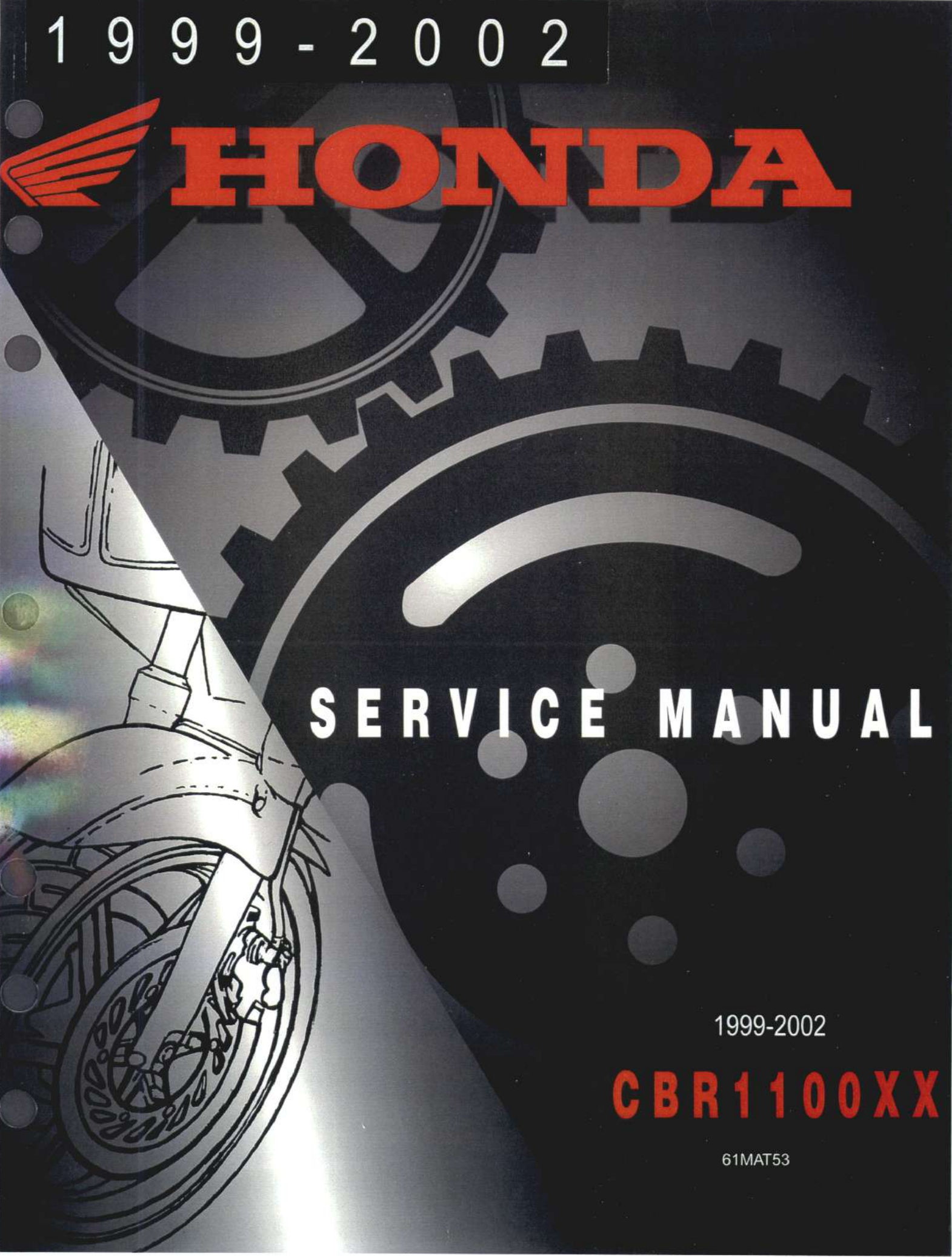
1999-2002

HONDA



SERVICE MANUAL

1999-2002

CBR1100XX

61MAT53

GENERAL SAFETY

CARBON MONOXIDE

If the engine must be running to do some work, make sure the area is well ventilated. Never run the engine in an enclosed area.

⚠WARNING

The exhaust contains poisonous carbon monoxide gas that can cause loss of consciousness and may lead to death.

Run the engine in an open area or with an exhaust evacuation system in an enclosed area.

GASOLINE

Work in a well ventilated area. Keep cigarettes, flames or sparks away from the work area or where gasoline is stored.

⚠WARNING

Gasoline is extremely flammable and is explosive under certain conditions. KEEP OUT OF REACH OF CHILDREN.

HOT COMPONENTS

⚠WARNING

Engine and exhaust system parts become very hot and remain hot for some time after the engine is run. Wear insulated gloves or wait until the engine and exhaust system have cooled before handling these parts.

USED ENGINE OIL

⚠WARNING

Used engine oil may cause skin cancer if repeatedly left in contact with the skin for prolonged periods. Although this is unlikely unless you handle used oil on a daily basis, it is still advisable to thoroughly wash your hands with soap and water as soon as possible after handling used oil. KEEP OUT OF REACH OF CHILDREN.

BRAKE DUST

Never use an air hose or dry brush to clean the brake assemblies. Use an OSHA-approved vacuum cleaner or alternate method approved by OSHA, designed to minimize the hazard caused by airborne asbestos fibers.

BRAKE FLUID

CAUTION:

Spilling fluid on painted, plastic or rubber parts will damage them. Place a clean shop towel over these parts whenever the system is serviced. KEEP OUT OF REACH OF CHILDREN.

COOLANT

Under some conditions, the ethylene glycol in engine coolant is combustible and its flame is not visible. If the ethylene glycol does ignite, you will not see any flame, but you can be burned.

⚠WARNING

- *Avoid spilling engine coolant on the exhaust system or engine parts. They may be hot enough to cause the coolant to ignite and burn without a visible flame.*
- *Coolant (ethylene glycol) can cause some skin irritation and is poisonous if swallowed. KEEP OUT OF REACH OF CHILDREN.*
- *Do not remove the radiator cap when the engine is hot. The coolant is under pressure and could scald you.*
- *Keep hands and clothing away from the cooling fan, as it starts automatically.*

CAUTION:

Using coolant with silicate inhibitors may cause premature water of water pump seals or brockage of radiator passages. Using tap water may cause engine damage.

BATTERY HYDROGEN GAS & ELECTROLYTE

⚠WARNING

- *The battery gives off explosive gases; keep sparks, flames and cigarettes away. Provide adequate ventilation when charging.*
- *The battery contains sulfuric acid (electrolyte). Contact with skin or eyes may cause severe burns. Wear protective clothing and a face shield.*
  - *If electrolyte gets on your skin, flush with water.*
  - *If electrolyte gets in your eyes, flush with water for at least 15 minutes and call a physician immediately.*
- *Electrolyte is poisonous.*
  - *If swallowed, drink large quantities of water or milk and follow with milk of magnesia or vegetable oil and call a physician. KEEP OUT OF REACH OF CHILDREN.*

SERVICE RULES

1. Use genuine HONDA or HONDA-recommended parts and lubricants or their equivalents. Parts that don't meet HONDA's design specifications may cause damage to the motorcycle.
2. Use the special tools designed for this product to avoid damage and incorrect assembly.
3. Use only metric tools when servicing the motorcycle. Metric bolts, nuts and screws are not interchangeable with English fasteners.
4. Install new gaskets, O-rings, cotter pins, and lock plates when reassembling.
5. When tightening bolts or nuts, begin with the larger diameter or inner bolt first. Then tighten to the specified torque diagonally in incremental steps unless a particular sequence is specified.
6. Clean parts in cleaning solvent upon disassembly. Lubricate any sliding surfaces before reassembly.
7. After reassembly, check all parts for proper installation and operation.
8. Route all electrical wires as show on pages 1-24 through 1-37, Cable and Harness Routing.

HOW TO USE THIS MANUAL

This service manual describes the service procedures for the CBR1100XX.

Follow the Maintenance Schedule (Section 3) recommendations to ensure that the vehicle is in peak operating condition and the emission levels are within the standards set by the U.S. Environmental Protection Agency and California Air Resources Board.

Performing the first scheduled maintenance is very important. It compensates for the initial wear that occurs during the break-in period.

Sections 1 and 3 apply to the whole motorcycle. Section 2 illustrates procedures for removal/installation of components that may be required to perform service described in the following sections. Sections 4 through 19 describe parts of the motorcycle, grouped according to location.

Find the section you want on this page, then turn to the table of contents on the first page of the section.

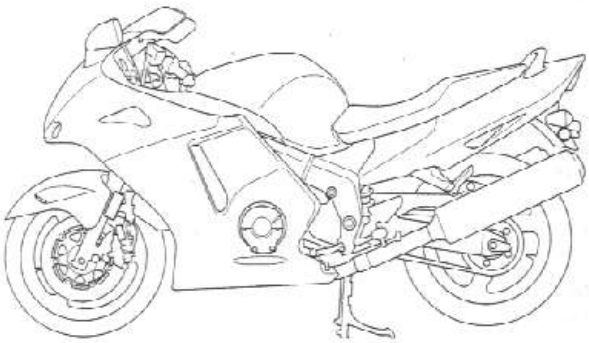
Most sections have an assembly or system illustration, service information and troubleshooting for the section.
The subsequent pages give detailed procedures.

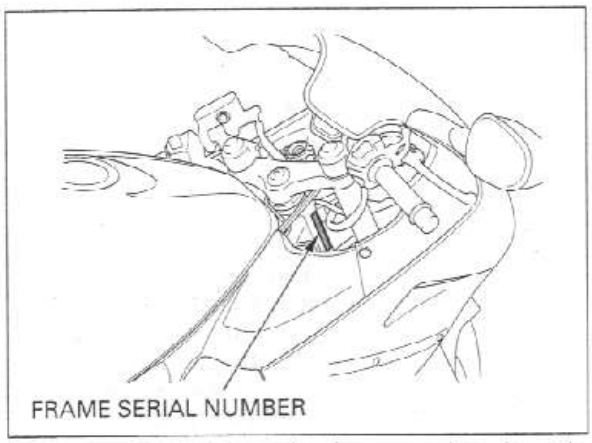
If you are not familiar with this motorcycle, read Technical Feature in section 21.
If you don't know the source of the trouble, go to section 22 Troubleshooting.

CONTENTS

Date of Issue: December, 1998

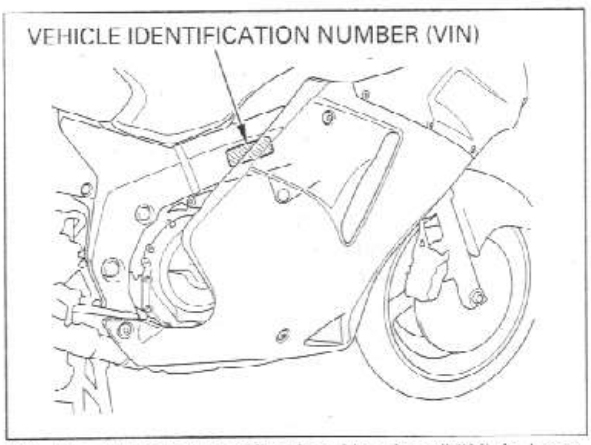
MODEL IDENTIFICATION



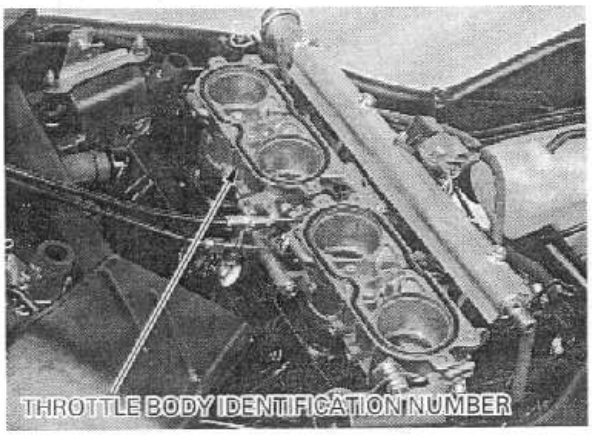


(1) The frame serial number is stamped on the right side of the steering head.

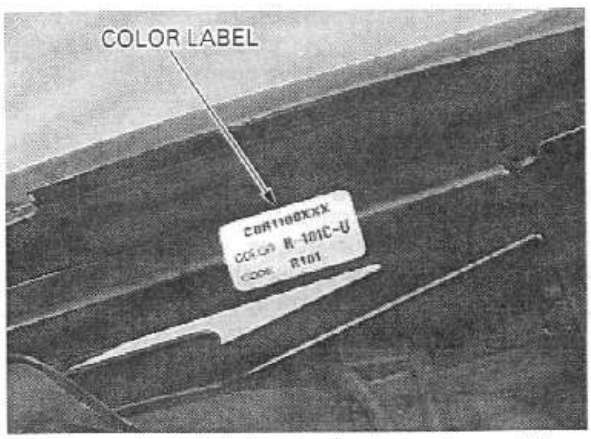
(2) The engine serial number is stamped on the right side of the upper crankcase.



(3) The Vehicle Identification Number (VIN) is located on right side of the frame near the steering head on the Safety Certification Label.



(4) The throttle body identification number is stamped on the intake side of the throttle body as shown.



(5) The color label is attached as shown. When ordering color-coded parts, always specify the designated color code.

SPECIFICATIONS

GENERAL

ITEM			SPECIFICATIONS
DIMENSIONS	Overall length		2,160 mm (85.0 in)
	Overall width		720 mm (28.3 in)
	Overall height	'99:	1,170 mm (46.1 in)
		After '99:	1,200 mm (47.2 in)
	Wheelbase	'99:	1,485 mm (58.5 in)
		After '99:	1,490 mm (58.7 in)
	Seat height		810 mm (31.9 in)
	Footpeg height		372 mm (14.6 in)
	Ground clearance		130 mm (5.1 in)
	Dry weight	49 state/Canada type	223 kg (492 lbs)
		California type	224 kg (494 lbs)
	Curb weight	49 state/Canada type	253 kg (558 lbs)
		California type	254 kg (560 lbs)
	Maximum weight capacity		
		49 state/California type	174 kg (384 lbs)
		Canada type	178 kg (393 lbs)
FRAME	Frame type		Diamond
	Front suspension		Telescopic fork
	Front wheel travel		109 mm (4.3 in)
	Rear suspension		Swingarm
	Rear wheel travel		120 mm (4.7 in)
	Rear damper		Nitrogen gas filled damper
	Front tire size		120/70 ZR17 (58W) /Radial
	Rear tire size		180/55 ZR17 (73W) /Radial
	Tire brand		
	Bridgestone		Front: BT57F RADIAL G /Rear: BT57R RADIAL G
	Dunlop		Front: D205FJ /Rear: D205G
	Michelin		Front: MACADAM 90X S /Rear: MACADAM 90X S
	Front brake		Hydraulic double disc brake with 3 piston calipers
	Rear brake		Hydraulic single disc brake with 3 piston calipers
	Caster angle		25°
	Trail length		99 mm (3.9 in)
	Fuel tank capacity		24.0 ℓ (6.34 US gal , 5.28 Imp gal)
ENGINE	Bore and stroke		79.0 × 58.0 mm (3.11 × 2.28 in)
	Displacement		1,137 cm³ (69.4 cu-in)
	Compression ratio		11.0 : 1
	Valve train		Chain drive and DOHC
	Intake valve opens	at 1 mm (0.04 in) lift	17° BTDC
	closes		40° ABDC
	Exhaust valve opens		40° BBDC
	closes		10° ATDC
	Lubrication system		Forced pressure and wet sump
	Oil pump type		Trochoid/double rotor
	Cooling system		Liquid cooled
	Air filtration		Paper filter
	Crankshaft type		Unit type
	Engine dry weight		83.0 kg (183.0 lbs)
	Cylinder arrangement		Four cylinder, inline 30° inclined from vertical

GENERAL (Cont'd)

ITEM			SPECIFICATIONS
CARBURETION	Type		PGM-FI (Programmed Fuel Injection)
	Throttle bore		42 mm (1.7 in)
DRIVE TRAIN	Clutch system		Multi-plate, wet
	Clutch operation system		Hydraulic operated type
	Transmission		Constant mesh, 6-speed
	Primary reduction		1.571 (88/56)
	Final reduction		2.647 (45/17)
	Gear ratio	1st	2.769 (36/13)
		2nd	2.000 (32/16)
		3rd	1.579 (30/19)
		4th	1.333 (28/21)
		5th	1.167 (28/24)
		6th	1.042 (25/24)
	Gearshift pattern		Left foot operated return system, 1-N-2-3-4-5-6
ELECTRICAL	Ignition system		Computer-controlled digital transistorized with electric advance
	Starting system		Electric starter motor
	Charging system		Triple phase output alternator
	Regulator/rectifier		SCR shorted/triple phase, full wave rectification
	Lighting system		Battery

Unit: mm (in)

LUBRICATION SYSTEM

ITEM			STANDARD	SERVICE LIMIT
Engine oil capacity		At draining	3.8 ℓ (4.0 US qt , 3.3 Imp qt)	———
		At disassembly	4.6 ℓ (4.9 US qt , 4.0 Imp qt)	———
		At oil filter change	3.9 ℓ (4.1 US qt , 3.4 Imp qt)	———
Recommended engine oil			HONDA GN4 4-stroke oil or equivalent motor oil API service classification SF or SG Viscosity: SAE 10W-40	———
Oil pressure at oil pressure switch			490 kPa (5.0 kgf/cm², 71 psi) at 5,400 rpm/(80 °C/176 °F)	———
Oil pump rotor	Feed pump	Tip clearance	0.15 (0.006) max.	0.20 (0.008)
		Body clearance	0.15 – 0.21 (0.006 – 0.008)	0.35 (0.014)
		Side clearance	0.04 – 0.09 (0.002 – 0.004)	0.12 (0.005)
	Cooler pump	Tip clearance	0.15 (0.006) max.	0.20 (0.008)
		Body clearance	0.15 – 0.21 (0.006 – 0.008)	0.35 (0.014)
		Side clearance	0.04 – 0.09 (0.002 – 0.004)	0.12 (0.005)

FUEL SYSTEM (Programmed Fuel Injection)

ITEM		SPECIFICATIONS
Throttle body identification number	49 state/Canada type	GQ 40 D
	California type	GQ 40 B
Starter valve vacuum difference		20 mm Hg
Base throttle valve for synchronization		No. 3
Idle speed		1,100 ± 50 rpm
Throttle grip free play		2 – 6 mm (1/16 – 1/4 in)
Intake air temperature sensor resistance (at 20 °C/68 °F)		1 – 4 kΩ
Engine coolant temperature sensor resistance (at 20 °C/68 °F)		2.3 – 2.6 kΩ
Fuel injector resistance (at 20 °C/68 °F)		13.0 – 14.4 kΩ
PAIR solenoid valve resistance (at 20 °C/68 °F)		20 – 24 Ω
Cam pulse generator peak voltage (at 20 °C/68 °F)		0.7 V minimum
Ignition pulse generator peak voltage (at 20 °C/68 °F)		0.7 V minimum
Manifold absolute pressure at idle		200 – 250 mm Hg
Fuel pressure at idle	'99:	294 kPa (3.0 kgf/cm², 43 psi)
	After '99:	343 kPa (3.5 kgf/cm², 50 psi)
Fuel pump flow (at 12 V)		Minimum 220 cm³ (7.4 US oz , 7.7 Imp oz) for 10 seconds

COOLING SYSTEM

ITEM		SPECIFICATIONS
Coolant capacity	Radiator and engine	3.2 ℓ (0.85 US gal, 0.70 Imp gal)
	Reserve tank	1.1 ℓ (0.29 US gal, 0.24 Imp gal)
Radiator cap relief pressure		108 – 137 kPa (1.1 – 1.4 kgf/cm², 16 – 20 psi)
Thermostat	Begins to open	80 – 84 °C (176 – 183 °F)
	Fully open	95 °C (203 °F)
	Valve lift	8 mm (0.3 in) minimum
Recommended antifreeze		High quality ethylene glycol antifreeze containing corrosion protection inhibitors
Standard coolant concentration		50% mixture with soft water

CYLINDER HEAD/VALVES

Unit: mm (in)

ITEM			STANDARD	SERVICE LIMIT
Cylinder compression			1,275 kPa (13.0 kgf/cm², 185 psi) at 350 rpm	———
Cylinder head warpage			———	0.10 (0.004)
Valve, valve guide	Valve clearance	IN	0.16 ± 0.03 (0.006 ± 0.001)	———
		EX	0.22 ± 0.03 (0.009 ± 0.001)	———
	Valve stem O.D.	IN	4.975 – 4.990 (0.1959 – 0.1965)	4.965 (0.1955)
		EX	4.960 – 4.975 (0.1953 – 0.1959)	4.950 (0.1949)
	Valve guide I.D.	IN	5.000 – 5.012 (0.1969 – 0.1973)	5.040 (0.1984)
		EX	5.000 – 5.012 (0.1969 – 0.1973)	5.040 (0.1984)
	Stem-to-guide clearance	IN	0.010 – 0.037 (0.0004 – 0.0015)	———
		EX	0.025 – 0.052 (0.0010 – 0.0020)	———
	Valve guide projection above cylinder head	IN	16.3 16.5 (0.64 – 0.65)	———
		EX	16.3 – 16.5 (0.64 – 0.65)	———
	Valve seat width	IN/EX	0.90 – 1.10 (0.035 – 0.043)	1.5 (0.06)
Valve spring free length	Inner	IN/EX	37.4 (1.47)	35.4 (1.39)
	Outer	IN/EX	40.6 (1.60)	38.6 (1.52)
Valve lifter	Valve lifter O.D.	IN/EX	25.978 – 25.993 (1.0228 – 1.0233)	25.97 (1.022)
	Valve lifter bore I.D.	IN/EX	26.010 – 26.026 (1.0240 – 1.0246)	26.04 (1.025)
Camshaft	Cam lobe height	IN	38.42 – 38.50 (1.513 1.516)	38.12 (1.501)
		EX	38.38 – 38.46 (1.511 – 1.514)	38.08 (1.499)
	Runout		———	0.05 (0.002)
	Oil clearance		0.020 – 0.074 (0.0008 – 0.0029)	0.10 (0.004)

CLUTCH/GEARSHIFT LINKAGE

Unit: mm (in)

ITEM			STANDARD	SERVICE LIMIT
Recommended clutch fluid			DOT 4 brake fluid	———
Clutch master cylinder		Cylinder I.D.	12.700 – 12.743 (0.5000 – 0.5017)	12.76 (0.502)
		Piston O.D.	12.657 – 12.684 (0.4983 – 0.4994)	12.65 (0.498)
Clutch spring free length			57.4 (2.26)	56.2 (2.21)
Clutch disc thickness		A1	3.72 – 3.88 (0.146 – 0.153)	3.5 (0.14)
		A2	3.72 – 3.88 (0.146 – 0.153)	3.5 (0.14)
Clutch plate warpage			———	0.30 (0.012)
Clutch outer guide		I.D.	28.000 – 28.021 (1.1024 – 1.1032)	28.031 (1.1036)
		O.D.	34.975 – 34.991 (1.3770 – 1.3776)	34.965 (1.3766)
Mainshaft O.D. at clutch outer guide			27.980 – 27.993 (1.1016 – 1.1021)	27.970 (1.1012)
Shift fork, fork shaft	Fork	I.D.	12.000 – 12.021 (0.4724 – 0.4733)	12.03 (0.474)
		Claw thickness	5.93 – 6.00 (0.233 – 0.236)	5.9 (0.23)
	Fork shaft O.D.		11.957 – 11.968 (0.4707 – 0.4712)	11.95 (0.470)

ALTERNATOR/STARTER CLUTCH

Unit: mm (in)

ITEM	STANDARD	SERVICE LIMIT
Starter driven gear boss O.D.	51.699 – 51.718 (2.0354 – 2.0361)	51.684 (2.0348)

CRANKCASE/PISTON/CYLINDER

Unit: mm (in)

ITEM			STANDARD	SERVICE LIMIT
Cylinder	I.D.		79.000 – 79.015 (3.1102 – 3.1108)	79.10 (3.114)
	Out of round		———	0.10 (0.004)
	Taper		———	0.10 (0.004)
	Warpage		———	0.05 (0.002)
Piston, piston rings	Piston mark direction		"IN" mark facing toward the intake side	———
	Piston O.D.		78.970 – 78.990 (3.1090 – 3.1098)	78.90 (3.106)
	Piston O.D. measurement point		15 mm (0.6 in) from bottom of skirt	———
	Piston pin bore I.D.		19.002 – 19.008 (0.7481 – 0.7483)	19.03 (0.749)
	Piston pin O.D.		18.994 – 19.000 (0.7478 – 0.7480)	18.984 (0.7474)
	Piston-to-piston pin clearance		0.002 – 0.014 (0.0001 – 0.0006)	———
	Piston ring-to-ring groove clearance	Top	0.030 – 0.065 (0.0012 – 0.0026)	0.08 (0.003)
		Second	0.015 – 0.045 (0.0006 – 0.0018)	0.06 (0.002)
	Piston ring end gap	Top	0.20 – 0.35 (0.008 – 0.014)	0.5 (0.02)
		Second	0.40 – 0.55 (0.016 – 0.022)	0.7 (0.03)
		Oil (side rail)	0.2 – 0.8 (0.01 – 0.03)	1.0 (0.04)
Cylinder-to-piston clearance			0.010 – 0.045 (0.0004 – 0.0018)	———
Connecting rod small end I.D.			19.030 – 19.051 (0.7492 – 0.7500)	19.061 (0.7504)
Connecting rod-to-piston pin clearance			0.030 – 0.057 (0.0012 – 0.0022)	———
Crankpin oil clearance			0.030 – 0.052 (0.0012 – 0.0020)	0.062 (0.0024)

CRANKSHAFT/TRANSMISSION/BALANCER

Unit: mm (in)

ITEM			STANDARD	SERVICE LIMIT
Crankshaft	Side clearance		0.05 – 0.20 (0.002 – 0.008)	0.30 (0.012)
	Runout		—	0.30 (0.012)
	Main journal oil clearance		0.017 – 0.035 (0.0007 – 0.0014)	0.045 (0.0018)
Transmission	Gear I.D.	M5, 6	31.000 – 31.025 (1.2205 – 1.2215)	31.04 (1.222)
		C1	26.000 – 26.021 (1.0236 – 1.0244)	26.04 (1.025)
		C2, 3, 4	33.000 – 33.025 (1.2992 – 1.3002)	33.04 (1.301)
	Bushing O.D.	M5, 6	30.950 – 30.975 (1.2185 – 1.2195)	30.93 (1.218)
		C2	32.955 – 32.980 (1.2974 – 1.2984)	32.93 (1.296)
		C3, 4	32.950 – 32.975 (1.2972 – 1.2982)	32.93 (1.296)
	Bushing I.D.	M5	27.985 – 28.006 (1.1018 – 1.1026)	28.02 (1.103)
		C2	29.985 – 30.006 (1.1805 – 1.1813)	30.02 (1.182)
	Gear-to-bushing clearance	M5, 6	0.020 – 0.062 (0.0008 – 0.0024)	0.10 (0.004)
		C2	0.020 – 0.070 (0.0008 – 0.0028)	0.11 (0.004)
		C3, 4	0.025 – 0.075 (0.0010 – 0.0030)	0.11 (0.004)
	Mainshaft O.D.	M5	27.967 – 27.980 (1.1011 – 1.1016)	27.957 (1.1007)
		Clutch outer guide	27.980 – 27.993 (1.1016 – 1.1021)	27.970 (1.1012)
	Countershaft O.D.	C2	29.967 – 29.980 (1.1798 – 1.1803)	27.957 (1.1007)
	Bushing-to-shaft clearance	M5	0.005 – 0.039 (0.0002 – 0.0015)	0.08 (0.003)
		C2	0.005 – 0.039 (0.0002 – 0.0015)	0.08 (0.003)