

# Chapter 2

## TECHNICAL DATA

- VEHICLE DIMENSIONS
- ROUTINE MAINTENANCE
- TUNE-UP
- ENGINE
- ENGINE ELECTRICAL
- COOLING SYSTEM
- FUEL SYSTEM

### VEHICLE DIMENSIONS

Overall length:	
All models except MWB Van	4 365 mm
MWB Van	4 765 mm
Overall width:	
SWB Van, 4 x 4 Van, MWB Van, GL and GLX Wagons	1 690 mm
SE Wagon, 4 x 4 Wagon	1 695 mm
Overall height:	
SWB Van, GL, GLX and SE Wagons	1 840 mm
4 x 4 Van, 4 x 4 Wagon	1 975 mm
MWB Van	1 955 mm
Wheelbase:	
SWB Van, GL, GLX and SE Wagons	2 235 mm
4 x 4 Van, 4 x 4 Wagon	2 240 mm
MWB Van	2 435 mm
Front track:	
4 x 2 models	1 445 mm
4 x 4 models	1 430 mm
Rear track:	
4 x 2 models	1 380 mm
4 x 4 models	1 415 mm
Ground clearance:	
4 x 2 models	190 mm
4 x 4 models	210 mm

- CLUTCH
- MANUAL TRANSMISSION
- AUTOMATIC TRANSMISSION
- FRONT AXLE AND SUSPENSION
- REAR AXLE AND SUSPENSION
- STEERING
- BRAKES

Turning circle (kerb to kerb):

SWB Van, GL, GLX and SE Wagons	9.0 m
MWB Van	9.8 m
4 x 4 models	10.0 m

### ROUTINE MAINTENANCE

#### Recommended lubricants and fluids

Engine (down to -20°C)	10W-40 or 10W-50 SG
Manual transmission	75W-85W GL4 or GL5
Transfer case	75W-85W GL4 or GL5
Automatic transmission	Dexron II
Differential:	
Conventional type	Hypoid 80W or 90 GL4 or GL5
Limited slip	Castrol LS 90 or LSX 90 GL5 or GL6
Power steering	Dexron II
Cooling system	Water plus Mitsubishi inhibitor
Brake fluid	Dot 4
Wheel bearings, steering and front suspension joints, propeller shaft and universal joints	Lithium based EP No 2 grease

### Refill capacities

<b>Engine oil:</b>	
With filter	3.9 litres
Without filter	3.5 litres
Manual transmission	2.0 litres
Transfer case	2.2 litres
Automatic transmission	6.8 litres
<b>Differential:</b>	
Front	1.1 litres
Rear —	
2.0 litre models except MWB Van	1.2 litres
2.0 litre MWB Vans and all 2.4 litre 4 x 2 models	1.5 litres
4 x 4 models	1.8 litres
Power steering	0.9 litres
<b>Coolant:</b>	
All 2.0 litre models	7.4 litres approx
2.4 litre Vans	8.2 litres approx
2.4 litre Wagons	8.7 litres approx
<b>Fuel tank:</b>	
4 x 2 models	55 litres
4 x 4 models	60 litres

### Torque wrench settings

Engine sump drain plug	35 – 45 Nm
<b>Manual transmission:</b>	
Filler plug	30 – 35 Nm
Drain plug —	
4 x 2 transmission	30 – 35 Nm
4 x 4 transmission	60 Nm
<b>Transfer case:</b>	
Filler and drain plugs	30 – 35 Nm
<b>Differential front and rear:</b>	
Filler plug	40 – 60 Nm
Drain plug	50 – 70 Nm

### TUNE-UP

<b>Compression pressure:</b>	
Standard	1 200 kPa
Minimum	890 kPa
Differential limit between cylinders	100 kPa
<b>Idle speed:</b>	
2.0 litre —	
Manual	750 ± 50 rpm
Automatic (in N range)	800 ± 50 rpm
2.4 litre —	
Manual and automatic (in N range)	800 ± 50 rpm
<b>Idle Co%:</b>	
2.0 litre	1.0 ± 0.5% with secondary air disconnected

2.4 litre	1%
Ignition timing at idle	5° ± 2° BTDC
High tension lead resistance	Less than 22 k/ohms
<b>Spark plugs:</b>	
Type —	
NGK	BP6ES
Nippondenso	W20EP
Gap	0.7 – 0.8 mm
<b>Drive belt deflection:</b>	
Alternator and air conditioning belt	7 – 10 mm
Power steering belt	6 – 9 mm
Valve clearance	Hydraulic-non adjustable

### Torque wrench settings

Spark plugs	20 – 30 Nm
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## ENGINE

### General specifications

Engine type	4 cyl OHC
<b>Engine designation:</b>	
2.0 litre	4G63
2.4 litre	4G64
<b>Induction:</b>	
2.0 litre	Carburettor
2.4 litre	Electronic fuel injection (EFI)
<b>Displacement:</b>	
2.0 litre	1 997 cc
2.4 litre	2 350 cc
<b>Bore:</b>	
2.0 litre	85.0 mm
2.4 litre	86.5 mm
<b>Stroke:</b>	
2.0 litre	88.0 mm
2.4 litre	100.0 mm
<b>Compression ratio:</b>	
2.0 litre	8.5:1
2.4 litre	8.6:1
Firing order	1 – 3 – 4 – 2

### Cylinder head

*Machining limit	0.2 mm
Type	Crossflow, alloy
Height	89.9 – 90.1 mm
Distortion limit	0.2 mm
Valve seat angle (inlet and exhaust)	44°
Valve seat contact width	0.9 – 1.3 mm
Valve face angle (inlet and exhaust)	45°
<b>Valve stem to guide clearance:</b>	
Inlet	0.02 – 0.06 mm

Exhaust	0.05 – 0.09 mm
Wear limit —	
Inlet	0.10 mm
Exhaust	0.15 mm
Valve head margin limit:	
Inlet	0.7 mm
Exhaust	1.5 mm
Valve springs free length:	
Green springs —	
Standard	47.5 mm
Limit	46.5 mm
White springs —	
Standard	49.8 mm
Limit	48.8 mm
Valve springs squareness limit	4°
Valve guides:	
Type	Replaceable
Service sizes	0.05, 0.25, 0.50 mm
Press-in temperature	Room temperature

### Cylinder block

Bore diameter:	
2.0 litre	85.00 – 85.03 mm
2.4 litre	86.50 – 86.53 mm
Bore diameter wear limit	0.2 mm
Taper and ovality limit	0.02 mm
Piston to cylinder bore clearance	0.02 – 0.04 mm
Cylinder block face	
distortion limit	0.1 mm
*Cylinder block face	
machining limit	0.2 mm

### Piston and rings

Piston diameter (standard):	
2.0 litre	84.97 – 85.00
2.4 litre	86.47 – 86.50
Piston oversizes	0.25, 0.50, 0.75 and 1.0 mm
Piston rings:	
Side clearance —	
Top ring	0.03 – 0.07 mm
Second ring	0.02 – 0.06 mm
Wear limit	0.1 mm
End gap —	
Top ring	0.25 – 0.40 mm
Second ring	0.45 – 0.60 mm
Oil ring to 1993	0.20 – 0.70 mm
Oil ring 1993 on	0.10 – 0.40 mm
Wear limit —	
Top and second ring	0.8 mm
Oil ring	1.0 mm

### Connecting rods and bearings

Connecting rod bend limit	0.05 mm
Connecting rod twist limit	0.1 mm
Connecting rod side clearance:	
Standard	0.10 – 0.25 mm
Limit	0.4 mm
Connecting rod bearing oil clearance:	
Standard	0.02 – 0.05 mm
Limit	0.1 mm
Undersize bearings available	0.25, 0.50 and 0.75 mm

### Crankshaft and main bearings

Main journal diameter	56.98 – 57.00 mm
Main bearing oil clearance:	
Standard	0.02 – 0.05 mm
Limit	0.1 mm
Crankshaft end float:	
Standard	0.05 – 0.18 mm
Limit	0.25 mm
Crankpin diameter	44.98 – 45.00 mm
Main journal and crankpin	
taper and ovality limit	0.01 mm
Flywheel runout limit	0.13 mm

### Camshaft and rocker gear

Number of bearings	5
Camshaft bearing journal	
diameter	33.94 – 33.95 mm
Camshaft oil clearance	0.05 – 0.09 mm
Camshaft end float:	
Standard	0.1 – 0.2 mm
Limit	0.4 mm
Rocker arm inside diameter	18.910 – 18.928 mm
Rocker arm to shaft clearance:	
Standard	0.01 – 0.04 mm
Limit	0.1 mm
Rocker shaft diameter	18.89 – 18.90 mm

### Counter balance shaft

Journal diameter:	
Right front	41.96 – 41.98 mm
Right rear	40.95 – 40.97 mm
Left front	18.47 – 18.48 mm
Left rear	40.95 – 40.97 mm
Oil clearance:	
Right front	0.03 – 0.06 mm
Right rear	0.05 – 0.09 mm
Left front	0.02 – 0.05 mm
Left rear	0.05 – 0.09 mm

## Lubrication

Regulated oil pressure (approximate) . . . 500 – 600 kPa

Oil pump clearances:

Drive gear tip clearance limit . . . . .	0.30 mm
Driven gear tip clearance limit . . . . .	0.27 mm
Drive gear side clearance limit —	
To April 1987 . . . . .	0.23 mm
From May 1987 . . . . .	0.18 mm
Driven gear side clearance limit —	
To April 1987 . . . . .	0.20 mm
From May 1987 . . . . .	0.15 mm

\*Combined machining of cylinder block and cylinder head not to exceed 0.2 mm.

## Torque wrench settings

Cylinder head bolts . . . . .	Refer to text
Camshaft bearing cap bolts:	
25 mm length . . . . .	20 – 27 Nm
65 mm length . . . . .	19 – 21 Nm
Camshaft sprocket bolt . . . . .	80 – 100 Nm
Main bearing cap bolts . . . . .	50 – 55 Nm
Big end cap nuts . . . . .	50 – 53 Nm
Flywheel/drive plate bolts . . . . .	130 – 140 Nm
Crankshaft pulley bolts . . . . .	20 – 30 Nm
Crankshaft sprocket bolt . . . . .	110 – 130 Nm
Oil pump sprocket nut . . . . .	50 – 60 Nm
Counter balance shaft sprocket bolt . . . . .	46 Nm
Timing belt tensioner pivot nut . . . . .	49 Nm
Timing belt tensioner adjusting bolt . . . . .	49 Nm
Timing belt tensioner pivot bolt . . . . .	19 Nm

## ENGINE ELECTRICAL

Starter motor:

Make . . . . .	Mitsubishi
Type —	
Manual transmission . . . . .	0.9 kW direct drive
Automatic transmission . . . . .	1.2 kW reduction drive
Minimum brush length . . . . .	To wear limit line
Drive pinion stop clearance . . . . .	0.5 – 2.0 mm

Alternator:

Make . . . . .	Mitsubishi
Type . . . . .	14 volt, internal regulator
Rated output . . . . .	40, 60, 65 or 75 amp
Field winding resistance . . . . .	3 – 5 ohms
Minimum brush length . . . . .	To wear limit line

Ignition coil:

Primary coil resistance —	
2.0 litre . . . . .	1.08 – 1.32 ohms
2.4 litre . . . . .	0.72 – 0.88 ohms

Secondary coil resistance —

2.0 litre . . . . .	12.75 – 17.25 k/ohms
2.4 litre . . . . .	10.29 – 13.92 k/ohms
Ballast resistor	
resistance (2.0 litre) . . . . .	1.22 – 1.49 ohms

## Torque wrench settings

Starter motor retaining bolts . . . . .	27 – 34 Nm
Alternator pivot bolt . . . . .	12 – 15 Nm
Alternator clamp nut . . . . .	20 – 25 Nm

## COOLING SYSTEM

Mitsubishi Long Life coolant concentration:

Temperatures down to $-15^{\circ}\text{C}$ . . . . .	300 ml/litre (30% volume in water)
Temperatures below $-15^{\circ}\text{C}$ . . . . .	500 ml/litre (50% volume in water)

Thermostat:

Opening temperature —	
2.0 litre . . . . .	$82^{\circ}\text{C}$
2.4 litre . . . . .	$88^{\circ}\text{C}$
Minimum valve lift . . . . .	8.0 mm

Radiator cap relief pressure:

SF . . . . .	78 – 98 kPa
SG, SH . . . . .	75 – 105 kPa

## FUEL AND ENGINE MANAGEMENT SYSTEM

### 2.0 litre carburettor models

Carburettor:

Make . . . . .	Mikuni
Type . . . . .	Twin throat downdraught
Choke type . . . . .	Automatic, wax element

Carburettor models:

1987 to late 1988 —	
Manual transmission . . . . .	32 – 35 DIDTA-376
Automatic transmission . . . . .	32 – 35 DIDTA-377
Late 1988 to late 1992 —	
Manual transmission . . . . .	32 – 35 DIDTA-386
Automatic transmission . . . . .	32 – 35 DIDTA-387
From late 1992 —	
Manual transmission . . . . .	32 – 35 DIDTA-394
Automatic transmission . . . . .	32 – 35 DIDTA-395

Main jet:

Primary . . . . .	No 106.3
Secondary . . . . .	No 165

Pilot jet:

Primary . . . . .	No 52.5
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Secondary .....	No 60
Enrichment jet .....	No 60
Float level .....	Non adjustable
Fuel pump:	
Type .....	Mechanical, non repairable
Delivery pressure .....	18 – 28 kPa
Fuel cut solenoid resistance .....	48 – 60 ohms at 20°C
Choke fast idle opening:	
Manual transmission .....	0.67 – 0.76 mm
Automatic transmission .....	0.76 – 0.85 mm
Throttle cable free play .....	1.0 mm

## 2.4 litre EFI models

Fuel pressure:	
At idle .....	188 kPa
At idle with pressure regulator vacuum hose disconnected .....	250 – 260 kPa
Injector resistance .....	2 – 3 ohms at 20°C
Pressure regulator solenoid resistance .....	36 – 46 ohms at 20°C

## CLUTCH

Type of control:	
2.0 litre .....	Cable
2.4 litre .....	Hydraulic
Clutch pedal height .....	202 – 208 mm
Clutch pedal free play:	
Cable .....	20 – 35 mm
Hydraulic .....	8 – 15 mm
Clutch driven plate minimum rivet head depth .....	0.3 mm
Pressure plate spring distortion limit .....	0.5 mm
Master cylinder inner diameter .....	15.87 mm
Slave cylinder inner diameter .....	19.05 mm

## Torque wrench settings

Clutch pressure plate bolts .....	15 – 21 Nm
Master cylinder mounting bolts .....	9 – 14 Nm
Slave cylinder mounting bolts .....	30 – 42 Nm

## MANUAL TRANSMISSION

Transmission type .....	5 speed
Transmission model:	
SF 4 x 2 model .....	KM135
SF 4 x 4 model .....	KM147
SG, SH 4 x 2 models .....	R5M21
SG, SH 4 x 4 models .....	V5M21

## Torque wrench settings

Propeller shaft retaining bolts .....	50 – 60 Nm
Transmission mounting bolts (4 x 2) .....	70 – 95 Nm
Transmission mounting bolts (4 x 4) .....	35 – 55 Nm

## AUTOMATIC TRANSMISSION

Transmission type .....	4 speed
Transmission model:	
SF models .....	AW372
SG, SH models .....	R4AW2
Kickdown cable set measurements:	
2.0 litre .....	52 – 53 mm
2.4 litre .....	0 – 1 mm
Stall test:	
2.0 litre .....	1 800 – 2 100 rpm
2.4 litre .....	2 050 – 2 350 rpm

## Torque wrench settings

Torque converter retaining bolts .....	35 – 42 Nm
Transmission mounting bolts:	
10 mm .....	43 – 55 Nm
8 mm .....	20 – 27 Nm
Propeller shaft retaining bolts .....	50 – 60 Nm
Drain plug .....	18 – 23 Nm

## FRONT AXLE AND SUSPENSION

### Front axle — 4 x 4 models:

Type .....	Semi floating hypoid
Final drive ratio .....	4.625
Hub end float .....	0.05 mm or less
Hub turning effort (spring scale on wheel stud) .....	5 – 18 N
Drive shaft end float .....	0.4 – 0.7 mm
Automatic free wheeling hub —	
Return spring length (minimum) .....	35 mm
Shift spring length (minimum) .....	30 mm
Brake plate thickness (minimum) .....	9.6 mm
Free wheeling hub turning resistance (maximum, spring scale on wheel stud) .....	14 N
Crownwheel backlash .....	0.11 – 0.16 mm
Crownwheel runout limit .....	0.05 mm
Drive pinion total backlash limit .....	14 mm
Drive pinion turning torque —	
With oil seal .....	0.6 – 0.7 Nm
Without oil seal .....	0.4 – 0.5 Nm

### Front axle — 4 x 2 models:

Hub end float	Zero
Hub bearing preload	8 Nm (see text)
Upper ball joint turning torque	0.8 – 3.5 Nm
Lower ball joint turning torque (4 x 2)	1 – 4 Nm
Lower ball joint end float (4 x 4)	0.5 mm
Wheel alignment:	
Toe in —	
SF models	0 – 6 mm
SG, SH models	1 ± 3 mm
Camber	0 deg 30 min ± 45 min
Caster	3 deg ± 1 deg
Kingpin inclination —	
4 x 2 models	10 deg 30 min
4 x 4 models	8 deg 30 min
Toe out on turns (outside wheel at 20 deg) —	
4 x 2 models	10 deg 30 min
4 x 4 models	8 deg 30 min
Clearance between bump stop and upper suspension arm —	
4 x 2 models	51 mm
4 x 4 models	45 mm

### Torque wrench settings

Free wheeling hub housing bolts	50 – 60 Nm
Wheel hub to brake disc bolts (4 x 4)	50 – 60 Nm
Wheel hub to brake disc nuts (4 x 2)	47 – 52 Nm
Upper ball joint to steering knuckle	120 – 180 Nm
Upper ball joint to upper arm	35 – 55 Nm
Lower ball joint to steering knuckle	120 – 180 Nm
Tie rod ball joint to steering knuckle	35 – 45 Nm
Radius rod to lower suspension arm nuts	85 – 110 Nm
Crownwheel bolts	80 – 90 Nm
Drive pinion nut	160 – 220 Nm
Side bearing cap bolts	55 – 65 Nm

### REAR AXLE AND SUSPENSION

#### Rear axle:

Type	Semi floating hypoid
Final drive ratio	4.625
Axle shaft end float	0.05 – 0.20 mm
Crownwheel backlash	0.11 – 0.16 mm
Drive pinion total backlash limit	5.0 mm
Drive pinion turning torque —	
With oil seal	0.6 – 0.7 Nm
Without oil seal	0.4 – 0.5 Nm

### Torque wrench settings

Final drive assembly retaining nuts	25 – 30 Nm
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Shackle retaining nuts	30 – 45 Nm
Propeller shaft nuts	50 – 60 Nm
Shock absorber nuts	20 – 30 Nm
Rear axle bearing lock nut	180 – 220 Nm
Pinion flange nut	190 – 250 Nm
U bolts nuts	85 – 110 Nm
Crownwheel bolts	80 – 90 Nm
Side bearing cap bolts	55 – 65 Nm
Backing plate retaining nuts	50 – 60 Nm

### STEERING

#### Steering wheel free play limit:

Manual steering	40 mm
Power steering (with engine running)	40 mm

Tie rod end ball joint turning torque	1 – 3 Nm
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#### Bevel gear assembly:

Bevel gear torque (output side)	0.05 – 0.10 Nm
Bevel gear torque (input side)	0.25 – 0.45 Nm
Total bevel gear torque	0.30 – 0.55 Nm

#### Steering gear:

Total pinion torque —	
Manual steering	0.6 – 1.2 Nm
Power steering	0.7 – 1.4 Nm

#### Power steering:

Drive belt deflection	6 – 9 mm
Pump pressure —	
Pressure gauge valve closed	7.5 – 8.2 MPa
Pressure gauge valve opened	0.8 – 1.0 MPa
Clearance between vane and rotor	0.06 mm
Pulley shaft side play	0.1 mm

### Torque wrench settings

Steering wheel nut	34 – 50 Nm
Steering column retaining bolts	14 – 20 Nm
Steering shaft to bevel gear pinch bolt	30 – 40 Nm
Upper steering shaft to lower steering shaft pinch bolt	30 – 35 Nm
Upper steering column to lower steering column bolts	15 – 20 Nm
Tie rod end castellated nut	35 – 45 Nm
Steering gear retaining bolts	70 – 90 Nm
Steering gear yoke pinch bolt	30 – 40 Nm
Intermediate shaft flexible joint nuts	17 – 26 Nm
Bevel gear assembly retaining bolts	35 – 55 Nm

### BRAKES

#### Front brake:

Caliper bore diameter	57.15 mm
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## Technical Data

Disc diameter —	
4 x 2 models . . . . .	258 mm
4 x 4 models . . . . .	277 mm
Disc minimum thickness . . . . .	20.4 mm
Disc maximum runout . . . . .	0.10 mm
Disc pad wear limit . . . . .	2.0 mm
Rear drum brake:	
Wheel cylinder bore diameter . . . . .	20.64 mm
Brake drum inner diameter . . . . .	254 mm
Brake drum machining limit . . . . .	256 mm
Lining wear limit . . . . .	1.0 mm
Master cylinder bore diameter:	
2.0 litre . . . . .	22.22 mm
2.4 litre . . . . .	23.81 mm
Brake booster pushrod clearance . . . . .	1.5 – 1.9 mm

Brake pedal:	
Height . . . . .	196 – 202 mm
Free play . . . . .	3 – 8 mm
Handbrake lever stroke:	
4 x 2 models . . . . .	4 – 6 notches
4 x 4 models . . . . .	5 – 7 notches

### Torque wrench settings

Brake pedal pivot bolt and nut . . . . .	19 – 28 Nm
Front caliper anchor plate bolts . . . . .	80 – 100 Nm
Front caliper guide pin bolts:	
Top bolt . . . . .	40 – 50 Nm
Bottom bolt . . . . .	32 – 42 Nm