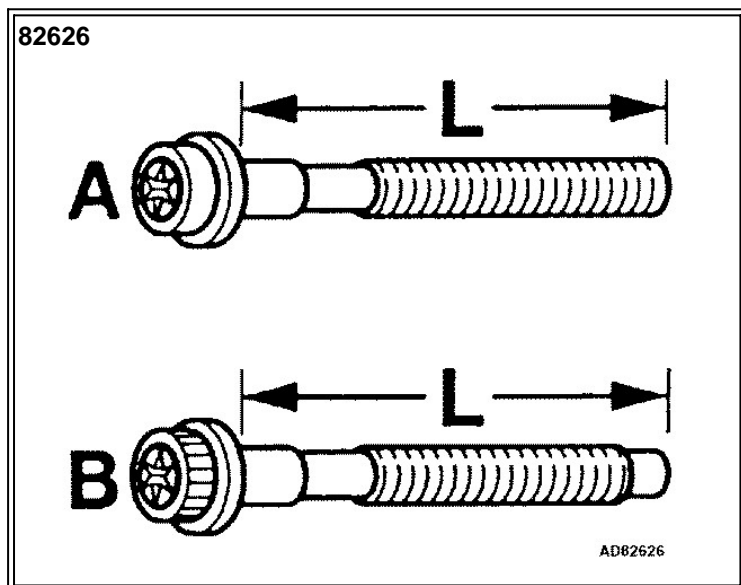
M24 = 320 Nm

#### Autodata Note 79

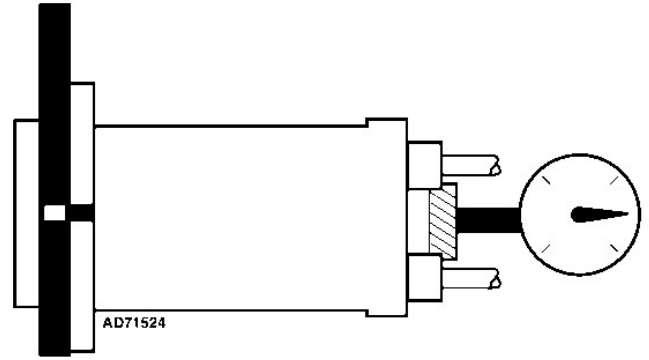
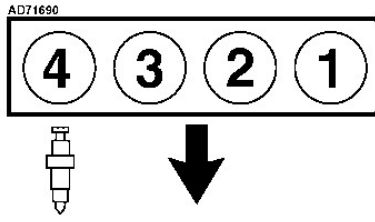
Turbo = 204 mm

ABS = 204 mm

Est/Kmb/Brk = 228,8 mm



## Cylinder layout



## Tightening sequence

