

ENGINE

CONTENTS

ENGINE REMOVAL AND REMOUNTING	3- 1
ENGINE REMOVAL	3- 1
ENGINE REMOUNTING	3- 3
ENGINE DISASSEMBLY	3- 4
ENGINE COMPONENTS INSPECTION AND SERVICING	3-14
BEARINGS	3-14
OIL SEALS	3-14
CRANKSHAFT	3-15
AUTOMATIC CLUTCH INSPECTION	3-15
CYLINDER HEAD	3-18
CYLINDER	3-19
PISTON	3-19
REED VALVE	3-22
ENGINE REASSEMBLY	3-22
OIL SEALS	3-22
BEARINGS	3-23
BUSHINGS	3-23
CRANKSHAFT	3-24
CRANKCASE	3-25
CENTER STAND	3-26
REAR AXLE SHAFT, BRAKE AND WHEEL	3-27
TRANSMISSION	3-29
STARTER DRIVEN GEAR AND STARTING MOTOR	3-31
MOVABLE DRIVEN AND CLUTCH	3-32
MOVABLE DRIVE	3-36
KICK STARTER	3-38
PISTON	3-40
OIL PUMP AND INTAKE PIPE	3-42
MAGNETO	3-43
MUFFLER	3-45

ENGINE REMOVAL AND REMOUNTING

ENGINE REMOVAL

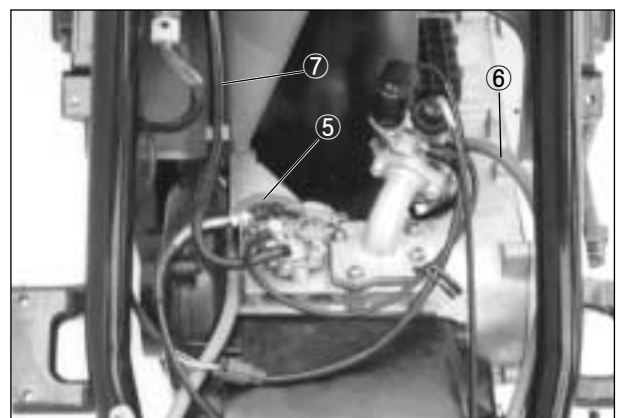
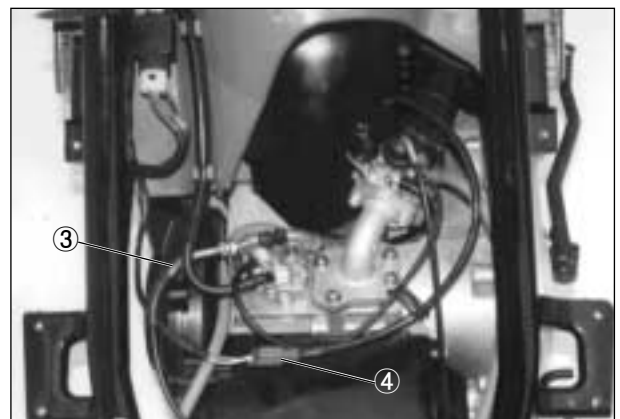
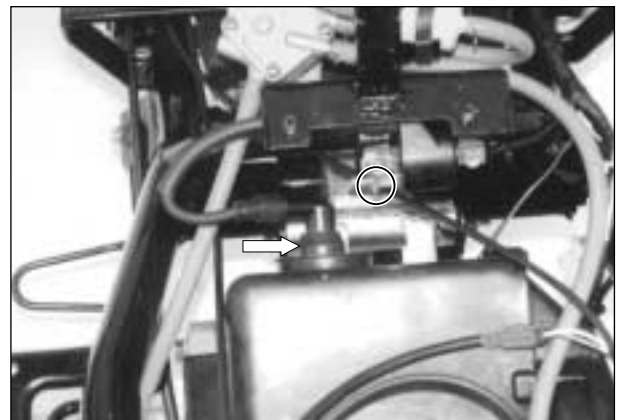
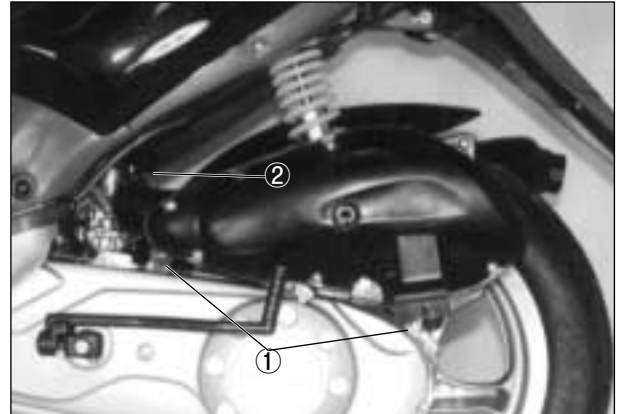
Before taking the engine out of the frame, thoroughly clean the engine with a suitable cleaner. The procedure of engine removal is sequentially explained as follows.

- Remove the low leg shield.
- Remove the air cleaner by removing the mounting bolts ① and clamp screw ②.

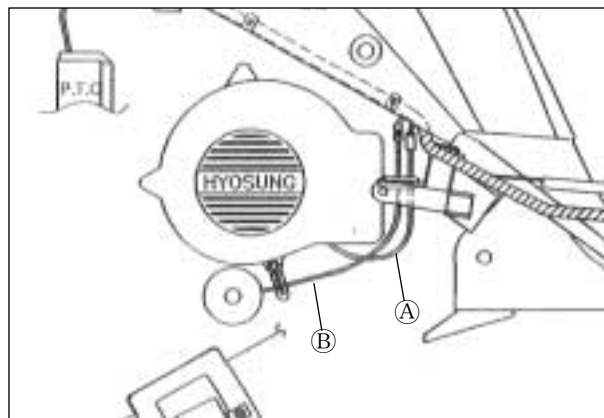
- Disconnect the ignition coil lead wires and spark plug cap.

- Disconnect the oil pump cable ③ and the thermoelement lead coupler ④.
- Disconnect the throttle cable. (Refer to page 4-2)

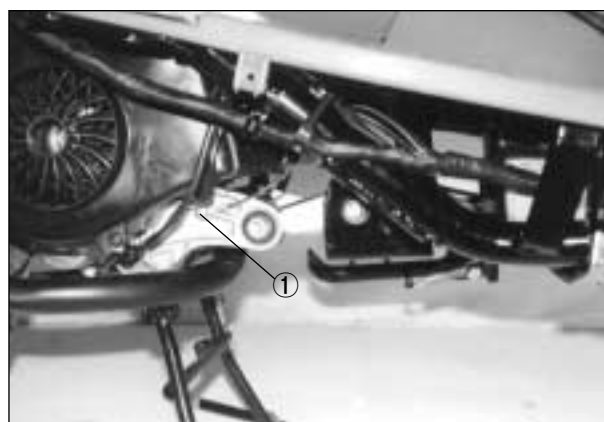
- Disconnect the vacuum hose ⑤, fuel hose ⑥ and oil hose ⑦.



- Disconnect the magneto lead wire ① and starting motor lead wire ②.



- Remove the rear brake cable ④ by removing the bolt ①, bolt ② and adjuster nut ③.



- Remove the rear shock absorber mounting lower bolt.



3-3 ENGINE

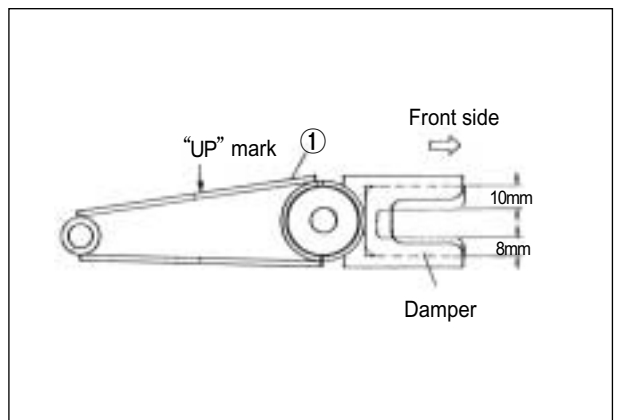
- Remove the engine mounting shaft and remove the engine from the frame.



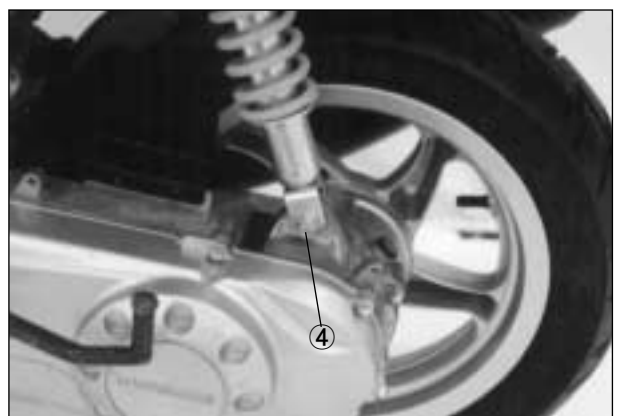
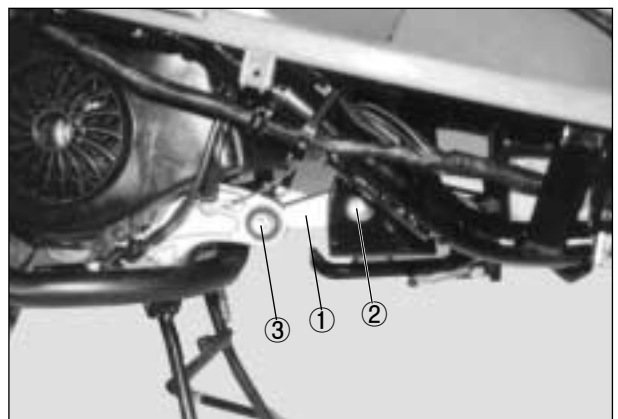
ENGINE REMOUNTING

The engine can be mounted in the reverse order of removal.

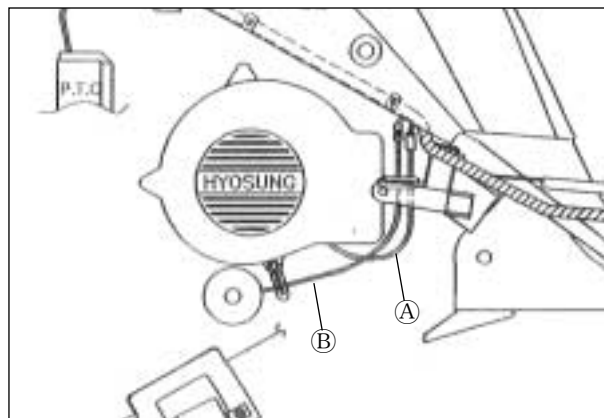
- Install the damper to the crankcase bracket as shown in the illustration.
- With “UP” mark faced upward, install the crankcase bracket ① on the frame. Do not tighten the bracket bolt ② at this stage. Pull up on the rear part of crankcase bracket and while holding it, tighten the bracket bolt ② to specification. Tighten both the rear shock absorber bolt ④ and engine mounting bolt ③ to specification.



- 🔧 Engine mounting bracket bolt
: 48~72 N · m (4.8~7.2 kg · m)
- 🔧 Engine mounting bolt
: 40~60 N · m (4.0~6.0 kg · m)
- 🔧 Rear shock absorber bolt
: 22~35 N · m (2.2~3.5 kg · m)



- Install the magneto lead wire (A) and starting motor lead wire (B) correctly.



After remounting the engine, route the wiring harness properly and following adjustments are necessary.

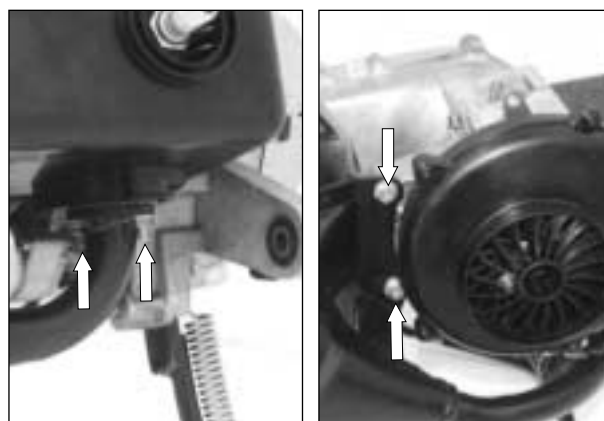
	Page
• Throttle cable play	2-6
• Idling adjustment	2-7
• Oil pump cable paly	2-7
• Rear brake cable adjustment	2-10
• Air bleeding at oil pump	4-9



ENGINE DISASSEMBLY

MUFFLER

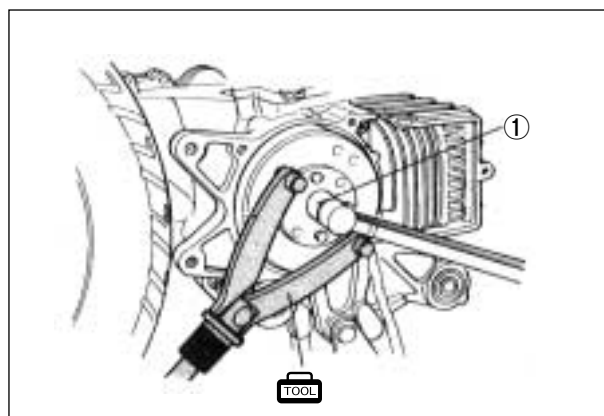
- Remove the muffler by removing the nuts.



MAGNETO

- Remove the cooling fan.
- Remove the magneto rotor nut (1) with the special tool.

 Rotor holder : 09930-40113



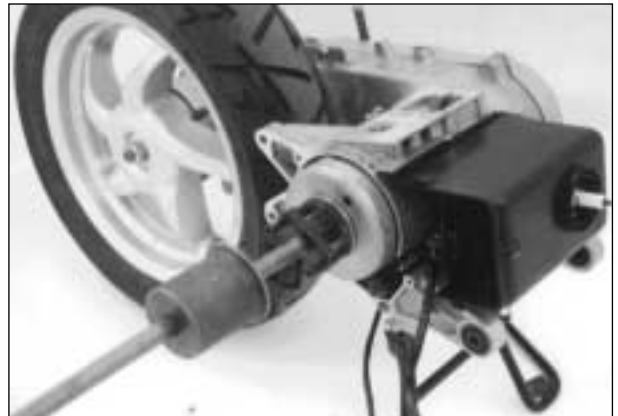
3-5 ENGINE

- Remove the magneto rotor with the special tool.



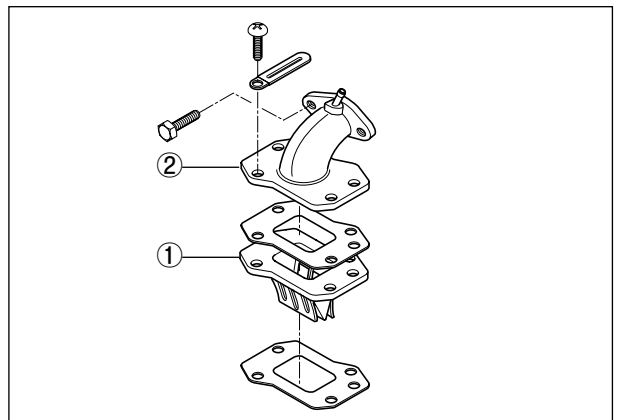
Rotor remover : 09930-30163
Rotor remover sliding shaft : 09930-30102

- Remove the magneto stator and key.



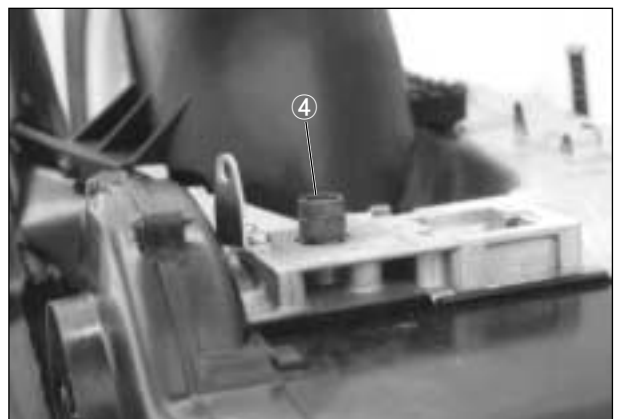
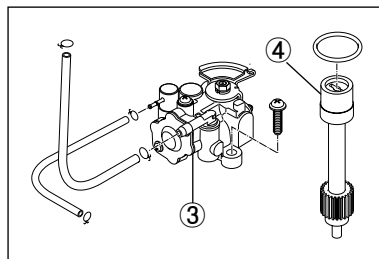
REED VALVE

- Remove the intake pipe ② with reed valve ①.



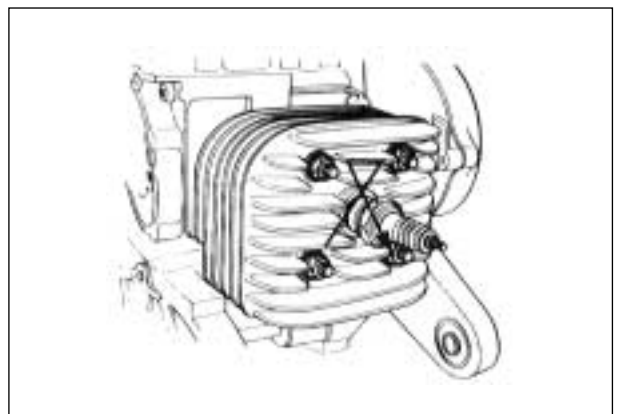
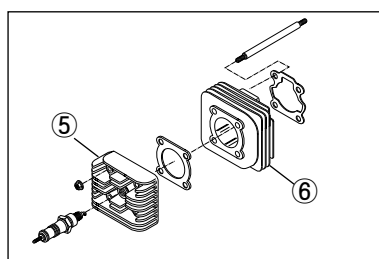
OIL PUMP

- Remove the oil pump ③.
- Remove the oil pump driven gear ④.



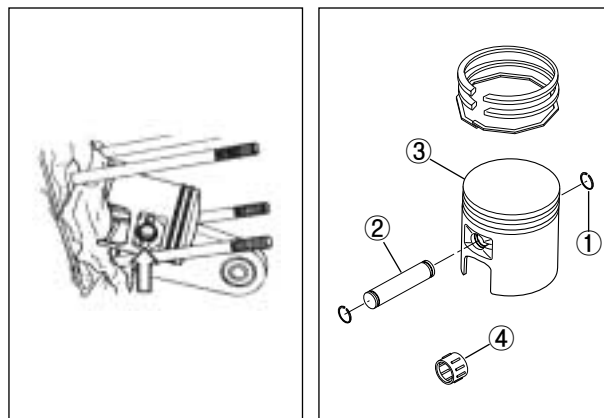
CYLINDER

- Remove the cylinder cowling.
- Remove the cylinder head ⑤ and cylinder ⑥.

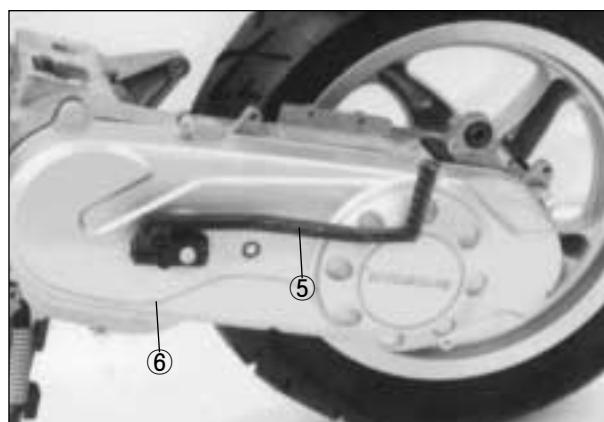


PISTON

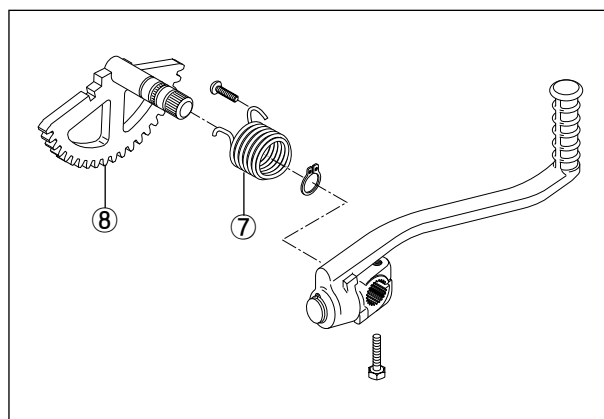
- Place a cloth beneath the piston and remove the piston circlip ① with a long nose pliers.
- Remove the piston pin ② and piston ③.
- Remove the piston pin bearing ④.

**KICK STARTER**

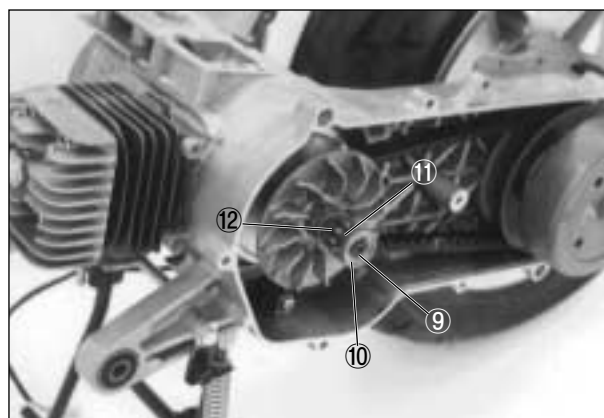
- Remove the kick starter lever ⑤.
- Remove the clutch cover ⑥.



- Remove the kick starter shaft spring ⑦ and kick starter shaft ⑧.

**KICK STARTER DRIVEN GEAR**

- Remove the E-ring ⑨ with the long nose plier.
- Remove the spacer ⑩, spring ⑪ and kick starter driven gear ⑫.




3-7 ENGINE

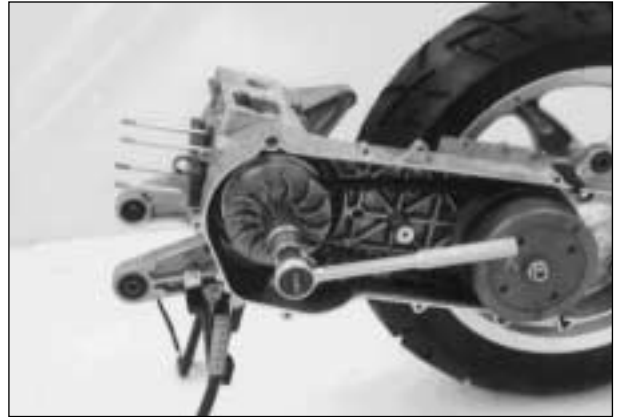
MOVABLE DRIVE FACE

- Remove the kick starter driven nut ① with the special tool.

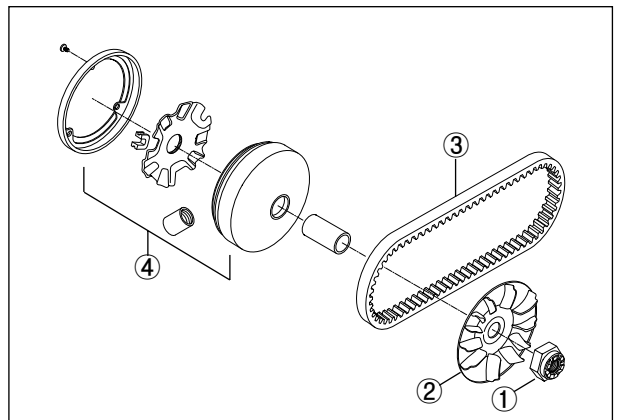
⚠ CAUTION

This nut has left-hand thread.

 Conrod holder : 09910-20115

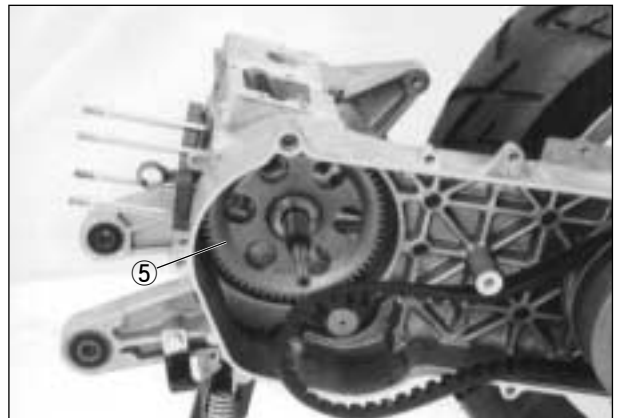


- Remove the fixed drive face ② and V-belt ③.
- Disassemble the movable drive face ④.




STARTER DRIVEN GEAR

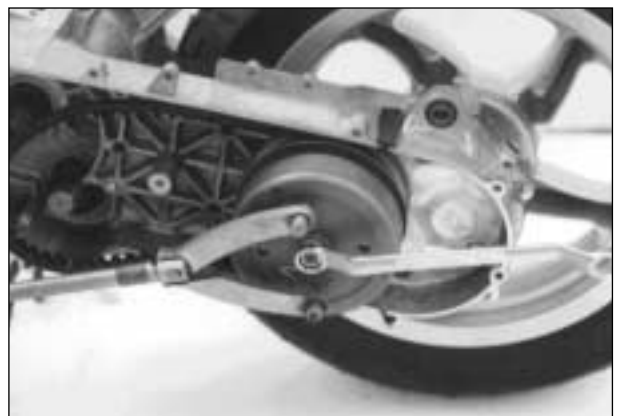
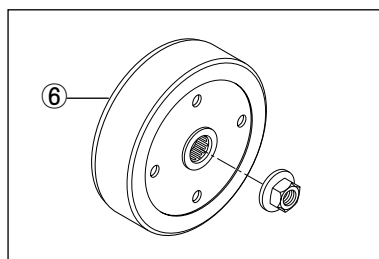
- Remove the starter driven gear ⑤.



MOVABLE DRIVEN FACE

- Remove the clutch housing ⑥ with the special tool.

 Rotor holder : 09930-40113



- Loosen the clutch shoe nut with the special tool.

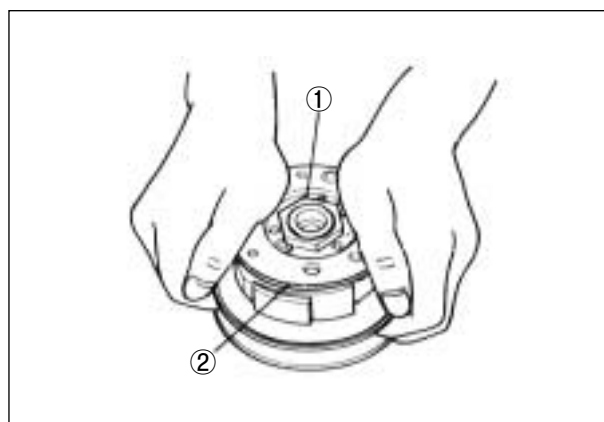
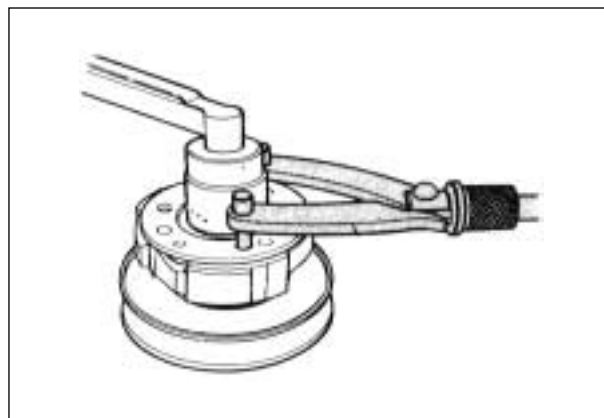
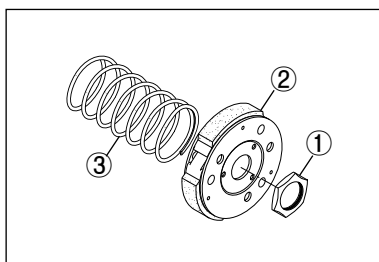
 Rotor holder : 09930-40113

- Remove the nut while holding down the clutch shoe assembly ② by both hands as shown in the illustration.

⚠ WARNING

Gradually back off the clutch shoe assembly pressed down by hand to counter the clutch spring load. Releasing the hand suddenly may cause the parts to fly apart.

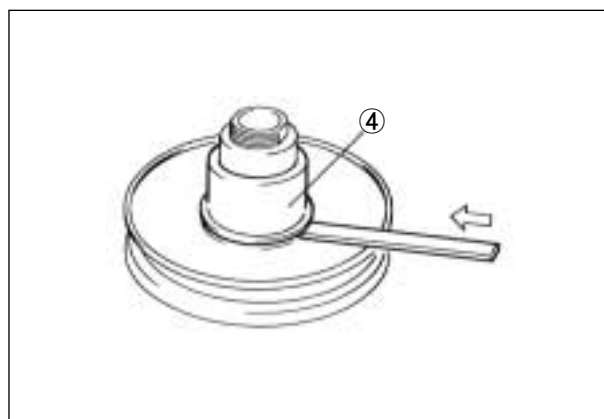
- Remove the nut ①.
- Remove the clutch shoe assembly ②.
- Remove the spring ③.



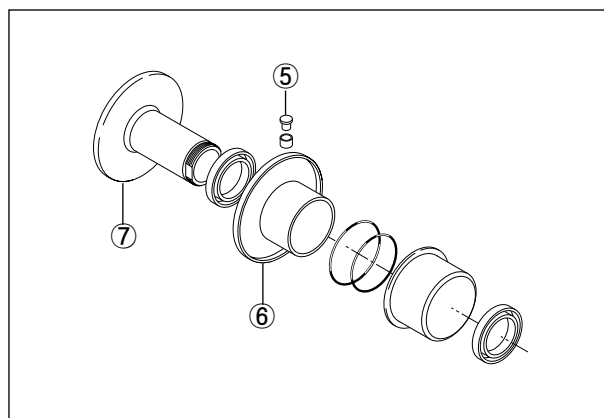
⚠ CAUTION

Do not attempt to disassemble the clutch shoe assembly.
It is not serviceable.

- Using a thin blade screwdriver or the like, pry up the movable driven face spring guide ④.




- Remove the pins ⑤, movable driven face ⑥ and fixed driven face ⑦.



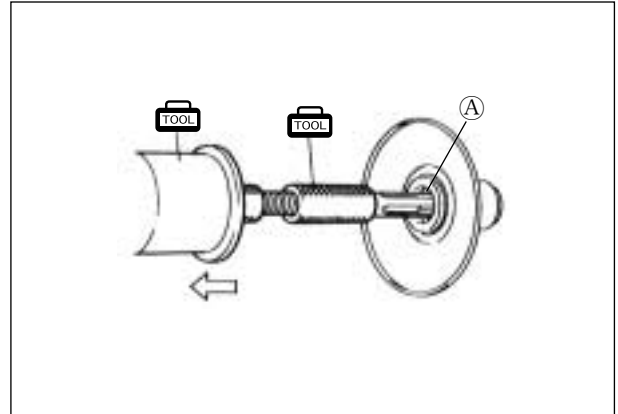
3-9 ENGINE

- Remove the roller bearing ① with the special tools.

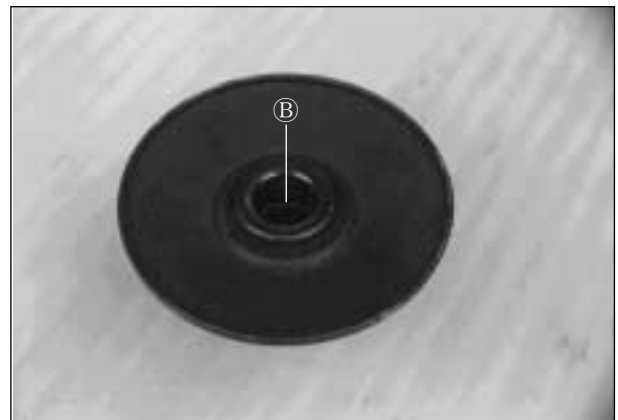
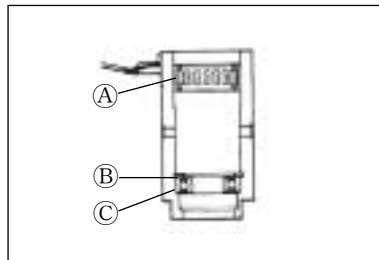
 Bearing remover(Φ 17 mm) : 09923-73210
Rotor remover sliding shaft : 09930-30102

CAUTION


The removed bearing should be replaced with a new one.



- Remove the circlip ②.

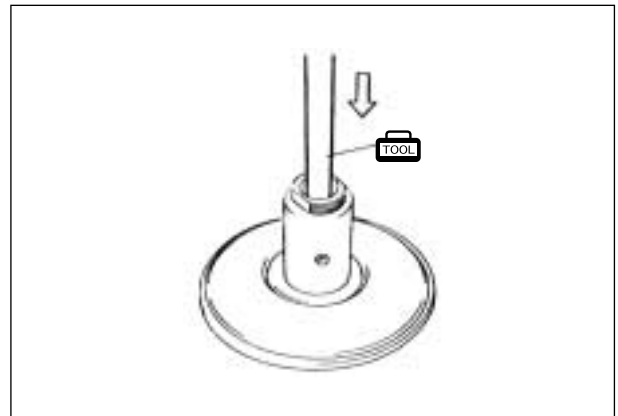


- Remove the bearing ③ with the special tool.

 Wheel bearing remover : 09941-50111

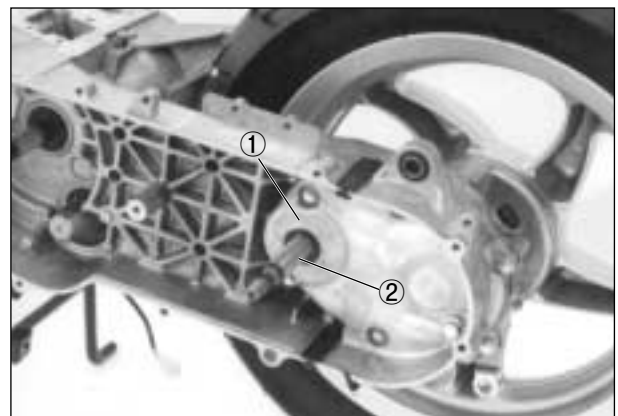
CAUTION

The removed bearing should be replaced with a new one.



TRANSMISSION

- Drain transmission oil.
- Remove the gear box cover ①.
- Remove the driveshaft ②.

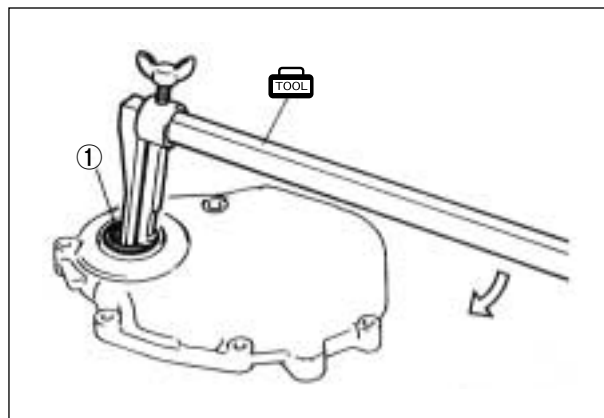


- Remove the oil seal ① from the gear box cover with the special tool.

 Oil seal remover : 09913-50121

CAUTION

The removed oil seal should be replaced with a new one.

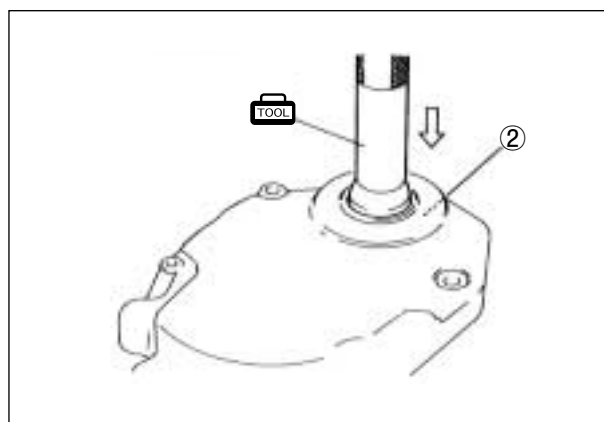


- Remove the bearing ② with the special tool.

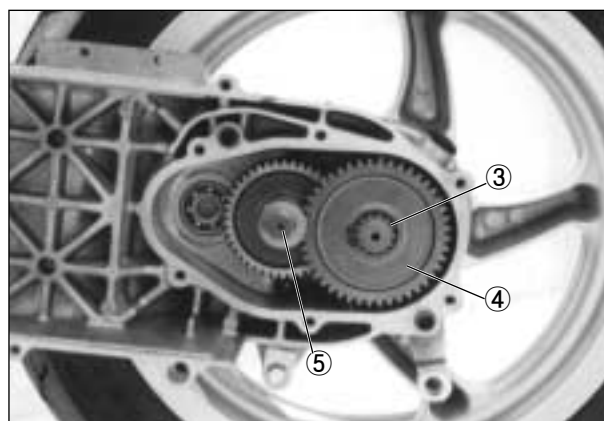
 Bearing installer : 09913-76010

CAUTION


The removed bearing should be replaced with a new one.

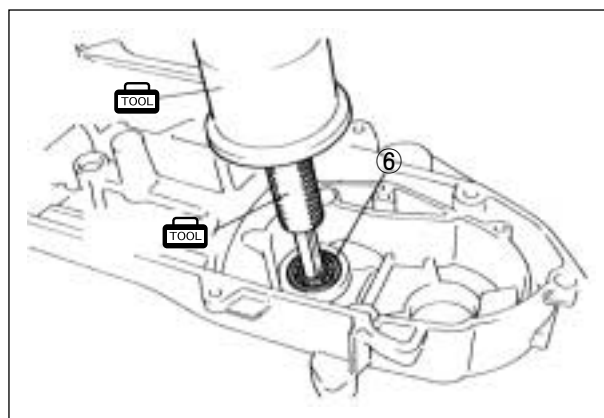


- Remove the circlip ③ and final driven gear ④.
- Remove the idle shaft ⑤.



- Remove the drive shaft bearing ⑥.

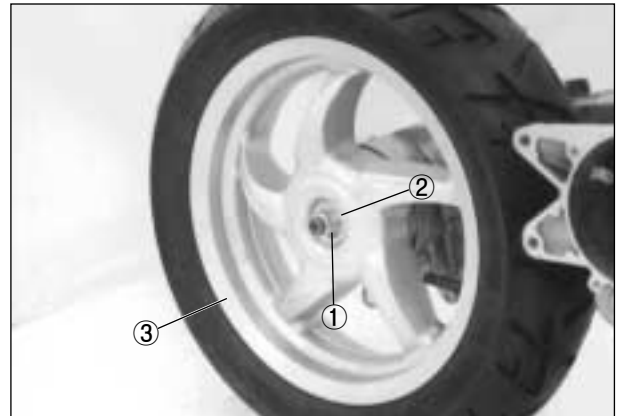
 Rotor remover sliding shaft : 09930-30102
 Bearing remover (Φ 12 mm) : 09921-20210



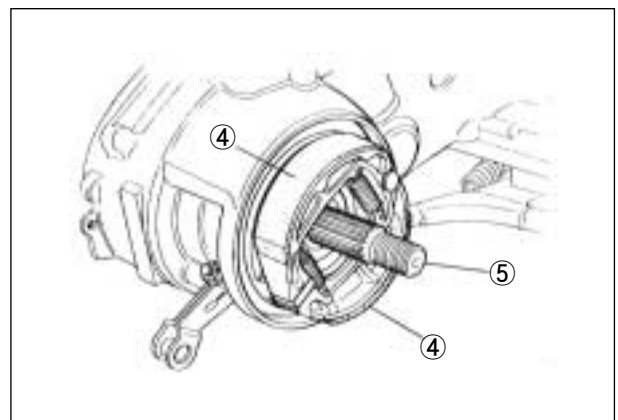
3-11 ENGINE

WHEEL, BRAKE

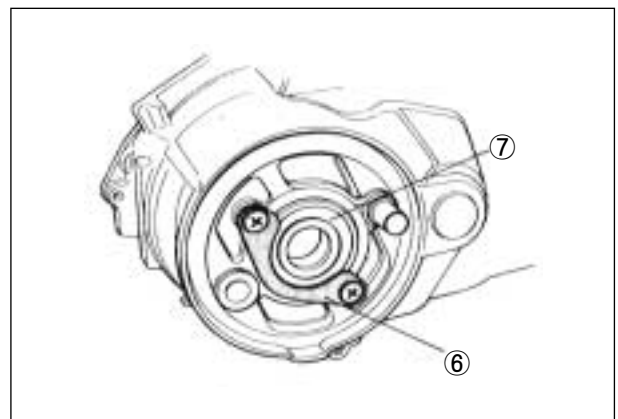
- Remove the rear axle nut ① and washer ②.
- Remove the rear wheel ③.



- Remove the brake shoes ④ and rear axle shaft ⑤.

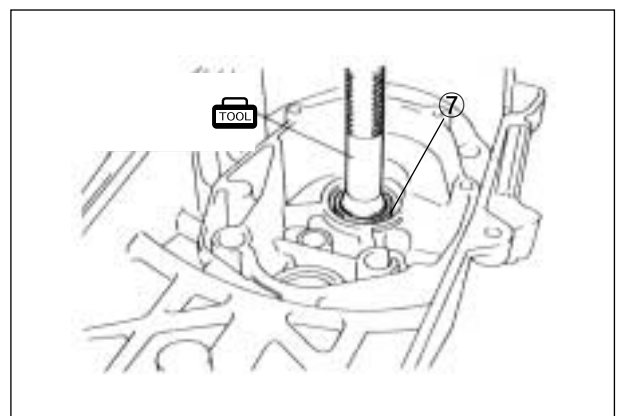


- Remove the bearing retainer ⑥.




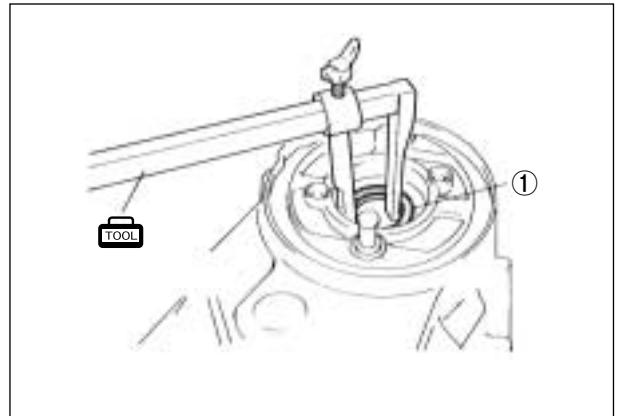
- Remove the bearing ⑦ with the special tool.

 Bearing installer : 09913-75820



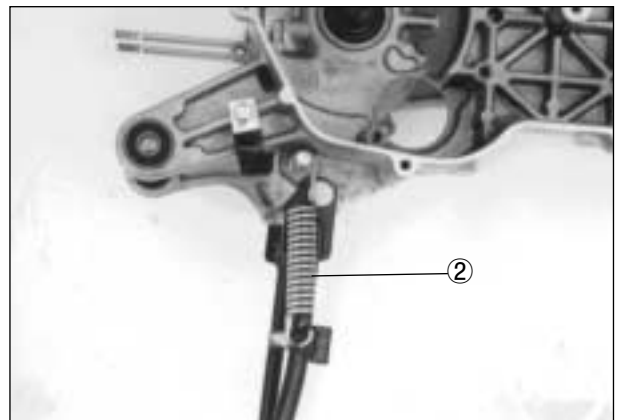
- Remove the oil seal ① with the special tool.

 Oil seal remover : 09913-50121

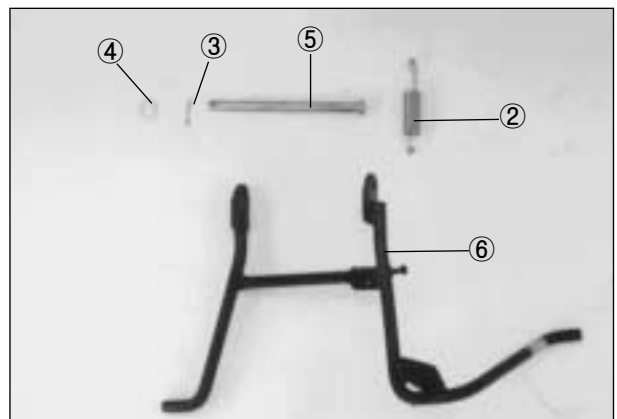


CENTER STAND

- Remove the return spring ②.



- Remove the cotter pin ③, washer ④ and shaft ⑤.
- Remove the center stand ⑥.



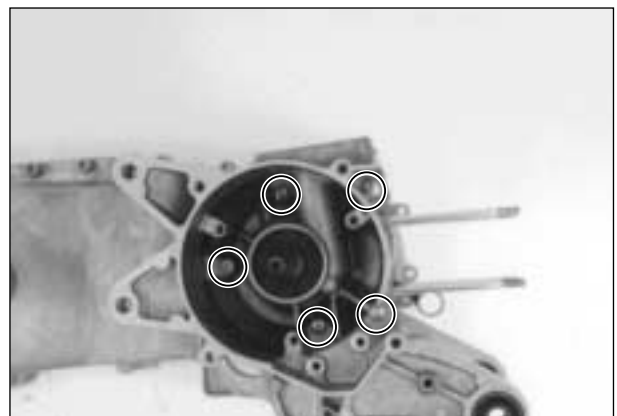
CRANKCASE

- Remove the crankcase securing screws.

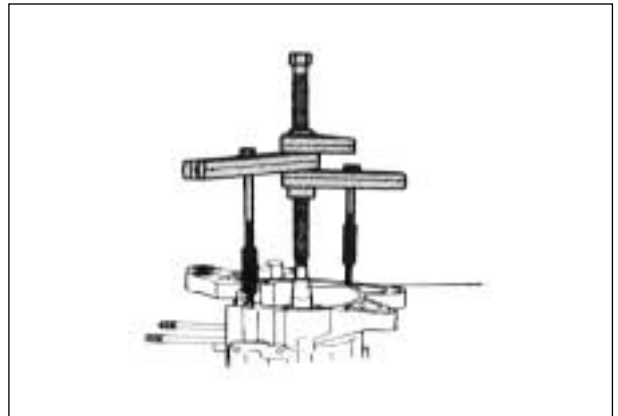
 **CAUTION**

Loosen the crankcase screws diagonally.

 Crankcase separator : 09920-13120

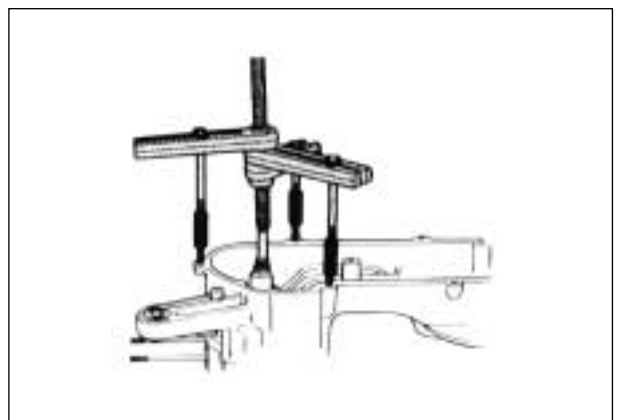


3-13 ENGINE

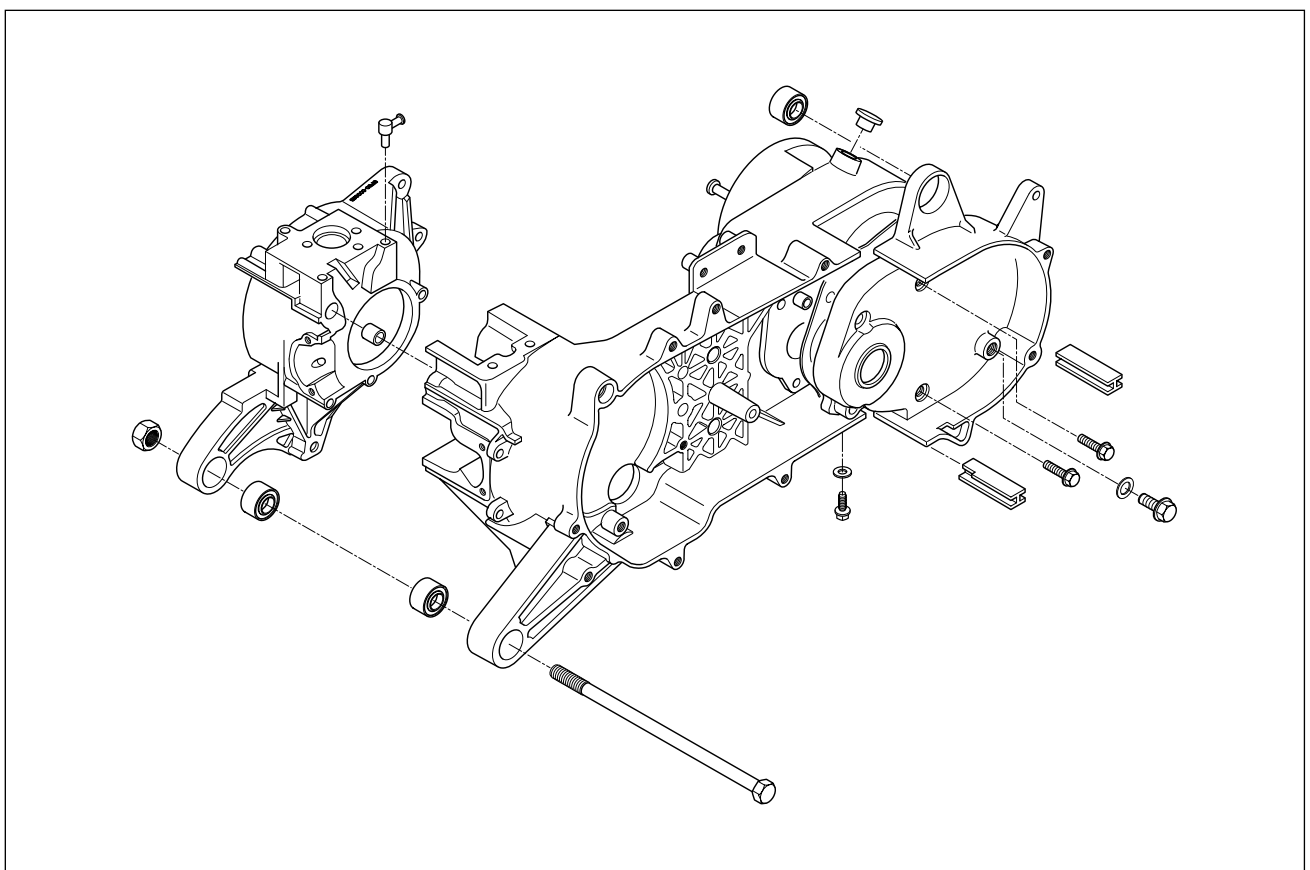


- Remove the crankshaft with the special tool.

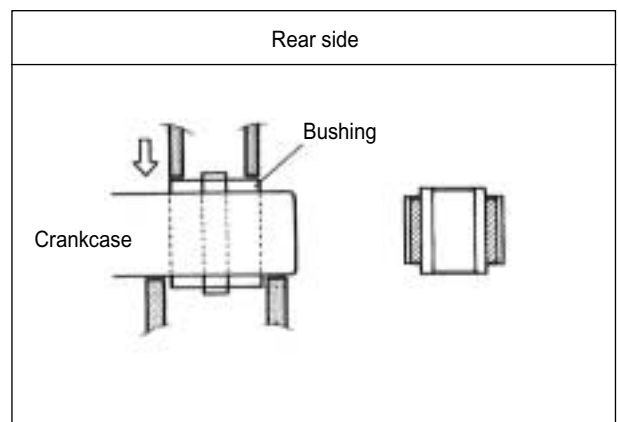
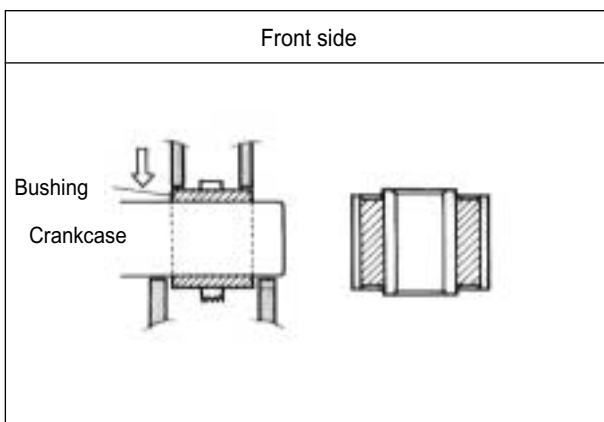
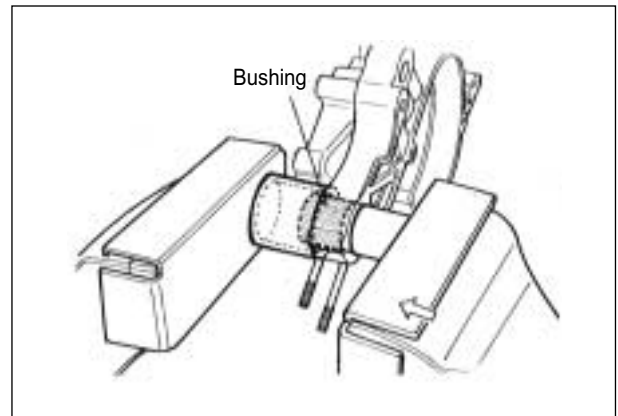
 Crankcase separator : 09920-13120



- Remove the bearings, oil seals and bushings.



- Using two steel tubes of appropriate size, press out the engine mounting bushings on a vise as shown in the illustration.

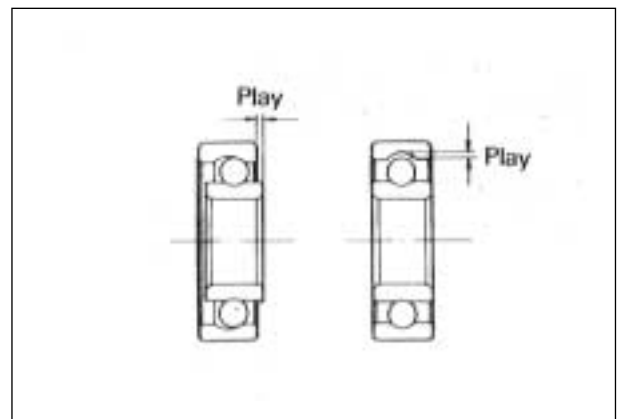


ENGINE COMPONENTS INSPECTION AND SERVICING

BEARINGS

Wash the bearing with cleaning solvent and lubricate with motor oil before inspecting.

Turn the inner ring and check to see that the inner ring turns smoothly. If it does not turn lightly, quietly and smoothly, or if noise is heard, the bearing is defective and must be replaced with a new one.



OIL SEAL

Damage to the lip of the oil seal may result in leakage of the fuel-air mixture or oil. Inspect for damage and be sure to replace the damaged seal if found.



CRANKSHAFT

CRANKSHAFT RUNOUT

Support crankshaft by “V” blocks, with the dial gauge rigged to read the runout as shown.

Crankshaft runout

Service limit 0.08 mm

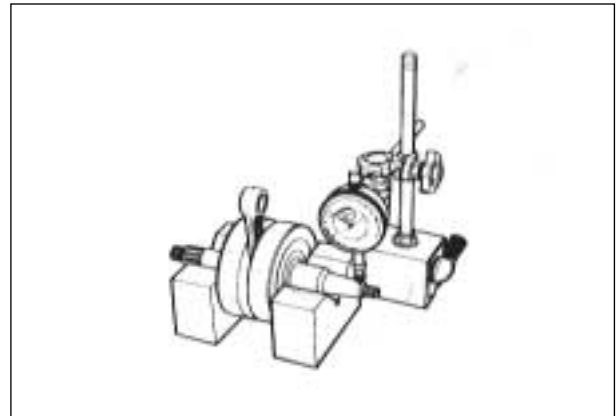
Excessive crankshaft runout is often responsible for abnormal engine vibration. Such vibration shortens engine life.



V-block(100 mm) : 09900-21304

Magnetic stand : 09900-20701

Dial gauge(1/100 mm) : 09900-20606

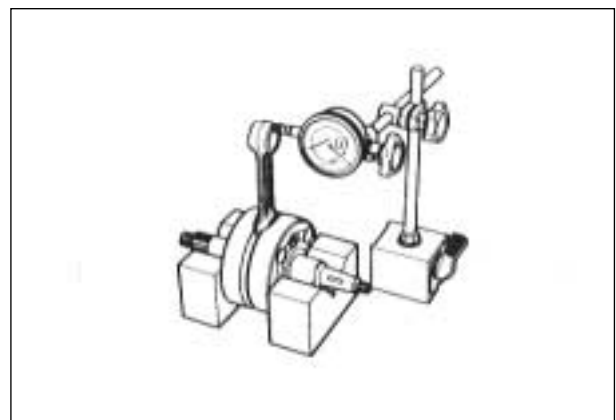


WEAR AND CLEARANCE OF CONROD BIG END

Turn the crankshaft with the conrod to feel the smoothness of rotary motion in the big end. Move the rod up and down while holding the crankshaft rigidly to be sure that there is no rattle in the big end.

Wear on the big end of the conrod can be estimated by checking the movement of the small end of the rod. This method can also check the extent of wear on the parts of the conrod's big end.

If wear exceeds the limit, conrod, crank pin and crank pin bearing should all be replaced.



Conrod big end runout

Service limit 3.0 mm

CONROD SMALL END BORE I.D.

Measure the conrod small end diameter with a caliper gauge.

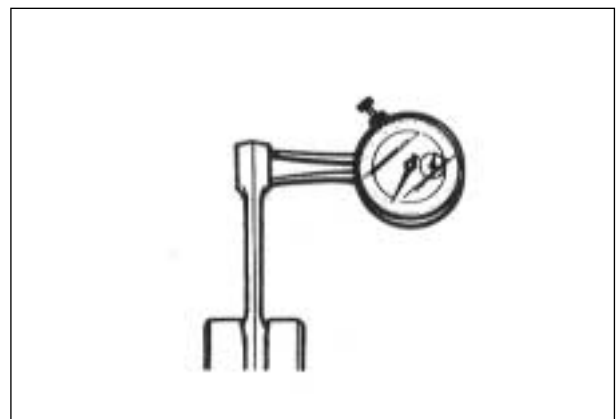


Conrod small end bore I.D.

Service limit 14.047 mm



Dial calipers : 09900-20605



AUTOMATIC CLUTCH INSPECTION

This motorcycle is equipped with an automatic clutch and variable ratio belt drive transmission. The engagement of the clutch is governed by engine RPMs and centrifugal mechanism located in the clutch.

To insure proper performance and longevity of the clutch assembly it is essential that the clutch engages smoothly and gradually. Two inspection checks must be performed to thoroughly check the operation of the drivetrain. Follow the procedures listed.


1. CLUTCH-IN INSPECTION

Warm up the motorcycle to normal operating temperature.

Remove the right frame side cover.

Connect an engine tachometer to the engine.

Seated on the motorcycle with the motorcycle on level ground, increase the engine RPMs slowly and note the RPM at which the motorcycle begins to move forward.

 Engine tachometer : 09900-26006

Clutch-in RPM	Standard	3,600 rpm
	Tolerance	± 200 rpm



2. CLUTCH TIGHT INSPECTION

Grip the front and rear brake lever fully, and measure the engine RPM when open the throttle.

Warm the engine to normal operating temperatures.

Connect an engine tachometer to the engine.

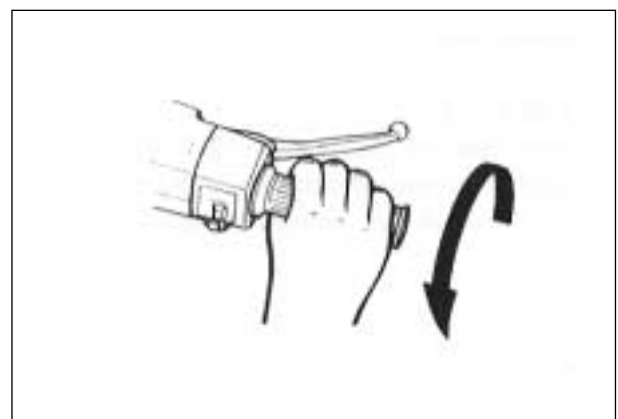
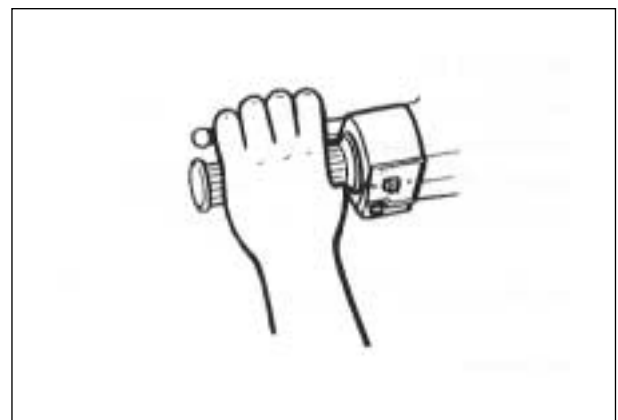
Apply the rear brake as firm as possible.

Briefly open the throttle fully and note the maximum engine RPMs sustained during the test cycle.

 **CAUTION**

Do not apply full power for more than 3 seconds or damage to the clutch or engine may occur.

Clutch tight RPM	Standard	6,000 rpm
	Tolerance	± 200 rpm

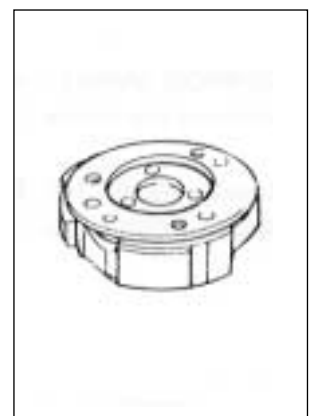
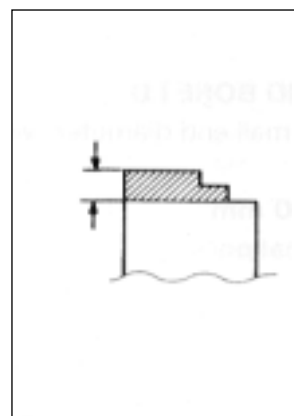


If the engine RPM does not coincide with the specified RPM range, then disassemble the clutch.

Clutch shoe - inspect the shoes visually for chips, cracking, uneven wear and burning, and check the thickness of the shoes with the vernier calipers. If the thickness is less than the following service limit, replace them as a set.

Clutch springs - visually inspect the clutch springs for stretched coils or broken coils.

Clutch shoe thickness	Service limit 2.0 mm
------------------------------	----------------------



3-17 ENGINE

⚠ CAUTION

Clutch shoes or springs must be changed as a set and never individually.

Clutch housing - inspect visually the condition of the inner clutch housing surface for scuffing, cracks, or uneven wear. Measure inside diameter of the clutch wheel with inside calipers. Measure the diameter at several points to check for an in-of-round condition as well as wear.

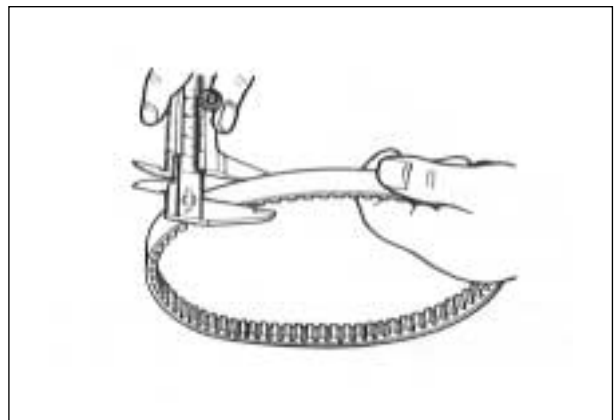
Clutch housing I.D.	Service limit 110.35 mm
----------------------------	-------------------------



DRIVE V-BELT

Remove the drive V-belt and check for cracks, wear and separation. Measure the drive V-belt width with a vernier calipers. Replace it if the drive V-belt width is less than the service limit or any defect has been found.

Drive V-belt width	Service limit 15.3 mm
---------------------------	-----------------------

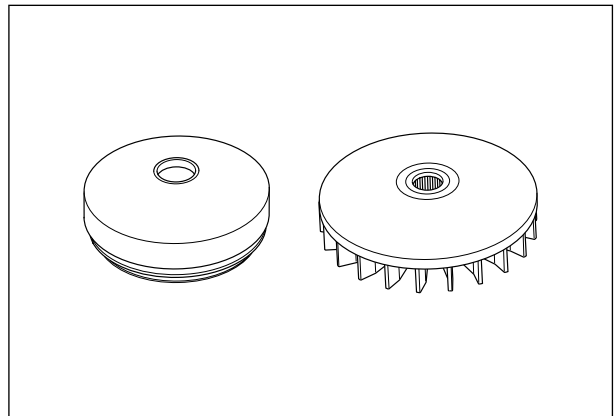


⚠ CAUTION

Always keep the drive belt away from any greasy mater.

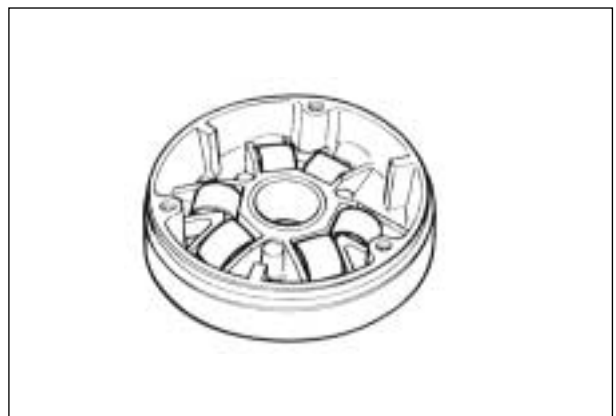
DRIVE FACE

Inspect the V-belt contact surface of the drive faces for wear, scratches or any abnormality. If there is something unusual, replace the drive face with a new one.



ROLLER AND MOVABLE DRIVE SURFACE

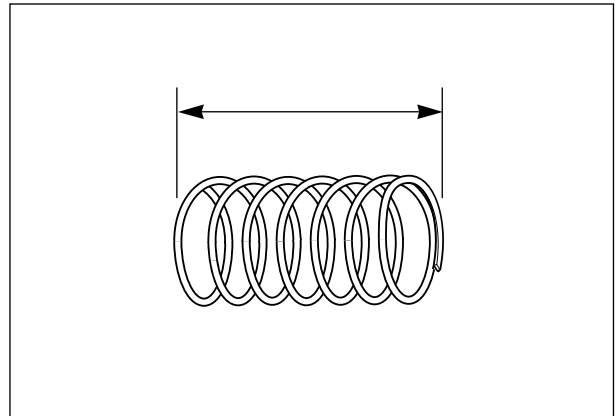
Inspect each roller and movable drive surface for wear or damage.



MOVABLE DRIVEN SPRING

Measure the free length of the movable driven spring. If the length is shorter than the service limit, replace the spring with a new one.

Movable driven spring free length	Service limit 135~153 mm
--	--------------------------

**MOVABLE DRIVEN FACE PIN AND OIL SEAL**

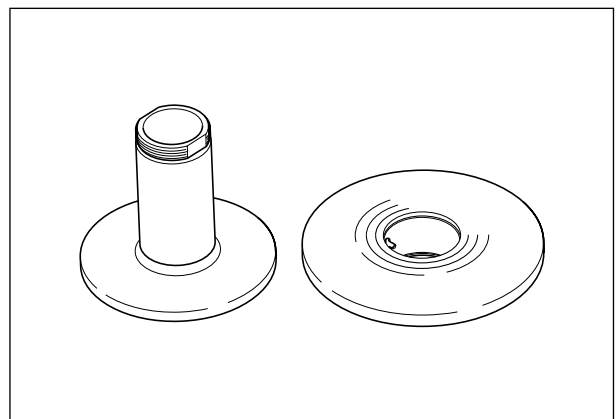
Turn the movable driven faces and check to see that the movable driven faces turn smoothly.

If not rotate smoothly, visually inspect the lip of oil seal, movable driven face sliding surface and sliding pins for wear or damage.

**MOVABLE DRIVEN FACE**


Inspect the V-belt contacting surface of both driven faces for any scratches, wear and damage.

Replace the movable driven face with new one if there are any abnormality.

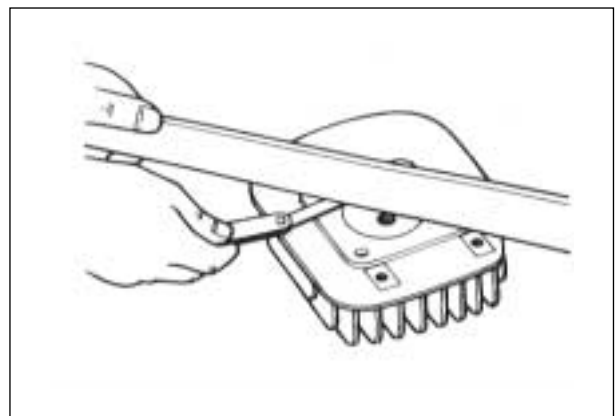
**CYLINDER HEAD**

Decarbon the combustion chamber.

Check the gasketed surface of the cylinder head for distortion with a straightedge and thickness gauge, taking a clearance reading at several places.

 Thickness gauge : 09900-20806

Cylinder head distortion	Service limit 0.1 mm
---------------------------------	----------------------



3-19 ENGINE

If the largest reading at any portion of the straightedge exceeds the limit, rework the surface by rubbing it against emery paper (of about # 400) laid flat on the surface plate in a lapping manner. The gasketed surface must be smooth and perfectly flat in order to secure a tight joint: a leaky joint can be the cause of reduced power output and increased fuel consumption.

CYLINDER

Decarbon exhaust port and upper part of the cylinder, taking care not to damage the cylinder wall surface.

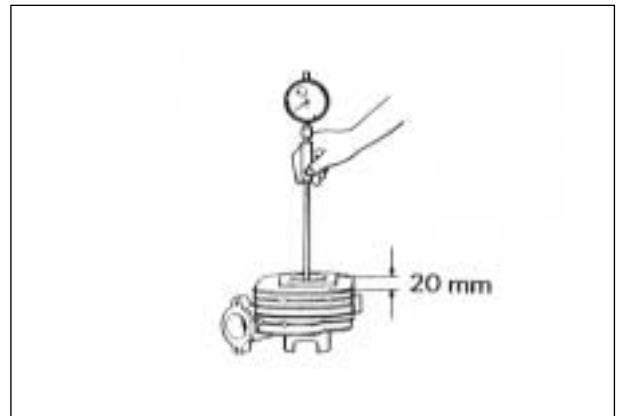
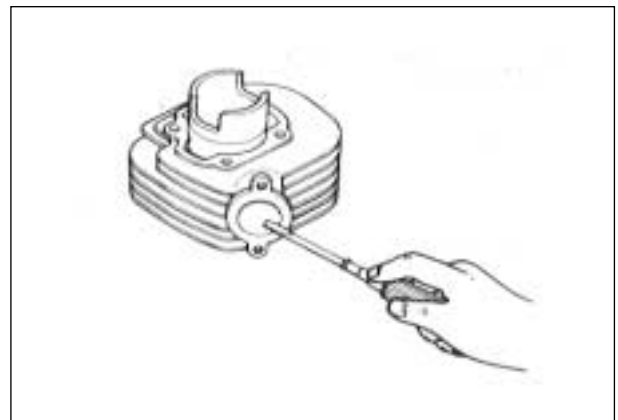
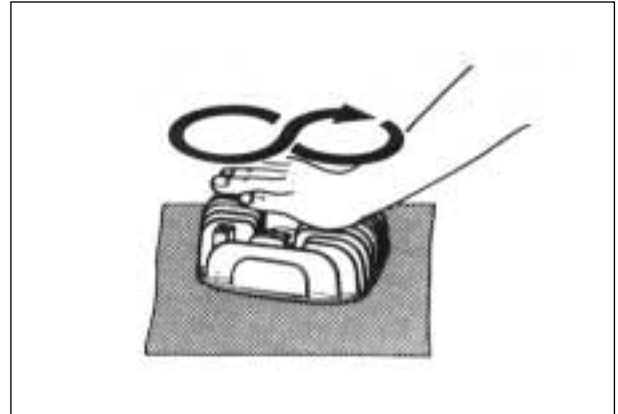
The wear of the cylinder wall is determined from diameter reading taken at 20 mm from the top of the cylinder with a cylinder gauge. If the wear thus determined exceeds the limit indicated below, rework the bore to the next oversize by using a boring machine or replace the cylinder with a new one.

 Cylinder gauge set : 09900-20508

Cylinder bore

Service limit 41.070 mm


After reworking the bore to an oversize, be sure to chamfer the edges of ports and smooth the chamfered edges with emery paper. To chamfer, use a scraper, taking care not to nick the wall surface.



PISTON

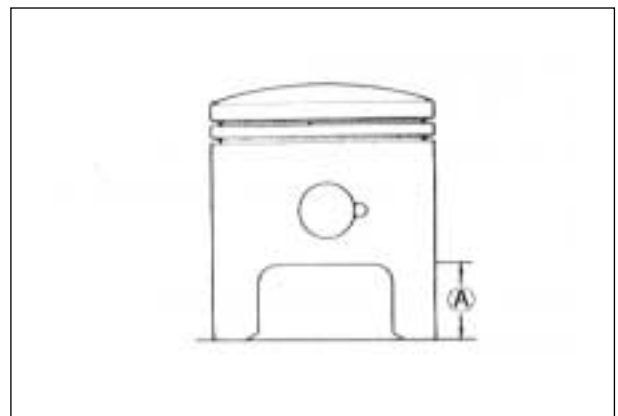
CYLINDER TO PISTON CLEARANCE

Cylinder-to-piston clearance is the difference between piston diameter and cylinder bore diameter. Be sure to take the maked diameter at right angles to the piston pin. The value of elevation (A) is prescribed to be 15 mm from the skirt end.

 Micrometer(25~50 mm) : 09900-20202

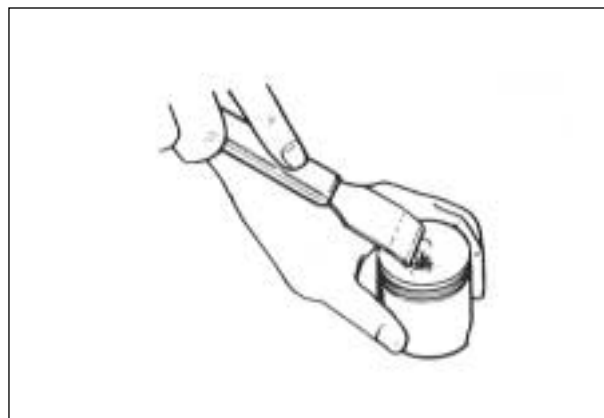
Piston diameter

Service limit 40.885 mm



As a result of the above measurement, if the piston-to-cylinder clearance exceeds the following limit, overhaul the cylinder and use an oversize piston, or replace both cylinder and piston. The measurement for the bore diameter should be taken in the intake-to-exhaust port direction and at 20mm from the cylinder top surface.

	Standard	Service limit
Cylinder bore	41.005-41.020 mm	41.070 mm
Piston diameter	40.935-40.950 mm	40.885 mm
Cylinder to piston clearance	0.065-0.075 mm	0.120 mm

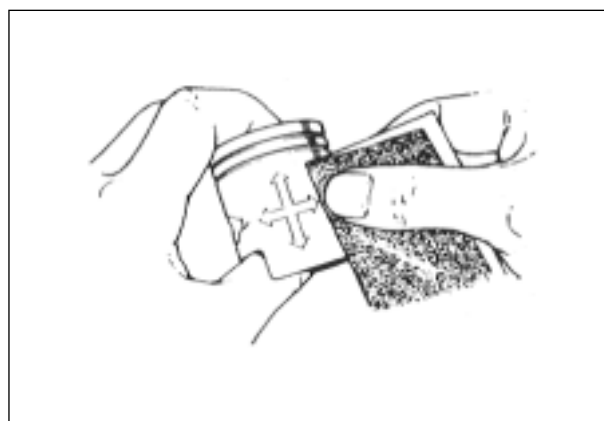
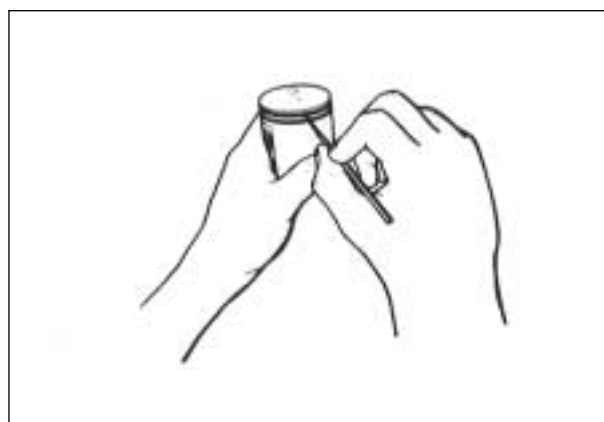


DE-CARBONING

De-carbon the piston and piston ring grooves, as illustrated. After cleaning the grooves, fit the rings and rotate them in their respective grooves to be sure that they move smoothly.

Carbon in groove is liable to cause the piston ring to get stuck in the groove, and this condition will lead to reduced engine power output.

A piston whose sliding surface is badly grooved or scuffed due to overheating must be replaced. Shallow grooves or minor scuff can be removed by grinding with emery paper of about # 400.

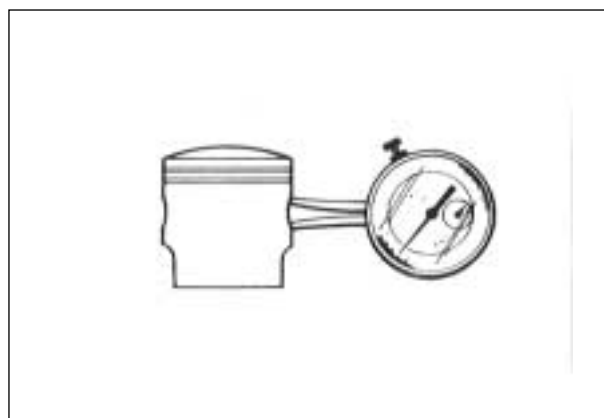


PISTON PIN BORE I.D.

Using a caliper gauge, measure the piston pin bore inside diameter. If reading exceeds the following service limit, replace it with a new one.

 Dial calipers : 09900-20605


Piston pin bore I.D.	Service limit 10.030 mm
-----------------------------	-------------------------



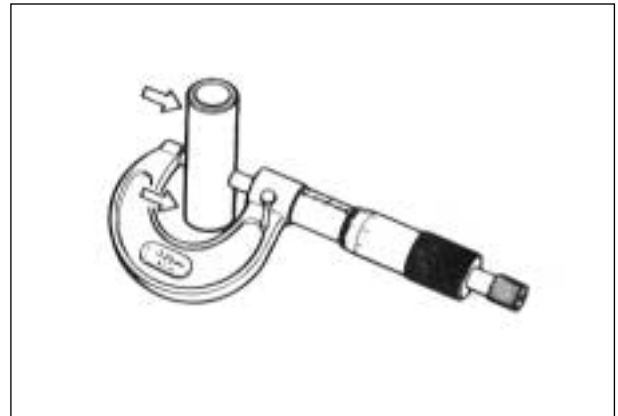
3-21 ENGINE

PISTON PIN O.D.

Using a micrometer, measure the piston outside diameter at three positions.

 Micrometer(0~25 mm) : 09900-20201


Piston pin O.D.	Service limit 9.980 mm
------------------------	------------------------



PISTON RINGS

Check each ring for end gap, reading the gap with a thickness gauge shown in the illustration. If the end gap is found to exceed the limit, indicated below, replace it with a new one.

The end gap of each ring is to be measured with the ring fitted squarely into the cylinder bore and held at the least worn part near the cylinder bottom, as shown in the illustration.

 Thickness gauge : 09900-20806

Piston ring clearance (Assembly condition)	Service Limit 0.75 mm
---	--------------------------

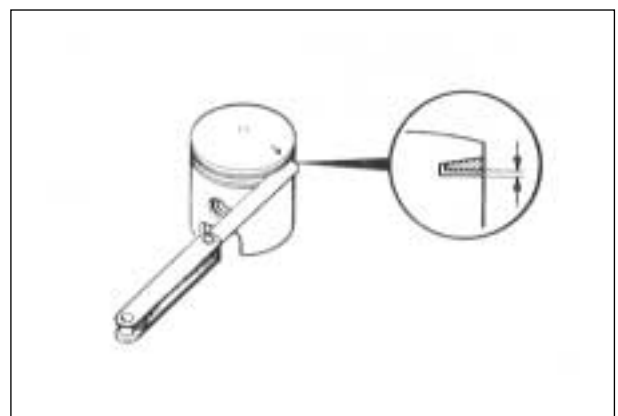
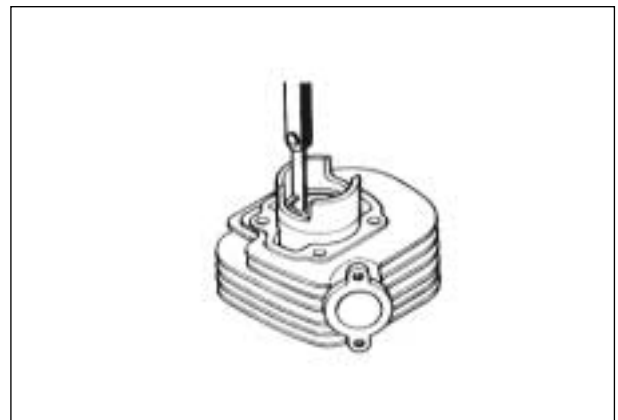
As the piston ring wears, its end gap increases reducing engine power output because of the resultant blow by through the enlarged gap. Here lies the importance of using piston rings with end gaps within the limit.

Measure the piston ring free end gap to check the spring tension.

Piston ring clearance(Free condition)	Service limit
1st	3.2 mm
2nd	3.1 mm

Fix the piston ring in the piston ring groove, measure the ring side clearance with the thickness gauge while matching the sliding surfaces of piston and ring.


Piston ring-ring groove clearance	Standard
1st	0.02~0.06 mm
2nd	0.02~0.06 mm



REED VALVE

When reinstalling the reed valve and stopper plate to the body, align the both cut on the reed valve and stopper plate.

Apply **THREAD LOCK "1324"** to the stopper plate securing screws.

 Thread Lock "1324"



ENGINE REASSEMBLY

Reassembly is generally performed in the reverse order of disassembly, but there are a number of reassembling steps that demand or deserve detailed explanation or emphasis. These steps will be taken up for respective parts and components.

OIL SEALS

Fit the oil seals to the crankcase following the procedure below.

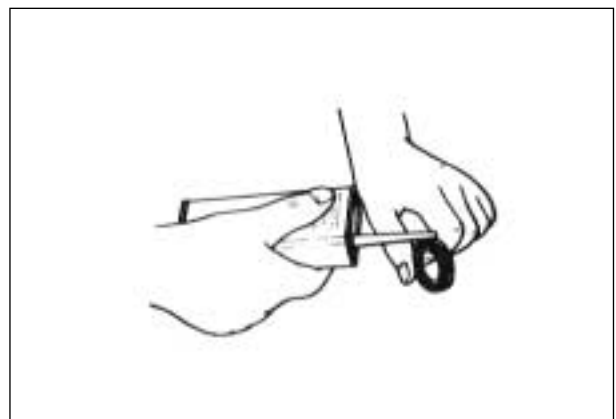
Replace removed oil seals with new ones.

- Coat **SUPER GREASE "A"** to the lip of the oil seals.


 Super Grease "A"

- Be sure to apply **THREAD LOCK "1324"** to outer surfaces of right and left crankshaft oil seals to prevent them from moving.

 Thread Lock "1324"

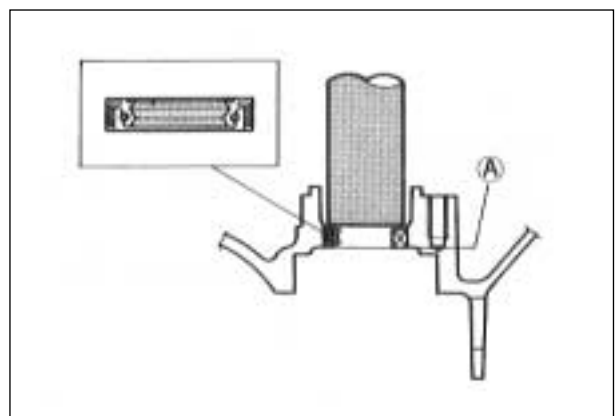


- When fitting the oil seal in the crankcase, insert it slowly with the special tools.

 Oil seal installer : 09913-75830
 Bearing installer attachment : 09924-74510
 Bearing installer pilot : 09924-74540

NOTE:

Align the oil seal with edge **A** of the crankcase as shown in the illustration.



3-23 ENGINE

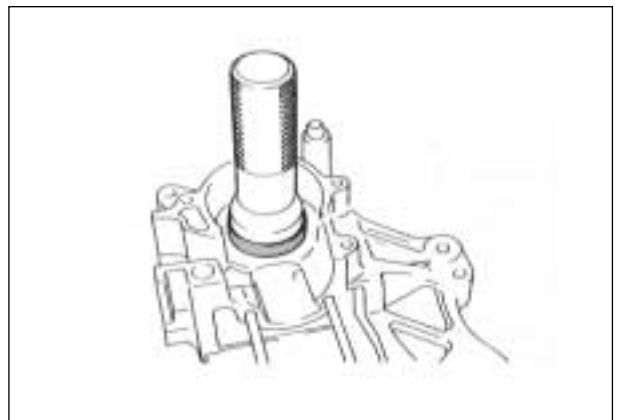
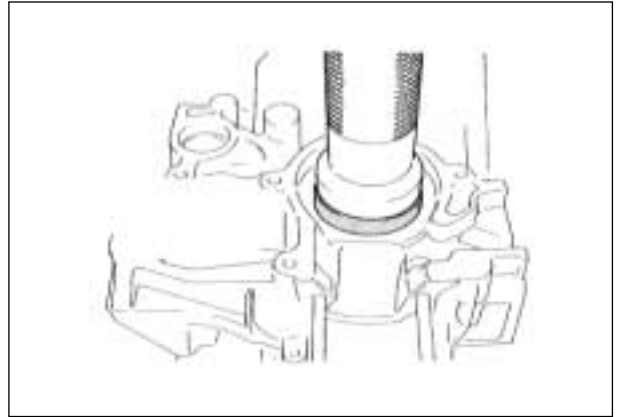
BEARINGS

Install new bearings with the special tool.



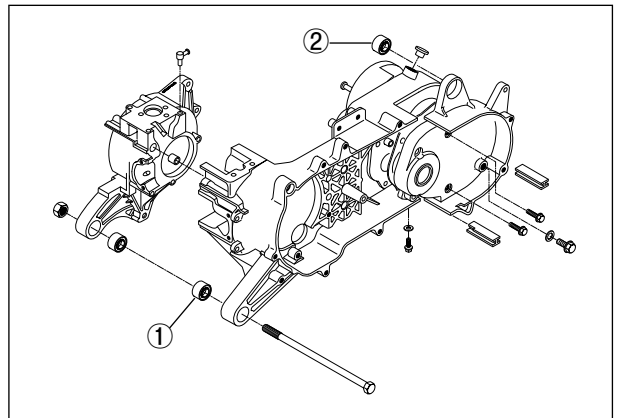
Bearing installer : 09913-75810

Bearing installer : 09913-76010



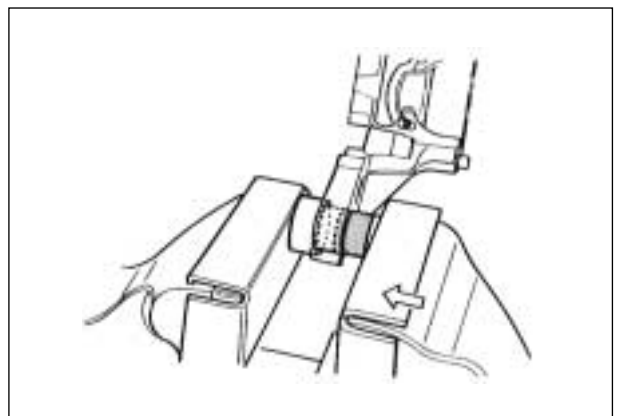
BUSHINGS

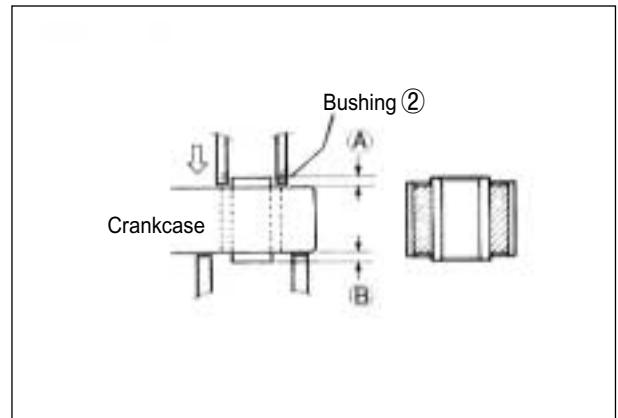
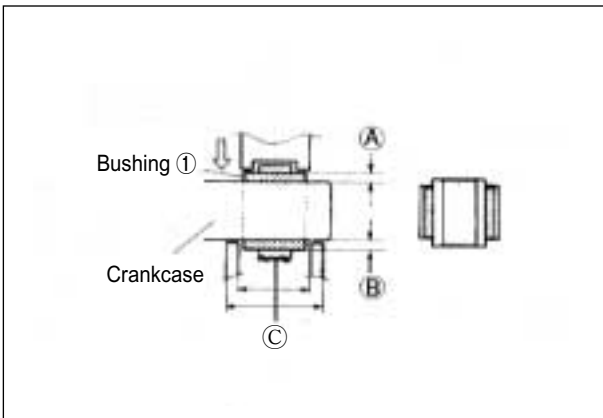
Using two steel tubes of appropriate size and a vise, press the mounting bushings ① and ② into the crankcase holes as shown in the illustration.



NOTE:

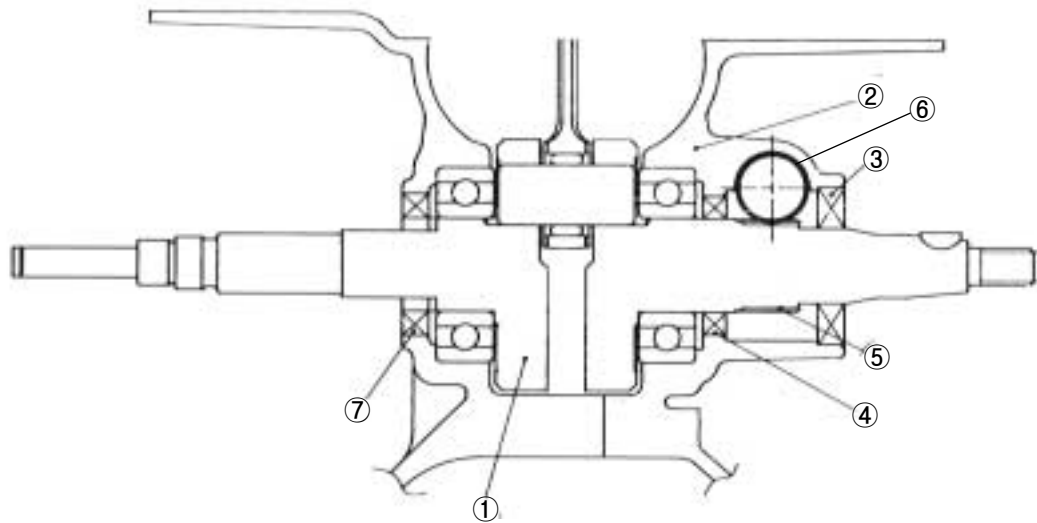
Knurled end © should face inside. Protrusion ① and ② should be in the same dimension.





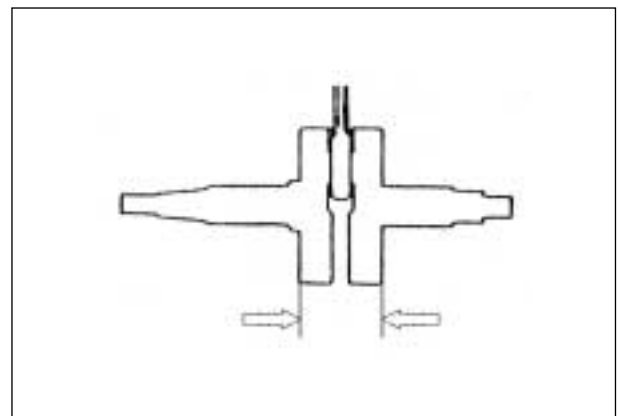
CRANKSHAFT

- ① Crank shaft
- ② Crankcase RH
- ③ Oil seal
- ④ Oil seal
- ⑤ Oil pump drive gear
- ⑥ Oil pump driven gear
- ⑦ Oil seal




- Measure the length between the webs referring to the figure at right when rebuilding the crankshaft.

Width between webs	Standard 35.0 ± 0.1 mm
---------------------------	----------------------------



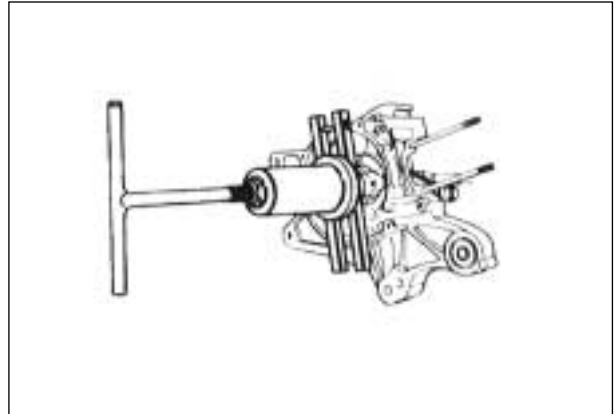
3-25 ENGINE

- When mounting the crankshaft into the crankcase, it is necessary to pull its left end into the crankcase with the special tool.

 Crankshaft installer : 09910-32812
Conrod holder : 09910-20116

CAUTION

Never fit the crankshaft into the crankcase by driving it with a plastic hammer. Always use the special tool, otherwise crankshaft alignment accuracy will be affected.

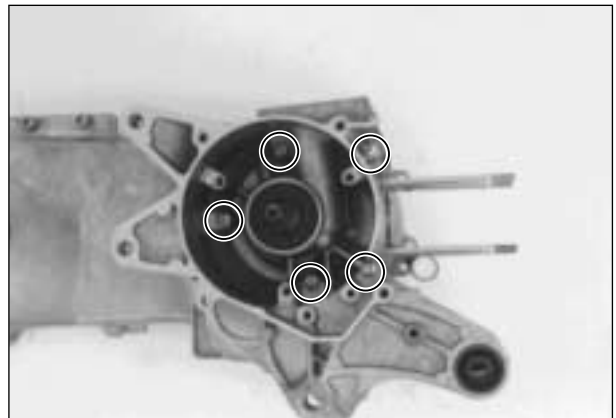
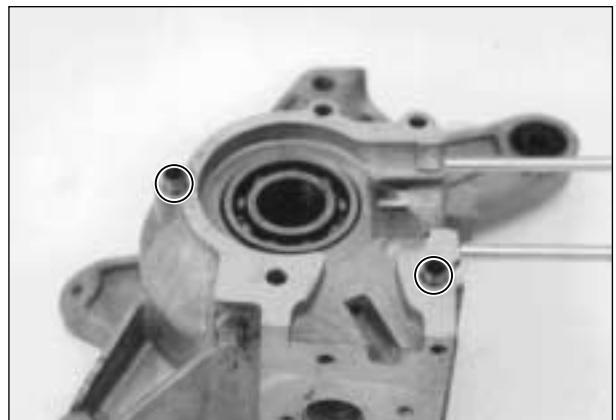


CRANKCASE

- Wipe the crankcase mating surfaces(both surfaces)with cleaning solvent.
- Apply BOND “1215” uniformly to the mating surface of the left half of the crankcase, and install the dowel pins.

 BOND “1215”

- Install the two dowel pins.
- Tighten the crankcase screws securely.
- Check if the crankshaft rotates smoothly.

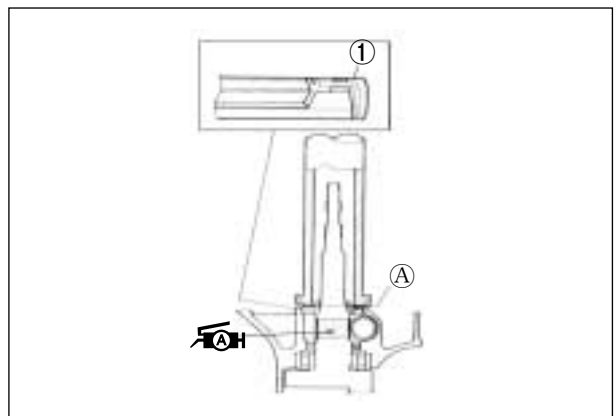


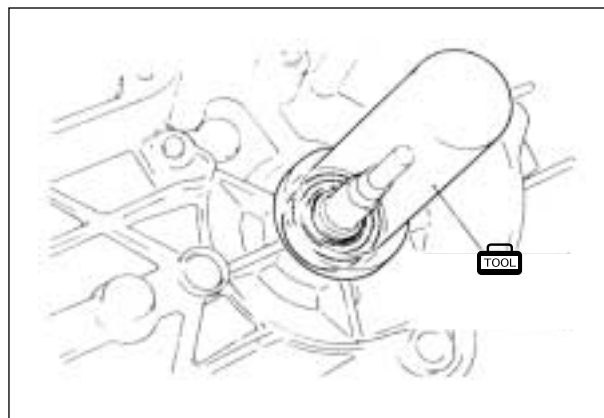
- Install the new oil seal ① to the crankcase with the special tool.

NOTE:

Align the oil seal with edge ① of the crankcase as shown in the illustration.

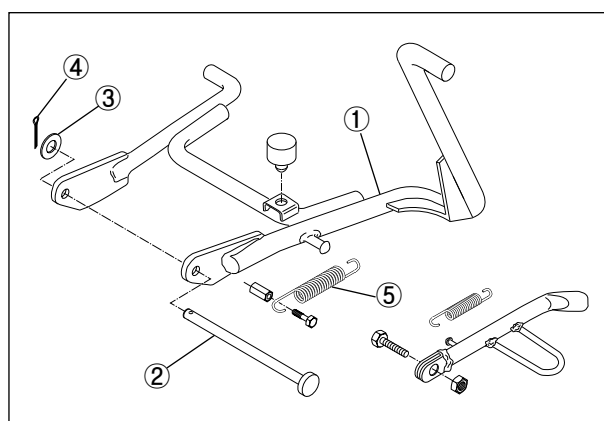
 Bearing installer : 09913-85210



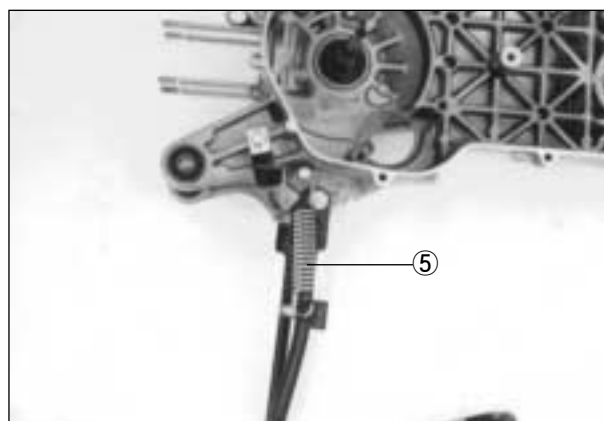


CENTER STAND

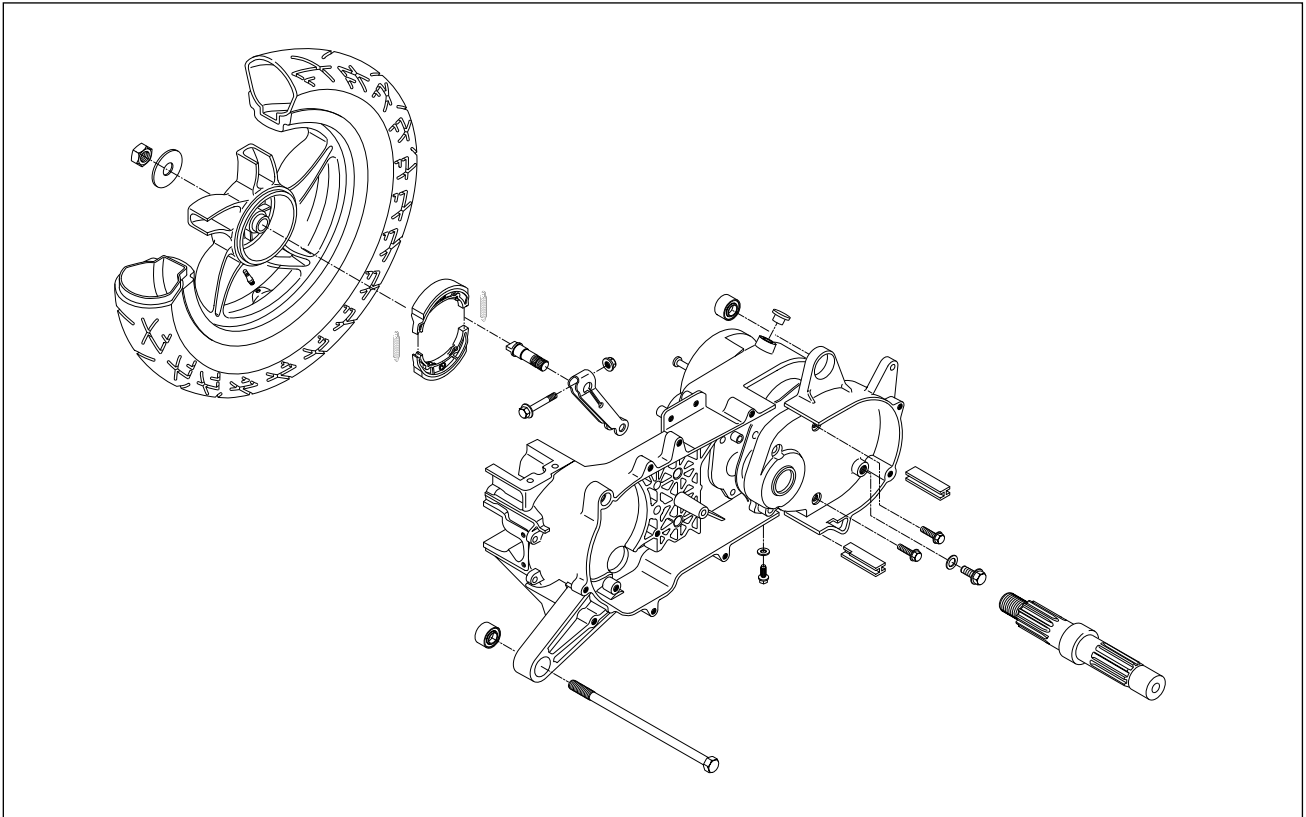
- Install the center stand ①.
- Install the shaft ②, washer ③ and cotter pin ④.



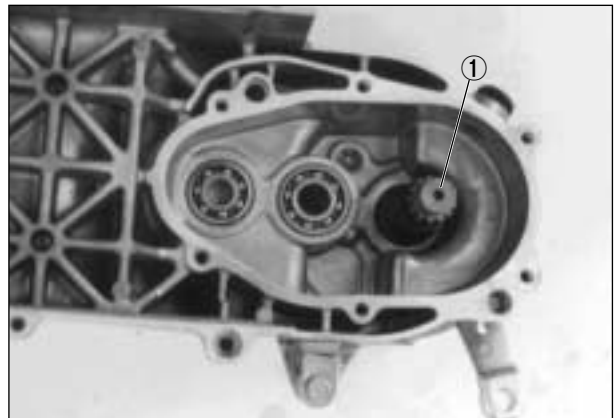
- Hook the center stand spring ⑤ into the crankcase.



REAR AXLE SHAFT, BRAKE AND WHEEL



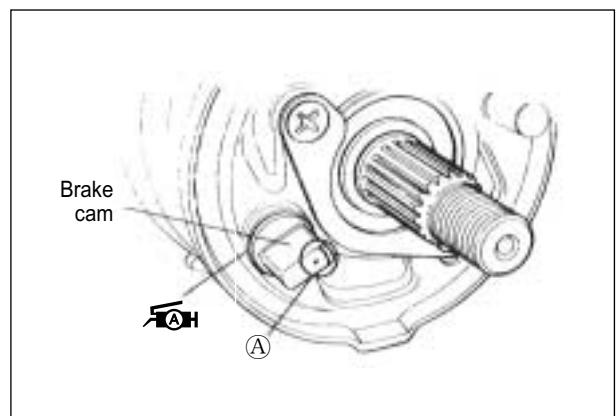
- Install the rear axle shaft ① into the crankcase by tapping its end lightly.
- Apply engine oil on the left end of the rear axle shaft being inserted later in the reduction rear box cover.



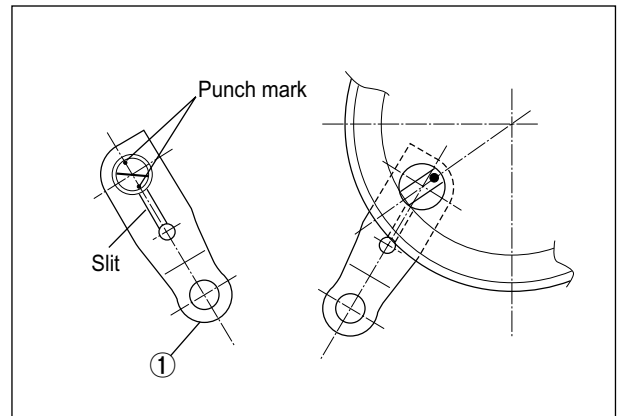
- Apply **SUPER GREASE "A"** lightly on the rear brake cam pivot part and install it to the crankcase.

 Super Grease "A"

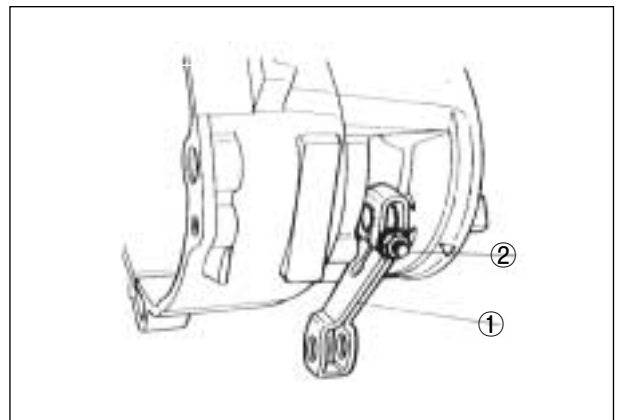
- Turn to position the cam where the punched mark ① on the end face is directed toward the axis of the rear axle shaft.



- When installing the cam lever ① to the cam, align the punched mark with the slit of cam lever.



- Tighten the cam lever nut ② to the specified torque.
- 🔧 Rear brake cam lever nut : 6~9 N · m (0.6~0.9 kg · m)

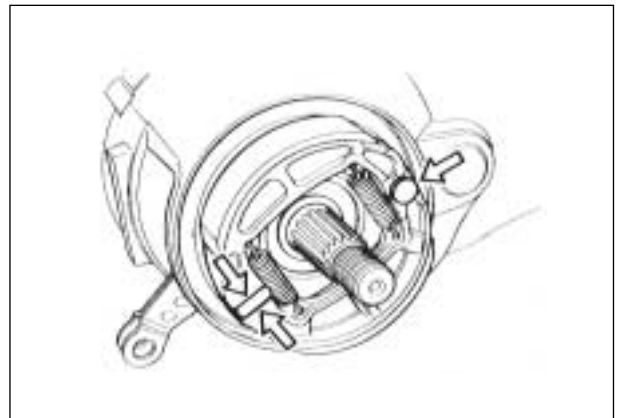


- Install the brake shoes.
- Apply **SUPER GREASE "A"** to the brake cam and pin before installing the brake shoes.

🔧 Super Grease "A"

⚠ CAUTION

Be careful not to apply too much grease to the brake cam and pin. If grease gets on the lining, brake effectiveness will be lost.

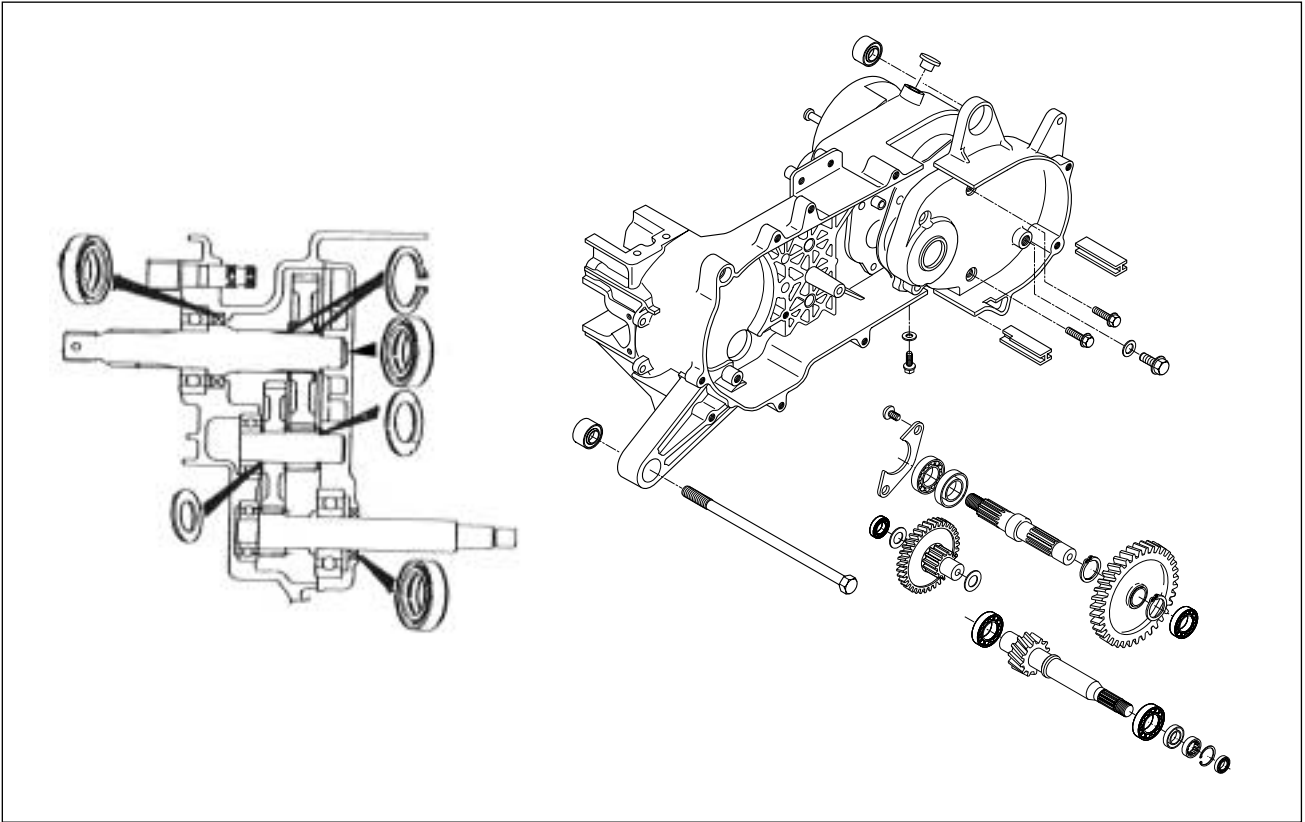


- Install the rear wheel and nut.

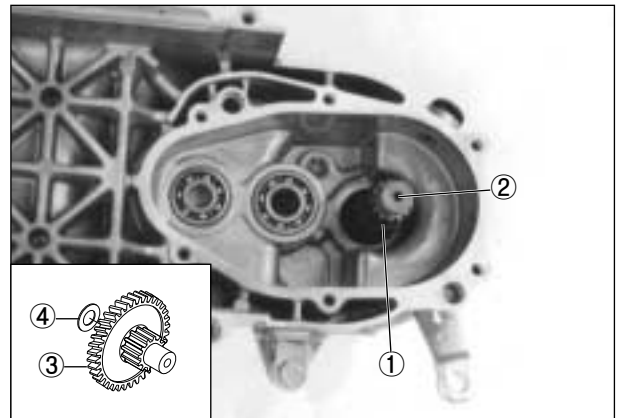
🔧 Rear axle nut : 60~90 N · m (6.0~9.0 kg · m)



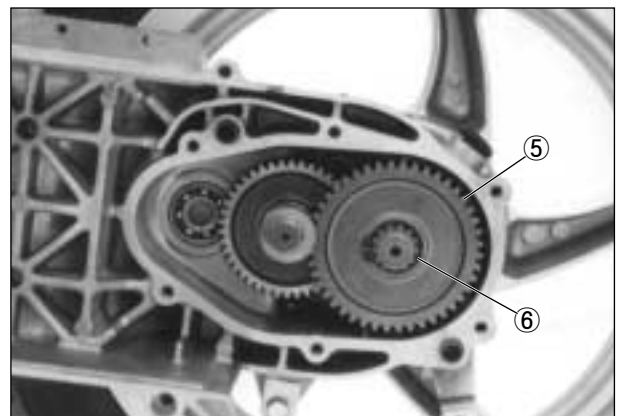
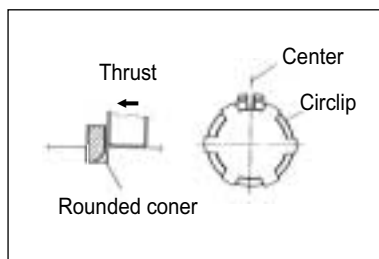
TRANSMISSION



- Install the circlip ① on to the rear axle shaft ②.
- Assemble the idle shaft subassembly using the idle shaft ③ and thrust washer ④, then install the sub-assembly on the gear box.

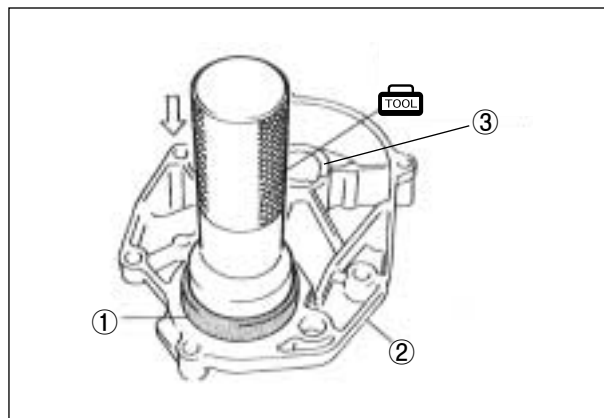


- Install the final driven gear ⑤ on the rear axle shaft using the circlip ⑥.



- Install the new bearing ①, ③ to the gear box cover ② with the special tool.

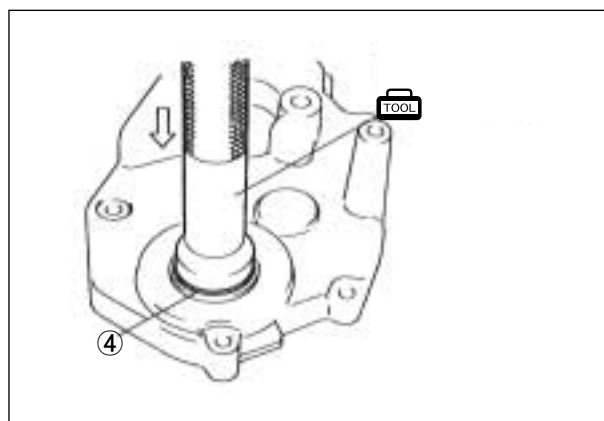
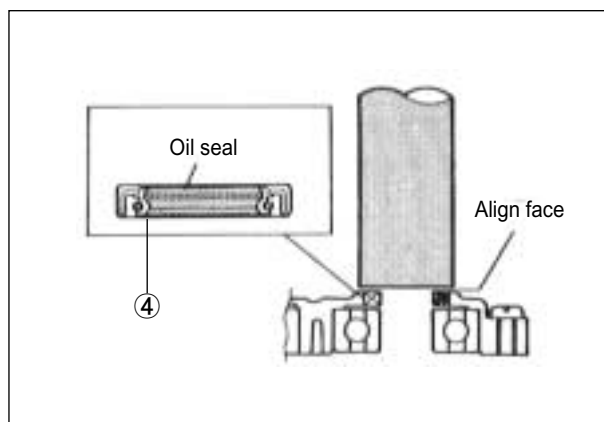
 Bearing installer : 09913-76010



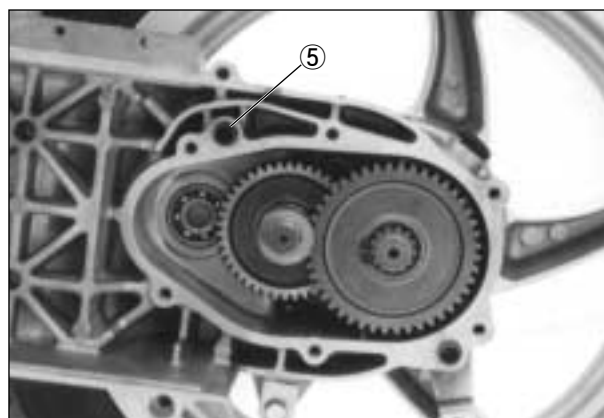
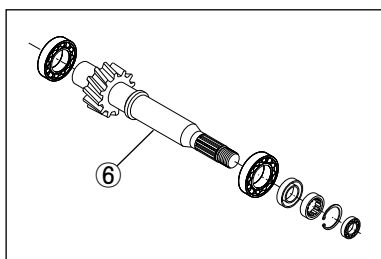
- Apply **SUPER GREASE "A"** to the lip of the oil seal ④ and install it to the gear box cover with the special tool.

 Super Grease "A"

 Bearing installer : 09913-70122



- Install the washer, new gasket and dowel pin ⑤.
- Install the driveshaft ⑥ to the gear box cover.

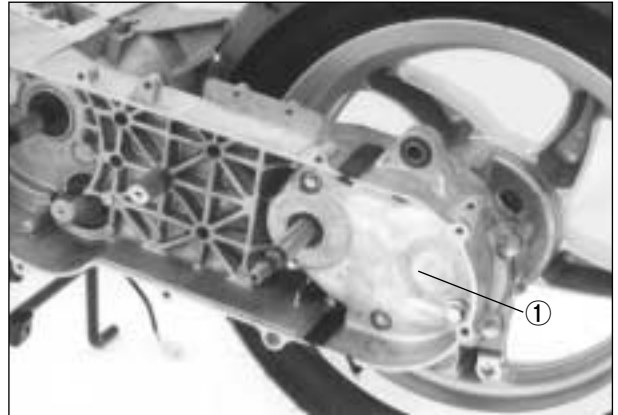


3-31 ENGINE

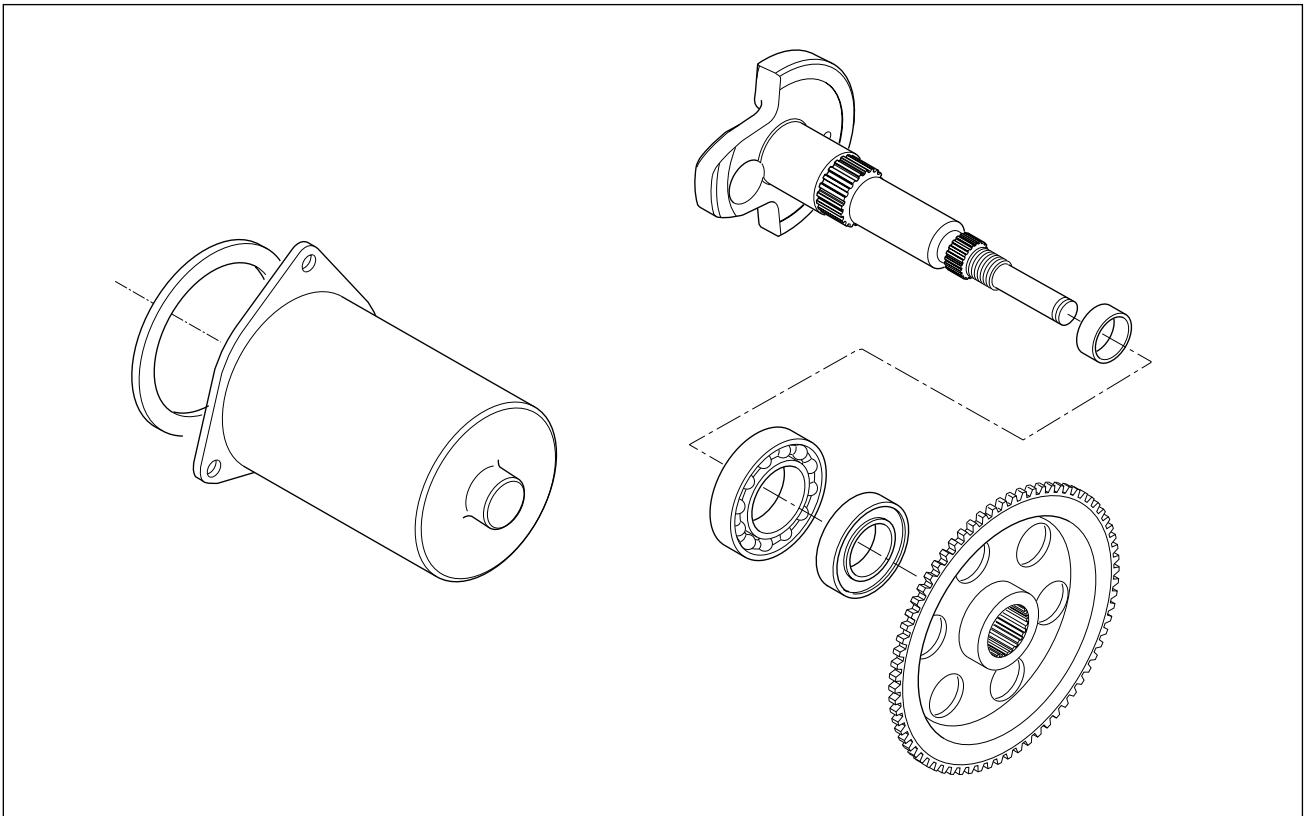
- Apply BOND “1215” at the hatched area shown in the illustration and install the gear box cover ① on the crankcase.

 BOND “1215”

- Tighten all the screws evenly one by one in a diagonal fashion.



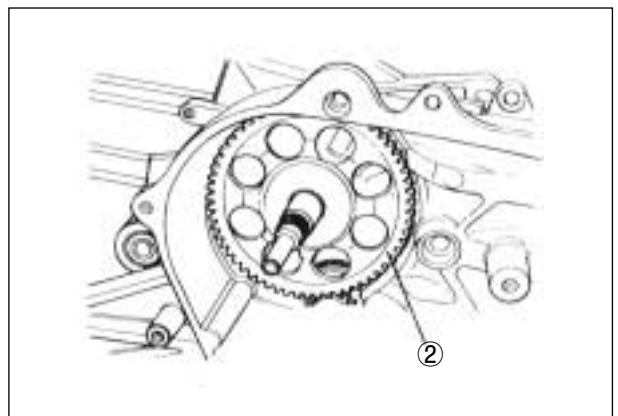
STARTER DRIVEN GEAR AND STARTING MOTOR



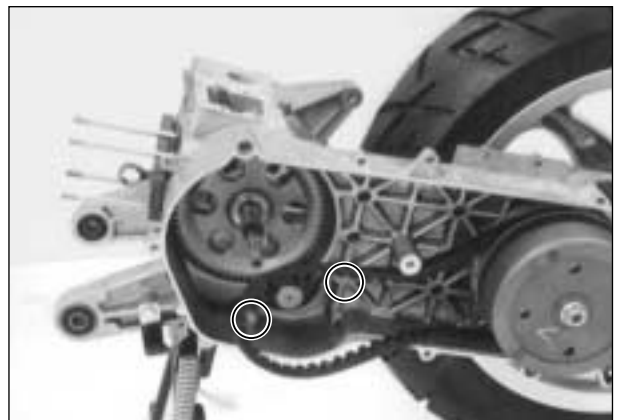
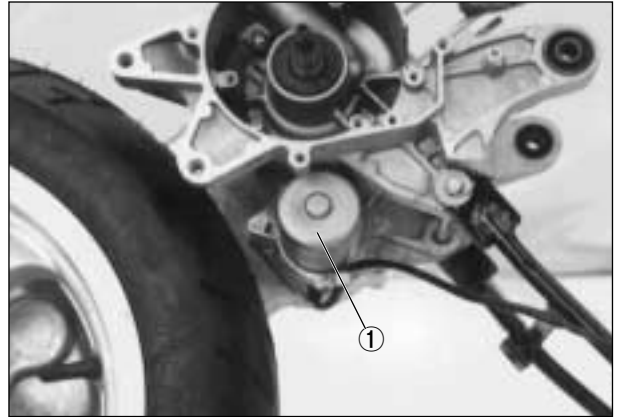
- Install the starter driven gear ② over the left crankshaft end.

NOTE:

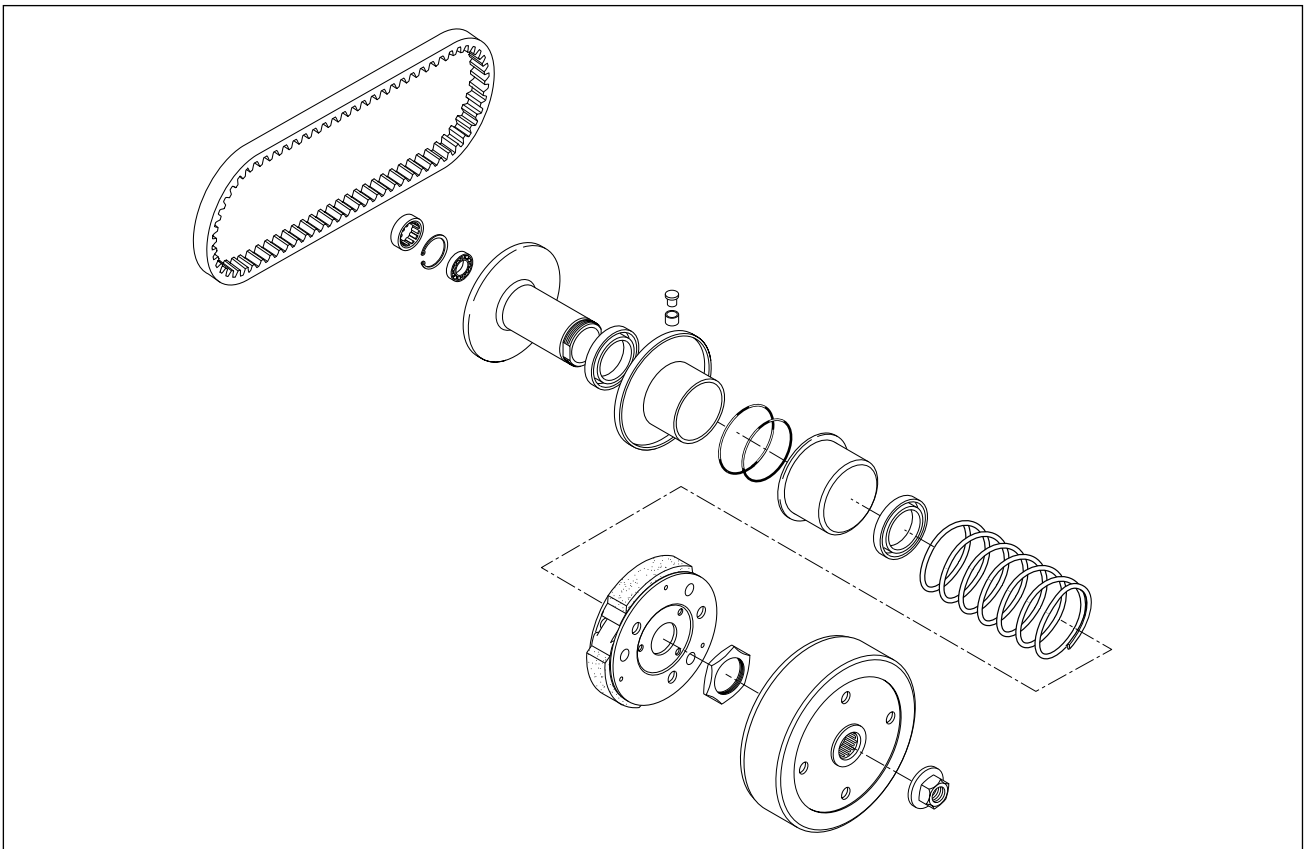
The convex side of hub should face outside when installed in proper position.



- Install the starting motor ①.



MOVABLE DRIVEN AND CLUTCH



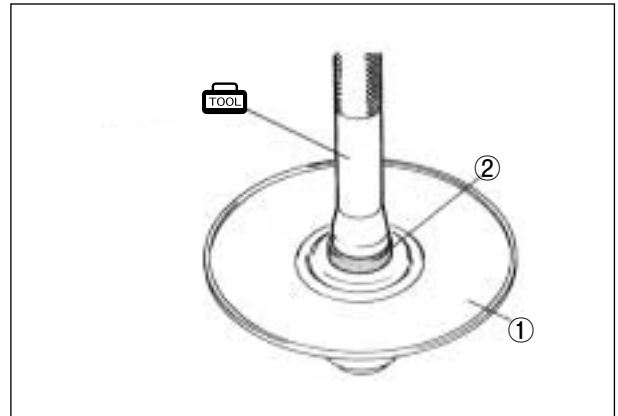
3-33 ENGINE

- Install the bearing ② in the fixed driven face ① with the special tool.

 Bearing installer : 09943-88211

CAUTION

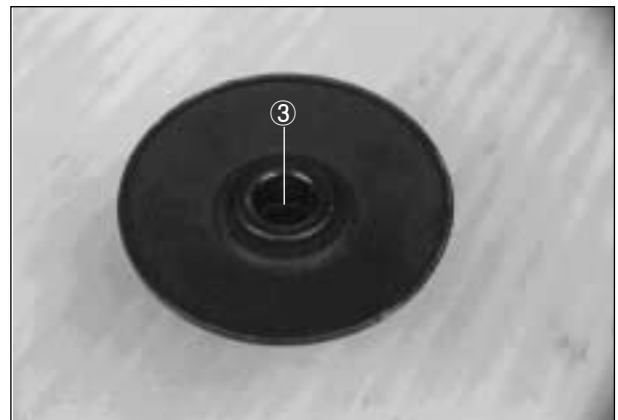
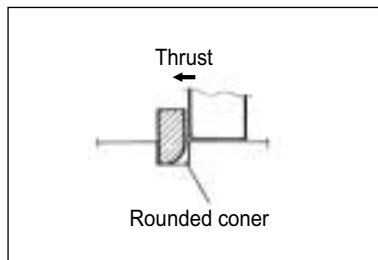
Take care that hit inner race of the bearing.
(Fall to ring in the bearing a case.)



- Install the circlip ③.

CAUTION

Instert surely in the circlip groove.

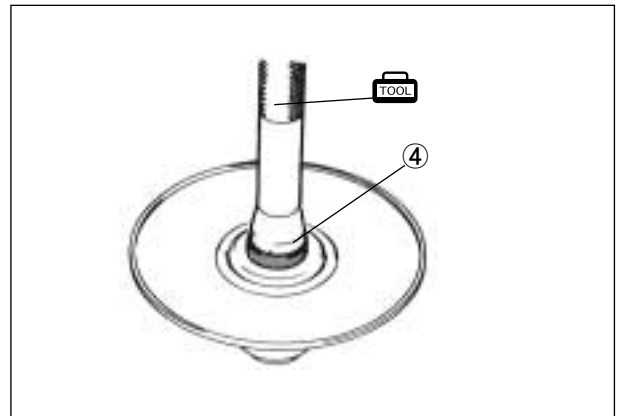


- Install the bearing ④ with the special tool.

 Bearing installer : 09943-88211

CAUTION

A mark part of the bearing is pointed to the outside.

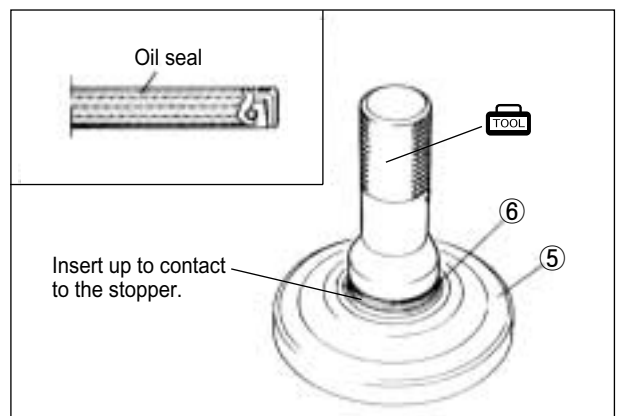


- Install the new oil seals (⑤, ⑥) to the movable driven face with the special tool.

 Bearing installer : 09913-76010

- Apply **SUPER GREASE "A"** to the lip of oil seals and groove of movable driven face's inside.

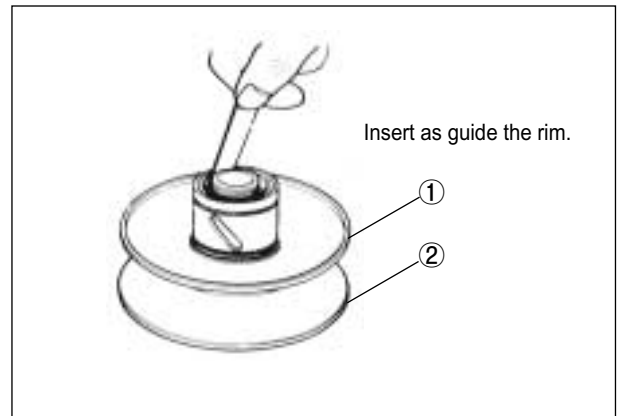
 Super Grease "A"



- Install the movable driven face ① to the fixed driven face ②.

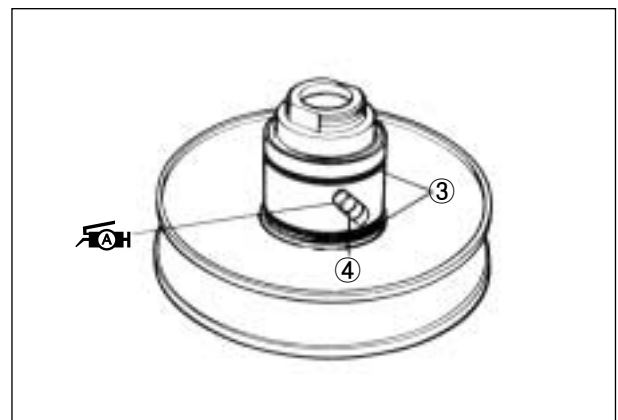
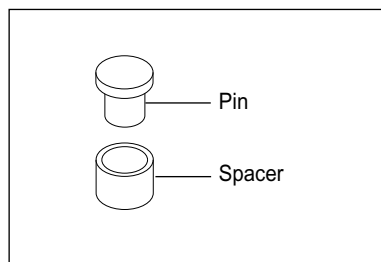
CAUTION

When reinstalling the movable driven face to the fixed driven face, make sure that the oil seal is positioned properly.



- Position the two O-ring ③.
- Install the pin ④ at three places on the driven face hub.
- Apply **SUPER GREASE "A"** lightly to the cam part where the pins are placed.

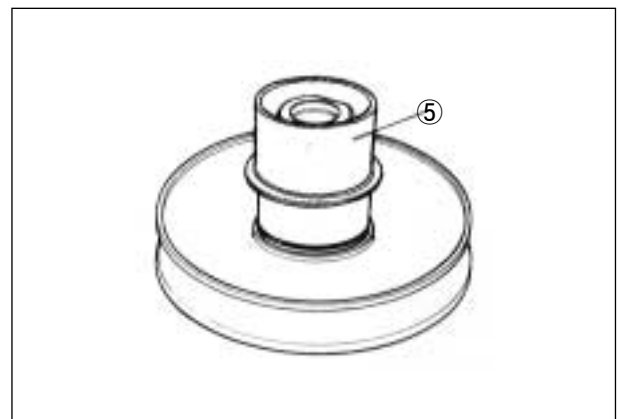
 Super Grease "A"



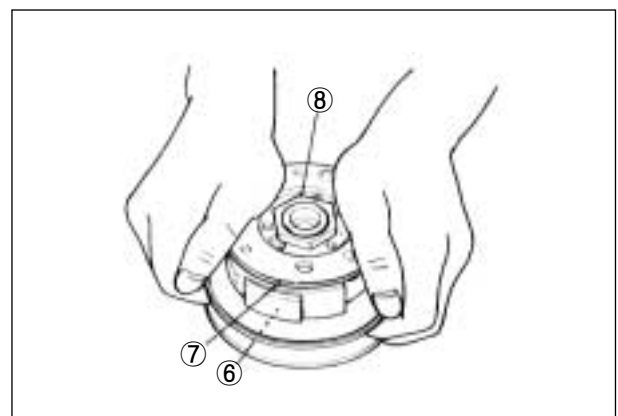
- Install the movable driven face seat ⑤.

CAUTION

The seat is installed rotatable naturally.
The O-ring get damaged, in case of installed by force.





- Install the spring ⑥.
- Install the clutch shoe assembly ⑦ and nut ⑧.

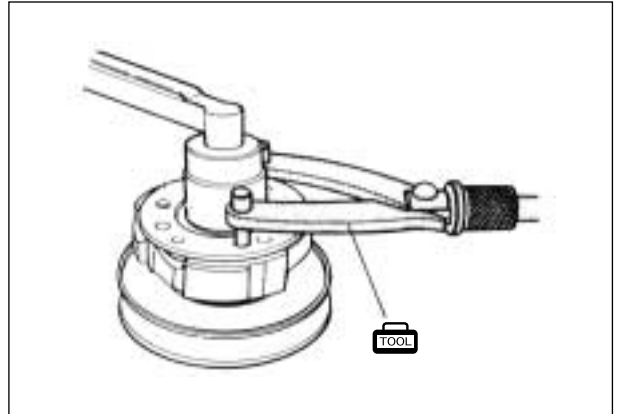


3-35 ENGINE

- Tighten the clutch shoe nut to the specified torque with the special tool.

 Rotor holder : 09930-40113

 Clutch shoe nut : 40~60 N · m (4.0~6.0 kg · m)

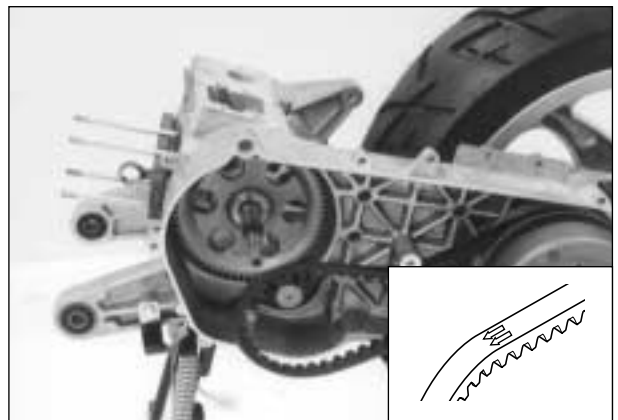


- Insert the V-belt between the driven faces as deep inside as possible while pulling the movable driven face all the way outside to provide the maximum belt clearance.

CAUTION


The V-belt should be positioned so that the arrows on the belt periphery point the normal turning direction.

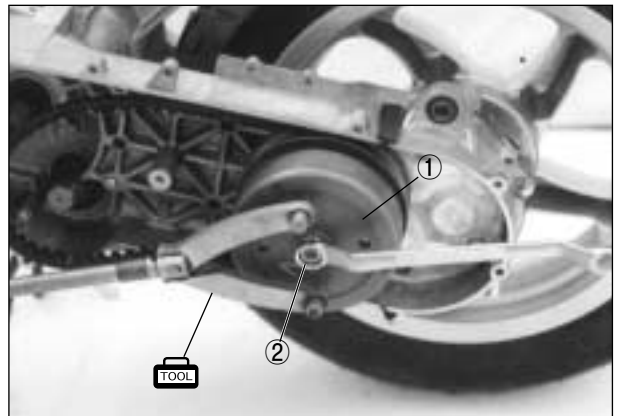
The V-belt contact face on the driven faces should be thoroughly cleaned to be free from oil.



- Thoroughly clean the clutch housing ① to be free from oil and position it over the clutch shoe assembly.
- Tighten the clutch housing nut ② to the specified torque with the special tool.

 Rotor holder : 09930-40113

 Clutch housing nut : 40~60 N · m (4.0~6.0 kg · m)



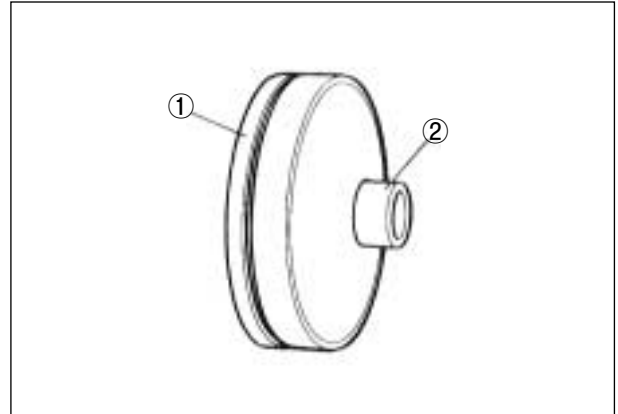
3-37 ENGINE

- Install the movable drive face cover ①.

⚠ CAUTION

Make sure that the movable drive plate is fully positioned inside, or the weight roller may come off.

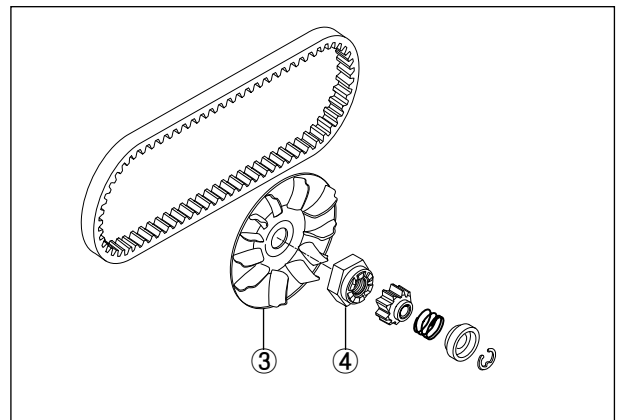
- Insert the spacer ②.




- Position the movable drive face subassembly on the crankshaft as shown in the photo.


⚠ CAUTION

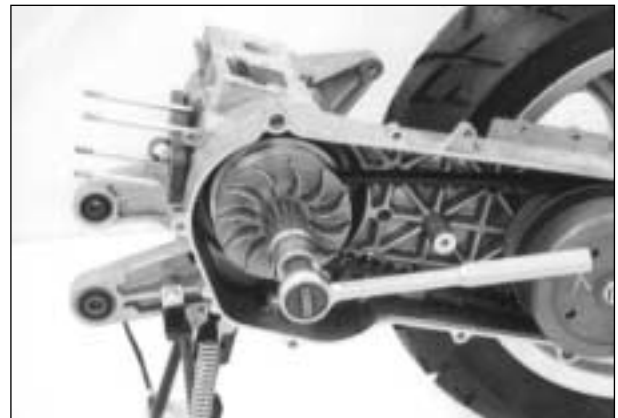
Thoroughly clean the V-belt contact to be from oil.



- Install the fixed drive face ③.
- Tighten the kick starter driven nut ④ to the specified torque with the special tool.

 Conrod holder : 09910-20115

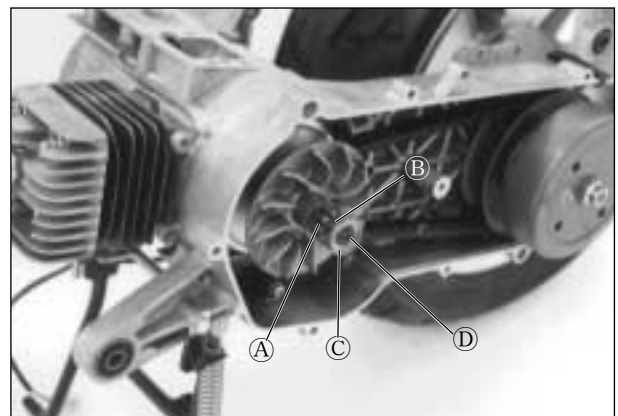
 Kick starter driven nut : 40~60 N · m (4.0~6.0 kg · m)



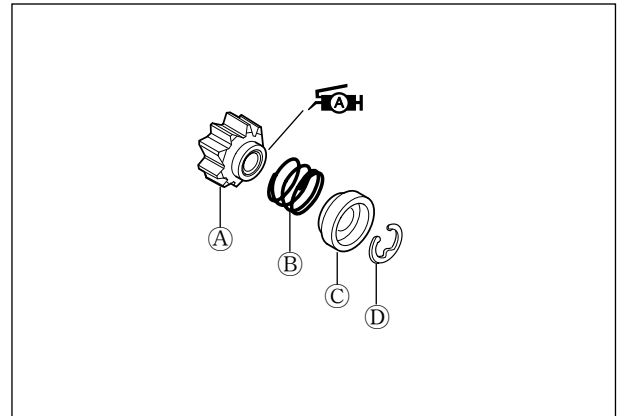
- Fill **SUPER GREASE "A"** in the groove provided inside sliding surface of the kick driven gear and install it **A** on the end of the crankshaft. Wipe off excess grease.

 Super Grease "A"

- Install the spring **B** and spacer **C**.




- Install the E-ring ④.

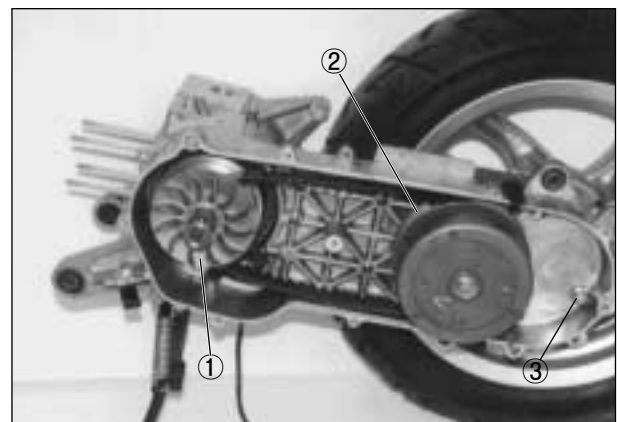


- Continue turning the fixed drive face ① by hand until the belt is seated in and both the drive and driven faces ② will move together smoothly without slip.
- Fill the final gear box with engine oil up to the level hole.

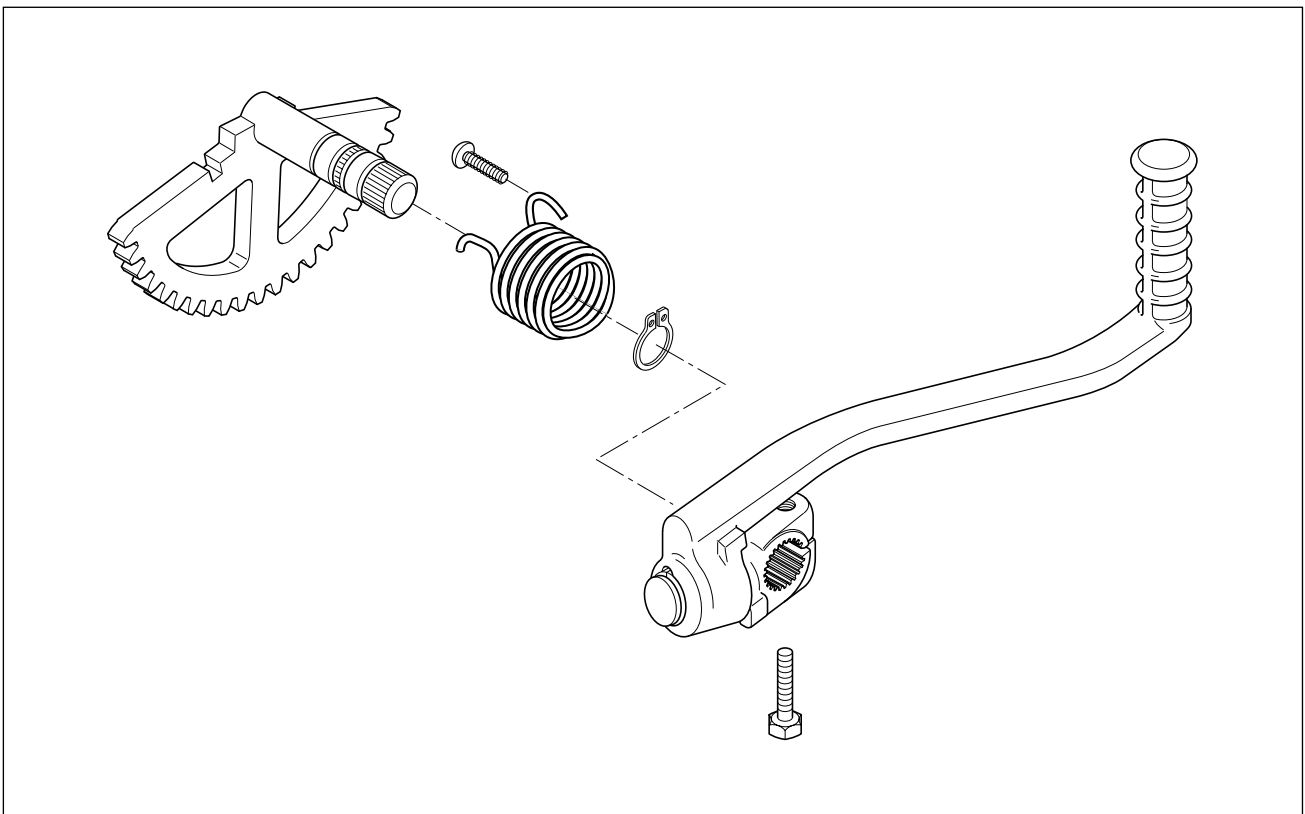
Transmission oil capacity	Replace	110 ml
	Overhaul	130 ml

- Tighten the oil level bolt ③ to the specified torque.

 Oil level bolt : 9~15 N · m (0.9~1.5 kg · m)



KICK STARTER

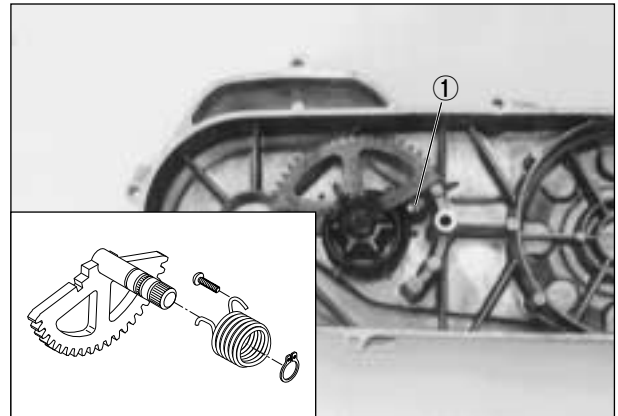


3-39 ENGINE

- Apply **SUPER GREASE “A”** lightly on the kick starter shaft rolling surface and install it on the crankcase cover.

 Super Grease “A”

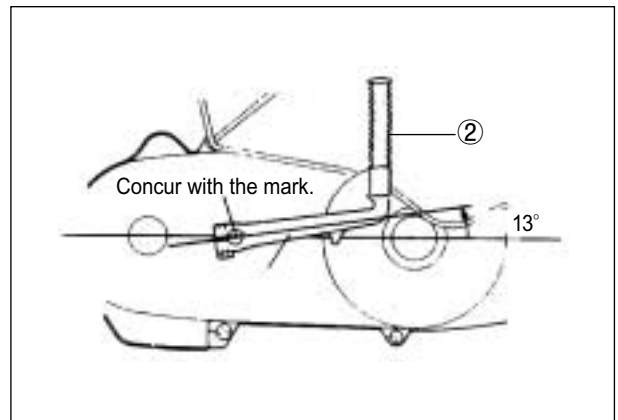
- Position the kick starter shaft return spring and hook the spring end on the crankcase cover boss ①.




- Install the clutch cover and kick starter lever ②.

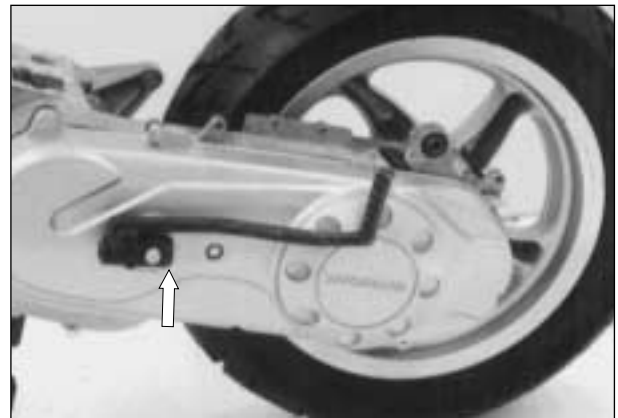
 **CAUTION**

Install the kick starter lever as shown in the illustration.

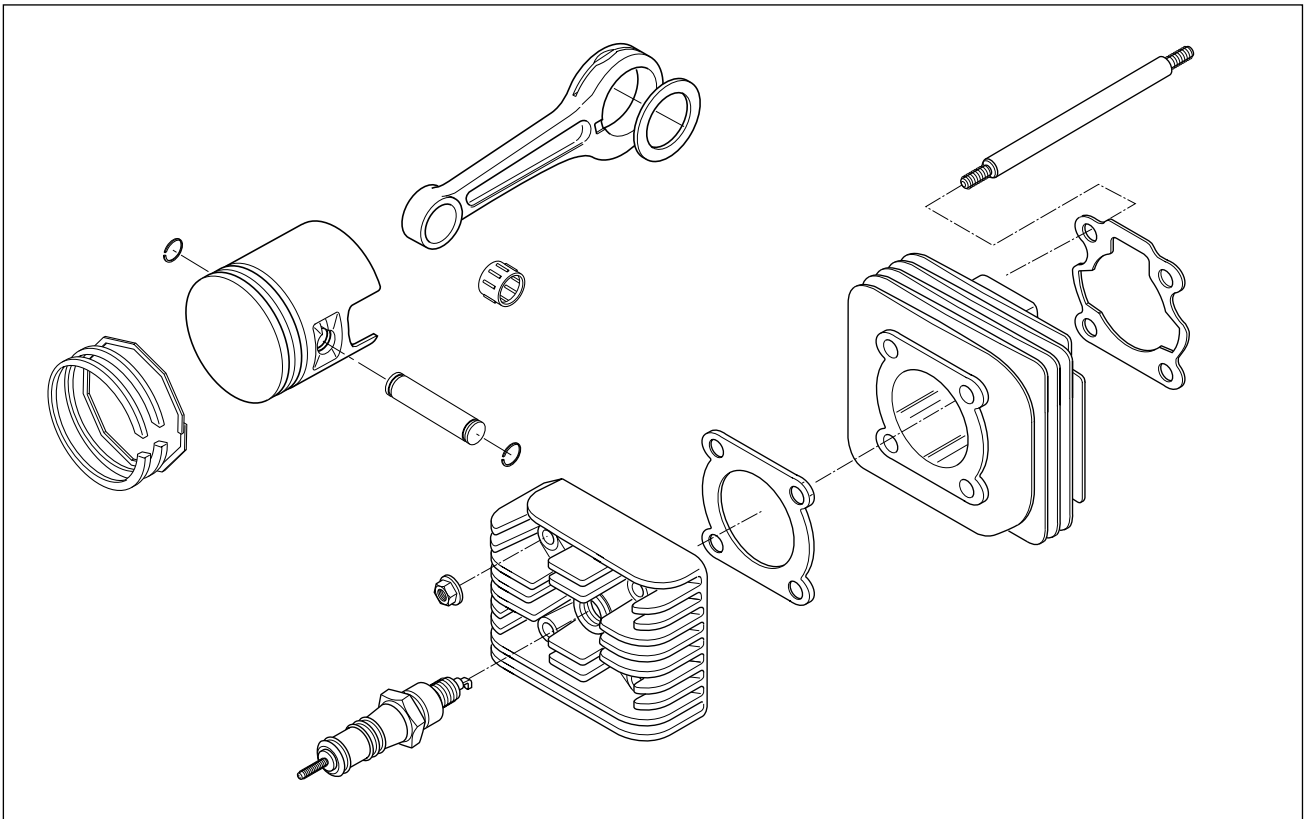


- Tighten the kick starter lever bolt to the specified torque.

 Kick starter lever bolt : 8~12 N · m (0.8~1.2 kg · m)



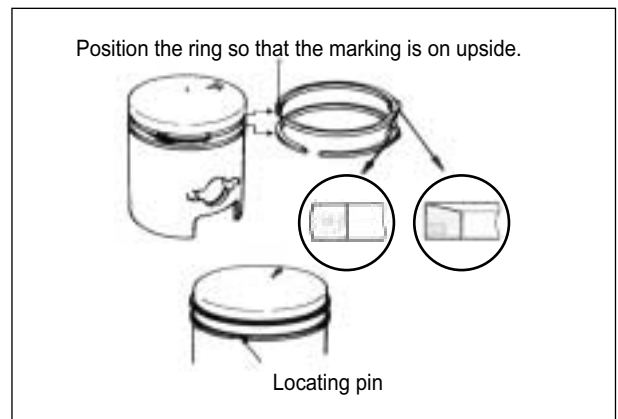
PISTON



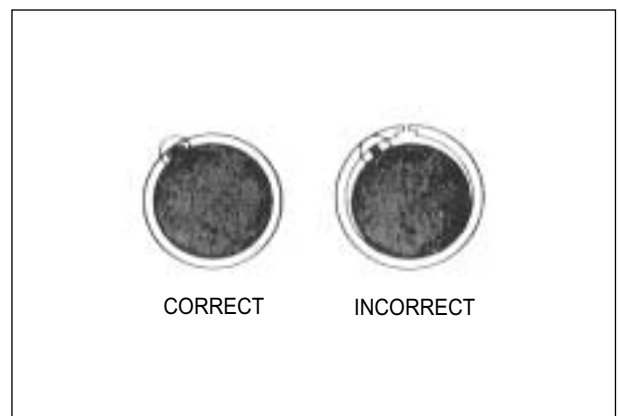
- Install the piston rings on the piston.
 - 1st - Keystone ring
 - 2nd - Barrel face ring
 - └ Expander ring

CAUTION

Position the ring so that the marking is on upside.



- It is extremely important that, when the piston is fed into the cylinder, each ring in place should be so positioned as to hug the locating pin as shown in the illustration.

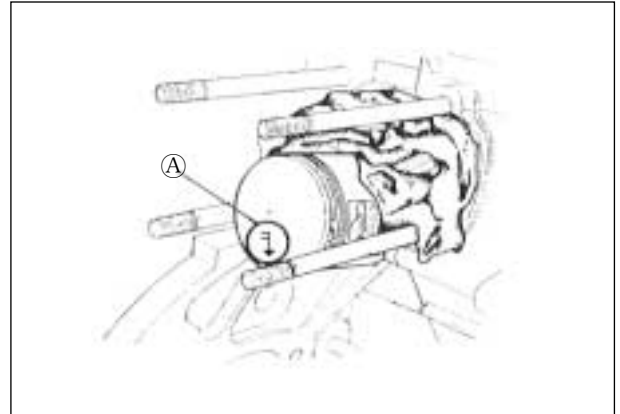


3-41 ENGINE

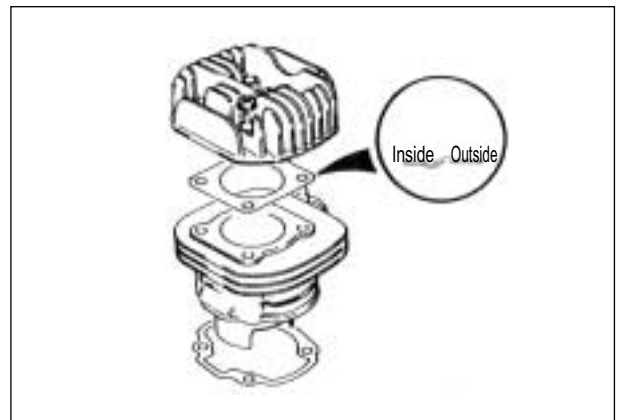
- Apply engine oil on the piston pin and install the piston to the conrod.

⚠ CAUTION

The arrow mark **Ⓐ** on the piston head should point the exhaust side.

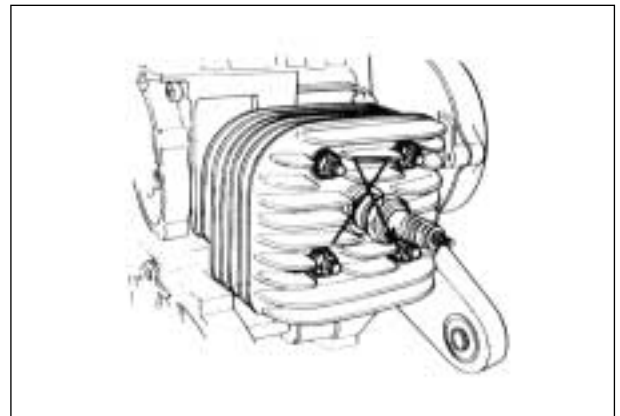


- The circlip should be mounted in such a position that the mating ends of the circlip do not coincide with the groove portion of the piston.
- Position the cylinder base gasket.
- Apply engine oil on the piston and cylinder wall surfaces and install the cylinder over the piston carefully.
- Install the cylinder head gasket and cylinder head.

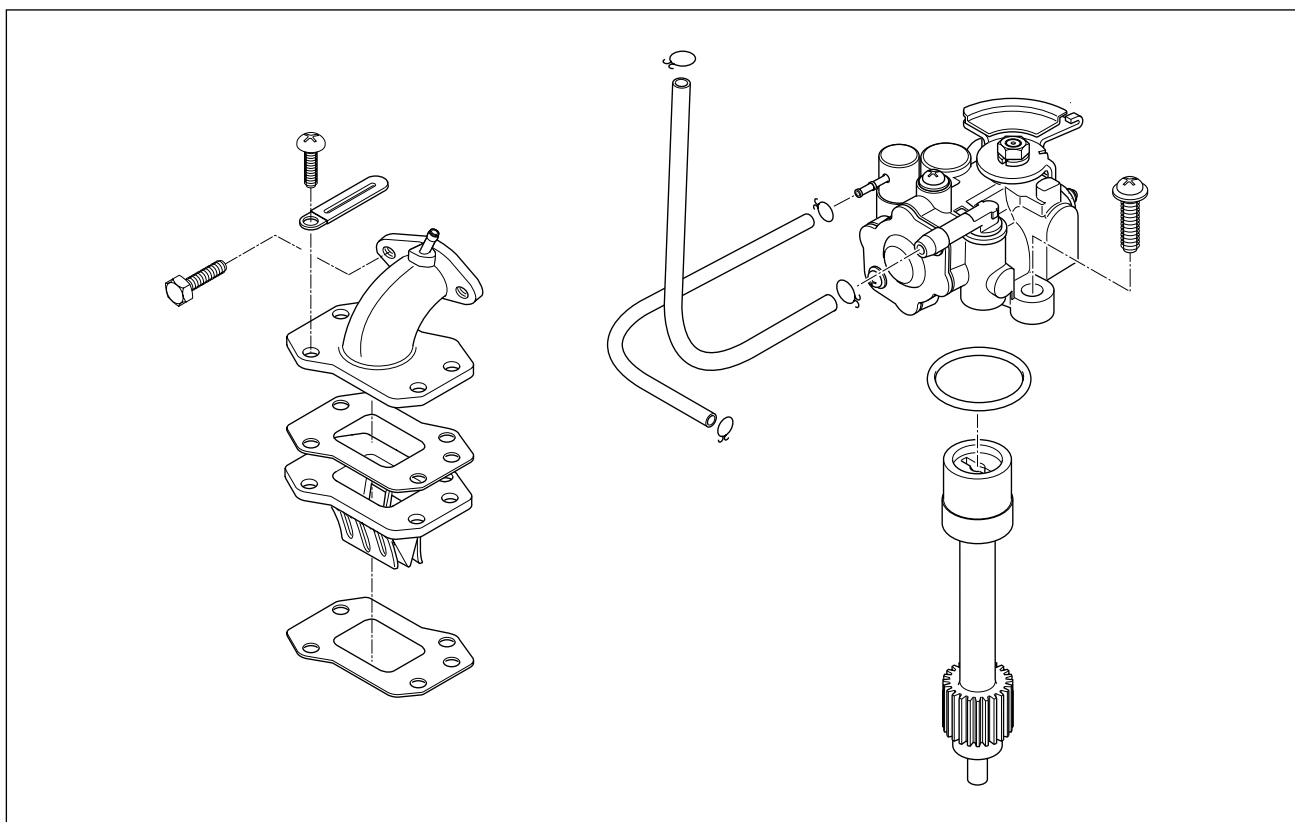


- Tighten the cylinder head nut to the specification, and tighten it diagonally several times as shown in the illustration.

🔧 Cylinder head nut : 8~12 N · m (0.8~1.2 kg · m)

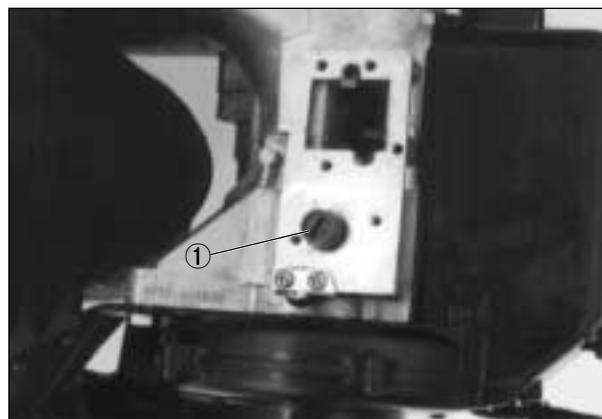


OIL PUMP AND INTAKE PIPE




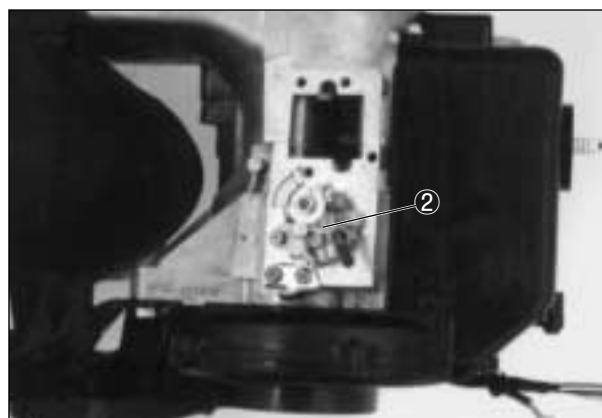
- Apply **SUPER GREASE "A"** to the oil pump driven gear ① and install it to the crankcase.

 Super Grease "A"



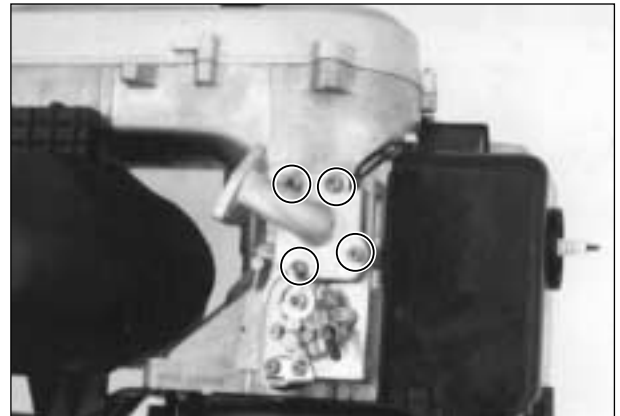
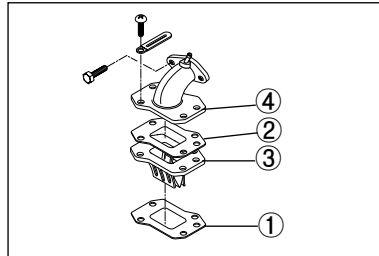
- Install the oil pump ② and tighten it to the specified torque.

 Oil pump bolt : 3~5 N · m (0.3~0.5 kg · m)

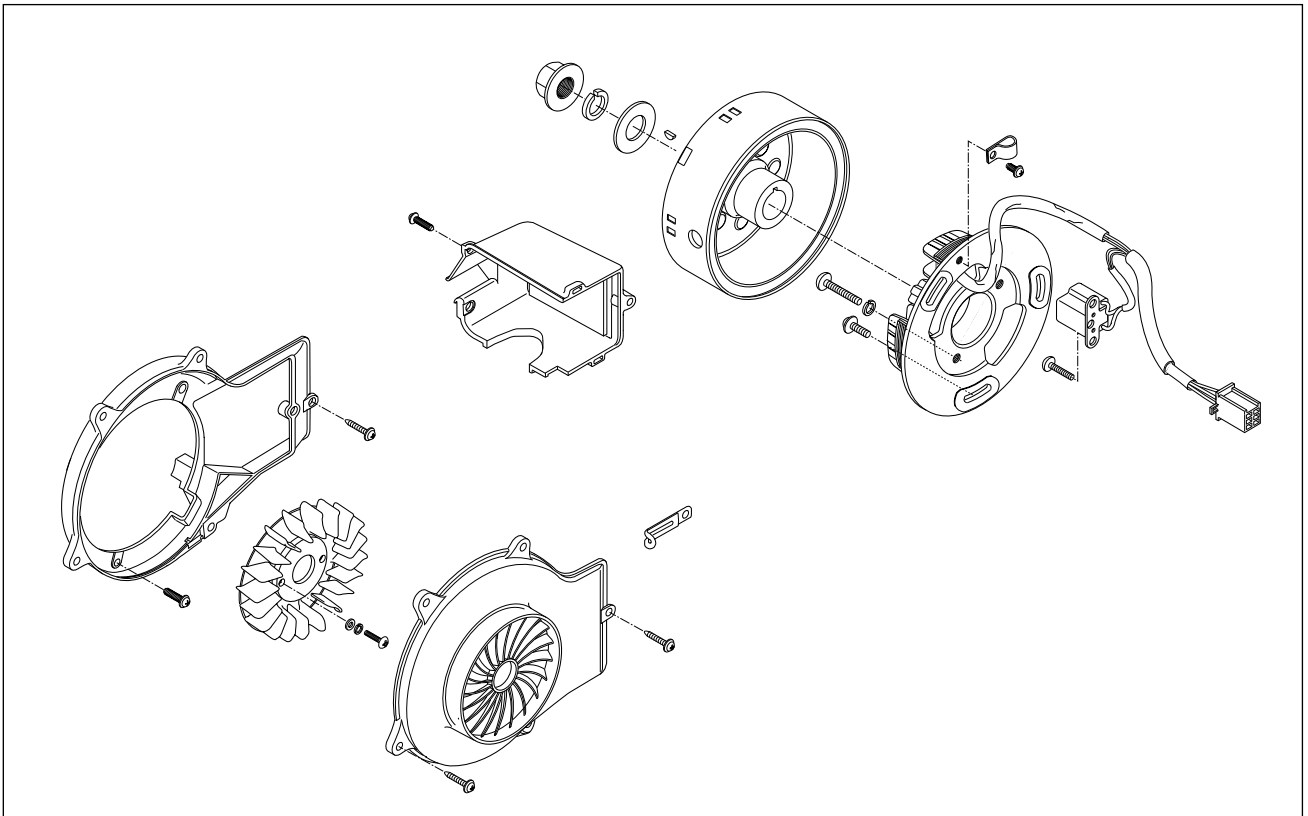


3-43 ENGINE

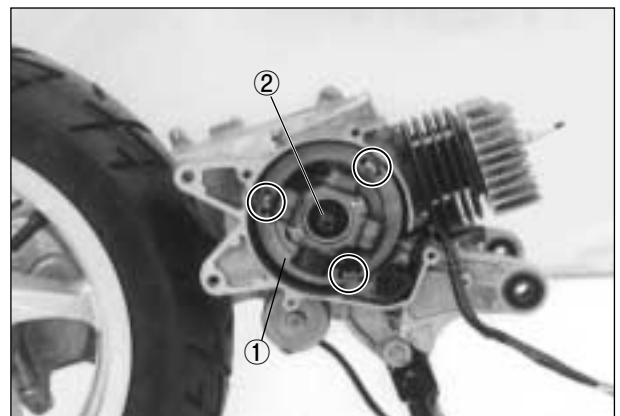
- Install the reed valve gasket ①, intake pipe gasket ② and intake pipe ④ with reed valve ③ to the crankcase.




MAGNETO





- Degrease the tapered portion of the crankshaft and also the magneto rotor.
- Install the stator ①.
- Install the key ②.

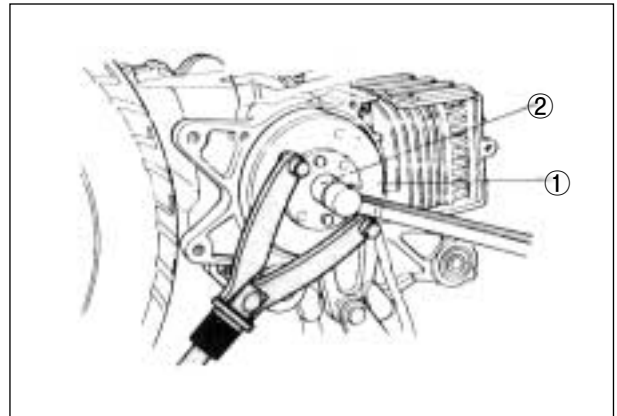


- Install the rotor ①.
- Apply **THREAD LOCK “1324”** to the rotor nut ② and tighten it to the specified torque with the special tool.

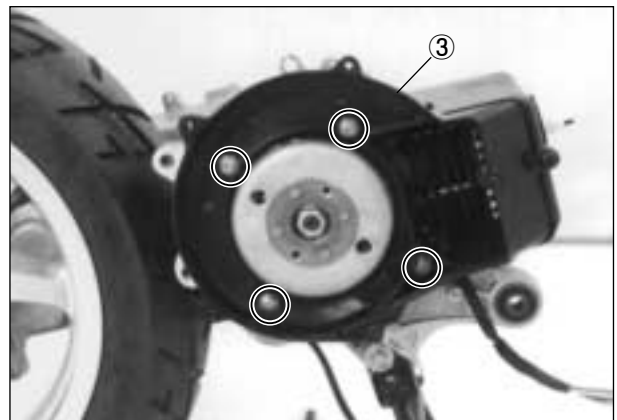
 Thread Lock “1324”

 Rotor holder : 09930-40113

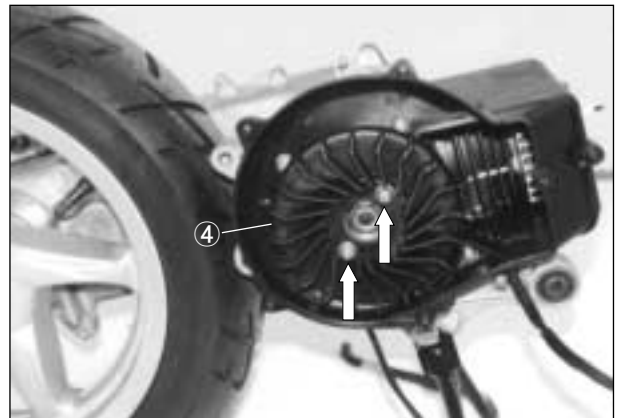
 Magneto rotor nut : 35~45 N · m (3.5~4.5 kg · m)



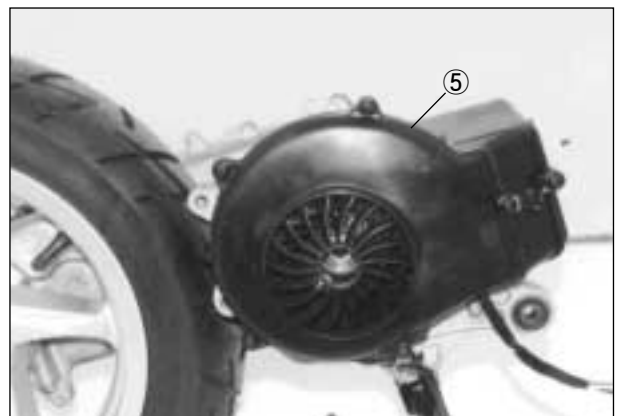
- Install the fan case ③.
- Install the magneto lead wire and starting motor lead wire.



- Install the cooling fan ④.



- Install the cooling fan cover ⑤.



MUFFLER

● Tighten the exhaust pipe bolts and muffler mounting bolts to the specified torque.

- ☑ Exhaust pipe bolt : 8~12 N · m (0.8~1.2 kg · m)
- ☑ Muffler mounting bolt : 18~28 N · m (1.8~2.8 kg · m)

