

Engine & Cooling

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Automotive Technical
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Engine and cooling systemSunny 1.6 Wagon/Van/4x4 (Y10)1991 to 1995

Type		GA16DS/E DOHC 16V 70kW US83
Capacity (cm³) / number of cylinders		1597 / 4
Compression ratio / pressure	bar	9.8 / ≥11.3
Oil pressure	bar	[3.4 to 4.4]
Oil temperature	°C	80
Valve clearance - inlet	mm	0.30 C
Valve clearance - exhaust	mm	0.35 C
Firing order		1-3-4-2
No 1 cylinder position		TCE
Thermostat opening temperature	°C	76.5
Radiator cap pressure	bar	0.78 to 0.98

Fuel systemSunny 1.6 Wagon/Van/4x4 (Y10)1991 to 1995

Idle speed - manual [auto]	rpm	750±50. A/C: 850±50
Fast idle speed - manual [auto]	rpm	2100±200
CO @ idle speed [3000 rpm] - see page VI	%	1.5±0.5. CAT: 1.0±0.5
HC @ idle speed [3000 rpm] - see page VI	ppm	≤200
CO2 @ idle speed [3000 rpm] - see page VI	%	—
O2 @ idle speed [3000 rpm] - see page VI	%	—
Carburettor / fuel injection		HitachiNissan
Type / ref		21L304-11. CAT: 21L304-13 ⁸
Main jet / needle		100, 135. CAT: 92, 135
Injection pressure	bar	2.9_
Pump pressure	bar	0.21 to 0.34
Octane rating	RON	95[E 95 RON] ¹

Ignition systemSunny 1.6 Wagon/Van/4x4 (Y10)1991 to 1995

Type		Electronic
Ignition coil		—
Primary resistance	ohms	1.0
Ballast resistor	ohms	—
Voltage - Tmnl 15(+) to earth	V	12.0
Distributor		Mitsubishi/Hitachi
Points gap (air gap)	mm	[0.30 to 0.50]
Dwell angle	° (%)	—
Condenser capacity	µF	—
Rotation		Anticlockwise
Ignition timing - basic [static	° Crankshaft @ rpm	10±2 BTDC @ 750
V = Vacuum NV = No Vacuum		NV
Total ignition advance	° Crankshaft @ rpm	—
	° Crankshaft @ rpm	—
	° Crankshaft @ rpm	—
Centrifugal check.	° Crankshaft @ rpm	-2 to +2 @ 1200
	° Crankshaft @ rpm	17 to 19 @ 2400 to 2800
	° Crankshaft @ rpm	23 to 27 @ 4400
Vacuum range check	mbar	134 to 533
Maximum vacuum advance	° Crankshaft	18 to 22
Spark plugs		NGK
Type		BKR6E GA16DE: BKR5E
Electrode gap	mm	0.80 to 0.90

Electrical systemSunny 1.6 Wagon/Van/4x4 (Y10)1991 to 1995

Battery	V / CC / RC	12 / 50Ah
Alternator voltage / full load current / engine rpm		14.1 to 14.7 / 50,65,70 / 2500
Starter motor current / voltage - cranking	A / V	60 to 100 / 11.0 to 11.5
- locked	A / V	—

Running gearSunny 1.6 Wagon/Van/4x4 (Y10)1991 to 1995

Brakes -		
Front (min. friction material thickness)	mm	2.0
Rear (min. friction material thickness)	mm	1.5

Tyres		
Saloon	Size	—
Estate / Van	Size	155x13: 175/70x13: 175/65x14
Pressure - front / rear - Saloon	bar	—
- Estate / Van	bar	2.1 / 2.1

Front suspension / wheel alignment

Toe-in (+) / Toe-out (–)	mm [°]	0 to +2.0 ³
Camber		-55' to +35' ⁴
Castor		+1°45' to 15' N/A ⁵
King pin inclination		+13°5' to 14°35' N/A ⁶

Rear suspension / wheel alignment

Toe-in (+) / Toe-out (–)	mm [°]	4x2: 0 to +4.
Camber		4x2: -45' to -2°15'

Torque wrench settingsSunny 1.6 Wagon/Van/4x4 (Y10)1991 to 1995

Cylinder head - stage 1	Nm	29
- stage 2	Nm	59
Cylinder head - stage 3	Nm	Loosen, then 29
- stage 4	Nm	+ 50 to 55 ⁷
Big-end bearings	Nm	15 + 35 to 40°
Main bearings	Nm	46 to 52
Clutch cover	Nm	22 to 29
Flywheel [driveplate]	Nm	83 to 93
Front hubs	Nm	WSM
Rear hubs	Nm	4x2: 186 to 255
Wheel nuts / bolts	Nm	98 to 118
Spark plugs	Nm	20 to 29

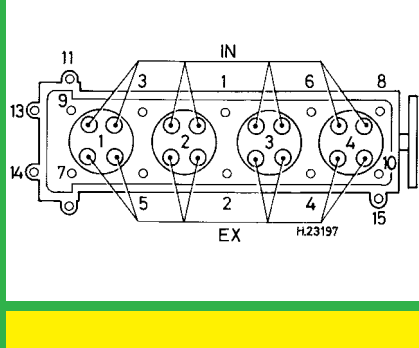
CapacitiesSunny 1.6 Wagon/Van/4x4 (Y10)1991 to 1995

Engine oil & filter	litres	3.2
Gearbox - 4-speed [5-speed]	litres	2.9. Transfer: 1.1
Automatic transmission - refill	litres	—
Final drive	litres	WT. 4x4: 1.0
Cooling system	litres	5.5
Fuel tank	litres	50. 4x4: 53

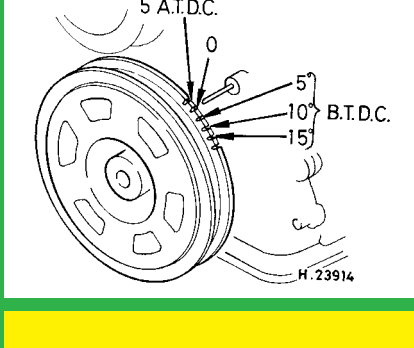
Notes and Illustrations

- ¹CAT: 95 [U]
- ³4x4: +1.0 to 3.0
- ⁴Estate: -45' to +45'. 4x4: -40' to +50'
- ⁵4x4: +25' to 1°55'
- ⁶4x4: +12°15' to 13°45'
- ⁷Bolts 11 to 15: 6.3 to 8.3
- ⁸GA16DE: ECCS Injection

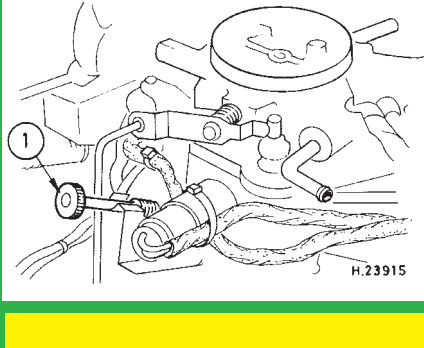
1: Idle speed2: CO / Mixture



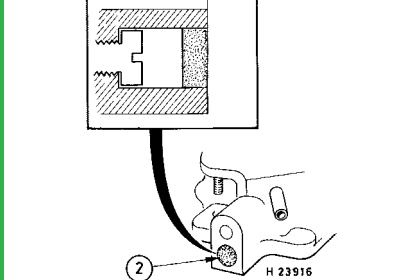
1597 cm³, 16V



1597 cm³, 16V



21L304-13/14



21L304-13/14