

ENGINE

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ENGINE COMPONENTS REMOVABLE WITH ENGINE IN PLACE

The parts listed below can be removed and reinstalled without removing the engine from the frame.
Refer to the parts listed in this section for removal instructions.

ENGINE LEFT SIDE		ENGINE CENTER		ENGINE RIGHT SIDE	
	Page		Page		Page
Gearshift lever	3-5	Cylinder head	3-10	Exhaust valve inspection window	3-10
Engine sprocket	3-16	Cylinder	3-11	Clutch cover	3-12
Magneto cover	3-15	Piston	3-11	Primary drive gear	3-13
Magneto rotor	3-15	Piston pin	3-11	Primary driven gear	3-13
Stator coil	3-15			Clutch assembly	3-12
Balancer shaft	3-17			Gearshift shaft	3-14
				Balancer drive gear	3-13
				Balancer driven gear	3-13
				Kick starter shaft	3-14
				Water pump	4-8

ENGINE REMOVAL AND REINSTALLATION

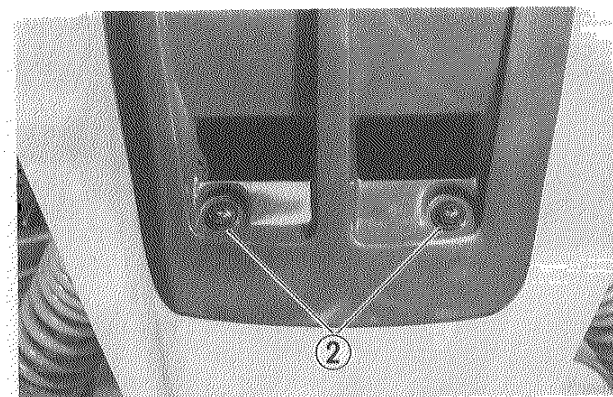
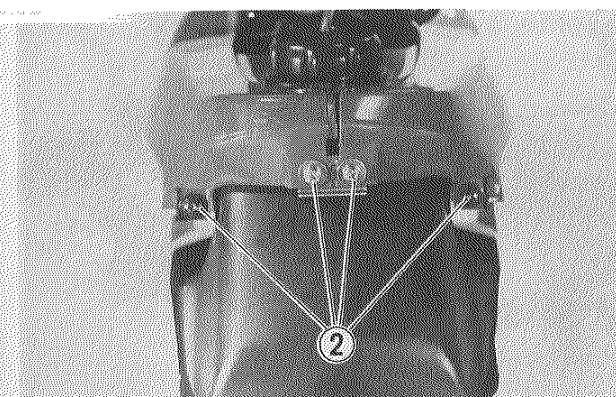
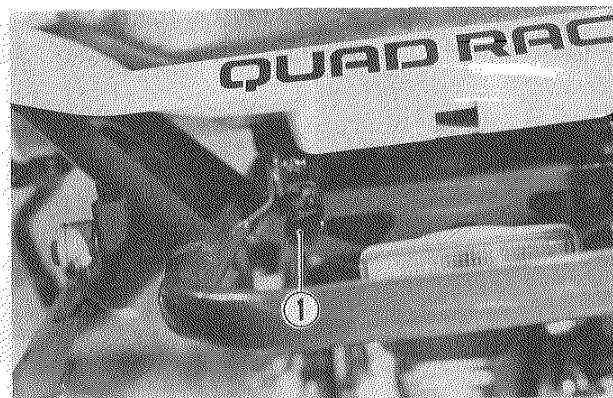
ENGINE REMOVAL

Before taking the engine out of the frame, wash the engine with a steam cleaner and drain transmission oil, etc. The procedure of engine removal is sequentially explained in the following steps, and engine reinstallation is effected by reversing the removal procedure.

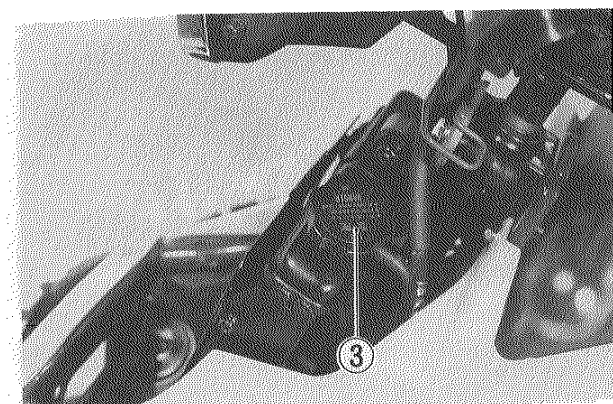
- Remove the seat by pulling the lever ①.
- Remove the center fender by removing the six screws ②.

NOTE:

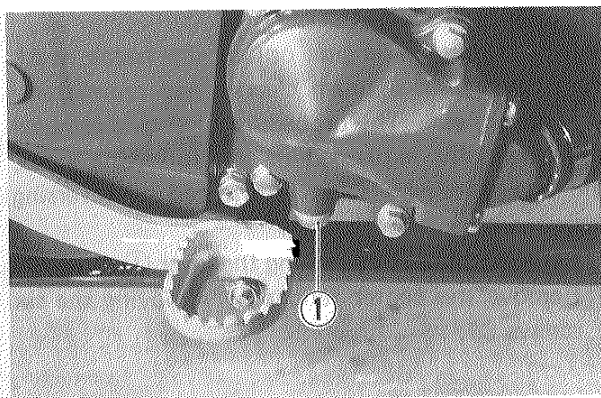
Drain transmission oil. (Page 2-3.)



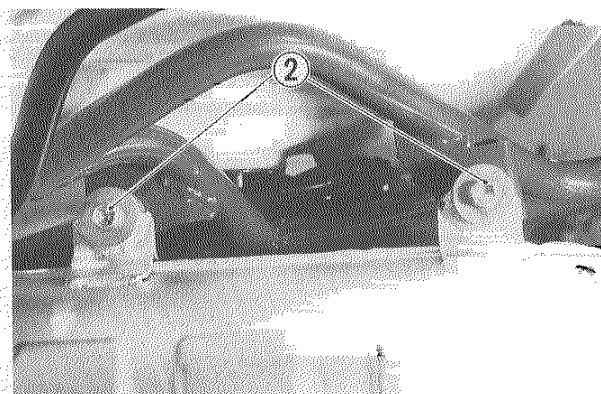
- Remove the radiator cap ③.



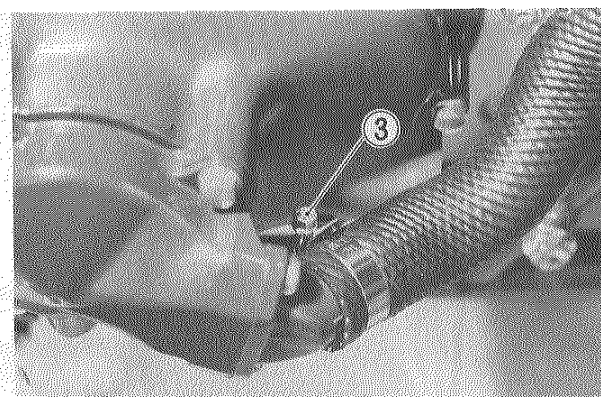
- Drain coolant out of the engine by removing the drain plug ①.



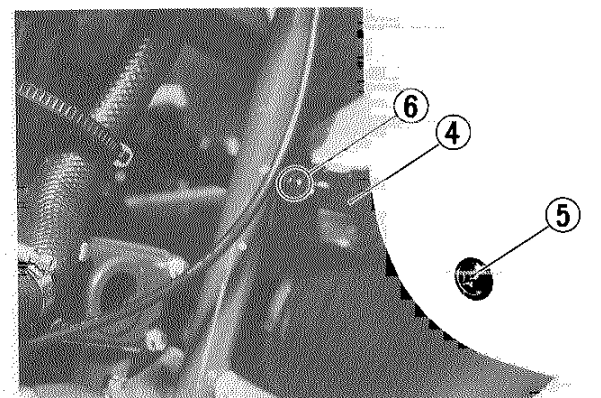
- Remove the muffler out of the frame by removing the two mounting bolts ②.



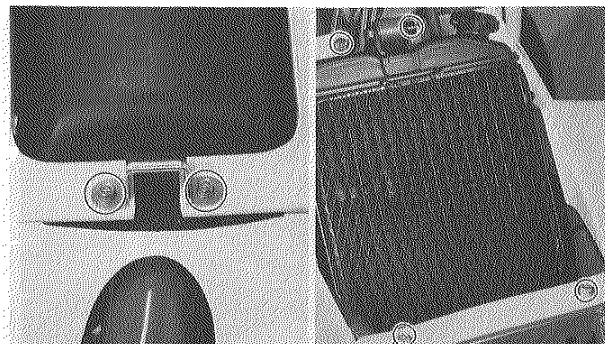
- Remove the radiator hose off the water pump cover by loosening the clamp screw ③.



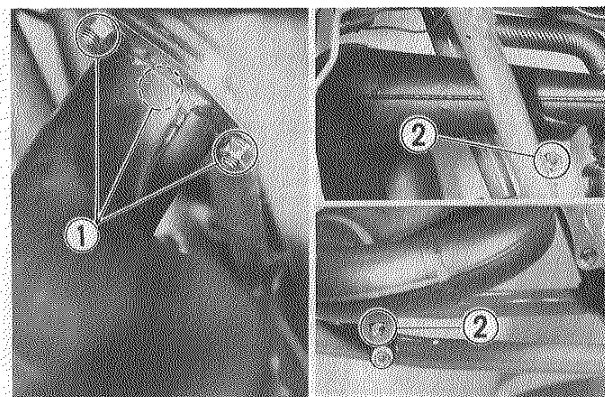
- Remove the front fender mounting bracket bar ④ by removing the screws ⑤ and bolts ⑥, right and left.



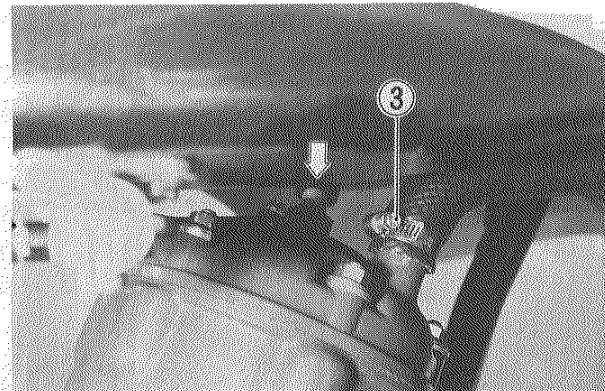
- Remove the front fender by removing the bolts.



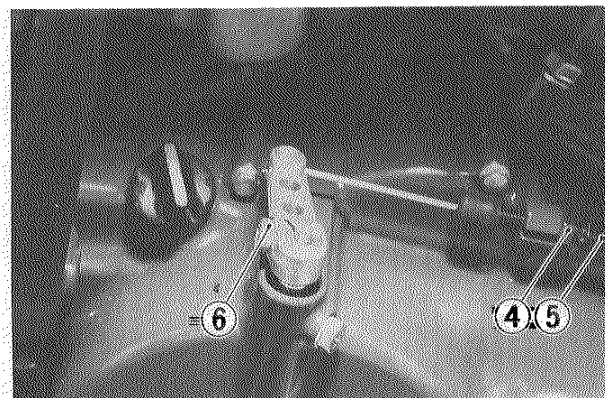
- Remove the exhaust pipe by removing the three nuts ① and two support bolts ②.



- Remove the radiator hose off the cylinder head by loosening the clamp screw ③.
- Remove the spark plug cap out of the spark plug.

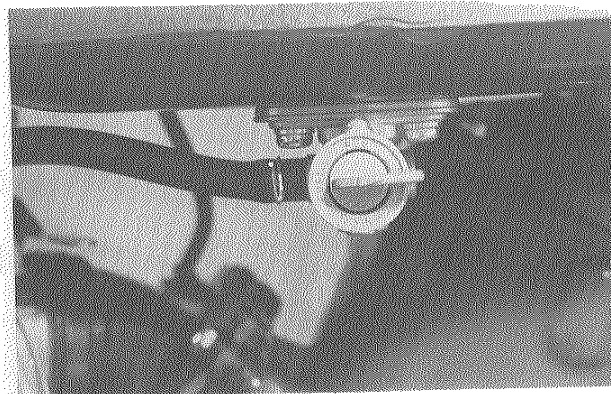


- Loosen the lock nut ④ and screw in the adjuster ⑤ to provide cable slack, and then disconnect the clutch cable by removing the bolt ⑥.

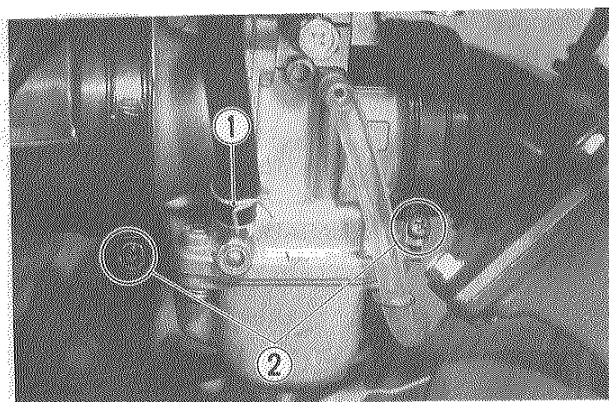


3-5 ENGINE

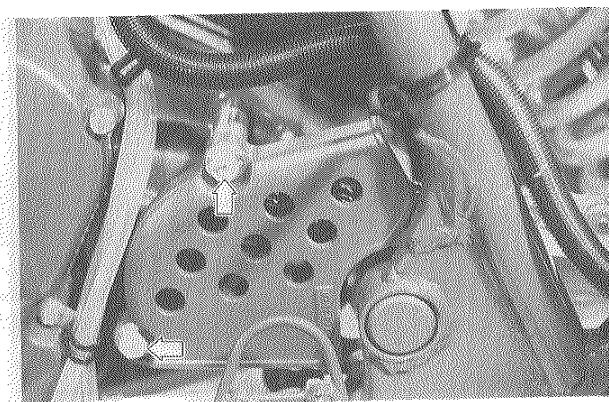
- Turn the fuel cock to the "OFF" position.



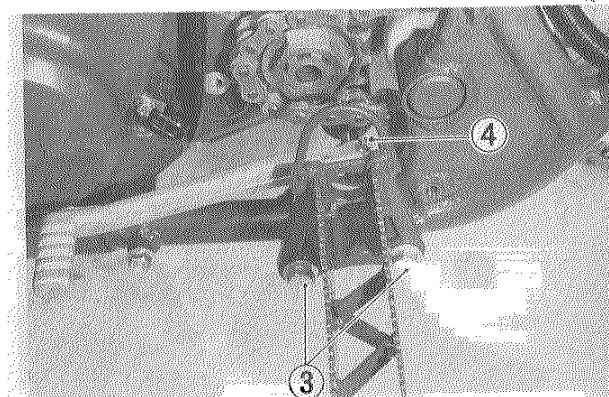
- Disconnect the fuel hose from the carburetor by sliding the clip ① sideways.
- Remove the carburetor out of the engine by loosening the two clamp screws ②.



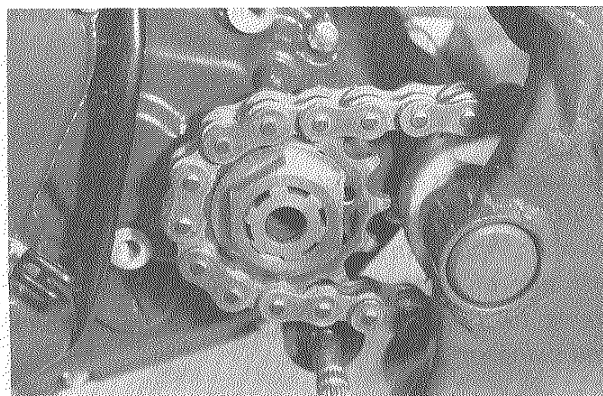
- Remove the engine sprocket cover by removing the two bolts.



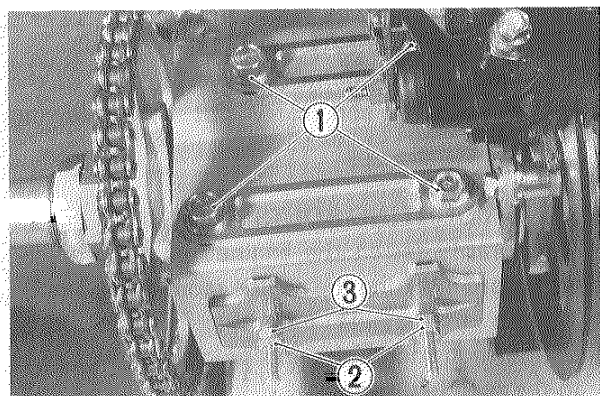
- Remove the left footrest by removing the two bolts ③.
- Remove the gearshift lever by removing the bolt ④.



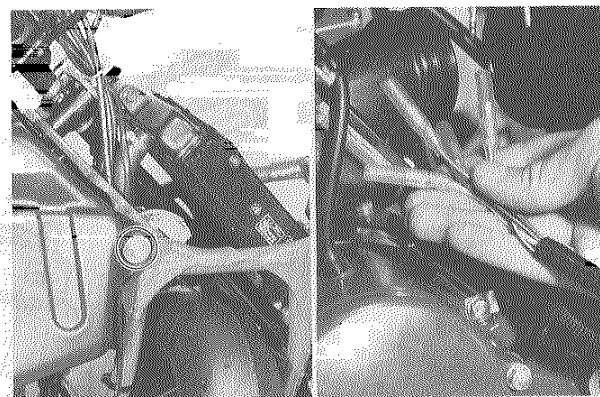
- Flatten the lock washer.
- Remove the engine sprocket nut while applying the rear brake tightly.



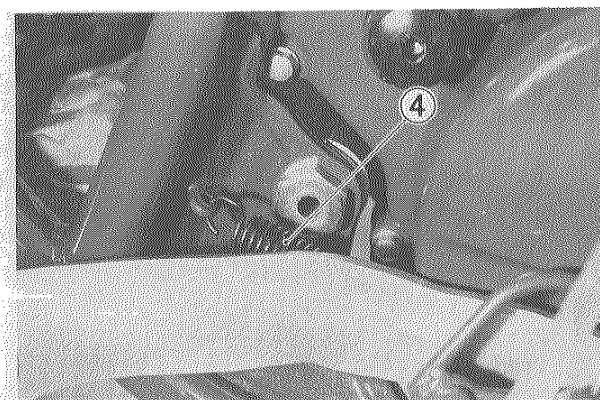
- Loosen the four pairs of bolts and nuts ①.
- Loosen the chain adjusting lock nuts ② and adjusting nuts ③, and make a slack on the chain.
- Remove the engine sprocket.



- Remove the fuel tank mounting bolts, right and left, and lift the fuel tank.
- Disconnect the magneto lead wires.



- Remove the brake pedal return spring ④.



- Remove the engine mounting bracket bolts and engine mounting bolts.
- Remove the swingarm pivot shaft.

NOTE:

Be careful not to draw out the swingarm pivot shaft completely from the right side swingarm pivoting hole. Insert the shaft or rod into the left side pivoting hole from the left side of the frame to keep the alignment of the frame holes and swingarm pivoting holes.

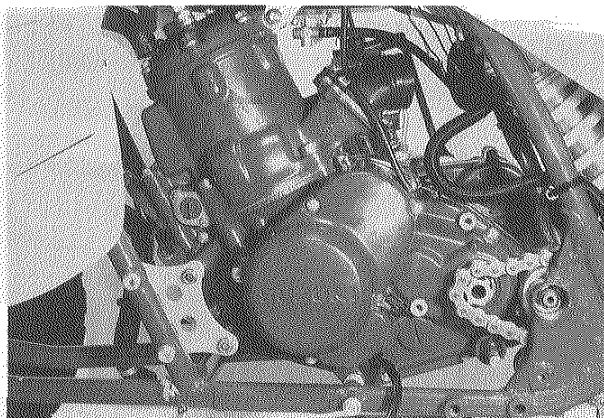
- Remove the engine out of the frame to the left side.

ENGINE REINSTALLATION

- Remount the engine in the reverse order of the engine removal and carry out the following steps.

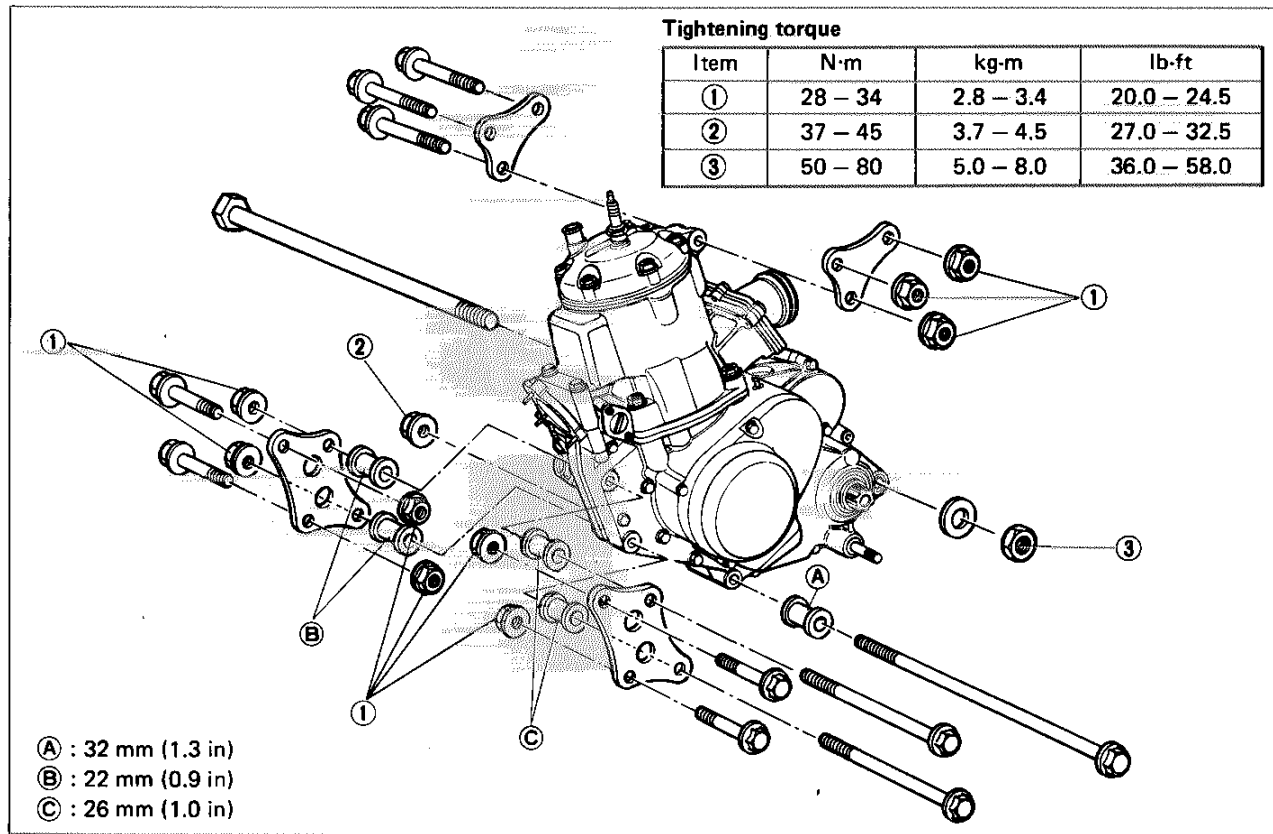
ENGINE MOUNTING BOLTS AND NUTS

- Temporarily fasten the engine mounting brackets before inserting the engine mounting bolts.
- Tighten the engine mounting bracket bolts, engine mounting bolts and swingarm pivot nuts to the specified torque.



NOTE:

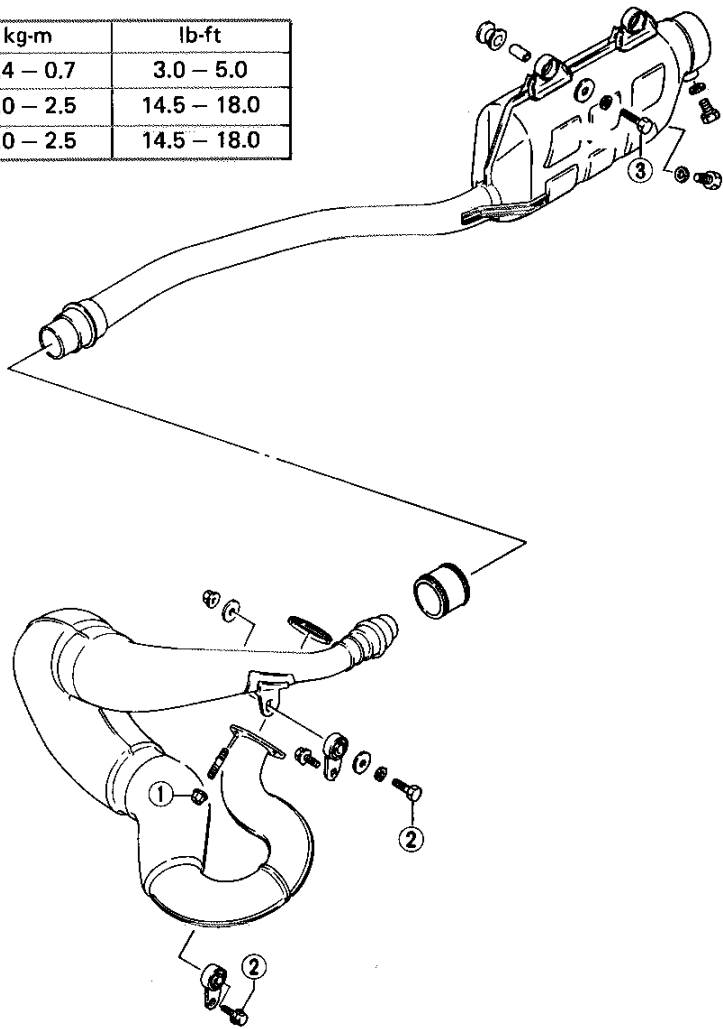
The engine mounting nuts are self-locking. Once the nut has been removed, it is no longer of any use. Be sure to use new nuts and tighten them to the specified torque.



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

Tightening torque

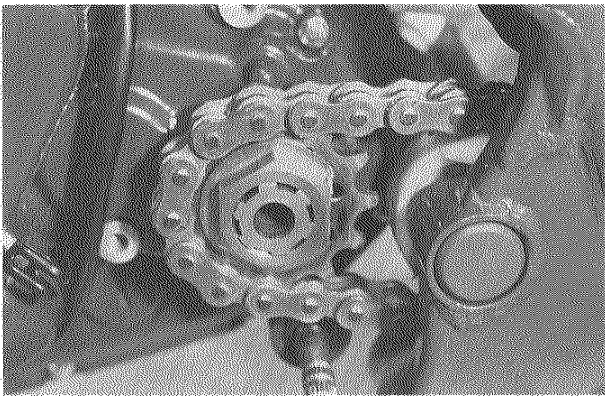
Item	N·m	kg·m	lb·ft
①	4 - 7	0.4 - 0.7	3.0 - 5.0
②	20 - 25	2.0 - 2.5	14.5 - 18.0
③	20 - 25	2.0 - 2.5	14.5 - 18.0



- Tighten the engine sprocket nut to the specified torque.

Tightening torque	80 - 100 N·m (8.0 - 10.0 kg·m) 58.0 - 72.0 lb·ft)
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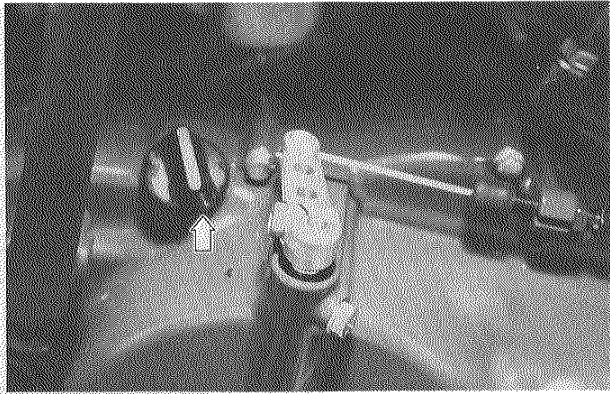
- Lock the nut by firmly bending the lock washer.



TRANSMISSION OIL

- Before starting the engine, make sure to install the specified amount of transmission oil into the engine.

Transmission oil when overhauling engine	1100 ml (1.16/0.97 US/Imp qt)
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ADJUSTMENT

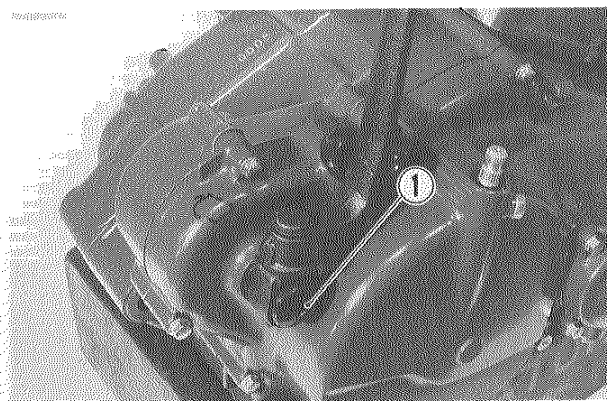
- After mounting the engine, route wiring harness, hoses and cables properly by referring to the sections for wire routing and cable routing, and adjust the following items to the specification.

	page
* Throttle cable play	2-7
* Clutch cable play	2-3
* Drive chain slack	2-4
* Engine idle r/min	2-6
* Filling cooling solution	2-9

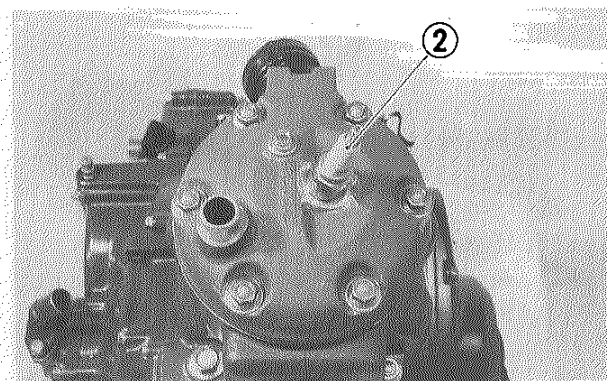
ENGINE DISASSEMBLY

- Remove the Allen bolt ① with the special tool and remove the kick starter lever.

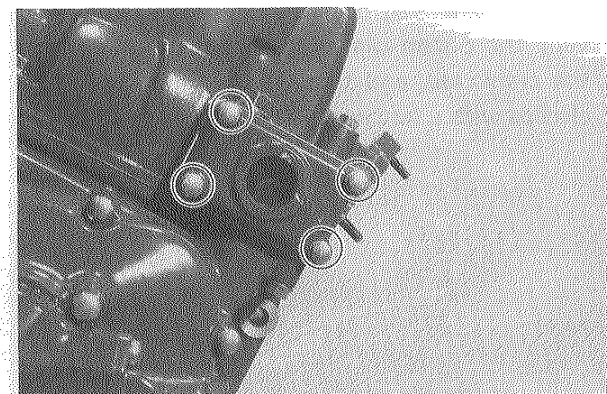
09914-25811

6 mm
"T" type hexagon wrench

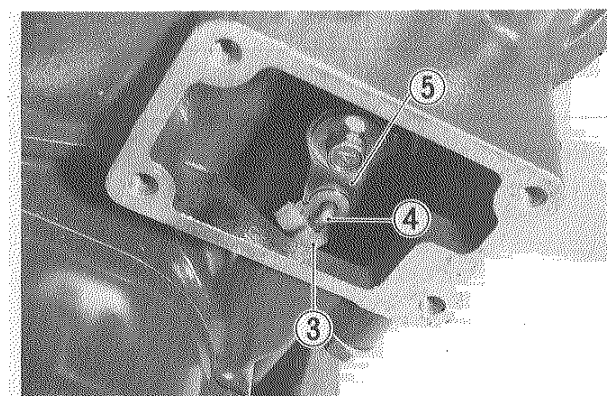
- Remove the spark plug ② and the six cylinder head nuts.
- Remove the cylinder head and its gasket.



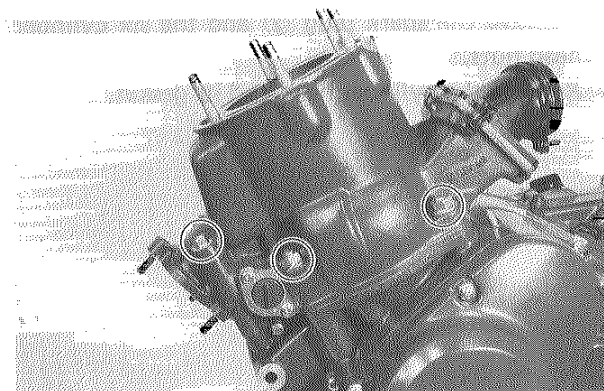
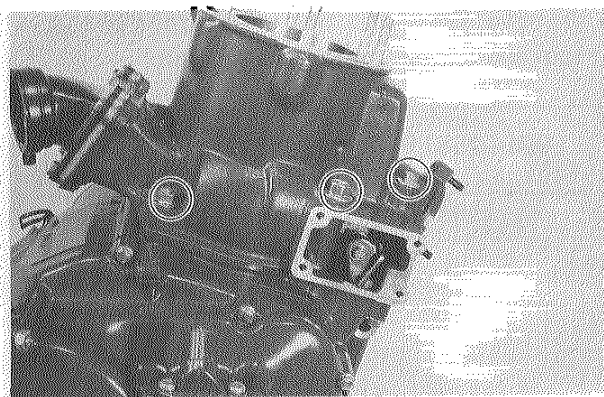
- Remove the exhaust valve inspection window by removing the four bolts.



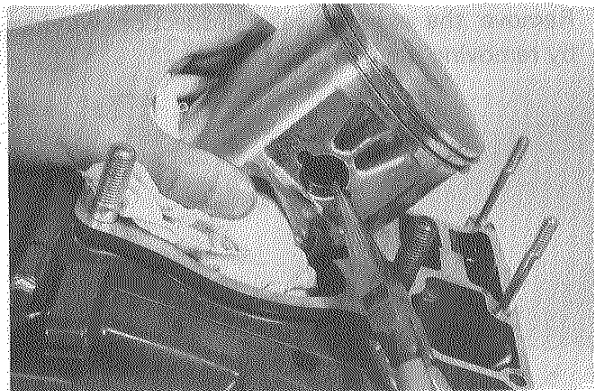
- Unhook the exhaust valve rod retainer clip ③ with a long-nose pliers.
- Disconnect the exhaust valve rod ④ from the exhaust valve lever ⑤.



- Remove the cylinder by removing the cylinder nuts and bolts.



- Place a clean rag over the cylinder base to prevent the piston pin circlip from dropping into the crankcase, and then remove the piston pin circlips with a long-nose pliers.

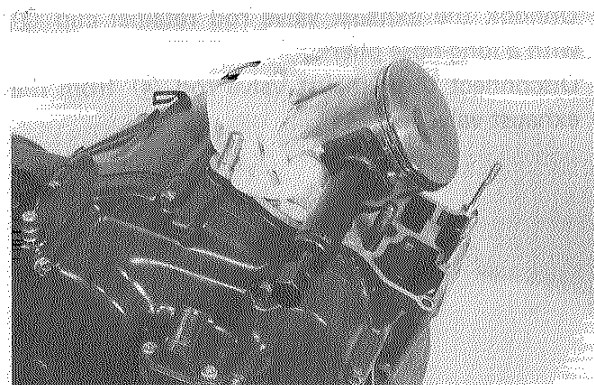


- Extract the piston pin with the special tool

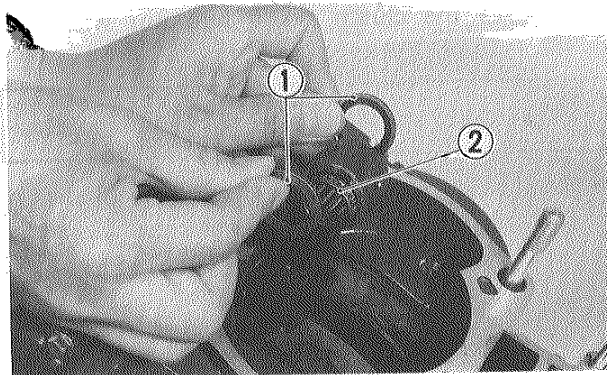
09910-34510

Piston pin puller

- Remove the piston.



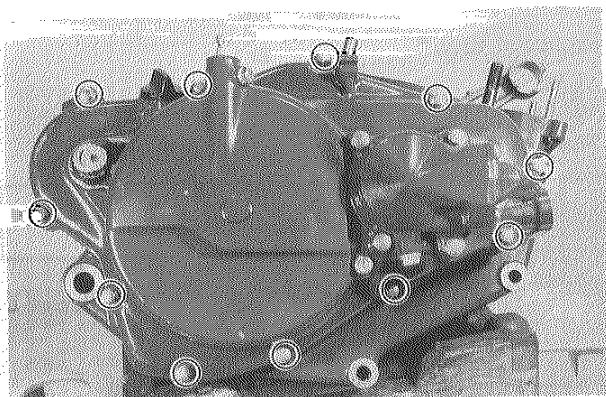
- Remove the two thrust washers ① and the bearing ②.



- Remove the clutch cover by removing the bolts.

NOTE:

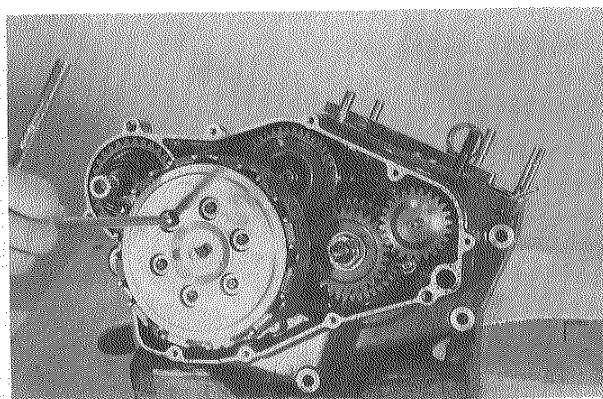
When servicing the water pump, refer to page 4-7 for details.



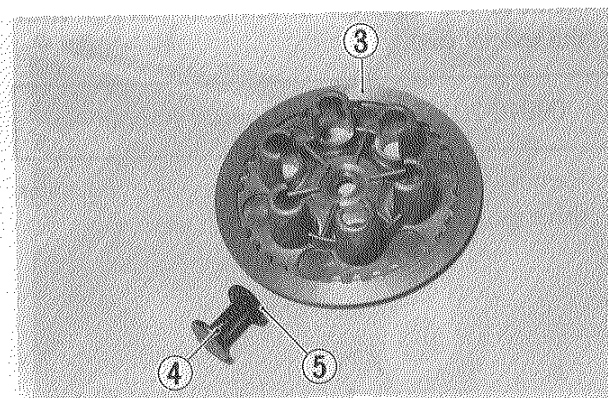
- Remove the six clutch pressure plate bolts with the special tool.

09910-20115

Conrod stopper



- Remove the six clutch springs, pressure plate ③, release rack ④ and thrust bearing ⑤.
- Remove the clutch drive and driven plates.

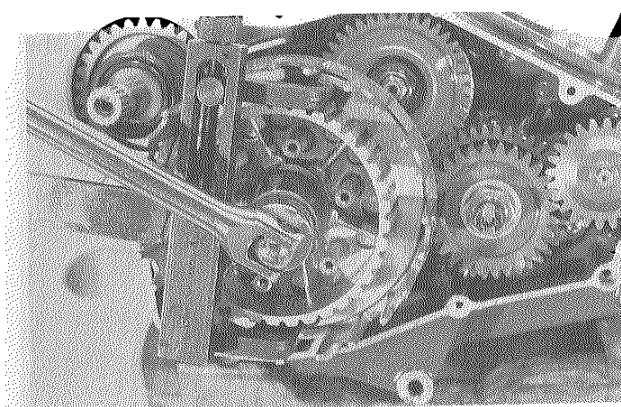


- Flatten the clutch sleeve hub nut lock washer.
- Remove the clutch sleeve hub nut with the special tool.

09920-53710

Clutch sleeve hub holder

- Remove the clutch sleeve hub, primary driven gear assembly, bearing, spacer and two washers.



- Remove the primary drive gear nut with the special tool.

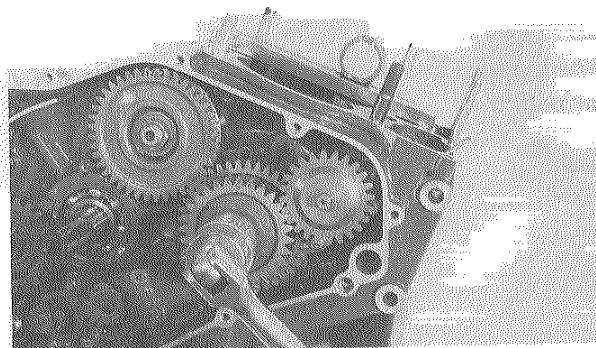
NOTE:

The primary drive gear nut is left hand thread.

09910-20115

Conrod stopper

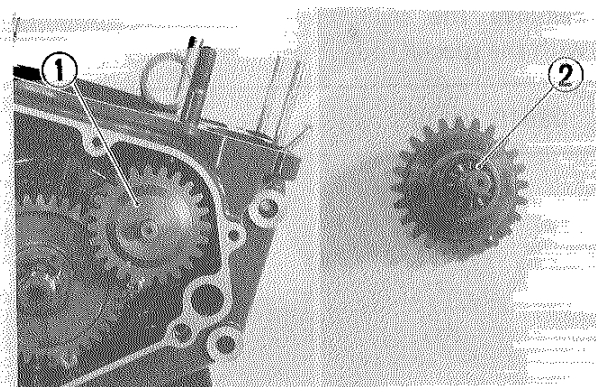
- Remove the concaved washer and the primary drive gear.



- Remove the exhaust valve governor assembly ① and the bearing ②.

CAUTION:

Do not attempt to disassemble the exhaust valve governor, it is not serviceable.

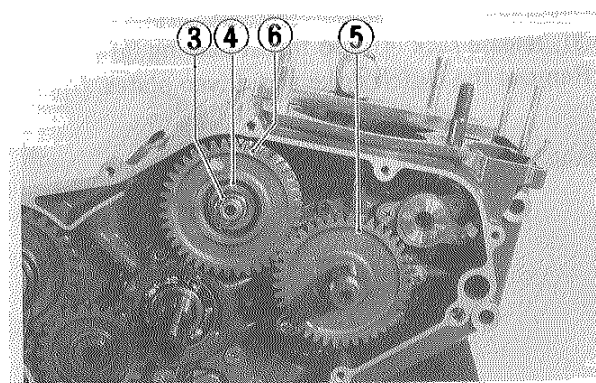


- Remove the balancer driven gear nut ③ with the special tool.

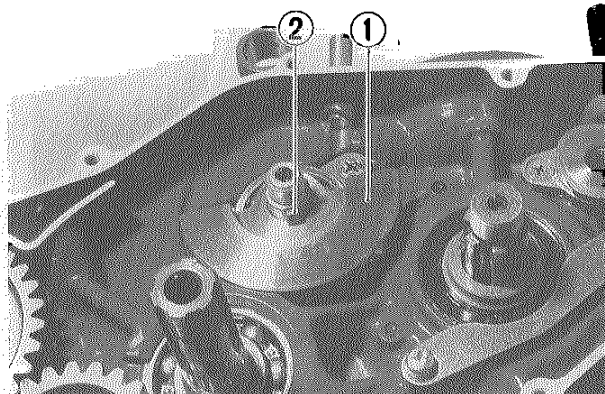
09910-20115

Conrod stopper

- Remove the concaved washer ④, balancer drive gear ⑤ and balancer driven gear ⑥.



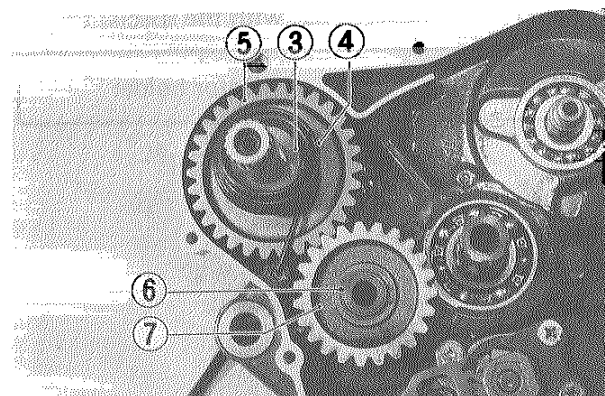
- Remove the right balancer weight ① and key ②.



- Remove the kick starter spring guide ③ and spring ④, and then remove the kick starter drive gear ⑤.
- Remove the snap ring ⑥ with the special tool, and then remove the kick starter idle gear ⑦.

09900-06107

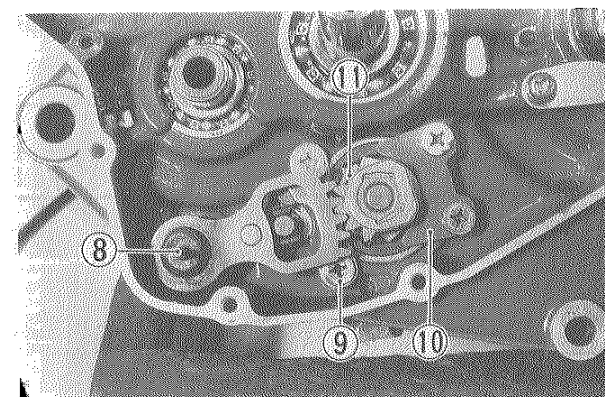
Snap ring pliers



- Extract the gearshift shaft ⑧.
- Remove the gearshift cam guide ⑨, pawl lifter ⑩ and cam driven gear ⑪ with the special tool.

09900-09003

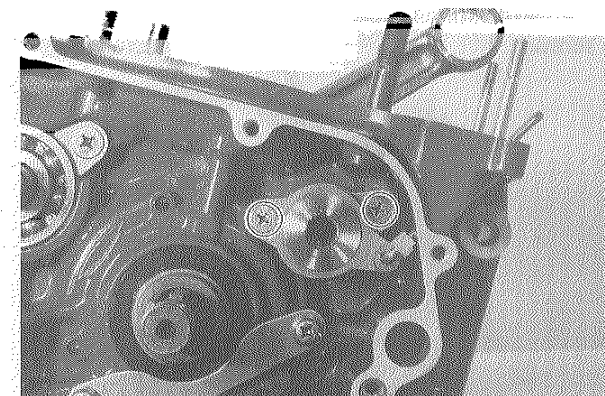
Impact driver set



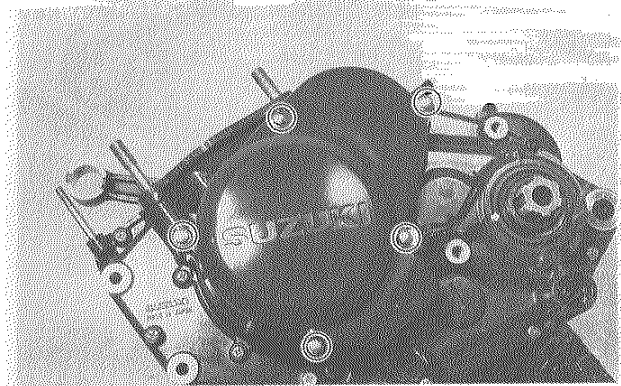
- Remove the exhaust valve actuator by removing the two screws with the special tool.

09900-09003

Impact driver set

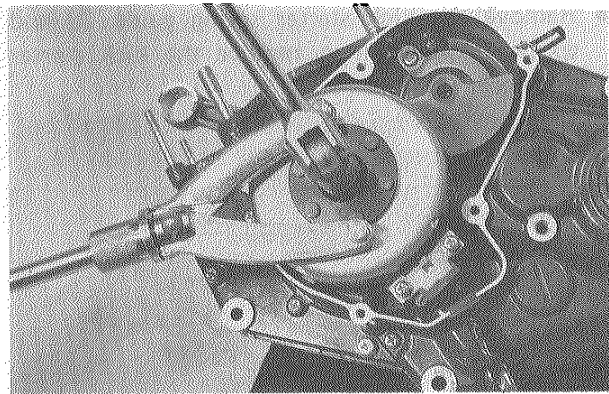


- Remove the magneto cover by removing the five bolts.



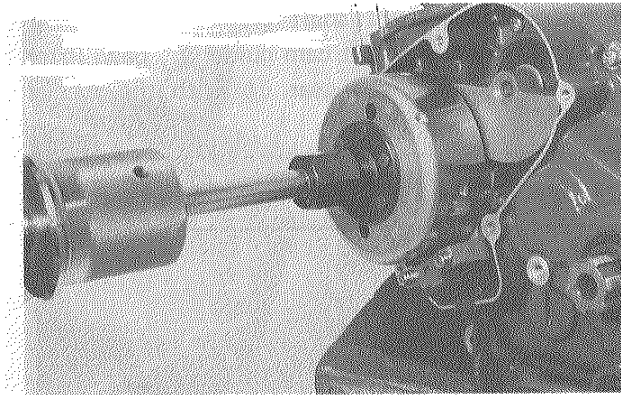
- Remove the magneto nut with the special tool.

09930-40113	Rotor holder
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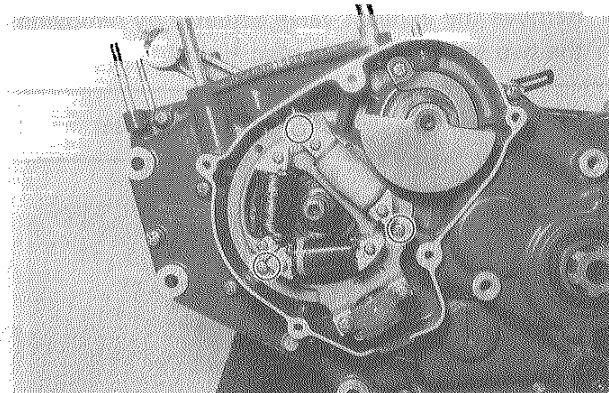


- Remove the magneto rotor with the special tools.

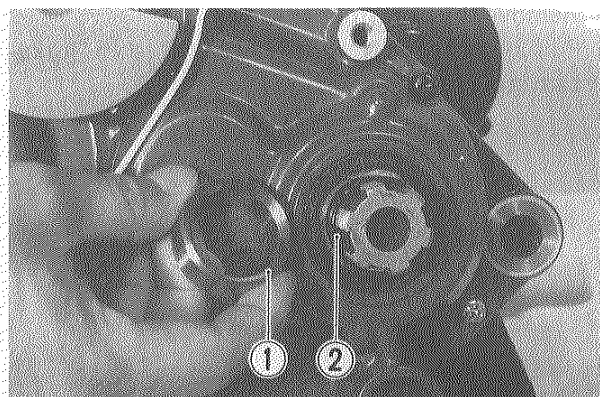
09930-30161	Attachment C
09930-30102	Sliding shaft



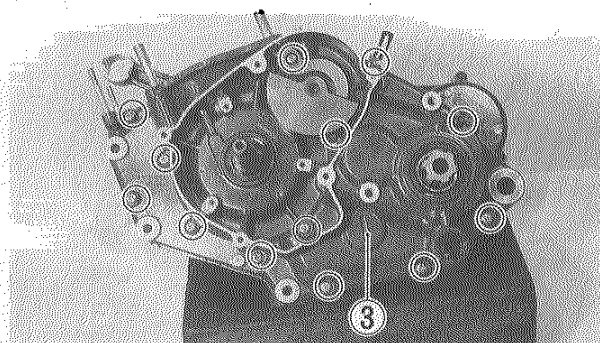
- Remove the stator by removing the three screws.



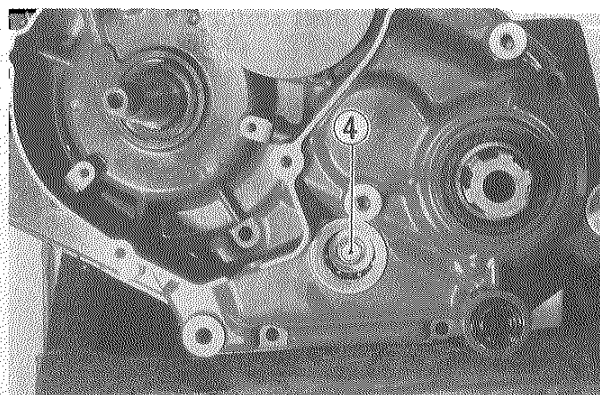
- Remove the engine sprocket spacer ① and O-ring ②.



- Remove the crankcase securing screws.
- Remove the cap ③.



- Remove the gearshift cam retainer bolt ④.



- Separate the crankcase into 2 parts, right and left with the special tool.

09920-13120

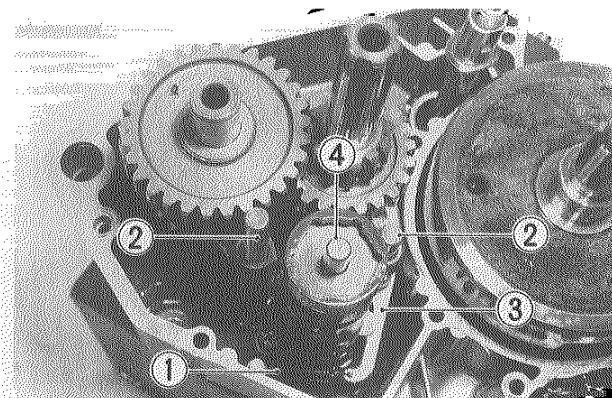
Crankcase separating tool

NOTE:

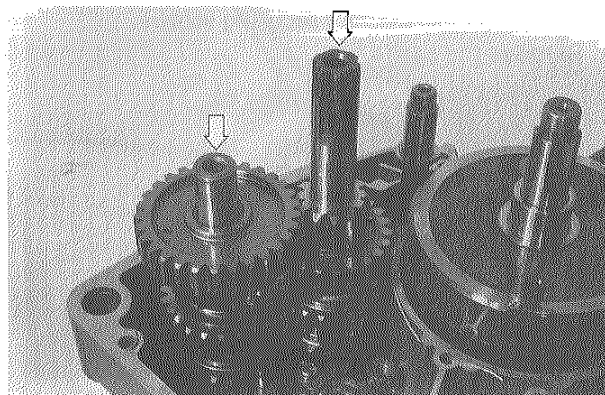
Fit the crankcase separating tool, so that the tool plate is parallel with the end face of the crankcase.



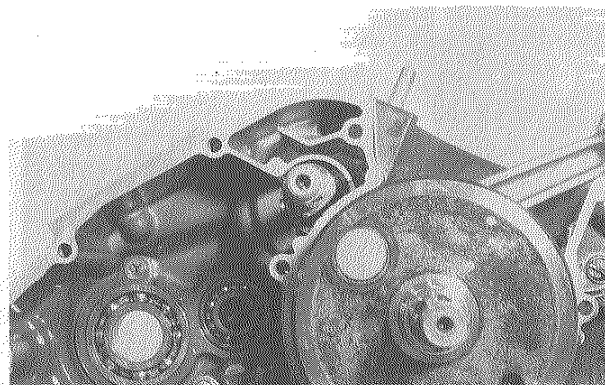
- Remove the cam stopper spring ①.
- Pull out the shift fork shafts ②, shift forks, cam stopper ③ and cam ④.



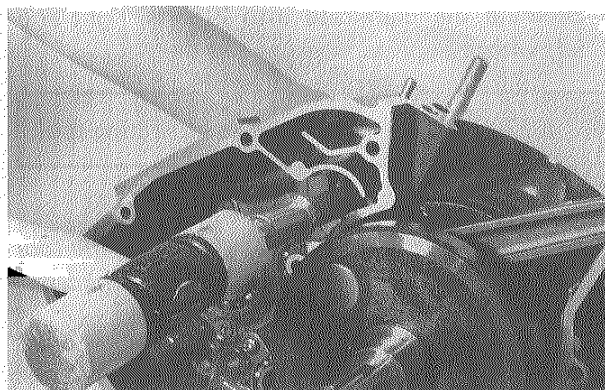
- Remove the countershaft and driveshaft assemblies.



- Turn the balancer shaft so that the part of the balancer shaft does not contact the crankcase.



- Remove the balancer shaft by tapping with a plastic hammer.



- Remove the crankshaft with the special tool.

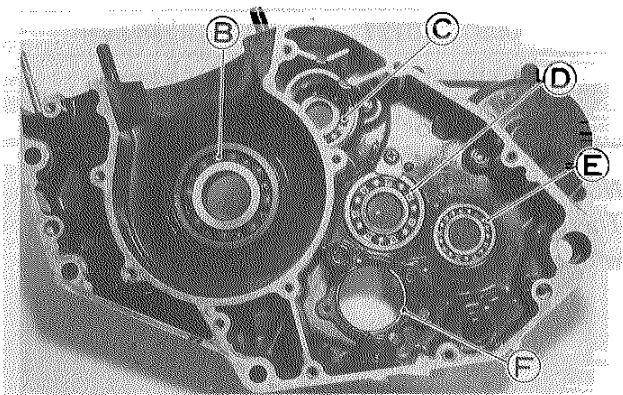
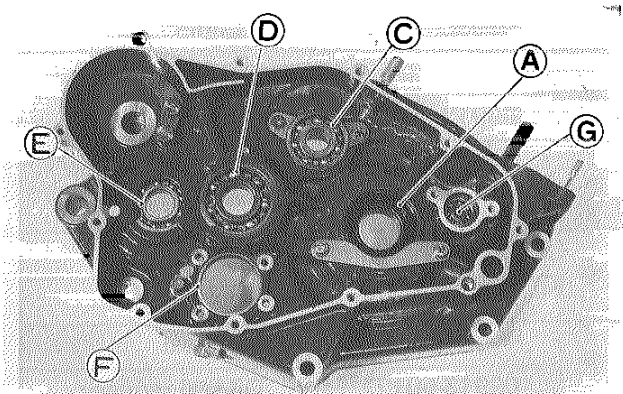
09920-13120	Crankcase separating tool
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OIL SEALS AND BEARINGS

- Remove the retainers, and then remove the oil seals and bearings with the special tools.

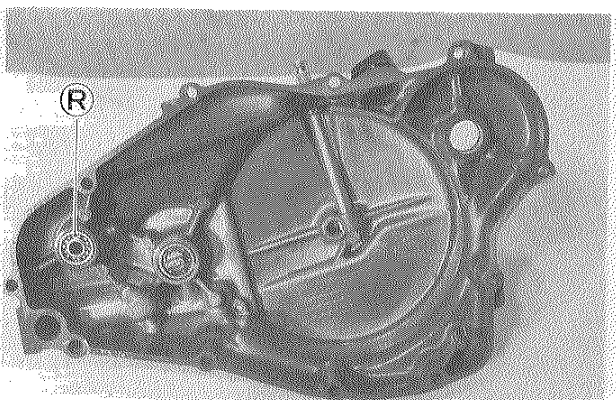
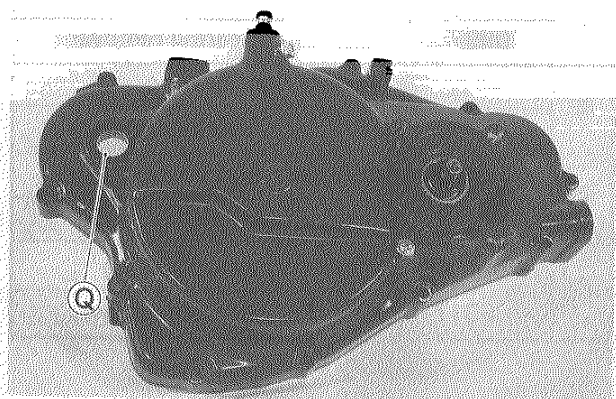
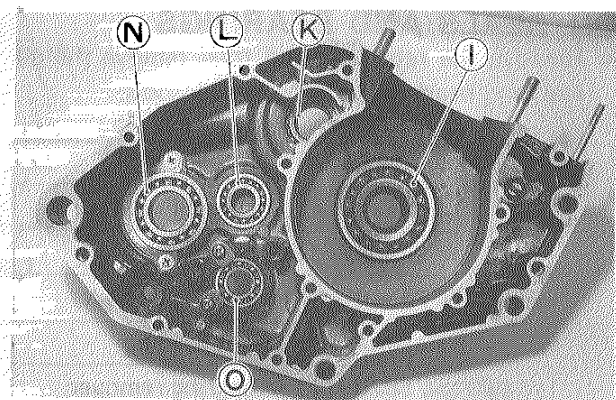
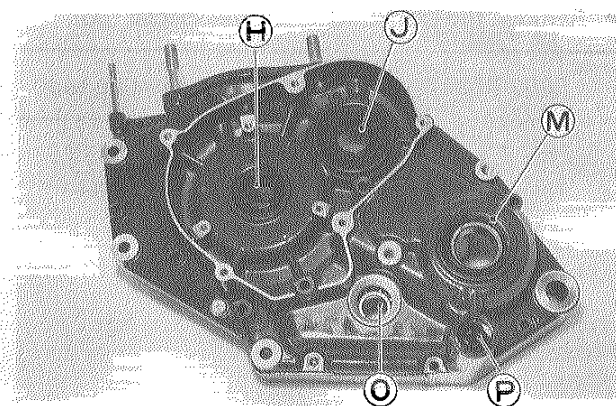
A	Crankshaft right oil seal	
	09913-50121	Oil seal remover
B	Crankshaft right bearing	
	09913-75810	Bearing remover
C	Balancer shaft right bearing	
	09913-75820	Bearing remover
D	Countershaft right bearing	
	09913-75810	Bearing remover
E	Driveshaft right bearing	
	09913-75820	Bearing remover
F	Gearshift cam right bearing	
	Plain screwdriver	
G	Exhaust valve actuator bearing	
	09917-50410	Bearing remover



(H)	Crankshaft left oil seal	
	09913-50121	Oil seal remover
(I)	Crankshaft left bearing	
	09913-76010	Bearing remover
(J)	Balancer shaft left oil seal	
	09913-50121	Oil seal remover
(K)	Balancer shaft left bearing	
	09913-75820	Bearing remover
(L)	Countershaft left bearing	
	09923-73210	Bearing remover
	09930-30102	Sliding shaft
(M)	Driveshaft left oil seal	
	09913-50121	Oil seal remover
(N)	Driveshaft left bearing	
	09914-79610	Bearing remover
(O)	Gearshift cam left bearing	
	Appropriate socket	
(P)	Gearshift lever oil seal	
	09913-50121	Oil seal remover
(Q)	Kick starter shaft oil seal	
	09913-50121	Oil seal remover
(R)	Exhaust valve governor pilot bearing	
	09917-50410	Bearing remover

NOTE:

The removed seals and bearing should be replaced with new ones.

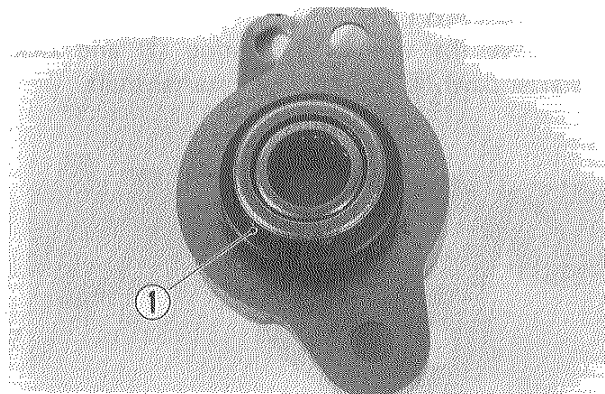


EXHAUST VALVE

- Remove the snap ring ① on the exhaust valve actuator with the special tool.

09900-06107

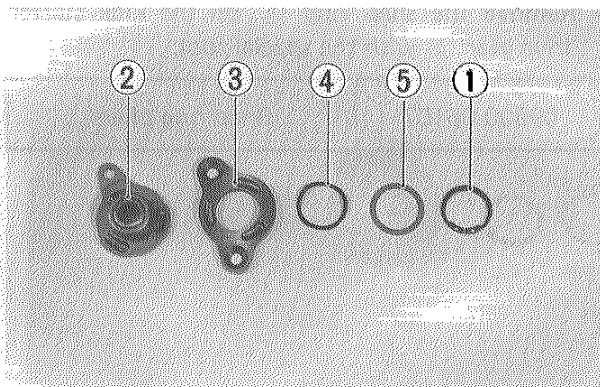
Snap ring pliers



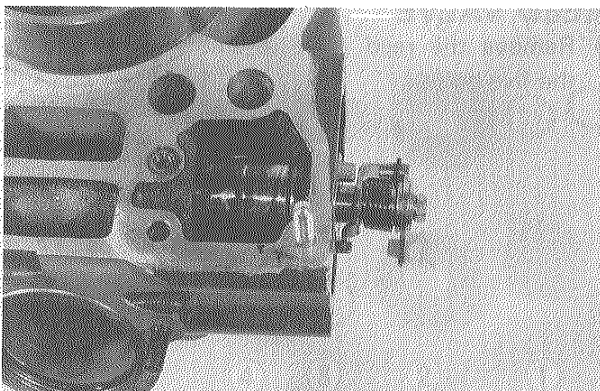
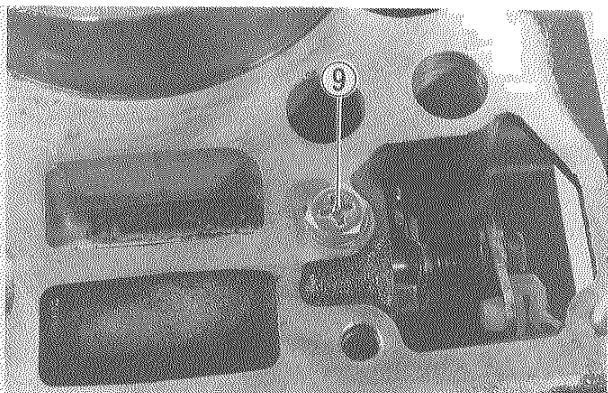
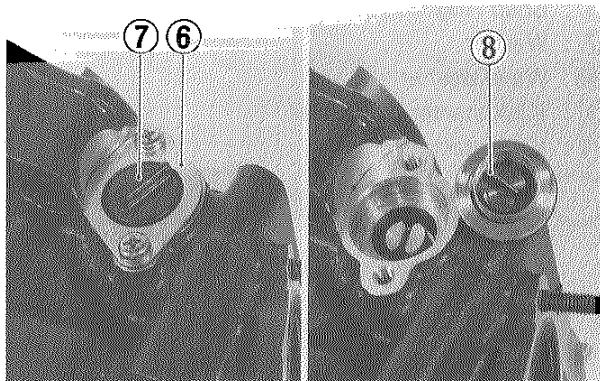
NOTE:

Do not lose the three balls.

- ① : Snap ring
- ② : Exhaust valve actuator
- ③ : Actuator stator
- ④ : Wave washer
- ⑤ : Washer

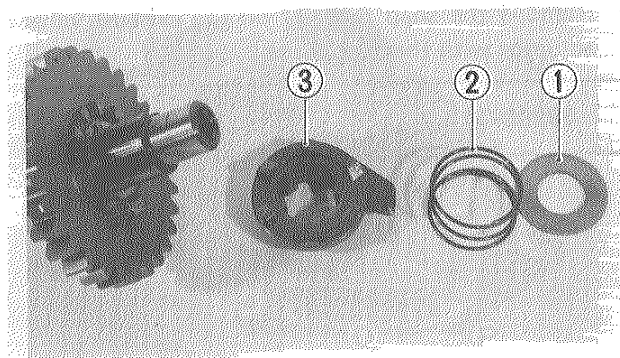


- Remove the exhaust valve cap retainer ⑥ by removing the two screws.
- Remove the exhaust valve cap ⑦ and the return spring ⑧.
- Remove the exhaust valve stopper bolt ⑨.
- Drive out the exhaust valve by knocking with an appropriate bar.



KICK STARTER

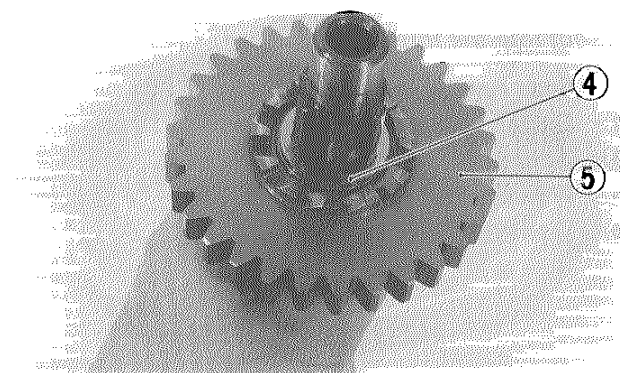
- Remove the washer ①, spring ② and kick starter pawl ③ from the kick starter shaft.



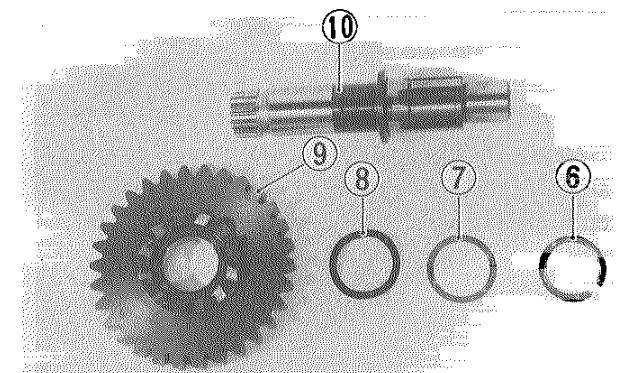
- Remove the snap ring ④ on the kick starter drive gear ⑤ with the special tool.

09900-06107

Snap ring pliers

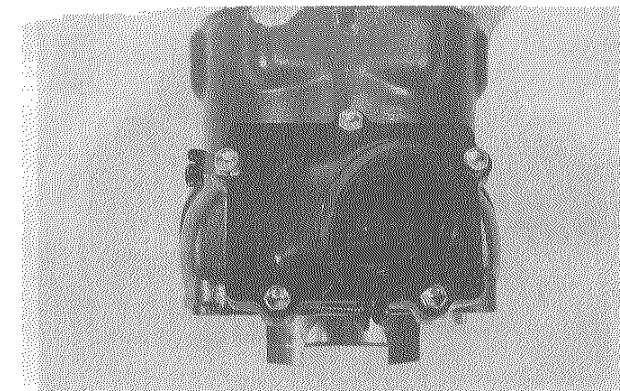


- ⑥ : Snap ring
- ⑦ : Washer
- ⑧ : Wave washer
- ⑨ : Kick starter drive gear
- ⑩ : Kick starter shaft



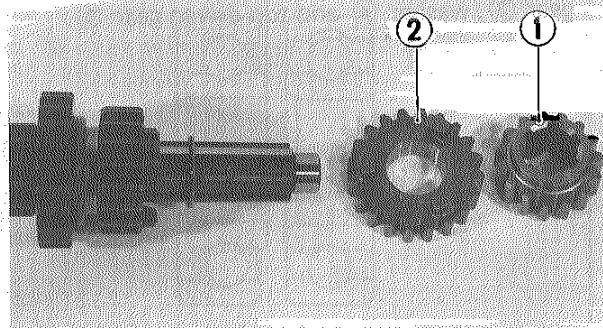
REED VALVE

- Remove the reed valve assembly by removing the five bolts.



COUNTERSHAFT

- Remove the 2nd drive gear ① and 4th drive gear ②.

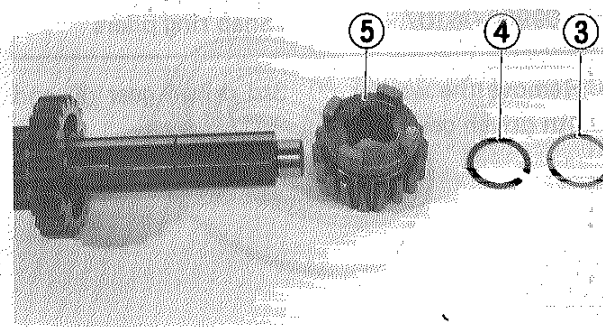


- Remove the washer ③ and then the circlip ④ with the special tool.

09900-06107

Snap ring pliers

- Remove the 3rd drive gear ⑤.

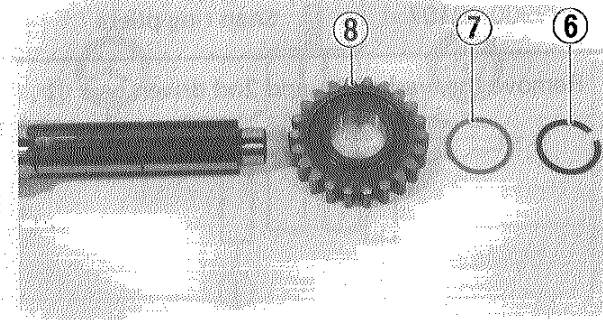


- Remove the circlip ⑥ with the special tool.

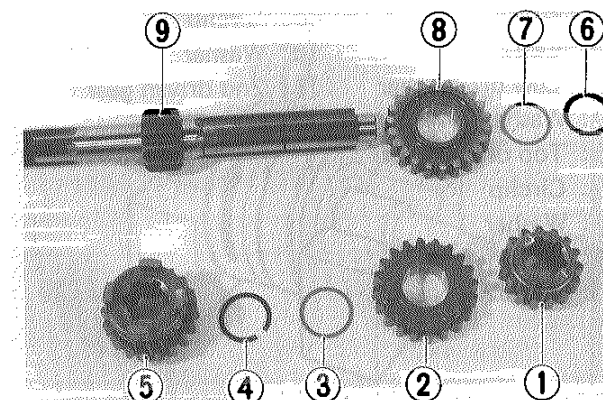
09900-06107

Snap ring pliers

- Remove the washer ⑦ and the top drive gear ⑧.

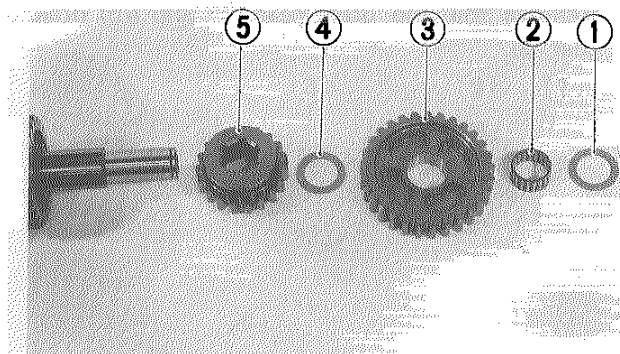


- ①: 2nd drive gear
- ②: 4th drive gear
- ③: Washer
- ④: Circlip
- ⑤: 3rd drive gear
- ⑥: Circlip
- ⑦: Washer
- ⑧: Top drive gear
- ⑨: Countershaft/Low drive gear



DRIVESHAFT

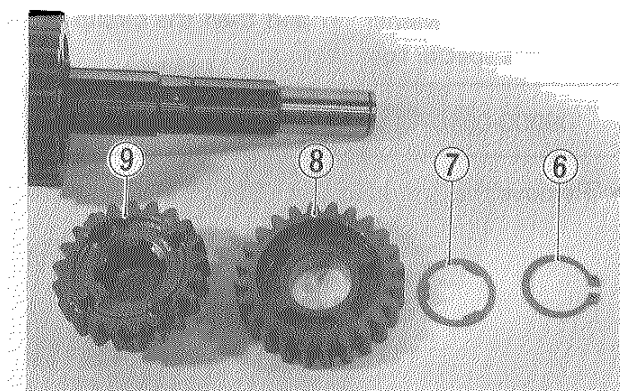
- Remove the washer ①, bearing ②, low driven gear ③, washer ④ and top driven gear ⑤.



- Remove the circlip ⑥ with the special tool.

09900-06107	Snap ring pliers
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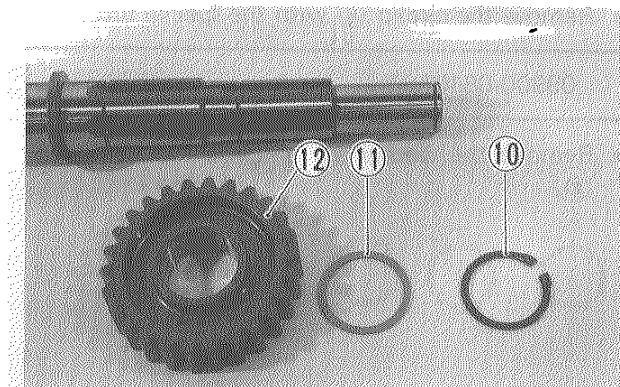
- Remove the washer ⑦, 3rd driven gear ⑧ and 4th driven gear ⑨.



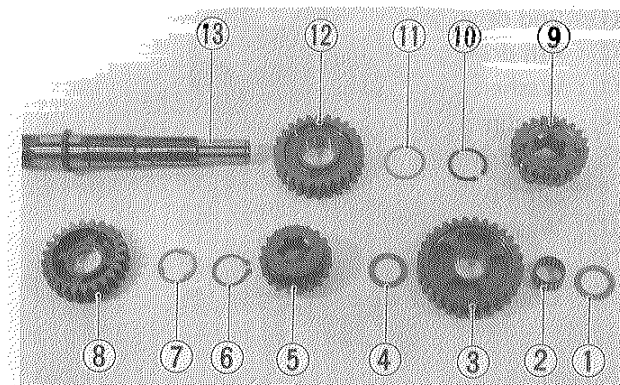
- Remove the circlip ⑩ with the special tool.

09900-06107	Snap ring pliers
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- Remove the washer ⑪ and 2nd driven gear ⑫.



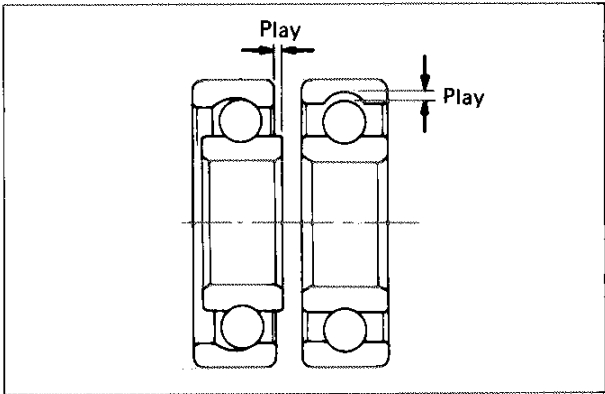
- | | |
|--------------------|--------------------|
| ①: Washer | ⑩: Circlip |
| ②: Bearing | ⑪: Washer |
| ③: Low driven gear | ⑫: 2nd driven gear |
| ④: Washer | ⑬: Driveshaft |
| ⑤: Top driven gear | |
| ⑥: Circlip | |
| ⑦: Washer | |
| ⑧: 3rd driven gear | |
| ⑨: 4th driven gear | |



**ENGINE COMPONENTS
INSPECTION AND SERVICING**

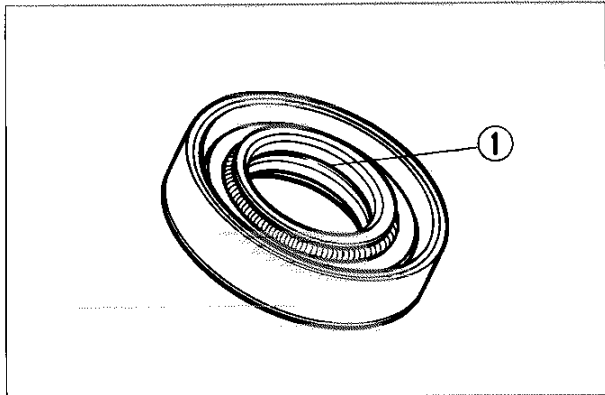
BEARING

- Wash the bearings with cleaning solvent and lubricate with motor oil before inspecting.
 - Turn the inner race and check to see that the inner race 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.
- (Page 3-18, 3-19)



OIL SEALS

- Damage to the lip ① of the oil seal may result in leakage of the fuel-air mixture or oil. Inspect for damage and be sure to replace damaged parts if there are any.

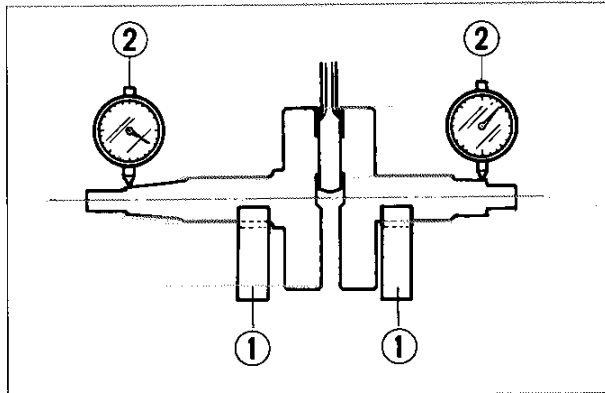


**CRANKSHAFT
CRANKSHAFT RUNOUT**

- Support crankshaft with "V" blocks ①, with the dial gauge ② rigged to read the runout as shown.

Service Limit	0.05 mm (0.002 in)
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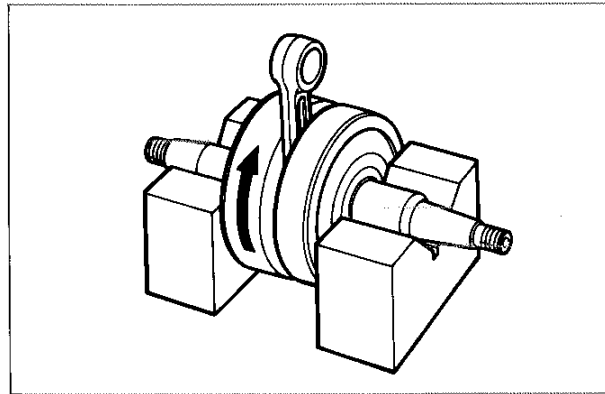
- Excessive crankshaft runout is often responsible for abnormal engine vibration. Such vibration shortens engine life.



09900-21304	V-block (Not available in U.S.A.)
09900-20701	Magnetic stand (Not available in U.S.A.)
09900-20606	Dial gauge (1/100 mm)

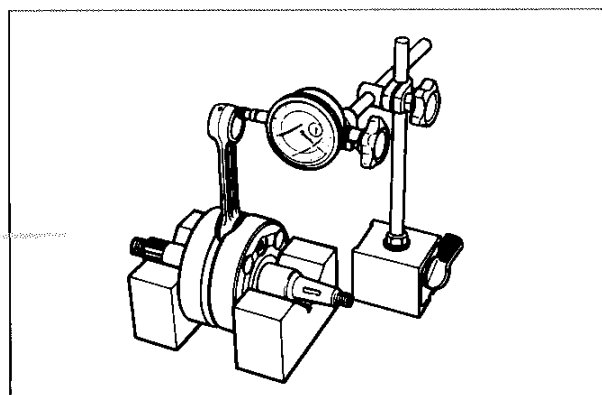
CONDITION OF BIG BEARING

- Turn the crankshaft with the connecting rod 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 connecting rod 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 connecting rod's big end.
- If wear exceeds the limit, the connecting rod, crank pin and crank pin bearing should all be replaced.

Service Limit	3.0 mm (0.12 in)
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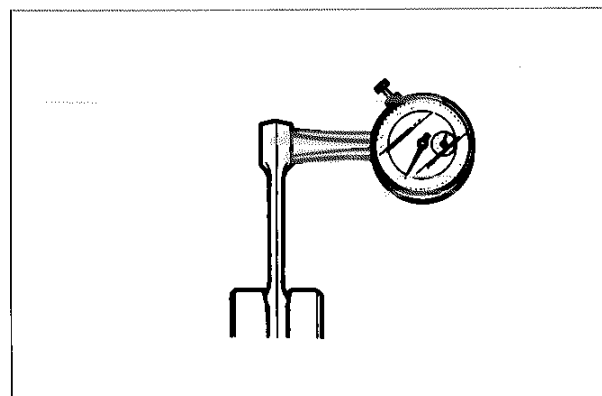


CON-ROD SMALL END I.D.

- With a caliper gauge, measure the con-rod small end diameter.

Service Limit	23.040 mm (0.9071 in)
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09900-20605	Dial calipers
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GEAR-SHIFT FORK

GEAR-SHIFT FORK CLEARANCE

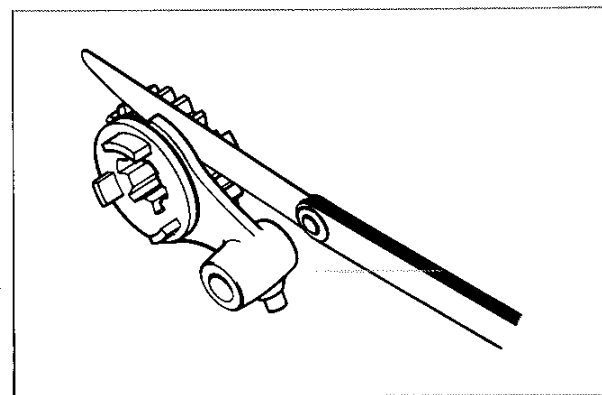
With a thickness gauge, check the shifting fork clearance in the groove of its gear. If the clearance limit is exceeded on any of the three gears, determine whether the gear or the gear shifting fork should be replaced by measuring the thickness and groove width.

09900-20803	Thickness gauge
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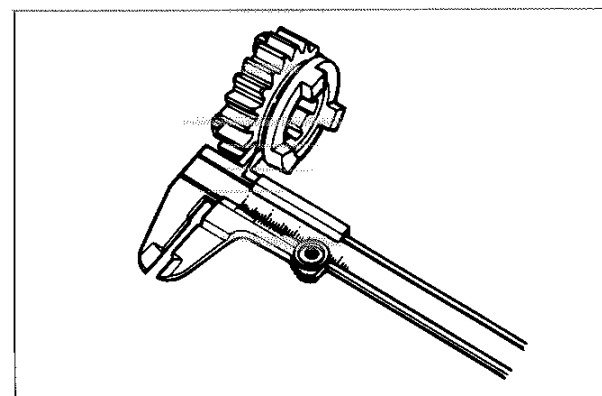
Item	Standard	Limit
Shift fork to groove clearance	0.10 – 0.30 mm (0.004 – 0.012 in)	0.50 mm (0.020 in)

09900-20101	Vernier calipers
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Item	Standard
Shift fork groove width	5.0 – 5.1 mm (0.197 – 0.201 in)

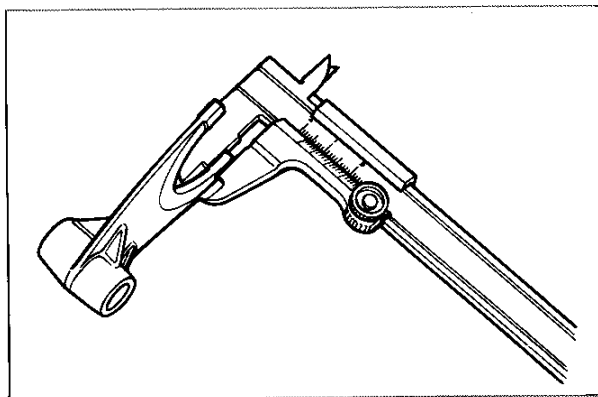


Shifting fork clearance in the groove



Checking groove width

Item	Standard
Shift fork thickness	4.8 – 4.9 mm (0.189 – 0.193 in)

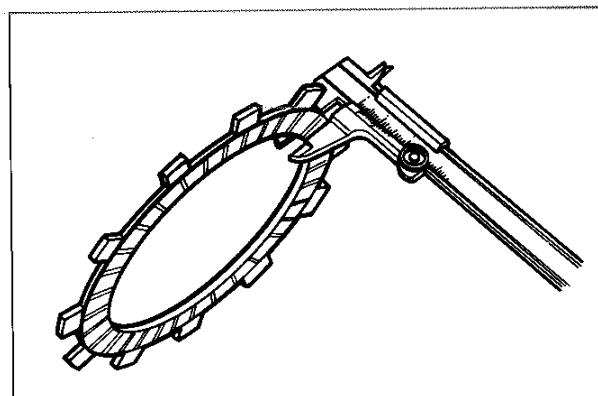


CLUTCH PLATES

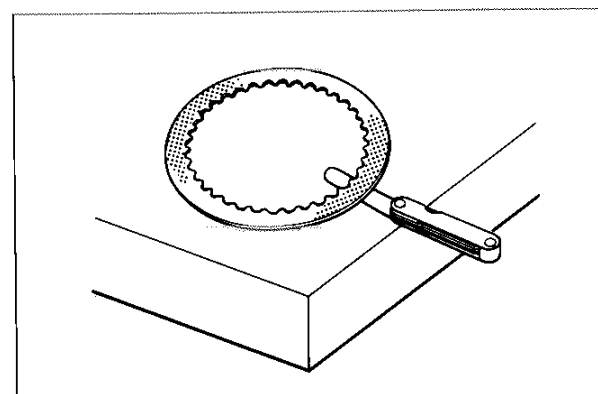
- Clutch plates in service remain in an oily condition as they were lubricated with oil. Because of this condition, both drive and driven plates are subject to little wearing action and therefore last much longer. Their life depends largely on the quality of oil used in the clutch and also on the way the clutch is operated.
- These plates are expendable: they are meant to be replaced when found worn down or distorted to the respective limit: use a calipers to check thickness and claw width and a thickness gauge to check distortion of surface plate.

09900-20102	Vernier calipers
09900-20804	Thickness gauge

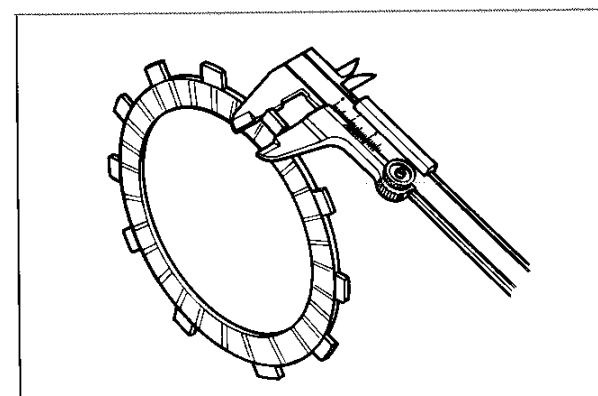
Service Limit	Drive plate	Driven plate
Thickness	2.15 mm (0.085 in)	—
Distortion	—	0.10 mm (0.004 in)
Claw width	15.0 mm (0.59 in)	—



Checking thickness



Checking distortion

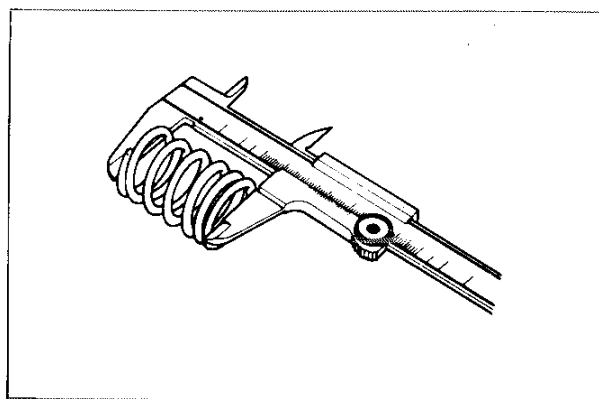


Checking claw width

CLUTCH SPRINGS

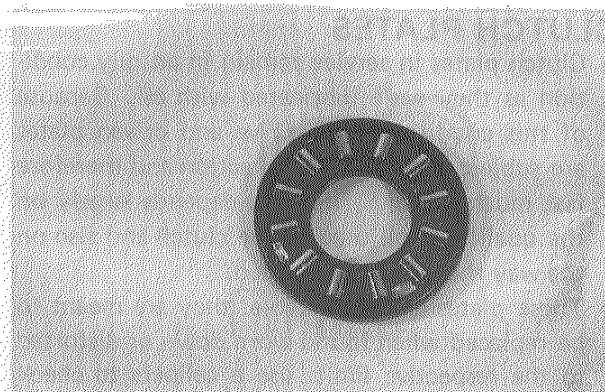
- Clutch springs which have lost their tension also cause clutch slipping, resulting in loss of power and rapid wear of the clutch plates.
- Remove the clutch springs and measure their free length with calipers.

09900-20102	Vernier calipers
Service Limit	31.0 mm (1.22 in)



CLUTCH RELEASE BEARING

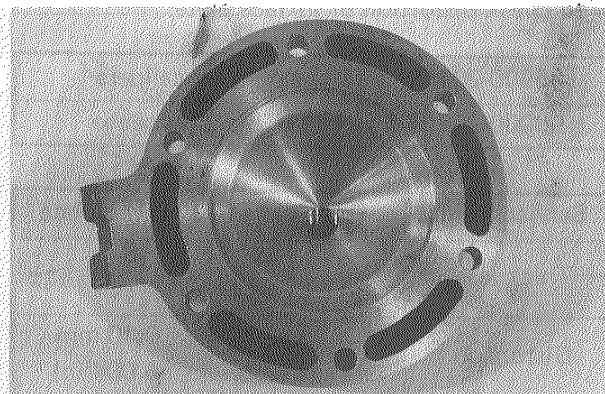
- Inspect this thrust-type bearing for any abnormality, particularly cracks, upon removal from the clutch, to decide whether it can be reused or should be replaced.
- Smooth engagement and disengagement of the clutch depends much on the condition of this bearing.



CYLINDER HEAD

DECARBON

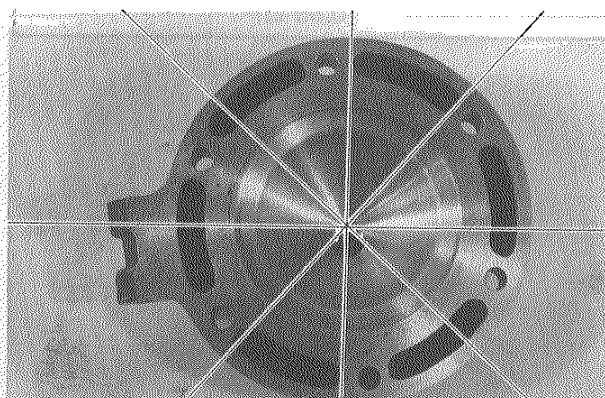
- Decarbon the combustion chamber.



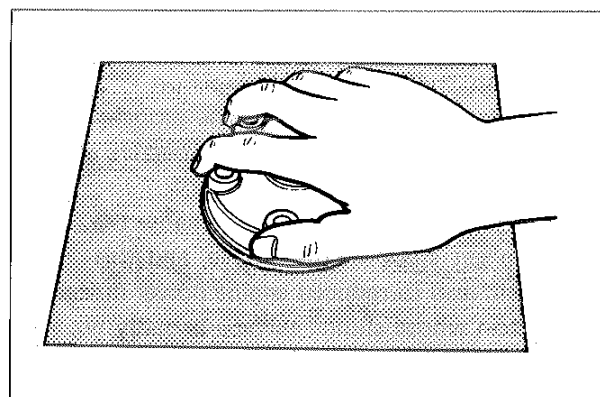
CYLINDER HEAD DISTORTION

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

09900-20803	Thickness gauge
Service Limit	0.05 mm (0.002 in)

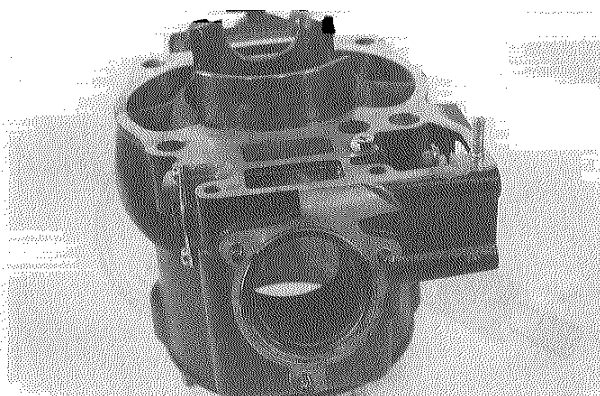


- If the largest reading at any portion of the straightedge exceeds the limit, rework the surface by rubbing it against emery paper (of about # 400) laid flat on the surface plate in a lapping manner.
- The gasketed surface must be smooth and perfectly flat in order to secure a tight joint: a leaky joint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



CYLINDER DECARBON

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



CYLINDER BORE

- The wear of the cylinder wall is determined from diameter readings taken at 20 mm (0.79 in) from the top of the cylinder with a cylinder gauge.
- If the wear thus determined exceeds the limit indicated, rework the bore to the next oversize with a boring machine or replace the cylinder with a new one.
- Oversize pistons are available in two sizes: 0.5 mm (0.02 in) and 1.0 mm (0.04 in) oversizes.

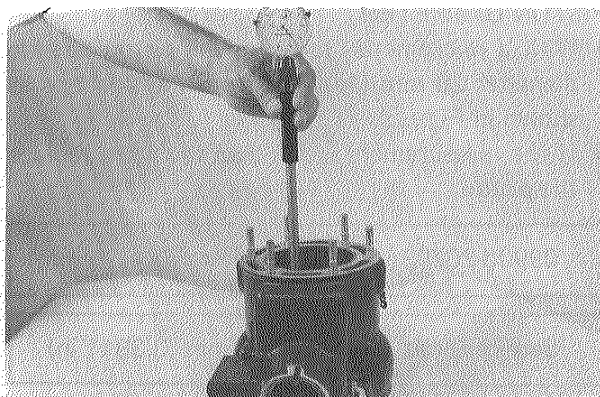
09900-20508	Cylinder gauge set
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Service Limit	86.060 mm (3.3882 in)
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EFFECTIVE ENGINE NO.: FROM 103220

Service Limit	86.050 mm (3.3878 in)
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- 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.



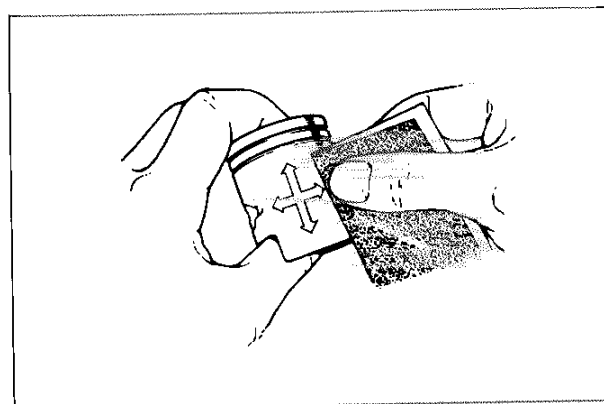
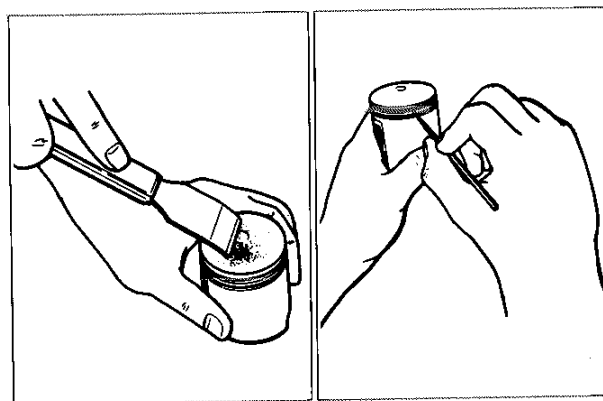
NOTE:

Minor surface flaws on the cylinder wall due to seizure or similar abnormalities can be corrected by removing the flaws with finegrain emery paper. If the flaws are deep grooves or othersize persist, the cylinder must be reworked with a boring machine to the next oversize.

PISTON

DECARBON

- Decarbon the crown of the piston and piston ring grooves. After cleaning the grooves, fit the rings and rotate them in their respective grooves to be sure that they move smoothly.
- Carbon in the 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 sanding with emery paper of about # 400.



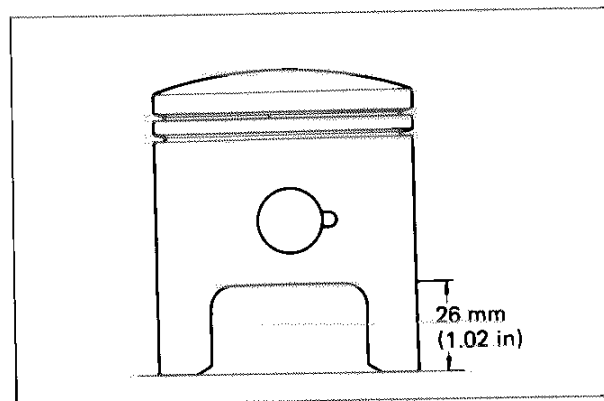
PISTON DIAMETER

- With a micrometer, measure the piston outside diameter 26 mm (1.02 in) from the skirt end as shown in Fig.
- If the measurement is less than the limit, replace the piston.

09900-20203	Micrometer (50 – 75 mm)
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Service Limit	85.880 mm (3.3811 in)
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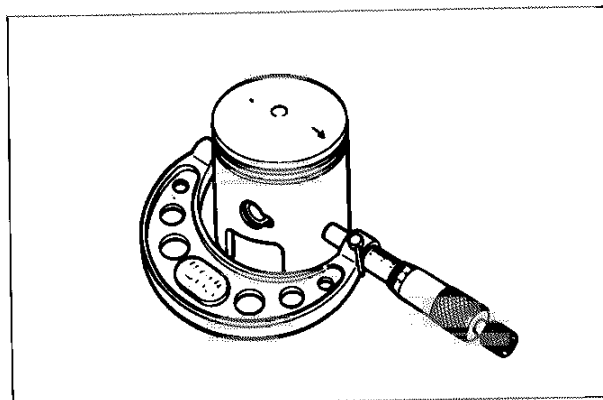
Piston oversize	0.5, 1.0 mm (0.02, 0.04 in)
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PISTON-CYLINDER CLEARANCE

- As a result of the above measurement, if the piston to cylinder clearance exceeds the limit shown in the table below, overhaul the cylinder and use an oversize piston, or replace both cylinder and piston.

Service Limit	0.120 mm (0.0047 in)
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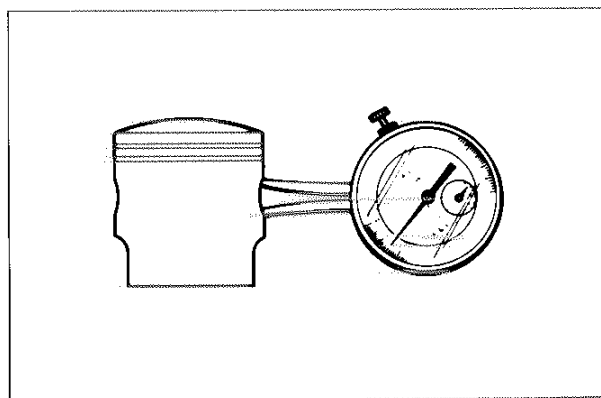


PISTON PIN BORE I.D.

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

Service Limit	18.030 mm (0.7098 in)
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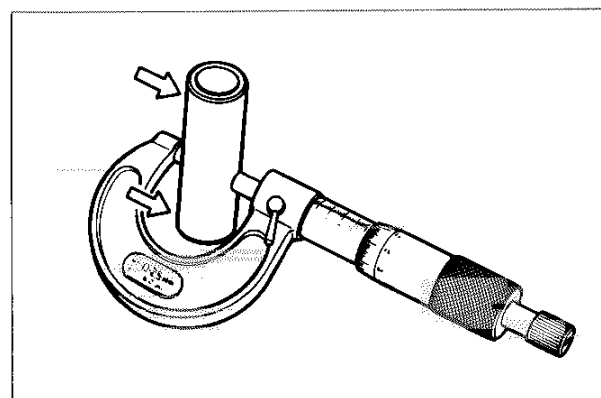
09900-20605	Dial calipers
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**PISTON PIN O.D.**

- With a micrometer, measure the piston pin outside diameter at three positions.

09900-20205	Micrometer (0 – 25 mm)
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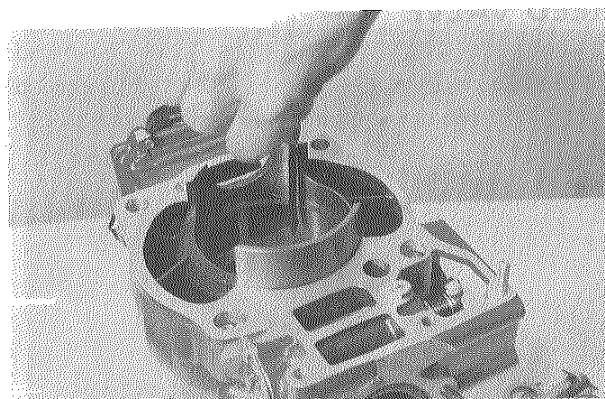
Service Limit	17.980 mm (0.7079 in)
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**PISTON RINGS****PISTON RING END GAP**

- Check each ring for end gap, reading the gap with a thickness gauge as shown in the Fig. 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 measure with the ring fitted squarely into the cylinder bore and held at the least worn part near the cylinder bottom, as the photo.

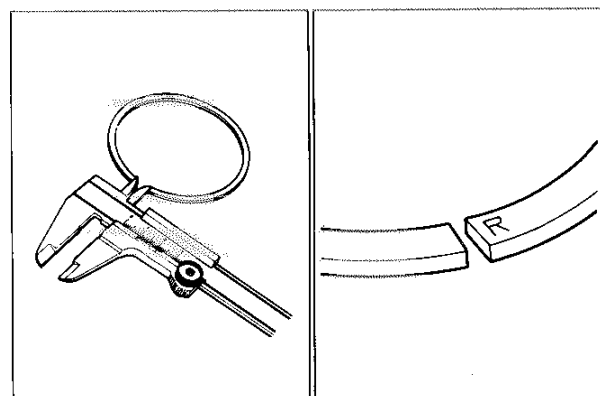
09900-20803	Thickness gauge
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Service Limit	0.85 mm (0.033 in)
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**PISTON RING FREE END GAP**

- As the piston ring wears, its end gap increases reducing engine power output because of the resultant blowby gas 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.

Mark	Service Limit
R	5.3 mm (0.21 in)

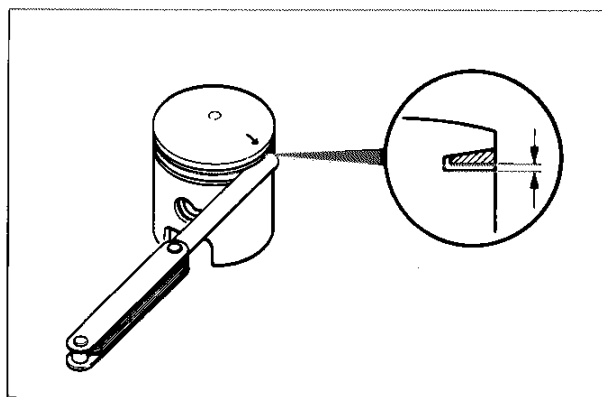


PISTON RING TO GROOVE CLEARANCE

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

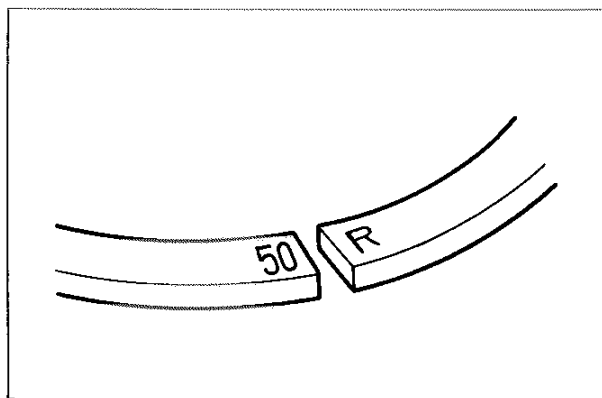
STD Clearance	0.01 – 0.07 mm (0.0004 – 0.003 in)
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09900-20803	Thickness gauge
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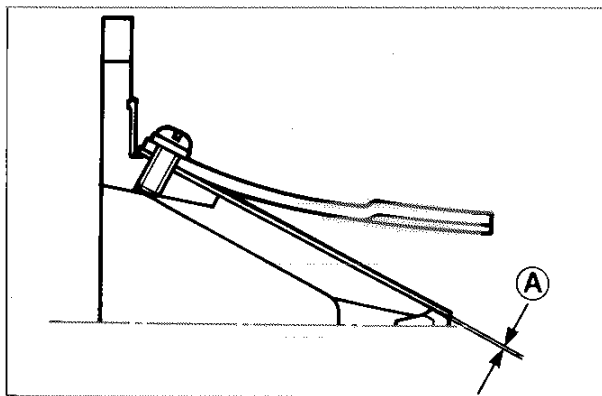
**OVERSIZE PISTON RING**

- The following two types of oversize piston rings are used. They bear the following identification numbers.

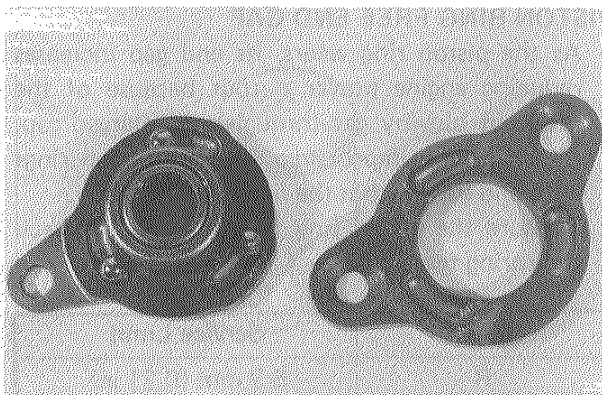
Oversize	Mark (1st and 2nd)
0.5 mm	50
1.0 mm	100

**REED VALVE**

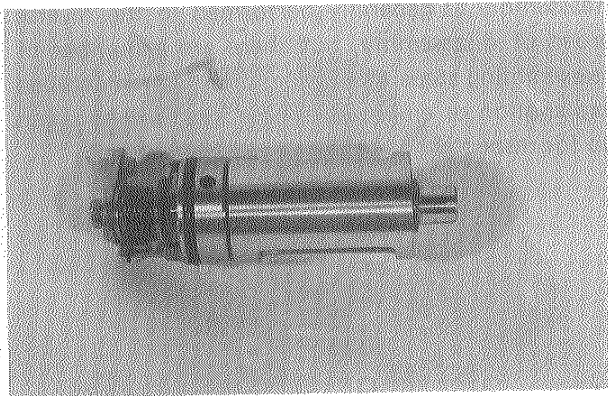
- Check the clearance (A) between reed valve and its seat. If the clearance (A) is noted to exceed 0.2 mm, replace the reed valve assembly.

**EXHAUST VALVE**

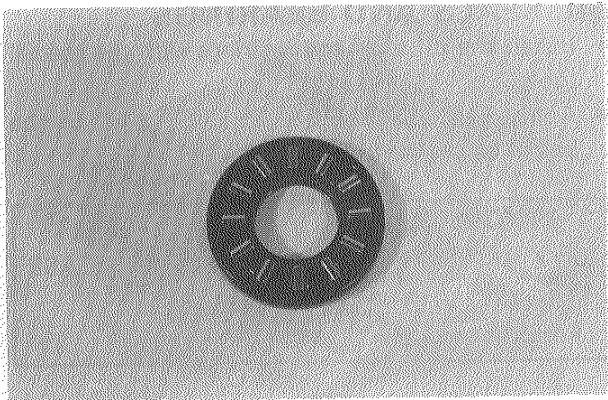
- Check the exhaust valve actuator races wear and balls wear.



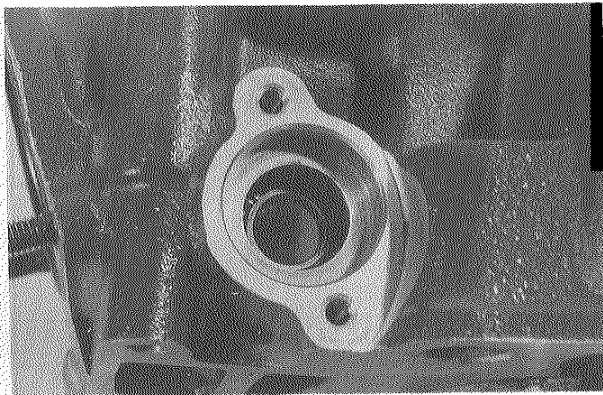
- Check the exhaust valve surface for any scratches or other damage.



- Inspect the exhaust valve thrust-type bearing for any abnormality, paticulary cracks, upon removal off the exhaust valve governor, to decide whether it can be reused or should be replaced.



- Rotate the inner race of the exhaust valve bearing by hand to inspect for abnormal noise occurs and rotating smoothly.
Replace the bearing if there is anything unusual.



OPENING AND CLOSING R.P.M. CHECK

- Connect an electric tachometer.

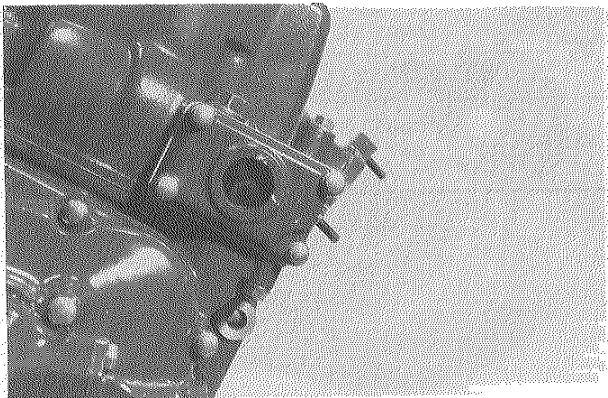
09900-26006	Tachometer Not available in U.S.A.
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- Start the engine.
- Increase the engine speed and check to read the r.p.m. when the exhaust valve closing and opening r.p.m. through the inspection window.

Closing	4 000 r.p.m.
Opening	4 500 r.p.m.

NOTE:

*If the exhaust valve Closing/Opening r.p.m. is not within the specification, adjust it by slightly turning the cap ② counterclockwise or clockwise.
(Page 3-50)*



ENGINE REASSEMBLY

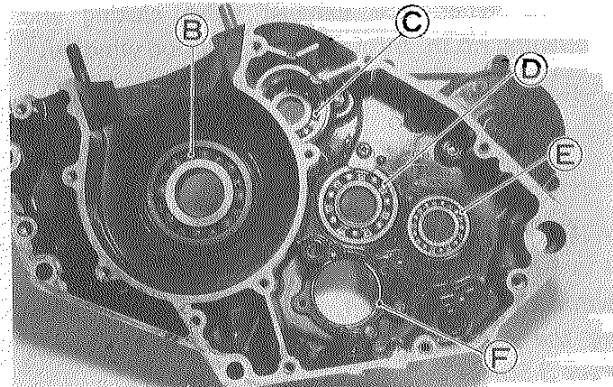
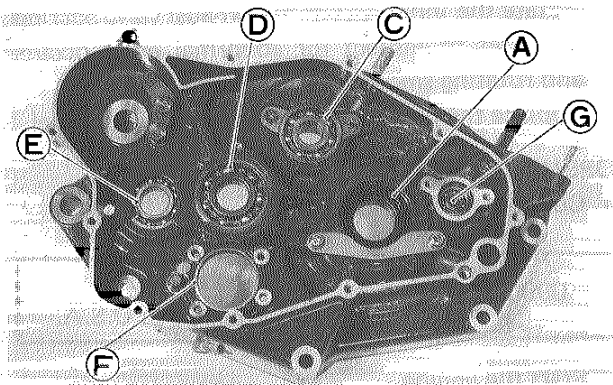
Reassembly is generally performed in the reverse order of disassembly, but there are a number of reassembling steps that demand or deserve detailed explanation or emphasis. These steps will be taken up for respective parts and components.

OIL SEALS AND BEARINGS

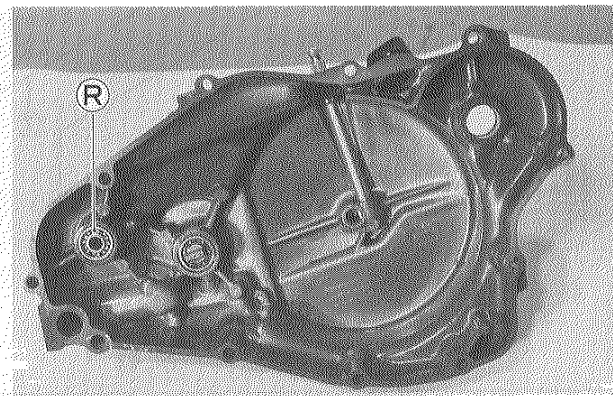
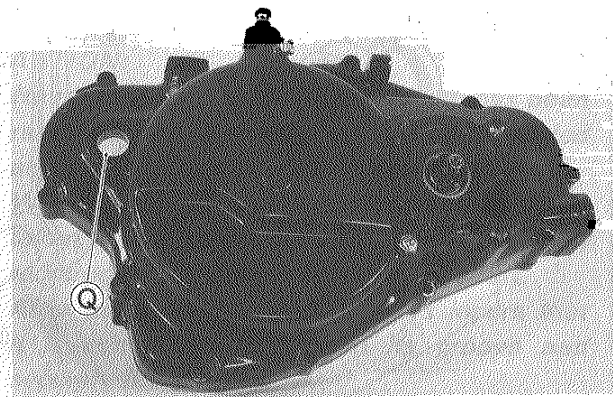
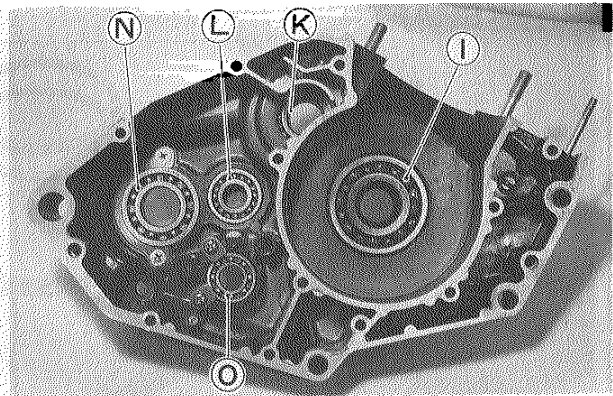
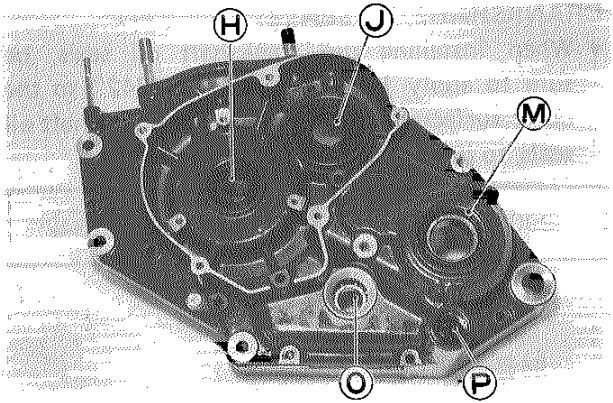
- Install the oil seals and bearings with the special tools.
- Apply SUZUKI SUPER GREASE "A" to the lips of oil seals and bearings.

99000-25030 For U.S. model	SUZUKI SUPER GREASE "A"
99000-25010 For other models	

A	Crankshaft right oil seal	
	09913-75810	Bearing installer
B	Crankshaft right bearing	
	09913-75510	Bearing installer
C	Balancer shaft right bearing	
	09913-76010	Bearing installer
D	Countershaft right bearing	
	09913-75810	Bearing installer
E	Driveshaft right bearing	
	09914-79610	Bearing installer
F	Gearshift cam right bearing	
	09913-76010	Bearing installer
G	Exhaust valve actuator bearing	
	Appropriate socket	



H	Crankshaft left oil seal	
	09913-76010	Bearing installer
I	Crankshaft left bearing	
	09913-75510	Bearing installer
J	Balancer shaft left oil seal	
	09913-70112	Bearing installer
K	Balancer shaft left bearing	
	09913-70122	Bearing installer
L	Countershaft left bearing	
	09914-79610	Bearing installer
M	Driveshaft left oil seal	
	09913-76010	Bearing installer
N	Driveshaft left bearing	
	09913-75510	Bearing installer
O	Gearshift cam left bearing	
	09913-80112	Bearing installer
P	Gearshift lever oil seal	
	09913-75820	Bearing installer
Q	Kick starter shaft oil seal	
	09913-75820	Bearing installer
R	Exhaust valve governor pilot bearing	
	Appropriate socket	

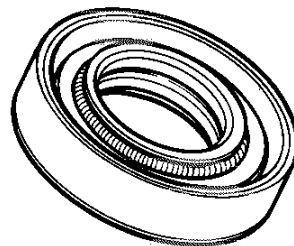


CRANKSHAFT OIL SEALS

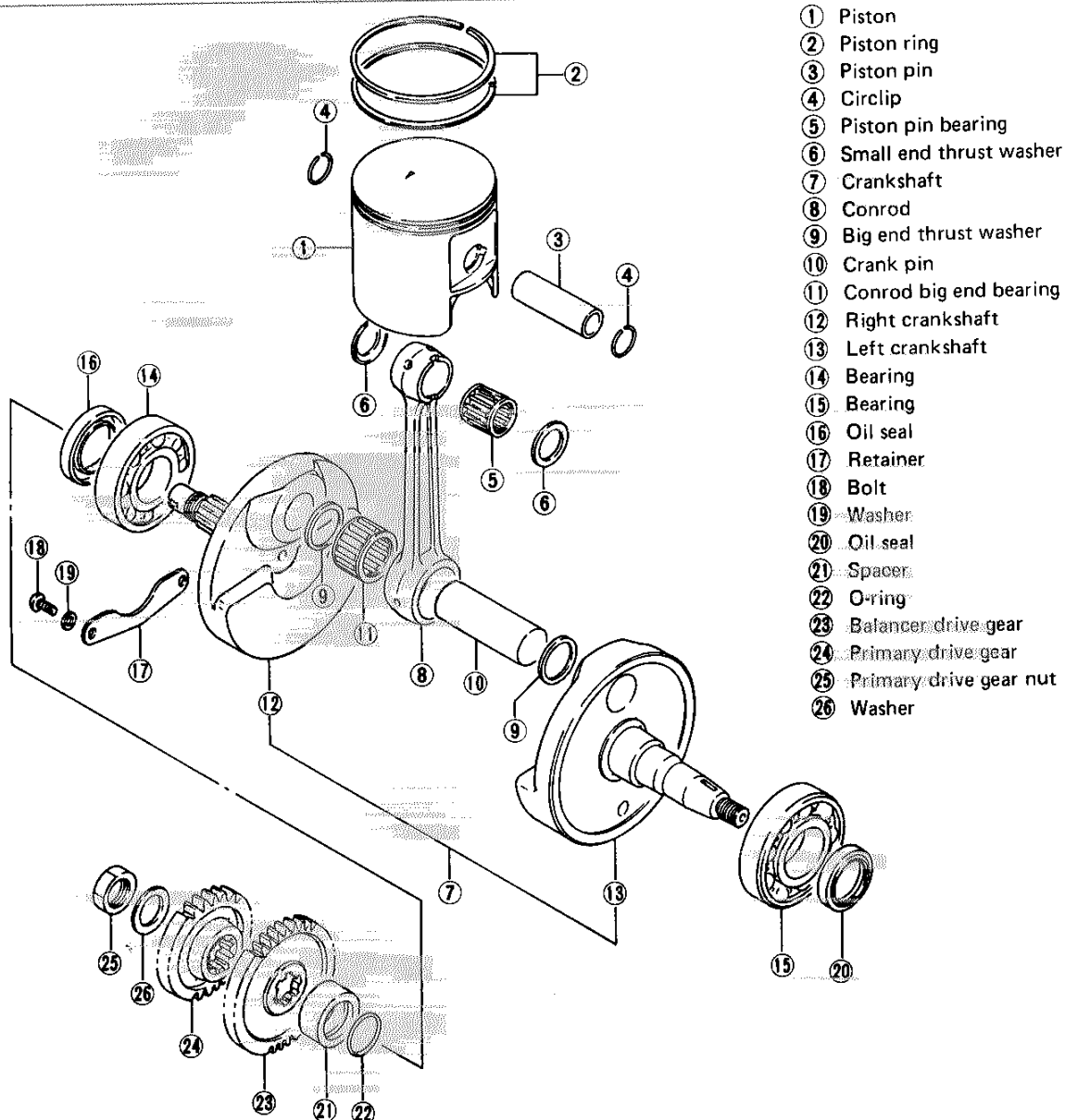
- When installing the crankshaft oil seals, be sure to apply **THREAD LOCK "1342"** to the outer surfaces of the right and left crankshaft oil seals, to prevent them from moving.

99000-32050

THREAD LOCK "1342"



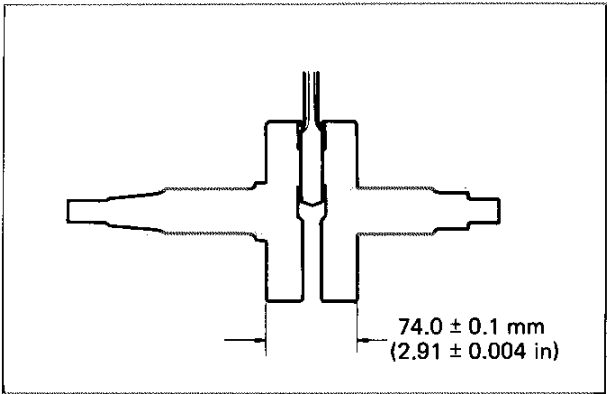
CRANKSHAFT



- ① Piston
- ② Piston ring
- ③ Piston pin
- ④ Circlip
- ⑤ Piston pin bearing
- ⑥ Small end thrust washer
- ⑦ Crankshaft
- ⑧ Conrod
- ⑨ Big end thrust washer
- ⑩ Crank pin
- ⑪ Conrod big end bearing
- ⑫ Right crankshaft
- ⑬ Left crankshaft
- ⑭ Bearing
- ⑮ Bearing
- ⑯ Oil seal
- ⑰ Retainer
- ⑱ Bolt
- ⑲ Washer
- ⑳ Oil seal
- ㉑ Spacer
- ㉒ O-ring
- ㉓ Balancer drive gear
- ㉔ Primary drive gear
- ㉕ Primary drive gear nut
- ㉖ Washer

- Inspect for the proper width between the webs by referring to the figure at right when rebuilding the crankshaft.

Crank web to web width	$74.0 \pm 0.1 \text{ mm}$ ($2.91 \pm 0.004 \text{ in}$)
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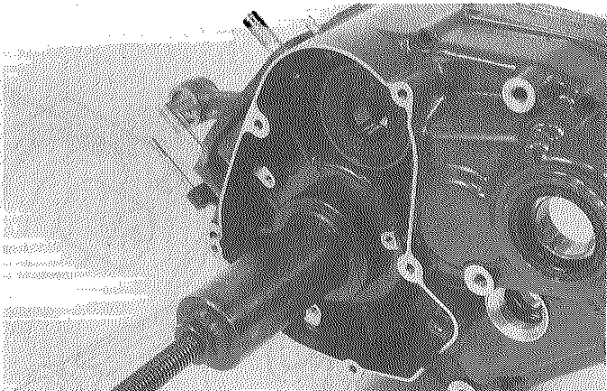


- When mounting the crankshaft in the crankcase, it is necessary to pull its left end into the crankcase with the special tool.

09910-32812	Crankshaft installer
09911-11310	Attachment

CAUTION:

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



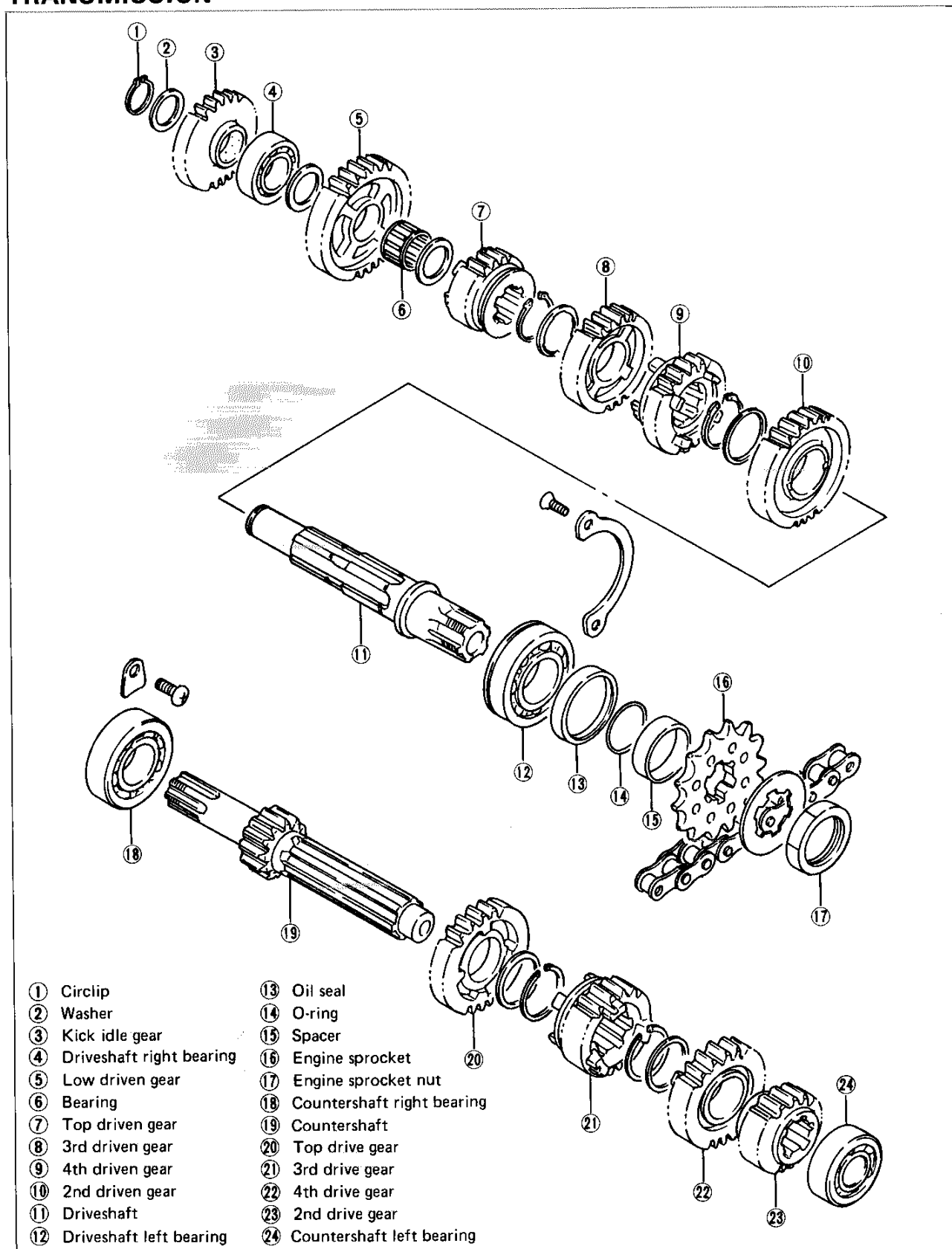
TRANSMISSION

- In reassembling the transmission, attention must be given to the locations and positions of washers and circlips. The exploded view given here will serve as a reference for correctly mounting the gears, washers and circlips.

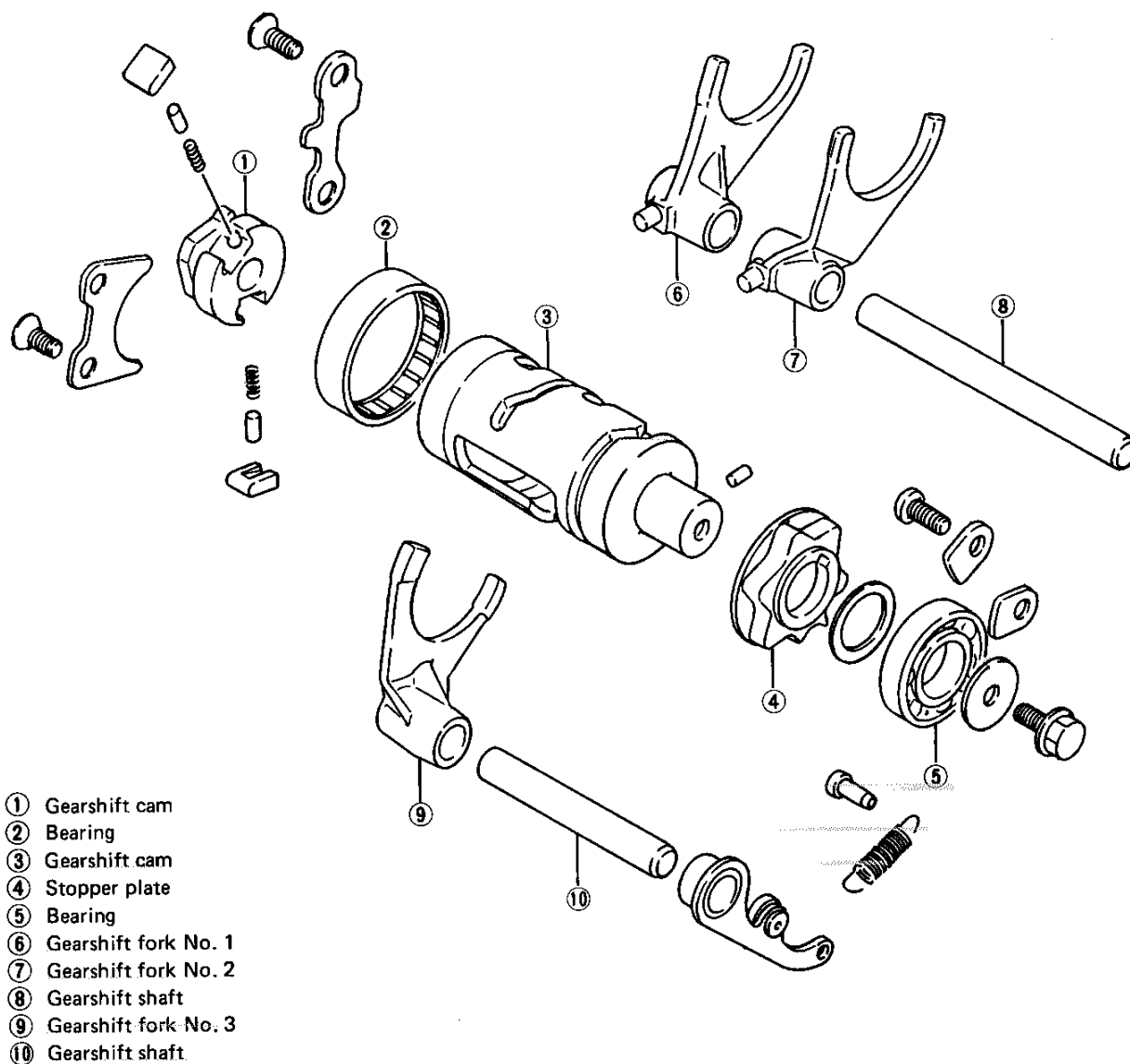
CAUTION:

- * *Never reuse a circlip. After a circlip has been removed from a shaft, it should be discarded and a new circlip must be installed.*
- * *When installing a new circlip, care must be taken not to expand the end gap larger than required to slip the circlip over the shaft.*
- * *After installing a circlip, always insure that it is completely seated in its groove and securely fitted.*

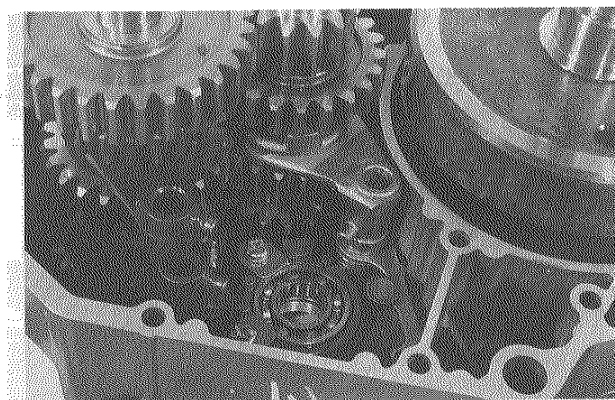
TRANSMISSION



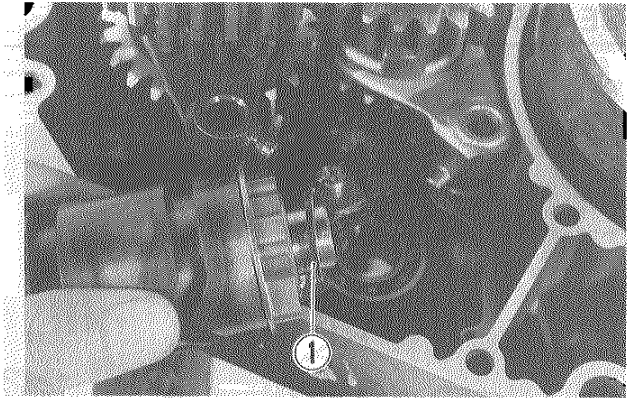
GEARSHIFT CAM AND FORK



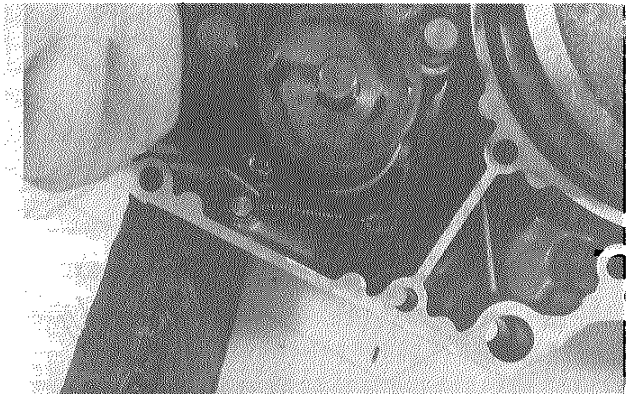
- Fit the three gearshift forks and the cam stopper correctly.



- Be sure to install the washer ① on the gearshift cam.



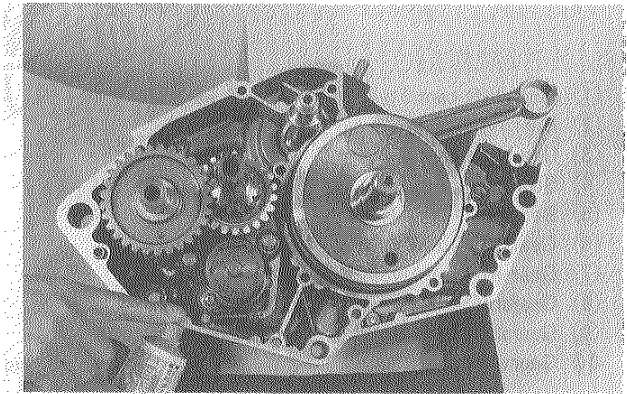
- Hook the cam stopper spring onto the crankcase with a long-nose pliers.



CRANKCASE

- Apply SUZUKI BOND NO. 1207B/1215 uniformly to the mating surface of the crankcase.

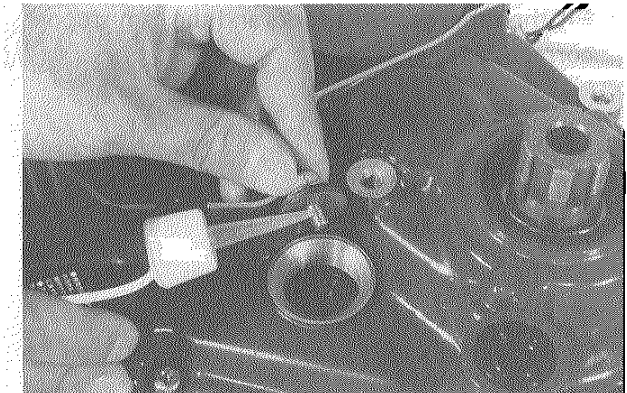
99104-31140 For U.S. model	SUZUKI BOND NO. 1207B
99000-31110 For other models	SUZUKI BOND NO. 1215



GEARSHIFTING CAM

- After applying a small quantity of THREAD LOCK SUPER 1322/1303 to the gearshift cam retainer bolt and tighten the bolt to the specified torque.

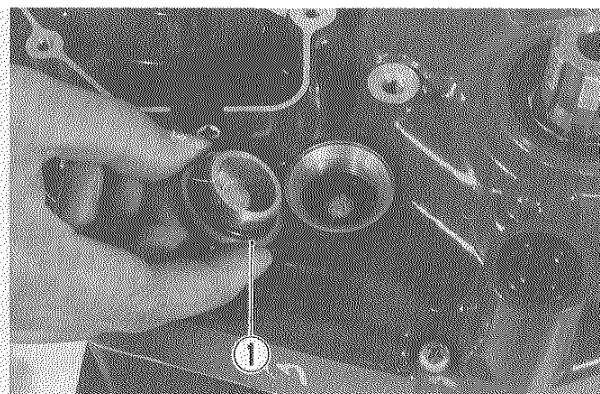
99000-32030	Thread Lock "1303" (For U.S. model)
99000-32110	Thread Lock "1322" (For other models)
Tightening torque	8 - 12 N·m (0.8 - 1.2 kg·m) (6.0 - 9.0 lb·ft)



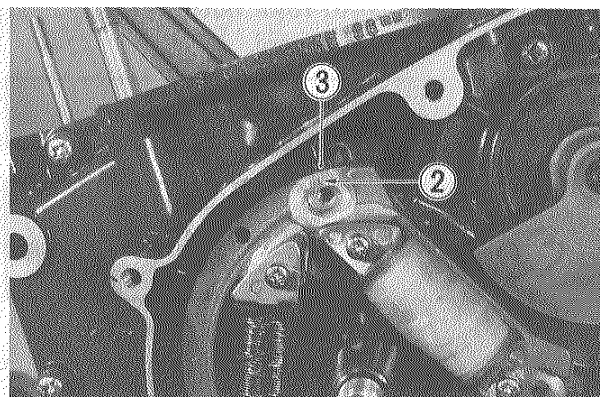
- Fit a new O-ring ① and install the gearshift cam cap.

NOTE:

A new O-ring is required to prevent oil leakage.

**STATOR**

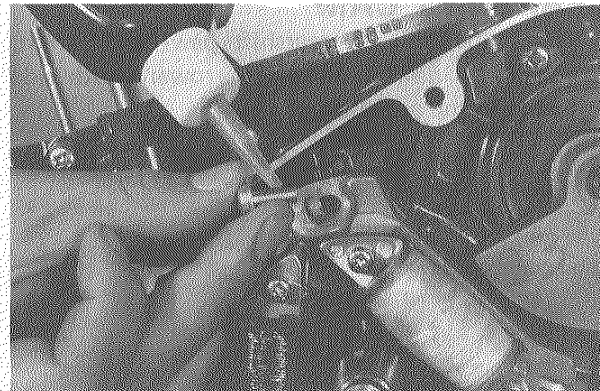
- Align the engraved line ② on the stator with the aligning line ③ on the crankcase.



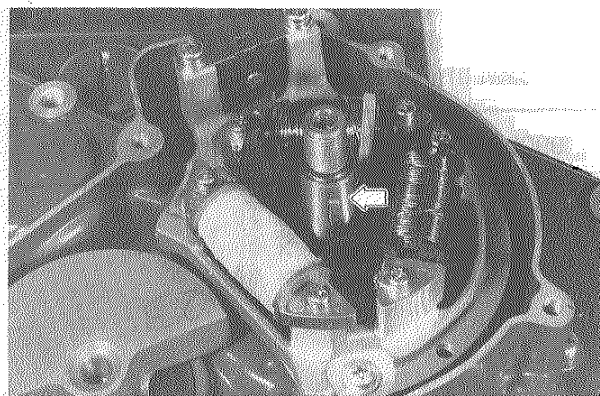
- Apply a small quantity of THREAD LOCK "1342" to the threaded part of the three stator screws.

99000-32050

THREAD LOCK "1342"

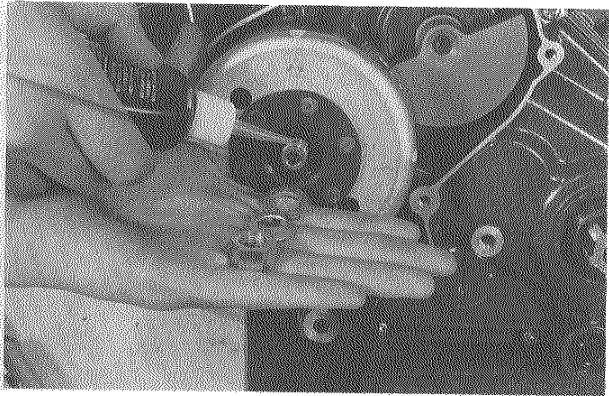
**MAGNETO ROTOR**

- Clean thoroughly both mating surfaces of the rotor and crankshaft with cleaning solvent.
- Fit the key into the key slot on the crankshaft.



- Install the magneto rotor.
- Apply a small quantity of **THREAD LOCK SUPER "1303"/"1305"** to the threaded part of the crankshaft.

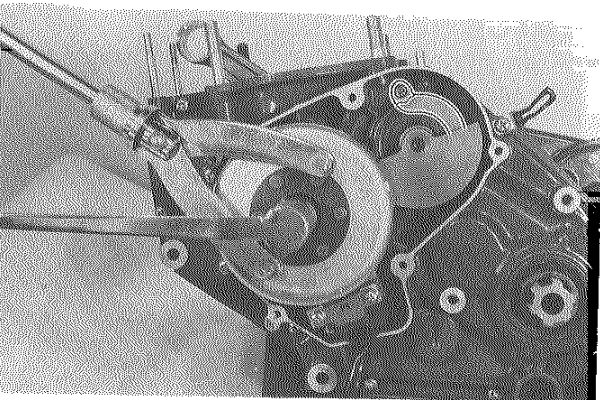
99000-32030 For U.S. model	THREAD LOCK SUPER "1303"
99000-32100 For other models	THREAD LOCK SUPER "1305"



- Tighten the magneto rotor nut to the specified torque with the special tool.

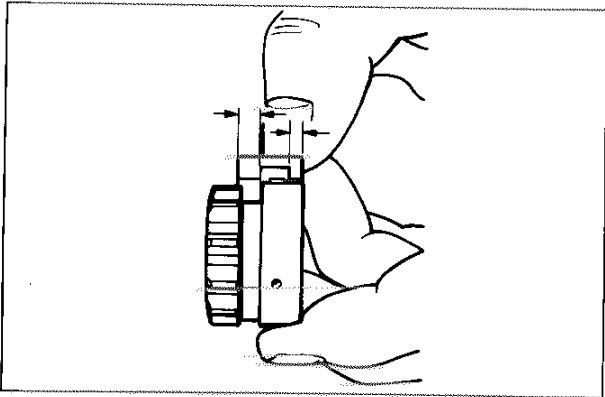
09930-40113	Rotor holder
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Tightening torque	90 – 100 N·m (9.0 – 10.0 kg·m) (65.0 – 72.5 lb·ft)
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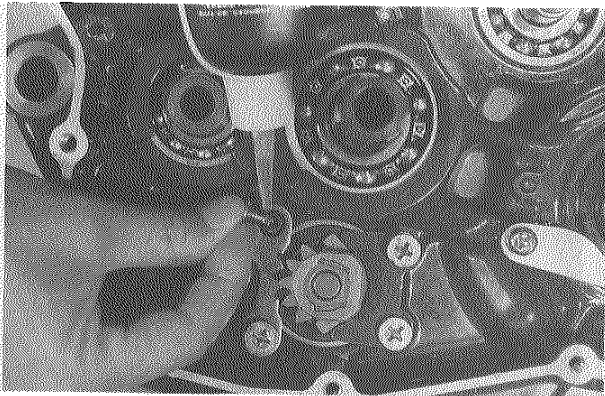
GEARSHIFT CAM

- The shape of each gearshift pawl is different, install the pawl with the narrower width side facing to the gearshift cam side.



- Apply a small quantity of **THREAD LOCK "1342"** to the cam guide ① mounting screws and pawl lifter ② mounting screws.

99000-32050	THREAD LOCK "1342"
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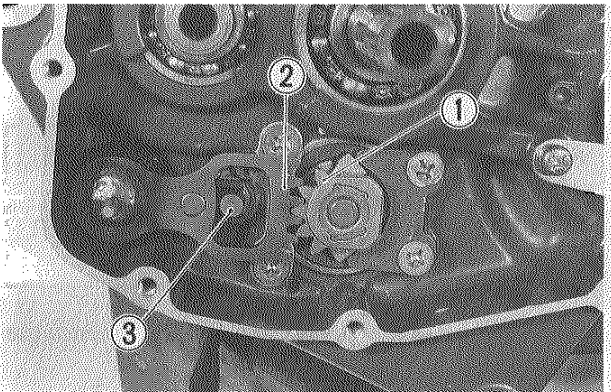
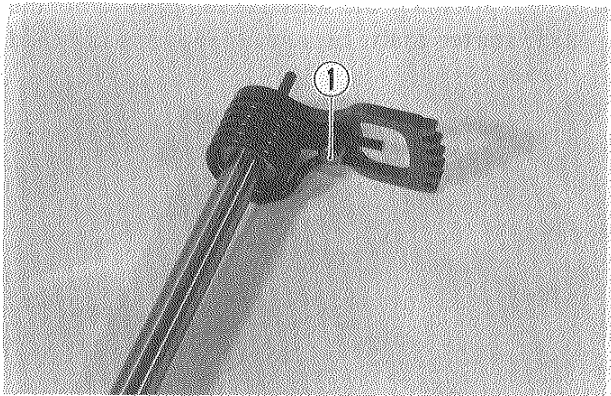


GEARSHIFT SHAFT

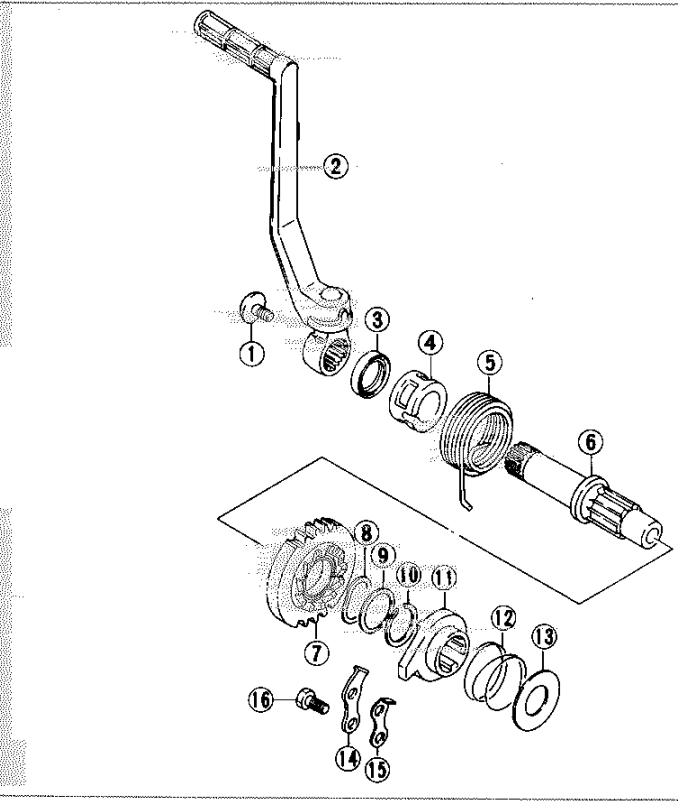
- Install the gearshift return spring onto the gearshift shaft with the stopper ① hatched by the spring ends.
- Install the gearshift shaft into the crankcase. Gearshift cam driven gear ① meshes with the gearshift cam drive gear ② mounted on the gearshift shaft. Be sure to mesh the gears ① and ② with their center lines coinciding with each other, or the mechanism will shift poorly or will not shift at all.

NOTE:
When replacing the gearshift arm stopper ③, apply a small quantity of **THREAD LOCK SUPER "1303"** to the threaded part of the stopper and tighten it to the specified torque.

99000-32030	THREAD LOCK SUPER "1303"
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KICK STARTER

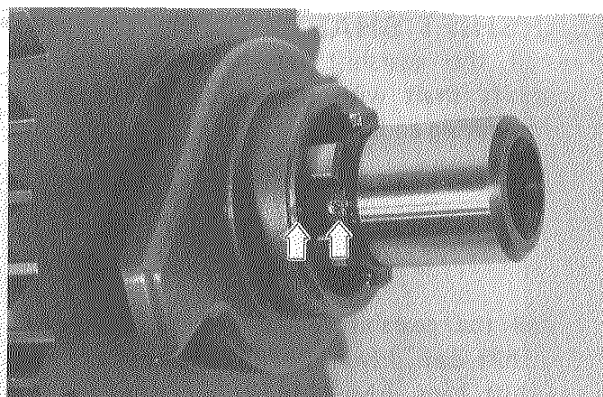


* Apply Thread Lock "1303/1322" to the bolts ① and ⑯.

1303	U.S. model
1322	Other models

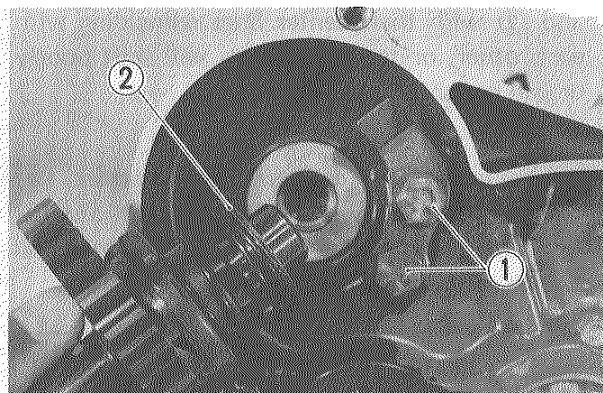
- ① Kick starter lever mounting bolt
- ② Kick starter lever
- ③ Oil seal
- ④ Spring guide
- ⑤ Kick starter spring
- ⑥ Kick starter shaft
- ⑦ Kick starter drive gear
- ⑧ Wave washer
- ⑨ Washer
- ⑩ Circlip
- ⑪ Kick starter pawl
- ⑫ Spring
- ⑬ Washer
- ⑭ Kick starter pawl guide
- ⑮ Kick starter pawl stopper
- ⑯ Kick starter pawl guide mounting bolt

- When installing the kick starter pawl onto the kick starter shaft, be sure to align the punched marks.



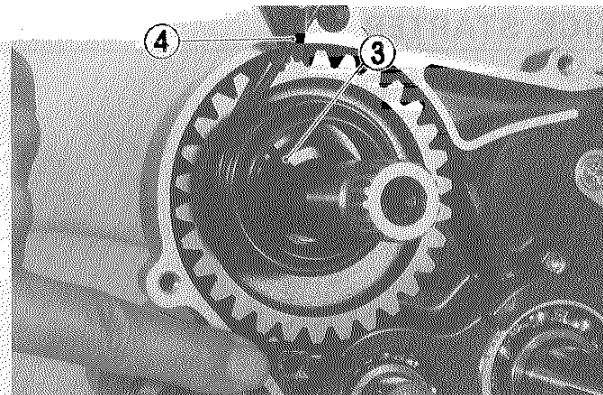
- When installing the kick starter pawl guide apply **THREAD LOCK SUPER "1303/1322"** to the threaded part of the mounting bolts ①.

99000-32030 For U.S. model	THREAD LOCK SUPER "1303"
99000-32110 For other models	THREAD LOCK SUPER "1322"

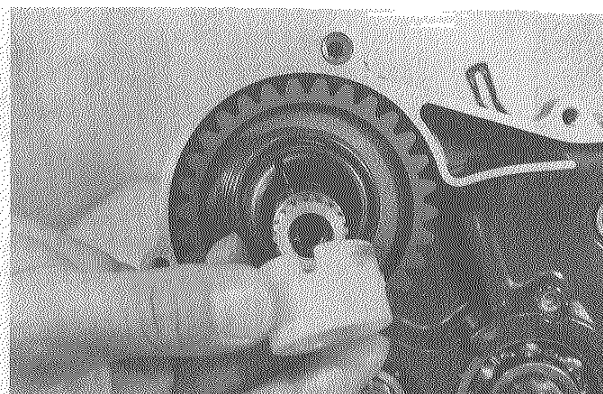


- When installing the kick starter shaft onto the crankcase, fit the washer ②.

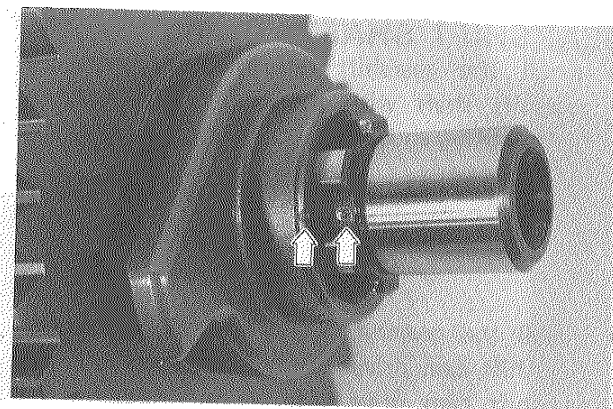
- When fitting the kick starter return spring, hook the part ③ of the return spring into the hole of the kick starter shaft, and turn it 1/2 a turn, clockwise and hook the part ④ of the return spring onto the crankcase with a pliers.



- Install the spring guide with its groove aligned with the spring end.

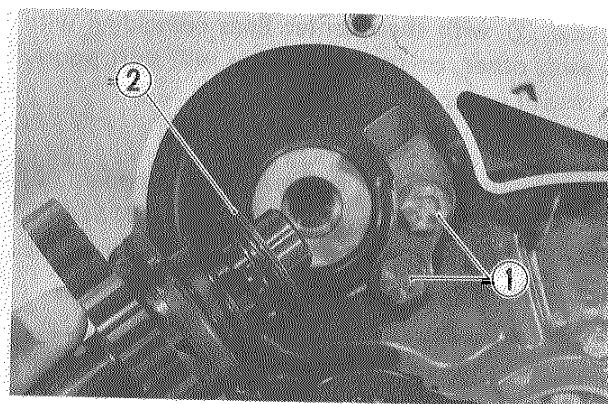


- When installing the kick starter pawl onto the kick starter shaft, be sure to align the punched marks.



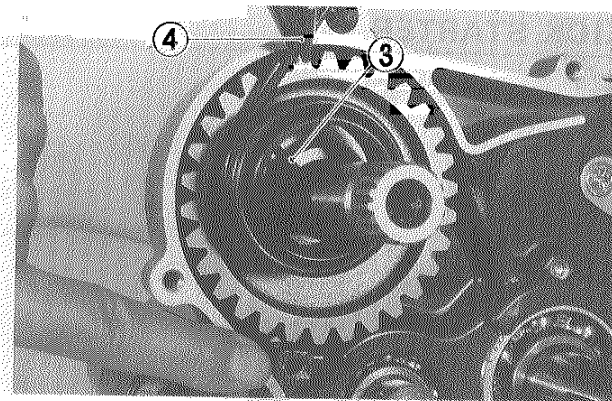
- When installing the kick starter pawl guide apply **THREAD LOCK SUPER "1303/1322"** to the threaded part of the mounting bolts ①.

99000-32030 For U.S. model	THREAD LOCK SUPER "1303"
99000-32110 For other models	THREAD LOCK SUPER "1322"

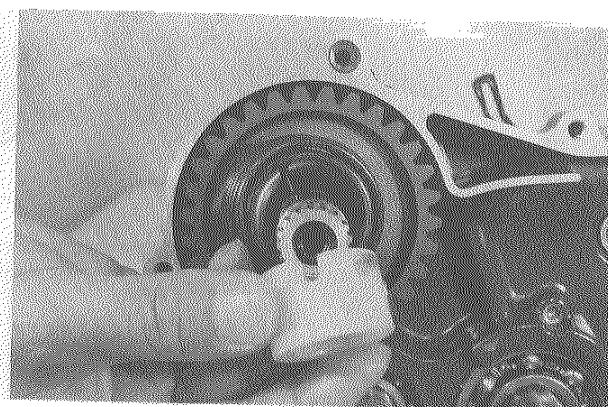


- When installing the kick starter shaft onto the crankcase, fit the washer ②.

- When fitting the kick starter return spring, hook the part ③ of the return spring into the hole of the kick starter shaft, and turn it 1/2 a turn, clockwise and hook the part ④ of the return spring onto the crankcase with a pliers.



- Install the spring guide with it's groove aligned with the spring end.



EXHAUST VALVE ACTUATOR

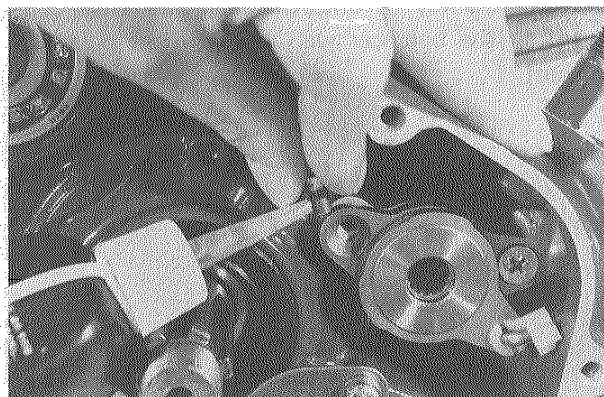
- When installing the exhaust valve actuator, apply **THREAD LOCK SUPER "1333B"** to the screws.

99000-32020

**THREAD LOCK SUPER
"1333B"**

NOTE:

When reassembling the exhaust valve actuator, apply grease to the steel balls.

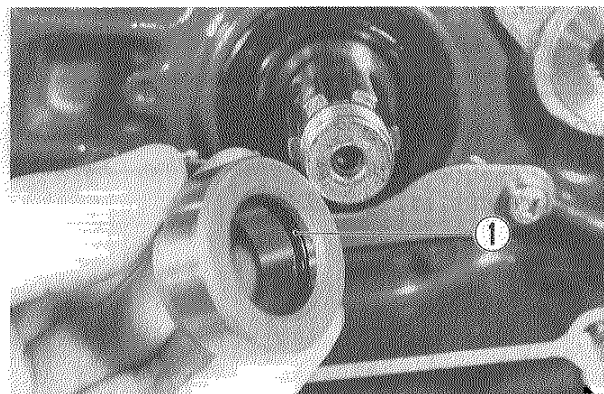


PRIMARY DRIVE GEAR SPACER

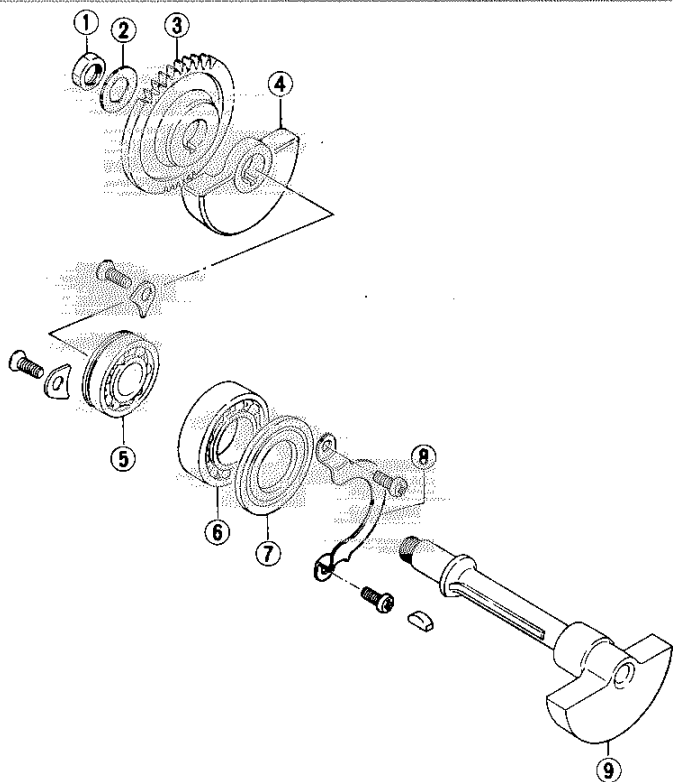
- Install the primary drive gear spacer onto the crankshaft.

NOTE:

Fit a new O-ring ① into the O-ring groove of spacer.

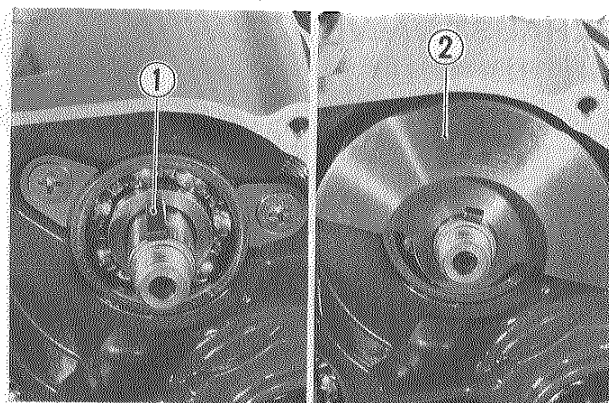


BALANCER



- ① Nut
- ② Washer
- ③ Balancer driven gear
- ④ Balancer RH weight
- ⑤ Bearing
- ⑥ Bearing
- ⑦ Oil seal
- ⑧ Retainer
- ⑨ Balancer shaft

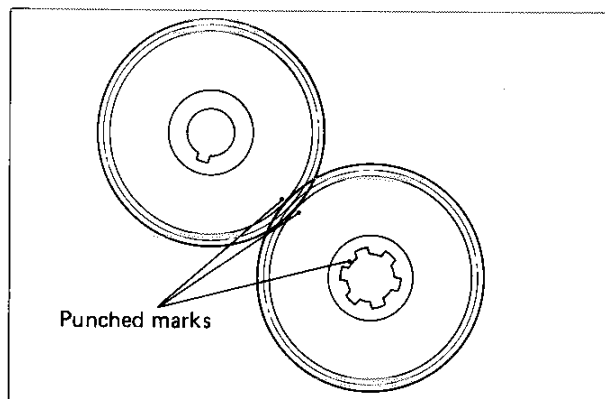
- Install the key ① onto the balancershaft.
- Install the balancer web ② onto the balancer-shaft.



- Install the balancer drive gear and driven gear while aligning the three punched marks on the crankshaft, drive gear and driven gear.

NOTE:

Align the three punched marks in line. Refer to the illustration in page 3-53.



- Apply a small quantity of THREAD LOCK SUPER "1303" to the threaded part of the balancer shaft, and tighten the balancer driven gear nut to the specified torque with the special tool.

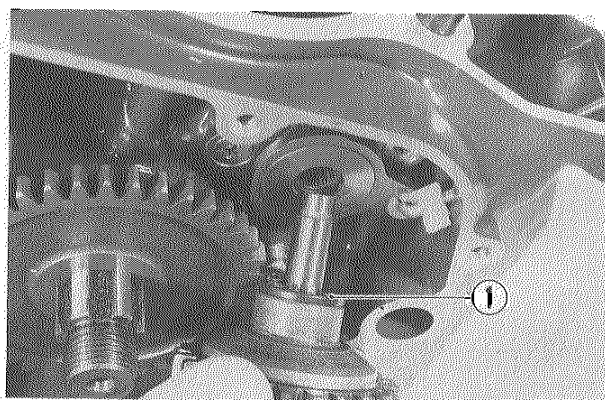
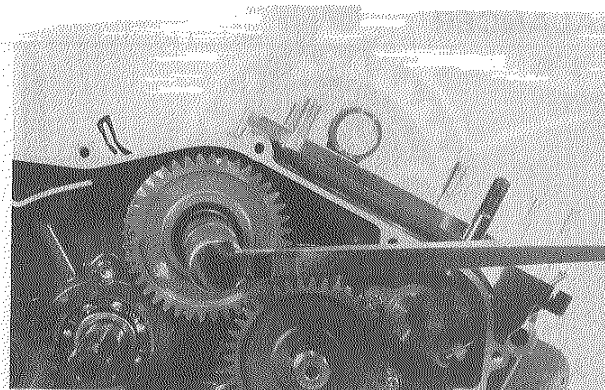
99000-32030 For U.S. model	THREAD LOCK SUPER "1303"
99000-32100 For other models	THREAD LOCK SUPER "1305"
Tightening torque	90 – 110 N·m (9.0 – 11.0 kg-m) (65.0 – 79.5 lb-ft)
09910-20115	Conrod stopper

EXHAUST VALVE GOVERNOR

- When installing the governor, be sure to install the thrust bearing ①.

NOTE:

The roller side of the thrust bearing ① faces to the actuator.



PRIMARY DRIVE GEAR

- Install the primary drive gear and tighten the primary drive gear nut to the specified torque with the special tool.

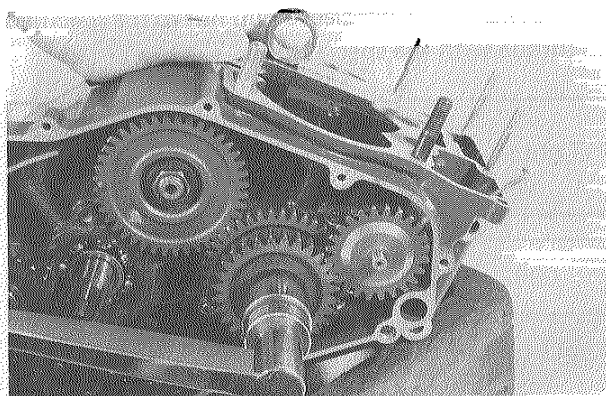
CAUTION:

Apply a small quantity of **THREAD LOCK SUPER "1303/1305"** to the threaded part of the primary drive gear nut.

99000-32030 For U.S. model	THREAD LOCK SUPER "1303"
99000-32100 For other models	THREAD LOCK SUPER "1305"

NOTE:

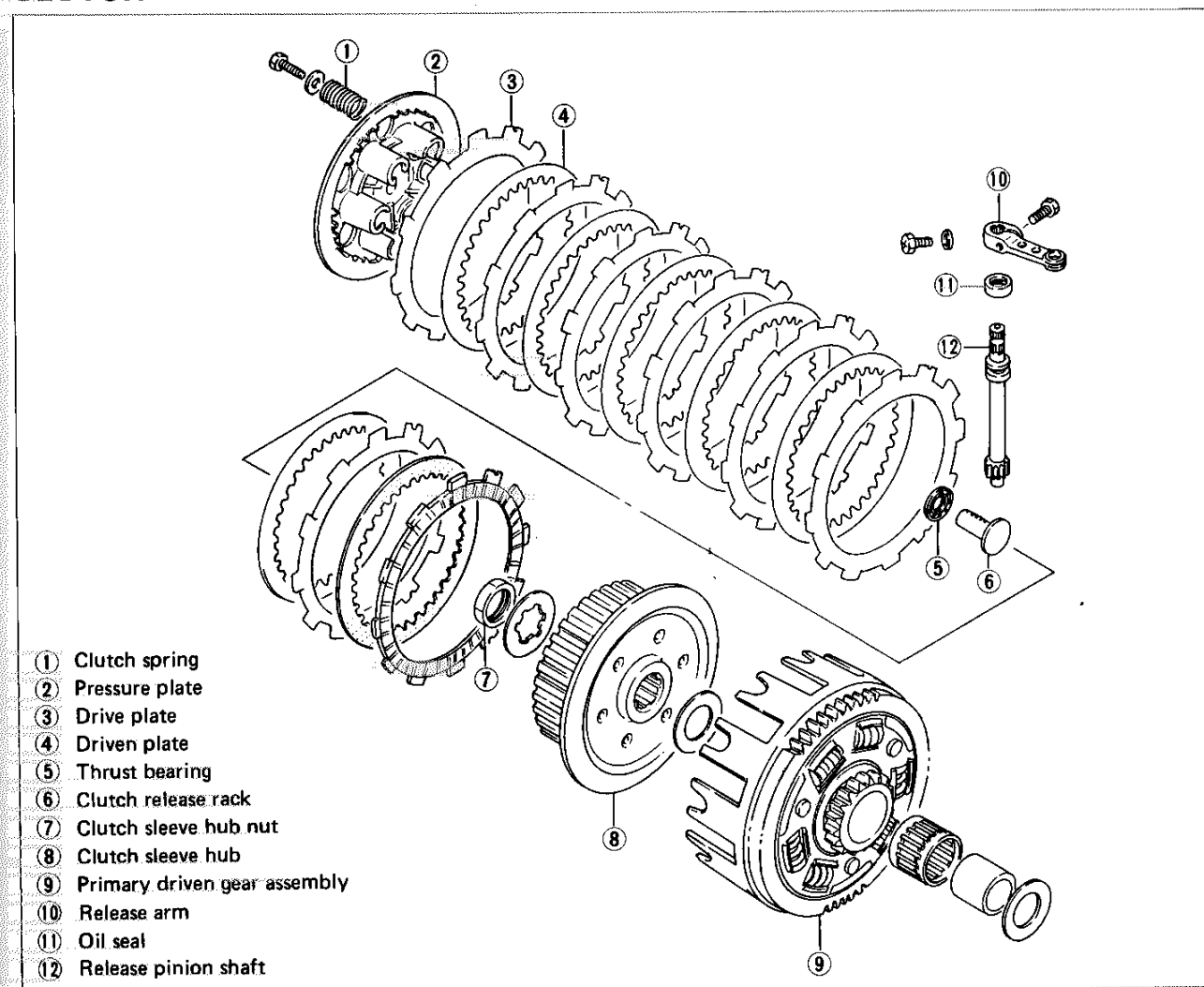
This nut is left-hand thread.



Tightening torque	100 – 130 N·m (10.0 – 13.0 kg·m) (72.5 – 94.0 lb·ft)
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09910-20115	Conrod stopper
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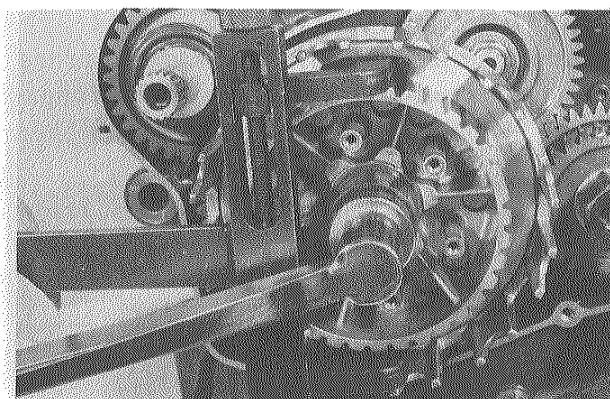
CLUTCH



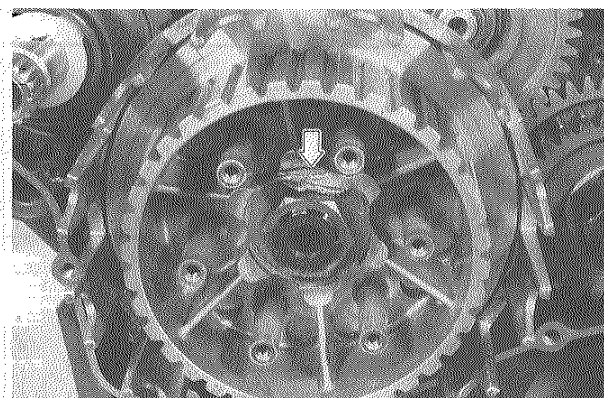
- Tighten the clutch sleeve hub nut to the specified torque with the special tool.

Tightening torque	40 – 60 N·m (4.0 – 6.0 kg-m) 29.0 – 43.5 lb-ft
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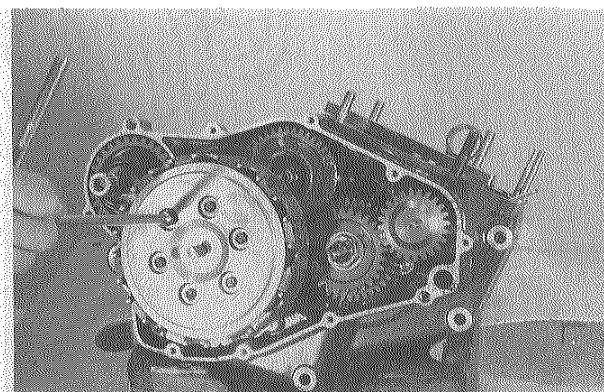
09920-53710	Clutch sleeve hub holder
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- Bend up the lock washer.



- Install the clutch plates, pressure plate and springs.
- Tighten the clutch spring set bolts diagonally.

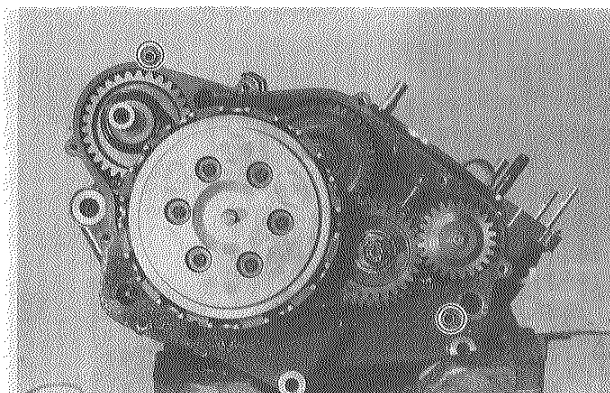


CLUTCH COVER

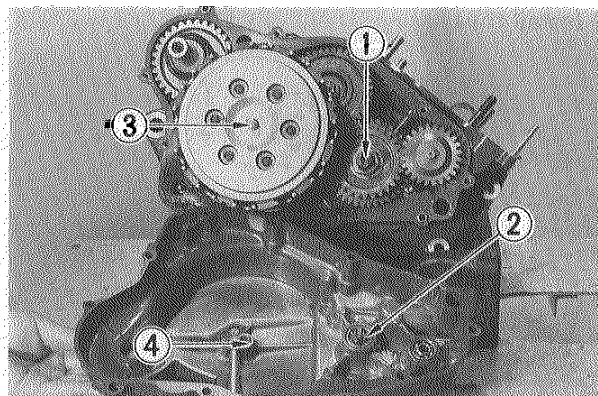
- Install the two dowel pins.
- Fit a new gasket.

CAUTION:

A new gasket is required to prevent oil leakage.

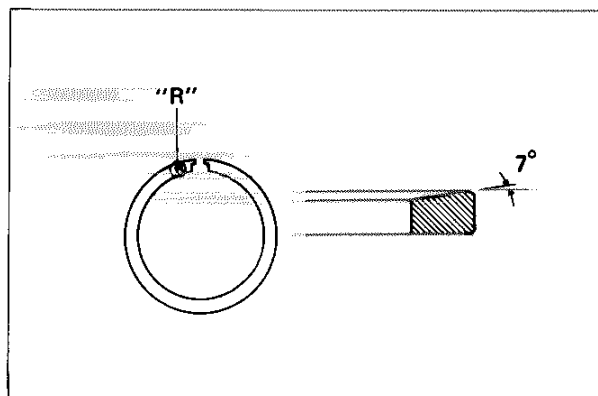


- Align the primary drive gear nut groove ① with the water pump driven protrusion ②.
- Align the rack ③ with the pinion ④.
- Install the clutch cover.

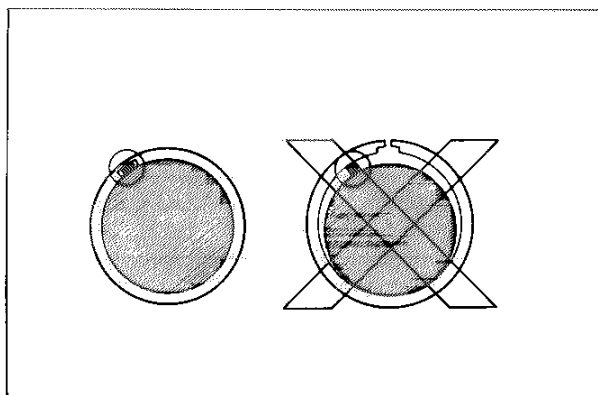


PISTON RINGS

- Both the 1st and 2nd rings are keystone type and identical in shape. The ring grooves on the piston are machined according to the shape of the piston rings. Therefore, the rings must be placed in the proper direction otherwise the piston will not fit in the cylinder.
- Each ring has a punched mark at its end and face it upside.

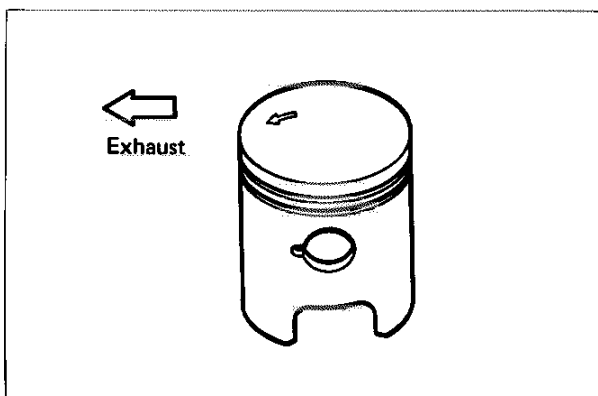


- It is extremely important that, when the piston is placed into the cylinder, each ring is properly positioned the locating pin as shown in the Fig.

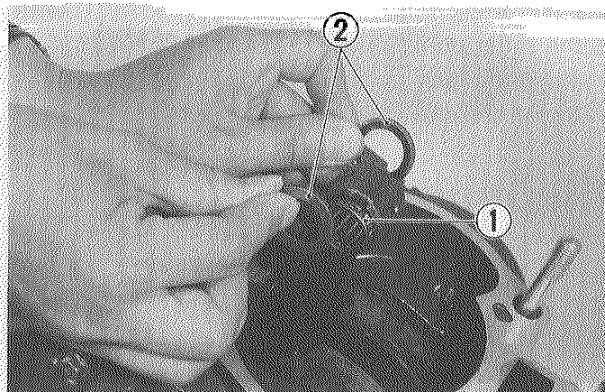


PISTON

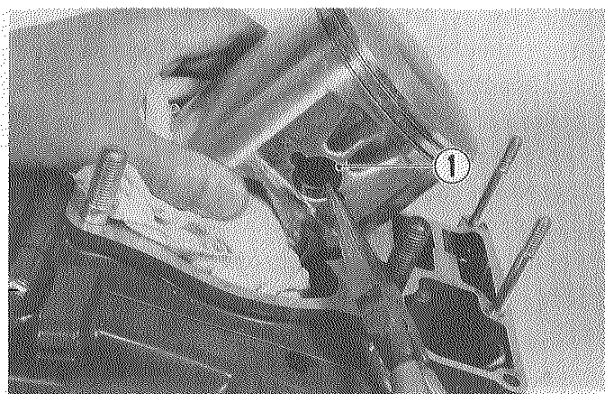
- Before connecting the piston to the connecting rod, be sure to apply SUZUKI CCI SUPER 2-CYCLE OIL or SUZUKI CCI Oil or two-stroke oil on the connecting rod big end and small end bearings.
- The arrow mark on the piston crown points to the exhaust port side.



- Install the bearing ① and the two thrust washers ②.



- The circlip should be mounted in such a position ① that the matching ends of the circlip do not coincide with the groove portion of the piston.
- Before inserting the piston in the cylinder, be sure to apply SUZUKI CCI SUPER 2-CYCLE Oil or SUZUKI CCI Oil or two-stroke oil to the outer surface of the piston and piston ring grooves.

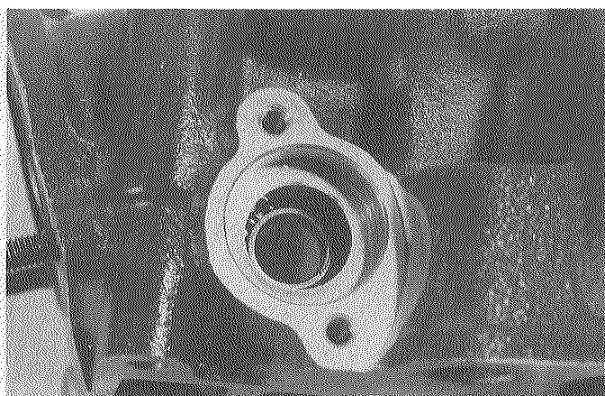
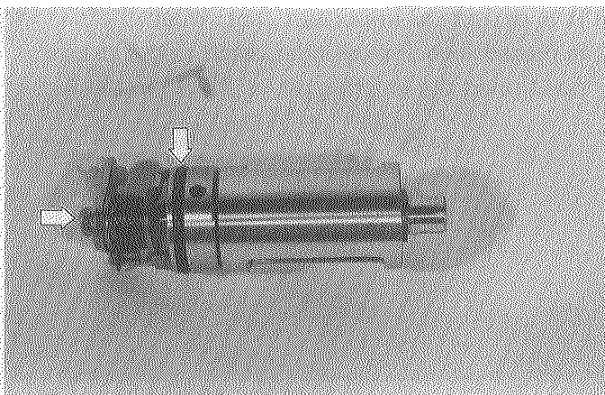


EXHAUST VALVE

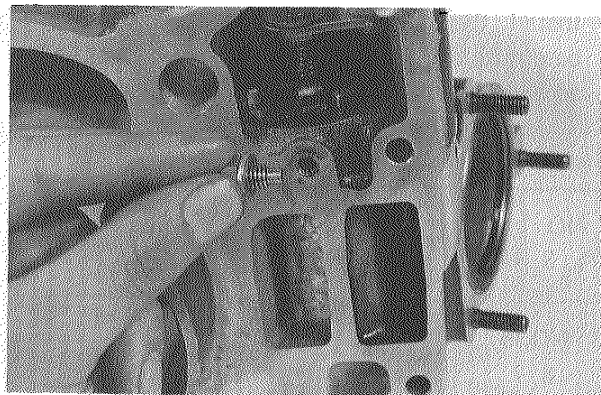
- Apply a small quantity of THREAD LOCK SUPER "1303" to the exhaust valve bolt and tighten it.

99000-32030	THREAD LOCK SUPER "1303"
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- Replace the O-ring with a new one.
- Lubricate the exhaust valve bearing with SUZUKI CCI Oil or two-stroke oil.



- Fit a new gasket onto the exhaust valve stopper bolt, and install the exhaust valve stopper bolt.

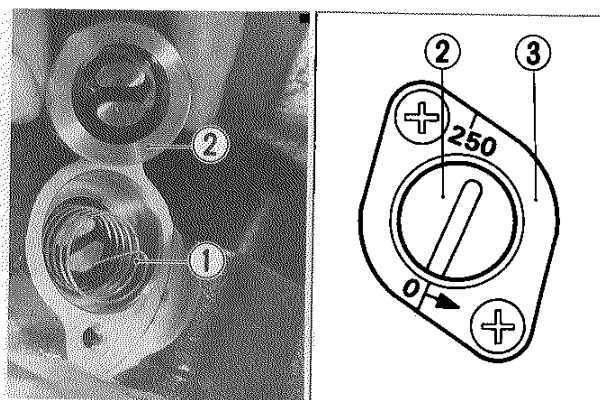


- Set the spring ①, cap ② and cap retainer ③.

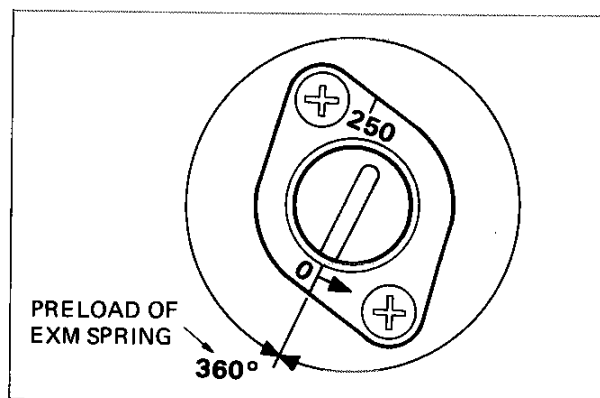
NOTE:

Do not tighten the cap retainer screws at this stage.

Be sure that the mark "250" of the cup retainer is at the top.

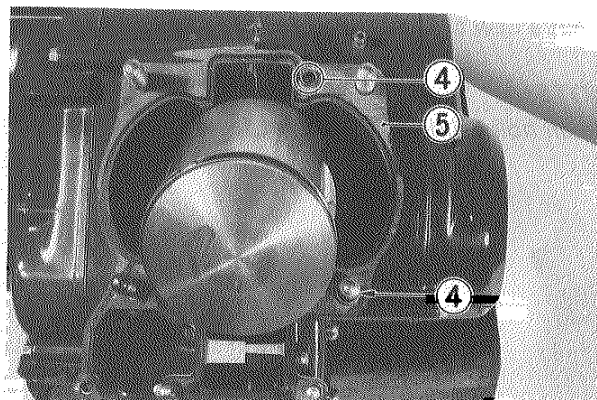


- Turn the cap ② counterclockwise 360 deg and tighten the screws.



CYLINDER

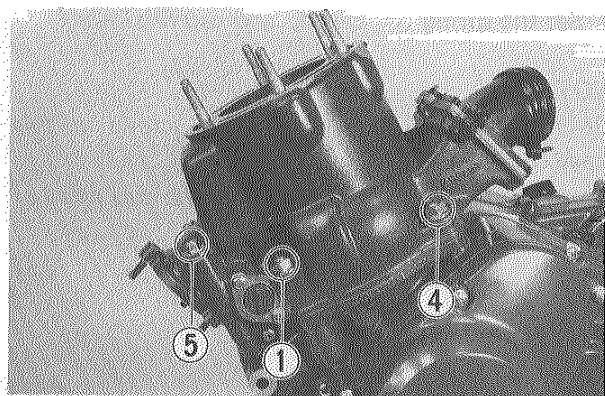
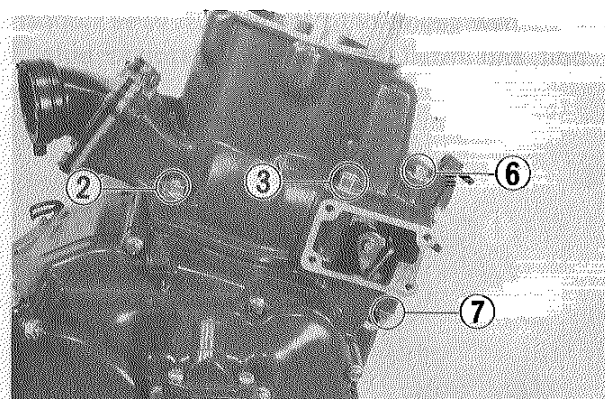
- Fit the two dowel pins ④ and a new cylinder base gasket ⑤ over the cylinder base.



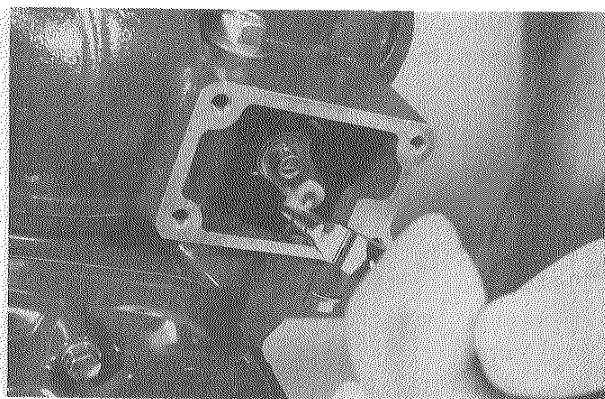
- Install the cylinder and tighten the cylinder base nuts and bolts to the specified torque in the ascending order of numbers indicated in Fig.

Tightening torque

NO. 1, 2, 3, 4	10 mm	36 – 40 N·m (3.6 – 4.0 kg-m) (26.0 – 29.0 lb-ft)
NO. 5, 6, 7	6 mm	8 – 12 N·m (0.8 – 1.2 kg-m) (6.0 – 8.5 lb-ft)



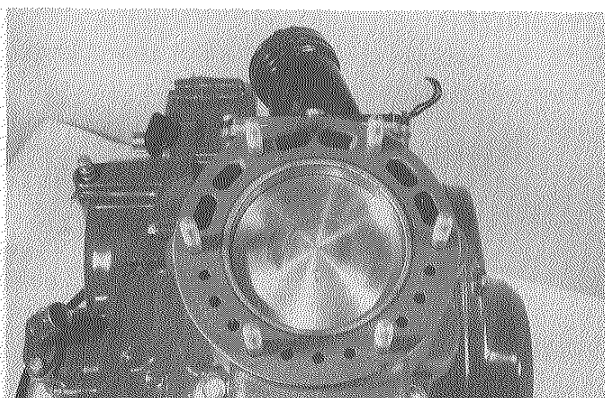
- Connect the exhaust valve rod to the exhaust valve lever by hooking the clip with a long-nose pliers.



- Fit a new cylinder head gasket.

NOTE:

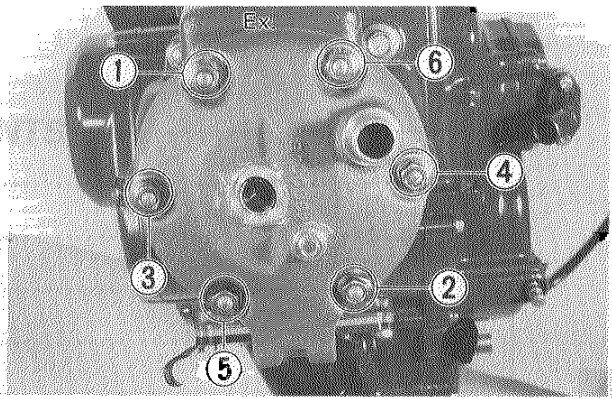
Small holes slide of the gasket faces to the exhaust.



- Install the cylinder head and tighten the cylinder head nuts to the specified torque in the ascending order of numbers.

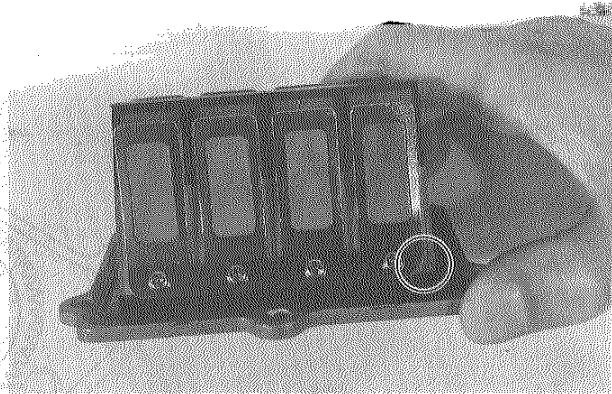
Tightening torque

Initial	15 N·m (1.5 kg·m) (11.0 lb·ft)
Final	26 – 30 N·m (2.6 – 3.0 kg·m) (19.0 – 21.5 lb·ft)

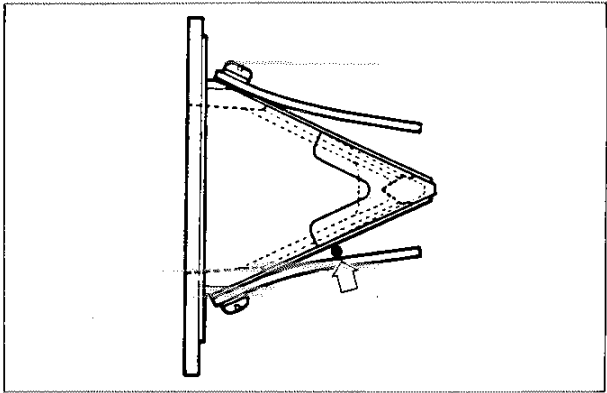


REED VALVE

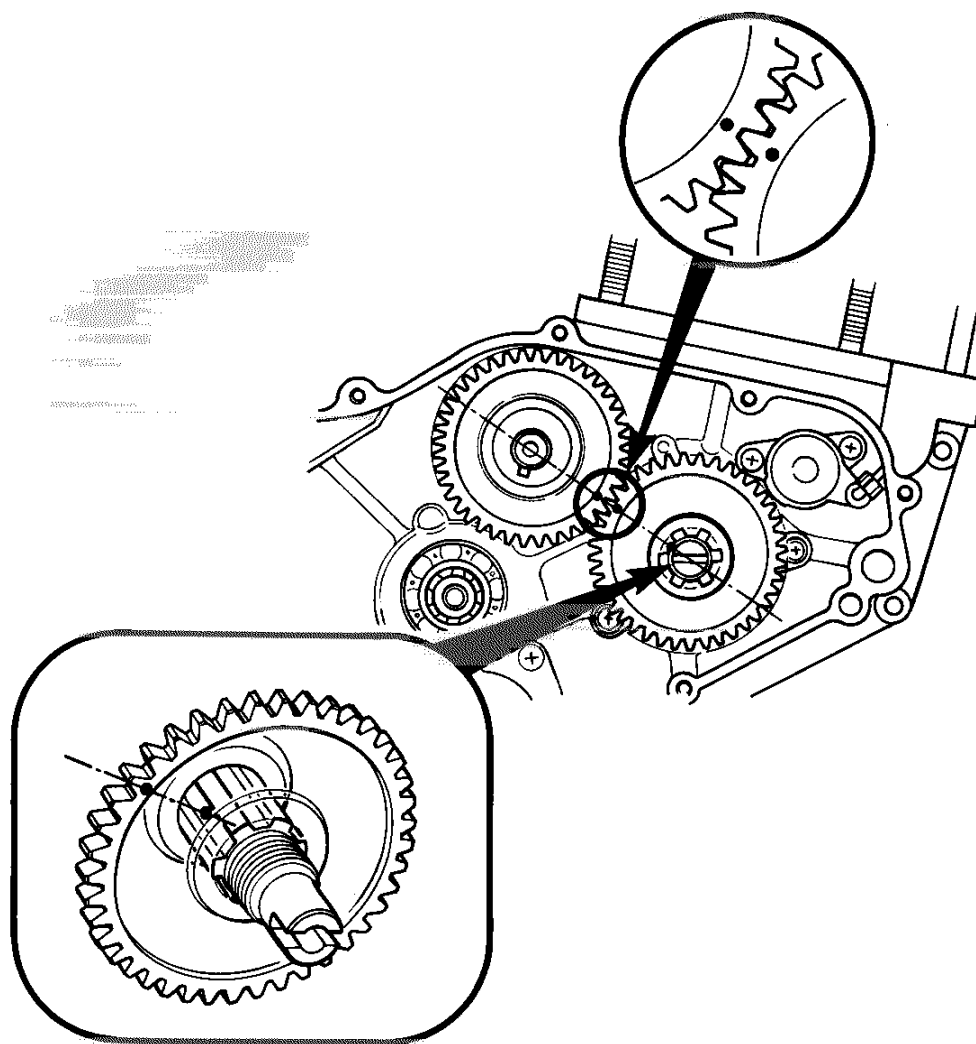
- When assembling the reed valve, align the cut of the stopper.



- Just before installing the reed valve assembly, make sure that there is not foreign matter stuck between the reed valve and its stopper.



REASSEMBLING INFORMATION



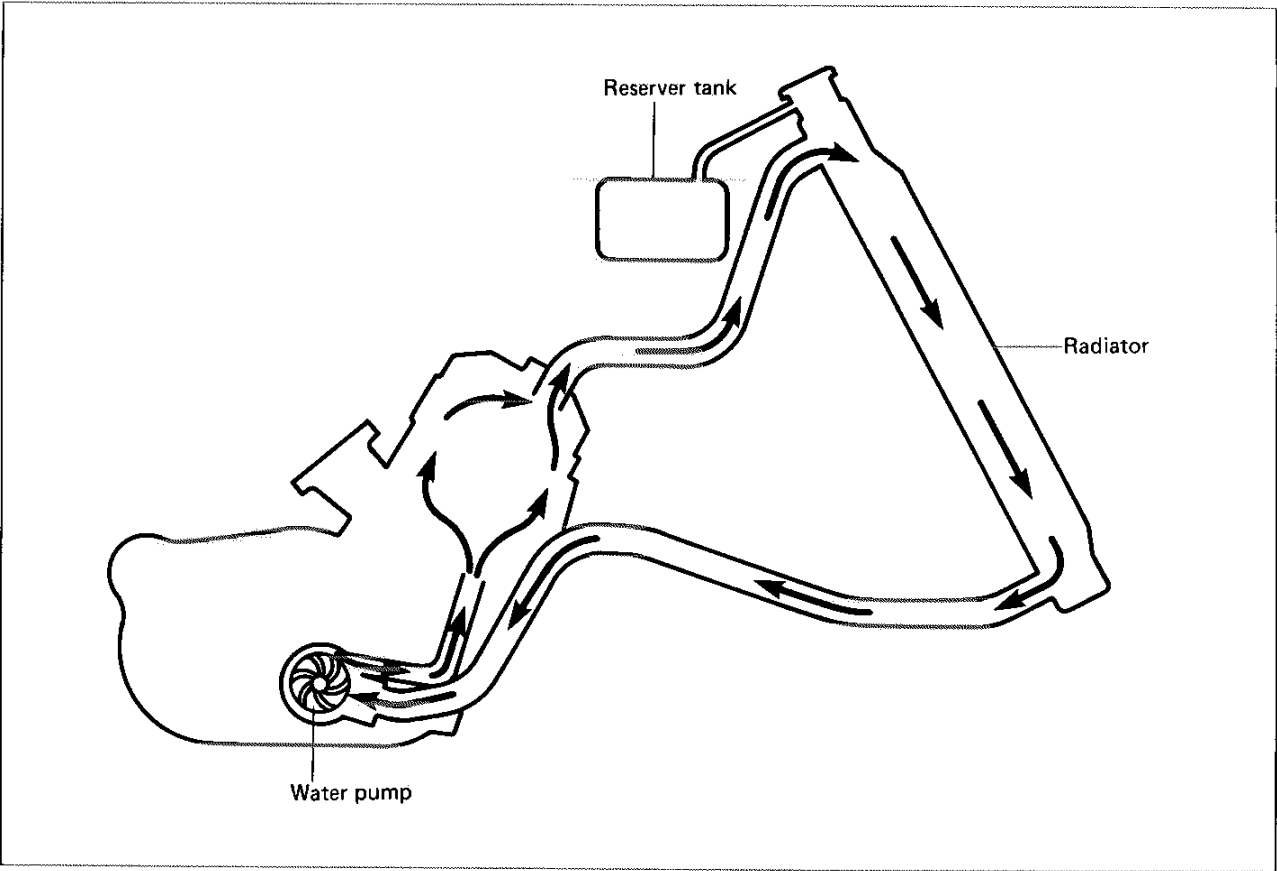
COOLING SYSTEM

CONTENTS

COOLING SYSTEM	4- 1
COOLING SOLUTION	4- 1
RADIATOR	4- 3
WATER PUMP	4- 7

COOLING SYSTEM

The engine is cooled by coolant set in forced recirculation through jackets formed in the cylinder and head, and through the radiator. For the water pump, a high-capacity centrifugal pump is used. The radiator is a tube-and-fin type made of aluminum material, which is characterized by lightness in weight and good radiation.



COOLING SOLUTION

At the time of manufacture, the cooling system is filled with 50 : 50 solution of distilled water and anti-freeze/summer coolant. This 50 : 50 mixture will provide excellent heat protection, and will protect the cooling system from freezing at temperatures above -31°C (-24°F). If the motorcycle is to be exposed to temperatures below -31°C (-24°F), this mixing ratio should be increased up to 55% or 60% according to the Fig.2.

NOTE:

Also included in the cooling solution at the time of manufacture is Bar's Leaks material to help ensure protection against coolant leakage.

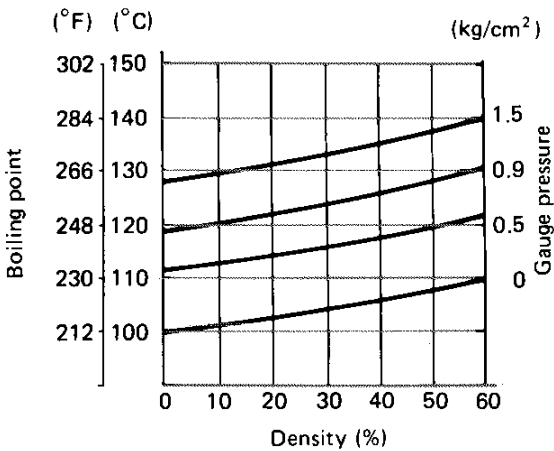


Fig. 1 Coolant density-boiling point curve.

NOTE:

The characteristics of different anti-freezes vary. Read the label to know the protection you will have.

CAUTION:

Do not put in more than 60% anti-freeze or less than 50%. Do not mix different brands of anti-freeze.

ANTI-LEAKAGE MATERIAL

The anti-freeze is characterized by very high values of permeability and a leakage accident of the cooling system is highly likely. The anti-leakage substance is used to prevent such a possible leakage and every new motorcycle is serviced with "Bar's Leaks". The same material or its equivalent should be filled in the radiator when the cooling water is changed. "Bar's Leaks" is available as spare parts in solid form. A suitable amount for use is 1/5 pack per model, and in the case of a liquid anti-leakage material available in the market, 15 – 18 ml (cc) should be used.

09900-24240

Bar's Leaks
Not available in US model

CAUTION:

Anti-leakage material should not be added except the time of the renewal of cooling water.

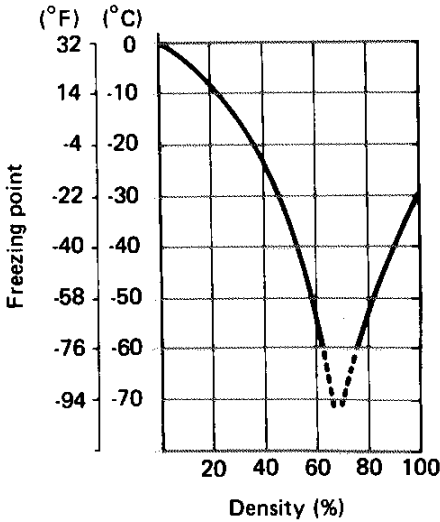
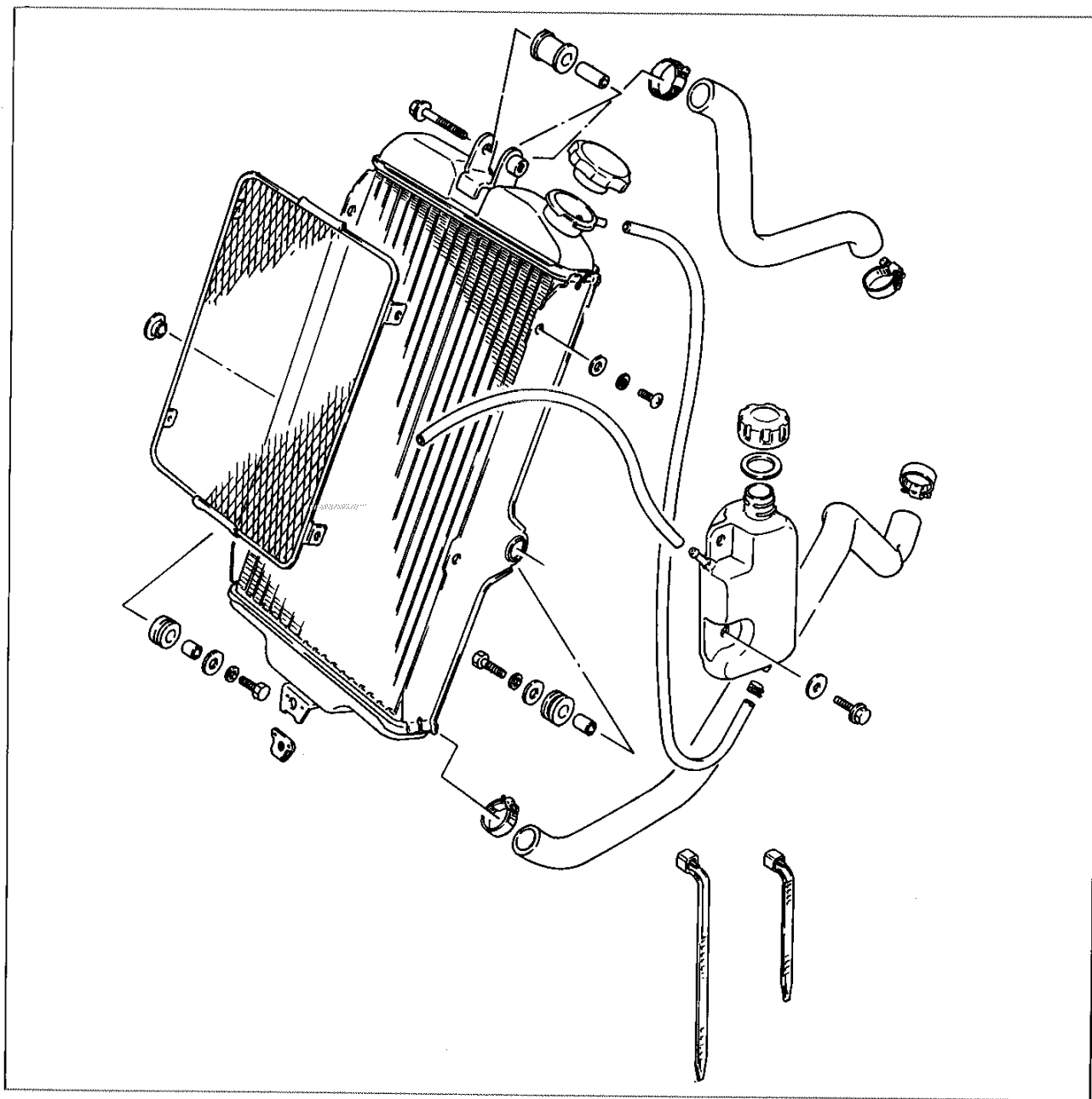


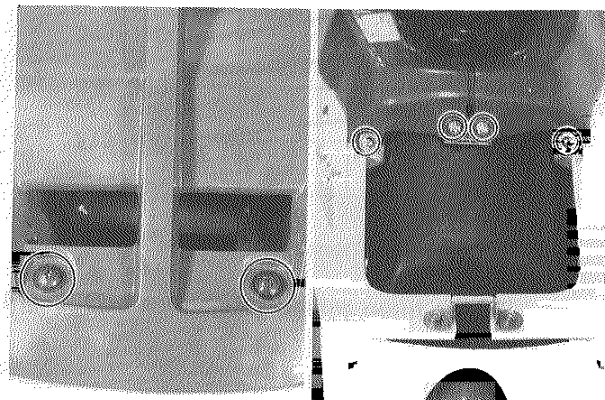
Fig. 2 Coolant density-freezing point curve.

RADIATOR

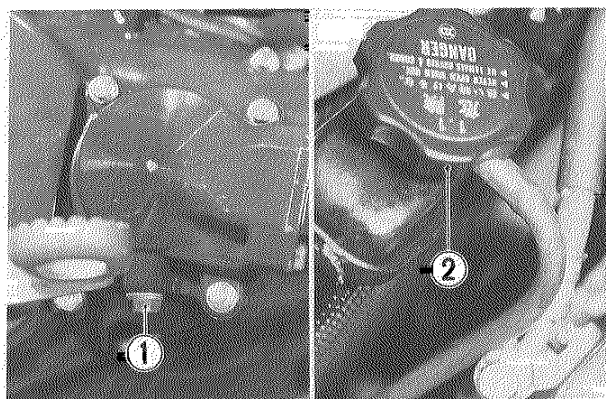


REMOVAL

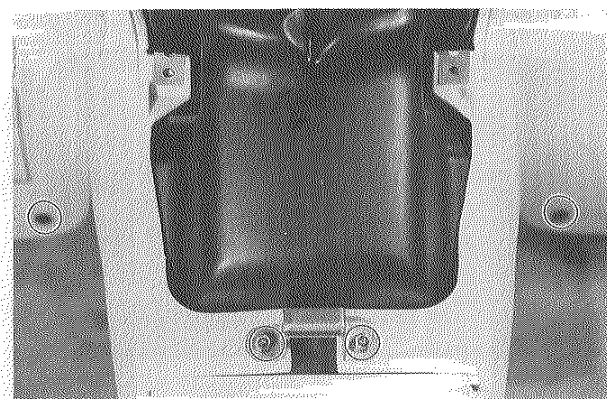
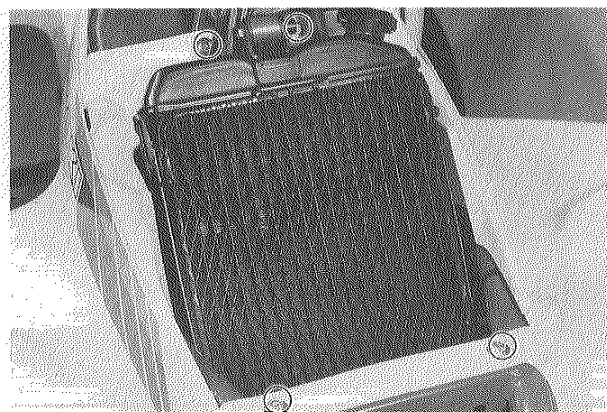
- Remove the seat.
- Remove the screws and remove the center fender. (Page 7-63)



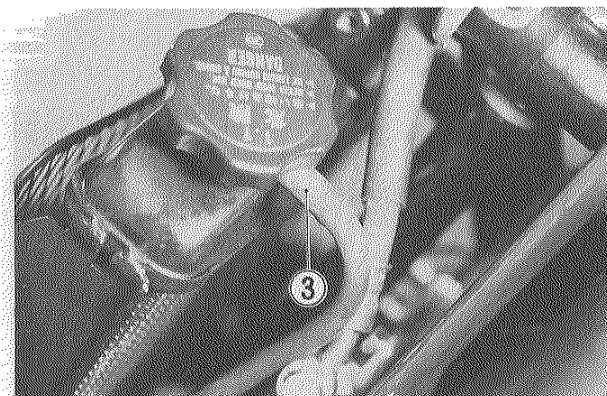
- Remove the drain plug ①.
- Remove the radiator cap ② and drain coolant completely.



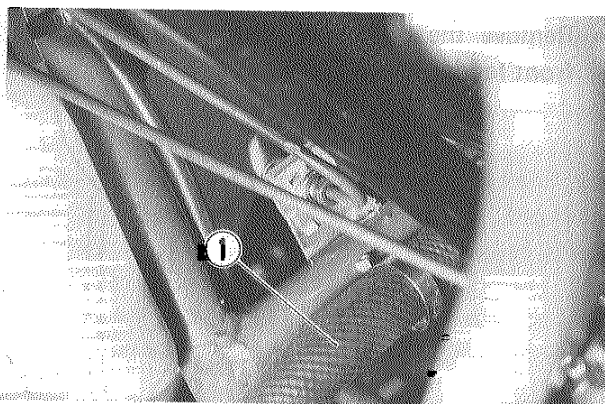
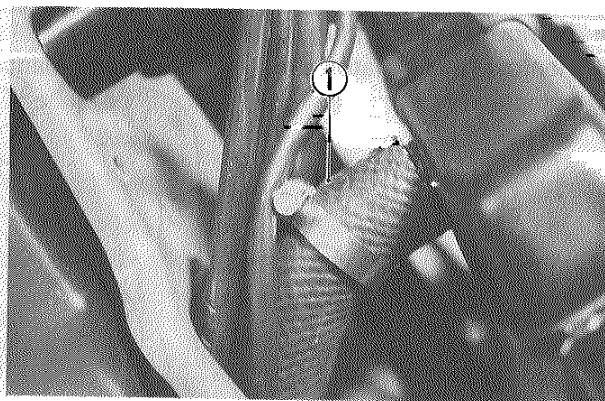
- Remove the bolts and screws and remove the front fender. (Page 7-63)



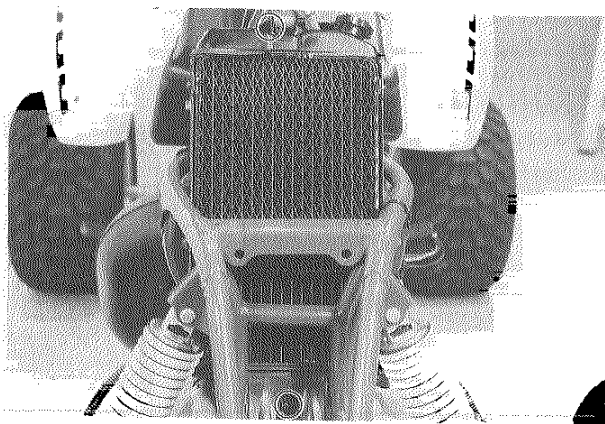
- Remove the head light stay. (Page 7-37)
- Disconnect the overflow hose ③.



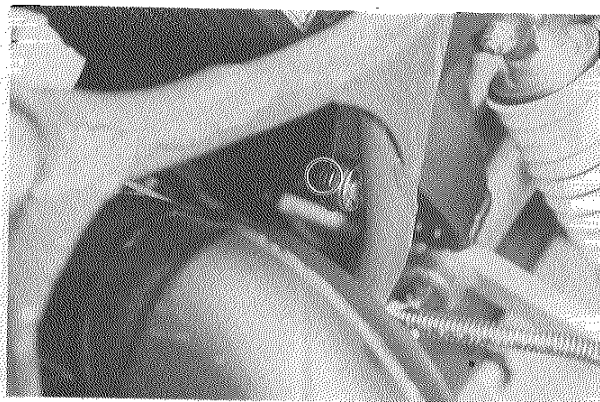
- Loosen the screws and disconnect the radiator hoses ①.



- Remove the bolt and screw.



- Remove the bolts, right and left.
- Remove the radiator.



INSPECTION

Before removing the radiator and draining coolant inspect the radiating system for the following two items.

1. With coolant filled to the filler neck, test the cooling system for tightness using a radiator tester (comercially available) in the following manner:
- Remove the radiator cap and connect the tester ① to the filler neck.
 - Give a pressure of about 1 kg/cm² (14.2 psi) and see if the system holds this pressure for 10 seconds. If not, repair or replace the leaking components.

WARNING:

The engine must be cool before servicing the cooling system, or scalding may result.

2. Test the radiator cap ② for relieving pressure using the radiator tester in the following manner:
- Fit the cap to the tester and build up pressure slowly by operating the tester. Make sure that the pressure built-up stops at 1.1 ± 0.15 kg/cm² and that, with the tester held at a standstill, the cap is capable of that pressure for at least 10 seconds. Replace the cap if it is found not to satisfy either of these two requirements.

Radiator cap valve release pressure	110 ± 15 kPa (1.1 ± 0.15 kg/cm ²)
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NOTE:

Before installing the cap to the tester, apply water to sealing surfaces.

3. Road dirt or trash stuck to the radiator fins must be removed. Use of compressed air is recommended for this cleaning. Fins bent down or dented can be repaired by straightening them with the blade of a small screwdriver.
4. Any water hose found in a cracked condition or flattened must be replaced.

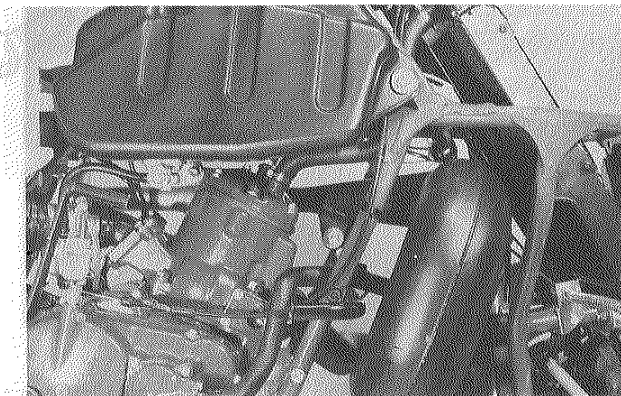
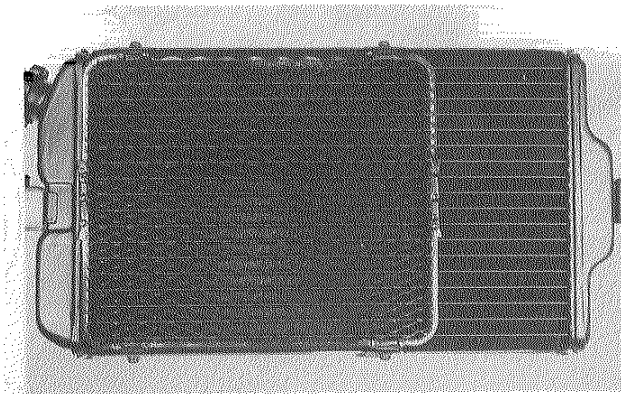
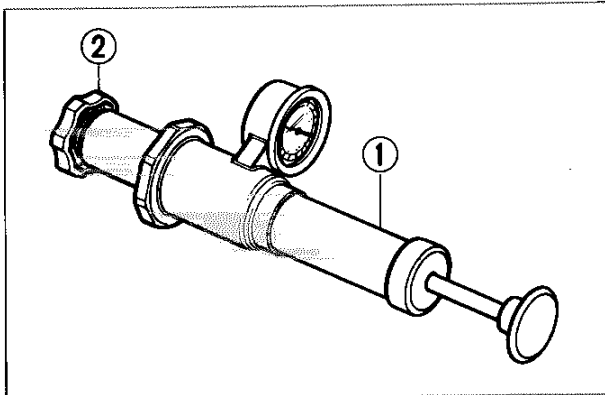
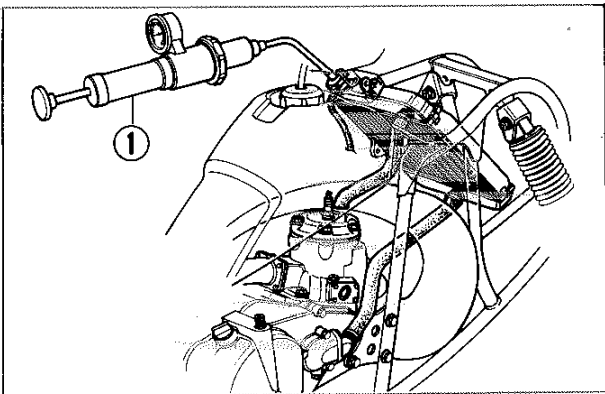
REMOUNTING

Remount the radiator in the reverse order of the removal. Also, pay attention the following points.

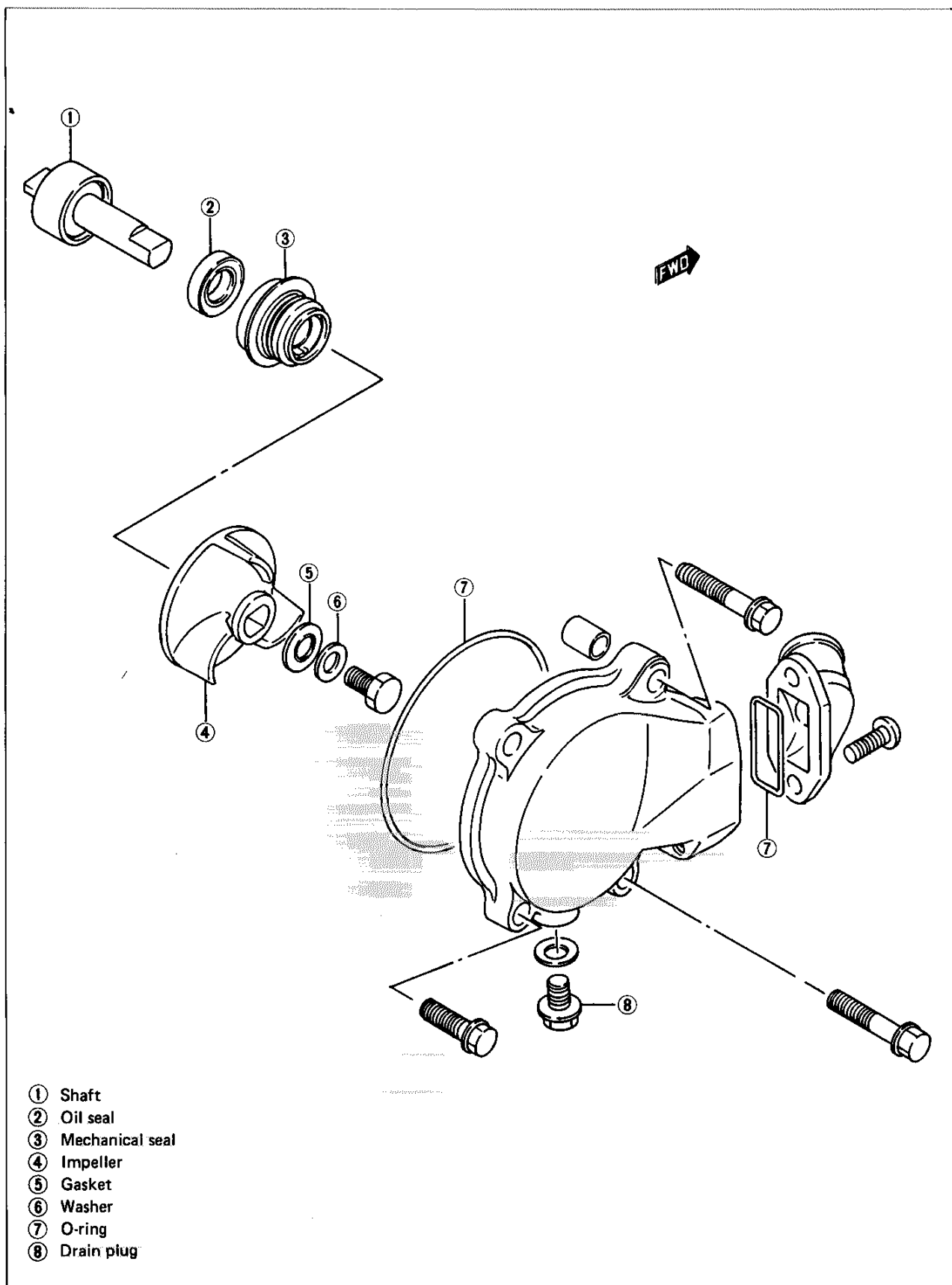
- Remount the radiator side bolts, right and left. (Page 8-11)
- Connect the overflow hose.
- Connect the radiator hoses with the white mark facing up and tighten the clamp with the specified torque.

Tightening torque	2 – 2.5 N·m (0.2 – 0.25 kg·m) 1.4 – 1.8 lb·ft
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- Refill the radiator with coolant. (Page 2-9)
- Finally inspect the radiating system on this page.

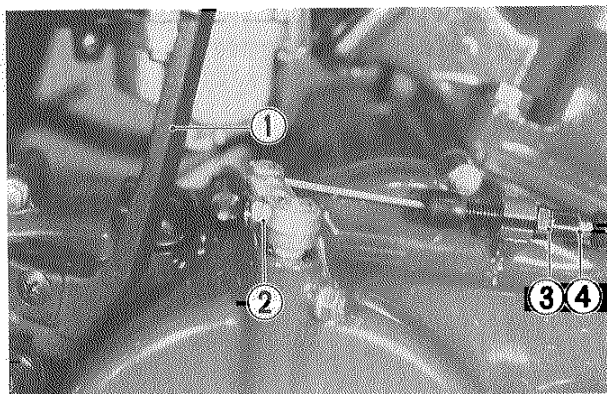


WATER PUMP

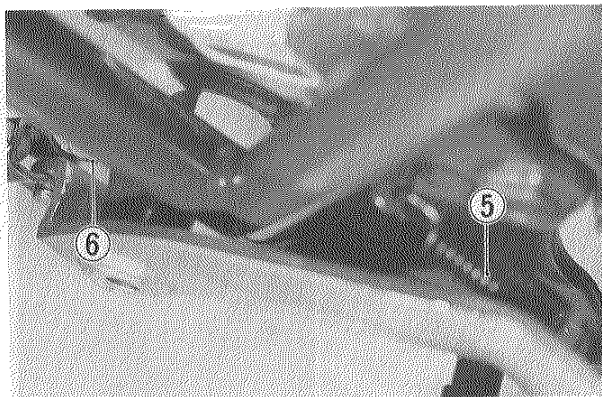


REMOVAL

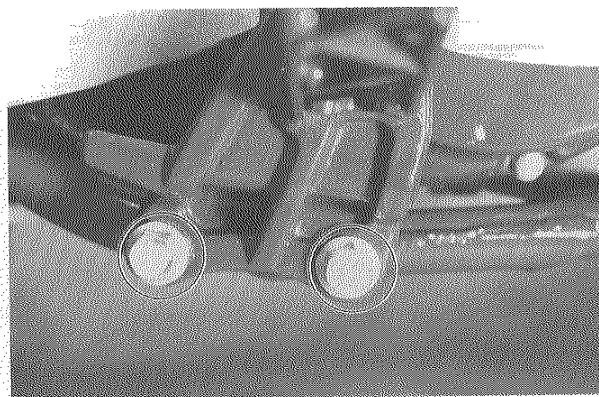
- Drain transmission oil. (Page 2-3)
- Drain coolant. (Page 4-3)
- Remove the radiator hose at the water pump case.
- Remove the kick lever ①.
- Remove the bolt ② and disconnect the lever.
- Loosen the lock nut ③ and remove the adjuster ④.
- Remove the clutch cable.



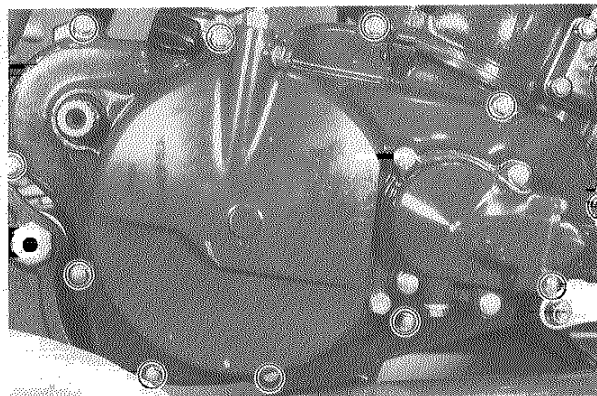
- Remove the spring ⑤.
- Remove the cotter pin ⑥ and disengage the rear brake lever.



- Remove the two bolts and remove the footrest.

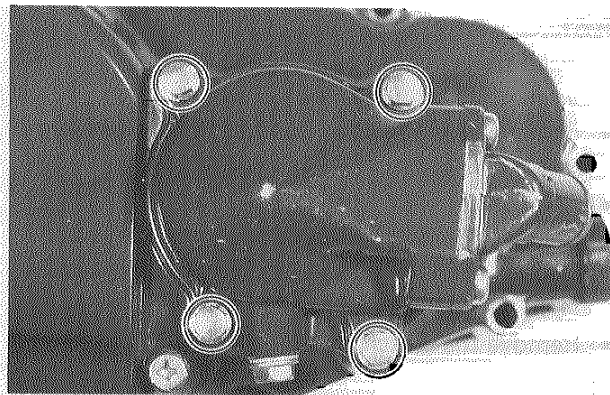


- Remove the bolts and remove the clutch cover.



DISASSEMBLY AND INSPECTION

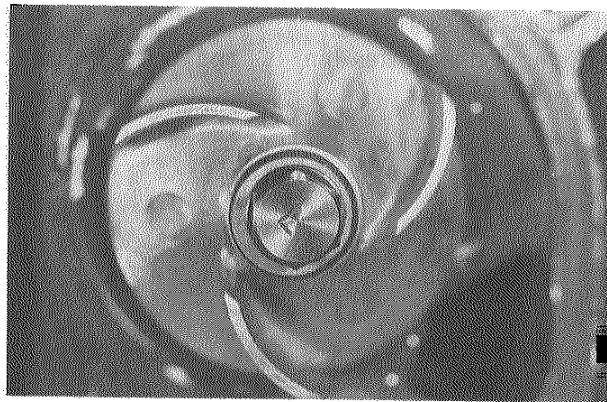
- Remove the bolts and remove the water pump case.



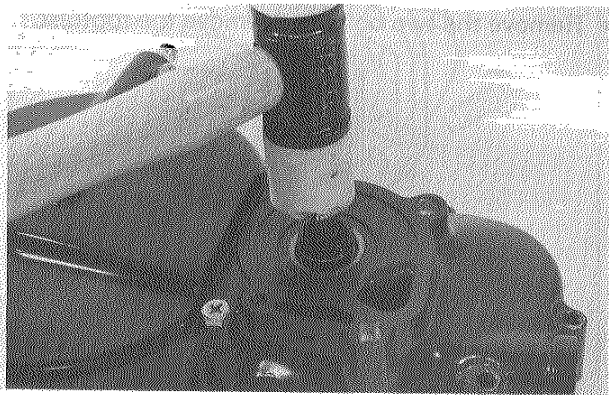
- Hold the water pump shaft and remove the water pump bolt, washer and gasket.
- Remove the impeller.

NOTE:

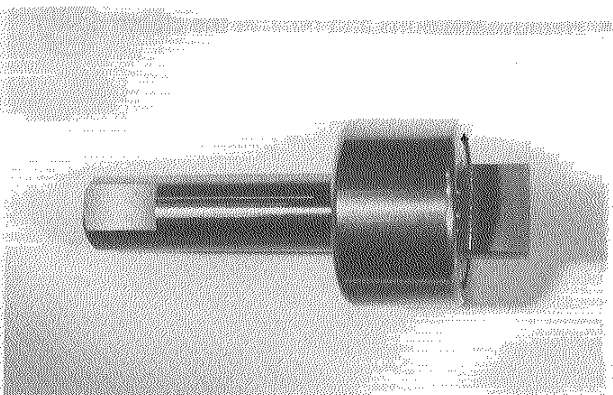
The water pump bolt has left-hand thread.



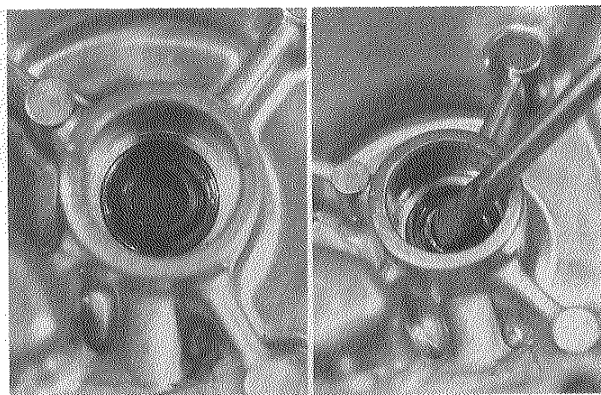
- Drive out the water pump shaft with a plastic hammer.



Inspect the water pump bearing and check for looseness and damage. If any damage is found replace the water pump shaft with a new one.

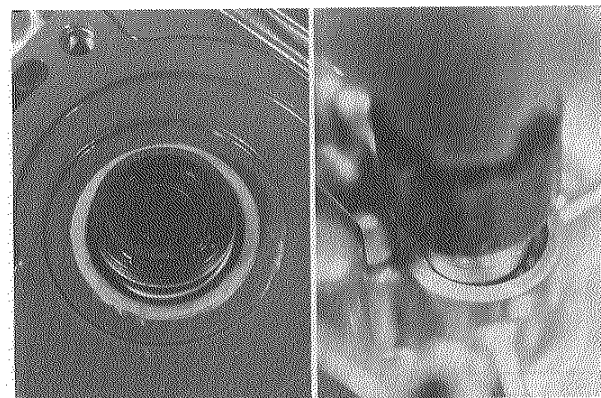


Inspect the oil seal and if any damage is found replace it with a new one. (Refer to page 4-11.)

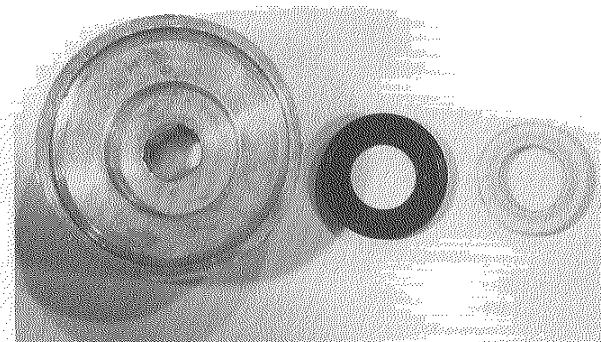


Inspect the mechanical seal and if any damage is found replace it with a new one.

- First remove the oil seal of the opposite side.
- Then drive out the mechanical seal using a proper socket wrench.



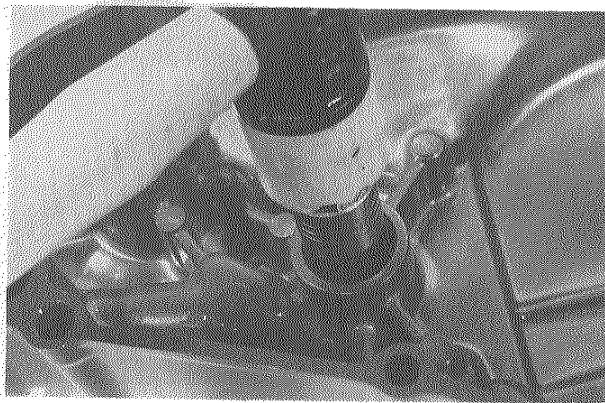
Inspect the ceramic plate and oil seal at the back-side of the impeller. If any damage found replace the impeller.



REASSEMBLY

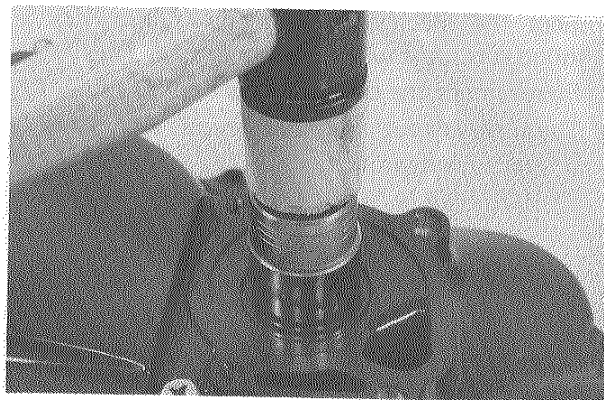
Reassemble the water pump in the reverse order of the disassembly, and also carry out the following steps:

- Drive a new oil seal with a proper socket wrench.

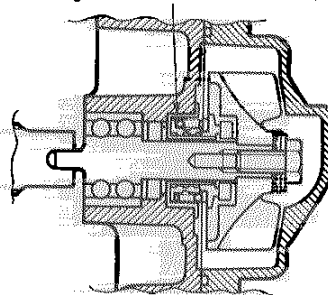


- Drive a new mechanical seal with a proper socket wrench.
- Apply the SUZUKI BOND NO. 1207B/1215 to the mating surface of the mechanical seal as shown in the illustration.

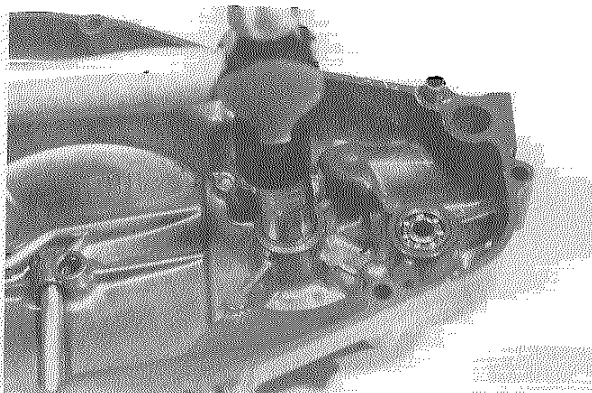
99104-31140	SUZUKI BOND NO. 1207B For U.S. model
99000-31110	SUZUKI BOND NO. 1215 For other models



Apply SUZUKI Bond No. 1207B/1215
to mating surface of mechanical seal.



- Drive the water pump shaft with a proper socket wrench.



Apply THREAD LOCK SUPER "1303"/"1322" to the impeller bolt and tighten it to the specified torque.

99000-32030 For U.S. model	THREAD LOCK SUPER "1303"
99000-32110 For other models	THREAD LOCK SUPER "1322"

Tightening torque	8 – 12 N·m (0.8 – 1.2 kg·m) (6.0 – 8.5 lb·ft)
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CAUTION:

Use a new gasket ① for the impeller bolt. When installing the gasket, face the iron side to the spring washer ② and bolt.

- Install the dowel pins and a new O-ring.

- Connect the radiator hose and tighten the clamp to the specified torque. (Page 8-11)

Tightening torque	2 – 2.5 N·m (0.2 – 0.25 kg·m) (1.4 – 1.8 lb·ft)
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- Refill transmission oil. (Page 2-3).
- Refill coolant. (Page 4-6, 2-9)
- Inspect the radiating system. (Page 4-6)
- Adjust the clutch cable play. (Page 2-3)

