

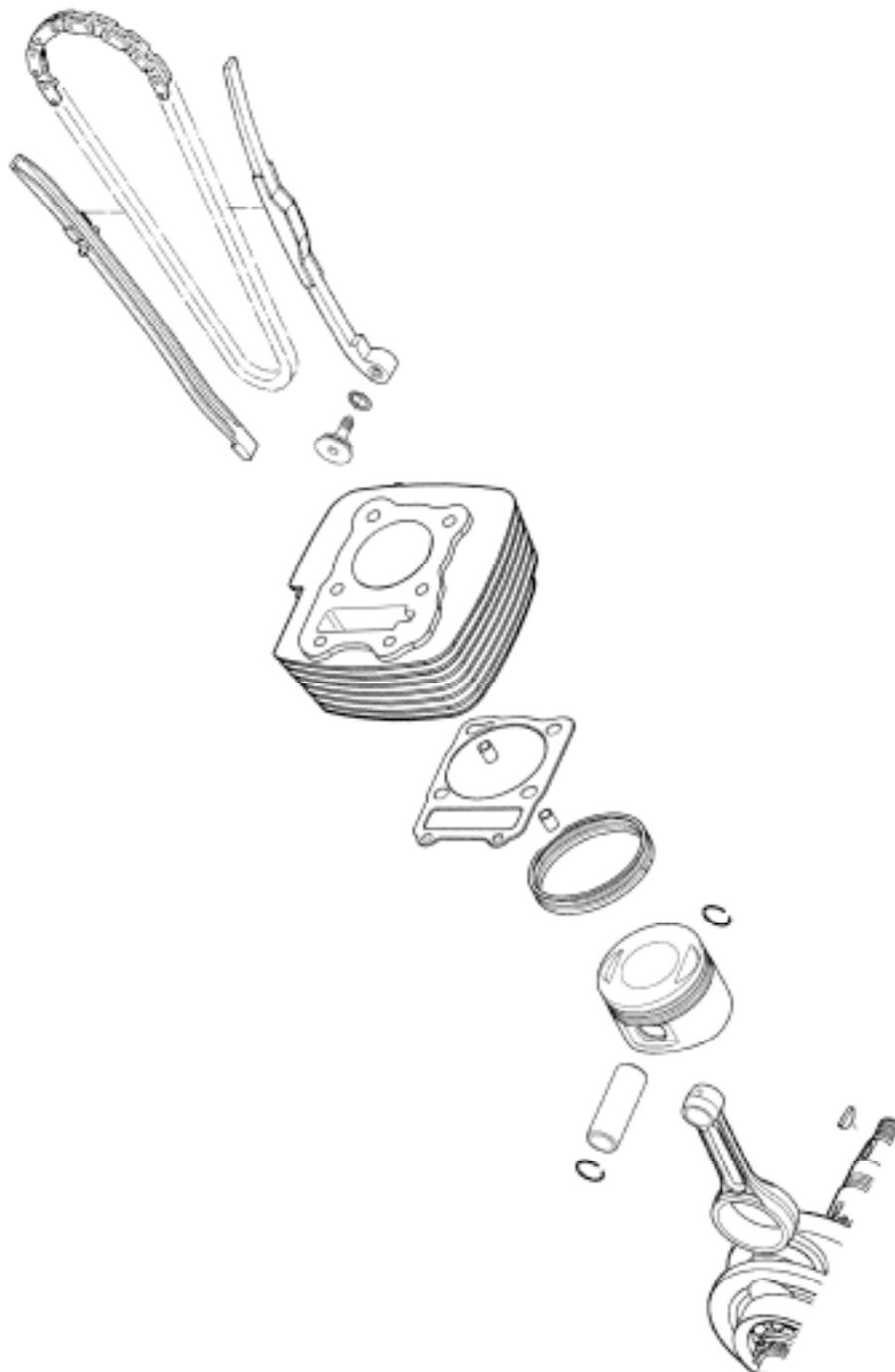
8. CYLINDER/PISTON

CYLINDER /PISTON

SERVICE INFORMATION	8- 2
TROUBLESHOOTING	8- 2
CYLINDER/PISTON.....	8- 4



8. CYLINDER/PISTON



8. CYLINDER/PISTON

SERVICE INFORMATION

GENERAL INSTRUCTIONS

- The cylinder and piston can be serviced with the engine installed in the frame.
- After disassembly, clean the removed parts and dry them with compressed air before inspection.

TROUBLESHOOTING

- When hard starting or poor performance at low speed occurs, check the crankcase breather for white smoke. If white smoke is found, it means that the piston rings are worn, stuck or broken.

Compression too low or uneven compression

- Worn, stuck or broken piston rings
- Worn or damaged cylinder and piston

Excessive smoke from exhaust muffler

- Worn or damaged piston rings
- Worn or damaged cylinder and piston

Compression too high

- Excessive carbon build-up in combustion chamber or on piston head

Abnormal noisy piston

- Worn cylinder, piston and piston rings
- Worn piston pin hole and piston pin

8. CYLINDER/PISTON

SPECIFICATIONS

		Standard (mm)	Service Limit (mm)	
Cylinder	I.D.	72.705_ 72.715	72.8	
	Warpage	□	0.05	
	Cylindricity	□	0.05	
	True roundness	□	0.05	
Piston, piston ring	Ring-to-groove clearance	Top	0.015_ 0.055	0.09
		Second	0.015_ 0.055	0.09
	Ring end gap	Top	0.15_ 0.3	0.5
		Second	0.3_ 0.45	0.65
		Oil ring	0.2_ 0.7	0.9
	Piston O.D.		72.67_ 72.69	72.6
	Piston O.D. measuring position		10mm from bottom of skirt	□
	Piston-to-cylinder clearance		0.010_ 0.040	0.1
Piston pin hole I.D.		17.002_ 17.008	17.04	
Piston pin O.D		16.994_ 17.000	16.96	
Piston-to-piston pin clearance		0.002_ 0.014	0.02	
Connecting rod small end I.D. bore		17.016_ 17.034	17.06	

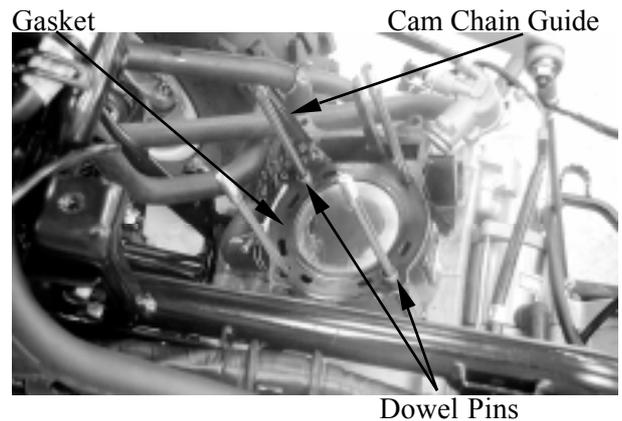
8. CYLINDER/PISTON

CYLINDER/PISTON

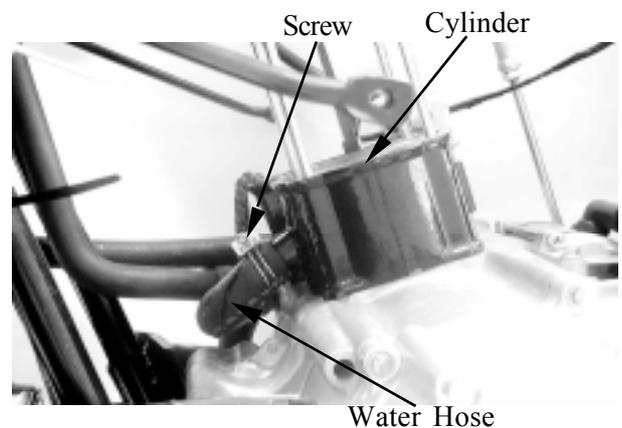
REMOVAL

Remove the cylinder head. (Refer to the chapter 7)

Remove the two dowel pins, cylinder head gasket and cam chain guide.

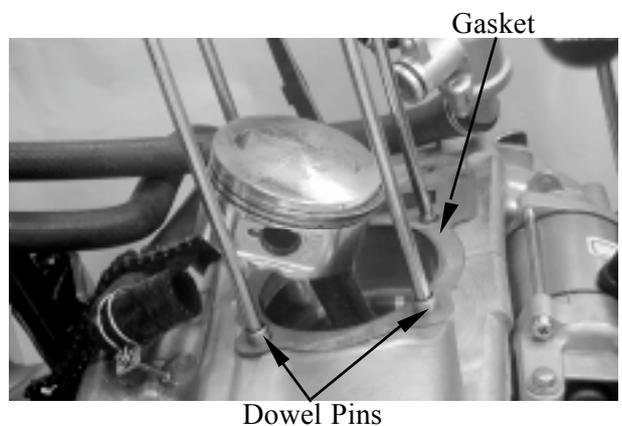


Unscrew the clamp and disconnect the water hose.
Remove the cylinder



Remove the cylinder gasket and dowel pins.
Clean any gasket material from the cylinder surface.

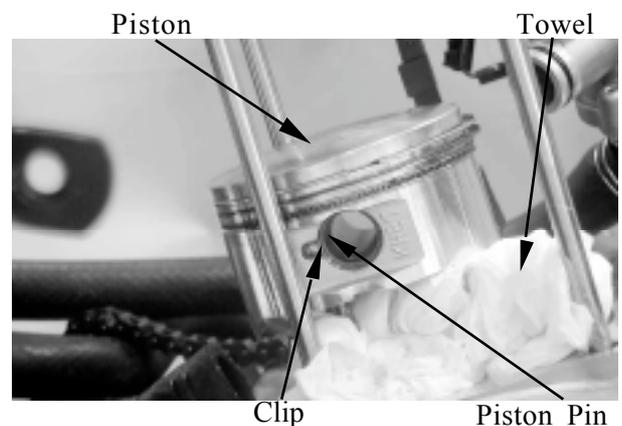
⚠ Be careful not to drop foreign matters into the crankcase.



Remove the piston pin clip.

⚠ Place a clean shop towel in the crankcase to keep the piston pin clip from falling into the crankcase.

Press the piston pin out of the piston and remove the piston.



8. CYLINDER/PISTON

INSPECTION

Inspect the piston, piston pin and piston rings.

Remove the piston rings.

- ⚠ Take care not to damage or break the piston rings during removal.

Clean carbon deposits from the piston ring grooves.

Inspect the piston wall for wear/scratches/damage.

If any defects are found, replace the piston with a new one.

Install the piston rings onto the piston and measure the piston ring-to-groove clearance.

Service Limits: Top: 0.09mm replace if over
2nd: 0.09mm replace if over

Remove the piston rings and insert each piston ring into the cylinder bottom.

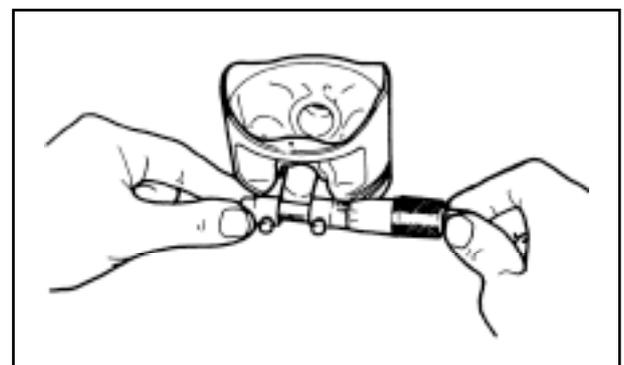
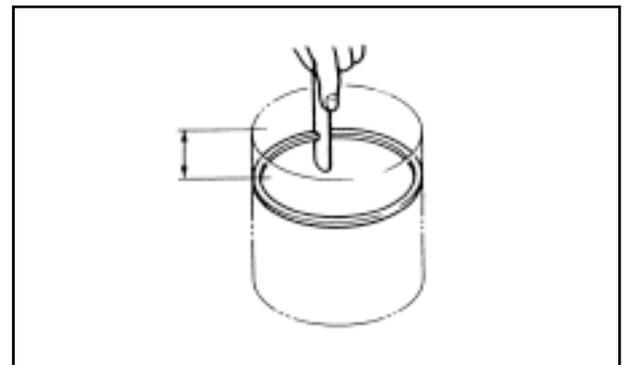
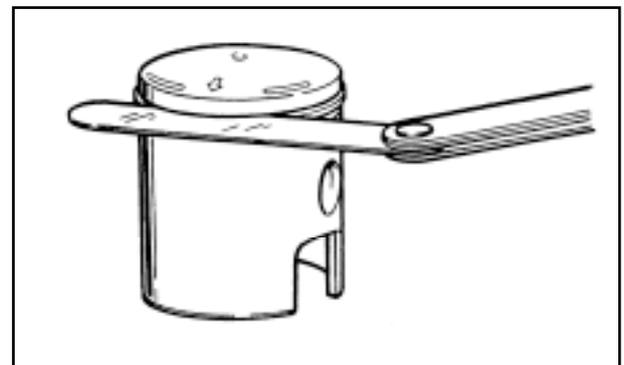
- ⚠ Use the piston head to push each piston ring into the cylinder.

Measure the piston ring end gap.

Service Limit: Top: 0.5mm replace if over
2nd: 0.65mm replace if over
Oil ring: 0.9mm replace if over

Measure the piston pin hole I.D.

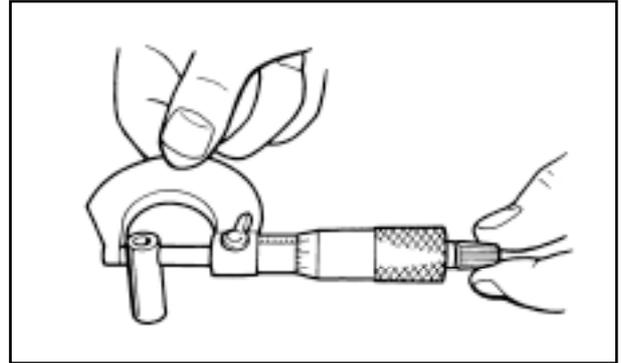
Service Limit: 17.04mm replace if over



8. CYLINDER/PISTON

Measure the piston pin O.D.

Service Limit: 16.96mm replace if below



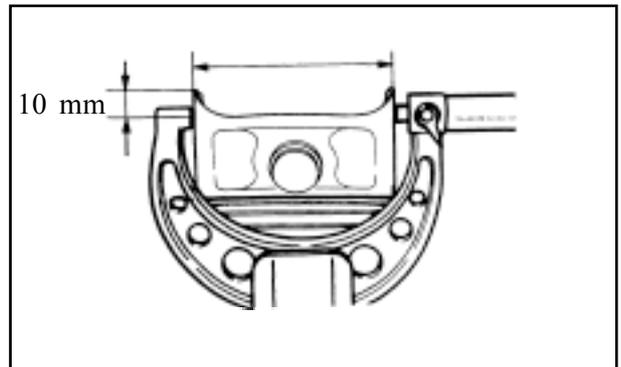
Measure the piston O.D.

Take measurement at 10mm from the bottom and 90° to the piston pin hole.

Service Limit: 72.6mm replace if below

Measure the piston-to-piston pin clearance.

Service Limit: 0.02mm replace if over



CYLINDER INSPECTION

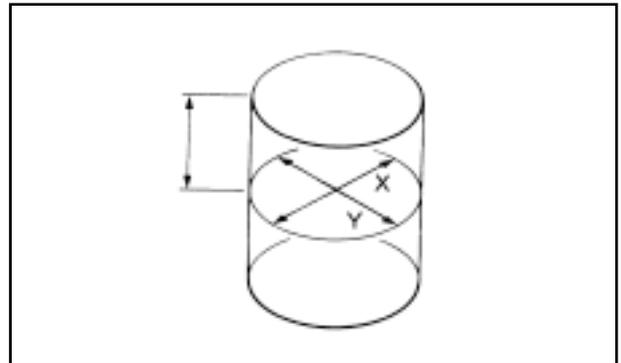
Inspect the cylinder bore for wear or damage. Measure the cylinder I.D. at three levels of top, middle and bottom at 90° to the piston pin (in both X and Y directions).

Cylinder I.D.:

Service Limit: 72.8mm replace if over

Measure the cylinder-to-piston clearance.

Service Limit: 0.1mm repair or replace if over



The true roundness is the difference between the values measured in X and Y directions. The cylindricity (difference between the values measured at the three levels) is subject to the maximum value calculated.

Service Limits:

True Roundness: 0.05mm repair or replace if over

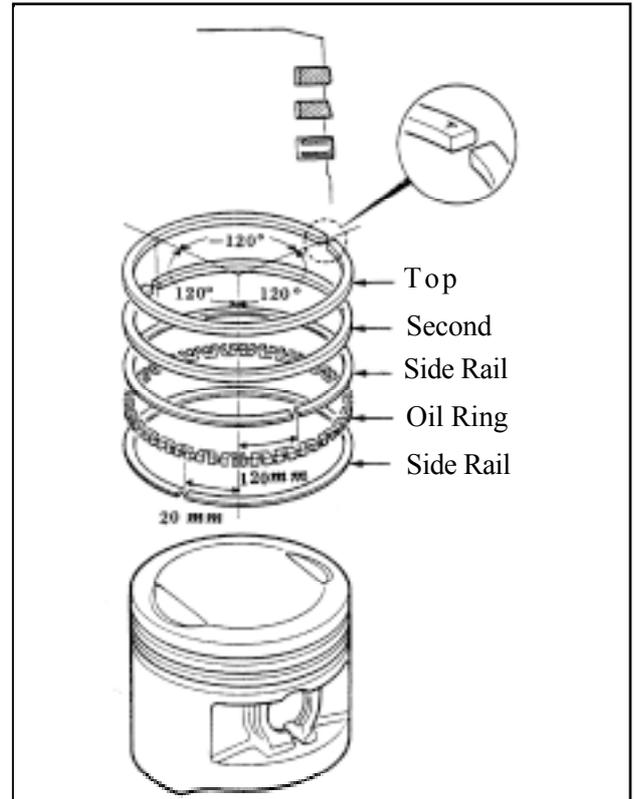
Cylindricity: 0.05mm repair or replace if over

8. CYLINDER/PISTON

PISTON RING INSTALLATION

Install the piston rings onto the piston.
Apply engine oil to each piston ring.

- Be careful not to damage or break the piston and piston rings.
- All rings should be installed with the markings facing up.
- After installing the rings, they should rotate freely without sticking.

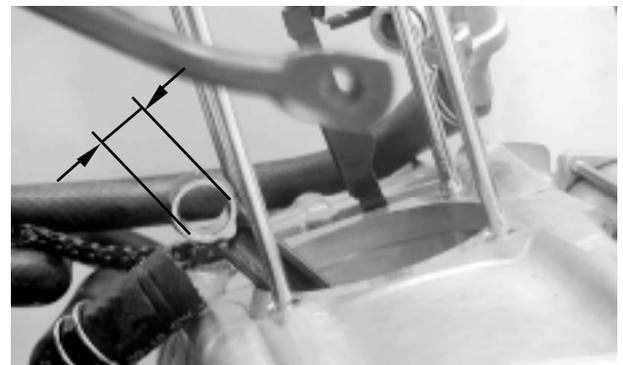


Measure the connecting rod small end I.D.

Service Limit: 17.06mm replace if over

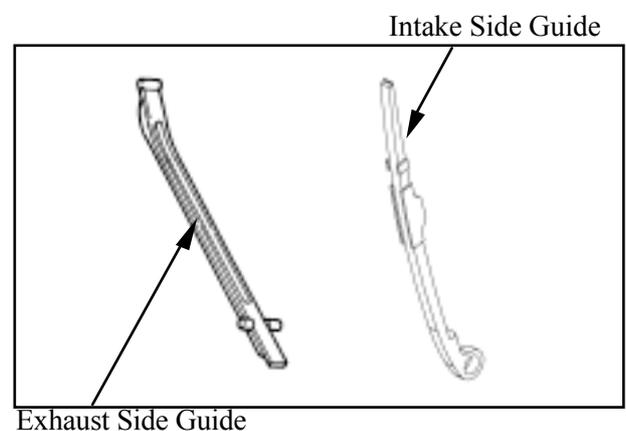
Measure the connecting rod to piston pin clearance.

Service Limit: 0.06mm replace if over



Inspect the exhaust side and intake side chain guides.

Wear/Damage _ Replace.



8. CYLINDER/PISTON

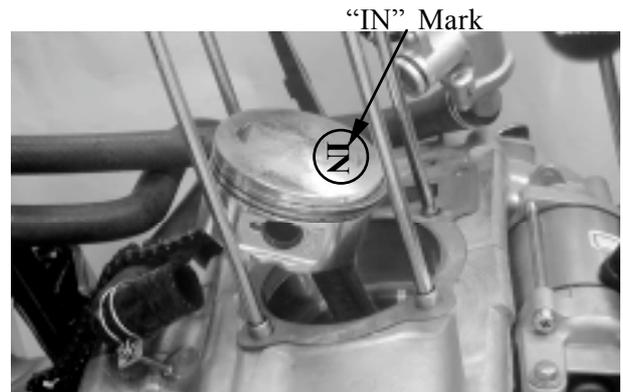
PISTON INSTALLATION

Remove any gasket material from the crankcase surface.

-  Be careful not to drop foreign matters into the crankcase.

Install the piston, piston pin and a new piston pin clip.

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 - Position the piston “IN” mark on the intake valve side.
 - Place a clean shop towel in the crankcase to keep the piston pin clip from falling into the crankcase.



CYLINDER INSTALLATION

Install the dowel pins and a new cylinder gasket on the crankcase.

Coat the cylinder bore, piston and piston rings with clean engine oil.

Carefully lower the cylinder over the piston by compressing the piston rings.

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 - Apply proper clean engine oil around cylinder wall.
 - Be careful not to damage or break the piston rings.
 - Stagger the ring end gaps at 120° to the piston pin.