

04 - GENERAL SPECIFICATION DATA

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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
Maximum power	- 8.13:1 127 kW at 4550 rev/min
	- 9.35:1 134 kW 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 type	5, Vandervell shells
Material	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	Vandervell VP lead-indium
Diametrical clearance	0.015-0.055 mm
End-float crankpin	0.15-0.36 mm
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 type Hepworth and Grandage
 Oil control ring width 3.0 mm
 Oil control ring rail gap 0.38-1.40 mm

Camshaft

Location Central
 Bearings Non 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 in sump
 Oil filter-external Full flow, self-contained cartridge



DIESEL ENGINE 2.5L

Type	95 A VM type Hr 4924 HI
Number of cylinders	Four
Bore	92.00 mm
Stroke	94.00 mm
Capacity	2500 cm ³
Valve operation	Overhead by push-rod
Injection order	1 - 3 - 4 - 2
Compression ratio	22.5:1 (±0.5)

Crankshaft

Front main journal diameter	62,995 to 63,010 mm
Clearance in main bearing	0,05 to 0,115mm
Minimum regrind diameter	62,495 mm
Central main journal diameter	63,005 to 63,020 mm
Clearance in main bearing	0,03 to 0,088 mm
Minimum regrind diameter	62,52 mm
Rear main journal diameter	69,985 to 70,00 mm
Clearance in main bearing	0,040 to 0,070 mm
Minimum regrind diameter	69,485 mm
Crankpin journal diameter	53,94 to 53,955 mm
Clearance in big-end bearing	0,022 to 0,076 mm
Minimum regrind diameter	53,44 mm
End float	0,153 to 0,304 mm
Adjustment	Thrust washers
Thrust washers available	2,311 to 2,362
	2,411 to 2,462 mm
	2,511 to 2,562 mm

Thrust spacer

Thickness	7,9 to 8,1 mm
Diameter	89,96 to 90 mm

Main bearings

Standard

Internal diameter:	
Front	63,060 to 63,11 mm
Centre	63,050 to 63,09 mm
Rear	70,040 to 70,055 mm

Bearing undersizes:

0,25 mm and 0,5 mm less than the dimensions given.

Main bearing carriers

Internal diameter:

Front	67,025 to 67,050 mm
Centre	66,67 to 66,687 mm
Rear	75,005 to 75,030 mm

Piston oil jet opening pressure 1,5 to 2,0 kg/cm²

Liners

Internal diameter:

White	
Standard	92,000 to 92,010 mm
Red	
Standard	92,010 to 92,020 mm
Protrusion	0,01 to 0,06 mm
Adjustment	Shims
Shims available	0,15 mm
	0,20 mm
	0,23 mm

Maximum ovality 0,100 mm

Maximum taper 0,100 mm

Cylinder heads

Minimum thickness 89,95 to 90,05 mm

Gaskets

Free thickness	Identity	
Part No. STC 0810	No notch	1,51 to 1,59 mm
Part No. STC 0812	1 notch	1,75 to 1,83 mm
Part No. STC 0811	2 notches	1,65 to 1,73 mm
Fitted thickness		
Part No. STC 0810		1,42 mm ± 0,04
Part No. STC 0812		1,62 mm ± 0,04
Part No. STC 0811		1,52 mm ± 0,04

End plates

Height 91,26 to 91,34 mm

Connecting rods

Weights (connecting rod with small end bush, big end cap and bolts, but without big end shell).

Letter Code

L 1156 to 1172 gr

Fully machined balanced



Pistons

Skirt diameter:

(measured approximately 15 mm above bottom of skirt).

Class A	91,92 to 91,93 mm
Class B	91,93 to 91,94 mm
Piston skirt wear limit	0,05 mm
Maximum ovality of gudgeon pin bore	0,05 mm

Piston clearance:

Top of piston to cylinder head 0,95 to 1,04 mm

Piston protrusion above crankcase:

0,38 to 0,47mm Fit gasket 1,42 mm

0,58 to 0,67mm Fit gasket 1,62 mm

0,48 to 0,57mm Fit gasket 1,52 mm

Maximum piston to liner clearance 0,15 mm

Small end bush

Internal diameter:

Minimum 30,030 mm

Maximum 30,045 mm

Wear limit between bush and gudgeon pin 0,100 mm

Connecting rod bearings

Standard:

Internal diameter 53,977 to 54,016 mm

Bearing undersizes:

0,25 mm and 0,5 mm less than dimension given.

Piston rings

Clearance in groove:

Top 0,080 to 0,130 mm

Second 0,070 to 0,102 mm

Oil control 0,040 to 0,072 mm

Fitted gap:

Top 0,25 to 0,50 mm

Second 0,25 to 0,45 mm

Oil control 0,25 to 0,58 mm

Gudgeon Pins

Type Fully floating

Diameter 29,990 to 29,996 mm

Clearance in connecting rod 0,034 to 0,055 mm

Wear limit between gudgeon

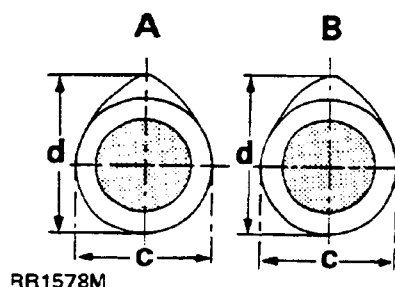
pin and connecting rod bush 0,100 mm

Camshaft

Journal diameter:

Front	53,495 to 53,51 mm
Bearing clearance	0,030 to 0,095 mm
Centre	53,45 to 53,47 mm
Bearing clearance	0,07 to 0,14 mm
Rear	53,48 to 53,50 mm
Bearing clearance	0,04 to 0,11 mm

Cam lobe minimum dimensions:



Inlet (A)

(c)	38,5 mm
(d)	45,7 mm

Exhaust (B)

(c)	37,5 mm
(d)	45,14 mm

Thrust plate thickness 3,95 to 4,05 mm

Tappets

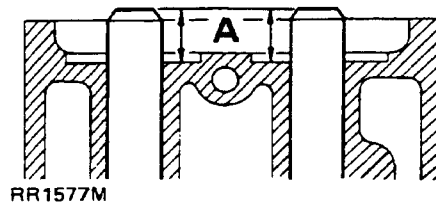
Outside diameter 14,965 to 14,985 mm

Rocker gear

Shaft diameter	21,979 to 22,00 mm
Bush internal diameter	22,020 to 22,041 mm
Assembly clearance	0,020 to 0,062 mm
Wear limit between bush and shaft	0,2 mm

Valves

Face angle:	Inlet	55° 30'
	Exhaust	45° 30'
Head diameter:	Inlet	40,05 to 40,25 mm
	Exhaust	33,80 to 34,00 mm
Head stand down:	Inlet	0,80 to 1,20 mm
	Exhaust	0,79 to 1,19 mm
Stem diameter:	Inlet	7,940 to 7,960 mm
	Exhaust	7,920 to 7,940 mm
Clearance in guide:	Inlet	0,040 to 0,075 mm
	Exhaust	0,060 to 0,095 mm



Valve guides

Inside diameter	8 to 8,015 mm
Fitted height A (above spring plate counterbore)	13,5 to 14 mm

Valve seat inserts

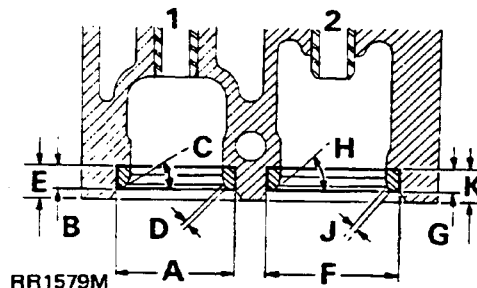
Machining dimensions

Exhaust (1)

A	36,066 to 36,050 mm
B	7,00 to 7,05 mm
C	44°30'
D	1,65 to 2,05 mm
E	10,15 to 10,25 mm

Inlet (2)

F	42,070 to 42,086 mm
G	7,14 to 7,19 mm
H	34° 30'
J	1,8 to 2,2 mm
K	10,3 to 10,4 mm



Valve springs

Free length	44,65 mm
Fitted length	38,6 mm
Load at fitted length	34 ± 3% Kg
Load at top of lift	92,5 ± 3% Kg
Number of coils	5,33

Valve timing**Rocker clearance:**

Timing:	Inlet	0,30 mm
	Exhaust	0,30 mm
Inlet valve:	Opens	22° ± 5° B.T.D.C.
	Closes	48° ± 5° A.B.D.C.
Exhaust valve:	Opens	60° ± 5° B.B.D.C.
	Closes	24° ± 5° A.T.D.C.

Lubrication**System pressure with oil at 90-100°C**

at 4,000 rev/min 3,5 to 5,0 kgf/cm²

Pressure relief valve opens 6.38 kgf/cm²

Pressure relief valve spring

- free length 57,5 mm

Oil pump:

Outer rotor end float 0,04 to 0,087 mm

Inner rotor end float 0,04 to 0,087 mm

Outer rotor to body

diametrical clearance 0,130 to 0,230 mm

Rotor body to drive gear

Clearance (pump not fitted) 0,15 to 0,25 mm



FUEL SYSTEM - V8

Fuel system type	Lucas 14CUX hot wire system electronically controlled
Fuel pump-make/type	High pressure electrical, immersed in the fuel tank
Fuel pump delivery pressure	2.4-2.6 kgf/cm ² (34-37 p.s.i.)
Fuel filter	Bosch in-line filter 'canister' type

Airflow Sensor

Make and type	Lucas 'Hot Wire' 3AM
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Injectors

Make and type	Lucas 8NJ
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Electronic Control Unit

Make and type	Lucas 14CUX
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Fuel pressure regulator

Make and type	Lucas 8RV
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Fuel temperature sensor

Make and type	Lucas 6TT
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Coolant temperature sensor

Make and type	Lucas 3TT
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Bypass Airvalve (Stepper motor)

Make and type	Lucas 2ACM
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Throttle potentiometer

Make and type	Lucas 215SA
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Lambda sensor - catalyst vehicles

Make and type	Lucas 3LS
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FUEL SYSTEM - 2.5 DIESEL ENGINE

Fuel lift pump	Mechanical, driven by camshaft
Turbo charger:	
Shaft radial clearance	0,35 mm
Shaft axial clearance	0,10 mm
Waste gate valve:	
Opening pressure	0,9 kgf/cm ²

COOLING SYSTEM

Type	Pressurized system with cross- flow radiator and remote header tank, thermostat control, pump and fan assisted
Type of pump	Centrifugal
Thermostat - V8	88°C
Thermostat - Diesel	80°C

TRANSMISSION

Clutch	
Make and type - V8	Borg and Beck diaphragm type
Clutch plate diameter	266.5 mm
Make and type - Diesel	Valeo, diaphragm
Diameter	235 mm

Borg Warner transfer gearbox

Type	Two speed reduction on main gearbox output, front and rear drive permanently engaged via a centre differential controlled by a viscous unit giving a 50/50 nominal front and rear torque split.
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Transfer gearbox ratios

High	1.206:1
Low	3.244:1

Manual gearbox

Model	LT77
Type	Five speed, single helical constant mesh with synchromesh on all forward gears



Manual gearbox ratios

5th	0.731:1
4th	1.000:1
3rd	1.397:1
2nd	2.132:1
1st	3.321:1
Reverse	3.429:1

Diesel models low first gear 3.692:1

Overall ratio (final drive):	High transfer	Low transfer
5th	3.119:1	8.39:1
4th	4.267:1	11.476:1
3rd	5.959:1	16.027:1
2nd	9.095:1	24.462:1
1st	14.172:1	38.115
Reverse	14.629:1	39.346:1
Diesel models low 1st gear	15.750:1	42.362

Automatic gearbox

ModelZF4HP22
 TypeFour speed and reverse epicyclic with fluid torque converter and lock up.

Automatic gearbox ratios

4th	0.728:1
3rd	1.000:1
2nd	1.480:1
1st	2.480:1
Reverse	2.086:1

Overall ratio (final drive):	High transfer	Low transfer
4th	3.11:1	8.36:1
3rd	4.27:1	11.48:1
2nd	6.32:1	17.00:1
1st	10.59:1	28.50:1
Reverse	8.91:1	23.96:1

**SHIFT SPEED SPECIFICATION - AUTOMATIC
ZF4HP22 GEARBOX**

OPERATION	SELECTOR POSITON	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.				



Propeller shafts

Type	
Front	Tubular 51 mm diameter
Front - Catalyst vehicles	Solid bar 28.6 mm diameter
Rear	Tubular 51 mm diameter
Universal joints	Open type Hookes O3EHD

Rear axle

Type	Spiral bevel, fully floating shafts
Ratio	3.54:1

Front axle

Type	Spiral bevel, enclosed constant velocity joints, fully floating shafts
Angularity of universal joint on full lock	32°
Ratio	3.54:1

STEERING

Power steering box

Make/type	Adwest Varamatic - worm and roller box
Ratio	Variable: straight ahead 19.3:1 on lock 17.2:1
Steering wheel turns, lock-to-lock	3.375

Steering pump

Make/type	Hobourn-Eaton series 200
Operating pressure - straight ahead position - at idle	7 kgf/cm ² (100 p.s.i.) maximum
Full lock (left or right) at idle	28 kgf/cm ² (400 p.s.i.) minimum
Full lock (left or right) 1000 rev/min	70-77 kgf/cm ² (1000-1100 p.s.i.)

Steering geometry

Steering wheel diameter	406.4 mm
Toe-out measurement	0 to 2 mm toe-out
Toe-out included angle	0° to 0° 16'
Camber angle	0°
Castor angle	3°
Swivel pin inclination-static	7°

Check with vehicle in static unladen condition, that is, vehicle with water, oil and five gallons of fuel. Rock the vehicle up and down at the front to allow it to take up a position

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. A levelling unit is positioned between the ball joint and upper cross member.



ROAD SPRING DATA

Specification	Part Number	Colour Code	Rating	Free length	No. of Working Coils
A	572315	Blue Stripe	2375.1 kg/m (133 lb/in)	391.16 mm (15.4 in)	7.18
B	NRC4306	Blue & White Stripe	2375.1 kg/m (133 lb/in)	417.57 mm (16.44 in)	7.55
C	NTC8476	White, Blue & Pink Stripe	2678.7 kg/m (150 lb/in)	420.3 mm (16.55 in)	7
D	NRC8477	Green, Blue & Yellow Stripe	3182.1 kg/m (178.2 lb/in)	461.67 mm (18.176 in)	8.75
E	NRC2119	Green stripe	2678.7 kg/m (150 lb/in)	409.70 mm (16.13 in)	7.63
F	NRC4305	Red & Yellow Stripe	2678.7 kg/m (150 lb/in)	436.4 mm (17.18 in)	7.65

Standard Suspension	Specification		Heavy Duty Suspension	Specification	
	Right Side	Left Side		Right Side	Left Side
RHD Front	A	A	RHD Front	D	D
LHD Front	A	B	LHD Front	D	C
RHD Rear	E	E			
LHD Rear	E	F			
* Vehicles with anti-roll bars					
RHD Rear	E	E			
LHD Rear	E	F			

* Anti-roll bars 1991 model introduction.



NOTE: Both right and left hand drive Diesel models are fitted with heavy duty front suspension.



WHEELS AND TYRES

Type and size	Alloy 7.00J X 16
Tyre size	205R16 (tubeless)
Type and size	Steel 6.00JK X 16
Tyre size	205R16 (tubed)



NOTE: Petrol vehicles must be fitted with 'S' or 'T' rated tyres.

AIR CONDITIONING

System	A.R.A.
Compressor	Sanden SD709

WIPER MOTORS

Tailgate wiper motor

Make/type	IMOS (non-serviceable)
Running current, wet screen at 20°C ambient	1.0 to 2.8 amps
Wiper speed, wet screen at 20°C ambient.....	37 to 43 cycles per minute

Windscreen wiper motor

Make/type	Lucas 28W 2-speed
Running current (Link disconnected)	1.5 amps at 39 to 45 rev/min (normal speed)
Rotary link speed	60 to 73 rev/min (high speed)

ELECTRICAL

System	12 volt, negative ground
Battery	
Make/type - basic	Land Rover Parts and Equipment/Chloride maintenance free 9-plate-210/85/90
Make/type - heavy duty	Land Rover Parts and Equipment/Chloride maintenance free 14-plate-380/120/90

Alternator - basic

Manufacturer	Magnetti Marelli
Type	A127 - 65A
Polarity	Negative ground
Brush length	
New	17 mm
Worn, minimum free protrusion from moulding	5 mm
Brush spring pressure flush with moulding	1.3N to 2.7 Ng
Rectifier pack output rectification	6 diodes (3 positive side and 3 ground side)
Field winding supply rectification	3 diodes
Stator windings	3 phase-delta connected
Field winding rotor poles	12
Maximum speed	15,000 rev/min
Winding resistance at 20°C	2.6 ohms
Control	Field voltage sensed regulation
Regulator-type	21 TR
voltage	13.6 to 14.4 volts
Nominal output	
Condition	Hot
Alternator speed	6000 rev/min
Control voltage	14 volt
Amp	65 amp

Alternator - heavy duty

Manufacturer	Magnetti Marelli
Type	A133 - 80A
Polarity	Negative ground
Brush length	
New	20 mm
Worn, minimum free protrusion from brush box	10 mm
Brush spring pressure flush with brush box face	136 to 279 g
Rectifier pack output rectification	6 diodes (3 positive side and 3 ground side)
Field winding supply rectification	3 diodes
Stator windings	3 phase-delta connected
Field winding rotor poles	12
Maximum speed	16,000 rev/min
Winding resistance at 20°C	2.6 ohms
Control	Field voltage sensed regulation
Regulator-type	15 TR
voltage	13.6 to 14.4 volts
Nominal output	
Condition	Hot
Alternator speed	6000 rev/min
Control voltage	14 volt
Amp	80 amp

**Coil**

Make/type Bosch 0221 122 392

Distributor

Make/type Lucas 35 DLM8
 Firing angles 0°-45°-90° (every 45°) ± 1°
 Application 12V Negative ground
 Pick-up air gap adjustment
 (Pick-up limb/reluctor tooth) 0.20 mm to 0.35 mm
 Pick-up winding resistance 2k to 5k ohms

Fuses

Type Autofuse (blade type)
 blow ratings to suit individual circuits

Horns

Make/type Klamix (Mixo) TR99

Ignition module

Make/type Lucas 9EM amplifier module, distributor mounted

Spark plugs

Make/type(8.13:1 Compression) Champion RN12YC
 Gap 0.84 to 0.96 mm

Make/type(9.35:1 Compression) Champion RN9YC
 Gap 0.84 to 0.96 mm

Starter motor - U8

Make/type Lucas M78R pre-engaged
 Minimum brush length 3.5 mm
 Minimum commutator diameter 28.8 mm

Starter motor - Diesel

Make and type Bosch 0.001.362.092

REPLACEMENT BULBS	TYPE		
Exterior lights			
Headlamps	12V	60/55W	(Halogen)
Headlamps - France amber	12V	60/55W	(Halogen)
Auxiliary driving lamps	12V	55W H3	(Halogen)
Sidelamps	12V	5W	bayonet
Tail lamps	12V	5/21W	bayonet
Reverse lamps	12V	21W	bayonet
Stop lamps	12V	21W	bayonet
Direction indicator lamps	12V	21W	bayonet
Rear side marker lamps	12V	4W	bayonet
Number plate lamps	12V	5W	capless
Interior lights			
Instrument panel lamps and warning lamps	12V	1.2W	bulb/holder unit
Ignition warning lamp (Instrument panel)	12V	2W	capless
Interior roof lamps	12V	10W	'Festoon'
Clock illumination	12V	2W	bayonet
Cigar lighter illumination	12V	1.2W	capless
Door shut face/puddle lamps	12 V	5W	capless
Auxiliary switch panel illumination (green)	12V	1.2W	capless
Heated rear screen warning lamp (amber)	12V	1.2W	capless
Hazard warning lamp	12V	1.2W	capless
Automatic graphics illumination	24V	5W	capless
Heater/air conditioning graphics illumination	12V	1.2W	capless
Differential lock warning lamp	12V	2W	bayonet
Column switch illumination	12V	1.2W	capless



CAUTION: The fitting of new bulbs with wattages in excess of those specified will result in damage to vehicle wiring and switches.



VEHICLE WEIGHTS AND PAYLOAD

When loading a vehicle to its maximum (Gross Vehicle Weight), consideration must be taken of the vehicle kerb 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.

Petrol-engined models		Front Axle kg	Rear Axle kg	Total kg
Manual				
2 door	EEC Kerb weight	955	969	1924
	Gross Vehicle Weight*	1100	1510	2510
4 door	EEC Kerb weight	967	993	1960
	Gross Vehicle Weight*	1100	1510	2510
Catalytic model	EEC Kerb weight	973	994	1967
	Gross Vehicle Weight*	1100	1510	2510
Automatic				
2 door	EEC Kerb weight	982	973	1955
	Gross Vehicle Weight*	1100	1510	2510
4 door	EEC Kerb weight	983	1021	2004
	Gross Vehicle Weight*	1100	1510	2510
Catalytic model	EEC Kerb weight	989	1022	2011
	Gross Vehicle Weight*	1100	1510	2510
Long wheelbase models	EEC Kerb weight	1070	1080	2150
	Gross Vehicle Weight*	1200	1620	2620



NOTE: EEC KERB WEIGHT is the minimum vehicle specification, plus full fuel tank and 75 kg driver. **GROSS VEHICLE WEIGHT** is the maximum all-up weight of the vehicle including driver, passengers, and equipment. This figure is liable to vary according to legal requirements in certain countries.

When **air conditioning** is fitted, 42 kg must be added to the above front axle weights and total weights.

VEHICLE DIMENSIONS

Overall length	4.45 m
- Long wheelbase vehicles	4.65 m
Overall width	1.82 m
Overall height	1.80 m
Wheelbase	2.54 m
- Long wheelbase vehicles	2.74 m
Track: front and rear	1.49 m
Ground clearance: under differential	190 mm
Turning circle	11.89 m
- Long wheelbase vehicles	13.64 m
Loading height	749 mm
Maximum cargo height	1.028 m
Rear opening height	0.87 m
Usable luggage capacity, rear seat folded	2.00 m ³
Usable luggage capacity, rear seat in use	
- four door vehicles	1.03 m ³
- two door vehicles	1.17 m ³
Maximum roof rack load	75 kg

TYRE PRESSURES

Pressures: Check with tyres cold	Normal on and off-road use. All speeds and loads		Off-road 'emergency' soft use maximum speed of 40 kph (25 mph)	
	Front	Rear (*)	Front	Rear
bars	1.9	2.4 (2.6)	1.2	1.8
lbf/in ²	28	35 (38)	17	25
kgf/cm ²	2.0	2.5 (2.7)	1.2	1.8

(*) Long wheelbase vehicles (108")

The pressure of tyres must be increased by 2.8 bars (3 lbf in² 0.2 kgf/cm²). For use with sustained driving speeds above 160 km/hr (100 miles/hour) or with heavy axle loads.

Normal operating pressures should be restored as soon as reasonable road conditions or hard ground is reached. After any usage off the road, tyres and wheels should be inspected for damage particularly if high cruising speeds are subsequently to be used.

Towing: When the vehicle is used for towing, the reduced rear tyre pressures for extra ride comfort are not applicable.



WARNING: Vehicles fitted with tubeless alloy road wheels as original equipment, note that these wheels DO NOT accept inner tubes and tubed tyres MUST NOT be fitted.

1993 MODEL YEAR - ENGINE 4.2 V8

Type	V8
Number of cylinders	Eight, two banks of four
Bore	94.00 mm
Stroke	77.00 mm
Capacity	4275 cc
Valve operation	Overhead by push-rod
Compression ratio	8.94:1
Maximum power	149 kW at 4850 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 type	5, Vandervell shells
Material	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	Vandervell VP lead-indium
Diametrical clearance	0.015-0.055 mm
End-float crankpin	0.15-0.36 mm
Undersize bearing shells	0.254 mm, 0.508 mm

Piston pins

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 type Hepworth and Grandage
 Oil control ring width 3.0 mm
 Oil control ring rail gap 0.38-1.40 mm

Camshaft

Location Central
 Bearings Non 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 in sump
 Oil filter-external Full flow, self-contained cartridge



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
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	1.76 - 3.86 kgf/cm ² (25 - 55 p.s.i.)
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 rev/min
Fuel filter	Paper element in disposable canister
Air cleaner	Paper element type
Turbocharger	Garrett T25 (see section 05)

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 (15.5 in) diameter. 1.1:1 drive ratio. Viscous coupling.
Pump type	Centrifugal, impellor, belt driven.
Thermostat opening	82°
Expansion tank cap pressure	1.05 kgf/cm ² (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

TRANSMISSION - 200Tdi engine

Main gearbox manual

Type LT77 Single helical constant mesh

Speeds 5 forward 1 reverse

Synchronesh 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