

13. ALTERNATOR/STARTER CLUTCH

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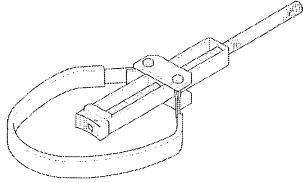
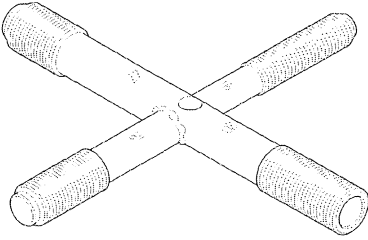
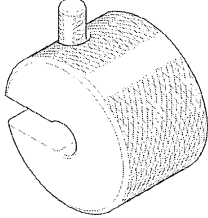
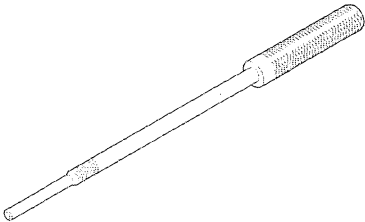
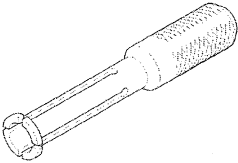
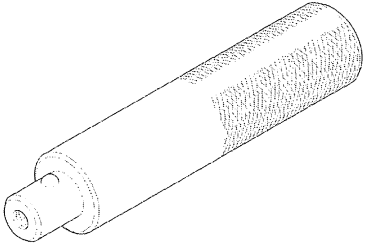
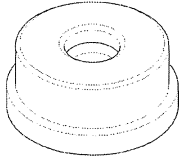
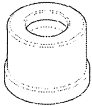
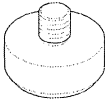
ALTERNATOR/STARTER CLUTCH

SERVICE INFORMATION

GENERAL

- This section covers service of the alternator cover/stator, starter reduction gears and flywheel/starter clutch.
- Alternator cover/stator, starter reduction gears, and flywheel/starter clutch can be serviced with the engine installed in the frame.
- Alternator lubricating oil is fed through the oil passage in the alternator cover. Clean the oil passage before installing the alternator cover.
- Be careful not to damage the mating surfaces of the crankcase and alternator cover when servicing.
- For alternator inspection, see Battery/Charging System section (page 22-6).
- For starter motor service, see Electric Starter section (page 6-4).

TOOLS

<p>Flywheel holder 07725-0040001</p> 	<p>Rotor puller 07733-0020001</p>  <p>or 07933-3950000 (U.S.A. only)</p>	<p>Remover weight 07741-0010201</p>  <p>or 07936-371020A (U.S.A. only)</p>
<p>Bearing remover shaft, 10 mm 07936-GE00100</p>  <p>or 07936-GE0A000 (U.S.A. only)</p>	<p>Bearing remover head, 10 mm 07936-GE00200</p>  <p>or 07936-GE0A000 (U.S.A. only)</p>	<p>Driver 07749-0010000</p> 
<p>Attachment, 42 x 47 mm 07746-0010300</p> 	<p>Attachment, 24 x 26 mm 07746-0010700</p> 	<p>Pilot, 30 mm 07746-0040700</p> 

Pilot, 10 mm
07746-0040100

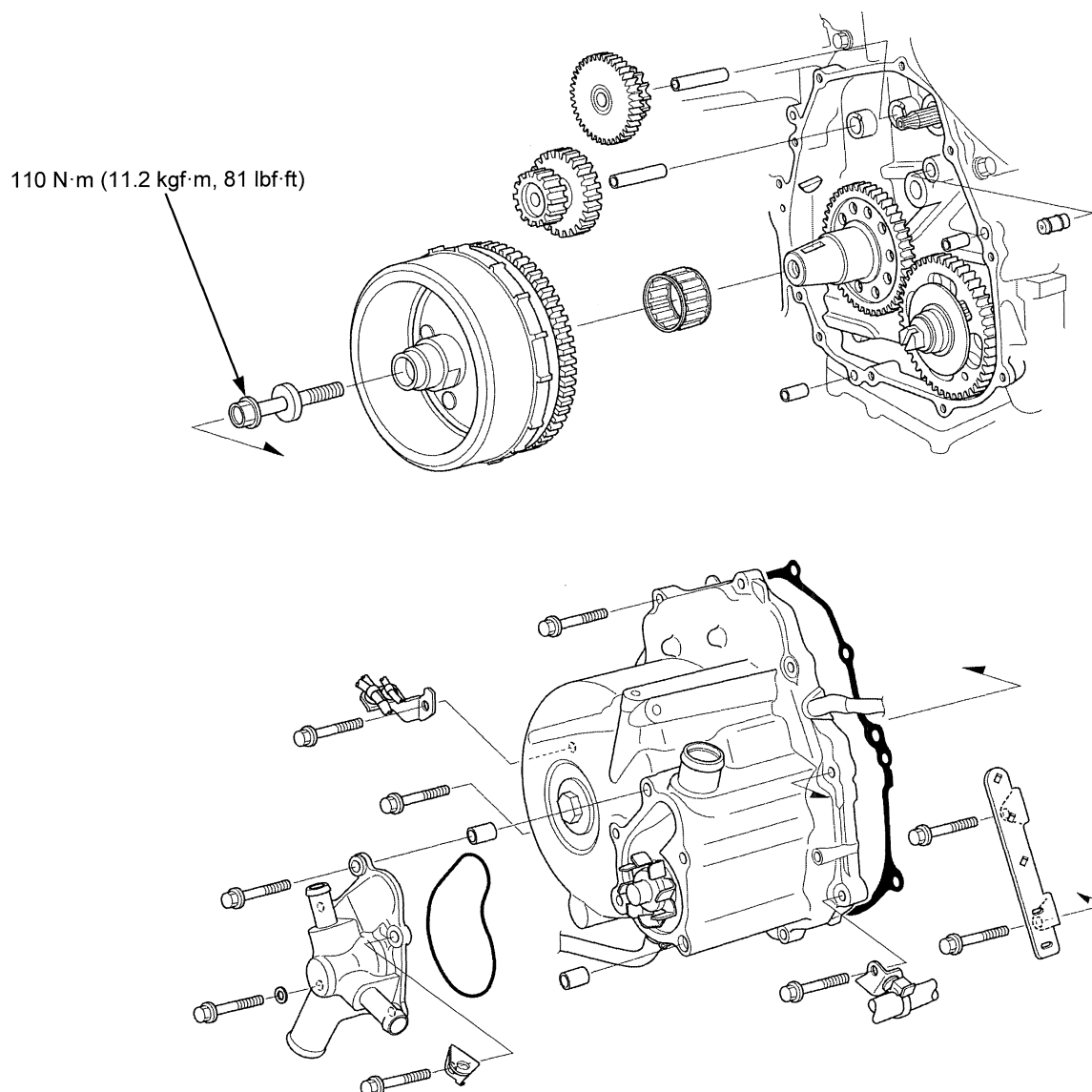


TROUBLESHOOTING

Starter motor turns, but engine does not turn

- Faulty starter clutch
- Damaged reduction gears

COMPONENT LOCATION



ALTERNATOR/STARTER CLUTCH

ALTERNATOR COVER/STATOR

ALTERNATOR COVER REMOVAL

Remove the floor panel (page 2-14).

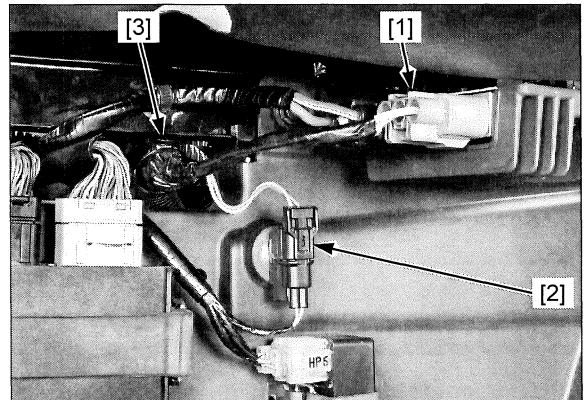
Drain the engine oil (page 3-13).

Drain the coolant (page 9-4).

Disconnect the regulator/rectifier 3P (Gray) connector [1].

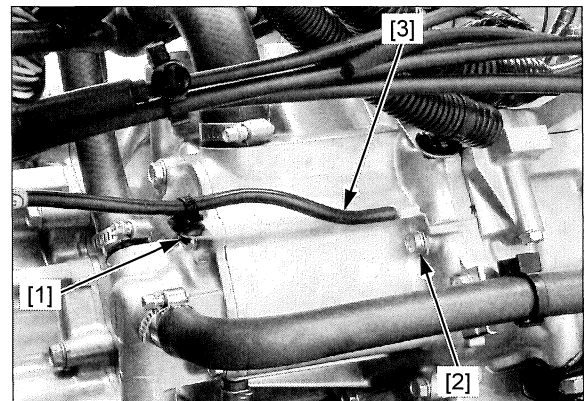
Disconnect the CKP sensor 2P (Black) connector [2].

Release the alternator wire clip [3].



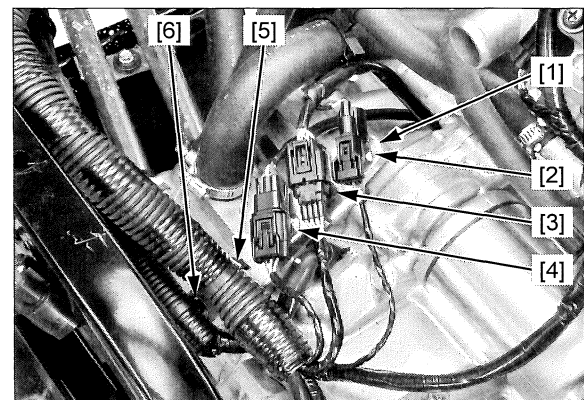
Release the cable clip [1].

Remove the bolt [2] and frame ground cable [3].

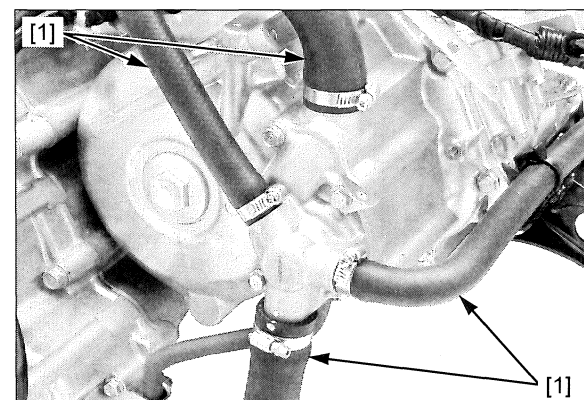


Release the clips from the connector stay [1]:

- neutral switch 1P (Black) connector [2]
- sub-transmission position switch 8P (Black) connector [3]
- TR sensor 3P (Black) connector [4]
- main wire harness [5]
- alternator wire [6]

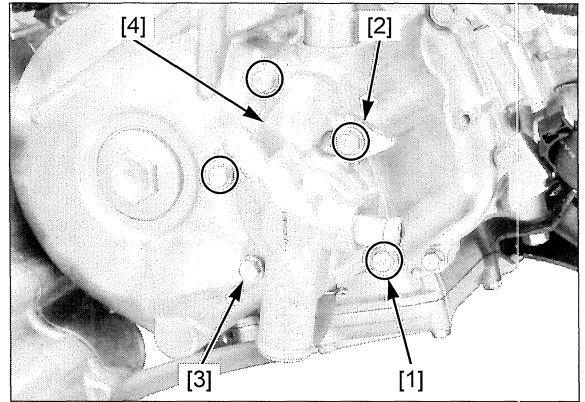


Disconnect the water hoses [1].



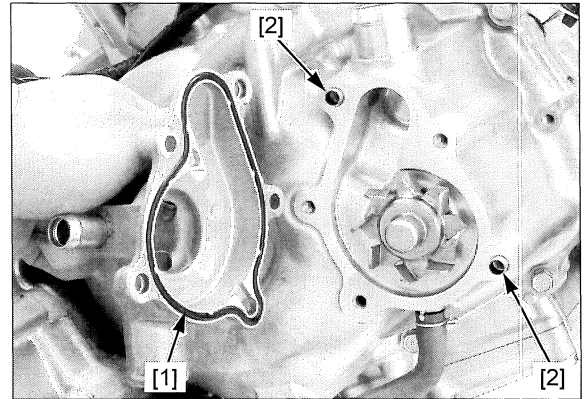
Remove the following:

- bolts [1]
- stay [2]
- sealing bolt and sealing washer [3]
- water pump cover [4]



Remove the following:

- O-ring [1]
- dowel pins [2]



Release the bleed hose [1].

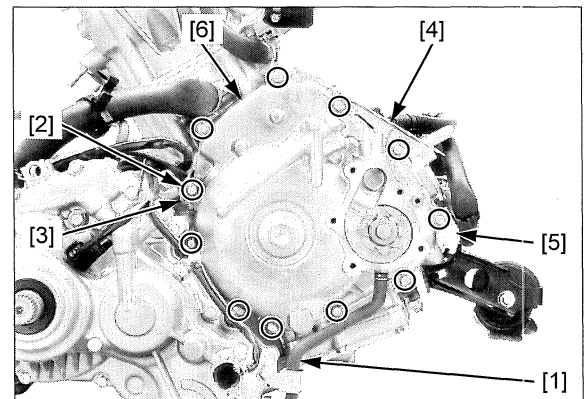
Remove the following:

- bolts [2]
- wire harness stay [3]
- connector stay [4]
- water hose stay [5]
- alternator cover [6]

NOTE:

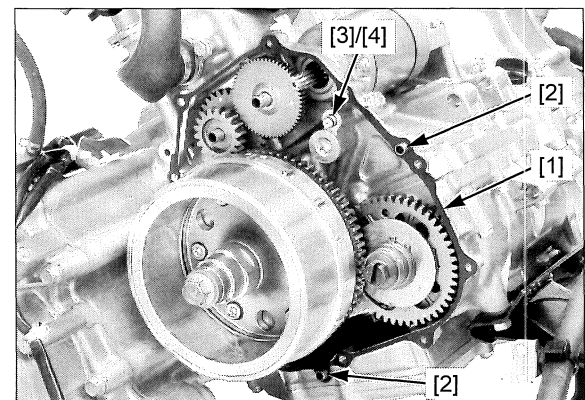
- The alternator cover (stator) is magnetically attracted to the flywheel, be careful during removal.

Check the alternator cover bearing and replace if necessary (page 13-9).



Remove the following:

- gasket [1]
- dowel pins [2]
- oil joint [3]
- O-rings [4]

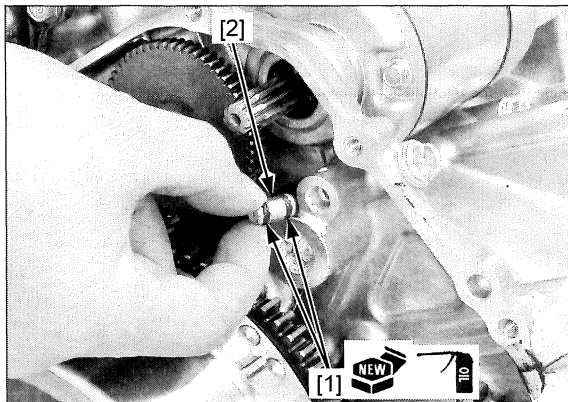


ALTERNATOR/STARTER CLUTCH

ALTERNATOR COVER INSTALLATION

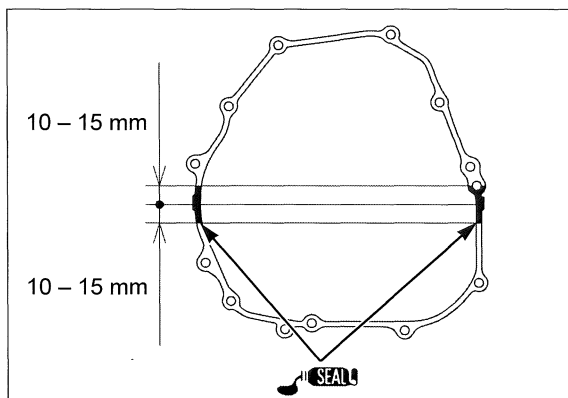
Apply engine oil to new O-rings [1] and install them onto the oil joint [2].

Install the oil joint.



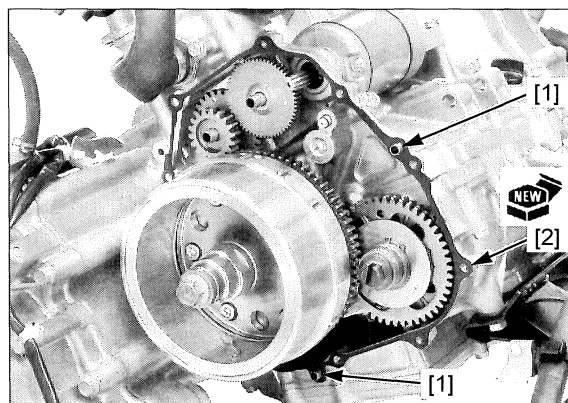
Clean the crankcase mating surfaces thoroughly.

Apply liquid sealant (TB1207B manufactured by ThreeBond or an equivalent) to the crankcase mating surface as shown.



Install the following:

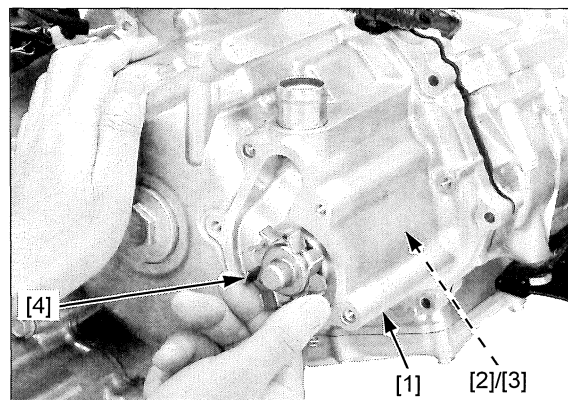
- dowel pins [1]
- new gasket [2]



Install the alternator cover [1].

NOTE:

- When installing the alternator cover, align the water pump shaft end [2] with the balancer shaft groove [3] by turning the impeller [4].
- The alternator cover (stator) is magnetically attracted to the flywheel, be careful during installation.

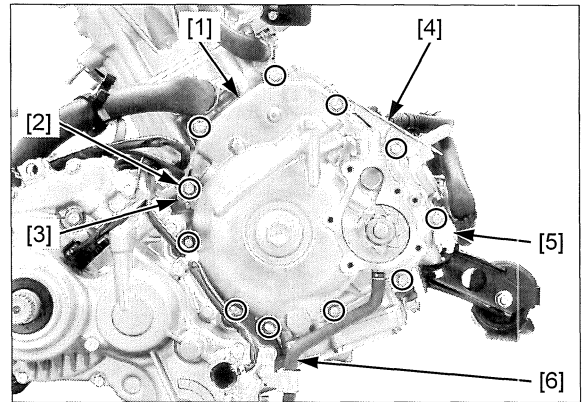


Install the following:

- alternator cover [1]
- bolts [2]
- wire harness stay [3]
- connector stay [4]
- water hose stay [5]

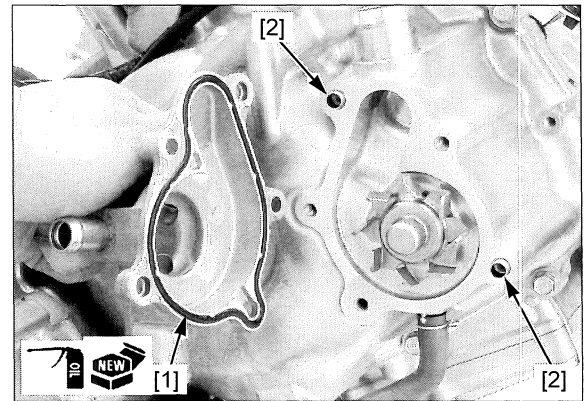
Tighten the bolts securely.

Install the bleed hose [6].



Apply engine oil to a new O-ring [1] and install it onto the water pump cover.

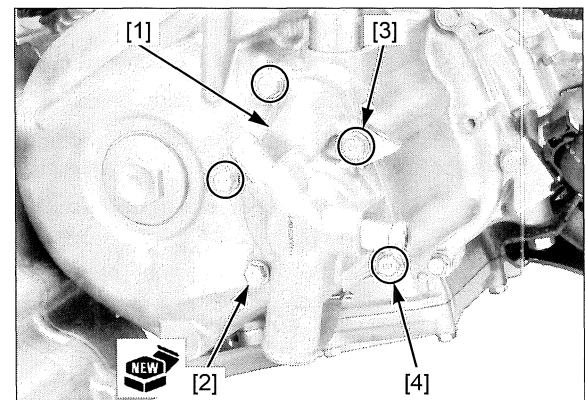
Install the dowel pins [2].



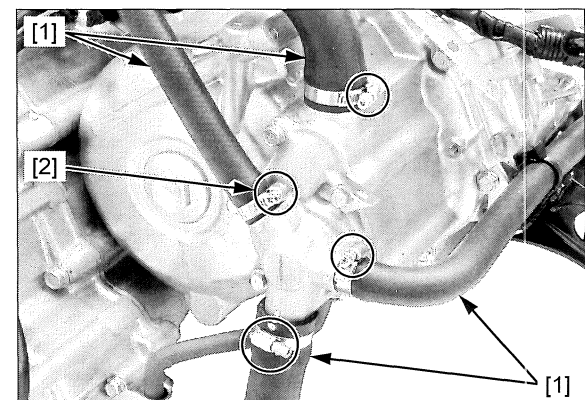
Install the following:

- water pump cover [1]
- sealing bolt and new sealing washer [2]
- stay [3]
- bolts [4]

Tighten the bolts securely.



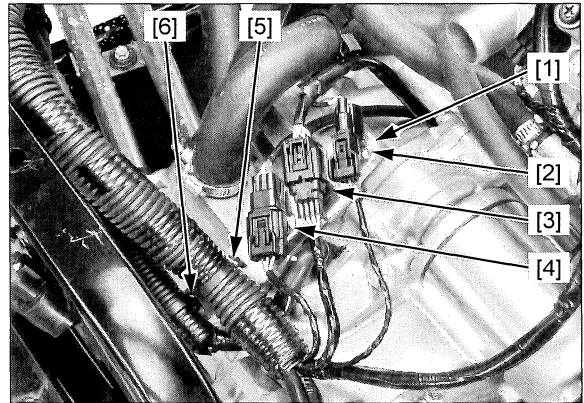
Connect the water hoses [1] and tighten the water hose band screws [2] to the specified range (page 10-20).



ALTERNATOR/STARTER CLUTCH

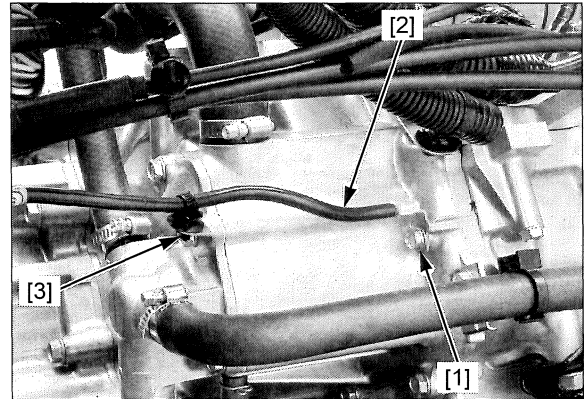
Install the clips to the connector stay [1]:

- neutral switch 1P (Black) connector [2]
- sub-transmission position switch 8P (Black) connector [3]
- TR sensor 3P (Black) connector [4]
- main wire harness [5]
- alternator wire [6]



Install the bolt [1] and frame ground cable [2] and tighten the bolt securely.

Install the cable clip [3].



Install the alternator wire clip [1].

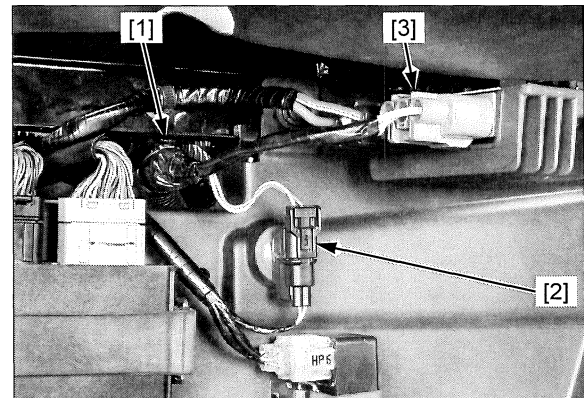
Connect the CKP sensor 2P (Black) connector [2].

Connect the regulator/rectifier 3P (Gray) connector [3].

Fill the system with the recommended coolant (page 9-4).

Fill the engine with the recommended engine oil (page 3-13).

Install the floor panel (page 2-14).



STATOR/CKP SENSOR REMOVAL/ INSTALLATION

Remove the alternator cover (page 13-4).

Remove the bolts [1] and CKP sensor [2].

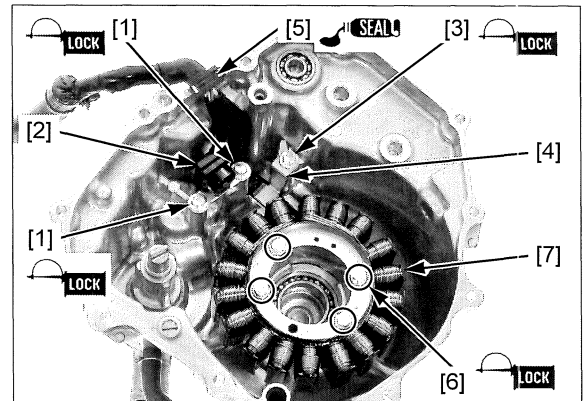
Remove the bolt [3] and wire clamp [4], and release the grommet [5] off the alternator cover.

Remove the bolts [6] and stator/CKP sensor assembly [7].

Installation is in the reverse order of removal.

NOTE:

- Apply locking agent to the bolt threads (page 1-14).
- Apply liquid sealant (TB1207B manufactured by ThreeBond or equivalent) to the grommet sealing surface.



TORQUE:

Alternator stator bolt:

10 N·m (1.0 kgf·m, 7 lbf·ft)

CKP sensor bolt:

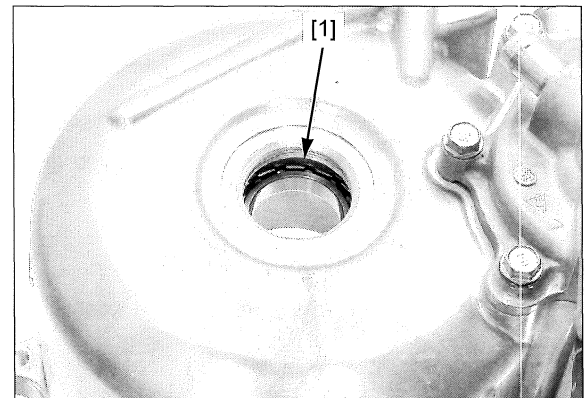
12 N·m (1.2 kgf·m, 9 lbf·ft)

alternator wire clamp bolt:

12 N·m (1.2 kgf·m, 9 lbf·ft)

BEARING REPLACEMENT

Drive out the ball bearing (6906) [1].



Remove the ball bearing (6000) [1] using the special tools.

TOOLS:

Bearing remover head,
10 mm [2]

07936-GE00200

Bearing remover shaft,
10 mm [3]

07936-GE00100

Remover weight [4]

07741-0010201

U.S.A. TOOLS:

Bearing remover, 10 mm

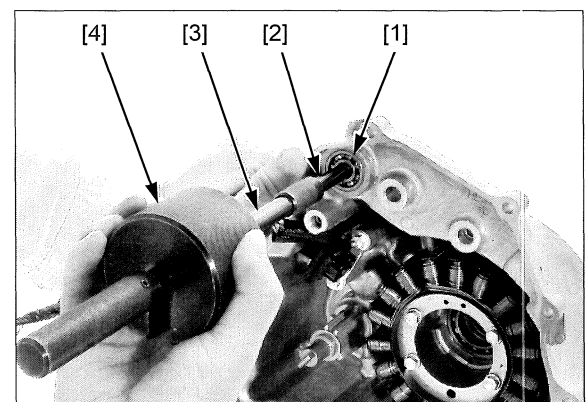
07936-GE0A000

Remover handle

07936-3710100

Remover weight

07936-371020A



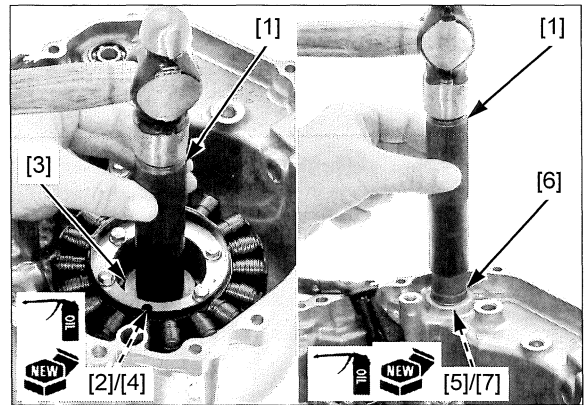
ALTERNATOR/STARTER CLUTCH

Apply engine oil to new bearings.

Drive in the bearings with its marked side facing up until they are fully seated using the special tools.

TOOLS:

- | | |
|----------------------------|---------------|
| Driver [1] | 07749-0010000 |
| Ball bearing (6906) [2] | |
| Attachment, 42 x 47 mm [3] | 07746-0010300 |
| Pilot, 30 mm [4] | 07746-0040700 |
| Ball bearing (6000) [5] | |
| Attachment, 24 x 26 mm [6] | 07746-0010700 |
| Pilot, 10 mm [7] | 07746-0040100 |



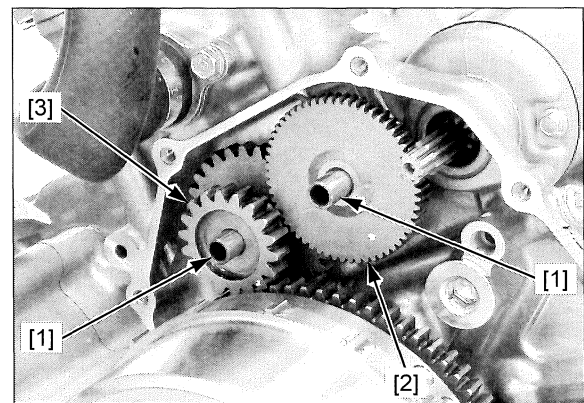
FLYWHEEL/REDUCTION GEARS

REMOVAL

Remove the alternator cover (page 13-4).

Remove the following:

- starter reduction gear shafts [1]
- starter reduction gear B [2]
- starter reduction gear [3]

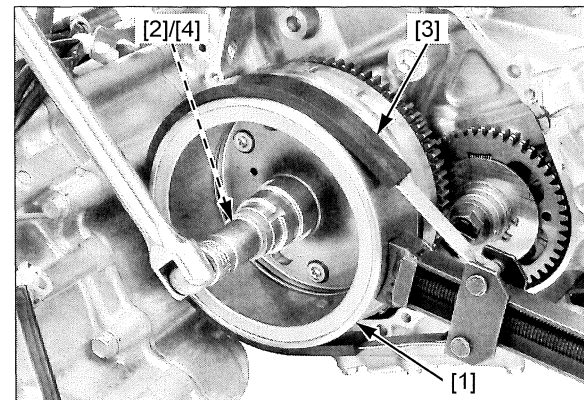


Hold the flywheel [1] with the special tool and loosen the flywheel bolt [2].

TOOL:

- | | |
|---------------------|---------------|
| Flywheel holder [3] | 07725-0040001 |
|---------------------|---------------|

Remove the bolt and washer [4].

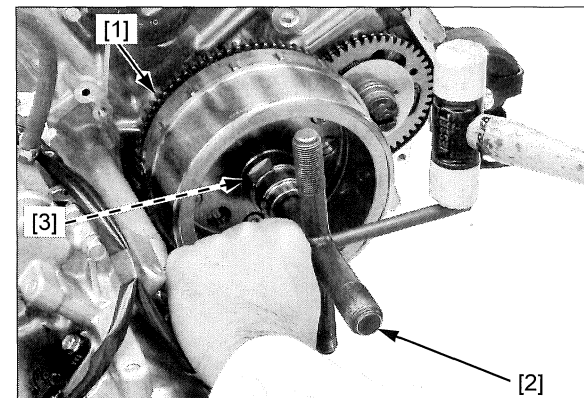


Remove the flywheel/starter driven gear [1] using the special tool.

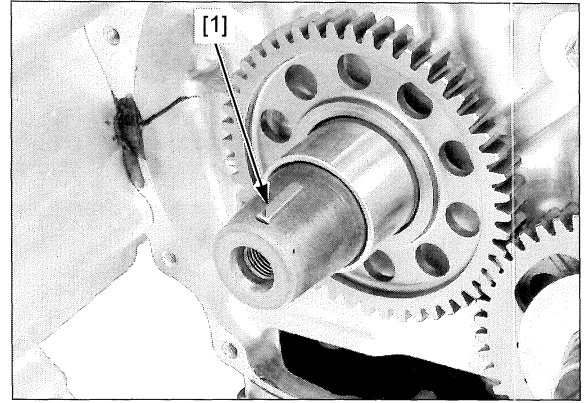
TOOL:

- | | |
|------------------|--|
| Rotor puller [2] | 07733-0020001 or
07933-3950000
(U.S.A. only) |
|------------------|--|

Remove the needle bearing [3]



Remove the woodruff key [1].



INSPECTION

Inspect the following parts for scratches, damage, abnormal wear, or deformation.

- starter reduction gear shaft
- starter reduction gear
- woodruff key
- needle bearing

INSTALLATION

Be careful not to damage the key groove and crankshaft.

Install the woodruff key [1].

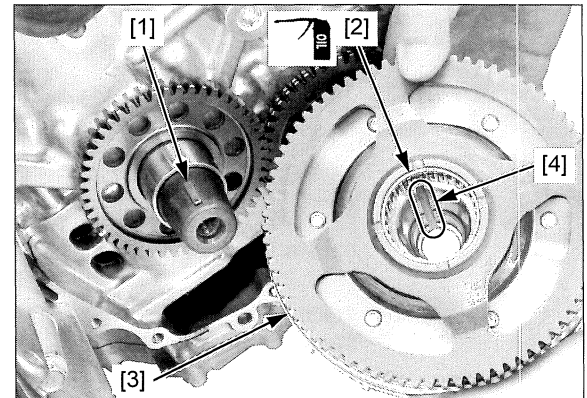
Apply engine oil to the needle bearing rotating area. Install the needle bearing [2].

Clean any oil from the tapered areas of the crankshaft and flywheel thoroughly.

Install the flywheel/starter driven gear [3] to the crankshaft.

NOTE:

- Align the flywheel keyway [4] with the woodruff key.



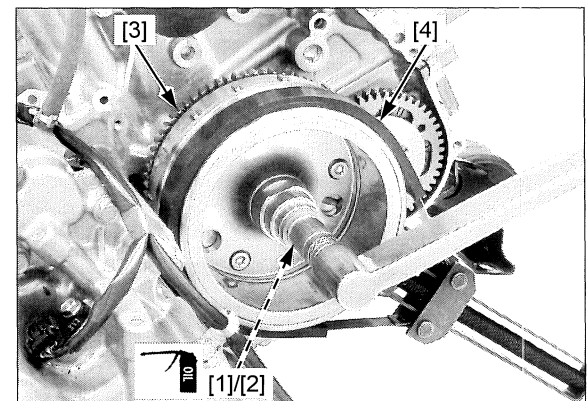
Apply engine oil to the flywheel bolt [1] threads and seating surface, and install the washer [2] and bolt.

Hold the flywheel [3] using the special tool and tighten the bolt to the specified torque.

TOOL:

Flywheel holder [4] 07725-0040001

TORQUE: 110 N·m (11.2 kgf·m, 81 lbf·ft)



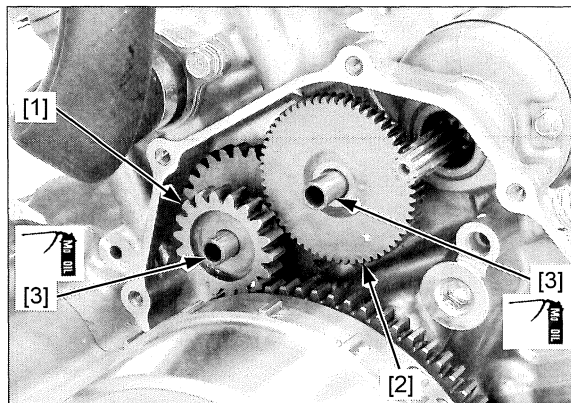
ALTERNATOR/STARTER CLUTCH

Apply molybdenum oil solution to the starter reduction gear shaft outer surfaces.

Install the following:

- starter reduction gear [1]
- starter reduction gear B [2]
- starter reduction gear shafts [3]

Install the alternator cover (page 13-6).



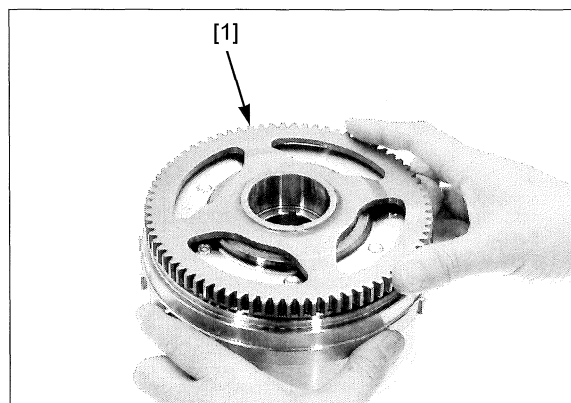
STARTER CLUTCH

STARTER CLUTCH DISASSEMBLY

Remove the flywheel (page 13-10).

Make sure that the starter driven gear [1] turns counterclockwise smoothly and does not turn clockwise.

Remove the driven gear while turning it counterclockwise.

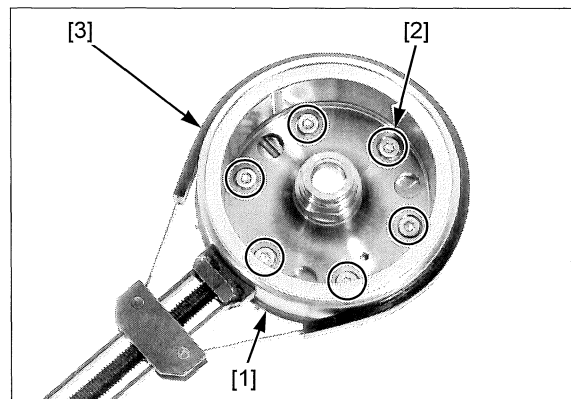


Hold the flywheel [1] with the special tool and remove the starter clutch outer bolts [2].

TOOL:

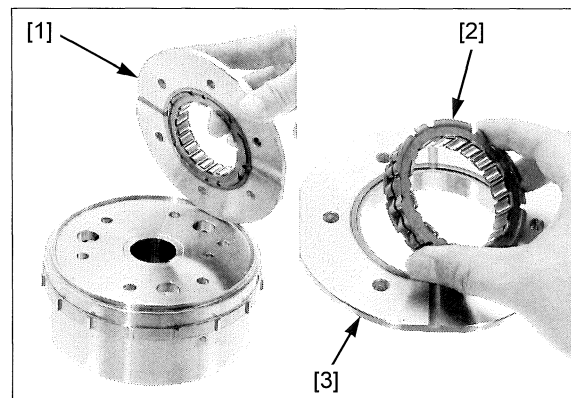
Flywheel holder [3]

07725-0040001



Remove the starter clutch assembly [1].

Remove the starter one-way clutch [2] from the starter clutch outer [3].



INSPECTION

Inspect the following parts for scratches, damage, abnormal wear, or deformation.

- Starter driven gear
- Starter clutch outer
- Starter one-way clutch

Measure each part according to ALTERNATOR/STARTER CLUTCH SPECIFICATIONS (page 1-10).

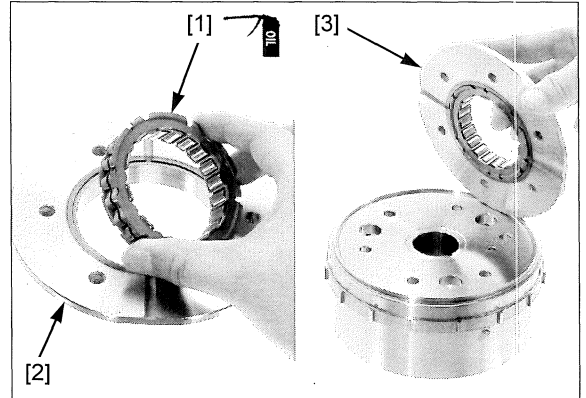
Replace any part if it is out of the service limit.

STARTER CLUTCH ASSEMBLY

Apply engine oil to the one-way clutch [1] sliding surface.

Install the one-way clutch to the clutch outer [2] with the flanged side facing the flywheel side.

Install the starter clutch assembly [3].



Hold the flywheel [1] with the special tool.

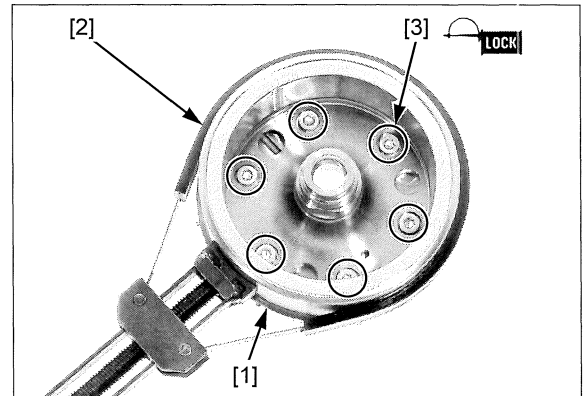
TOOL:

Flywheel holder [2] 07725-0040001

Apply locking agent to the starter clutch outer bolt threads (page 1-14).

Install and tighten the bolts [3] to the specified torque.

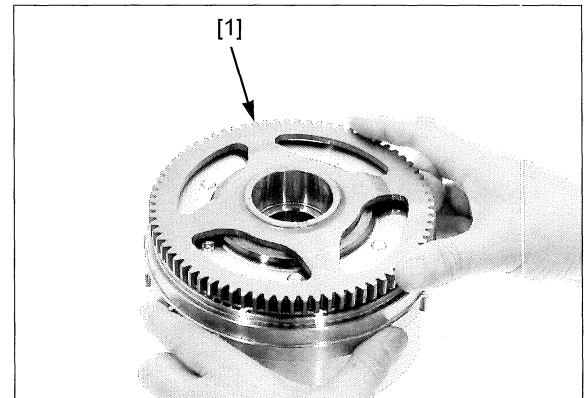
TORQUE: 23 N·m (2.3 kgf·m, 17 lbf·ft)



Install the starter driven gear [1] while turning it counterclockwise.

Recheck the one-way clutch operation (page 13-12).

Install the flywheel (page 13-11).



MEMO