

V8 PETROL ENGINE

Type	V8
Number of cylinders	Eight, two banks of four
Bore	88,90 mm (3.500 in)
Stroke	71,12 mm (2.800 in)
Capacity	3528 cc (215 in ³)
Valve operation	Overhead by push-rod
Maximum power - B.H.P	144.5 at 5000 rpm
Maximum power - KW	107.7 at 5000 rpm
Maximum torque	260.2 Nm (192 lb/ft) at 2000 rpm

Crankshaft

Main journal diameter	58,409 - 58,422 mm (2.2996 - 2.3001 in)
Minimum regrind diameter	57,393 - 57,406 mm (2.2596 - 2.2601 in)
Crankpin journal diameter	50,800 - 50,812 mm (2.0000 - 2.0005 in)
Minimum regrind diameter	49,784 - 49,797 mm (1.9600 - 1.9605 in)
Crankshaft end thrust	Taken on thrust washers of centre main bearing
Crankshaft end float	0,10 - 0,20 mm (0.004 - 0.008 in)

Main bearings

Number and type	5 Vandervell shells
Material	Lead-indium
Diametrical clearance	0,010 - 0,048 mm (0.0004 - 0.0019 in)
Undersize bearing shells	0,254 mm, 0,508 mm (0.010 in, 0.020 in)

Connecting rods

Type	Horizontally split big-end, plain small-end
Length between centres	143,81 - 143,71 mm (5.662 - 5.658 in)

Big-end bearings

Type and material	Vandervell VP lead-indium
Diametrical clearance	0,015 - 0,055 mm (0.0006 - 0.022 in)
End-float crankpin	0,15 - 0,36 mm (0.006 - 0.014 in)
Undersize bearing shells	0,254 mm, 0,508 mm (0.010 in, 0.020 in)

Gudgeon pins

Length	72,67 - 72,79 mm (2.861 - 2.866 in)
Diameter	22,215 - 22,220 mm (0.8746 - 0.8748 in)
Fit-in connecting rod	Press fit
Clearance in piston	0,002 - 0,007 mm (0.0001 - 0.0003 in)

Pistons

Clearance in bore, measured at bottom of skirt at right angles to piston pin	0,018 - 0,040 mm (0.0007 - 0.0016 in)
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Piston rings

Number of compression	2
Number of oil	1
No. 1 compression ring	Chrome parallel faced
No. 2 compression ring	Stepped to 'L' shaped and marked 'T' or 'TOP'
Width of compression rings	1,56 - 1,59 mm (0.0614 - 0.0626 in)
Compression ring gap	0,44 - 0,57 mm (0.017 - 0.022 in)
Oil ring type	Perfect circle, type 98-6
Oil ring width	4,811 mm (0.1894 in) maximum

Camshaft

Location	Central
Bearings	Non serviceable
Number of bearings	5
Drive	Chain 9.52 mm (0.375 in) pitch x 54 pitches.

Valves

Length:	
- Inlet	116,59 - 117,35 mm (4.590 - 4.620 in)
- Exhaust	116,59 - 117,35 mm (4.590 - 4.620 in)
Seat angle:	
- Inlet	45° to 45.5°
- Exhaust	45° to 45.5°
Head diameter:	
- Inlet	39,75 - 40,00 mm (1.565 - 1.575 in)
- Exhaust	34,226 - 34,480 mm (1.3475 - 1.3575 in)
Stem diameter:	
- Inlet	8,664 - 8,679 mm (0.3411 - 0.3417 in)
- Exhaust	8,651 - 8,666 mm (0.3406 - 0.3412 in)
Stem to guide clearance:	
- Inlet	0,025 - 0,066 mm (0.0010 - 0.0026 in)
- Exhaust	0,038 - 0,078 mm (0.0015 - 0.0031 in)
Valve lift (Inlet and Exhaust)	9,93 mm (0.390 in)
Valve spring length fitted	40,4 mm (1.590 in) at pressure of 29.5 kg (65 lb)

Lubrication

System	Wet sump, pressure fed
System pressure, engine warm at 2000 rpm	28 p.s.i. (1.93 bar)
Oil filter (external)	Full flow, self-contained cartridge
Oil filter (internal)	Gauze. Pump intake filter
Oil pump type	Gear
Oil pressure relief valve	Non-adjustable incorporated in filter
Relief valve spring:	
- Free length	81,2 mm (3.200 in)
- Compressed length at 4,2 kg (9.3 lb) load	45,7 mm (1.800 in)

200Tdi ENGINE

Type	Direct injection, turbocharged, intercooled
Number of cylinders	4
Bore	90,47 mm (3.562 in)
Stroke	97,00 mm (3.822 in)
Capacity	2495 cc
Compression ratio	19.5:1 + - 0.5:1
Valve operation	O.H.V. pushrod operated
Turbo charger	Garrett T25

Crankshaft

Main bearing journal diameter	63,475 - 63,487 mm (2.499 - 2.4993 in)
Regrind dimensions	63,2333 - 63,246 mm (2.4895 - 2.490 in)
	Use 0.010 in U/S bearings
Crankpin journal diameter	58,725 - 58,744 mm (2.312 - 2.31275 in)
Regrind dimensions	58,4708 - 58,48985 mm (2.30200 - 2.30275 in)
	Use 0.010 in U/S bearings
Crankshaft end thrust	Taken on thrust washers at centre main bearing
Crankshaft end float	0,05 - 0,15 mm (0.002 - 0.006 in)

Main bearings

Number and type	5 halved shells with oil grooves
Diametrical clearance	0,0792 - 0,0307 mm (0.0031 - 0.0012 in)

Connecting rods

Length between centres	175,38 - 175,43 mm (6.905 - 6.907 in)
Diametrical clearance (big-end bearings)	0,025 - 0,075 mm (0.001 - 0.003 in)
End float on crankpin	0,15 - 0,356 mm (0.006 - 0.014 in)

Pistons

Type	Aluminium alloy, combustion chamber in crown
Skirt diametrical clearance (at right angle to gudgeon pin)	0,025 - 0,05 mm (0.001 - 0.002 in)
Maximum height above combustion face	0,8 mm (0.031 in)

Gudgeon pins

Type	Floating
Fit in piston	Hand push fit
Diameter	30,1564 - 30,1625 mm (1.18726 - 1.18750 in)
Clearance in connecting rod	0,0036 - 0,0196 mm (0.00014 - 0.00077 in)

Piston rings

Type:	
- Top	Chamfered friction edge, chrome plated
- Second	Taper faced
- Oil control	Expander and rails
Gap in bore:	
- Top	0,40 - 0,65 mm (0.0157 - 0.0255 in)
- Second	0,30 - 0,50 mm (0.0118 - 0.0196 in)
- Oil control	0,3 - 0,6 mm (0.011 - 0.023 in)
Clearance in piston grooves:	
- Top	0,167 - 0,232 mm (0.0065 - 0.0091 in)
- Second	0,05 - 0,08 mm (0.0019 - 0.0031 in)
- Oil control	0,05 - 0,08 mm (0.0019 - 0.0031 in)

Camshaft

Drive	30 mm (1.2 in) wide dry toothed belt
Location	Right hand side (thrust side)
End float	0,1 - 0,2 mm (0.004 - 0.008 in)
Number of bearings	4
Material	Steel shell, white metal lined

Valves

Tappet clearance:	
- Inlet and exhaust	0,20 mm (0.008 in)
Seat angle:	
- Inlet	30°
- Exhaust	45°
Head diameter:	
- Inlet	39,35 - 39,65 mm (1.549 - 1.560 in)
- Exhaust	36,35 - 36,65 mm (1.431 - 1.443 in)
Stem diameter:	
- Inlet	7,960 - 7,975 mm (0.313 - 0.314 in)
- Exhaust	7,940 - 7,960 mm (0.212 - 0.313 in)
Valve lift:	
- Inlet	9,93 mm (0.401 in)
- Exhaust	10,26 mm (0.404 in)
Cam lift:	
- Inlet	6,81 mm (0.268 in)
- Exhaust	7,06 mm (0.278 in)
Valve head stand down	
- Inlet and exhaust	0,9 - 1,1 mm (0.035 - 0.040 in)

Valve springs

Type	Single coil
Length, free	46,28 mm (1.822 in)
Length, under 21 kg (46 lb) load	40,30 mm (1.587 in)

Lubrication

System	Wet sump, pressure fed
Pressure, engine warm at normal operating speeds	25 - 55 p.s.i. (1.76 - 3.86 kgf/cm ²)
Oil pump:	
- Type	Double gear 10 teeth, sintered iron gears
- Drive	Splined shaft from camshaft skew gear
- End float of both gears	0,026 - 0,135 mm (0.0009 - 0.0045 in)
- Radial clearance of gears	0,025 - 0,075 mm (0.0008 - 0.0025 in)
- Backlash of gears	0,1 - 0,2 mm (0.0034 - 0.0067 in)
Oil pressure relief valve	Non-adjustable
Relief valve spring:	
- Full length	67,82 mm (2.670 in)
- Compressed length at 2.58 kg (5.7 lb) load	61,23 mm (2.450 in)
Oil filter	Screw-on disposable canister
Engine oil cooler	Combined with coolant radiator and intercooler

FUEL SYSTEM - 200Tdi engine

Injection pump type	Bosch rotary VE4/11F (see section 05)
Injection pump timing	1.54 mm lift at T.D.C.
Injectors	(see section 05)
Heater plugs	(see section 05)
Fuel lift pump type	Mechanical with hand primer
Fuel lift pump pressure	42 - 55 kpa at 1800 rpm
Fuel filter	Paper element in disposable canister
Air cleaner	Paper element type
Turbocharger	Garrett T25 (see section 05)

FUEL SYSTEM - V8 petrol engine

Carburettors	Two SU HIF44
Fuel lift pump	Submerged in fuel tank
Air cleaner	Paper element type

FUEL SYSTEM - V8i petrol engine

Fuel system type	Lucas hot wire system electronically controlled
Fuel pump-make/type	AC Delco-high pressure (electrical) immersed in the fuel tank
Fuel pump delivery pressure	2.4-2.6 kgf/cm ³ (34-37 p.s.i.)
Fuel filter	Bosch in-line filter 'canister' type

COOLING SYSTEM - 200Tdi engine

System type	Pressurised, spill return, thermostatically controlled water and anti freeze mixture. Pump assisted thermo syphon. Coolant radiator combined with oil cooler and turbo intercooler.
Cooling fan	7 blade axial flow 395 mm diameter. 1.1:1 drive ratio. Viscous coupling.
Pump type	Centrifugal, impellor, belt driven.
Thermostat opening	82°
Expansion tank cap pressure	15 p.s.i. (system pressure)

COOLING SYSTEM - V8 petrol engine

System type	Pressurised, spill return, thermostatically controlled water and anti freeze mixture. Pump assisted thermo syphon.
Cooling fan	7 blade axial flow 406 mm diameter. 1.25:1 drive ratio. Viscous coupling.
Pump type	Centrifugal, impellor, belt driven.
Thermostat opening	82° (depending on market)
Expansion tank cap pressure	15 p.s.i. (system pressure)

CLUTCH - 200Tdi engine

Type	Valeo diaphragm spring
Centre plate diameter	235 mm (9.25 in)
Facing material	Verto F202 grooved
Number of damper springs	8
Damper spring colour	2 off white/green - suffix 'C' 2 off pigeon blue - suffix 'A' 4 off ruby red - suffix 'B'
Release bearing	Ball journal

CLUTCH - V8 petrol engine

Type	Diaphragm spring
Centre plate diameter	267 mm (10.5 in)
Facing material	Ferodo 3112
Number of damper springs	6
Damper spring colour	Light blue/dark blue stripe
Release bearing	Ball journal

TRANSMISSION - 200Tdi engine**Main gearbox manual**

Type LT77	Single helical constant mesh
Speeds	5 forward 1 reverse
Synchromesh	All forward speeds
Ratios:	
- Fifth	0.770:1
- Fourth (direct)	1.000:1
- Third	1.397:1
- Second	2.132:1
- First	3.692:1
- Reverse	3.429:1

Transfer box

Type LT230T	Two speed reduction on main gearbox output. Front and rear drive permanently engaged via a lockable differential
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Overall ratios (final drive):	In high transfer	In low transfer
Fifth	3.331:1	9.049:1
Fourth	4.324:1	11.747:1
Third	6.040:1	16.406:1
Second	9.218:1	25.040:1
First	15.962:1	43.367:1
Reverse	14.827:1	40.276:1

TRANSMISSION - V8 petrol engine**Main gearbox manual**

Type LT77	Single helical constant mesh
Speeds	5 forward 1 reverse
Synchromesh	All forward speeds
Ratios:	
- Fifth	0.770:1
- Fourth (direct)	1.000:1
- Third	1.397:1
- Second	2.132:1
- First	3.321:1
- Reverse	3.429:1

Transfer box

Type LT230T	Two speed reduction on main gearbox output. Front and rear drive permanently engaged via a lockable differential	
Overall ratios (final drive):	In high transfer	In low transfer
Fifth	3.331:1	9.049:1
Fourth	4.324:1	11.747:1
Third	6.040:1	16.406:1
Second	9.218:1	25.040:1
First	14.363:1	39.017:1
Reverse	14.827:1	40.276:1

TRANSMISSION - V8i petrol engine**Transfer gearbox - LT230T**

Type	Two speed reduction on main gearbox output. Front and rear drive permanently engaged via a lockable differential.
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Transfer gearbox ratios

High	1.222:1
Low	3.320:1

Automatic gearbox

Model	ZF4HP22
Type	Four speed and reverse epicyclic with fluid torque converter and lock up

Fourth	0.728:1
Third	1.000:1
Second	1.480:1
First	2.480:1
Reverse	2.086:1

Overall ratios (final drive):	In high transfer	In low transfer
Fourth	3.15:1	8.55:1
Third	4.32:1	11.85:1
Second	6.40:1	17.38:1
First	10.72:1	29.13:1
Reverse	9.02:1	24.50:1

PROPELLER SHAFTS

Front and rear	Tubular 51 mm diameter with Hookes type universal joint series 03EHD each end
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FRONT AXLE

Type	Spiral bevel, enclosed constant velocity joints, fully floating hubs
Ratio	3.538:1
Angle of universal joint on full lock	32°

REAR AXLE

Type	Spiral bevel, fully floating hubs
Ratio	3.538:1

SUSPENSION

Type	Coil springs controlled by telescopic dampers front and rear
Front	Transverse location of axle by Panhard rod, and fore and aft location by two radius arms
Rear	Fore and aft movement inhibited by two tubular trailing links. Lateral location of axle by a centrally positioned 'A' bracket bolted at the apex to a ball joint mounting.

STEERING

Steering box	Adwest power assisted, worm and roller
Turns lock to lock	3.375
Ratio - straight ahead	19.3:1
Ratio - on lock	17.2:1
Turning circle - between kerbs	11.9 metres (39 feet)
Turning circle - between walls	12.5 metres (41 feet)
Track - front and rear	1486 mm (58.5 in)
Steering column type	Collapsible coupling
Steering damper	Fitted to track rod
Camber angle	Zero
Castor angle	3°
Swivel pin inclination	7°
Front wheel toe-out	0 to 2,0 mm

BRAKES

Type - foot brake	Disc brakes on front and rear axles. Ventilated discs on front where asbestos free friction pads are used.
Type - park brake	Drum transmission brake at rear of transfer gearbox. Cable operated
Brake calipers, front and rear	Opposed piston type AP4 X26
Park brake type	Girling GNSM
Park brake size	254 mm diameter, 70 mm wide
Park brake lining material	Ferodo 3611
Friction pad material - front	Asbestos Don 230 or Asbestos free Ferodo 3440
Friction pad material - rear	Asbestos Don 230 or Asbestos free Ferodo 3440
Front brake disc size	299 x 14,3 mm dia (11.7 x 0.460 in)
Rear brake disc size	290 x 12,7 mm dia (11.4 x 0.448 in)
Brake pad lining area - front	9800 mm ² total 19600 mm ²
Brake pad lining area - rear	6600 mm ² total 13200 mm ²
Park brake lining area	33400 mm ²
Brake fluid specification	DOT 4
Brake servo - type	Girling LSC115
Brake servo vacuum pump (200Tdi only)	Clayton Dewandre - low inertia. Aluminium rotary pump driven from camshaft gear.

WHEELS AND TYRES - 200Tdi and V8 petrol vehicles

Type of wheel	Dunlop pressed steel, ventilated
Wheel size	16 x 7J H2
Number of studs	5
Tyre size and type	205 R16 radial

TYRE PRESSURES

WARNING: Tyre pressures must be checked with the tyres cold, as the pressure is about 0.21 bar (3 lbf/in²) 0.2 kg/cm² higher at running temperature. If the vehicle has been parked in the sun or high ambient temperatures, DO NOT reduce the tyre pressures, move the vehicle into the shade and wait for the tyres to cool before checking the pressures.

Maximum tyre life and performance will only be obtained if the tyres are maintained at the correct pressures.

	Front	Rear
Normal - all load conditions	1,9 bar 28 lbf/in ² 2,0 kgf/cm ²	2,6 bar 38 lbf/in ² 2,8 kgf/cm ²
Emergency soft	1,2 bar 17 lbf/in ² 1,2 kgf/cm ²	1,7 bar 25 lbf/in ² 1,7 kgf/cm ²

NOTE: Emergency soft pressures should only be used in extreme conditions where extra floatation is required. Max. speed 40 km/h (25 mph). Return pressure to normal immediately firm ground is regained. When the vehicle is used for towing, the reduced tyre pressures are not applicable.

Adventure choice tyre specification

Tyre size	235/70 R16
Tyre pressure	Front 26 lbf/in ² Rear 34 lbf/in ²

ELECTRICAL EQUIPMENT

System	12 volt, negative earth
Battery:	
- 200Tdi vehicles	Chloride 1 x 643
- V8 petrol vehicles	Chloride 1 x 091
Starter motor:	
- 200Tdi vehicles	Valeo D9R
- V8 petrol vehicles	Magneti Marelli M78R
Wiper motor:	
- Windscreen	Delco 235 series
- Tailgate	Imos Vitaloni
Horns	Mixo type TR99
Alternator:	
- Type	Magneti Morelli A127-65
- Nominal output	65 amps
- Field resistance	2,9 ohms ± 15% at 20°C
- Brush spring pressure - new	2.4 - 2.7 N
- Brush spring pressure - used	1.1 - 1.4 N
- Regulating voltage	14.2 volts ± 0.25 volts at 6000 rpm with 20% load including battery at 20°C ± 5°C

REPLACEMENT BULBS AND UNITS

Headlamps

- UK and Europe (except France) 60/55 W Halogen bulb
- France 60/55 W Halogen bulb, yellow

NOTE: Local legislative requirements may require fitment of quartz-halogen headlamps in countries outside Europe. Refer to Distributor or Dealer for details.

- Front side lamps 12 V 5 W
- Side repeater lamps 12 V 5 W
- Stop/tail lamps 12 V 21/5 W
- Flasher lamps 12 V 21 W
- Number plate lamp 12 V 5 W
- Reverse lamp 12 V 21 W
- Rear fog guard lamp bulb 12 V 21 W
- Interior lamp 12 V 5 W
- Warning lights (except ignition) 12 V 1.12 W
- Ignition warning light 12 V 2 W
- Instrument illumination front lighting panel 12 V 1.4 W
- Hazard switch warning light 12 V 1.2 W

VEHICLE DIMENSIONS - 200Tdi MODELS

Dimensions

- Overall length (including spare wheel) 4521 mm (177.9 in)
- Overall length (including tow hitch) 4529 mm (178.3 in)
- Overall width 1793 mm (70.6 in)
- Overall height 1918 mm (75.5 in)
- Wheelbase 2540 mm (99.9 in)
- Track front/rear 1486 mm (58.5 in)
- Width between wheel boxes 1080 mm (42.5 in)
- Seating capacity 5 to 7

Performance

- Tyre size fitted 205 R16 radial
- Max. gradient (EEC kerb weight) 45°
- Approach angle (EEC kerb weight) 42.45°
- Departure angle with tow hitch (EEC kerb weight) 19.76°
- Departure angle without tow hitch (EEC kerb weight) 30.76°
- Ramp break over angle 30.79°
- Min. ground clearance (unladen) 253 mm (9.9 in)
- Wading depth 500 mm (20 in)

Towing weights

- | | | |
|--|---------|----------|
| Towing weights | On road | Off road |
| Unbraked trailers | 750 kg | 500 kg |
| Trailers with overrun brakes | 3500 kg | 1000 kg |
| 4 wheel trailers with coupled brakes (FULLY BRAKED)* | 4000 kg | 1000 kg |

NOTE: * Only applies to vehicles modified to accept coupled brakes.

NOTE: All weight figures are subject to local restrictions.

VEHICLE DIMENSIONS - V8 PETROL MODELS

Dimensions

Overall length (including spare wheel)	4521 mm (177.9 in)
Overall length (including tow hitch)	4529 mm (178.3 in)
Overall width	1793 mm (70.6 in)
Overall height	1928 mm (75.9 in)
Wheelbase	2540 mm (99.9 in)
Track front/rear	1486 mm (58.5 in)
Width between wheel boxes	1080 mm (42.5 in)
Seating capacity	5 to 7

Performance

Tyre size fitted	205 R16 radial
Max. gradient (EEC kerb weight)	45°
Approach angle (EEC kerb weight)	40.63°
Departure angle with tow hitch (EEC kerb weight)	20.75°
Departure angle without tow hitch (EEC kerb weight)	31.65°
Ramp break over angle	29.01°
Min. ground clearance (unladen)	241 mm (9.5 in)
Wading depth	500 mm (20 in)

Towing weights

Towing weights	On road	Off road
Unbraked trailers	750 kg	500 kg
Trailers with overrun brakes	3500 kg	1000 kg
4 wheel trailers with coupled brakes (FULLY BRAKED)*	4000 kg	1000 kg

NOTE: * Only applies to vehicles modified to accept coupled brakes.

NOTE: All weight figures are subject to local restrictions.

Road Spring and Damper Data

Part No. and colour codes			COIL SPRINGS				DAMPERS	
			FRONT		REAR		FRONT	REAR
			LH	RH	LH	RH		
P E T R O L	LHD	PART NUMBER	NRC 4306	572315	NTC 7381	NTC 5527	NTC 4311	NTC 4310
		COLOUR CODE	1 BLUE 1 WHITE	1 BLUE	1 YELLOW 1 PINK	2 RED 1 PINK	1 WHITE	1 YELLOW 8 RED
	RHD	PART NUMBER	572315	572315	NTC 5527	NTC 5527	NTC 4311	NTC 4310
		COLOUR CODE	1 BLUE	1 BLUE	2 RED 1 PINK	2 RED 1 PINK	1 WHITE	1 YELLOW 8 RED
D I E S E L	LHD	PART NUMBER	NRC 4305	NRC 2119	NTC 7381	NTC 5527	NTC 4311	NTC 4310
		COLOUR CODE	1 RED 1 YELLOW	1 GREEN	1 YELLOW 1 PINK	2 RED 1 PINK	1 WHITE	1 YELLOW 8 RED
	RHD	PART NUMBER	NRC 2119	NRC 2119	NTC 5527	NTC 5527	NTC 4311	NTC 4310
		COLOUR CODE	1 GREEN	1 GREEN	2 RED 1 PINK	2 RED 1 PINK	1 WHITE	1 YELLOW 8 RED
PART NUMBER			SPRING FREE LENGTH					
NRC 2119			409.7mm					
NTC 5527			408 mm					
572315			391.16 mm					
NRC 4305			436.4 mm					
NRC 4306			417.6 mm					
NTC 7381			400 mm					

VEHICLE WEIGHTS - 200Tdi MODELS

When loading a vehicle to its maximum (Gross Vehicle Weight), consideration must be taken of the unladen vehicle weight and the distribution of the payload to ensure that axle loadings do not exceed the permitted maximum values.

It is the customer's responsibility to limit the vehicle's payload in an appropriate manner such that neither maximum axle loads nor Gross Vehicle Weight are exceeded.

Maximum EEC kerb weight and distribution - all optional equipment

Front axle	1037 kg
Rear axle	1043 kg
Total	2080 kg

Maximum axle weights

Front axle	1200 kg
Rear axle	1650 kg
Gross vehicle weight	2720 kg

EEC kerb weight = Unladen weight + Full fuel tank + 75 kg driver.

VEHICLE WEIGHTS - V8 PETROL MODELS

When loading a vehicle to its maximum (Gross Vehicle Weight), consideration must be taken of the unladen vehicle weight and the distribution of the payload to ensure that axle loadings do not exceed the permitted maximum values.

It is the customer's responsibility to limit the vehicle's payload in an appropriate manner such that neither maximum axle loads nor Gross Vehicle Weight are exceeded.

Maximum EEC kerb weight and distribution - all optional equipment

Front axle	961 kg
Rear axle	1018 kg
Total	1979 kg

Maximum axle weights

Front axle	1100 kg
Rear axle	1650 kg
Gross vehicle weight	2720 kg

EEC kerb weight = Unladen weight + Full fuel tank + 75 kg driver.

ENGINE - Mpi - 2.0 LITRE

Type	20 T4 - 16 valve twin overhead camshaft	
Cylinder arrangement	4 in line	
Bore	84.45 mm	3.325 in
Stroke	89.00 mm	3.504 in
Capacity	1994 cm ³	121.68 in ³
Firing order	1-3-4-2	
Compression ratio	10 : 1	

Oil pump

Outer rotor to body clearance	0.05 to 0.10 mm
Inner rotor tip clearance	0.025 to 0.12 mm
Outer rotor end float	0.03 to 0.08 mm

Oil pressure relief valve

Spring free length	42.0 mm
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Cooling system

Starts to open	82 to 86°C
Thermostat fully open	88°C
Open travel A	9 mm

Camshaft

Camshaft end-float	0.06 to 0.25 mm
Bearing clearance	0.060 to 0.094 mm
Service limit	0.15 mm

Timing belt tensioner

Spring free length	57.5 to 58.5 mm
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Cylinder head

Longitudinal warp - maximum	0.1 mm
Transverse warp - maximum	0.1 mm
Diagonal warp - maximum	0.1 mm
Cylinder head height	135.0 to 135.1 mm

Valve springs

Free length	46.25 mm
Fitted length	37.0 mm
Load at fitted length	255 ± 12 N
Load at valve open length	560 ± 22.5 N

Valves

Valve stem diameter:

Inlet	7.09 to 7.10 mm
Exhaust	7.07 to 7.09 mm

Valve head diameter:

Inlet	31.7 to 31.95 mm
Exhaust	29.2 to 29.43 mm

Valve installed height - maximum	43.4 mm
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Valve stem to guide clearance:

Inlet	0.04 to 0.06 mm
Service limit	0.09 mm
Exhaust	0.06 to 0.07 mm
Service limit	0.10 mm

Valve guides

Internal diameter - Inlet and Exhaust	7.137 to 7.162 mm
Overall length:	
Inlet	48.5 mm
Exhaust	52.9 mm

Valve seats

Valve seat angle - Inlet and Exhaust	45°
Valve seat width - Inlet and Exhaust	1.5 to 2.0 mm
Valve face angle:	
Inlet and Exhaust	45° to 45° 15'

Crankshaft

End-float	0.03 to 0.2 mm
Thrust washer halves thickness	2.31 to 2.36 mm
Main journal diameter	54.005 to 54.026 mm
Maximum out of round	0.010 mm
Main bearing diametric clearance	0.03 to 0.07 mm
Big-end journal diameter	47.648 to 47.661 mm
Maximum out of round	0.010 mm
Big-end bearing diametric clearance	0.04 to 0.08 mm

Piston rings

New ring to groove clearance:	
Top compression	0.06 to 0.09 mm
2nd compression	0.05 to 0.07 mm
Oil control rails - expander fitted	0.03 to 0.05 mm
Ring fitted gap:	
Top compression	0.25 to 0.35 mm
2nd compression	0.3 to 0.5 mm
Oil control rails	0.38 to 1.14 mm

Pistons

Piston diameter:	
Grade A	84.409 to 84.422 mm
Grade B	84.423 to 84.436 mm
Clearance in bore	0.01 to 0.03 mm

Cylinder bore

Grade A	84.442 to 84.455 mm
Grade B	84.456 to 84.469 mm

FUEL SYSTEM MpiElectronic fuel injection data See **Mpi Engine Tuning Data****Fuel Pump:**

Make/Type	A.C. Rochester/Electric immersible	
Pump pressure	3.2 bar	44 lbf/in ²
Delivery at 3 bar pressure & 12V (min)	64 litre/h	113 pints/h
Regulated pressure range	3.0 ± 0.2 bar	43 ± 3 lbf/in ²
Fuel pump delivery pressure	2.3 - 2.5 kgf/cm ²	
	34 - 37 lbf/in ²	
Fuel filter	Bosch in-line filter 'canister' type	

COOLING SYSTEM Mpi

Pressure cap	1.0 kgf/cm ²	15 lbf/in ²
Thermostat	88 °C	190 °F

CLUTCH Mpi

Type	Diaphragm spring, hydraulically operated	
Adjustment	Self adjusting	
Clutch plate diameter	215.13 mm	8.47 in

TRANSMISSION Mpi**Main gearbox**

Type LT77	Single helical constant mesh	
Speeds	5 forward 1 reverse	
Synchromesh	All forward speeds	
Ratios:		
- Fifth	0.831:1	
- Fourth (direct)	1.000:1	
- Third	1.507:1	
- Second	2.301:1	
- First	3.585:1	
- Reverse	3.701:1	

Transfer box

Type LT230T Two speed reduction on main gearbox output. Front and rear drive permanently engaged via a lockable differential

Overall ratios (final drive):	In high transfer	In low transfer
- Fifth	4.146:1	9.761:1
- Fourth	4.989:1	11.746:1
- Third	7.518:1	17.701:1
- Second	11.479:1	27.109:1
- First	17.884:1	42.109:1
- Reverse	18.463:1	43.472:1

ELECTRICAL EQUIPMENT

System	12 volt, negative earth
Battery:	Chloride 1 x 091
Starter motor:	Bosch-Kat B
Wiper motor:	
- Windscreen	Delco 235 series
- Tailgate	Imos Vitaloni
Horns	Mixo type TR99
Alternator:	
- Type	Magneti Morelli A127-100
- Nominal output	100 amps
- Field resistance	2,9 ohms \pm 15% at 20°C
- Brush spring pressure - new	2.4 - 2.7 N
- Brush spring pressure - used	1.1 - 1.4 N
- Regulating voltage	14.2 volts \pm 0.25 volts at 6000 rpm with 20% load including battery at 20°C \pm 5°C

VEHICLE DIMENSIONS - Mpi**Dimensions**

Overall length (including spare wheel)	4521 mm (177.9 in)
Overall length (including tow hitch)	4529 mm (178.3 in)
Overall width	1793 mm (70.6 in)
Overall height	1918 mm (75.5 in)
Wheelbase	2540 mm (99.9 in)
Track front/rear	1486 mm (58.5 in)
Width between wheel boxes	1080 mm (42.5 in)
Seating capacity	5 to 7

Performance

Tyre size fitted	205 R16 radial
Max. gradient (EEC kerb weight)	45°
Approach angle (EEC kerb weight)	39°
Departure angle with tow hitch (EEC kerb weight)	20°
Departure angle without tow hitch (EEC kerb weight)	29°
Ramp break over angle	30°
Min. ground clearance (unladen)	214 mm (8.4 in)
Wading depth	500 mm (20 in)

Towing weights

Towing weights	On road	Off road
Unbraked trailers	750 kg	500 kg
Trailers with overrun brakes	2750 kg	1000 kg

NOTE: All weight figures are subject to local restrictions.

VEHICLE WEIGHTS - Mpi

When loading a vehicle to its maximum (Gross Vehicle Weight), consideration must be taken of the unladen vehicle weight and the distribution of the payload to ensure that axle loadings do not exceed the permitted maximum values.

It is the customer's responsibility to limit the vehicle's payload in an appropriate manner such that neither maximum axle loads nor Gross Vehicle Weight are exceeded.

EEC kerb weight and distribution - all optional equipment

	3 Door	5 Door
Front axle	900	910
Rear axle	990	1015
Total	1890	1925

Maximum axle weights

Front axle	1200 kg
Rear axle	1650 kg
Gross vehicle weight	2720 kg

EEC kerb weight = Unladen weight + Full fuel tank + 75 kg driver.

ROAD SPRINGS REVISED DATA

From Vin - LJ 038633

V8i - Mpi

LEFT HAND DRIVE	Part No	Colour Code
Left hand front	NRC 4306	Blue/White
Right hand front	572315	Blue
Left hand rear	ANR 1977	Red/Yellow
Right hand rear	ANR 1977	Red/Yellow

RIGHT HAND DRIVE	Part No	Colour Code
Left hand front	572315	Blue
Right hand front	572315	Blue
Left hand rear	ANR 1977	Red/Yellow
Right hand rear	ANR 1977	Red/Yellow

Tdi Diesel

RIGHT HAND DRIVE	Part No	Colour Code
Left hand front	ANR 1975	Blue/Purple/Red
Right hand front	ANR 1976	Blue/Purple/Yellow
Left hand rear	ANR 1977	Red/Yellow
Right hand rear	ANR 1977	Red/Yellow

LEFT HAND DRIVE	Part No	Colour Code
Left hand front	ANR 1976	Blue/Purple/Yellow
Right hand front	ANR 1975	Blue/Purple/Red
Left hand rear	ANR 1977	Red/Yellow
Right hand rear	ANR 1977	Red/Yellow

ENGINE 3.9 V8

Type	V8
Number of cylinders	Eight, two banks of four
Bore	94.00 mm
Stroke	71.12 mm
Capacity	3950 cc
Valve operation	Overhead by push-rod
Compression ratio	8.13:1 or 9.35:1
Valve operation	Overhead by push-rod
Maximum power	
- 8.13:1	127kW at 4550 rev/min
- 9.35:1	134kW at 4750 rev/min

Crankshaft

Main journal diameter	58.409-58.422 mm
Minimum regrind diameter	57.393-57.406 mm
Crankpin journal diameter	50.800-50.812 mm
Minimum regrind diameter	49.784-49.797 mm
Crankshaft end thrust/(end float)	Taken on thrust washers of centre main bearing 0.10-0.20 mm

Main bearings

Number and material	5 Lead-indium
Diametrical clearance	0.010-0.048 mm
Undersize bearing shells	0.254 mm, 0.508 mm

Connecting rods

Type	Horizontally split big-end, plain small-end
Length between centres	143.81-143.71 mm

Big-end bearings

Type and material	Lead-indium
Diametrical clearance	0.015-0.055 mm
End-float crankpin	0.15-0.36mm
Undersize bearing shells	0.254 mm, 0.508 mm

Piston pins

Length	72.67-72.79 mm
Diameter	22.215-22.220 mm
Fit-in connecting rod	Press fit
Clearance in piston	0.002-0.007 mm

Pistons

Clearance in bore, measured at bottom
of skirt at right angles to piston pin 0.018-0.041 mm

Piston rings

Number of compression rings 2
 Number of control rings 1
 No 1 compression ring Molybdenum barrel faced
 No 2 compression ring Tapered and marked 'T' or 'TOP'
 Width of compression rings 1.478-1.49 mm
 Compression ring gap 0.40-0.65 mm
 Oil control ring width 3.0 mm
 Oil control ring rail gap 0.38-1.40 mm

Camshaft

Location Central
 Bearings Serviceable
 Number of bearings 5
 Drive Chain 9.52 mm pitch x 54 pitches.

Tappets Hydraulic-self-adjusting

Valves**Length:**

Inlet 116.59-117.35 mm
 Exhaust 116.59-117.35 mm

Seat angle:

Inlet 45° to 45 1/2°
 Exhaust 45° to 45 1/2°

Head diameter:

Inlet 39.75-40.00 mm
 Exhaust 34.226-34.480 mm

Stem diameter:

Inlet 8.664-8.679 mm
 Exhaust 8.651-8.666 mm

Stem to guide clearance:

Inlet 0.025-0.066 mm
 Exhaust 0.038-0.078 mm

Valve lift (Inlet and Exhaust) 9.49 mm

Valve spring length fitted 40.4 mm at pressure of 29.5 kg

Lubrication

System type Wet sump, pressure fed
 Oil pump type Gear
 Oil pressure 2.11 to 2.81 kg/cm² (30 to 40 p.s.i) at 2400 rev/min
 with engine warm
 Oil filter-internal Wire screen, pump intake filter.
 Oil filter-external Full flow, self-contained cartridge

SHIFT SPEED AUTOMATIC ZF ON 3.9 V8

OPERATION	SELECTOR POSITION	VEHICLE SPEED APPROX		ENGINE SPEED APPROX (RPM)
KICKDOWN				
		MPH	KPH	
KD4 - 3	D	84 - 92	136 - 150	
KD3 - 2	3(D)	57 - 62	91 - 99	
KD2 - 1	2(D,3)	27 - 34	44 - 56	
KD3 - 4	D	N/A	N/A	
KD2 - 3	D(3)	60 - 63	96 - 104	4750 - 5200
KD1 - 2	D(3,2)	34 - 40	56 - 64	4600 - 5250
FULL THROTTLE				
FT4 - 3	D	61 - 67	98 - 108	
FT3 - 2	3(D)	40 - 46	64 - 73	
FT3 - 4	D	74 - 80	119 - 129	3980 - 4330
FT2 - 3	D(3)	55 - 60	88 - 96	4350 - 4800
FT1 - 2	D(3,2)	29 - 34	48 - 56	3950 - 4650
PART THROTTLE				
PT4 - 3	D	47 - 54	75 - 86	
PT3 - 2	D(3)	29 - 37	48 - 59	
PT2 - 1	D(3,2)	10 - 12	16 - 19	
LIGHT THROTTLE				
LT3 - 4	D	26 - 30	43 - 49	1430 - 1650
LT2 - 3	D(3)	18 - 22	29 - 35	1420 - 1820
LT1 - 2	D(3,2)	9 - 10	14 - 16	1180 - 1220
ZERO THROTTLE				
ZT4 - 3	D	19 - 25	31 - 41	
ZT3 - 2	D(3)	12 - 15	19 - 24	
ZT2 - 1	D(3,2)	6 - 7	10 - 11	
TORQUE CONVERTER				
Lock up (IN)	D	51 - 54	81 - 86	1875 - 2000
Unlock (OUT)	D	49 - 52	78 - 83	1825 - 1930

NOTE: The speeds given in the above chart are approximate and only intended as a guide. Maximum shift changes should take place within these tolerance parameters.

SHIFT SPEED AUTOMATIC ZF ON Tdi ENGINE

OPERATION	SELECTOR POSITON	VEHICLE SPEED APPROX		ENGINE SPEED APPROX (RPM)
KICKDOWN				
MPH KPH				
KD4 - 3	D	62 - 72	99 - 115	
KD3 - 2	3(D)	43 - 49	69 - 78	
KD2 - 1	2(D,3)	23 - 36	37 - 58	
KD3 - 4	D	64 - 76	102 - 122	3400 - 4000
KD2 - 3	D(3)	46 - 51	74 - 82	3600 - 3900
KD1 - 2	D(3,2)	26 - 29	42 - 46	3500 - 3800
PART THROTTLE				
PT4 - 3	D	39 - 45	62 - 72	
PT3 - 2	D(3)	24 - 30	38 - 48	
PT2 - 1	D(3,2)	18 - 20	29 - 32	
LIGHT THROTTLE				
LT3 - 4	D	24 - 28	38 - 45	1300 - 1400
LT2 - 3	D(3)	21 - 23	34 - 37	1700 - 1800
LT1 - 2	D(3,2)	13 - 14	21 - 22	1700 - 1900
ZERO THROTTLE				
ZT4 - 3	D	22 - 27	35 - 43	
ZT3 - 2	D(3)	18 - 22	29 - 35	
ZT2 - 1	D(3,2)	9 - 11	14 - 18	
TORQUE CONVERTER				
Lock up (IN)	D	46 - 49	74 - 78	1600 - 1850
Unlock (OUT)	D	45 - 48	72 - 77	1700 - 1800

NOTE: The speeds given in the above chart are approximate and only intended as a guide. Maximum shift changes should take place within these tolerance parameters.