
6. Engine Removal/Installation

Service Information

6-1 Engine Removal/Installation

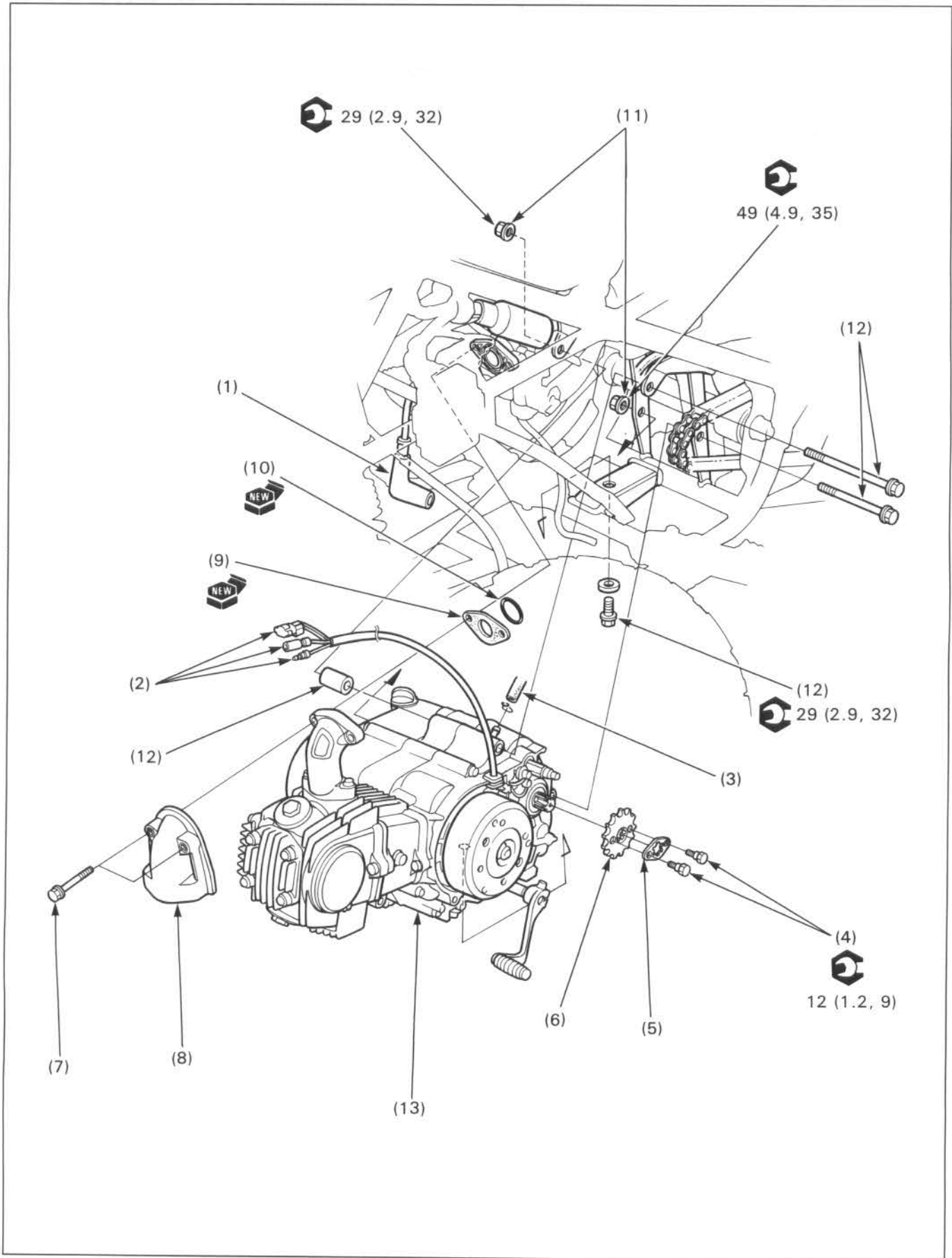
6-2

Service Information

- The following components require engine removal for service:
 - Crankshaft (section 10)
 - Crankcase (section 10)
 - Transmission (section 10)
- After installing the engine, adjust the drive chain (page 3-6)

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Engine Removal/Installation



Requisite Service

- Exhaust pipe removal/installation (page 2-8)
- Left crankcase cover removal/installation (page 13-6)
- Front fender removal/installation (page 2-2)

Procedure		Q'ty	Remarks
	Removal Order		Installation is in the reverse order of removal.
(1)	Spark plug cap	1	NOTE • When installing, route the alternator wire properly.
(2)	Alternator wire connector	3	
(3)	Crankcase breather tube	1	
(4)	Drive sprocket bolt	2	
(5)	Drive sprocket retaining plate	1	
(6)	Drive sprocket	1	
(7)	Carburetor mounting bolt	2	
(8)	Intake manifold cover	1	
(9)	Gasket	1	
(10)	O-ring	1	
(11)	Engine mounting nut	2	
(12)	Engine mounting bolt/collar	3/1	
(13)	Engine	1	

MEMO



7. Cylinder Head/Cylinder/Piston

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Service Information

- The cylinder head, cylinder and piston can be serviced with the engine in the frame.
- Camshaft and rocker arm lubricating oil is fed through the oil passage in the cylinder and cylinder head. Be sure oil passage is not clogged before installing the cylinder and cylinder head.
- When disassembling, mark and store the disassembled parts to ensure that they are reinstalled in their original locations.
- Clean all disassembled parts with cleaning solvent and dry them by blowing them off with compressed air before inspection.
- Be careful not to damage the mating surfaces by using a screwdriver when removing the cylinder. Do not strike the cylinder too hard during removal, even with a rubber or plastic mallet, to prevent the possibility of damage to the cylinder fins.
- Take care not to damage the cylinder wall and piston.
Refer to section 10 of the Common Service Manual for piston ring removal/installation.

Troubleshooting

Engine top-end problems usually affect engine performance. These can be diagnosed by a compression test, or by tracing top-end noises with a sounding rod or stethoscope. (See section 3 of the Common Service Manual for engine compression testing.)

Compression too low, hard starting or poor performance at low speed

- Valves
 - Incorrect valve clearance
 - Burned or bent valve
 - Incorrect valve timing
 - Broken valve spring
 - Uneven valve seating
- Cylinder head
 - Leaking or damaged cylinder head gasket
 - Warped or cracked cylinder head
 - Loose spark plug
- Cylinder, piston
 - Worn, stuck or broken piston ring
 - Worn or damaged cylinder and piston

Compression too high

- Excessive carbon built-up on piston or combustion chamber

Excessive smoke

- Cylinder head
 - Worn valve stem or valve guide
 - Damaged stem seal
- Cylinder, piston
 - Worn cylinder, piston or piston rings
 - Improper installation of piston rings
 - Scored or scratched piston or cylinder wall

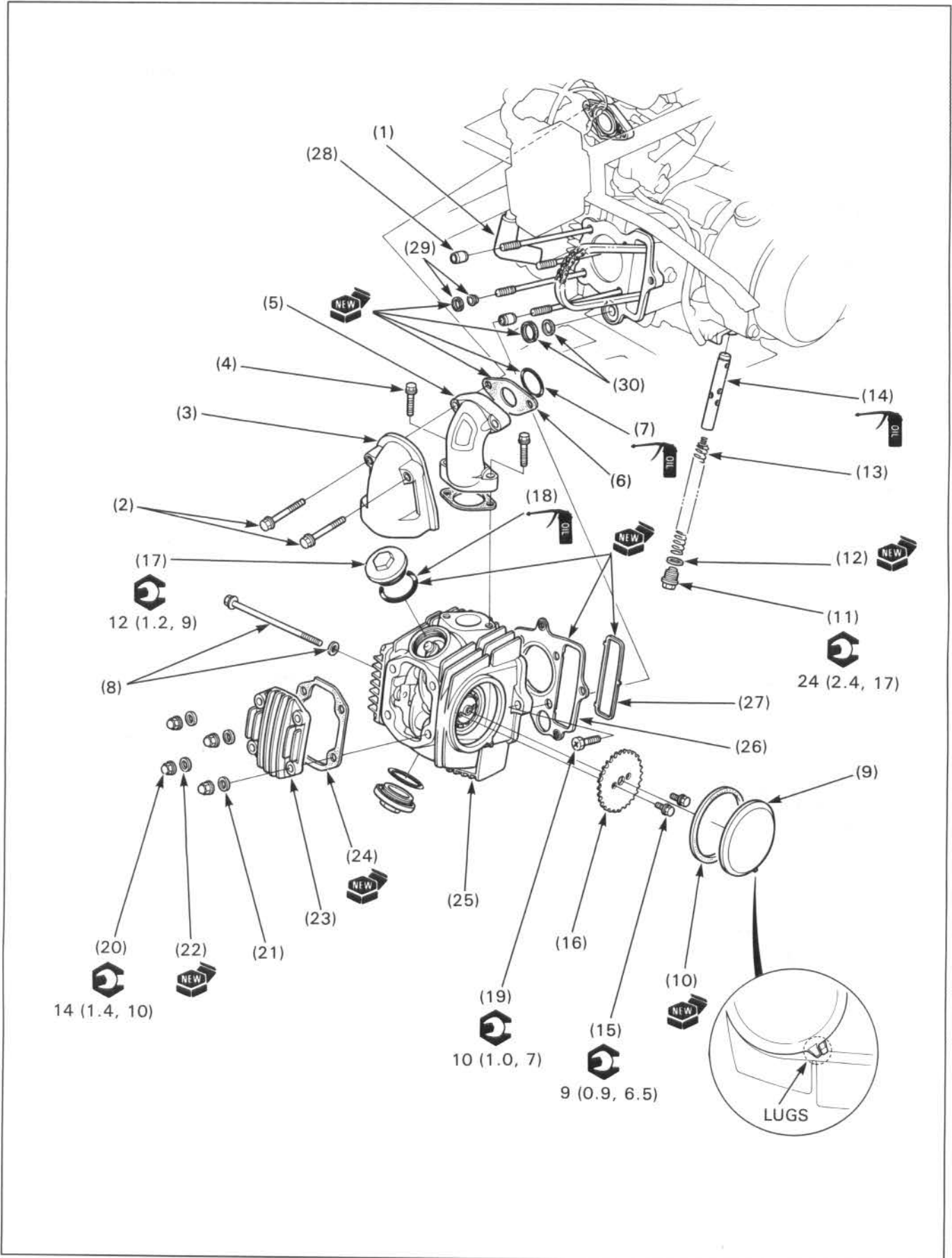
Excessive noise

- Incorrect valve clearance
- Sticking valve or broken valve spring
- Worn or damaged camshaft
- Worn or damaged rocker arm and/or shaft
- Worn or damaged cam sprocket teeth
- Loose or worn cam chain
- Worn or damaged cam chain tensioner
- Loose spark plug

Rough idle

- Low cylinder compression
- Faulty decompressor cam one-way clutch

Cylinder Head Removal/Installation



Requisite Service

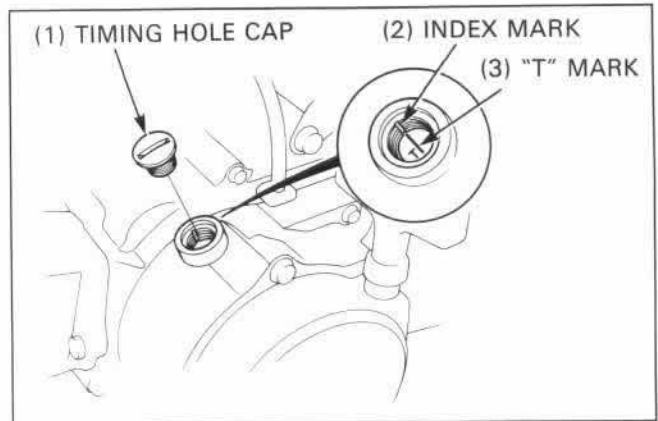
- Exhaust pipe removal/installation (page 2-8)

Procedure	Q'ty	Remarks
Removal Order		Installation is in the reverse order of removal.
(1) Spark plug cap	1	
(2) Carburetor mounting bolt	2	
(3) Intake manifold cover	1	
(4) Intake manifold bolt	2	
(5) Intake manifold	1	
(6) Gasket	2	
(7) O-ring	1	
(8) Through bolt/washer	1/1	
(9) Cylinder head left side cover	1	NOTE <ul style="list-style-type: none"> • If it is difficult to remove the cover, loosely install the through bolt and lightly tap it. • When installing, align the lugs of the cover and cylinder head as shown.
(10) Side cover gasket	1	
(11) Sealing bolt	1	
(12) Sealing washer	1	
(13) Cam chain tensioner spring	1	Inspection (page 7-4) NOTE <ul style="list-style-type: none"> • Install with the tightly wound coil facing up.
(14) Cam chain tensioner push rod	1	Inspection (page 7-4) Oil filling (page 7-5)
(15) Cam sprocket bolt	2	Removal/installation (page 7-4)
(16) Cam sprocket	1	
(17) Valve adjusting hole cap	2	
(18) O-ring	2	
(19) Cylinder head bolt	1	
(20) Cylinder head cover cap nut	4	
(21) Washer	3	
(22) Sealing (copper) washer	1	NOTE <ul style="list-style-type: none"> • Note the installation position.
(23) Cylinder head cover	1	NOTE <ul style="list-style-type: none"> • Install with the arrow mark facing down.
(24) Cylinder head cover gasket	1	
(25) Cylinder head assembly	1	
(26) Cylinder head gasket	1	
(27) Seal rubber	1	
(28) Dowel pin	2	
(29) O-ring/collar	1/1	
(30) O-ring/collar	1/1	

Cylinder Head/Cylinder/Piston

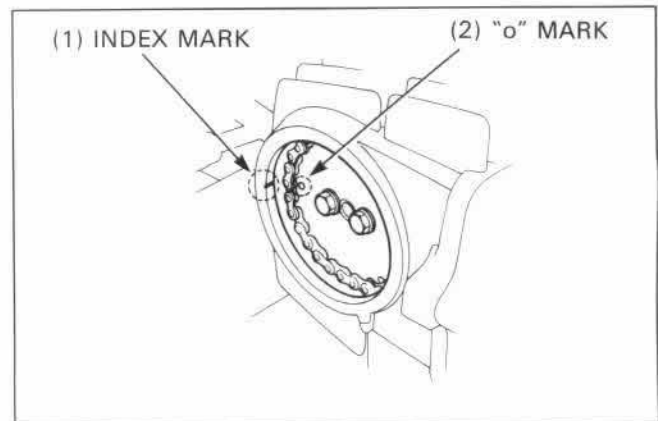
Cam Sprocket Removal/Installation

Remove the timing hole cap from the left crankcase cover. Turn the crankshaft with the recoil starter and align the "T" mark on the flywheel with the index mark on the left crankcase cover. At the same time, align the "o" mark on the cam sprocket with the index mark on the cylinder head. Then remove the cam sprocket bolts and cam sprocket.



CAUTION

- When turning the crankshaft, be careful not to jam the cam chain on the crankshaft.



Align the "o" mark on the cam sprocket with the index mark on the cylinder head and install the cam chain over the cam sprocket.

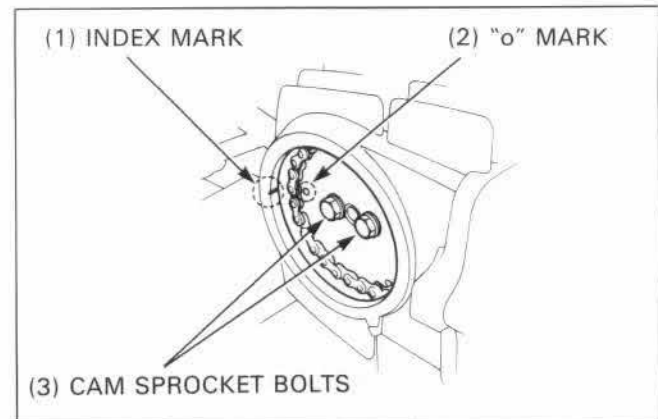
Install the dowel pin in the cam sprocket.

Align the bolt holes in the cam sprocket and camshaft, and install the cam sprocket bolts.

Torque: 9 N·m (0.9 kg-m, 6.5 ft-lb)

NOTE

- Be careful not to drop the cam sprocket bolt into the crankcase.



Install the timing hole cap.

Torque: 3 N·m (0.3 kg-m, 2.2 ft-lb) NEW

Cam Chain Tensioner Inspection

Measure the cam chain tensioner spring free length.

Service limit: 100.0 mm (3.94 in)

