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SERVICE INFORMATION

GENERAL INSTRUCTIONS

All cylinder/piston repair and inspection can be accomplished without removing the engine.

SPECIAL TOOLS

Special Tools

Piston Base (2 required) 07958-250001

Piston Ring Compressor (2 required) 07954-3740000

SPECIFICATIONS

ITEM		STANDARD	SERVICE LIMIT	
Cylinder	I. D.	59.800-59.810 mm (2.3543-2.3547 in)	59.90 mm (2.358 in)	
	Warpage	—————	0.25 mm (0.010 in)	
Piston, piston rings and piston pin	Piston ring-to-ring groove clearance	TOP	0.015-0.045 mm (0.0006-0.0018 in)	0.15 mm (0.006 in)
		SECOND	0.015-0.045 mm (0.0006-0.0018 in)	0.15 mm (0.006 in)
	Ring end gap	TOP	0.10-0.30 mm (0.004-0.012 in)	0.7 mm (0.028 in)
		SECOND	0.10-0.30 mm (0.004-0.012 in)	0.7 mm (0.028 in)
		OIL (SIDE RAIL)	0.3-0.9 mm (0.012-0.035 in)	1.1 mm (0.043 in)
	Piston O. D.	59.77-59.79 mm (2.353-2.354 in)	59.65 mm (2.348 in)	
	Piston pin bore	15.002-15.008 mm (0.5906-0.5909 in)	15.08 mm (0.594 in)	
	Connecting rod small end I. D.	15.016-15.034 mm (0.5912-0.5919 in)	15.07 mm (0.593 in)	
	Piston pin O. D.	14.994-15.000 mm (0.5903-0.5906 in)	14.98 mm (0.590 in)	
Piston-to-piston pin clearance	—————	0.04 mm (0.002 in)		
Cylinder-to-piston clearance	—————	0.10 mm (0.004 in)		
Cam chain tensioner spring		81.0 mm/7 kg	81.0 mm/5 kg	

TROUBLESHOOTING

Compression low

1. Worn cylinder or piston rings

Excessive smoke

1. Worn cylinder or piston
2. Improper installation of piston rings
3. Scored or scratched piston or cylinder

Overheating

1. Excessive carbon build-up on piston or combustion chamber wall

Knocking or abnormal noise

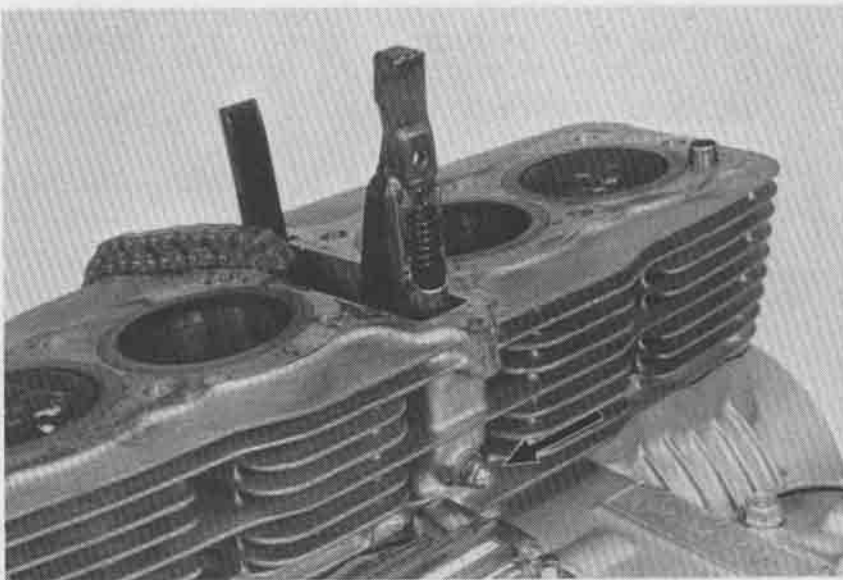
1. Worn piston or cylinder
2. Excessive carbon build-up



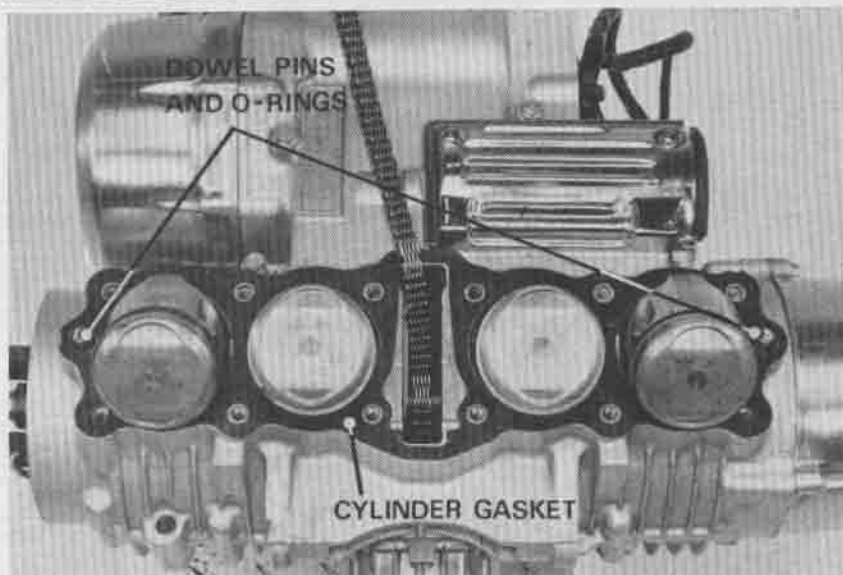
CYLINDER REMOVAL

Remove the cylinder head (Page 6-9).
 Remove the cam chain tensioner lock nut.

Remove the cylinder.
 Remove the cam chain tensioner and chain guide.



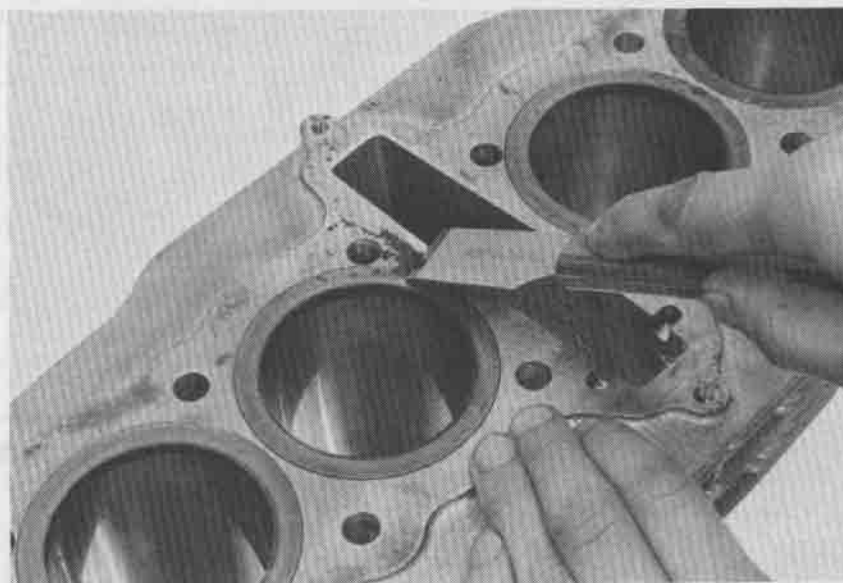
Remove the cylinder gasket, dowel pins and O-rings.



Clean the head gasket surface.

NOTE

- Be careful not to damage the gasket surface.
- The gasket will come off easier if soaked in solvent.

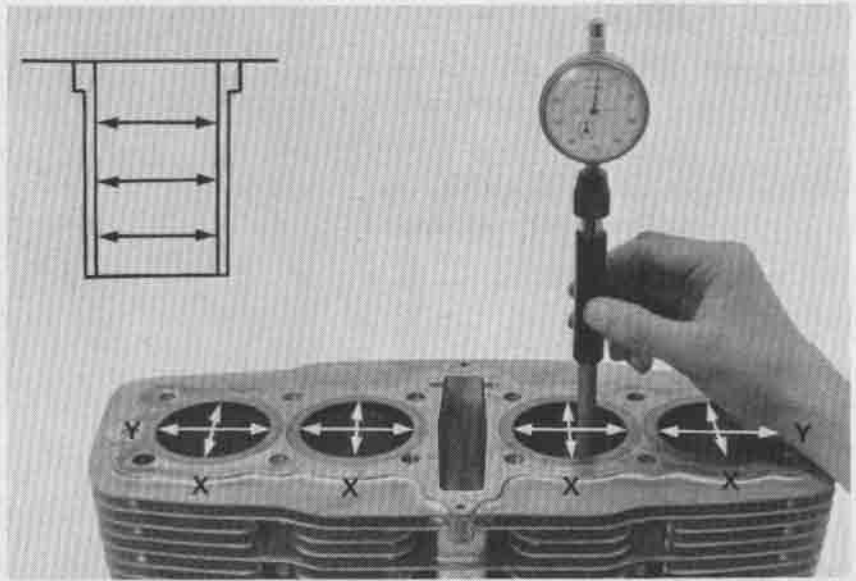




CYLINDER INSPECTION

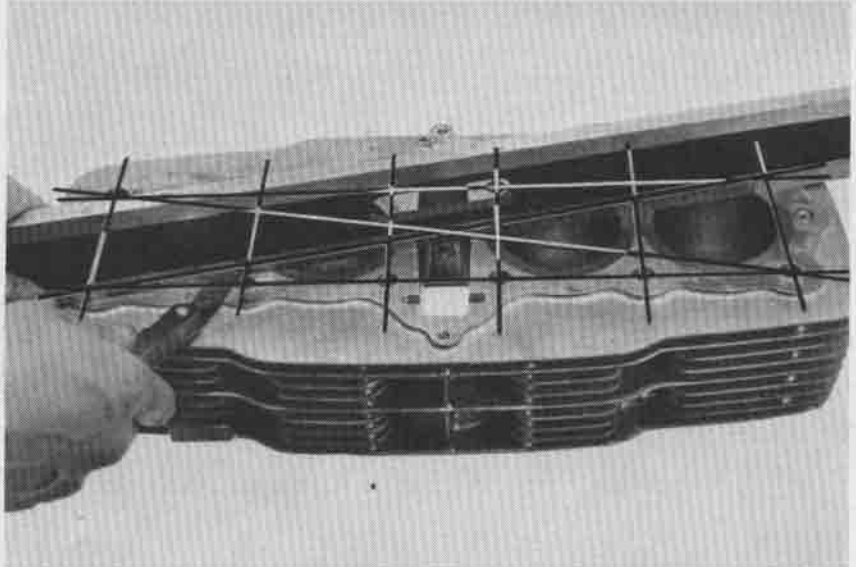
Inspect the cylinder bore for wear or damage. Measure the cylinder I. D. at three levels in X and Y axis.

SERVICE LIMIT: 59.90 mm (2.358 in)



Inspect the top of the cylinders for warpage. Check in an X pattern as shown.

SERVICE LIMIT: 0.25 mm (0.010 in)



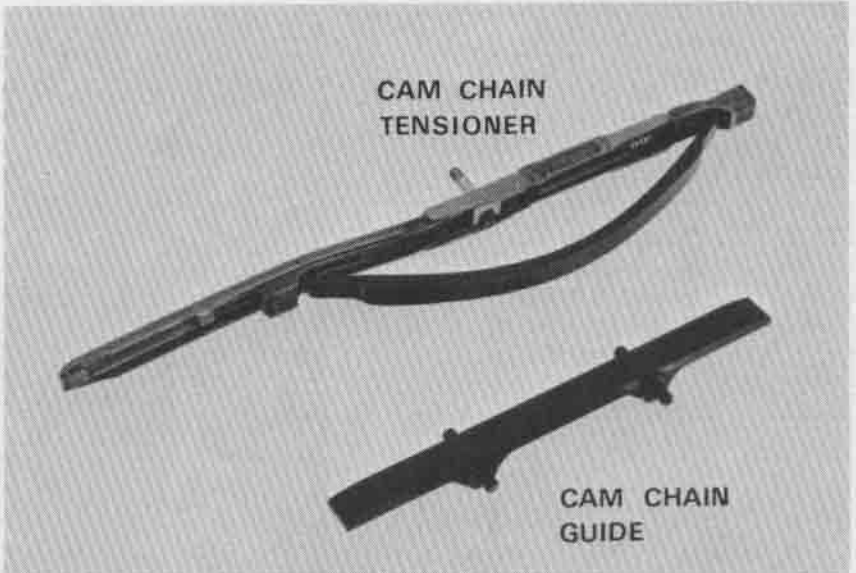
CAM CHAIN TENSIONER INSPECTION

Inspect the slipper of the cam chain tensioner for damage or excessive wear.

Replace the tensioner and guide if the Teflon coating on the slipper is worn out.

Inspect the tension spring for weakness.

SERVICE LIMIT: 81.0 mm/5kg





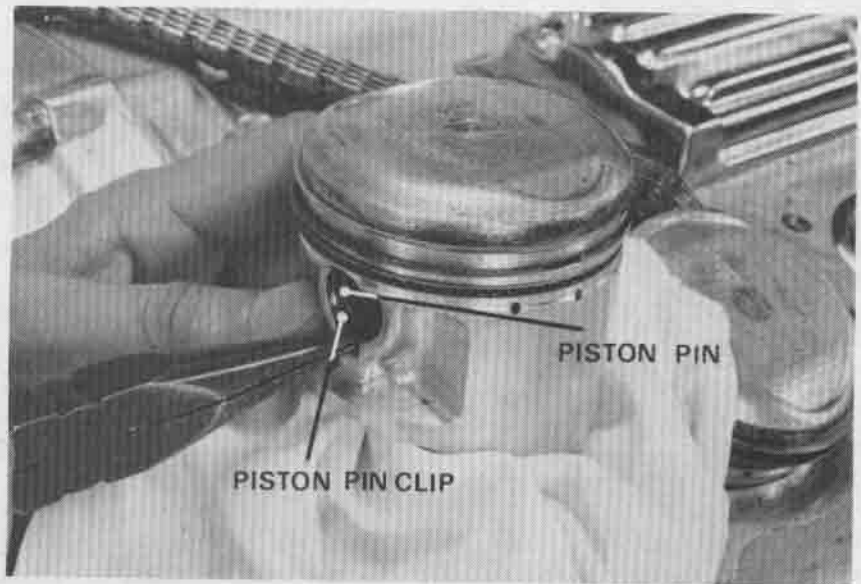
PISTON REMOVAL

Remove each piston pin clip with needle nose pliers.

NOTE

- Do not allow clips to fall into the crankcase. Place a shop towel under the piston.
- Mark the pistons to indicate the cylinder positions.

Press the piston pin out.



PISTON/PISTON RING INSPECTION

Inspect the piston ring-to-groove clearance.

SERVICE LIMITS:

TOP: 0.15 mm (0.006 in)
 SECOND: 0.15 mm (0.006 in)

NOTE

Mark the rings to ensure assembly in their original locations.

Inspect the pistons for damage and cracks and the ring grooves for wear.



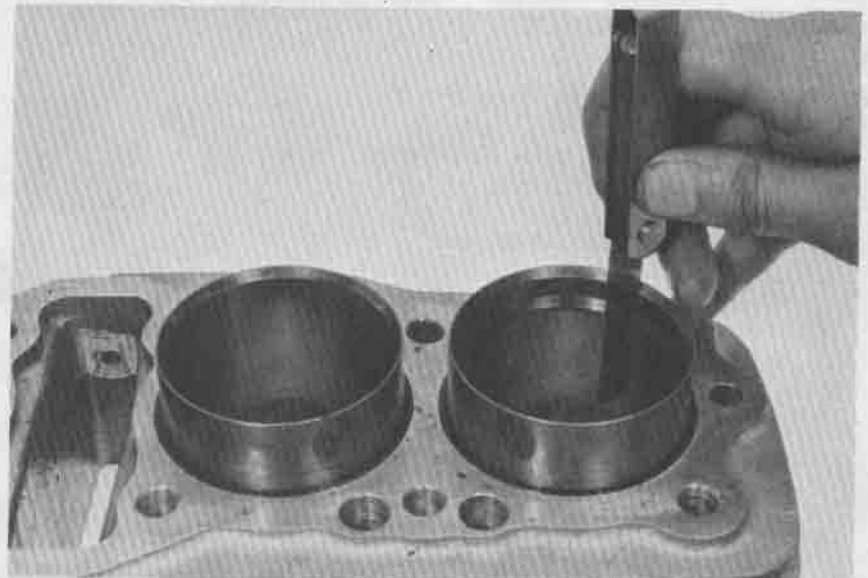
Insert each piston ring into the cylinder, and inspect the end gap.

SERVICE LIMITS:

TOP: 0.7 mm (0.028 in)
 SECOND: 0.7 mm (0.028 in)
 OIL (Side Rail) 1.1 mm (0.043 in)

STANDARD END GAPS:

TOP: 0.10–0.30 mm
 (0.004–0.012 in)
 SECOND: 0.10–0.30 mm
 (0.004–0.012 in)
 OIL (Side Rail) 0.3–0.9 mm
 (0.012–0.035 in)





Measure the piston O. D. at the skirt.

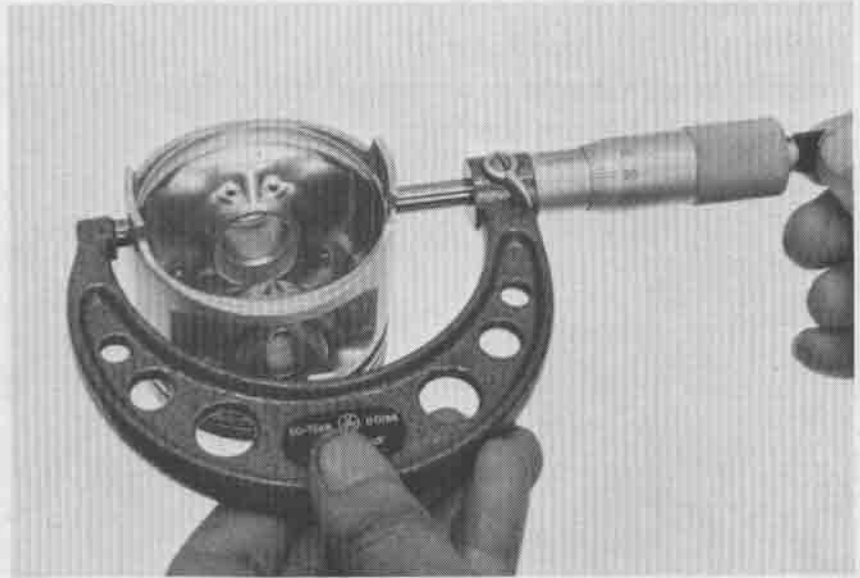
SERVICE LIMIT: 59.65 mm (2.348 in)

NOTE

Measurements should be taken 10 mm (0.04 in) from the bottom.

Calculate the cylinder-to-piston clearance.

SERVICE LIMIT: 0.10 mm (0.004 in)



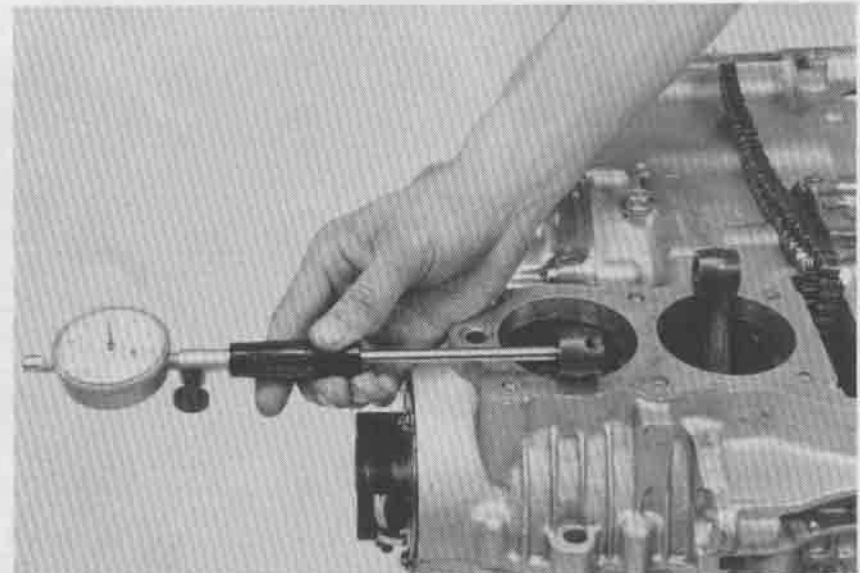
Measure the piston pin hole I. D.

SERVICE LIMIT: 15.08 mm (0.594 in)



Measure the connecting rod small end I. D.
(See Section 12 for replacement procedure)

SERVICE LIMIT: 15.07 mm (0.593 in)



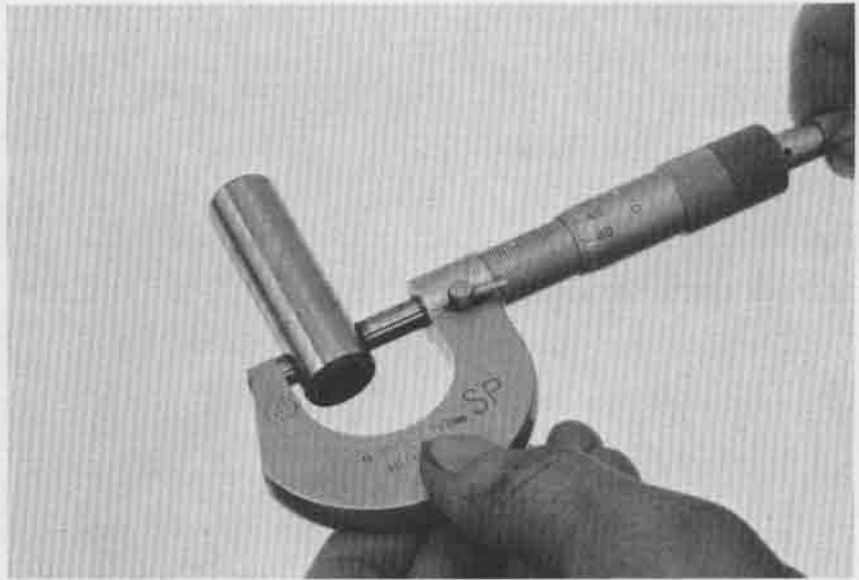


Measure the piston pin O. D.

SERVICE LIMIT: 14.98 mm (0.590 in)

Determine the piston-to-piston pin clearance.

SERVICE LIMIT: 0.04 mm (0.002 in)

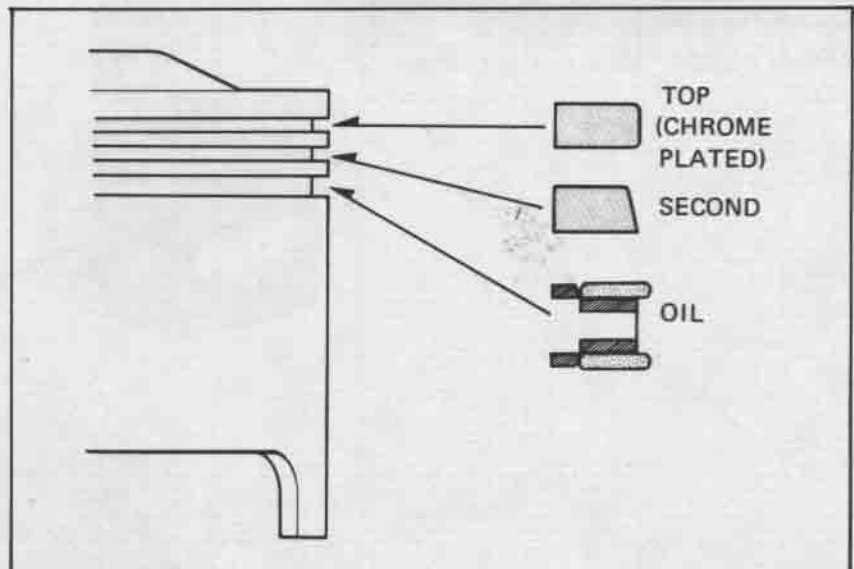


PISTON RING INSTALLATION

Install the piston rings.

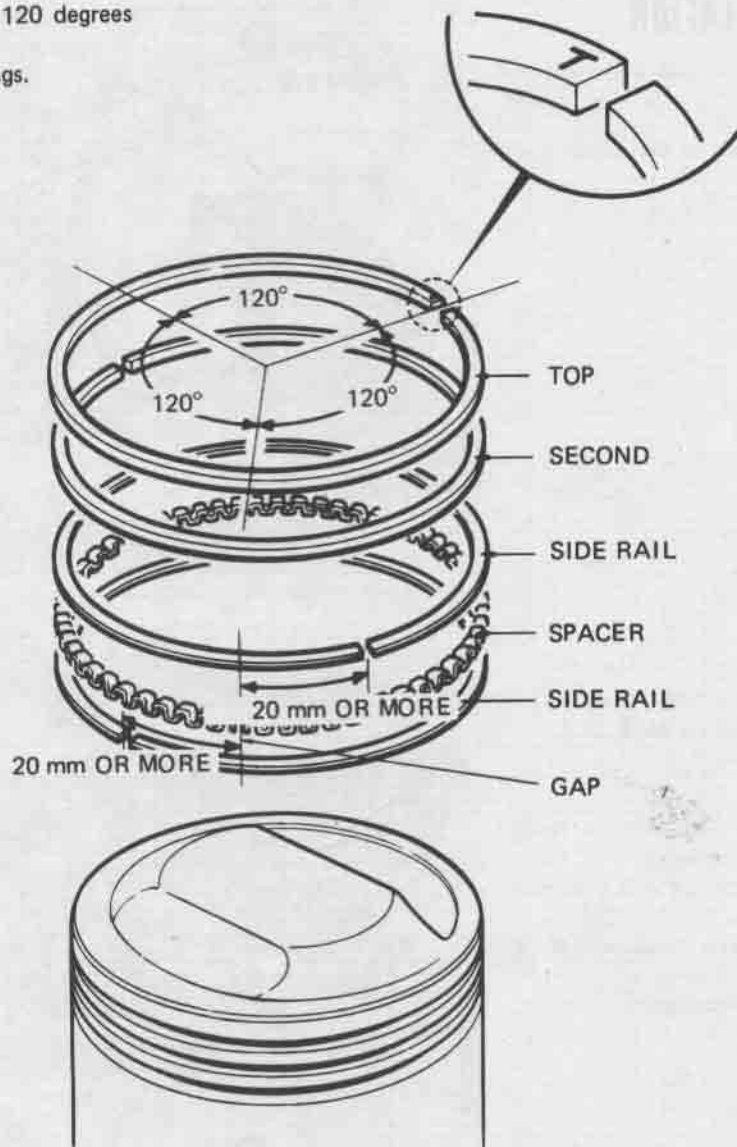
NOTE

- All rings should be installed with the markings facing up.
- After installation, be sure the rings rotate freely.





Space the piston ring end gaps 120 degrees apart.
Do not align the gaps in the oil rings.

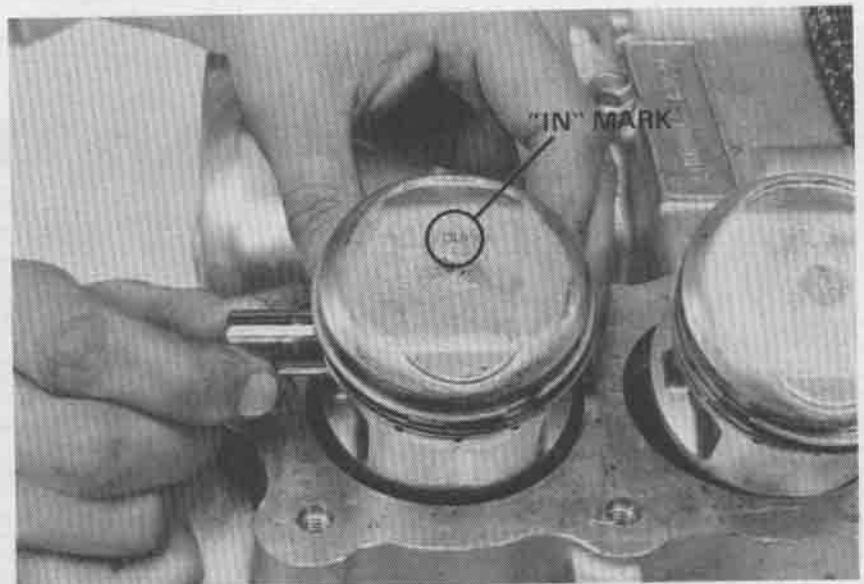


PISTON INSTALLATION

Apply molybdenum disulfide grease to the connecting rod small ends.
Install the pistons, piston pins and clips.

NOTE

- Position the mark "IN" on the piston to the intake side.
- Install the pistons in their original positions.
- Do not allow piston pin clips to fall into the crankcase.

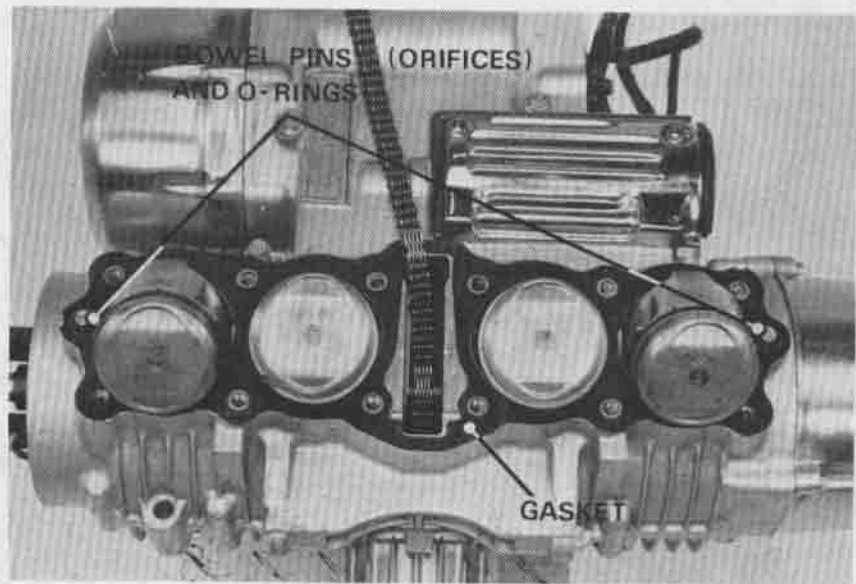




CYLINDER INSTALLATION

Install the dowel pins, O-rings and cylinder gasket.

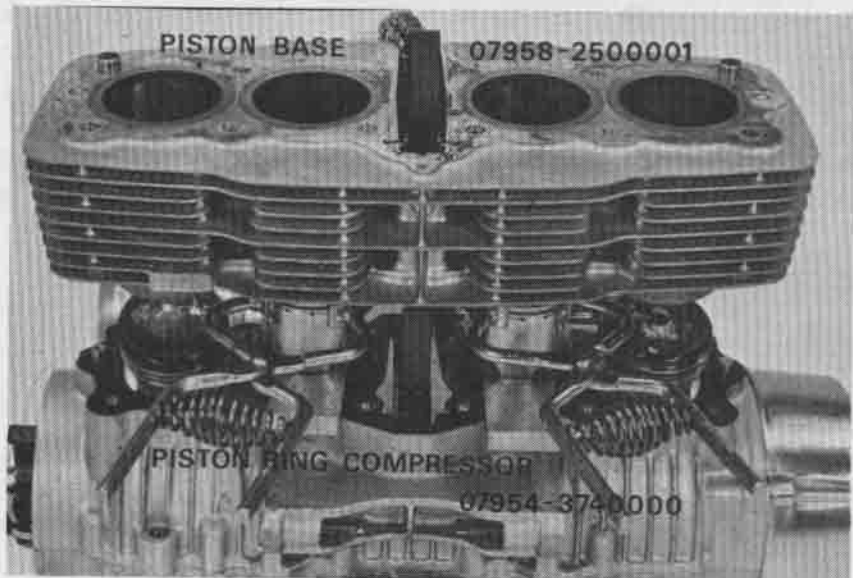
Make sure the oil orifices in the dowel pins are not clogged.



NOTE

Before using the special tools, position the No.2 and No.3 pistons at T. D. C. (Top Dead Center).

Insert the piston bases between the No.2 and No.3 Pistons and crankcase.
 Install the piston ring compressors over the No.2 and No.3 piston rings.
 Press the cylinder over the No.2 and No.3 piston rings.
 Remove the piston ring compressors .



Install the piston ring compressors over the No.1 and No.4 piston rings.
 Press the cylinder.
 Remove the piston ring compressors and piston bases.

