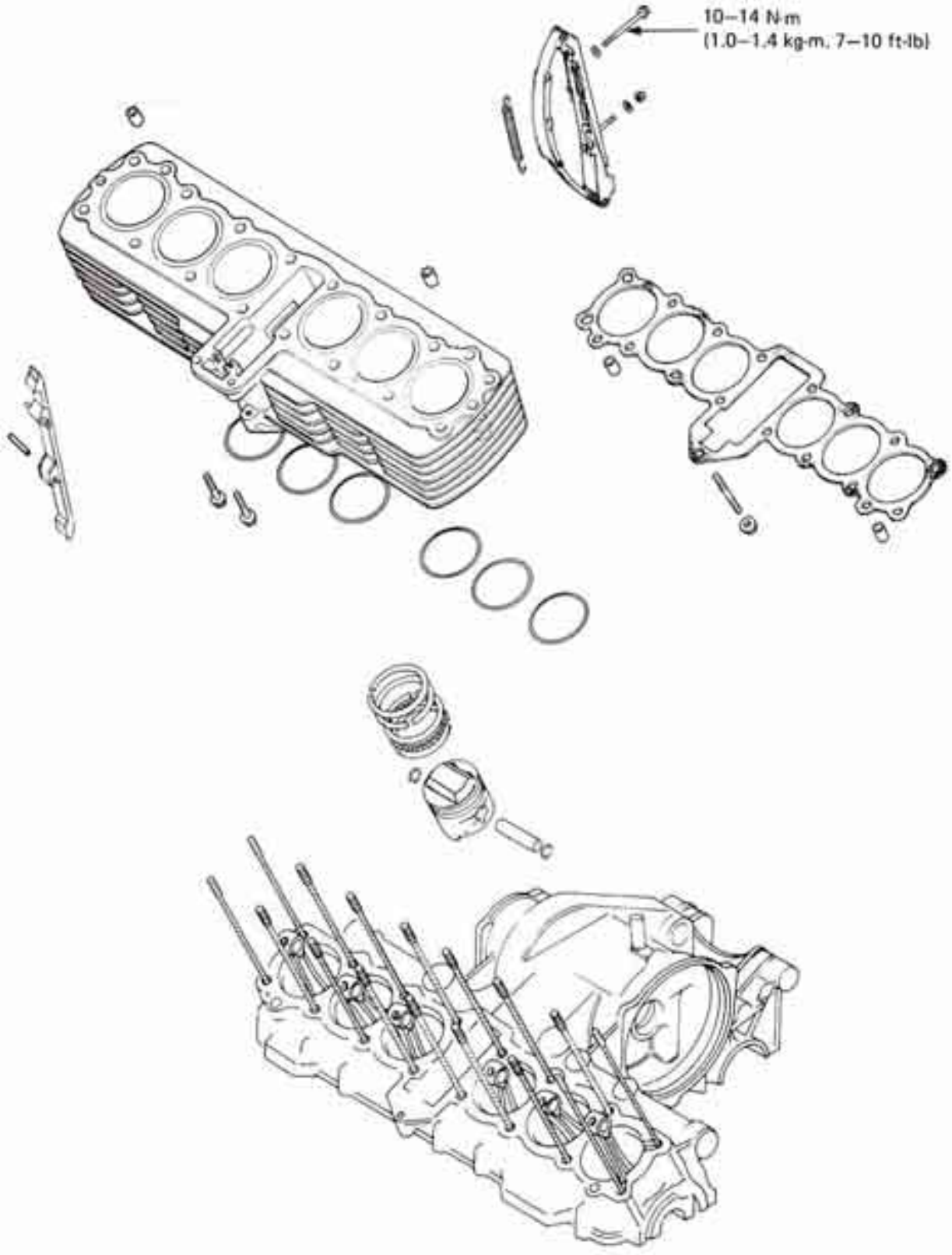


Date of Issue: May, 1981
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SERVICE INFORMATION	7-1	PISTON REMOVAL	7-3
TROUBLESHOOTING	7-1	PISTON INSTALLATION	7-7
CYLINDER REMOVAL	7-2	CYLINDER INSTALLATION	7-7

SERVICE INFORMATION

GENERAL INSTRUCTION

All cylinder/piston maintenance and inspection can be accomplished with the engine in the frame.

TOOLS

Special

Piston Base (4 required)	07958–2500000
Piston Ring Compressor (4 required)	07954–4220000

TORQUE VALUE

Cam chain tensioner rear bolt: 10–14 N·m (1.0–1.4 kg-m, 7–10 ft-lb)

SPECIFICATIONS

			STANDARD	SERVICE LIMIT
Cylinder	I.D.		64.500–64.510 mm (2.5394–2.5398 in)	64.60 mm (2.543 in)
	Warpage		———	0.10 mm (0.004 in)
Piston, piston rings and piston pin	Piston ring-to ring groove clearance	TOP	0.015–0.045 mm (0.0006–0.0018 in)	0.09 mm (0.004 in)
		SECOND	0.015–0.045 mm (0.0006–0.0018 in)	0.09 mm (0.004 in)
	Ring end gap	TOP	0.15–0.30 mm (0.006–0.012 in)	0.5 mm (0.02 in)
		SECOND	0.15–0.30 mm (0.006–0.012 in)	0.5 mm (0.02 in)
		OIL (SIDE RAIL)	0.30–0.90 mm (0.012–0.035 in)	1.1 mm (0.04 in)
	Piston O.D.		64.47–64.49 mm (2.538–2.539 in)	64.40 mm (2.535 in)
	Piston pin bore		15.002–15.008 mm (0.5906–0.5909 in)	15.04 mm (0.592 in)
	Connecting rod small end I.D.		15.016–15.034 mm (0.5912–0.5919 in)	15.05 mm (0.592 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)

TROUBLESHOOTING

Compression Too Low or Unstable
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 the piston or combustion chamber.

Knocking or Abnormal Noise
1. Worn piston and cylinder
2. Excessive carbon build-up

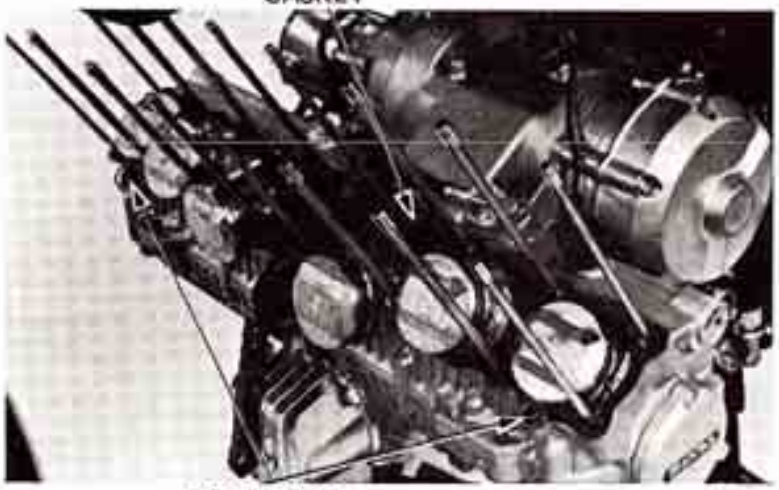
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CYLINDER REMOVAL

Remove the cylinder head (Section 6).
Place clean shop towels into the crankcase openings to keep objects from falling in.
Remove the nut at the lower front cylinder base.
Remove the cylinder.
Remove the cam chain tensioner.

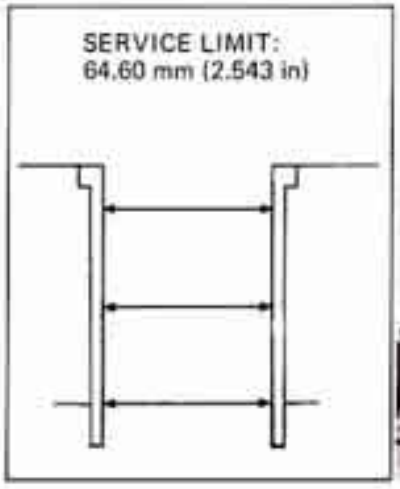


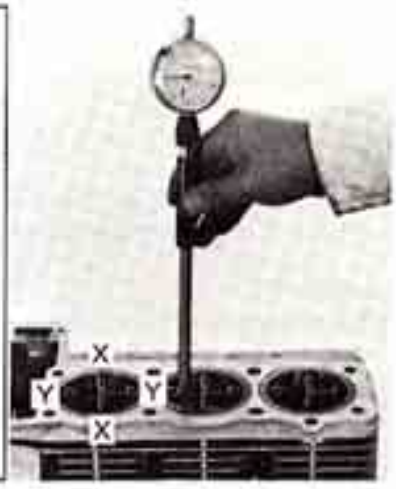
Remove the cylinder gasket and dowel pins.
Remove the cam chain guide pin.



CYLINDER INSPECTION

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





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

WARP SERVICE LIMIT
0.10 mm (0.004 in)



CAM CHAIN TENSIONER INSPECTION

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



PISTON REMOVAL

Remove and discard each piston pin clip with pliers.

NOTE

- Do not allow clips to fall into the crankcase.
- Never re-use the clips.

Press the piston pin out of the piston.

NOTE

Mark the pistons to indicate the cylinder positions.



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PISTON/PISTON RING INSPECTION

Inspect the piston ring-to-groove clearacne.
Remove the piston rings.

NOTE

Mark the rings so that they can be returned to their original locations.

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



SERVICE LIMIT:
TOP: 0.09 mm (0.004 in)
SECOND:0.09 mm (0.004 in)

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

SERVICE LIMITS:

TOP:	**0.5 mm (0.02 in)**
SECOND:	**0.5 mm (0.02 in)**
OIL (Side rail):	**1.1 mm (0.04 in)**

STANDARD END GAPS:

TOP	**0.15–0.30 mm (0.006–0.012 in)**
SECOND:	**0.15–0.30 mm (0.006–0.012 in)**
OIL (Side rail):	**0.3–0.9 mm (0.012–0.035 in)**



Measure the piston O.D. at the skirt 90° from the piston pin hole.

NOTE

Measurements should be taken 10 mm (0.4 in) from the bottom.

Calculate the cylinder-to-piston clearance.
SERVICE LIMIT: 0.10 mm (0.004 in)

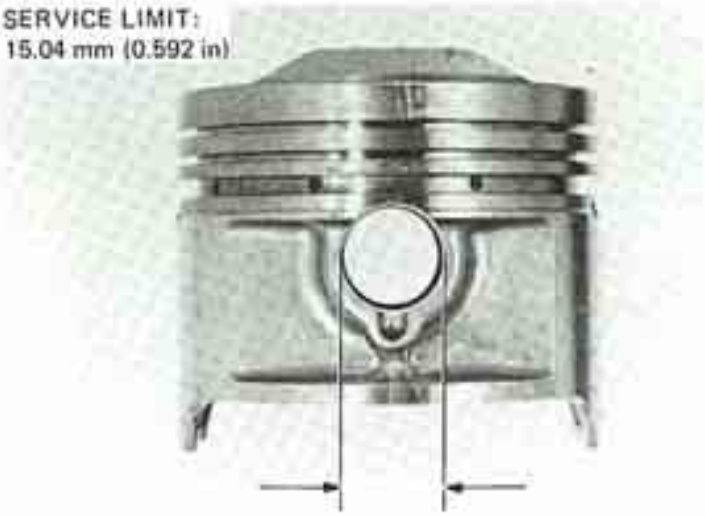
SERVICE LIMIT:
64.40 mm (2.535 in)



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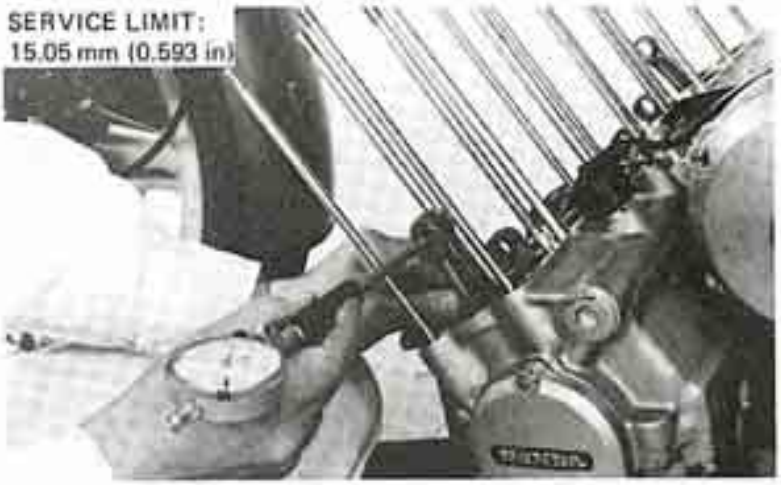
Measure the piston pin hole I.D..

SERVICE LIMIT:
15.04 mm (0.592 in)



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

SERVICE LIMIT:
15.05 mm (0.593 in)



Measure the piston pin O. D..

Determine the piston-to-piston pin clearance.
SERVICE LIMIT: 0.04 mm (0.002 in)

SERVICE LIMIT:
14.98 mm (0.590 in)



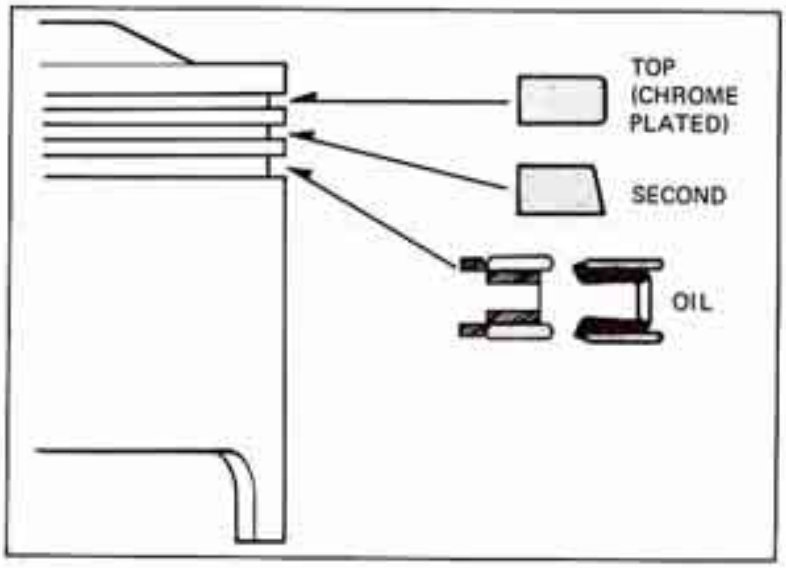
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PISTON RING INSTALLATION

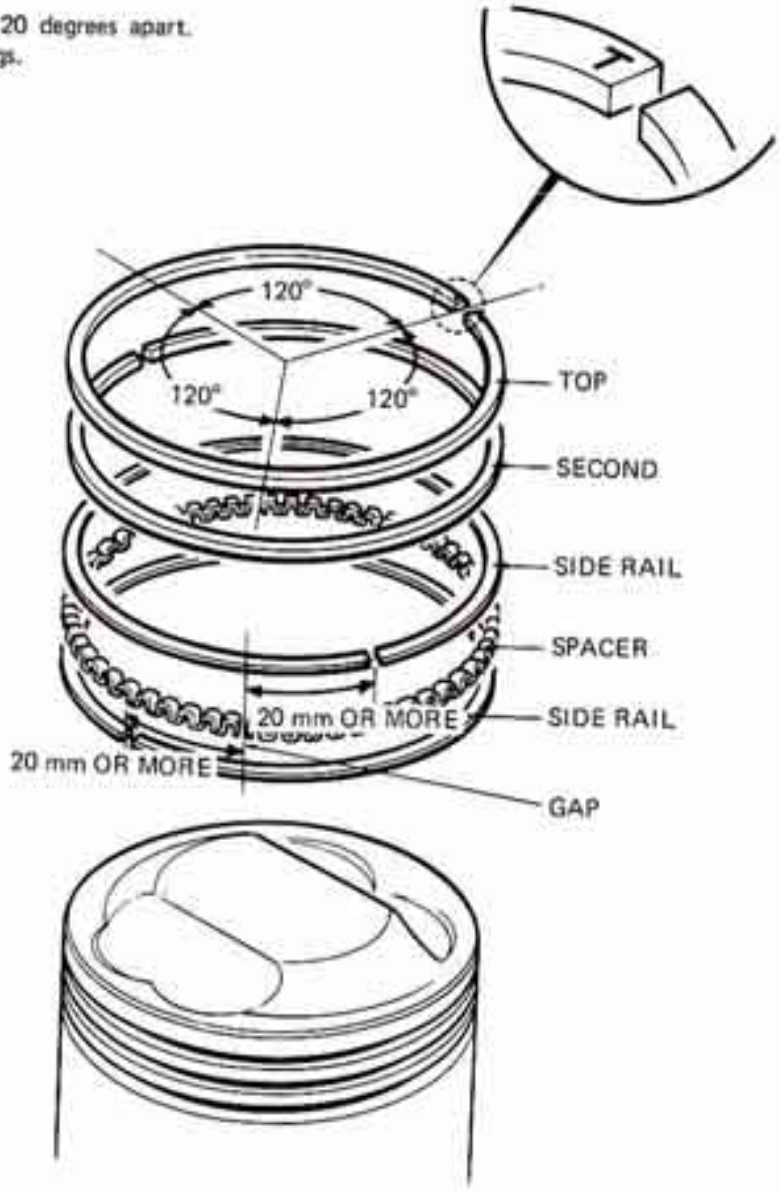
Install the piston rings.

NOTE

- Avoid piston and piston ring damage during installation.
- All rings should be installed with the markings facing up.
- After installation, the rings should rotate freely.



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



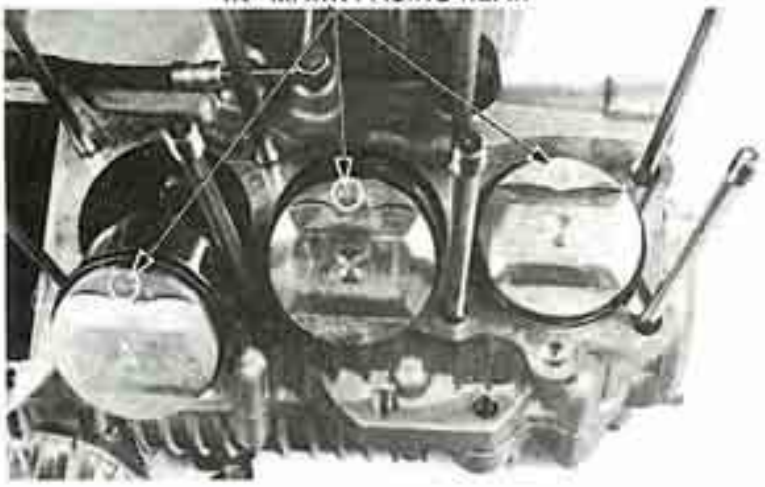
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PISTON INSTALLATION

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

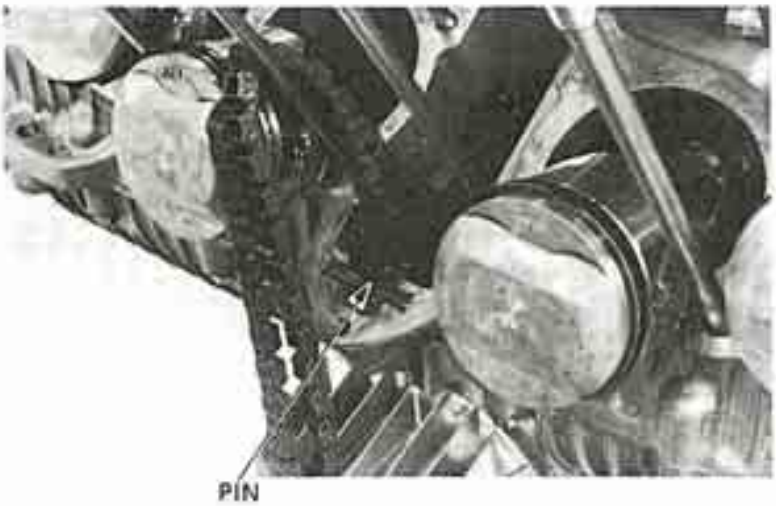
NOTE

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

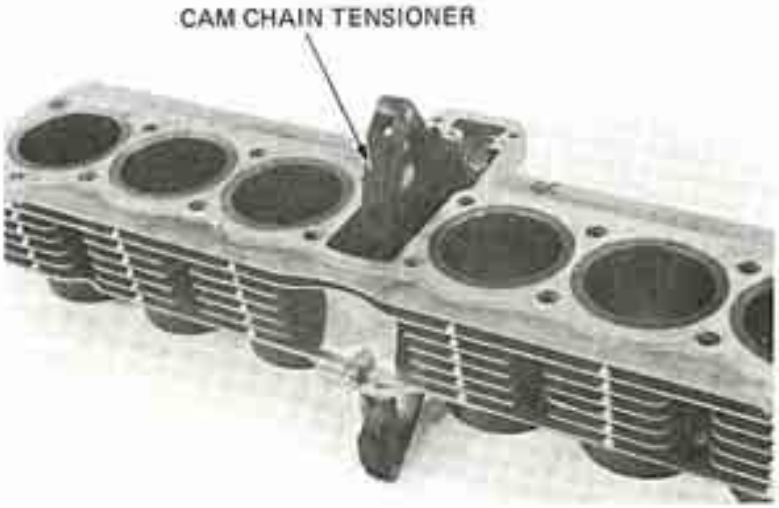


CYLINDER INSTALLATION

Install the cam chain guide pin.

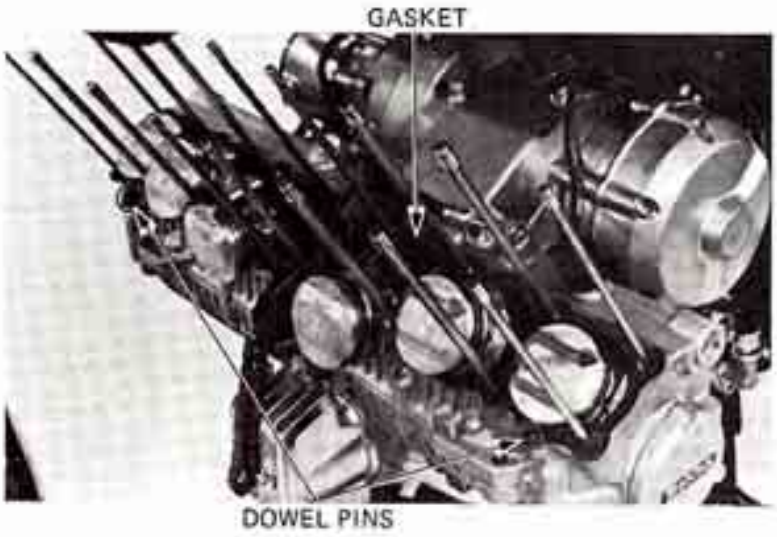


Install the cam chain tensioner.



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Install the dowel pins and cylinder gasket.



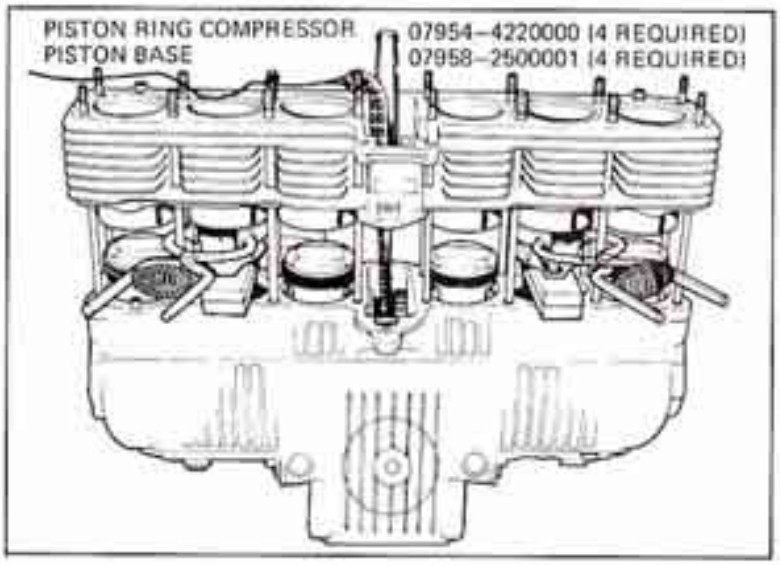
Install the cylinder.

CAUTION

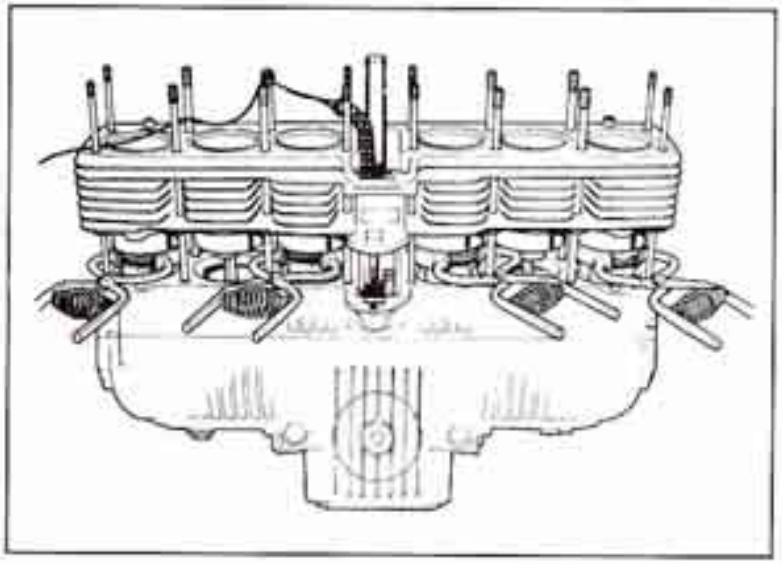
Avoid damaging the pistons and piston rings when installing the cylinder.

NOTE

Before using the special tools, position the No. 2 and No. 5 pistons at T. D. C. (Top Dead Center).



Tighten the cylinder base nut securely after installation.



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