

# **11.CRANKSCASE/CRANKSHAFT**

---

---

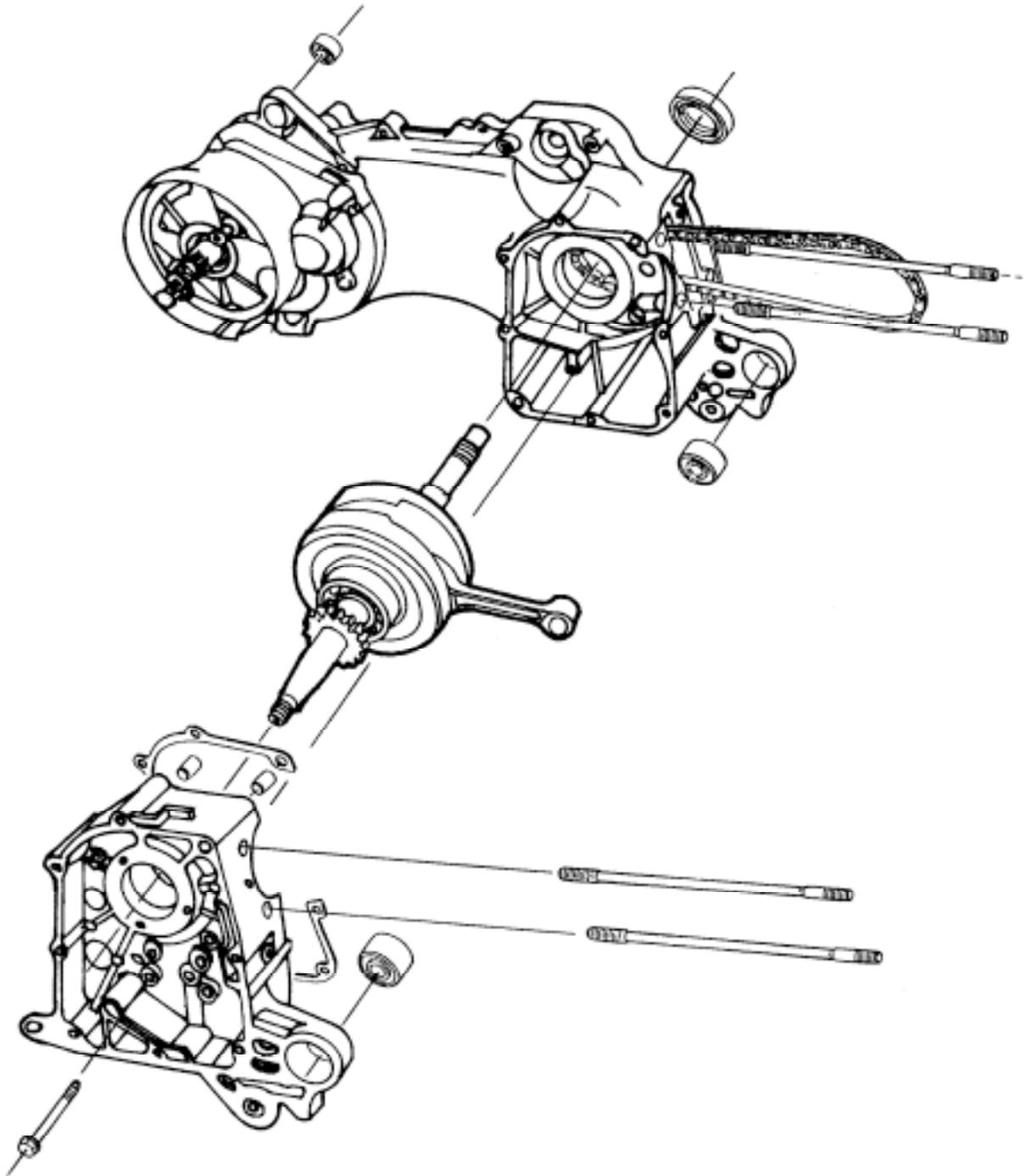
## **CRANKCASE/CRANKSHAFT**

---

|   |       |
|---|-------|
| SERVICE INFORMATION .....                   | 11- 3 |
| CRANKCASE/CRANKSHAFT (Mongoose/KXR 90)..... | 11- 4 |
| CRANKCASE/CRANKSHAFT (Mongoose/KXR 50)..... | 11- 7 |

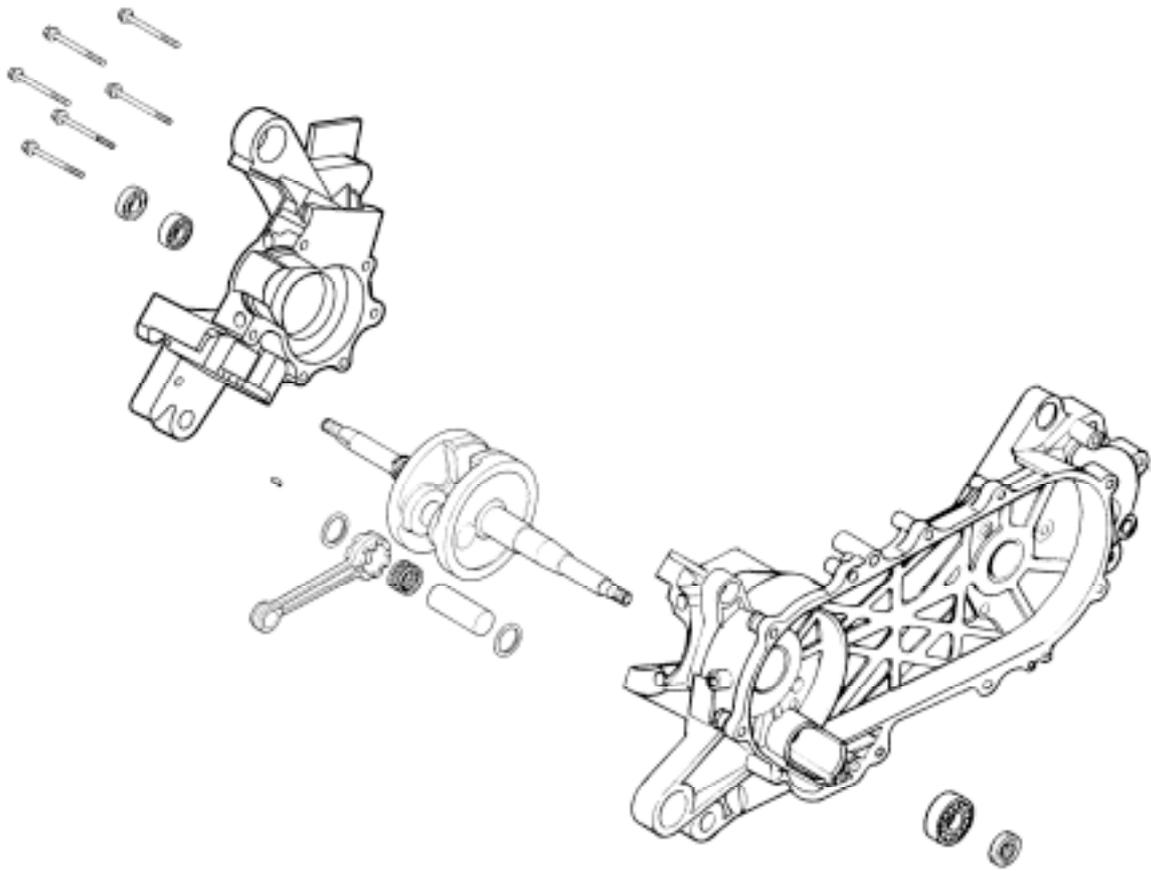
# 11. CRANKCASE/CRANKSHAFT

Mongoose/KXR 90



# 11. CRANKCASE/CRANKSHAFT

Mongoose/KXR 50



# 11.CRANKCASE/CRANKSHAFT

## SERVICE INFORMATION

### GENERAL INSTRUCTIONS

- This section covers crankcase separation to service the crankshaft. The engine must be removed for this operation.
- The following parts must be removed before separating the crankcase.
  - Cylinder head (⇒Chapter 7 (Mongoose/KXR 90))
  - Cylinder/piston (⇒Chapter 8)
  - Drive and driven pulleys (⇒Chapter 9)
  - A.C. generator (⇒Chapter 14)
  - Starter clutch (⇒Chapter 16)
  - Oil pump (⇒Chapter 4)

### SPECIFICATIONS (Mongoose/KXR 90)

|            | Item                                    | Standard (mm) | Service Limit (mm) |
|------------|---|---------------|--------------------|
| Crankshaft | Connecting rod small end free play      | 0.05_ 0.4     | 0.6                |
|            | Connecting rod big end radial clearance | 0_ 0.008      | 0.05               |
|            | Run out                                 | □             | 0.10               |

### SPECIFICATIONS (Mongoose/KXR 50)

|            | Item                                    | Standard (mm) | Service Limit (mm) |
|------------|---|---------------|--------------------|
| Crankshaft | Connecting rod big end side clearance   | □             | 0.6                |
|            | Connecting rod big end radial clearance | □             | 0.04               |
|            | Run out A/B                             | □             | 0.1/0.15           |

### TORQUE VALUES

|                                  |                                 |
|----------------------------------|---------------------------------|
| Crankcase bolt                   | 0.8_ 1.2kgf-m                   |
| Cam chain tensioner slipper bolt | 0.8_ 1.2kgf-m (Mongoose/KXR 90) |

### SPECIAL TOOLS (Mongoose/KXR 50)

|                                   |      |
|-----------------------------------|------|
| Crankcase puller                  | E026 |
| Universal bearing puller          | E030 |
| Crankshaft install tool           | E016 |
| Crankcase assembly tool           | E024 |
| Oil seal and bearing install tool | E014 |

### TROUBLESHOOTING

#### Abnormal engine noise

- Excessive crank journal bearing play
- Excessive crankpin bearing play
- Excessive transmission bearing play

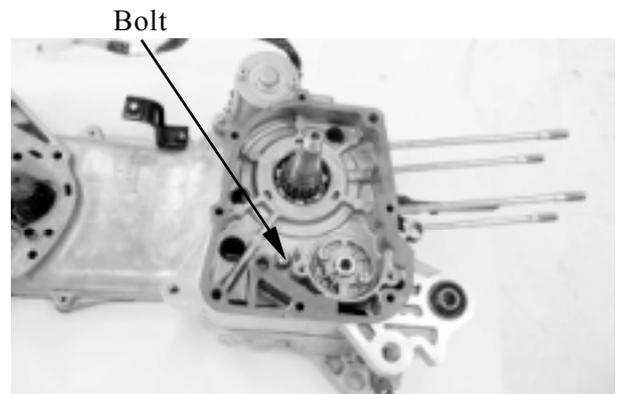
# 11. CRANKCASE/CRANKSHAFT

## CRANKCASE/CRANKSHAFT (Mongoose/KXR 90)

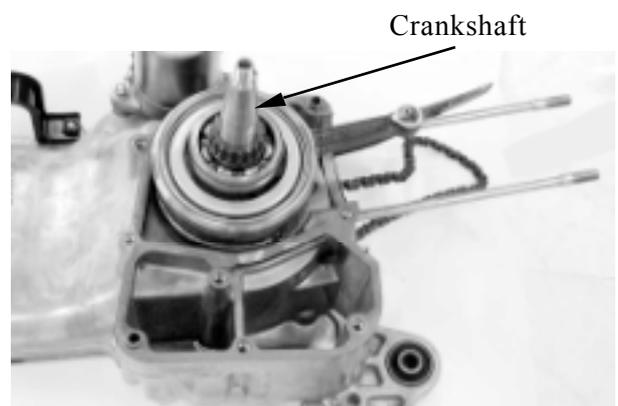
### REMOVAL

Remove the crankcase attaching bolt.  
Separate the left and right crankcase halves.

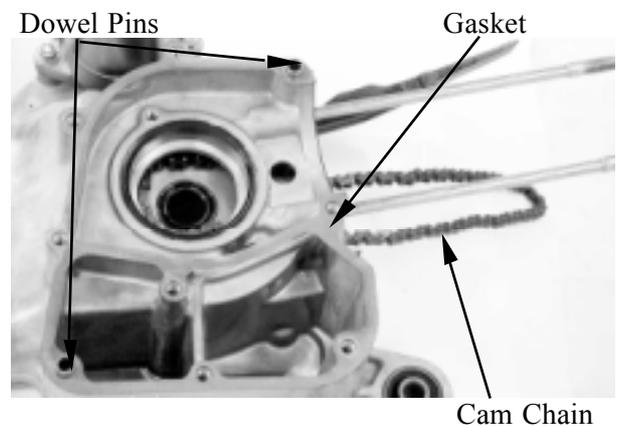
- \* Do not damage the crankcase gasket surface.
- \* Never use a driver to pry the crankcase mating surfaces apart.



Remove the crankshaft from the left crankcase.

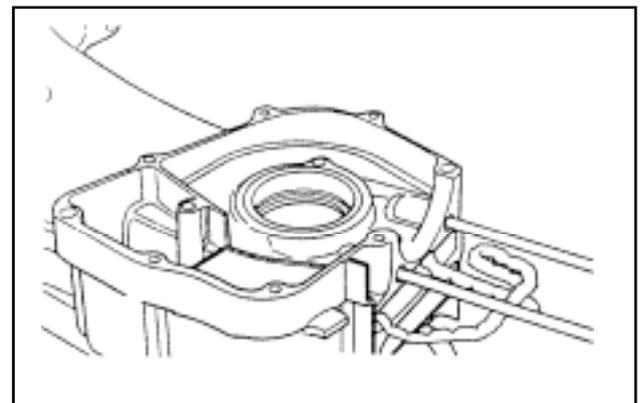


Remove the cam chain.  
Remove the gasket and dowel pins.



Clean off all gasket material from the crankcase mating surfaces.

- \* Avoid damaging the crankcase mating surfaces.



# 11.CRANKCASE/CRANKSHAFT

## CRANKSHAFT INSPECTION

Measure the connecting rod small end I.D.

**Service Limit:** 13.06 mm replace if over



Measure the connecting rod small end free play (A).

Out of specification (0.05 ~ 0.4 mm) \_  
Replace the crankshaft.

Measure the crankshaft run out (B).

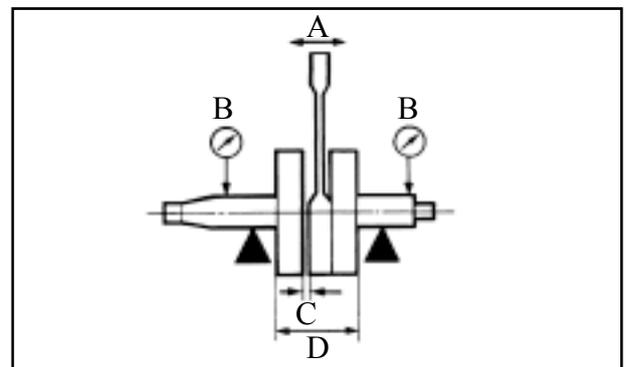
**Service Limit:** 0.10mm replace if over

Measure the connecting rod big end side clearance (C).

**Service Limit:** 0.05mm replace if over

Measure the crank width (D).

Out of specification (45.15 ~ 45.2 mm) \_  
Replace the crankshaft.



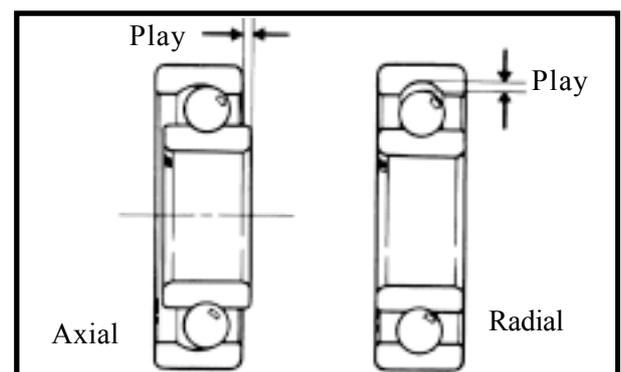
Turn the crankshaft bearings and check for excessive play.

Measure the crankshaft bearing play.

**Service Limit:**

Axial : 0.20mm replace if over

Radial : 0.05mm replace if over



# 11.CRANKCASE/CRANKSHAFT

## CRANKCASE/BALANCER INSTALLATION

Install the cam chain into the left crankcase.

Install the dowel pins and a new gasket onto the left crankcase.

- \* Place the right crankcase over the crankshaft and onto the left crankcase.

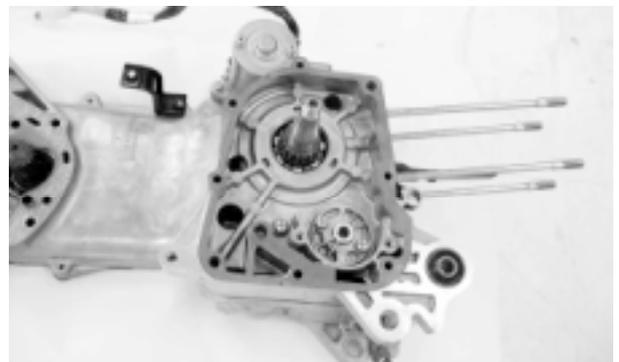


Install the crankshaft into the left crankcase.

- \* When installing the crankshaft, be careful not to damage the oil seal.



Install the right crankcase.  
Tighten the crankcase attaching bolt.  
**Torque:** 0.8~1.2kgf-m

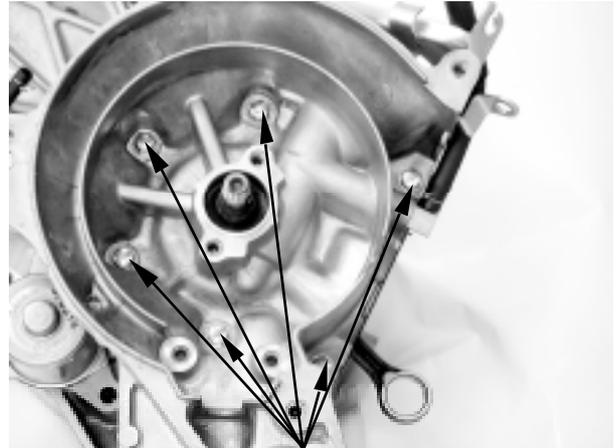


# 11.CRANKCASE/CRANKSHAFT

## CRANKCASE/CRANKSHAFT (Mongoose/KXR 50)

### REMOVAL

Remove the crankcase attaching bolts.

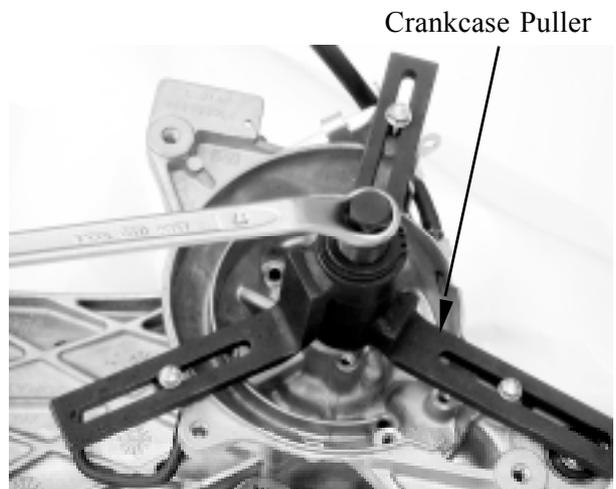


Bolt

Attach the crankcase puller on the right crankcase and remove the right crankcase from the left crankcase.

**Special**

Crankcase puller E026



Crankcase Puller

### CRANKSHAFT REMOVAL

Attach the crankcase puller on the left crankcase and remove the crankshaft from the left crankcase.

⊘ When removing the crankshaft, do it slowly and gently.

**Special**

Crankcase puller E026

⊘ When separating the crankcase, the oil seals must be removed. Replace the oil seals with new ones.



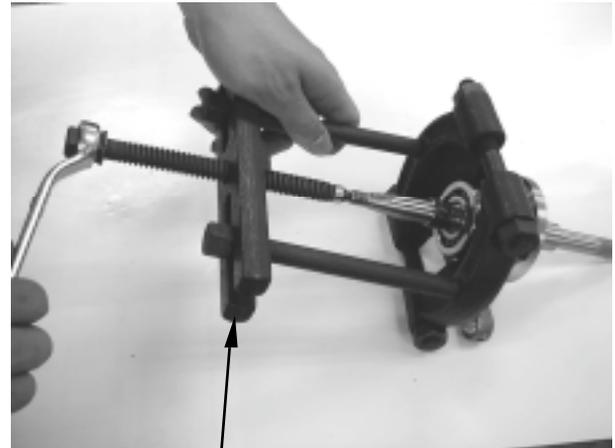
Crankcase Puller

# 11. CRANKCASE/CRANKSHAFT

Remove the remaining bearing on the crankshaft side using the universal bearing puller.

Special

Universal bearing puller E030

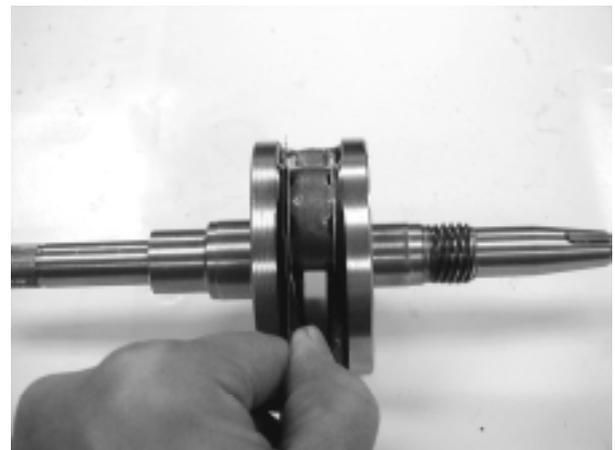


Universal Bearing Puller

## CRANKSHAFT INSPECTION

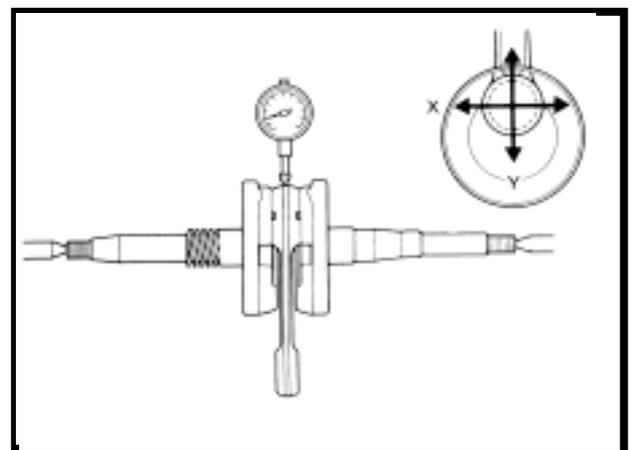
Measure the connecting rod big end side clearance.

**Service Limit:** 0.6mm replace if over



Measure the connecting rod big end radial clearance at two points in the X and Y directions.

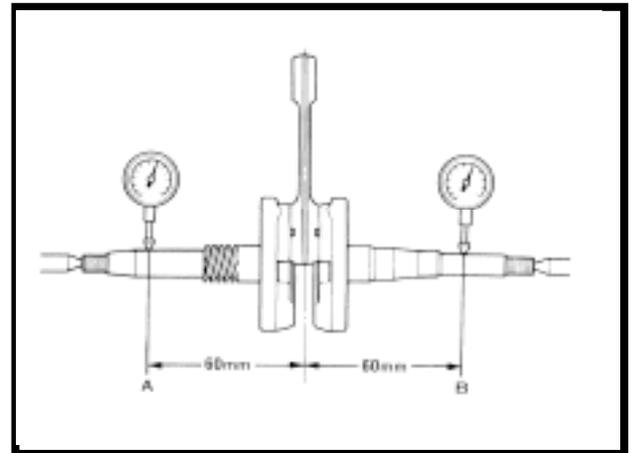
**Service Limit:** 0.04mm replace if over



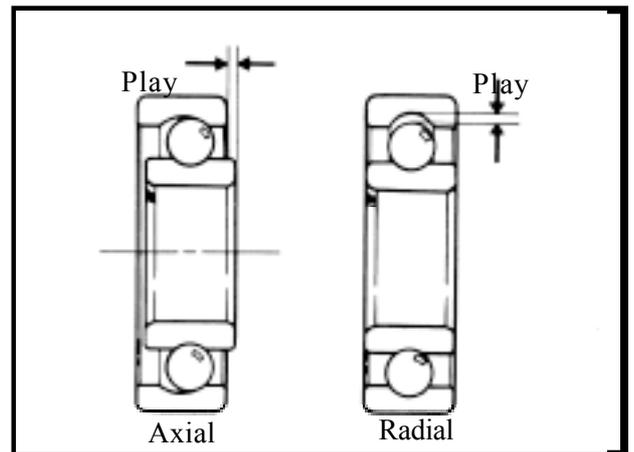
# 11.CRANKCASE/CRANKSHAFT

Measure the crankshaft runout.

| Service Limit              |                            |
|----------------------------|----------------------------|
| A                          | B                          |
| 0.100mm<br>replace if over | 0.150mm<br>replace if over |



Check the crankshaft bearings for excessive play. The bearings must be replaced if they are noisy or have excessive play.

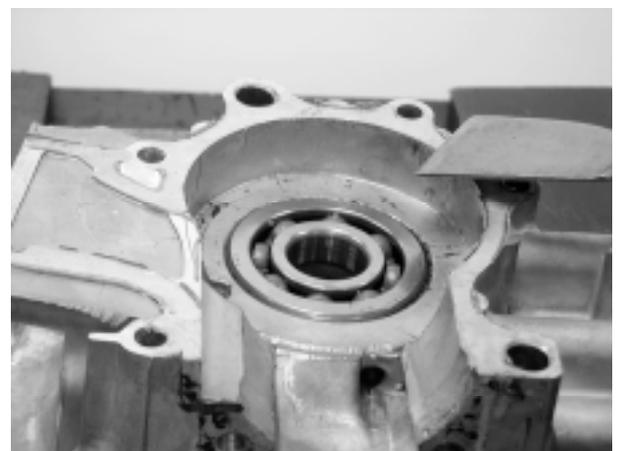


## CRANKSHAFT INSTALLATION

Wash the crankshaft in cleaning solvent and then check for cracks or other faults.



- After check, apply clean engine oil to all moving and sliding parts.
- Remove all gasket material from the crankcase mating surfaces. Dress any roughness or irregularities with an oil stone.

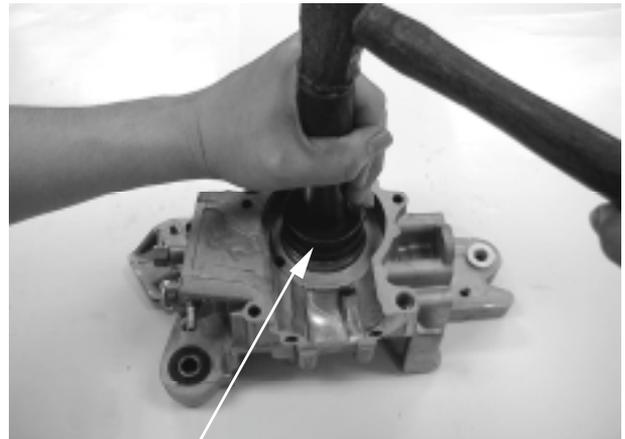


# 11.CRANKSCASE/CRANKSHAFT

Drive a new crankshaft bearing into the right crankcase.

**Special**

Oil seal and bearing install E014



Oil Seal And Bearing Install

Drive a new crankshaft bearing into the left crankcase.

**Special**

Oil seal and bearing install E014



Oil Seal And Bearing Install

Install the crankshaft into the left crankcase.



- Apply KYMCO ULTRA motor oil or molybdenum disulfide to the crankshaft bearings and connecting rod big end.
- Apply grease to the lip of the oil seal and then install it.

**Special**

Crankshaft install tool E016

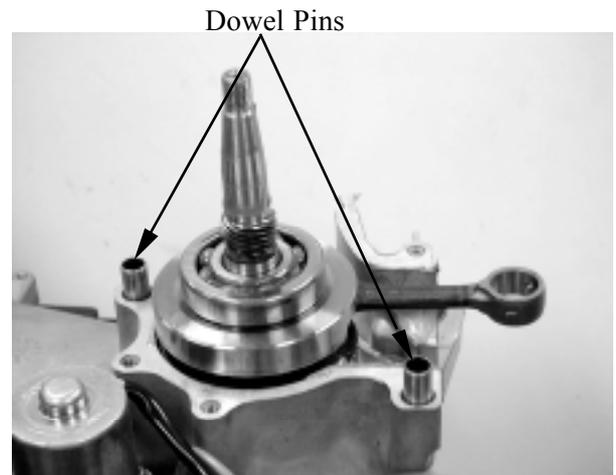


Crankcase Install Tool

# 11.CRANKCASE/CRANKSHAFT

## CRANKCASE ASSEMBLY

Install the dowel pins and a new gasket to the crankcase mating surface.



Assemble the crankcase halves.

**Special**

Crankshaft & crankcase install tool E024

The distance between the right crankcase oil seal and crankcase surface is about  $12.5 \pm 0.5$  mm.

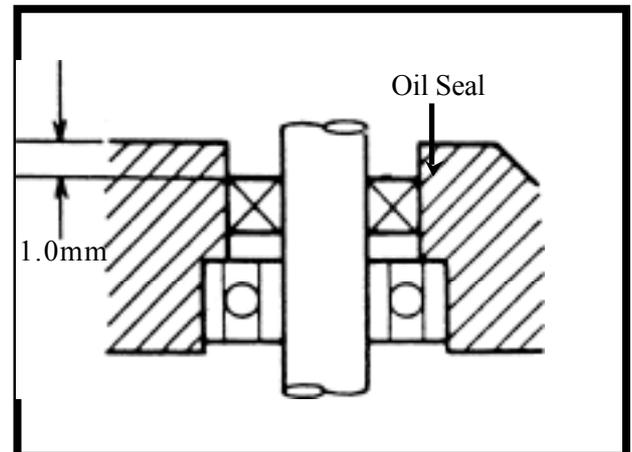
ⓘ When installing the oil seal, be careful to press it with even force.



Crankshaft & Crankcase Install Tool

# 11.CRANKSCASE/CRANKSHAFT

The distance between the left crankcase oil seal and crankcase surface is about 1.0mm.



Install and tighten the crankcase attaching bolts.



After assembly, check the crankshaft for smooth operation.

