

Engine & Cooling

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Automotive Technical
DATA BOOK

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Engine and cooling systemSunny 1.6 (B12, N13)1989 to 1991

Type		GA16S SOHC 12V
Capacity (cm ³) / number of cylinders		1597 / 4
Compression ratio / pressure	bar	9.8 / ≥11.8
Oil pressure	bar	[3.9 to 4.9]
Oil temperature	°C	—
Valve clearance - inlet	mm	0: Hyd.
Valve clearance - exhaust	mm	0: Hyd.
Firing order		1-3-4-2
No 1 cylinder position		TBE
Thermostat opening temperature	°C	82
Radiator cap pressure	bar	0.78 to 0.98

Fuel systemSunny 1.6 (B12, N13)1989 to 1991

Idle speed - manual [auto]	rpm	850±50 [900±50]
Fast idle speed - manual [auto]	rpm	2700±200 [3100±200]
CO @ idle speed [3000 rpm] - see page VI	%	1.5±0.5
HC @ idle speed [3000 rpm] - see page VI	ppm	≤1200
CO2 @ idle speed [3000 rpm] - see page VI	%	—
O2 @ idle speed [3000 rpm] - see page VI	%	—
Carburettor / fuel injection		Hitachi
Type / ref		21L304-03 [AT: -04]
Main jet / needle		99, 155
Injection pressure	bar	—
Pump pressure	bar	0.21 to 0.34
Octane rating	RON	97[R]

Ignition systemSunny 1.6 (B12, N13)1989 to 1991

Type		Electronic
Ignition coil		Hanshin STC-143
Primary resistance	ohms	1.0 to 1.3
Ballast resistor	ohms	—
Voltage - Tmnl 15(+) to earth	V	—
Distributor		Hitachi
Points gap (air gap)	mm	[0.30 to 0.50]
Dwell angle	° (%)	—
Condenser capacity	µF	—
Rotation		Anticlockwise
Ignition timing - basic [static	° Crankshaft @ rpm	6±5 BTDC @ idle
V = Vacuum NV = No Vacuum		V
Total ignition advance	° Crankshaft @ rpm	—
	° Crankshaft @ rpm	—
	° Crankshaft @ rpm	—
Centrifugal check.	° Crankshaft @ rpm	0 @ 600
	° Crankshaft @ rpm	20 @ 2400
	° Crankshaft @ rpm	28 to 32 @ 4400
Vacuum range check	mbar	147 to 373
Maximum vacuum advance	° Crankshaft	20
Spark plugs		NGK/Champion
Type		BCPR6ES / RC9YC
Electrode gap	mm	0.80 to 0.90

Electrical systemSunny 1.6 (B12, N13)1989 to 1991

Battery	V / CC / RC	12 / 60Ah
Alternator voltage / full load current / engine rpm		14.1 to 14.7 / _ / 2500
Starter motor current / voltage - cranking	A / V	60 / 11.5 (no load)
- locked	A / V	—

Running gearSunny 1.6 (B12, N13)1989 to 1991

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

Tyres		
Saloon	Size	155x13: 175/70x13: 185/60x14
Estate / Van	Size	155x13: 175/70x13
Pressure - front / rear - Saloon	bar	2.1 / 2.1
- Estate / Van	bar	2.1 / 2.1

Front suspension / wheel alignment		
Toe-in (+) / Toe-out (–)	mm [°]	-0.5 to +1.5
Camber		-50' to +40' ¹
Castor		+35' to 2°5' N/A ²
King pin inclination		+13°5' to 14°35' N/A ³

Rear suspension / wheel alignment		
Toe-in (+) / Toe-out (–)	mm [°]	0 to -4.0 ⁴
Camber		-1°45' to -15' [B12; -25'] ⁵

Torque wrench settingsSunny 1.6 (B12, N13)1989 to 1991

Cylinder head - stage 1	Nm	29
- stage 2	Nm	64
Cylinder head - stage 3	Nm	Loosen, then 29
- stage 4	Nm	⁶
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 ⁷
Front hubs	Nm	196 to 275
Rear hubs	Nm	186 to 255
Wheel nuts / bolts	Nm	98 to 118
Spark plugs	Nm	20 to 29

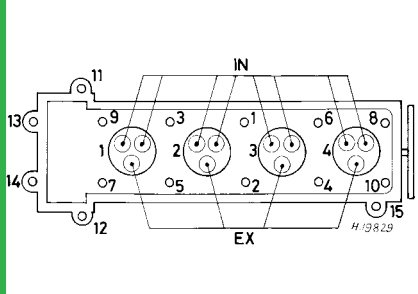
CapacitiesSunny 1.6 (B12, N13)1989 to 1991

Engine oil & filter	litres	3.2
Gearbox - 4-speed [5-speed]	litres	2.8
Automatic transmission - refill	litres	6.3
Final drive	litres	WT
Cooling system	litres	5.0 [AT: 5.4]
Fuel tank	litres	B12: 52. N13: 50

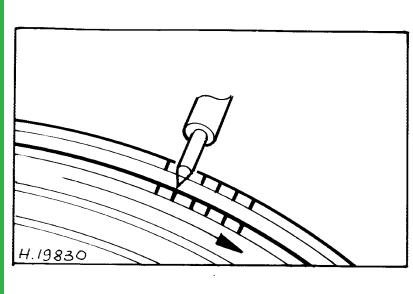
Notes and Illustrations

- ¹Coupé: -1°5' to +25'
- ²Coupé: +45' to 2°15' N/A
- ³Coupé: +13°25' to 14°55' N/A
- ⁴Coupé: +0.5 to -3.5
- ⁵Coupé: -1°55' to -25'
- ⁶Bolt 1: + 80 to 85°. Bolts 2 to 10: + 60 to 65°. Bolts 11 to 15: 6.3 to 8.3
- ⁷Driveplate: [93 to 103]

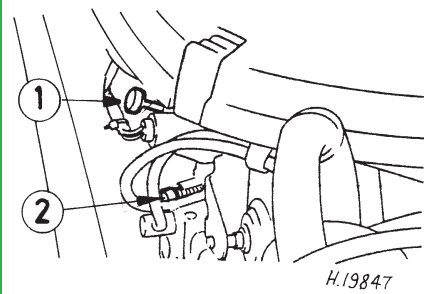
1: Idle speed 2: CO / Mixture



1597 cm³, 12V



1597 cm³, 12V



Hitachi 21L