CYLINDER BLOCK

EM0XT–02

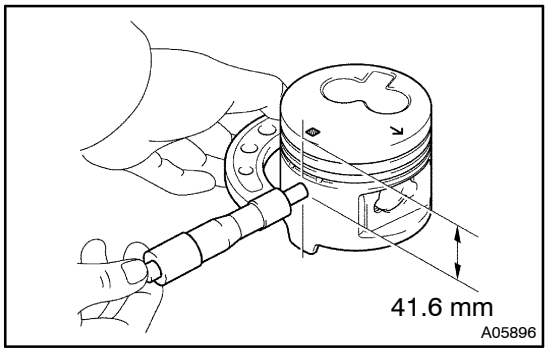
INSPECTION

INSPECT PISTON AND PISTON RING

(a) Inspect the piton diameter and oil clearance.

HINT:

There are 3 sizes of the standard piston diameter, marked ”1”, ”2” and ”3” accordingly. The mark is stamped on the piston top.



(1) Using a micrometer, measure the piston diameter at right angles to the piston pin center line, 41.6 mm (1.638 in.) from the piston head.

Piston diameter:

Mark 1	93.885 – 93.895 mm (3.69625 – 3.69665 in.)
Mark 2	93.896 – 93.905 mm (3.69669 – 3.69704 in.)
Mark 3	93.906 – 93.915 mm (3.69708 – 3.69743 in.)

(2) Measure the cylinder bore diameter in the thrust directions. (See Pub No. RM172E)

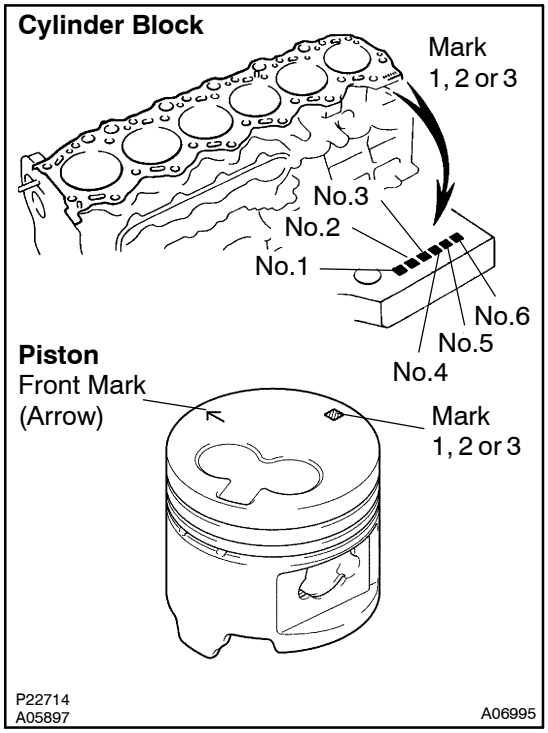
(3) Subtract the piston diameter measurement from the cylinder bore diameter measurement.

Standard oil clearance:

0.105 – 0.125 mm (0.0041 – 0.0049 in.)

Maximum oil clearance: 0.125 mm (0.0049 in.)

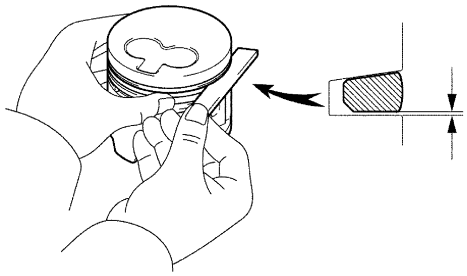
If the oil clearance is greater than maximum, replace all the 6 pistons and rebore all the 6 cylinders. If necessary, replace the cylinder block.



HINT:

Use a piston with the same number mark as the cylinder bore diameter marked on the cylinder block.

No.1 Ring



(b) Inspect the piston ring groove clearance.

(1) No.1 ring:

Install a new piston ring to the piston. Using a feeler gauge, measure the clearance between the piston ring and wall of the ring groove.

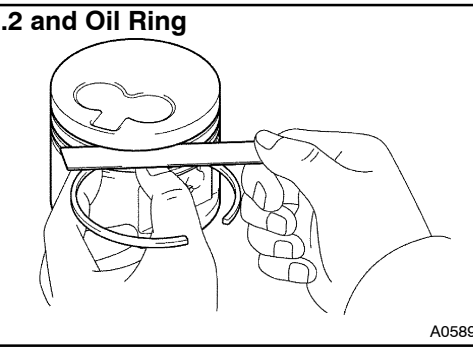
Standard groove clearance:

0.054 – 0.095 mm (0.0021 – 0.0037 in.)

Maximum groove clearance: 0.20 mm (0.0079 in.)

If the clearance is greater than maximum, replace the piston.

No.2 and Oil Ring



(2) No.2 and oil rings:

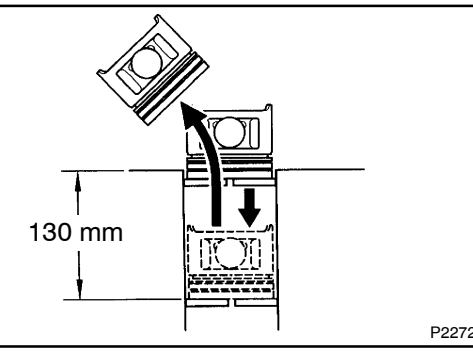
Using a feeler gauge, measure the clearance between the new piston ring and wall of the ring groove.

Standard groove clearance:

No.2	0.060 – 0.100 mm (0.0024 – 0.0039 in.)
Oil	0.030 – 0.070 mm (0.0012 – 0.0028 in.)

Maximum groove clearance: 0.20 mm (0.0079 in.)

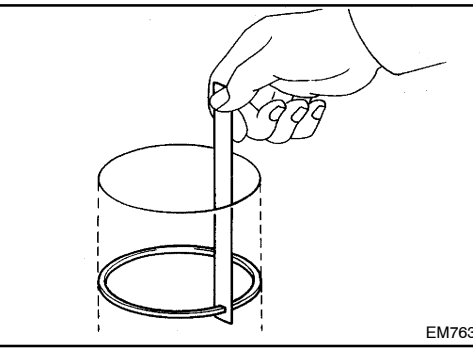
If the clearance is greater than maximum, replace the piston.



(c) Inspect the piston ring end gap.

(1) Inspect the piston ring into the cylinder bore.

(2) Using a piston, push the piston ring a little beyond the bottom of the ring travel, 130 mm (5.12 in.) from the top of the cylinder block.



(3) Using a feeler gauge, measure the end gap.

Standard end gap:

No.1	0.270 – 0.370 mm (0.0106 – 0.0146 in.)
No.2	0.450 – 0.550 mm (0.0177 – 0.0217 in.)
Oil	0.200 – 0.400 mm (0.0079 – 0.0157 in.)

Maximum end gap:

No.1	0.850 mm (0.0335 in.)
No.2	0.900 mm (0.0354 in.)
Oil	0.880 mm (0.0346 in.)

If the end gap is greater than maximum, replace the piston ring.
If the end gap is greater than maximum, even with a new piston ring, rebore all the 6 cylinders or replace the cylinder block.