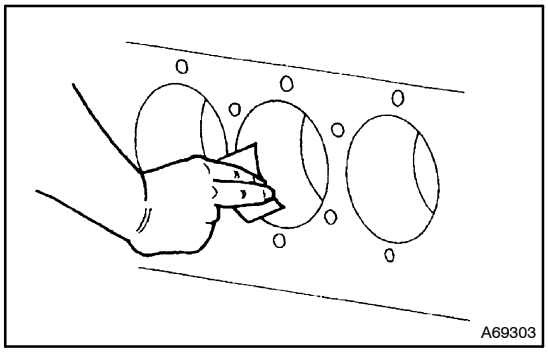
14146–01

OVERHAUL

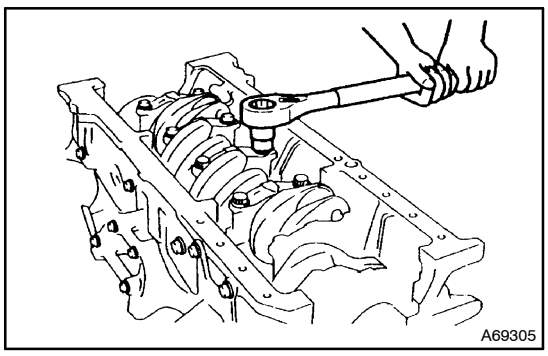


1. REMOVE PISTON AND CONNECTING ROD

(a) Remove the connecting rod bearing cap mounting bolts and pull out the pistons along with the connecting rods from the cylinder block upper side.

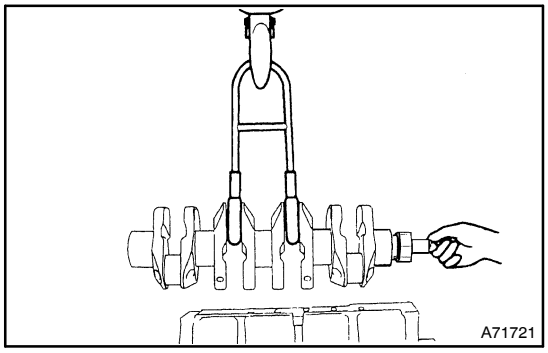
HINT:

- Before pulling out the pistons, remove carbon deposits from the upper end inside the cylinder liner with a scraper or an emery paper (recommended: No. 150), working in a circular direction.
- When pulling out the pistons, be careful that the insides of the cylinder liners are not damaged by the connecting rod big ends.
- When pulling out the pistons, be careful not to drop the connecting rod bearings from the connecting rod big ends, which may cause deformation or damage.
- Arrange the removed parts in order of the cylinder numbers. Be careful not to change the combination of the connecting rod and cap.
- 2 pistons can be removed at a time (Nos. 1 and 4, Nos. 2 and 3).

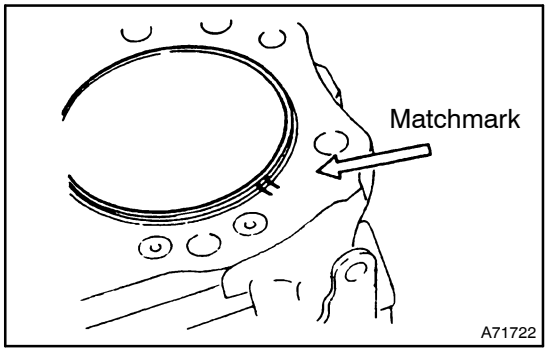


2. REMOVE CRANKSHAFT

(a) Remove the bearing cap mounting bolts.



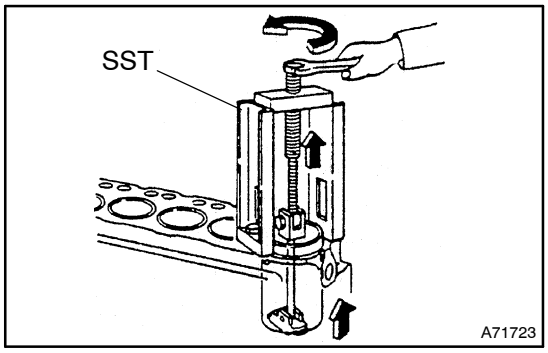
(b) Remove the crankshaft.



3. REMOVE CYLINDER LINER

HINT:

Before removing the piston, put matchmarks on the cylinder liner and cylinder is bent by ”run–in”. When reusing the cylinder liner, misalignment with the cylinder block may concentrate stress on the thin part of the cylinder liner and it may break.



(a) Remove the cylinder liner can be pulled out by hand.

If this is difficult, use the SST.

SST S0942–01460

HINT:

Arrange the removed parts in the order of the cylinder numbers.

4. CLEAN CYLINDER BLOCK

(a) Rinse the cylinder block in a hot commercial alkaline solution, and remove oil from the cylinder block.

(b) Remove the alkaline solution from the cylinder block using a steam cleaner.

(c) If the water jacket is dirty, clean it as follows.

(1) Rinse the cylinder block in a commercial acid solution.

(2) After rinsing the cylinder block for a while, immerse it in the solution for approximately 30 minutes.

(3) Pull out the cylinder block. After the solution has drained off, re–immerse the cylinder block in the solution and leave it for approximately 10 minutes.

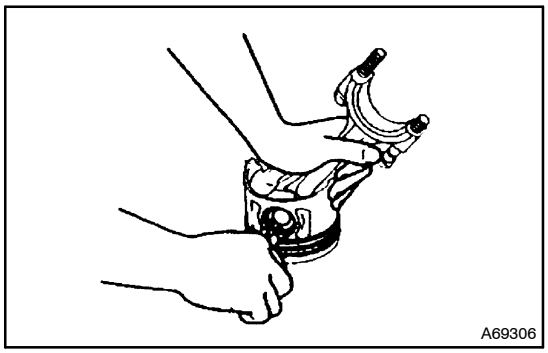
(4) Repeat step 3 until deposits are removed.

(5) Remove the acid solution with hot water.

(6) Immerse the cylinder block in the alkaline solution to neutralize the acid.

(7) Finish by cleaning with a steam cleaner.

(d) When the cooling water passage and oil passage are cleaned completely, dry the cylinder block, press–fit a new blank cap and apply seal packing.



5. REMOVE CONNECTING ROD SUB–ASSY

(a) Using snap ring pliers, remove the retainer rings from both ends of the piston pin.

CAUTION:

Removing the retainer rings may cause the retainer rings to fly up. Be sure to wear protective goggles.

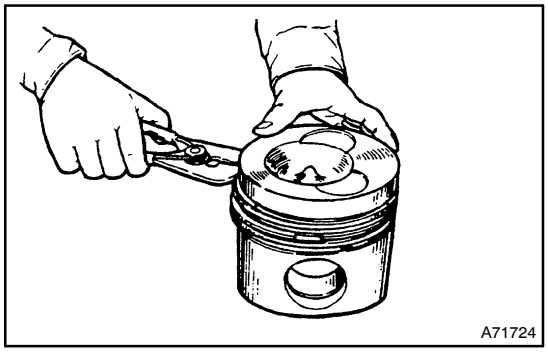
(b) Using a hammer, apply the reinforcing plate to the piston pin and punch out the piston pin.

HINT:

If it is difficult to punch out the piston pin, first immerse the piston and piston pin in hot water (80 – 90°C (176 – 194°F)) for approximately 5 minutes to facilitate removal.

CAUTION:

Never touch the piston with your bare hands when it is hot.

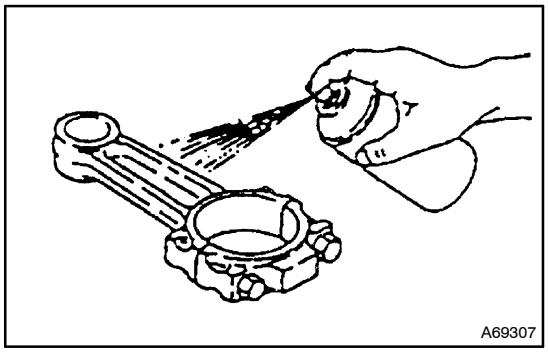

A71724

6. REMOVE PISTON RING SET

(a) Using a piston ring expander, remove the piston ring.

HINT:

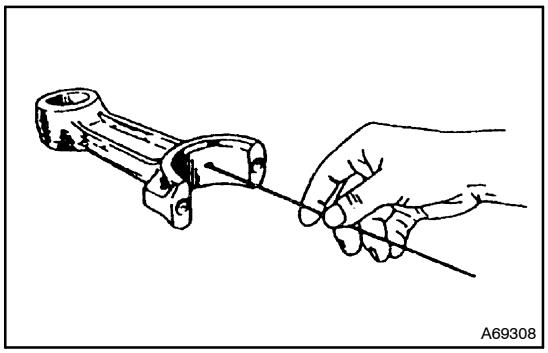
- Handle the piston rings carefully because they are made of a special casting which is easily broken.
- Arrange the piston rings in the order of the cylinder numbers.


A69307

7. INSPECT CONNECTING ROD SUB–ASSY

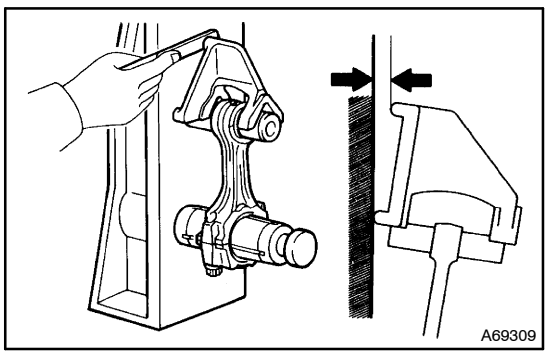
(a) Using dye penetrant test or magnetic test, check the connecting rod for cracks or damage.

If there are any cracks or damage, replace the connecting rod with a new one.


A69308

(b) Check that there is no clogging in the lubrication passage to the connecting rod small end.

If there is any clogging, blow air through the lubrication passage using an air gun, or clean by inserting a wire.


A69309

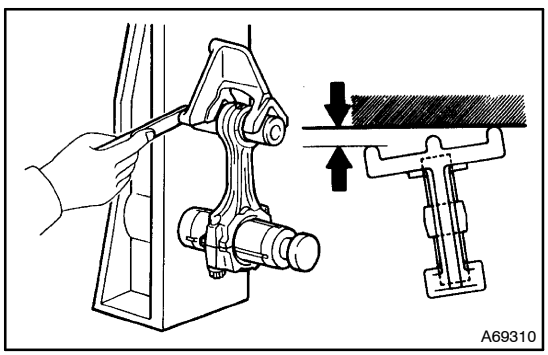
(c) Using a rod aligner and feeler gauge, check the connecting rod alignment.

(1) Check for bend.

Maximum bend:

0.10 mm (0.0039 in.) per 200 mm (7.87 in.)

If the bend is greater than the maximum, replace the connecting rod with a new one.

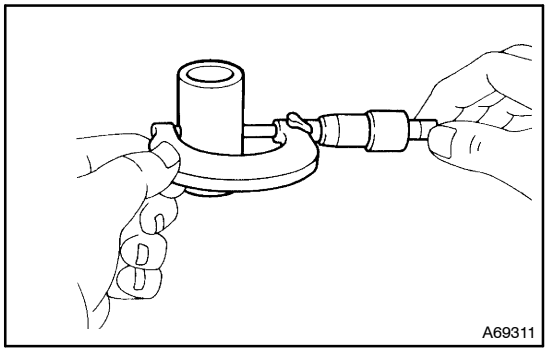

A69310

(2) Check for twist.

Maximum twist:

0.10 mm (0.0039 in.) per 200 mm (7.87 in.)

If the twist is greater than the maximum, replace the connecting rod with a new one.



8. INSPECT PISTON PIN

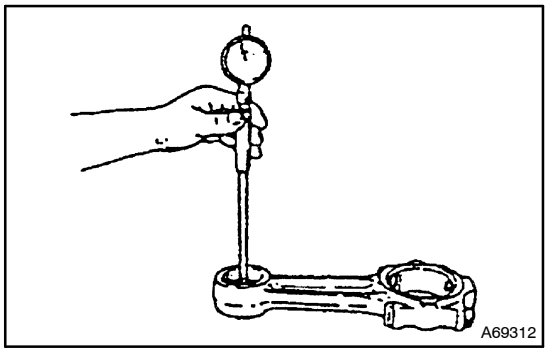
(a) Using a micrometer, measure the piston pin diameter.

Standard piston pin diameter:
36.989 – 37.000 mm (1.4563 – 1.4567 in.)
Minimum piston pin diameter: 36.96 mm (1.4551 in.)

If the diameter is less than the minimum, replace the piston pin with a new one.

HINT:

Never grind the piston pin, because the surface is coated with a special material.



9. INSPECT CONNECTING ROD SMALL END BUSH

(a) Using a cylinder gauge, measure the connecting rod bush inside diameter.

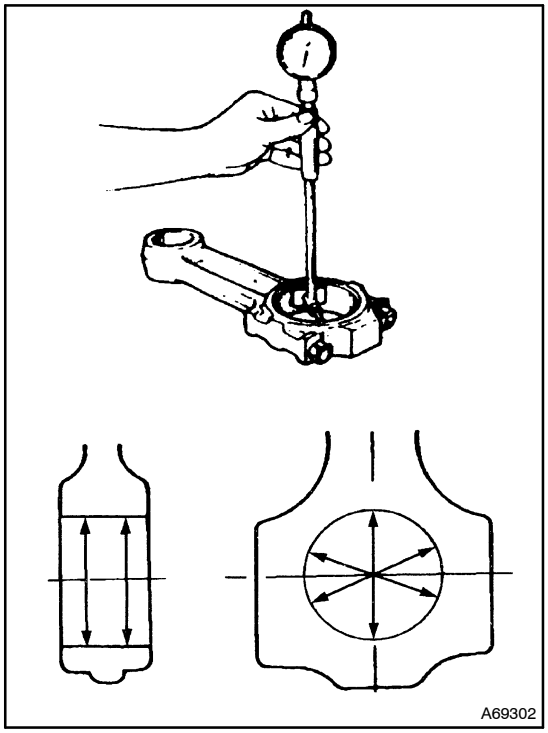
Standard bush inside diameter:
37.035 – 37.045 mm (1.4581 – 1.4585 in.)
Maximum bush inside diameter: 37.10 mm (1.4606 in.)

If the inside diameter is greater than the maximum, replace the connecting rod bush with a new one.

(b) Subtract the diameter measurement of the piston pin from the inside diameter measurement of the connecting rod bush.

Standard oil clearance:
0.035 – 0.056 mm (0.0014 – 0.0022 in.)
Maximum oil clearance: 0.08 mm (0.0031 in.)

If the oil clearance is greater than the maximum, replace the piston with a new one.



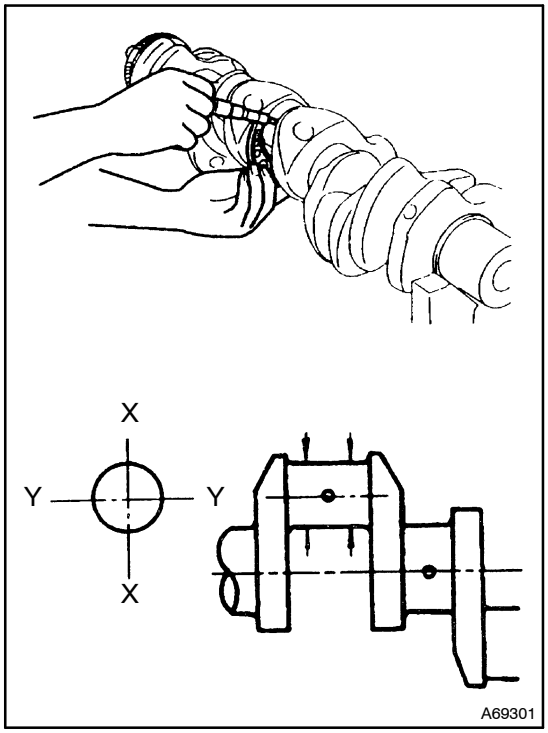
10. INSPECT CONNECTING ROD BIG END

(a) After tightening the connecting rod cap without bearing, using a cylinder gauge, measure the inside diameter of the connecting rod big end to calculate the roundness.

Standard big end inside diameter (w/o Bearing):
65.985 – 66.000 mm (2.5978 – 2.5984 in.)
Maximum big end inside diameter (w/o Bearing):
66.06 mm (2.6008 in.)

HINT:

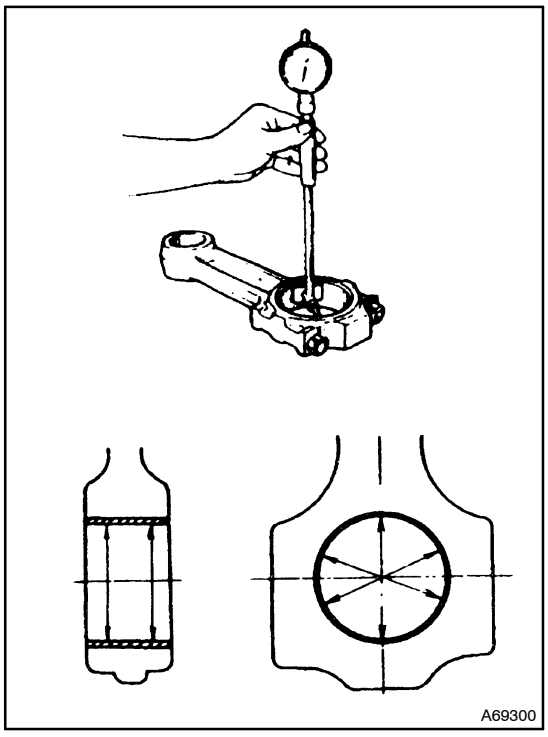
For tightening of the connecting rod cap, see step 29.



11. INSPECT CRANKSHAFT PIN AND BEARING

(a) Using a micrometer, measure the crankshaft pin diameter.

Standard pin diameter:
61.940 – 61.960 mm (2.4386 – 2.4394 in.)
Minimum pin diameter: 60.76 mm (2.3921 in.)



(b) Using a cylinder gauge, measure the connecting rod big end inside diameter.

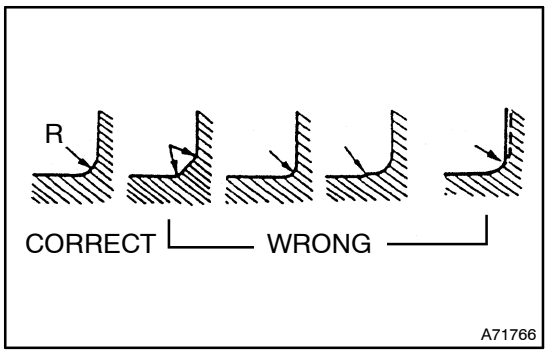
Standard big end inside diameter (w/ Bearing):
61.985 – 62.000 mm (2.4403 – 2.4409 in.)
Maximum big end inside diameter (w/ Bearing):
62.06 mm (2.4433 in.)

(c) Subtract the diameter measurement of the crankshaft pin from the inside diameter measurement of the connecting rod big end.

Standard clearance:
0.031 – 0.082 mm (0.0012 – 0.0032 in.)
Maximum clearance: 0.12 mm (0.0047 in.)

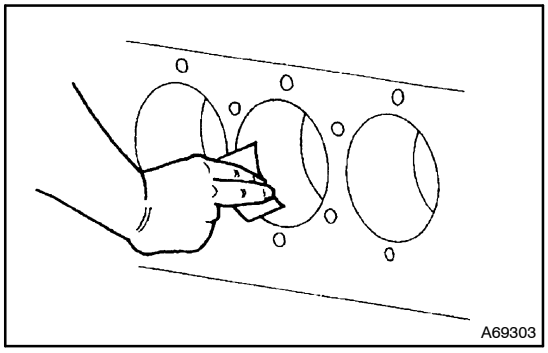
If the clearance is greater than the maximum, replace the connecting rod bearing with the correct one.

Undersize machining dimension: 4 sizes below
0.25 mm (0.0098 in.)
0.50 mm (0.0197 in.)
0.75 mm (0.0295 in.)
1.00 mm (0.0394 in.)



HINT:
Machined dimension of filet R

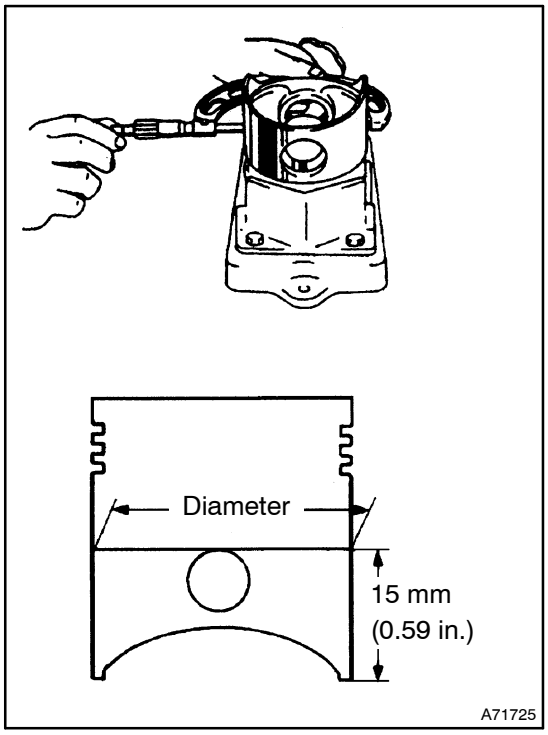
Crankshaft pin: 3.50 – 4.00 mm (0.1378 – 0.1575 in.)



12. INSPECT PISTON AND CYLINDER LINER

HINT:

Before the measurement, remove carbon deposits from the upper end inside the cylinder liner with a scraper or an emery paper (recommended: No. 150), working in a circular direction. Make sure that there is no scratches inside the cylinder liner.

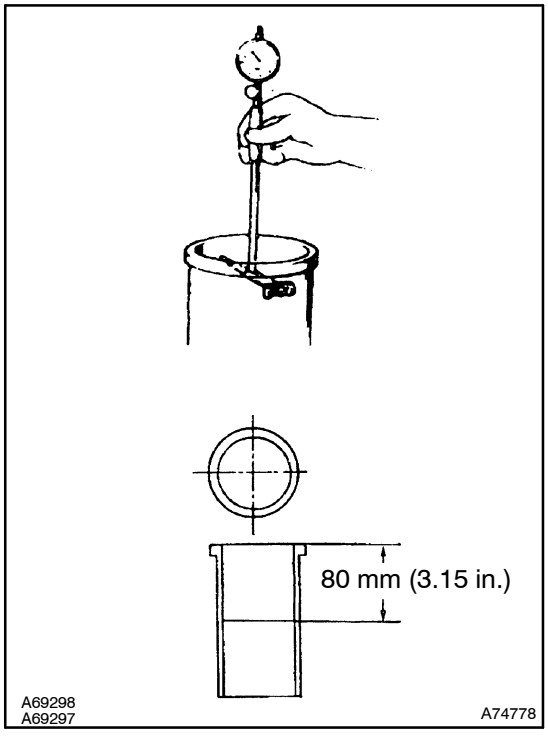


(a) Using a micrometer, measure the piston diameter at the points in the illustration.

Standard piston diameter: 103.908 mm (4.0909 in.)

Minimum piston diameter: 103.902 mm (4.0906 in.)

If the piston diameter is less than the minimum, replace the piston with a new one.



(b) Using a cylinder gauge, measure the cylinder liner inside diameter at the 4 points in the piston boss and thrust direction, as shown in the illustration.

Standard inside diameter:

104.003 – 104.018 mm (4.0946 – 4.0952 in.)

Maximum inside diameter: 104.15 mm (4.1004 in.)

If the inside diameter is greater than the maximum, replace the cylinder liner with a new one.

HINT:

- Apply the value measured at the most worn point to the cylinder liner inside diameter.
- If the cylinder liner is heavily worn or if only the piston ring must be replaced, correct the corrugation at the top of the cylinder liner.

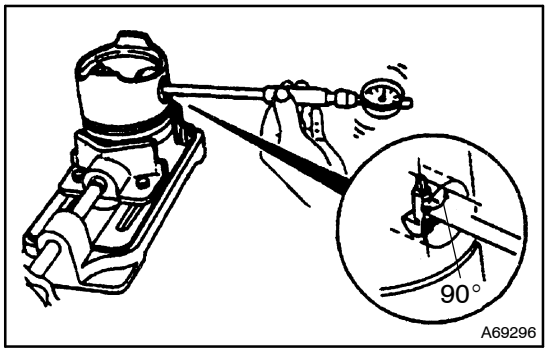
(c) Subtract the piston diameter measurement from the cylinder liner inside diameter measurement.

Standard oil clearance:

0.0140 – 0.0172 mm (0.0055 – 0.0068 in.)

If the clearance is greater than the standard, replace the cylinder liner and/or piston with a new one.

HINT:
Apply the value measured at the most worn point to the cylinder liner inside diameter.



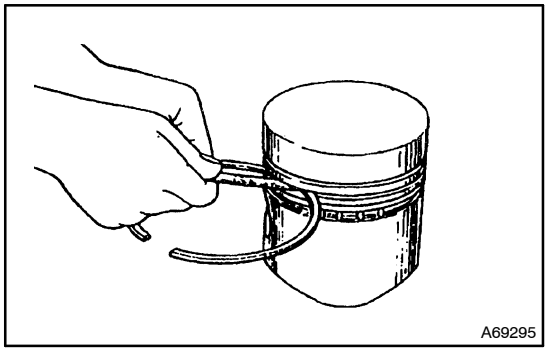
13. INSPECT PISTON PIN BOSS

(a) Using a cylinder gauge, measure the piston pin boss inside diameter.
Standard piston pin boss inside diameter:
36.987 – 37.003 mm (1.4562 – 1.4568 in.)
Maximum piston pin boss inside diameter:
37.05 mm (1.4587 in.)

If the piston pin boss inside diameter is greater than the maximum, replace the piston with a new one.

(b) Subtract the diameter measurement of the piston pin from the inside diameter measurement of the piston pin boss.
Standard oil clearance:
0.013 (T) – 0.014 (L) mm (0.00051 (T) – 0.00055 (L) in.)
Maximum oil clearance: 0.05 mm (0.0020 in.)

HINT:
T = tightening allowance, L = clearance
If the clearance is greater than the maximum, replace the piston or piston pin.



14. INSPECT PISTON RING AND PISTON RING GROOVE

(a) Insert the piston ring into the piston ring groove.

(b) Using a feeler gauge, measure the clearance between the piston ring and piston ring groove.
Standard groove clearance:

1st	0.09 – 0.13 mm (0.0035 – 0.0051 in.)
2nd	0.07 – 0.11 mm (0.0028 – 0.0043 in.)
Oil	0.02 – 0.06 mm (0.0008 – 0.0024 in.)

Maximum groove clearance: 0.30 mm (0.0118 in.)

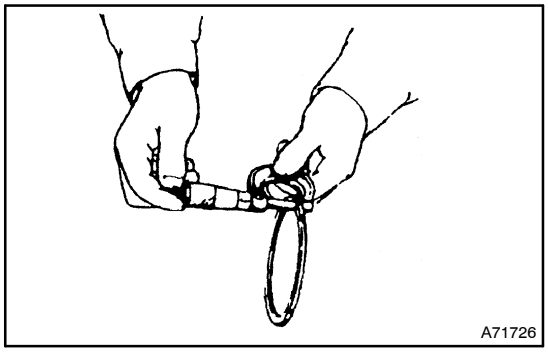
If the clearance is greater than the maximum, measure the width of the piston ring and piston ring groove individually and replace any parts that do not meet the limit with new ones.

Standard groove width:

1st	2.58 – 2.60 mm (0.1016 – 0.1024 in.)
2nd	2.06 – 2.08 mm (0.0811 – 0.0819 in.)
Oil	4.01 – 4.03 mm (0.1579 – 0.1587 in.)

Maximum groove width:

1st	3.10 mm (0.1220 in.)
2nd	2.20 mm (0.0866 in.)
Oil	4.08 mm (0.1606 in.)

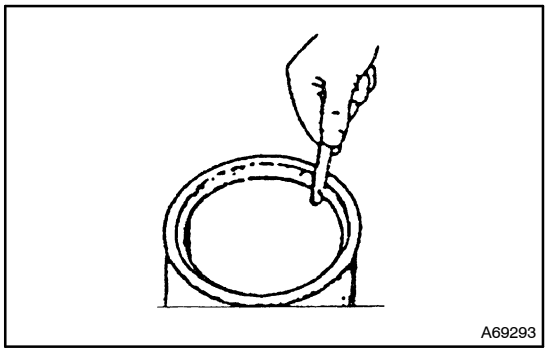

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Standard ring thickness:

1st	2.47 – 2.49 mm (0.0972 – 0.0980 in.)
2nd	1.97 – 1.99 mm (0.0776 – 0.0783 in.)
Oil	4.97 – 4.99 mm (0.1957 – 0.1965 in.)

Maximum groove width:

1st	2.32 mm (0.0913 in.)
2nd	1.82 mm (0.0717 in.)
Oil	4.95 mm (0.1949 in.)


A69293

15. INSPECT PISTON RING END GAP

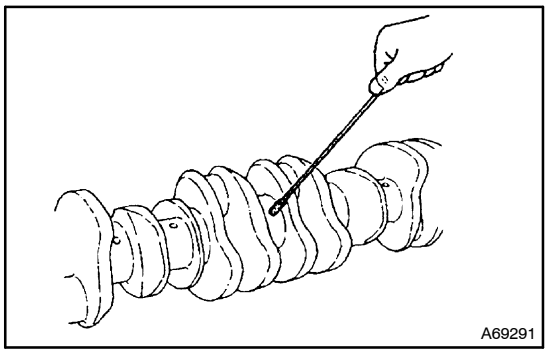
(a) Fit the piston ring into the cylinder liner.

(b) Using a feeler gauge, measure the end gap of the piston ring matching point.

Standard end gap: 0.30 – 0.42 mm (0.0118 – 0.0165 in.)

Maximum end gap: 1.20 mm (0.0472 in.)

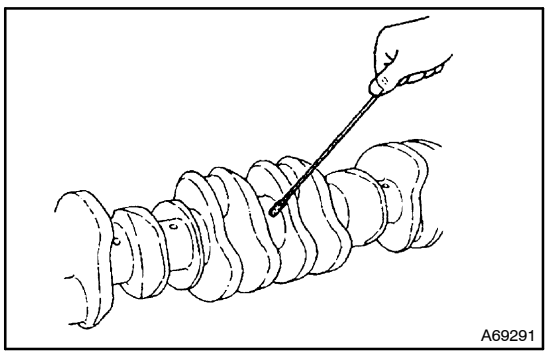
If the end gap is greater than the maximum, replace the piston ring with a new one.


A69291

16. INSPECT CRANKSHAFT

HINT:

Before the inspection, clean the crankshaft with a commercial cleaning agent and clean the lubrication passage using an air gun.


A69291

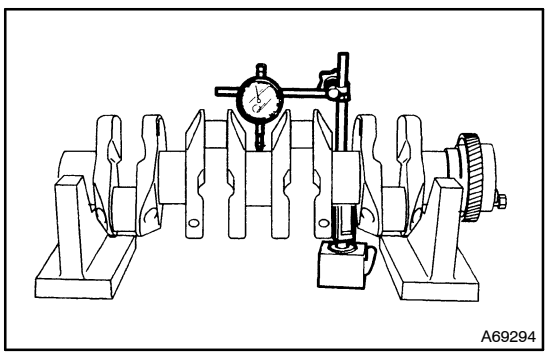
(a) Performing the dye penetrant test, and check the crankshaft for cracks.

HINT:

Pay special attention to the finished R section and oil hole of the crankshaft journal and crankshaft pin.

(b) Visually check the condition of the crankshaft journal and pin for damage or wear.

If any damages are found, replace the crankshaft with a new one.


A69294

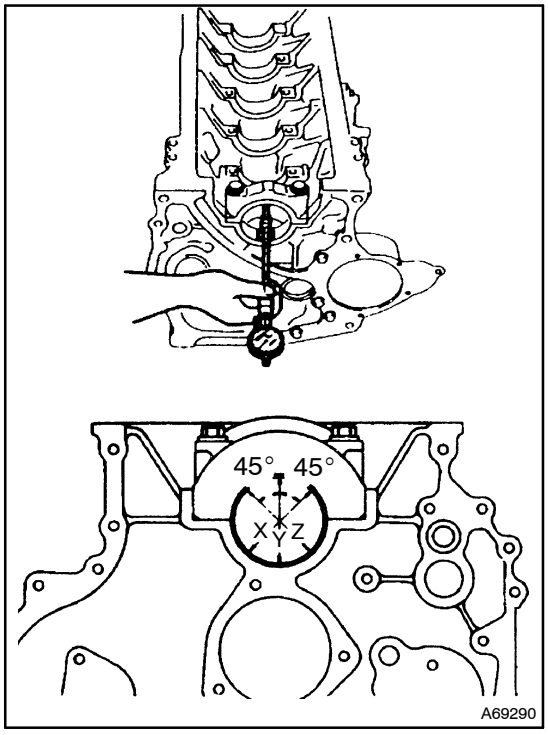
(c) Inspect for bend.

(1) Place the crankshaft on V–blocks.

(2) Using a dial gauge, measure the bend of the crankshaft at the center journal.

Maximum bend: 0.04 mm (0.0016 in.)

If the bend is greater than the maximum, replace the crankshaft with a new one.



17. INSPECT CRANKSHAFT BEARING CAP

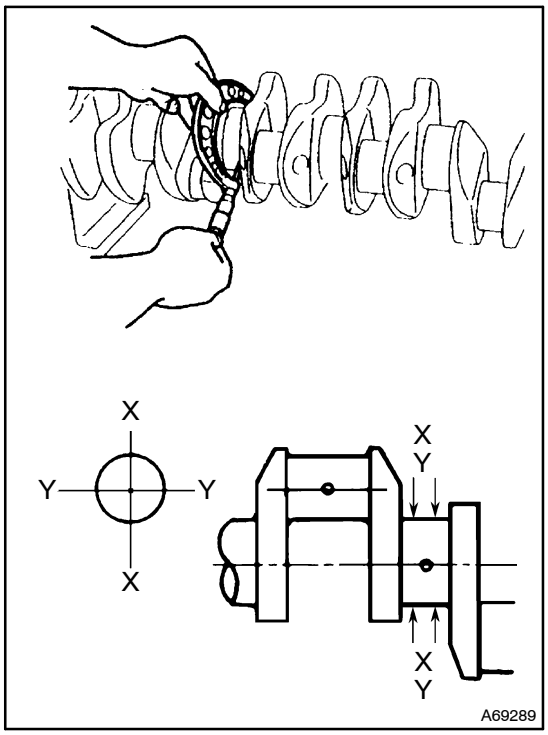
(a) After tightening the main bearing caps without bearing, using a cylinder gauge, measure the bore diameter of the main bearing caps to calculate the roundness.

Standard bore diameter (w/o Bearing):
77.985 – 78.000 mm (3.0703 – 3.0709 in.)
Maximum bore diameter (w/o Bearing):
78.20 mm (3.0787 in.)

If the bore diameter is greater than the maximum, carry out boring after overlay welding or replace the cylinder block with a new one.

HINT:

- When installing the main bearing caps, make sure to return them to the original position according to the number stamped on the caps. The main bearing caps together with the cylinder block are round.
- For tightening of the main bearing caps, see step 23.



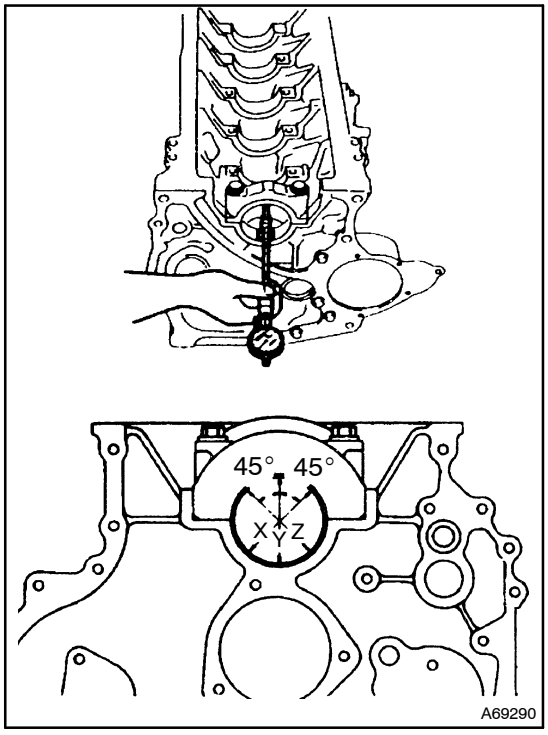
18. INSPECT CRANKSHAFT JOURNAL AND BEARING

(a) Using a micrometer, measure the main journal outside diameter.

Standard journal diameter:
72.94 – 72.96 mm (2.8716 – 2.8724 in.)
Minimum journal diameter:

Repair	72.74 mm (2.8638 in.)
Use	71.76 mm (2.8252 in.)

If the diameter is less than the minimum for use, replace the crankshaft with a new one.



(b) After installing and tightening the bearing caps, using a cylinder gauge, measure the bearing inside diameter.

Standard bearing inside diameter:
73.000 mm (2.8740 in.)
Maximum bearing inside diameter:
73.30 mm (2.8858 in.)

If the inside diameter is greater than the maximum, replace the bearing with a new one.

HINT:

- When installing the bearing caps, make sure to return them to the original position according to the number stamped on the caps. The bearing caps together with the cylinder block are round.
- For tightening of the bearing cap, see step 23.

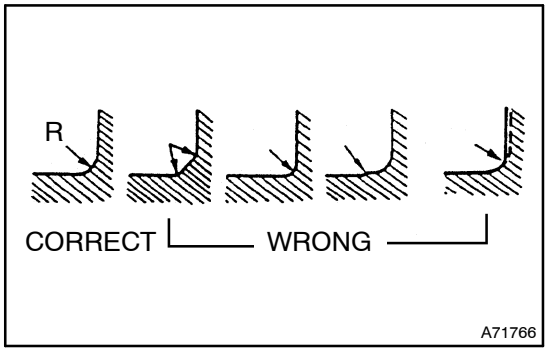
(c) Subtract the crankshaft journal diameter measurement from the bearing inside diameter measurement.

Standard oil clearance:
0.039 – 0.090 mm (0.0015 – 0.0035 in.)
Maximum oil clearance: 0.13 mm (0.0051 in.)

HINT:

Undersize machining dimension: 4 sizes below
0.25 mm (0.0098 in.)
0.50 mm (0.0197 in.)
0.75 mm (0.0295 in.)
1.00 mm (0.0394 in.)

If the oil clearance is greater than the maximum, replace the bearing with a correct one.



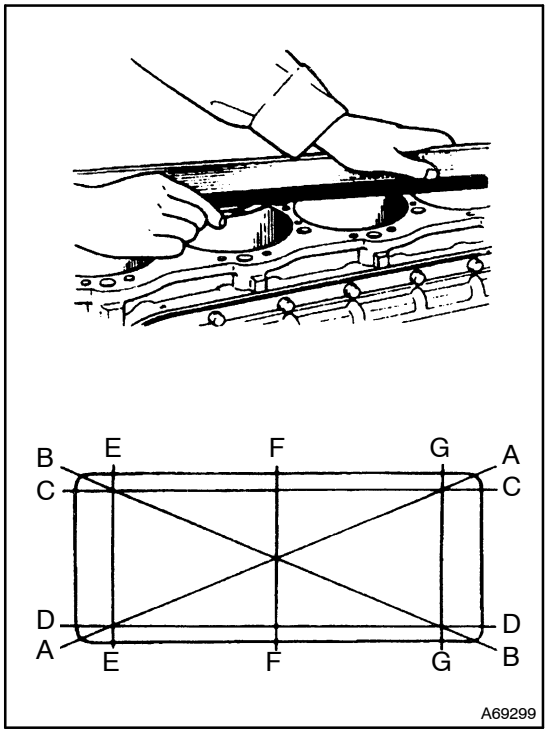
HINT:

Make sure to replace the top and bottom main bearings as one set. The top and bottom main bearings must be round.

HINT:

Machined dimension of filet R

Main crankshaft journal:
3.00 – 3.50 mm (0.1181 – 0.1378 in.)



19. INSPECT CYLINDER BLOCK

(a) Remove the water gallery plug, and visually check the condition of the worn hole.

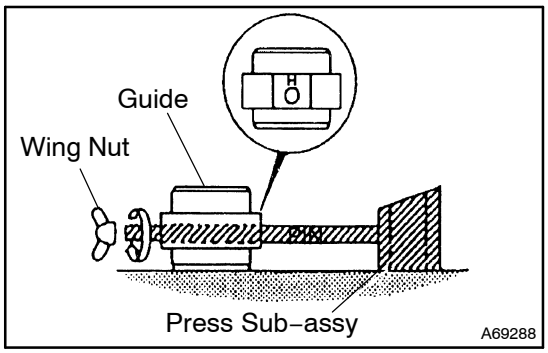
If the wear is excessive, replace the part with a new one. Also inspect the inside of the cylinder block, and clean the cylinder block main body with a commercial cleaning agent as required.

(b) Check the cylinder for cracks.
Check the cylinder block for cracks and perform the dye penetrant test.

If any cracks are found, replace the cylinder block with a new one.

(c) Check the flatness of the cylinder block upper surface.
Using a straight edge and feeler gauge, measure the warpage of the surfaces contacting the cylinder head.
Standard warpage: 0.05 mm (0.0020 in.) or less
Maximum warpage: 0.10 mm (0.0039 in.)

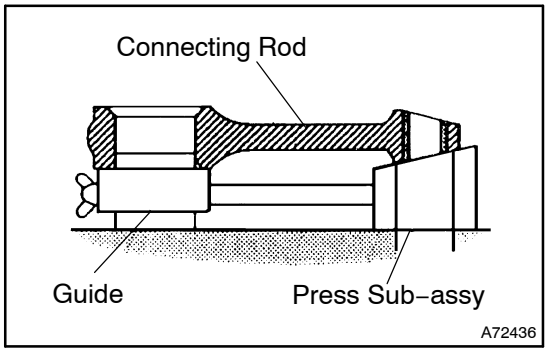
If the warpage is greater than the maximum, replace the cylinder block with a new one.



20. REPLACE CONNECTING ROD SMALL END BUSH

(a) Prepare SST.
SST S0940–21450 (press sub–assy), S0948–11130 (guide), S9233–10360 (wing nut)

(1) Assemble the guide and press sub–assy by inserting its pin into the guide, then secure them with the wing nut.

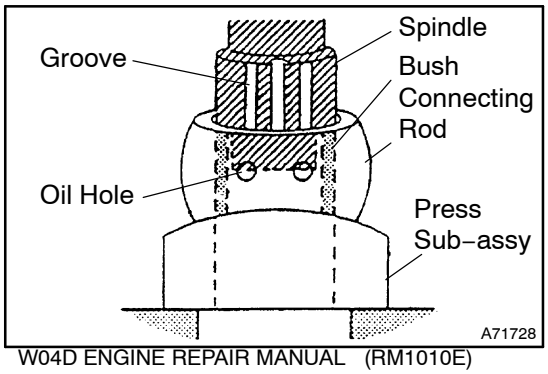


HINT:

- Bring the lever W punched on the guide above the pin.
- Make sure to align both supporting surfaces of the guide and press sub–assy flatly on a plane.

(b) Using the SST, remove the bush.

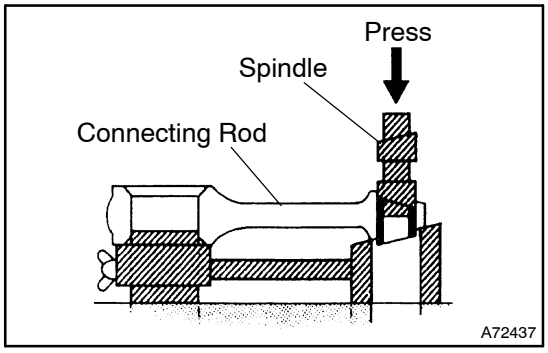
(1) Set the connecting rod assembled without crankshaft pin bore bearing on the guide and press sub–assembly.



(2) Using SST, install the spindle into the bush.
SST S0940–21460 (press sub–assy)

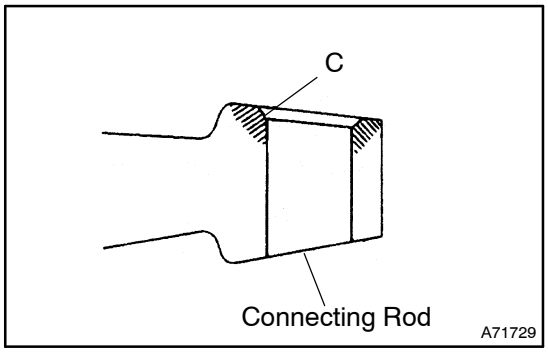
HINT:

Align the groove of the spindle with the oil hole of the bush.



(3) Using a press, remove the bush.

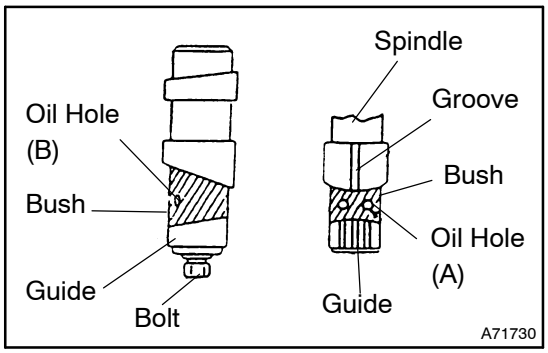
HINT:
Always operate the press slowly and smoothly.



(c) Assemble the bush.

(1) Uniformly chamfer one edge of the bush hole at the small end of the connecting rod by C (0.5 – 1.0 mm (0.0196 – 0.0393 in.)).

HINT:
Irregular chamfering can cause out–of–roundness of the pressed bush, which may result in jamming during the insertion. Remove dust from the inner surface of the smaller hole.



(d) Mount the bush on the spindle.

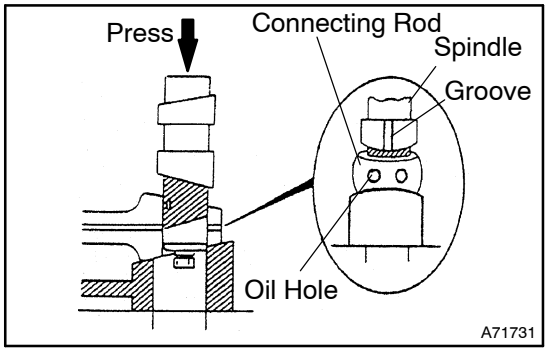
SST S0940–21460 (press sub–assy), S0948–11140 (guide), S9191–08252 (bolt)

(1) Set the bush and guide on the spindle, then secure them with the bolt.

Torque: 4.9 – 6.9 N·m (50 – 70 kgf·cm, 43 – 61 in.·lbf)

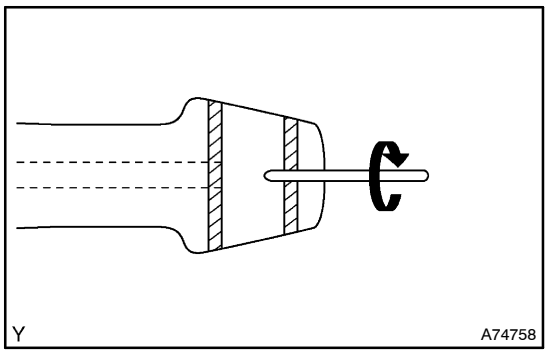
HINT:
Align oil hole (A) in the bush with both groove or the spindle and guide, and make sure that oil hole (B) will meet with oil path in the connecting rod led from the big end bore in the rod.

(2) Apply fresh engine oil around the bush and guide.



(e) Install the bush in the connecting rod. Position the bush tool assembly so that the oil hole (B) aligns with the oil path through the connecting rod.

HINT:
Before installing, fully coat the bore in the connecting rod with fresh engine oil.

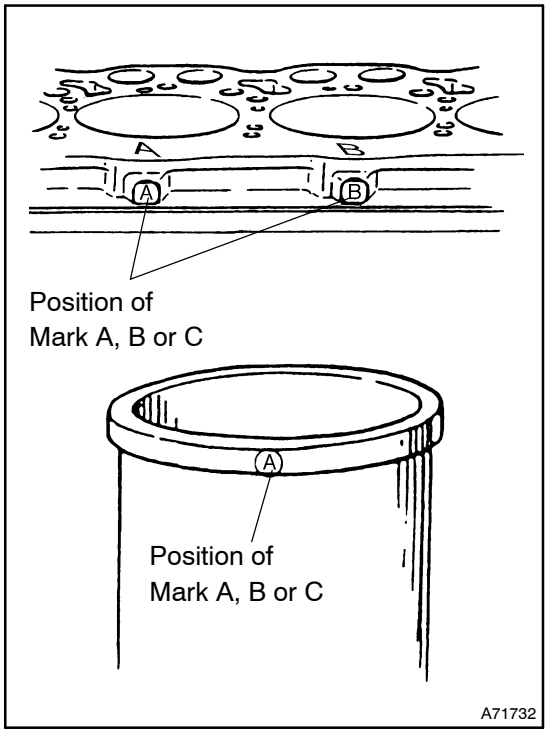


(f) Inspect the bush position after the installation.

(1) Make sure that the oil hole of the bush and the oil path of the connecting rod are suitably aligned allowing a 3 mm (0.12 in.) diameter rod to penetrate.

HINT:
Misalignment can lead to insufficient lubrication, which may result in seizure.

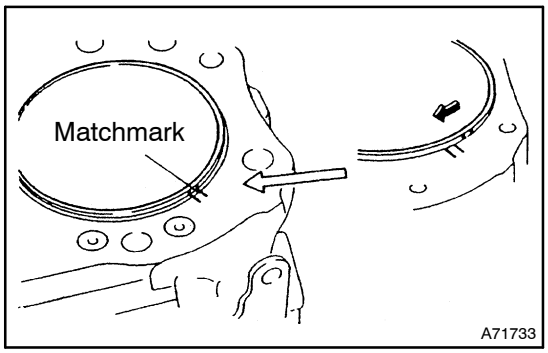
(2) With a new piston pin inserted in the piston pin, make sure that the bush can be rotated by hand without rattling.



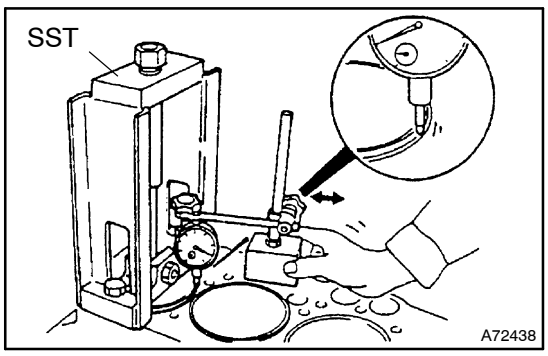
21. INSTALL CYLINDER LINER

HINT:

- When assembling the cylinder liner with the cylinder block, clearance can be set to three levels.
- When using a new cylinder liner, the upper surface and side surface of the cylinder block are stamped A, B or C. Insert a matching cylinder liner having the same symbol.



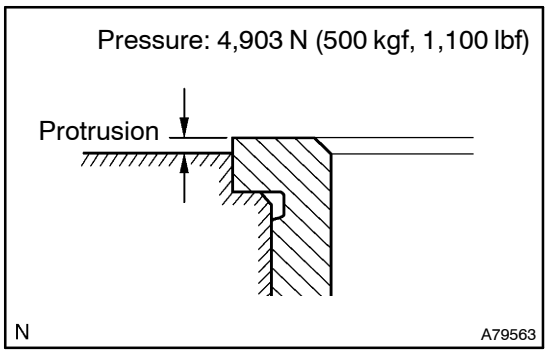
- When reusing a cylinder liner, install it according to the matchmarks made during the removal. The cylinder liner is bent by ”run–in”. When reusing the cylinder liner, misalignment with the cylinder block may concentrate stress on the thin part of the cylinder liner and it may be broken.



22. INSPECT PROTRUSION OF CYLINDER LINER

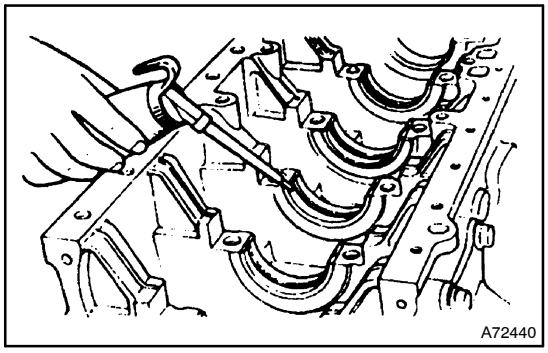
(a) Install SST onto the cylinder block.
SST S0942–01460

(b) Tighten the center bolt to the specified torque below to set the cylinder liner in the normal installation condition.
9.8 N·m (100 kgf·cm, 87 in.·lbf)



(c) Using a dial gauge, measure the protrusion of the cylinder liner.
Standard protrusion:
0.01 – 0.08 mm (0.0004 – 0.0031 in.)
Maximum protrusion: 0.08 mm (0.0031 in.)

If the protrusion is greater than the maximum, replace the cylinder liner.

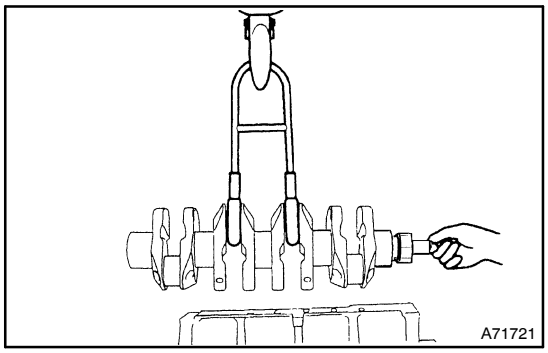


23. INSTALL CRANKSHAFT

(a) Install the main bearings onto the cylinder block and main bearing caps.

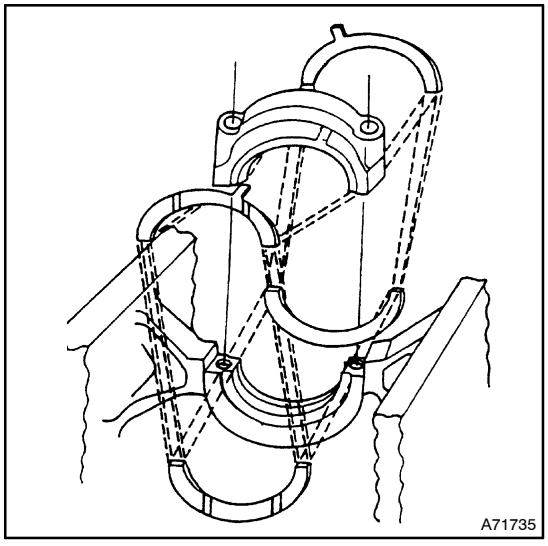
HINT:

- When reusing a bearing, make sure to reassemble the removed bearing as it was originally installed.
- Install the bearing with the oil hole on the block side and install the bearing without the oil hole on the cap side.
- Match the bearing protrusion with the notch of the block or cap.
- After the installation, apply engine oil to the journal surfaces of the bearings.



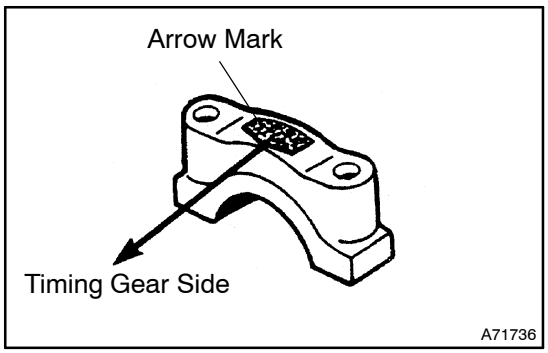
(b) Install the thrust washers onto the 4 points of the No. 2 journal of the cylinder block and either side of the bearing caps.

(c) Install the crankshaft onto the cylinder block.



HINT:

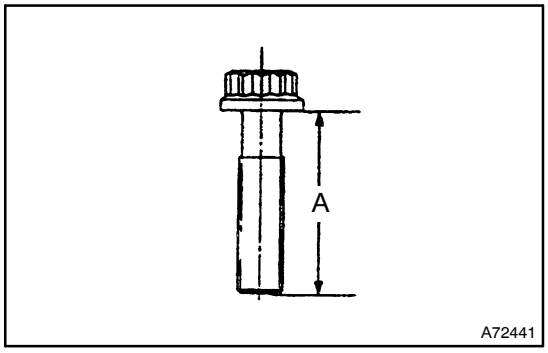
- When reusing a bearing, make sure to reassemble the removed bearing as it was originally installed.
- Install the thrust washers with the groove side (front) toward the crankshaft arm and with the part number stamp (back) toward the main bearing cap or cylinder block.
- Apply engine oil or grease to the back of the bearing to prevent looseness during the installation.
- Fit the bearing to the mounting groove of the block and cap side.



(d) Install the bearing cap.

HINT:

Facing the arrow mark stamped on the cap forward, install it in the order of the stamped numbers.



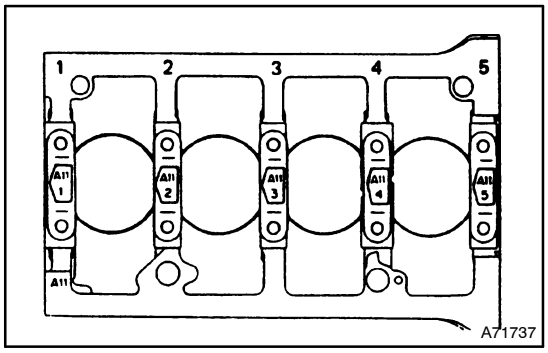
(1) Measure the length of the bearing cap bolts.

Standard length (A): 94.00 mm (3.7008 in.)

Maximum length (A): 95.20 mm (3.7480 in.)

If the length is greater than the maximum, replace them with new bolts.

(2) Apply clean engine oil to the bolt seat and bolt threads.



(3) Tighten the bolts in the order shown in the illustration.

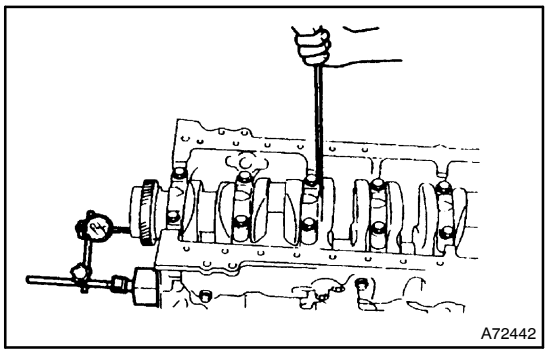
Tightening order: 3 – 2 – 4 – 1 – 5

Torque: 147.1 N·m (1,500 kgf·cm, 109 ft·lbf)

HINT:

When adding torque, never untighten the nuts even if they have been over–tightened.

(4) After tightening, using a plastic–faced hammer, tap the front and back ends of the crankshaft to make a complete fit.



24. INSPECT CRANKSHAFT THRUST CLEARANCE

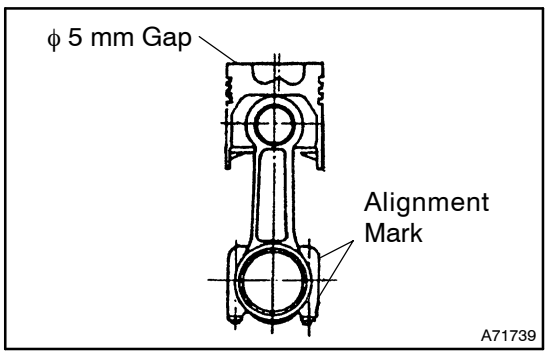
(a) Using a dial gauge, measure the crankshaft thrust clearance.

Standard thrust clearance:

0.05 – 0.22 mm (0.0020 – 0.0087 in.)

Maximum thrust clearance: 0.40 mm (0.0157 in.)

If the thrust clearance is greater than the maximum, replace the thrust bearing.



25. INSTALL CONNECTING ROD SUB–ASSY

(a) Install a new retainer ring onto one end of the piston boss.

HINT:

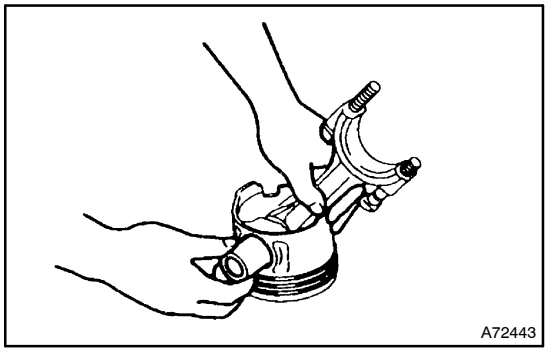
Installing the retainer ring may cause it to fly up. Be sure to wear protective goggles.

(b) Immerse the piston in hot water (80 – 90°C (176 – 194°F)) for approx. 5 minutes.

(c) Assemble the piston with the ϕ 5 mm (0.20 in.) gap being opposite to the connecting rod alignment mark.

CAUTION:

Never touch the piston with your bare hands while it is hot.


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(d) Insert the piston pin into the piston.

HINT:

- Insert the piston pin from the piston boss attached to the retainer ring so that the ring groove is not damaged.

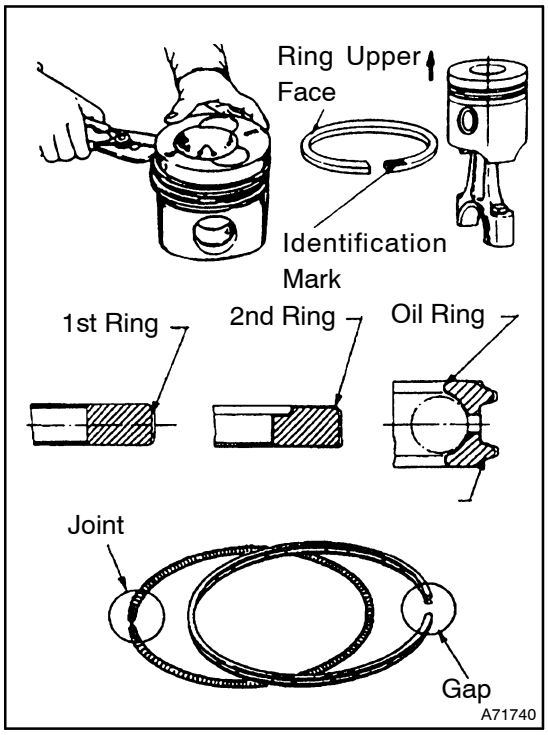
(e) Install a new retainer ring to the other end of the piston boss.

CAUTION:

Installing the retainer ring may cause it to fly up. Be sure to wear protective goggles.

HINT:

- When using an oversized piston, hone the liner so that the clearance between the cylinder liner and the piston becomes the standard value.
- Prevent parts from damage by wrapping them in a cloth while they are being installed onto the cylinder block.



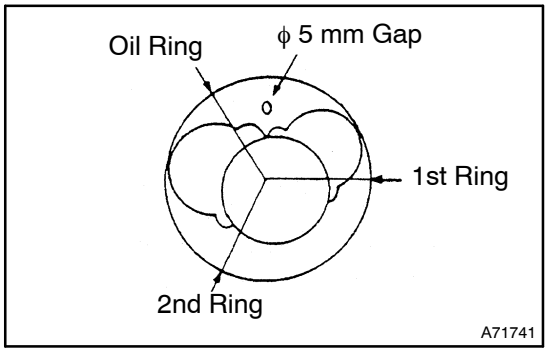
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26. INSTALL PISTON RING SET

(a) Facing the identification marks on the piston ring upper surface, using a piston ring expander, install them in the order of the oil ring, 2nd ring and 1st ring.

HINT:

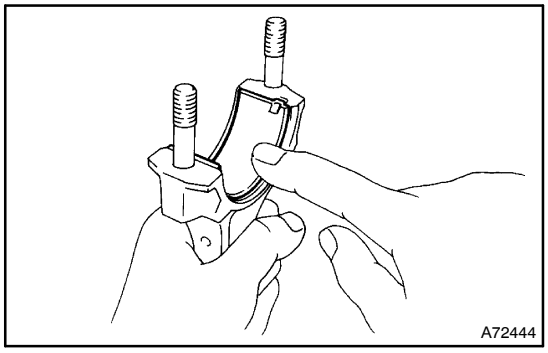
- Never change the combination of the coil and oil ring.
- Connect the joint of the coil expander for the oil ring and install it inside the piston ring. Assemble the ring with the joint 180˚opposite to the matching point of the ring.



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HINT:

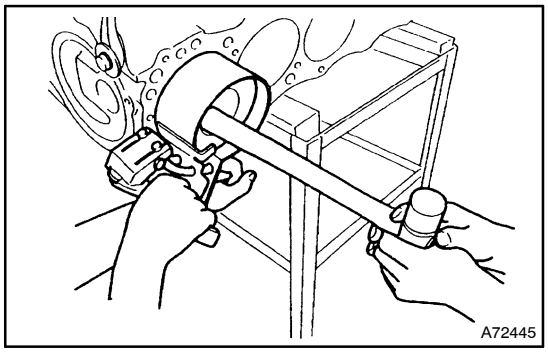
Position the matching points of the piston ring at an even distance. Be careful not to position at the piston boss.



27. INSTALL CONNECTING ROD BEARING

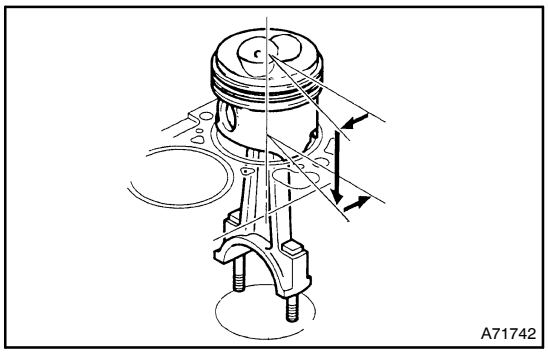
NOTICE:

- **When reusing the bearing, make sure to reassemble the removed bearing as it was originally installed.**
- **Install the bearing with the oil hole on the connecting rod side and install the bearing without the oil hole on the cap side.**
- **Match the bearing protrusion with the notch of the connecting rod or cap.**



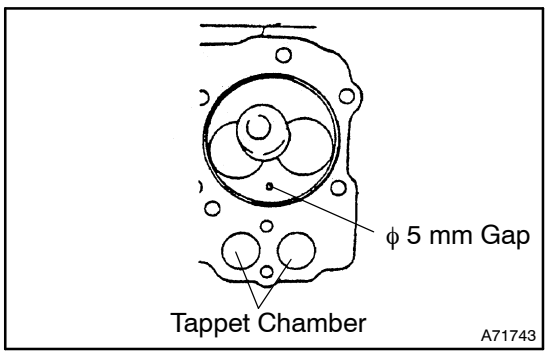
28. INSTALL PISTON AND CONNECTING ROD

(a) Using a piston ring compressor and a hammer handle, insert the piston through the connecting rod assembly into the cylinder block.

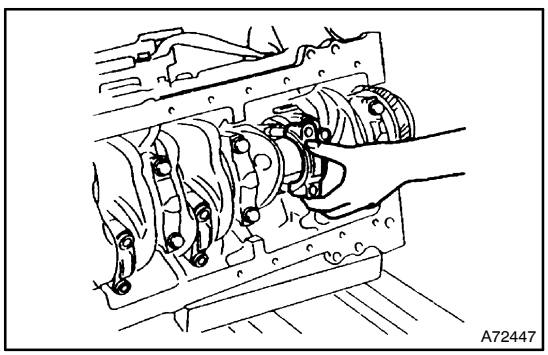


HINT:

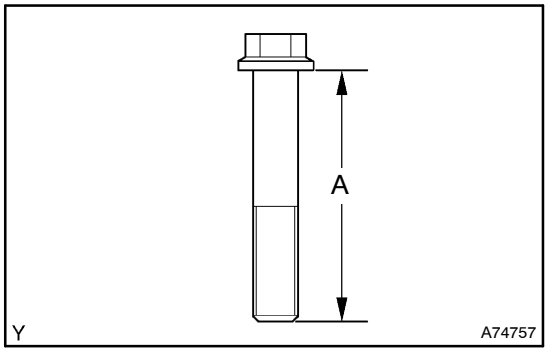
- Before the installation, apply engine oil to the piston pin, piston ring, cylinder liner and connecting rod bearing.
- Recheck the matching point of each piston ring.



- Make sure that the ϕ 5 mm (0.20 in.) gap on the piston is at the tappet chamber side.
- Do not damage the inside of the liner.



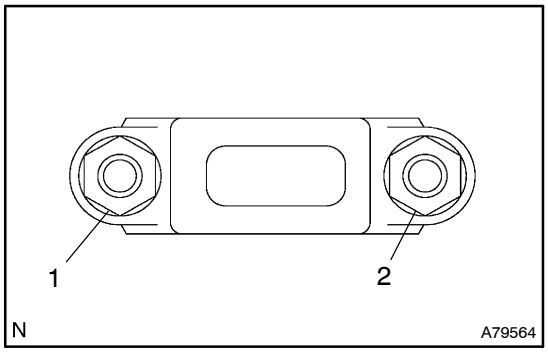
29. INSTALL CONNECTING ROD CAP



(a) Measure the length of the bolts.
Standard length (A): 59.00 mm (2.3228 in.)
Maximum length (A): 60.00 mm (2.3622 in.)

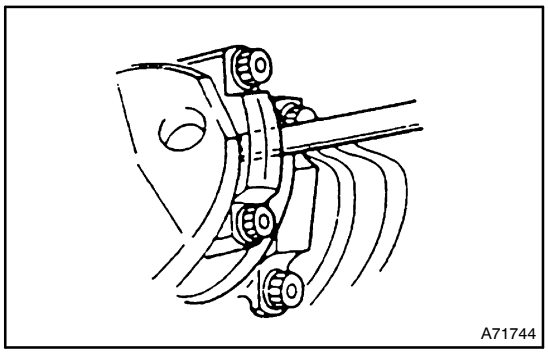
If the length is greater than the maximum, replace them with new bolts.

(b) Apply clean engine oil to the nut seat surface and bolt thread of the connecting rod cap.



(c) Tighten the connecting rod nut in the order shown in the illustration to the specified torque below.
(1) Tighten the connecting rod nuts 1 and 2 temporarily, dividing into small amount.
Torque: 122.6 N·m (1,250 kgf·cm, 90 ft·lbf)

HINT:
When adding torque, never untighten the nuts even if they have been over–tightened.



30. INSPECT CONNECTING ROD THRUST CLEARANCE

(a) Using a feeler gauge, measure the clearance between the connecting rod and crankshaft pin end surface.
Standard thrust clearance:
0.20 – 0.52 mm (0.0079 – 0.0205 in.)
Maximum thrust clearance: 0.60 mm (0.0236 in.)

If the thrust clearance is greater than the maximum, replace the connecting rod.