

Section 5

Transmission / Transaxle

CONTENTS

Precautions	5-1	Clutch	5C-1
Precautions.....	5-1	Precautions.....	5C-1
Precautions for Transmission / Transaxle.....	5-1	Precautions for Clutch System.....	5C-1
Manual Transmission.....	5B-1	Clutch Fluid (Brake Fluid) Information.....	5C-1
Diagnostic Information and Procedures.....	5B-1	Schematic and Routing Diagram.....	5C-2
Manual Transmission Symptom Diagnosis.....	5B-1	Clutch Hose Routing Diagram.....	5C-2
Repair Instructions	5B-2	Diagnostic Information and Procedures.....	5C-3
Transmission Components	5B-2	Clutch System Symptom Diagnosis	5C-3
Transmission Removal.....	5B-3	Repair Instructions	5C-3
Transmission Installation	5B-5	Clutch Lever Position Switch Inspection	5C-3
Transmission Construction.....	5B-8	Clutch Fluid Level Check	5C-3
Countershaft Gear / Driveshaft Gear		Clutch Hose Inspection	5C-3
Disassembly and Assembly.....	5B-9	Air Bleeding from Clutch Fluid Circuit	5C-4
Transmission Related Parts Inspection.....	5B-12	Clutch Fluid Replacement.....	5C-4
Gear Position (GP) Switch Inspection.....	5B-12	Clutch Hose Removal and Installation	5C-5
Gear Position (GP) Switch Removal and		Clutch Control System Components	5C-6
Installation.....	5B-12	Clutch Master Cylinder Assembly Removal	
Gearshift Lever Construction	5B-13	and Installation.....	5C-7
Gearshift Lever Removal and Installation	5B-14	Clutch Master Cylinder / Clutch Lever	
Gearshift Lever Height Inspection and		Disassembly and Assembly	5C-8
Adjustment	5B-14	Clutch Master Cylinder Parts Inspection.....	5C-10
Gearshift Shaft / Gearshift Cam Plate		Clutch Release Cylinder / Push Rod Removal	
Components.....	5B-14	and Installation.....	5C-10
Gearshift Construction	5B-15	Clutch Push Rod (Left) Inspection	5C-11
Gearshift Shaft / Gearshift Cam Plate		Clutch Release Cylinder Disassembly and	
Removal and Installation.....	5B-15	Assembly.....	5C-11
Gearshift Linkage Inspection	5B-18	Clutch Release Cylinder Inspection	5C-11
Gearshift Shaft Oil Seal / Bearing Removal		Clutch Components.....	5C-12
and Installation	5B-19	Clutch Removal.....	5C-13
Specifications.....	5B-20	Clutch Installation.....	5C-14
Service Data	5B-20	Clutch Parts Inspection	5C-18
Tightening Torque Specifications.....	5B-20	Specifications	5C-19
Special Tools and Equipment.....	5B-21	Service Data.....	5C-19
Recommended Service Material	5B-21	Tightening Torque Specifications.....	5C-19
Special Tool	5B-21	Special Tools and Equipment.....	5C-20
		Recommended Service Material	5C-20
		Special Tool	5C-20

Precautions

Precautions

Precautions for Transmission / Transaxle

Refer to "General Precautions in Section 00 (Page 00-1)".

B718H1500001

Manual Transmission

Diagnostic Information and Procedures

Manual Transmission Symptom Diagnosis

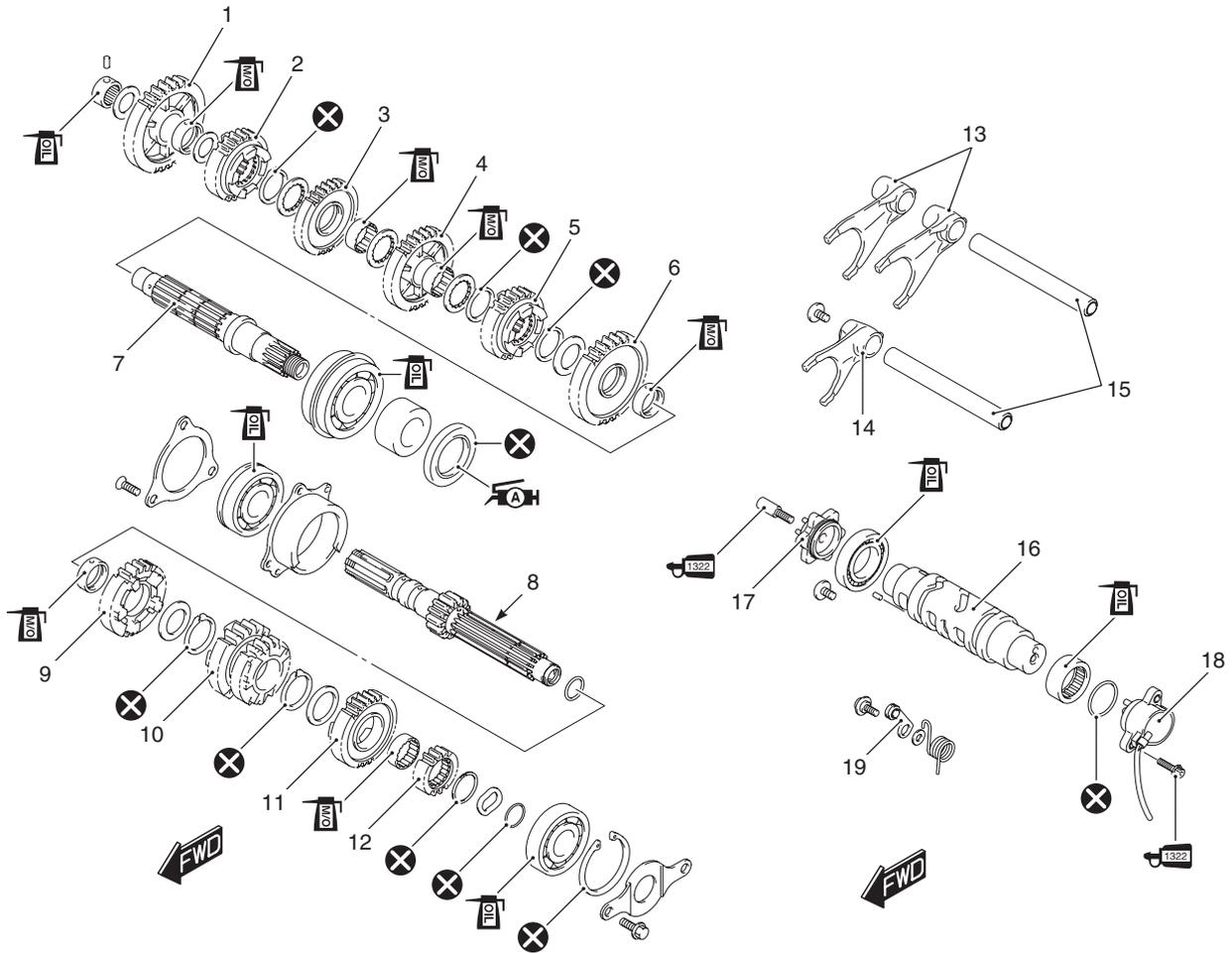
B718H15204001

Condition	Possible cause	Correction / Reference Item
Engine is noisy (Noise seems to come from the transmission).	Worn or rubbing gear.	<i>Replace.</i>
	Worn countershaft spline.	<i>Replace countershaft.</i>
	Worn driveshaft spline.	<i>Replace driveshaft.</i>
	Worn or rubbing primary gear.	<i>Replace.</i>
	Worn bearing.	<i>Replace.</i>
Transmission will not shift.	Broken gearshift cam.	<i>Replace.</i>
	Distorted gearshift fork.	<i>Replace.</i>
	Worn gearshift pawl.	<i>Replace.</i>
Transmission will not shift back.	Broken gearshift shaft return spring.	<i>Replace.</i>
	Rubbing or stuck gearshift shaft.	<i>Repair or replace.</i>
	Worn or distorted gearshift fork.	<i>Replace.</i>
Transmission jumps out of gear.	Worn shifting gears on driveshaft or countershaft.	<i>Replace.</i>
	Worn or distorted gearshift fork.	<i>Replace.</i>
	Weakened gearshift stopper spring.	<i>Replace.</i>
	Worn gearshift cam plate.	<i>Replace.</i>

Repair Instructions

Transmission Components

B718H15206001



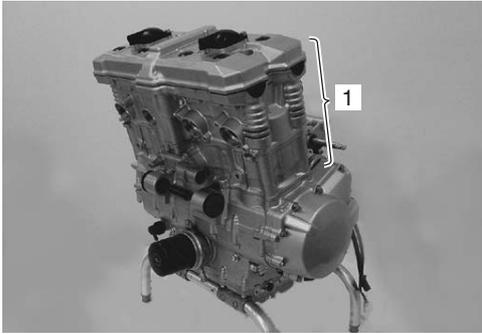
I718H1520076-02

1. 1st driven gear	9. 5th drive gear	17. Gearshift cam plate
2. 5th driven gear	10. 3rd/4th drive gear	18. Gear position switch
3. 4th driven gear	11. 6th drive gear	19. Gearshift cam stopper plate
4. 3rd driven gear	12. 2nd drive gear	: Apply oil.
5. 6th driven gear	13. Gearshift fork No.1	: Apply molybdenum oil solution.
6. 2nd driven gear	14. Gearshift fork No.3	: Apply grease to oil seal lip.
7. Driveshaft	15. Gearshift fork	: Apply thread lock to thread part.
8. Countershaft/1st drive gear	16. Gearshift cam	: Do not reuse.

Transmission Removal

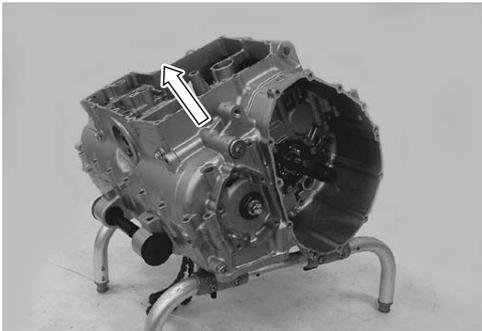
B718H15206002

- 1) Remove the engine assembly from the frame. Refer to "Engine Assembly Removal in Section 1D (Page 1D-17)".
- 2) Disassemble the engine top side (1). Refer to "Engine Top Side Disassembly in Section 1D (Page 1D-24)".



I718H1140158-01

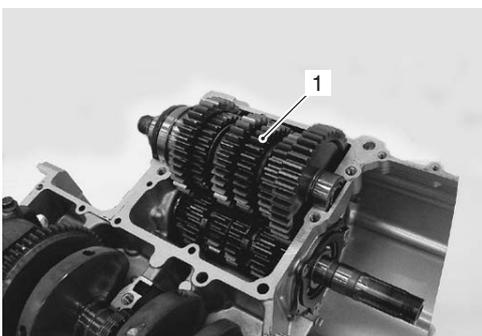
- 3) Separate the upper and lower crankcases. Refer to "Engine Bottom Side Disassembly in Section 1D (Page 1D-53)".



I718H1520004-01

Driveshaft Assembly

- 1) Remove the driveshaft assembly (1).

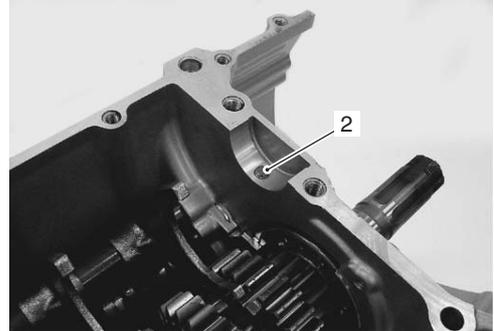


I718H1520005-01

- 2) Remove the bearing pin (2).

NOTE

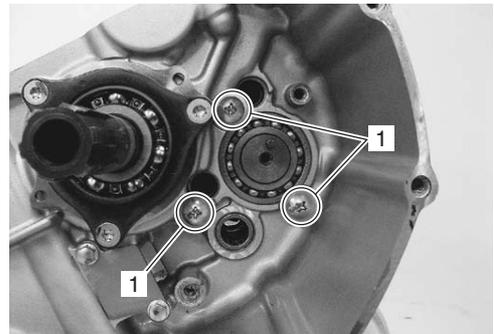
Do not lose the bearing pin (2).



I718H1520006-01

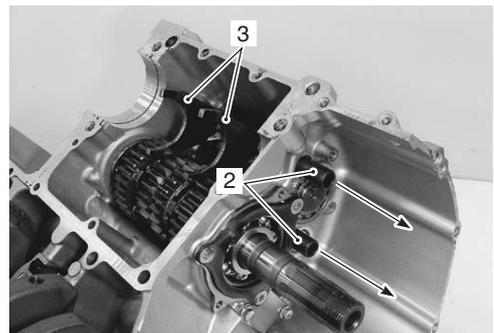
Gearshift Cam / Gearshift Fork

- 1) Remove the retainer screws (1).



I718H1520007-01

- 2) Remove the gearshift fork shafts (2) and No.1 gearshift forks (3).

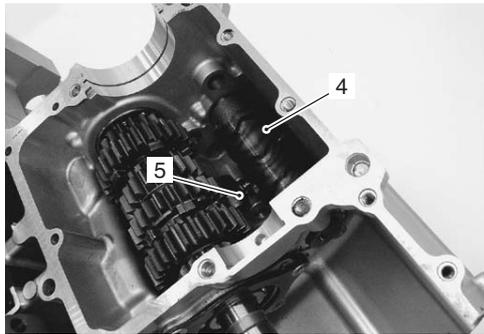


I718H1520008-01

- 3) Remove the gearshift cam bearing and gearshift cam (4).

5B-4 Manual Transmission:

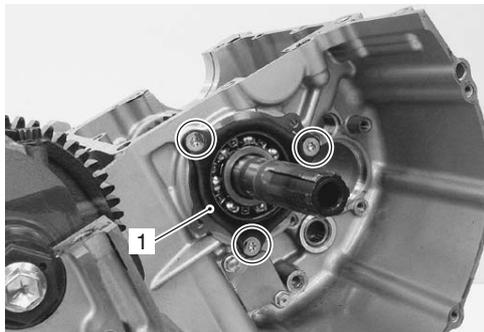
- 4) Remove the No.3 gearshift fork (5).



I718H1520009-01

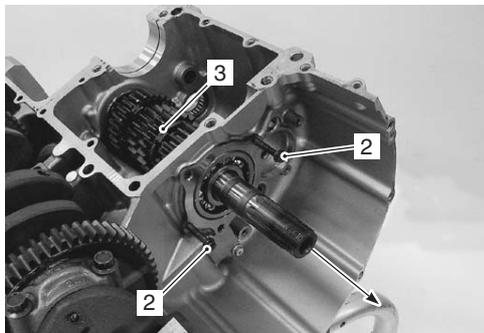
Countershaft Assembly

- 1) Remove the bearing retainer (1).



I718H1520010-01

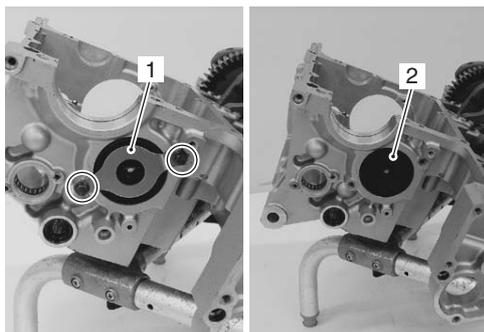
- 2) By using suitable size bolts (2), pull out the countershaft assembly (3).



I718H1520011-01

Bearing / Oil Seal

- 1) Remove the oil seal retainer (1) and oil seal (2).

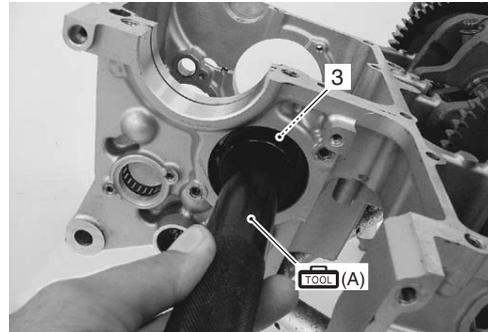


I718H1520012-01

- 2) Remove the countershaft bearing (3) with the special tool.

Special tool

 (A): 09913-70210 (Bearing installer set)

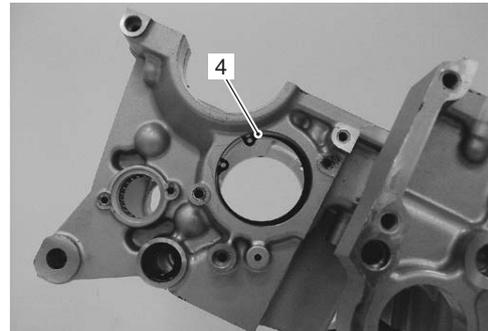


I718H1520013-01

- 3) Remove the snap ring (4).

Special tool

 : 09900-06108 (Snap ring pliers)



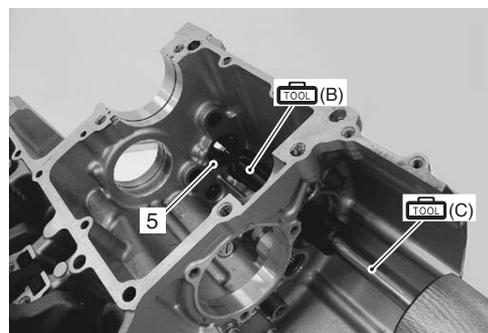
I718H1520014-01

- 4) Remove the gearshift cam bearing (5) with the special tools.

Special tool

 (B): 09923-74511 (Bearing puller)

 (C): 09930-30104 (Rotor remover slide shaft)



I718H1520015-01

Transmission Installation

B718H15206003

Install the transmission in the reverse order of removal. Pay attention to the following points:

Bearing / Oil Seal

⚠ CAUTION

Replace the removed oil seal, bearings and snap ring with new ones.

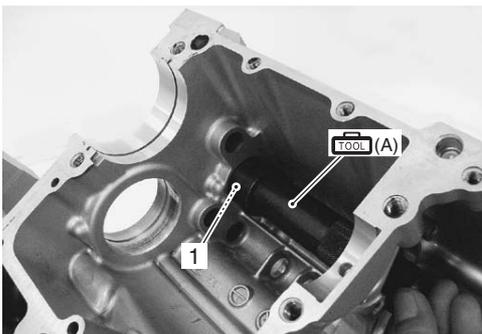
- Install the bearings (1), (2) with the special tool.

NOTE

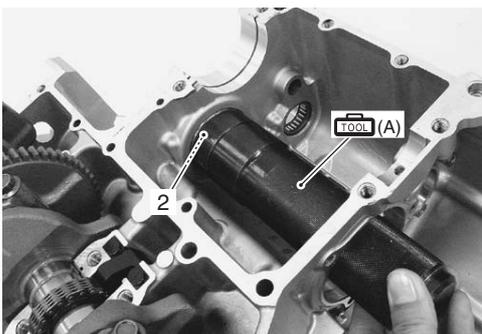
- The stamped mark side of gearshift cam bearing (1) faces inside.
- The sealed side of countershaft bearing (2) faces outside.

Special tool

TOOL (A): 09913-70210 (Bearing installer set)



I718H1520016-02



I718H1520017-02

- Install the oil seal with the special tool.

Special tool

TOOL (A): 09913-70210 (Bearing installer set)

- Apply grease to the oil seal lip.

FAH : Grease 99000-25010 (SUZUKI SUPER GREASE A or equivalent)



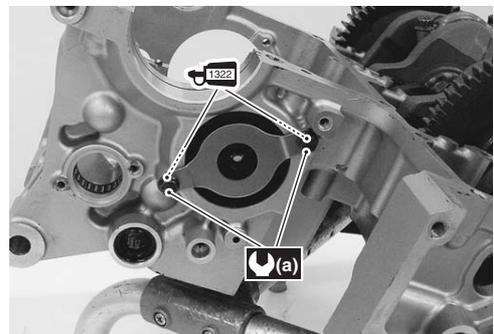
I718H1520018-02

- Apply a small quantity of thread lock to the oil seal bolts and tighten them to the specified torque.

1322 : Thread lock cement 99000-32110 (THREAD LOCK CEMENT SUPER 1322 or equivalent)

Tightening torque

Push rod oil seal bolt (a): 12 N·m (1.2 kgf-m, 8.5 lb-ft)



I718H1520019-03

5B-6 Manual Transmission:

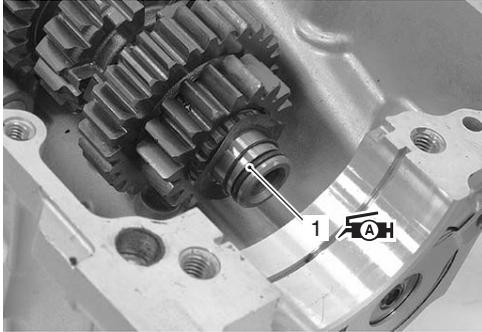
Countershaft Assembly

- Apply grease to the O-rings.

CAUTION

Replace the O-rings (1) with new ones.

 : Grease 99000-25010 (SUZUKI SUPER GREASE A or equivalent)



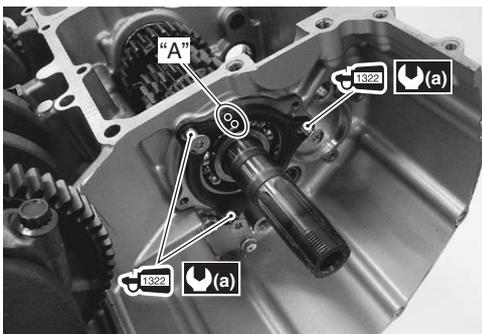
I718H1520020-02

- Align the punch marks "A" on the countershaft bearing housing and bearing retainer.
- Apply a small quantity of thread lock to the bearing retainer screw and tighten them to the specified torque.

 : Thread lock cement 99000-32110 (THREAD LOCK CEMENT SUPER 1322 or equivalent)

Tightening torque

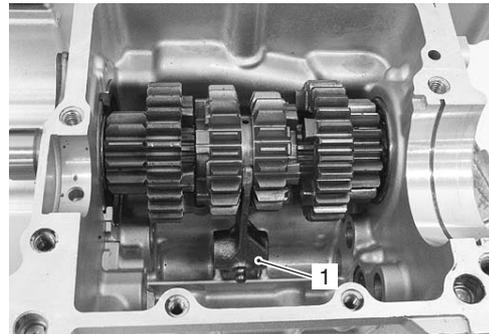
Countershaft bearing retainer screw (a): 12 N·m (1.2 kgf-m, 8.5 lb-ft)



I718H1520021-02

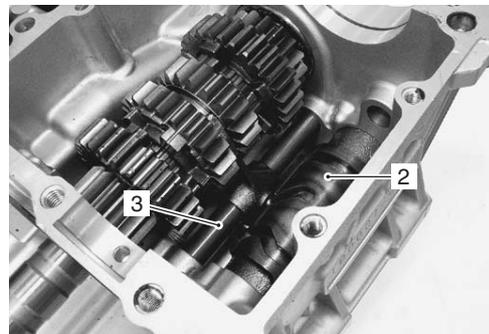
Gearshift Cam and Gearshift Fork

- Install the No.3 gearshift fork (1) as shown.



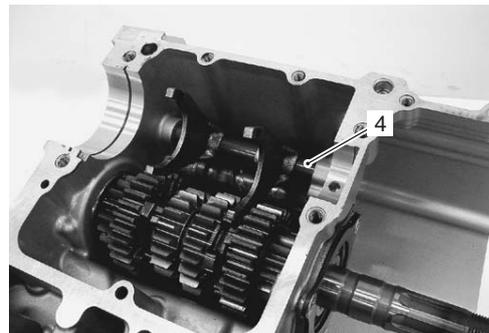
I718H1520022-03

- Install the gearshift cam (2) with the bearing fitted.
- With engaging the fork end to the cam groove, insert the fork shaft (3).



I718H1520023-01

- With engaging each fork end to the cam groove, insert the fork shaft (4).



I718H1520024-01

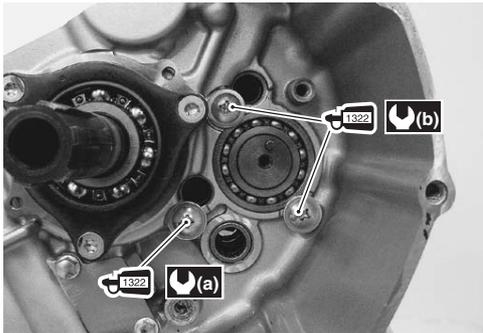
- Apply thread lock to the screws and tighten them to the specified torque.

 : Thread lock cement 99000-32110 (THREAD LOCK CEMENT SUPER 1322 or equivalent)

Tightening torque

Gearshift fork shaft retainer screw (a): 10 N·m (1.0 kgf-m, 7.0 lb-ft)

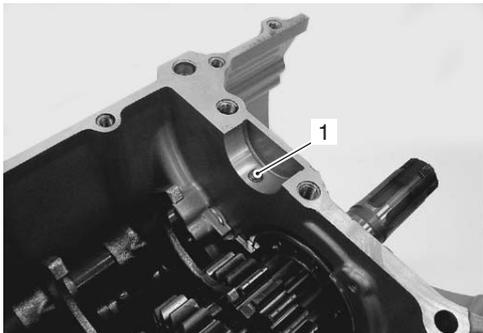
Gearshift cam retainer screw (b): 10 N·m (1.0 kgf-m, 7.0 lb-ft)



I718H1520025-02

Driveshaft Assembly

- Install the bearing pin (1).

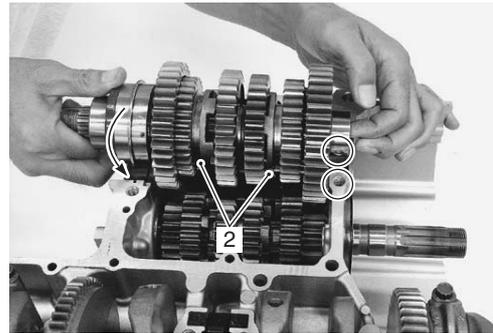


I718H1520026-01

- Install the driveshaft assembly on the upper crankcase.

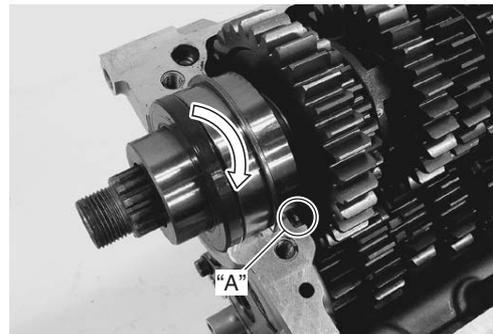
NOTE

- Align the gearshift forks (2) with their grooves.
- Align the C-ring with the groove of bearing and the bearing pin with the indent on the bearing.



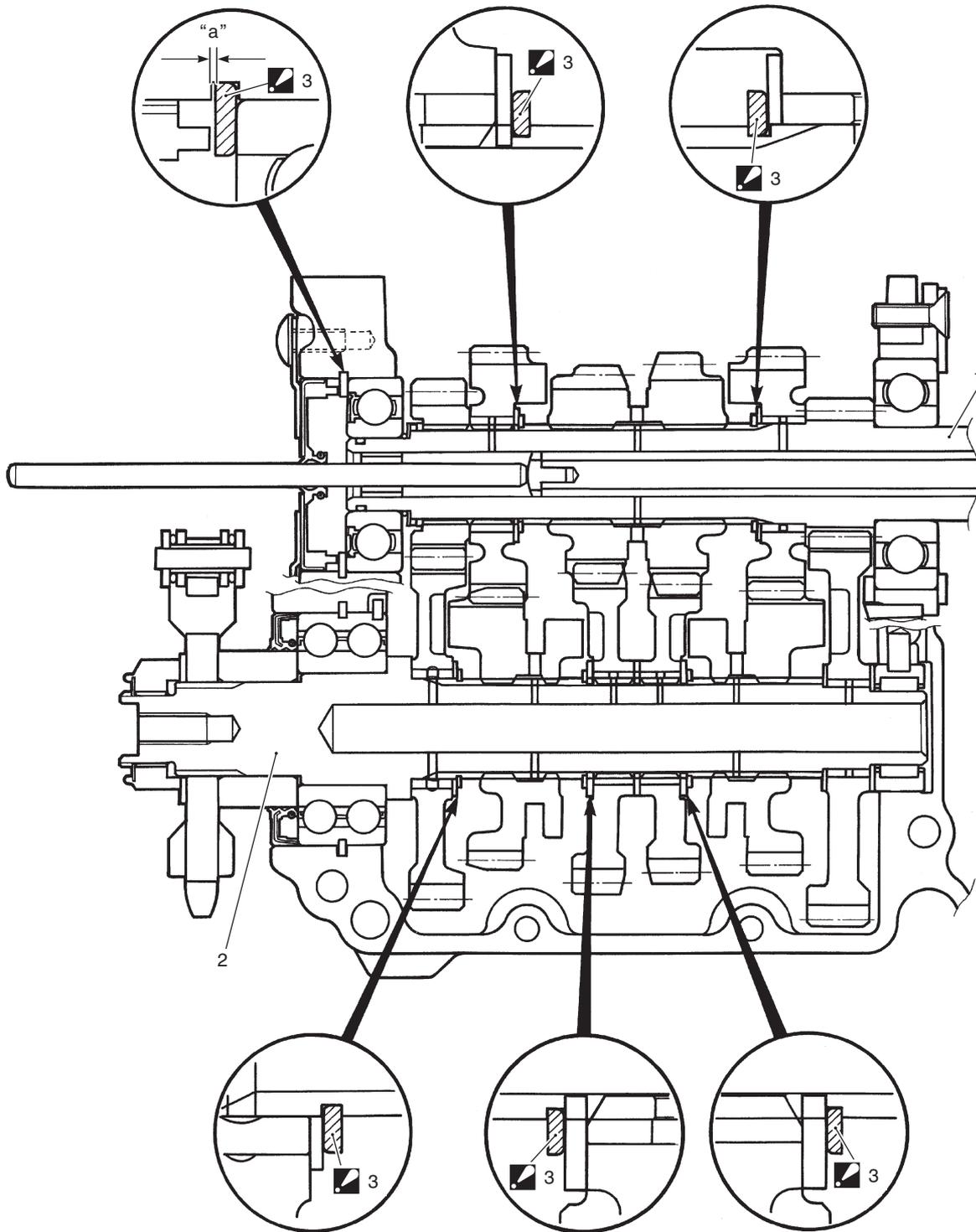
I718H1520027-02

- Turn the bearing to fit the bearing dowel pin in the position "A".



I718H1520028-02

- Assemble the engine. Refer to "Engine Bottom Side Assembly in Section 1D (Page 1D-61)" and "Engine Top Side Assembly in Section 1D (Page 1D-28)".
- Remount the engine assembly. Refer to "Engine Assembly Installation in Section 1D (Page 1D-21)".



I718H1520071-04

1. Counter shaft	2. Drive shaft	 3. Snap ring : Assemble snap ring with sharp edge side out.	"a": 0.2 mm (0.008 in)
------------------	----------------	--	------------------------

Countershaft Gear / Driveshaft Gear Disassembly and Assembly

B718H15206005

Refer to "Transmission Removal (Page 5B-3)" and "Transmission Installation (Page 5B-5)".

Disassembly

⚠ CAUTION

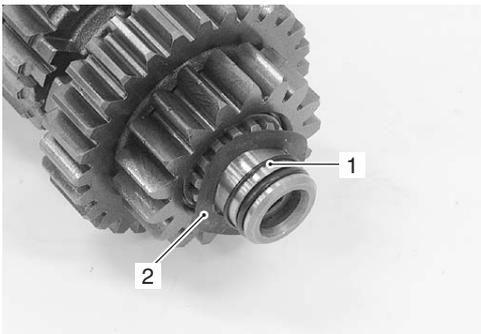
Identify the position of each removed part. Organize the parts in their respective groups (i.e., drive or driven) so that they can be reinstalled in their original positions.

Disassemble the countershaft and driveshaft as shown in the transmission construction. Refer to "Transmission Construction (Page 5B-8)".

Pay attention to the following points:

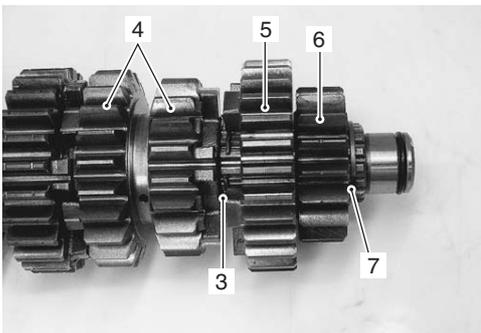
Countershaft

- Remove the O-ring (1) and wave washer (2).



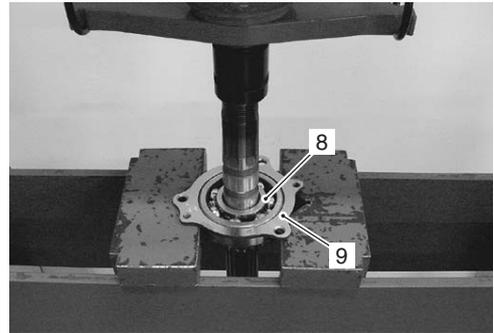
I718H1520072-01

- Remove the 6th drive gear snap ring (3) from its groove and slide it towards the 3rd/4th drive gears (4).
- Slide the 6th (5) and 2nd (6) drive gears toward the 3rd/4th drive gears (4), then remove the 2nd drive gear circlip (7).



I718H1520030-02

- Remove the countershaft bearing (8) along with the housing (9), using the hydraulic press.

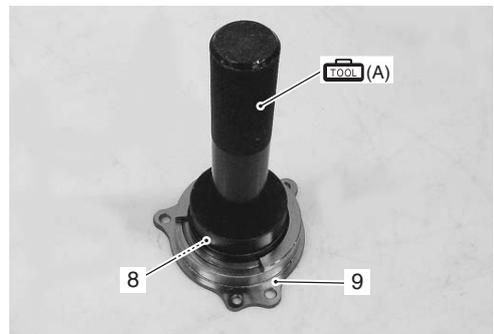


I718H1520031-02

- Remove the countershaft bearing (8) from the housing (9), using the special tool.

Special tool

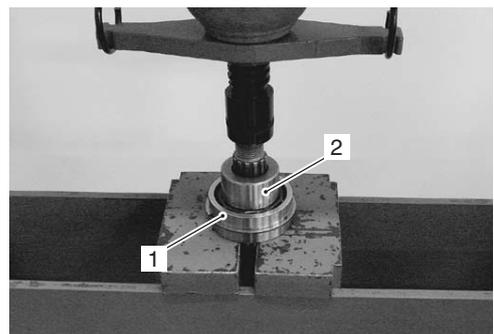
TOOL (A): 09913-70210 (Bearing installer set)



I718H1520032-02

Driveshaft

- Remove the driveshaft bearing (1) along with the spacer (2), using the hydraulic press.



I718H1520033-01

Assembly

NOTE

When reassembling the transmission gears, attention must be given to the locations and positions of washers and snap rings. The cross sectional view shows the correct position of the gears, bushings, washers and snap rings. Refer to "Transmission Construction (Page 5B-8)".

CAUTION

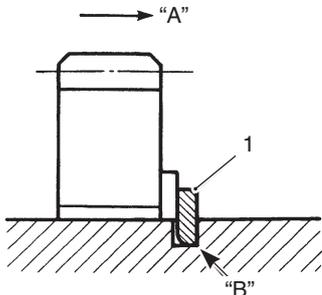
- Never reuse a snap rings. After a snap rings has been removed from a shaft, it should be discarded and a new snap rings must be installed.
- When installing a new snap rings, do not expand the end gap larger than required to slip the snap rings over the shaft.
- After installing snap rings, make sure that they are completely seated in their groove and securely fitted.

NOTE

- Rotate the bearing by hand to inspect if there are any abnormal noises and smooth rotation. Replace the bearing if there is anything unusual.
- Before installing the gears, apply engine oil to the driveshaft and countershaft.
- Before installing the oil seal, apply grease to the oil seal lip.

⚠: Grease 99000-25010 (SUZUKI SUPER GREASE A or equivalent)

- When installing a new snap ring (1), pay attention to its direction. Fit it to the side where the thrust is as shown in the illustration.



I649G1520049-01

"A": Thrust	"B": Sharp edge	1. Snap ring
-------------	-----------------	--------------

Driveshaft

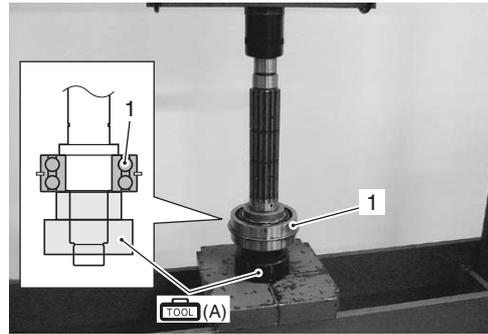
- Install the driveshaft bearing (1), using the hydraulic press and special tool.

CAUTION

Never reuse driveshaft bearing (1).

Special tool

TOOL (A): 09913-70210 (Bearing installer set)

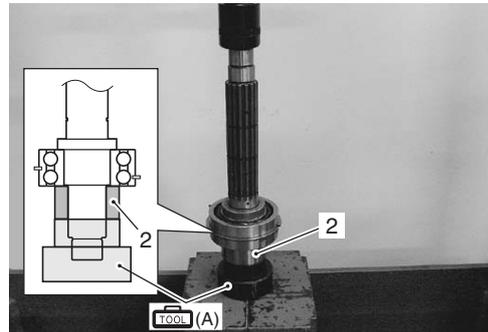


I718H1520034-01

- Install the spacer (2), using the hydraulic press and special tool.

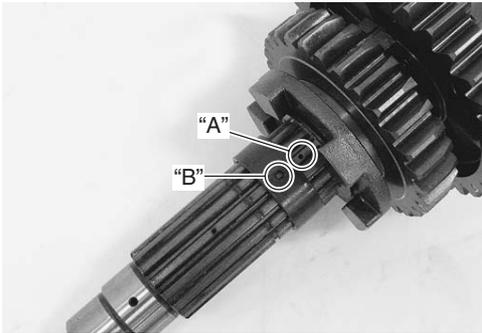
Special tool

TOOL (A): 09913-70210 (Bearing installer set)

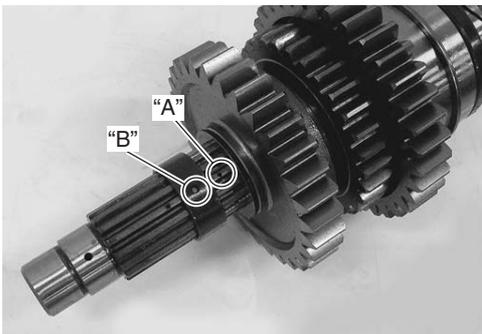


I718H1520035-01

- When installing the gear bushing onto the driveshaft, align the shaft oil hole "A" with the bushing oil hole "B".



I718H1520036-01



I718H1520037-01

Countershaft

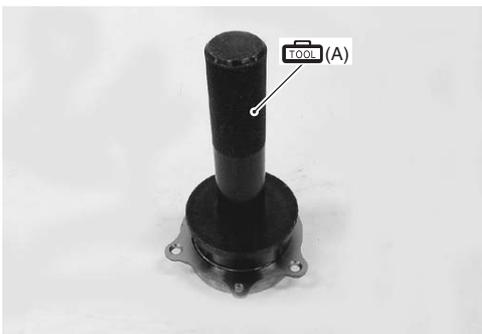
- Install the countershaft bearing (1) into the housing (2), using the special tool.

⚠ CAUTION

Never reuse countershaft bearing (1).

Special tool

TOOL (A): 09913-70210 (Bearing installer set)

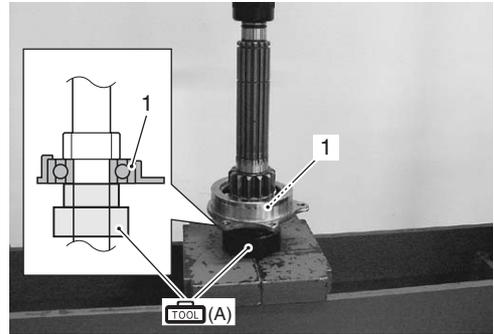


I718H1520038-01

- Install the countershaft bearing (1) to the countershaft, using the hydraulic press and special tool.

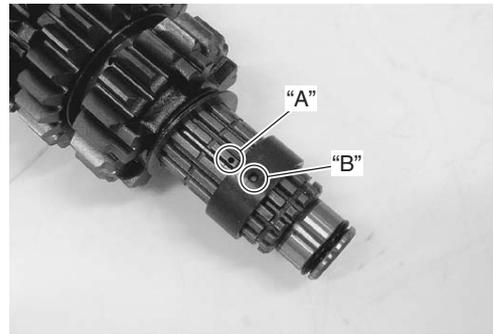
Special tool

TOOL (A): 09913-70210 (Bearing installer set)



I718H1520039-01

- When installing the gear bushing onto the countershaft (3), align the shaft oil hole "A" with the bushing oil hole "B".

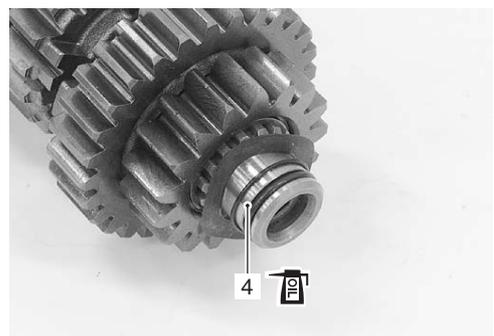


I718H1520040-01

- Apply engine oil to O-ring (4).

⚠ CAUTION

Replace the O-ring (4) with a new one.



I718H1520073-01

5B-12 Manual Transmission:

Transmission Related Parts Inspection

B718H15206007

Refer to “Transmission Removal (Page 5B-3)”, “Transmission Installation (Page 5B-5)” and “Countershaft Gear / Driveshaft Gear Disassembly and Assembly (Page 5B-9)”.

Gearshift Fork to Groove Clearance

NOTE

The clearance for each gearshift fork plays an important role in the smoothness and positiveness of the shifting action.

Using a thickness gauge, check the gearshift fork clearance in the groove of its gear. If the clearance checked is noted to exceed the limit specified, replace the fork or its gear, or both.

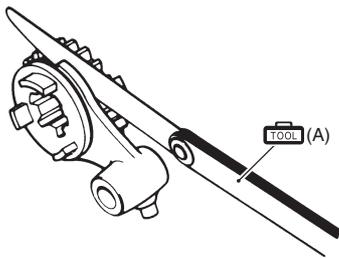
Special tool

 (A): 09900-20803 (Thickness gauge)

Gearshift fork to gearshift fork groove clearance

Standard: 0.1 – 0.3 mm (0.004 – 0.012 in)

Service limit: 0.5 mm (0.02 in)



I649G1520056-02

Gearshift Fork Groove Width

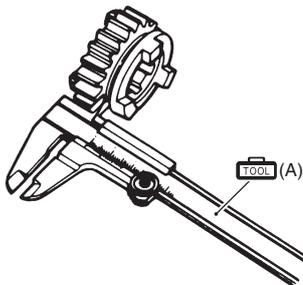
Measure the gearshift fork groove width using the vernier calipers.

Special tool

 (A): 09900-20102 (Vernier calipers (1/20 mm, 200 mm))

Gearshift fork groove width

Standard (No.1, No.2 & No.3): 5.0 – 5.1 mm (0.197 – 0.201 in)



I649G1520057-02

Gearshift Fork Thickness

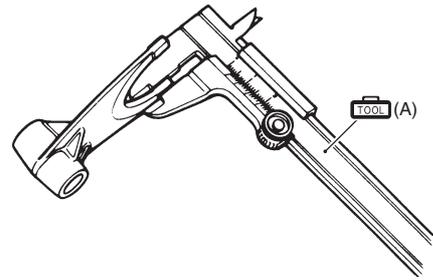
Measure the gearshift fork thickness using the vernier calipers.

Special tool

 (A): 09900-20102 (Vernier calipers (1/20 mm, 200 mm))

Gearshift fork thickness

Standard (No.1, No.2 & No.3): 4.8 – 4.9 mm (0.189 – 0.193 in)

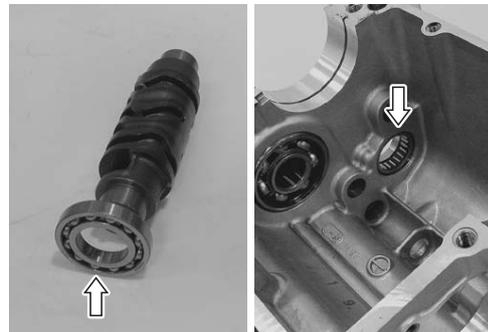


I649G1520058-02

Gearshift Cam Bearing

Inspect the gearshift cam bearings, left and right for abnormal noise and smooth rotation.

Replace the bearing if there is anything unusual. Refer to “Transmission Removal (Page 5B-3)” and “Transmission Installation (Page 5B-5)”.



I718H1520041-01

Gear Position (GP) Switch Inspection

B718H15206008

Refer to “Side-stand / Ignition Interlock System Parts Inspection in Section 11 (Page 11-8)”.

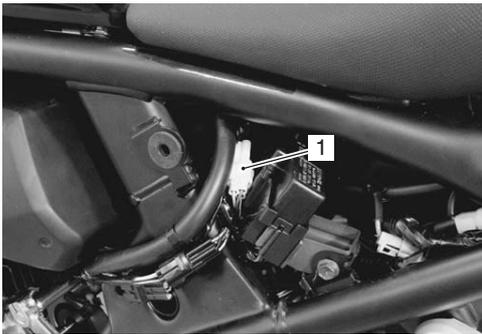
Gear Position (GP) Switch Removal and Installation

B718H15206009

Removal

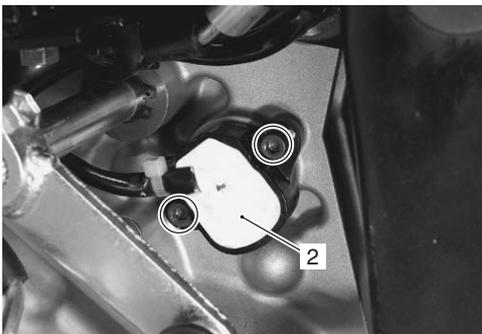
- 1) Turn the ignition switch OFF.
- 2) Remove the left flame cover. Refer to “Exterior Parts Removal and Installation in Section 9D (Page 9D-6)”.
- 3) Remove the engine sprocket outer cover. Refer to “Engine Sprocket Removal and Installation in Section 3A (Page 3A-2)”.

4) Disconnect the gear position switch coupler (1).



I718H1520042-01

5) Remove the gear position switch (2).



I718H1520043-01

Installation

Install the gear position switch in the reverse order of removal. Pay attention to the following points:

- Apply grease to the O-ring.

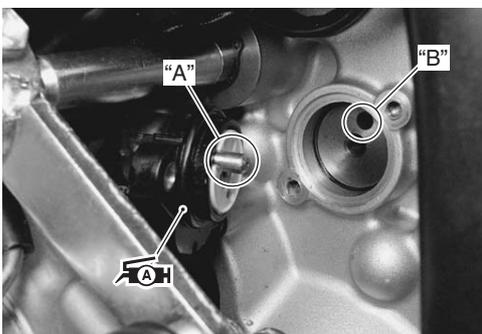
CAUTION

Replace the O-ring with a new one.

NOTE

Align the gear position switch pin "A" with the gearshift cam hole "B".

⚠️ Grease 99000-25010 (SUZUKI SUPER GREASE A or equivalent)



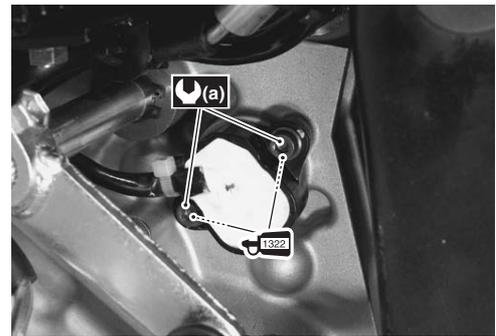
I718H1520044-01

- Apply thread lock to the gear position switch bolts and tighten them to the specified torque.

🔩1322 : Thread lock cement 99000-32110 (THREAD LOCK CEMENT SUPER 1322 or equivalent)

Tightening torque

GP switch mounting bolt (a): 6.5 N·m (0.65 kgf·m, 4.7 lb-ft)

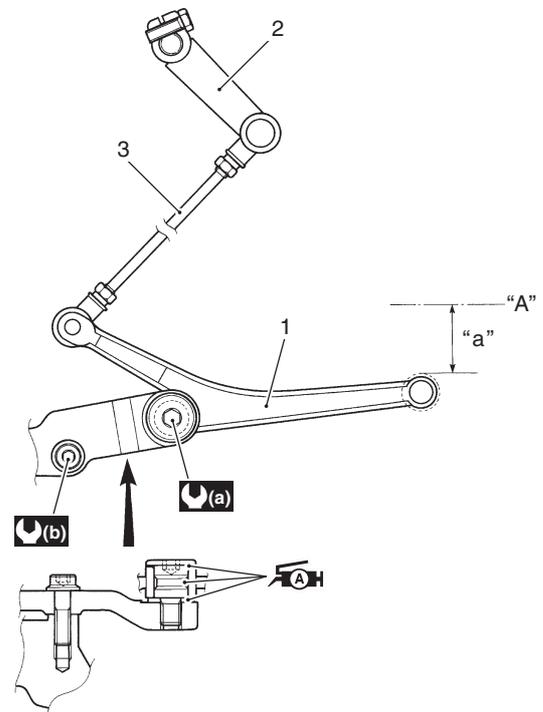


I718H1520045-02

- Route the gear position switch lead wire. Refer to "Wiring Harness Routing Diagram in Section 9A (Page 9A-8)".

Gearshift Lever Construction

B718H15206016



I718H1520074-02

1. Gearshift lever	"a". 45 – 55 mm (1.8 – 2.2 in)
2. Gearshift link arm	🔩(a) : 40 N·m (4.0 kgf·m, 29.0 lb-ft)
3. Gearshift link rod	🔩(b) : 23 N·m (2.3 kgf·m, 16.5 lb-ft)
"A". Footrest top surface	⚠️A : Apply grease.

5B-14 Manual Transmission:

Gearshift Lever Removal and Installation

B718H15206017

Removal

- 1) Place the motorcycle on the center stand.
- 2) Remove the gearshift lever as shown in the gearshift lever construction. Refer to "Gearshift Lever Construction (Page 5B-13)".

Installation

- 1) Install the gearshift lever as shown in the gearshift lever construction. Refer to "Gearshift Lever Construction (Page 5B-13)".
- 2) After installing the gearshift lever, check the gearshift lever height. Refer to "Gearshift Lever Height Inspection and Adjustment (Page 5B-14)".

Gearshift Lever Height Inspection and Adjustment

B718H15206014

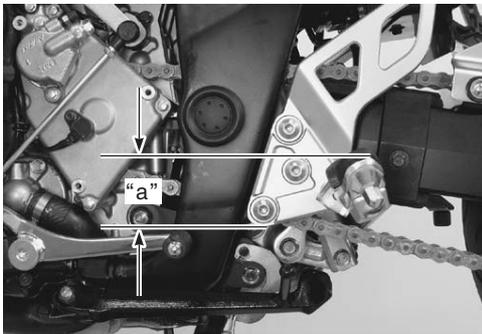
Inspect and adjust the gearshift lever height in the following procedures:

- 1) Inspect the gearshift lever height "a" between the pedal top face and footrest. Adjust the gearshift lever height if necessary.

Gearshift lever height "a"

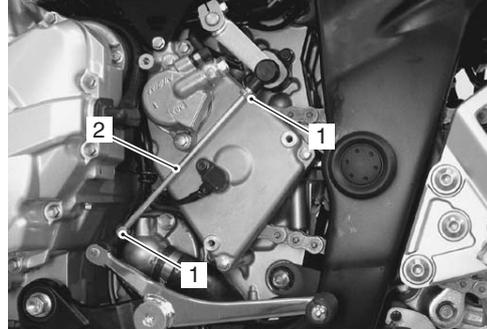
Standard 45 – 55 mm (1.8 – 2.2 in.)

- 2) Remove the engine sprocket outer cover. Refer to "Engine Sprocket Removal and Installation in Section 3A (Page 3A-2)".



I718H1520068-01

- 3) Loosen the lock-nuts (1).
- 4) Turn the gearshift link rod (2) until the gearshift lever is 45 – 55 mm (1.8 – 2.2 in.) below the top of the footrest.
- 5) Tighten the lock-nuts securely.

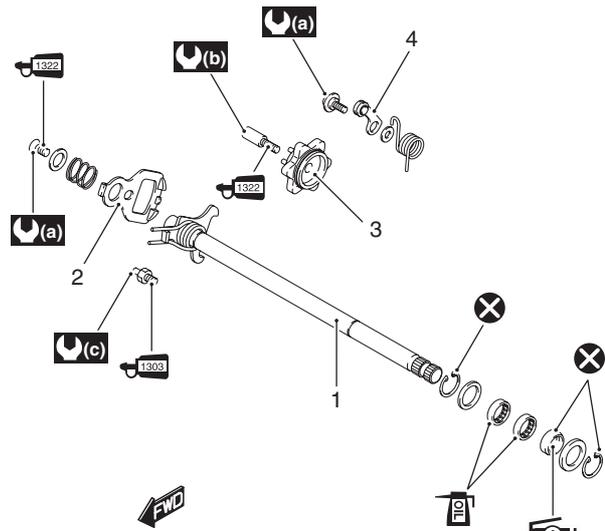


I718H1520069-01

- 6) Reinstall the engine sprocket outer cover.

Gearshift Shaft / Gearshift Cam Plate Components

B718H15206010

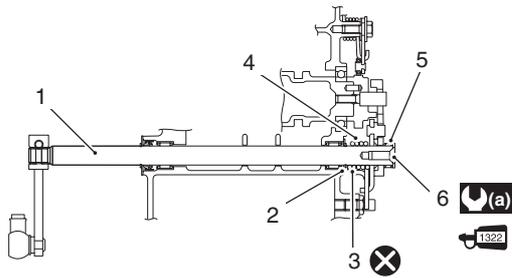


I718H1520075-03

1.	Gearshift shaft
2.	Gearshift cam drive plate
3.	Gearshift cam plate
4.	Gearshift cam stopper
(a)	: 10 N·m (1.0 kgf·m, 7.0 lb·ft)
(b)	: 13 N·m (1.3 kgf·m, 9.5 lb·ft)
(c)	: 19 N·m (1.9 kgf·m, 13.5 lb·ft)
1303	: Apply thread lock to thread part.
1322	: Apply thread lock to thread part.
FAH	: Apply grease to oil seal lip.
P	: Apply engine oil.
⊗	: Do not reuse.

Gearshift Construction

B718H15206015



I718H1520002-02

1.	Gearshift shaft
2.	Washer
3.	Snap ring
4.	Gearshift shaft return spring
5.	Gearshift plate return spring
6.	Gearshift shaft end bolt
(a)	: 10 N·m (1.0 kgf-m, 7.0 lb-ft)
1322	: Apply thread lock to thread part.
X	: Do not reuse.

Gearshift Shaft / Gearshift Cam Plate Removal and Installation

B718H15206011

Removal

- 1) Remove the engine sprocket outer cover. Refer to "Engine Sprocket Removal and Installation in Section 3A (Page 3A-2)".
- 2) Disengage the gearshift link arm by removing the bolt.

NOTE

Mark the gearshift shaft head at which the gearshift link arm slit set for correct reinstallation.

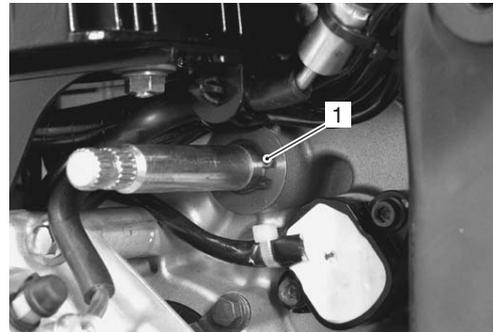


I718H1520046-01

- 3) Remove the clutch components. Refer to "Clutch Removal in Section 5C (Page 5C-13)".
- 4) Remove the snap ring (1) from the gearshift shaft.

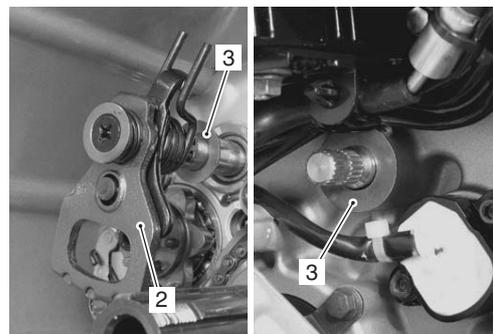
Special tool

TOOL : 09900-06107 (Snap ring pliers)



I718H1520047-01

- 5) Remove the gearshift shaft assembly (2) and washers (3).

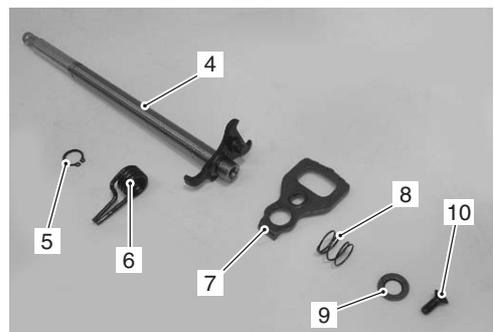


I718H1520048-02

- 6) Remove the following parts from the gearshift shaft (4).
 - Snap ring (5)
 - Gearshift return spring (6)
 - Gearshift cam drive plate (7)
 - Plate return spring (8)
 - Washer (9)
 - End bolt (10)

Special tool

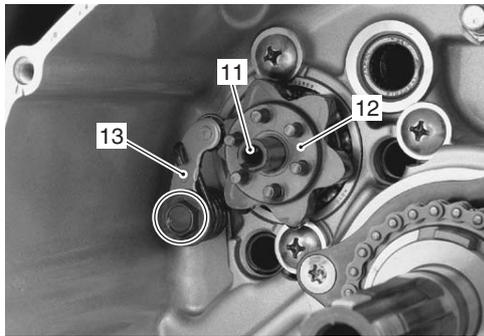
TOOL : 09900-06107 (Snap ring pliers)



I718H1520049-02

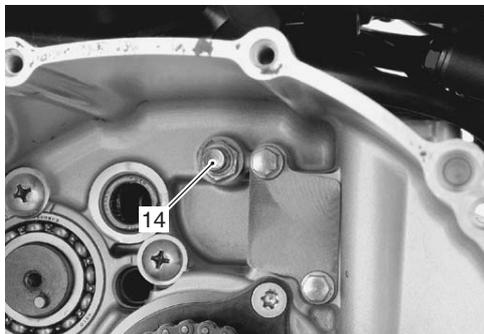
5B-16 Manual Transmission:

- 7) Remove the gearshift cam plate bolt (11) and gearshift cam plate (12).
- 8) Remove the gearshift cam stopper (13).



I718H1520050-01

- 9) Remove the gearshift arm stopper (14).



I718H1520051-01

Installation

Install the gearshift shaft and gearshift cam plate in the reverse order of removal. Pay attention to the following points:

⚠ CAUTION

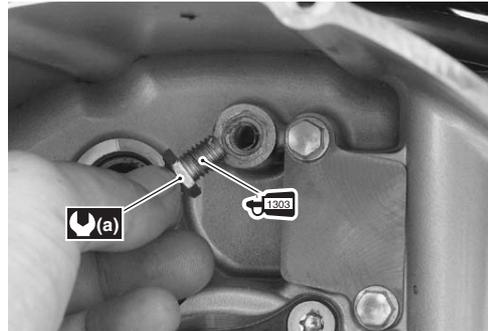
The removed snap rings must be replaced with new ones.

- Apply a small quantity of thread lock to the gearshift arm stopper and tighten it to the specified torque.

1303 : Thread lock cement 99000-32030
(THREAD LOCK CEMENT SUPER 1303 or equivalent)

Tightening torque

Gearshift arm stopper (a): 19 N·m (1.9 kgf·m, 13.5 lb-ft)



I718H1520052-01

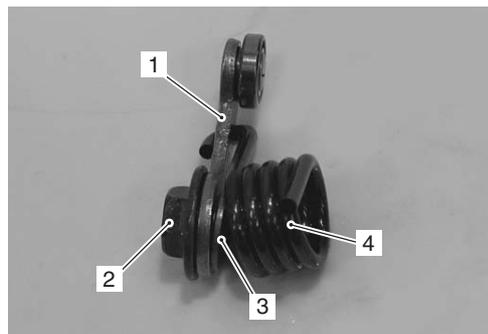
- Install the gearshift cam stopper (1), bolt (2), washer (3) and return spring (4).
- Tighten the gearshift cam stopper bolt (2) to the specified torque.

NOTE

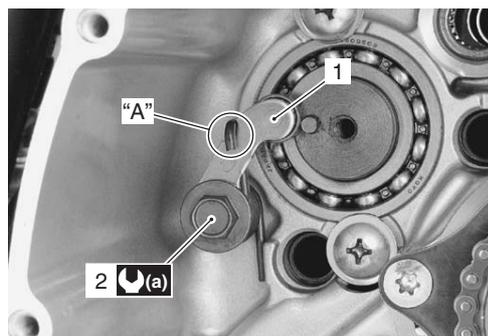
Hook the return spring end "A" to the stopper (1).

Tightening torque

Gearshift cam stopper bolt (b): 10 N·m (1.0 kgf·m, 7.0 lb-ft)



I718H1520003-03

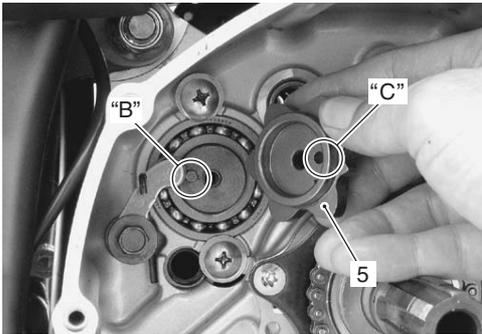


I718H1520082-01

- Check the gearshift cam stopper moves smoothly.
- Locate the gearshift cam in the neutral position.
- Install the gearshift cam stopper plate (5).

NOTE

Align the gearshift cam pin "B" with the gearshift cam stopper plate hole "C".



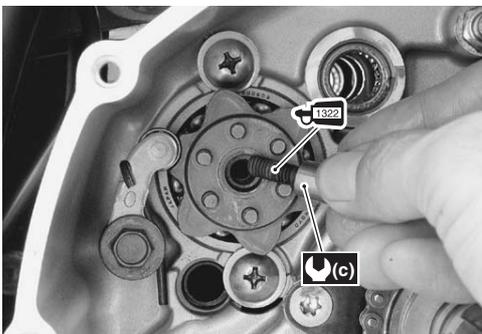
I718H1520054-01

- Apply a small quantity of thread lock to the gearshift cam stopper plate bolt and tighten it to the specified torque.

1322 : Thread lock cement 99000-32110 (THREAD LOCK CEMENT SUPER 1322 or equivalent)

Tightening torque

Gearshift cam stopper plate bolt (c): 13 N·m (1.3 kgf-m, 9.5 lb-ft)



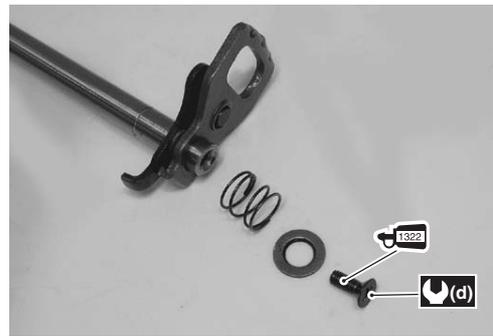
I718H1520055-02

- Apply a small quantity of thread lock to the gearshift shaft end bolt and tighten it to the specified torque.

1322 : Thread lock cement 99000-32110 (THREAD LOCK CEMENT SUPER 1322 or equivalent)

Tightening torque

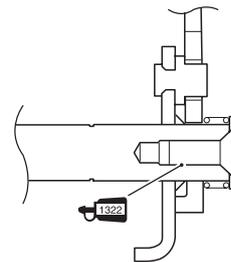
Gearshift shaft end bolt (d): 10 N·m (1.0 kgf-m, 7.0 lb-ft)



I718H1520056-02

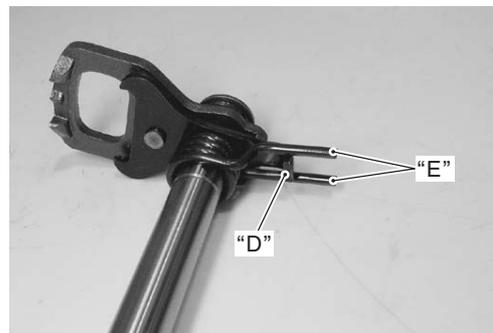
NOTE

The concave side of washer faces outside.



I718H1520084-01

- When installing the gearshift shaft return spring, position the stopper "D" of gearshift arm between the shaft return spring ends "E".



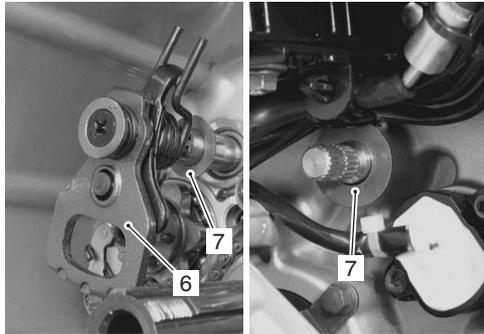
I718H1520057-01

5B-18 Manual Transmission:

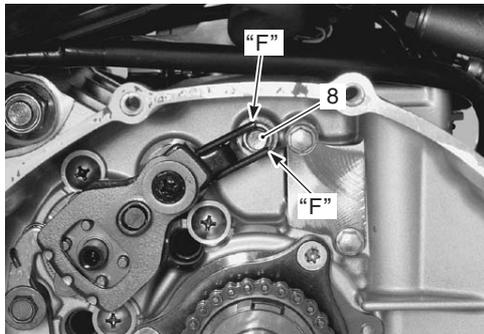
- Install the gearshift shaft assembly (6) and washers (7) as shown.

NOTE

Pinch the gearshift arm stopper (8) with return spring ends "F".



I718H1520058-02

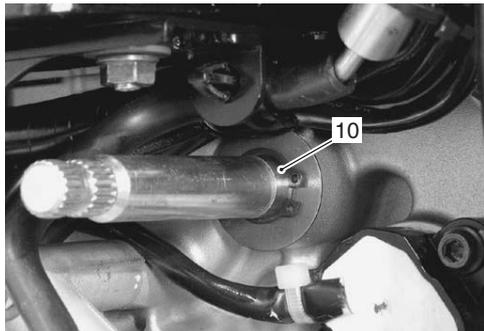


I718H1520059-02

- Install a new snap ring (10).

Special tool

 : 09900-06107 (Snap ring pliers)



I718H1520060-01

- After installing the gearshift lever, check the gearshift lever height. Refer to "Gearshift Lever Height Inspection and Adjustment (Page 5B-14)".

Gearshift Linkage Inspection

B718H15206012

Refer to "Gearshift Shaft / Gearshift Cam Plate Removal and Installation (Page 5B-15)".

Gearshift Shaft

Check the gearshift shaft for bend or wear.

Check the return spring for damage or fatigue.

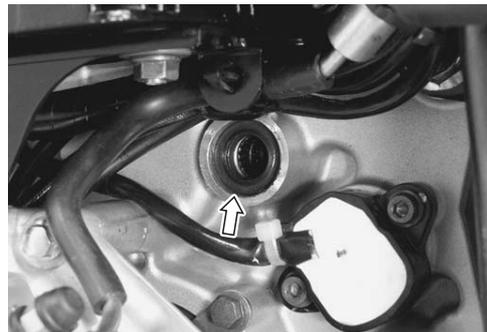
If any defects are found, replace the defective part(-s).



I718H1520061-01

Gearshift Shaft Oil Seal

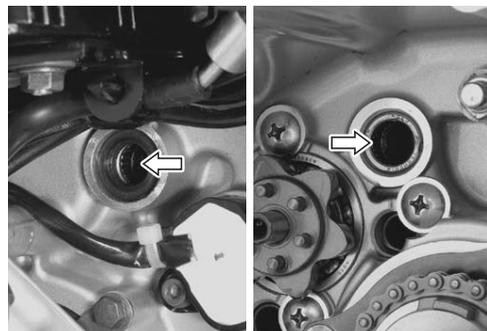
Inspect the gearshift shaft oil seal lip for damage or wear. If any defect is found, replace the oil seal with a new one.



I718H1520062-01

Gearshift Shaft Bearing

Inspect the gearshift shaft bearing for abnormal noise and smooth rotation. Replace the bearing if there is anything unusual.



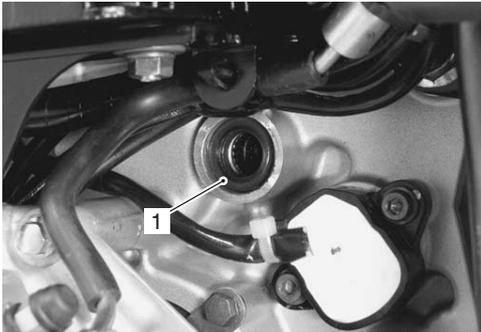
I718H1520063-01

Gearshift Shaft Oil Seal / Bearing Removal and Installation

B718H15206013

Removal

- 1) Remove the gearshift shaft. Refer to "Gearshift Shaft / Gearshift Cam Plate Removal and Installation (Page 5B-15)".
- 2) Remove the gearshift shaft oil seal (1).

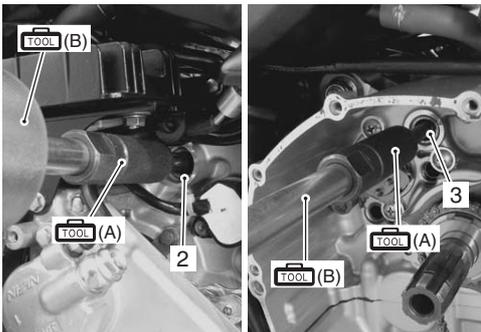


I718H1520064-01

- 3) Remove the bearings (2), (3) with the special tools.

Special tool

- TOOL (A): 09921-20210 (Bearing remover)**
TOOL (B): 09930-30104 (Rotor remover slide shaft)



I718H1520065-01

Installation

Install the oil seal and bearing in the reverse order of removal. Pay attention to the following points:

⚠ CAUTION

The removed oil seal and bearings must be replaced with new ones.

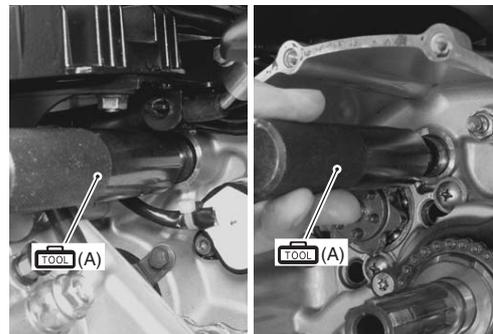
- Install the bearings with the special tool.

NOTE

The stamped mark side of gearshift shaft bearing faces outside.

Special tool

- TOOL (A): 09913-70210 (Bearing installer set)**



I718H1520066-01

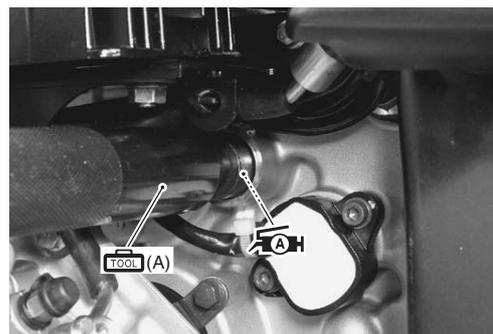
- Install the oil seal with the special tool.

Special tool

- TOOL (A): 09913-70210 (Bearing installer set)**

- Apply grease to the oil seal lip.

TOOL (A): Grease 99000-25010 (SUZUKI SUPER GREASE A or equivalent)



I718H1520067-01

Specifications

Service Data

B718H15207001

Transmission + Drive Chain

Unit: mm (in) Except ratio

Item		Standard	Limit
Primary reduction ratio		1.537 (83/54)	—
Final reduction ratio		2.388 (43/18)	—
Gear ratios	Low	3.076 (40/13)	—
	2nd	2.058 (35/17)	—
	3rd	1.550 (31/20)	—
	4th	1.304 (30/23)	—
	5th	1.160 (29/25)	—
	Top	1.071 (30/28)	—
Gearshift-fork to gearshift-fork groove clearance	No.1, 2, 3	0.1 – 0.3 (0.004 – 0.012)	0.5 (0.020)
Gearshift fork groove width	No.1, 2, 3	5.0 – 5.1 (0.197 – 0.201)	—
Gearshift fork thickness	No.1, 2, 3	4.8 – 4.9 (0.189 – 0.193)	—
Gearshift lever height		45 – 55 (1.8 – 2.2)	—

Tightening Torque Specifications

B718H15207002

Fastening part	Tightening torque			Note
	N·m	kgf-m	lb-ft	
Push rod oil seal bolt	12	1.2	8.5	☞(Page 5B-5)
Countershaft bearing retainer screw	12	1.2	8.5	☞(Page 5B-6)
Gearshift fork shaft retainer screw	10	1.0	7.0	☞(Page 5B-7)
Gearshift cam retainer screw	10	1.0	7.0	☞(Page 5B-7)
GP switch mounting bolt	6.5	0.65	4.7	☞(Page 5B-13)
Gearshift arm stopper	19	1.9	13.5	☞(Page 5B-16)
Gearshift cam stopper bolt	10	1.0	7.0	☞(Page 5B-16)
Gearshift cam stopper plate bolt	13	1.3	9.5	☞(Page 5B-17)
Gearshift shaft end bolt	10	1.0	7.0	☞(Page 5B-17)

NOTE

The specified tightening torque is also described in the following.

“Gearshift Lever Construction (Page 5B-13)”

“Gearshift Shaft / Gearshift Cam Plate Components (Page 5B-14)”

“Gearshift Construction (Page 5B-15)”

Reference:

For the tightening torque of fastener not specified in this section, refer to “Tightening Torque Specifications in Section 0C (Page 0C-7)”.

Special Tools and Equipment

Recommended Service Material

B718H15208001

Material	SUZUKI recommended product or Specification	P/No.:	Note
Grease	SUZUKI SUPER GREASE A or equivalent	99000-25010	☞ (Page 5B-5) / ☞ (Page 5B-6) / ☞ (Page 5B-10) / ☞ (Page 5B-13) / ☞ (Page 5B-19)
Thread lock cement	THREAD LOCK CEMENT SUPER 1303 or equivalent	99000-32030	☞ (Page 5B-16)
	THREAD LOCK CEMENT SUPER 1322 or equivalent	99000-32110	☞ (Page 5B-5) / ☞ (Page 5B-6) / ☞ (Page 5B-7) / ☞ (Page 5B-13) / ☞ (Page 5B-17) / ☞ (Page 5B-17)

NOTE

Required service material is also described in the following.

“Transmission Components (Page 5B-2)”

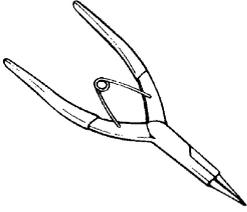
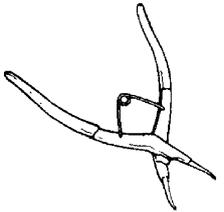
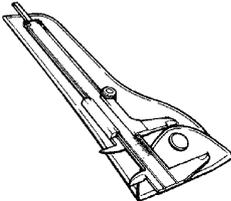
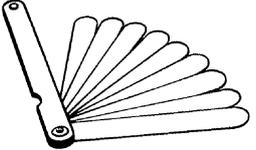
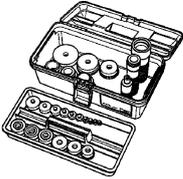
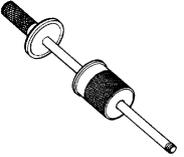
“Gearshift Lever Construction (Page 5B-13)”

“Gearshift Shaft / Gearshift Cam Plate Components (Page 5B-14)”

“Gearshift Construction (Page 5B-15)”

Special Tool

B718H15208002

09900-06107 Snap ring pliers ☞ (Page 5B-15) / ☞ (Page 5B-15) / ☞ (Page 5B-18)		09900-06108 Snap ring pliers ☞ (Page 5B-4)	
09900-20102 Vernier calipers (1/20 mm, 200 mm) ☞ (Page 5B-12) / ☞ (Page 5B-12)		09900-20803 Thickness gauge ☞ (Page 5B-12)	
09913-70210 Bearing installer set ☞ (Page 5B-4) / ☞ (Page 5B-5) / ☞ (Page 5B-5) / ☞ (Page 5B-9) / ☞ (Page 5B-10) / ☞ (Page 5B-10) / ☞ (Page 5B-10) / ☞ (Page 5B-11) / ☞ (Page 5B-11) / ☞ (Page 5B-11) / ☞ (Page 5B-19) / ☞ (Page 5B-19)		09921-20210 Bearing remover ☞ (Page 5B-19)	
09923-74511 Bearing remover ☞ (Page 5B-4)		09930-30104 Rotor remover slide shaft ☞ (Page 5B-4) / ☞ (Page 5B-19)	

Clutch

Precautions

Precautions for Clutch System

B718H1530001

Refer to "General Precautions in Section 00 (Page 00-1)".

Clutch Fluid (Brake Fluid) Information

B718H1530002

⚠ WARNING

- This clutch system is filled with an ethylene glycol-based DOT 4 brake fluid. Do not use or mix different types of fluid such as silicone-based or petroleum-based.
 - Do not use any brake fluid taken from old, used or unsealed containers. Never reuse brake fluid left over from the last servicing or stored for long periods.
 - When storing brake fluid, seal the container completely and keep away from children.
 - When replenishing brake fluid, take care not to get dust into fluid.
 - When washing clutch components, use fresh brake fluid. Never use cleaning solvent.
-

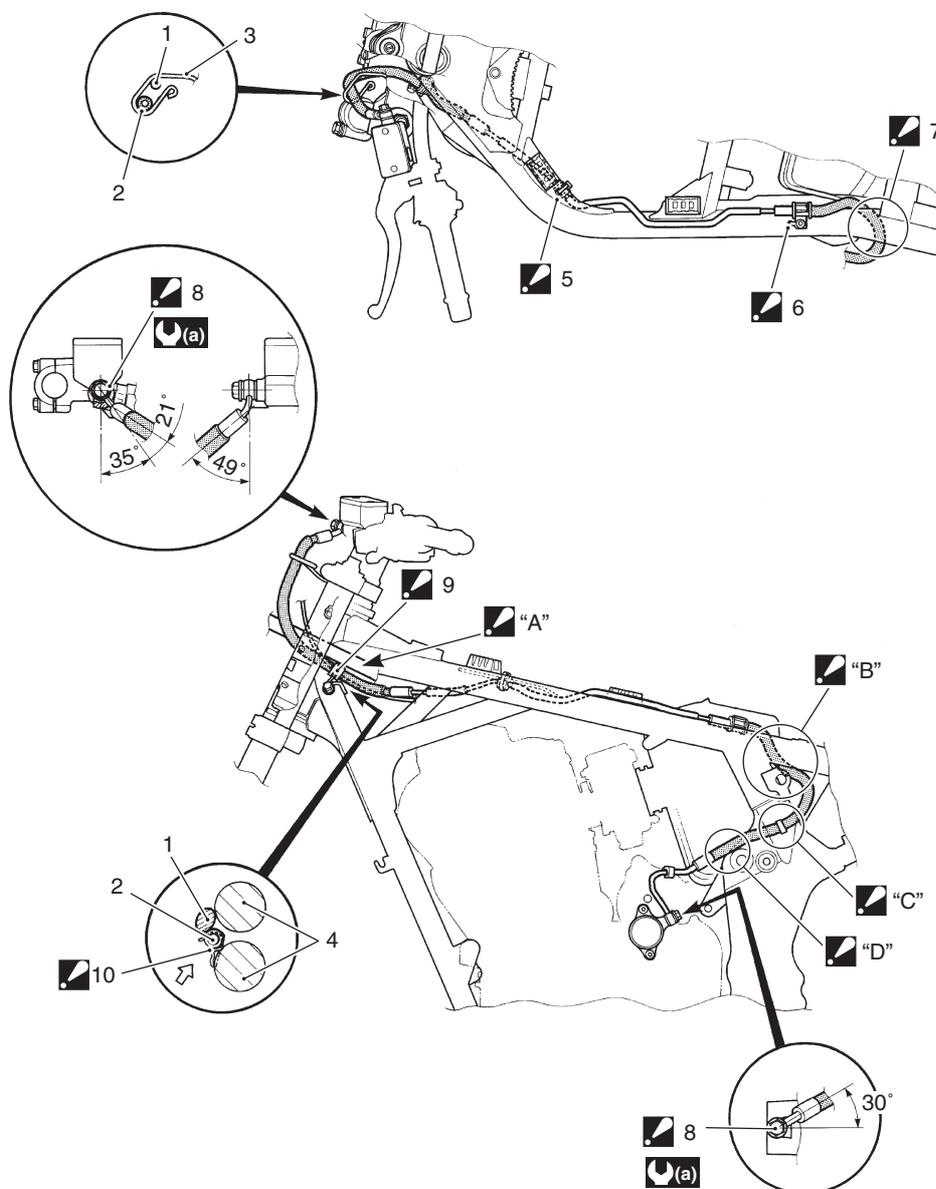
⚠ CAUTION

Immediately and completely wipe off any brake fluid contacting any part of the motorcycle. The brake fluid reacts chemically with paint, plastics and rubber materials, etc., and will damage them severely.

Schematic and Routing Diagram

Clutch Hose Routing Diagram

B718H15302001



I718H1530005-05

1. Wiring harness	<input checked="" type="checkbox"/> 9. Clutch hose No.3 clamp : After positioning the clamp with stopper, tighten the bolt.
2. Clutch hose	<input checked="" type="checkbox"/> 10. Grommet : Install the grommet of the clutch hose to the clutch hose guide properly.
3. Guide (GSF1250S/SA only)	<input checked="" type="checkbox"/> "A": Pass the wiring harness through upper the clutch hose No.3 clamp.
4. Frame	<input checked="" type="checkbox"/> "B": Clutch hose : Pass through the clutch hose between the frame and fuel tank rail. Be careful not to contact the clutch hose and frame cover bracket.
<input checked="" type="checkbox"/> 5. Clutch hose clamp : Insert the clutch hose clamp end to the hole of the frame fully.	<input checked="" type="checkbox"/> "C": pass the clutch hose through outside of the frame.
<input checked="" type="checkbox"/> 6. Clutch hose No.2 clamp : After positioning the clamp with stopper, tighten the bolt.	<input checked="" type="checkbox"/> "D": Pass the clutch hose through outside of the wiring harness.
<input checked="" type="checkbox"/> 7. Clutch hose : Pass through the clutch hose under the frame.	<input checked="" type="checkbox"/> (a) : 23 N-m (2.3 kgf-m, 16.5 lb-ft)
<input checked="" type="checkbox"/> 8. Union bolt : After the clutch hose union has contacted the stopper, tighten the union bolt.	

Diagnostic Information and Procedures

Clutch System Symptom Diagnosis

B718H15304001

Condition	Possible cause	Correction / Reference Item
Engine is noisy (Noise seems to come from the clutch).	Worn countershaft spline.	Replace countershaft.
	Worn clutch hub spline.	Replace clutch hub.
	Worn clutch plate teeth.	Replace clutch plate.
	Distorted clutch plate.	Replace.
	Worn clutch release bearing.	Replace.
	Weakened clutch damper.	Replace primary driven gear.
Clutch slips.	Weakened clutch spring.	Replace.
	Worn or distorted clutch pressure plate.	Replace.
	Distorted clutch plate.	Replace.
Clutch drags.	Leakage of clutch fluid.	Repair or replace.
	Worn or damaged clutch cylinder/ release cylinder.	Replace.
	Some clutch springs are weak, while others are not.	Replace.
	Worn or distorted clutch pressure plate.	Replace.
	Distorted clutch plate.	Replace.
Leakage of clutch fluid.	Leakage of clutch fluid from system.	Repair or replace.
Excessive clutch lever stroke.	Air in hydraulic system.	Bleed air.

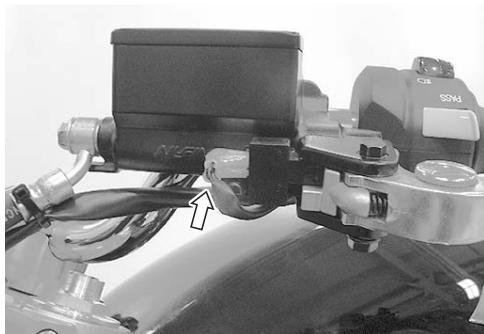
Repair Instructions

Clutch Lever Position Switch Inspection

B718H15306001

Inspect the clutch lever position switch in the following procedures:

- 1) Disconnect the clutch lever position switch lead wires.



I718H1530007-01

- 2) Inspect the switch for continuity with a tester. If any abnormality is found, replace the switch with a new one.

Special tool

: 09900-25008 (Multi-circuit tester set)

Tester knob indication

Continuity (•)))

Clutch lever position switch

Color Position	Terminal (B/Y)	Terminal (B/W)
FREE		
•	○	○

I649G1530004-02

- 3) Connect the clutch lever position switch lead wires.

Clutch Fluid Level Check

B718H15306002

Refer to "Clutch System Inspection in Section 0B (Page 0B-14)".

Clutch Hose Inspection

B718H15306003

Refer to "Clutch System Inspection in Section 0B (Page 0B-14)".

Air Bleeding from Clutch Fluid Circuit

B718H15306004

⚠ CAUTION

Handle brake fluid with care: the fluid reacts chemically with paint, plastics, rubber materials, etc.

The clutch fluid circuit may be purged of air in the following manner:

- 1) Keep the motorcycle upright and place the handlebars straight.
- 2) Fill up the master cylinder reservoir to the upper end of the inspection window. Replace the reservoir cap to prevent entry of dirt.
- 3) Remove the engine sprocket outer cover (1).



I718H1530008-01

- 4) Attach a pipe to the bleeder valve and insert the free end of the pipe into a receptacle.



I718H1530009-01

- 5) Squeeze and release the clutch lever several times in rapid succession, and squeeze the lever fully without releasing it.



I718H1530010-01

- 6) Loosen the bleeder valve by turning it a quarter of a turn so that the fluid runs into the receptacle; this will remove the tension of the clutch lever causing it to touch the handlebar grip.
- 7) Close the valve, pump and squeeze the lever, and open the valve.
- 8) Repeat this process until the fluid flowing into the receptacle no longer contains air bubbles.
- 9) Close the bleeder valve and disconnect the pipe.

Tightening torque

Air bleeder valve (Clutch): 6 N·m (0.6 kgf·m, 4.5 lb-ft)

- 10) Fill the reservoir with brake fluid to the upper end of the inspection window.
- 11) Reinstall the removed parts.

Clutch Fluid Replacement

B718H15306005

⚠ CAUTION

Handle brake fluid with care: the fluid reacts chemically with paint, plastic, rubber materials, etc.

- 1) Place the motorcycle on a level surface and keep the handlebars straight.
- 2) Remove the clutch fluid reservoir cap and diaphragm.
- 3) Suck up the old clutch fluid as much as possible.

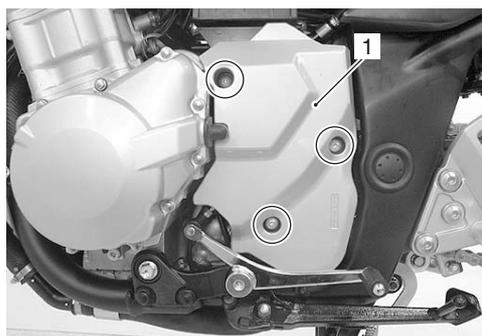


I718H1530011-01

- 4) Fill the reservoir with new clutch fluid.

BF: Brake fluid (DOT 4)

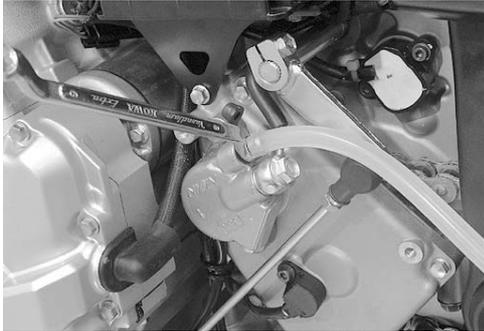
- 5) Remove the engine sprocket outer cover (1).



I718H1530012-01

5C-5 Clutch:

- 6) Connect a clear hose to the air bleeder valve and insert the other end of hose into a receptacle.



I718H1530009-01

- 7) Loosen the air bleeder valve and pump the clutch lever until old clutch fluid flows out of the bleeder system.

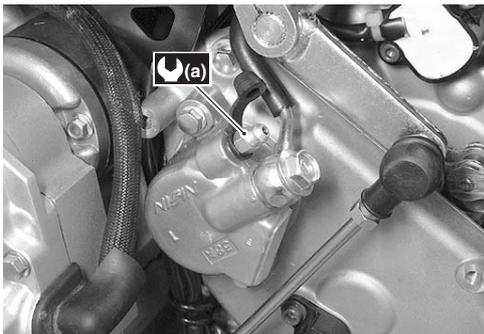


I718H1530010-01

- 8) Close the air bleeder valve and disconnect a clear hose.

Tightening torque

Air bleeder valve (Clutch) (a): 6 N·m (0.6 kgf·m, 4.5 lb·ft)



I718H1530015-01

- 9) Fill the reservoir with new fluid to the upper mark of the reservoir.
- 10) Reinstall the removed parts.

Clutch Hose Removal and Installation

B718H15306006

Removal

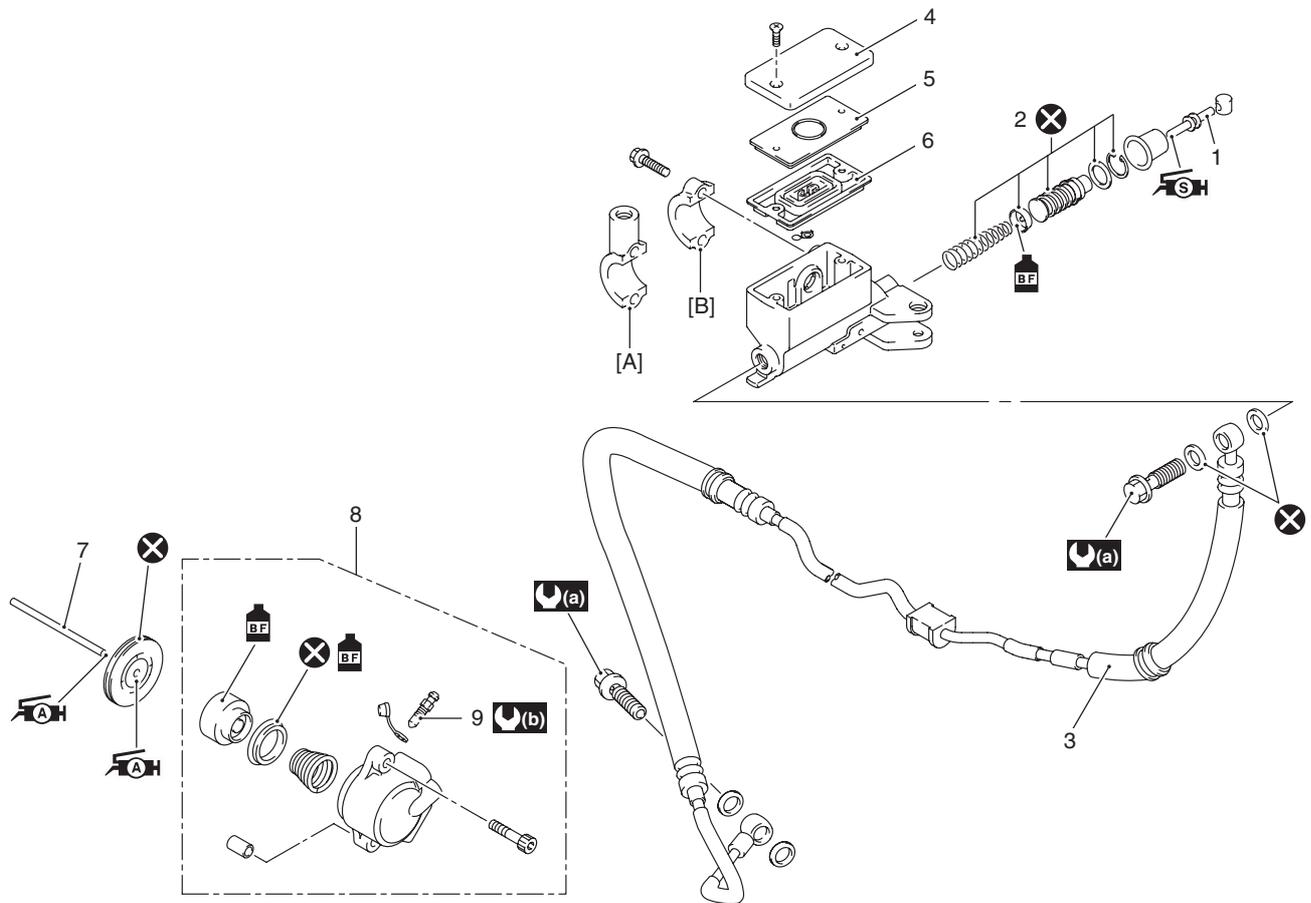
- 1) Drain clutch fluid. Refer to “Clutch Fluid Replacement (Page 5C-4)”.
- 2) Remove the fuel tank. Refer to “Fuel Tank Removal and Installation in Section 1G (Page 1G-9)”.
- 3) Remove the left frame cover and engine sprocket outer cover. Refer to “Exterior Parts Removal and Installation in Section 9D (Page 9D-6)” and “Engine Sprocket Removal and Installation in Section 3A (Page 3A-2)”.
- 4) Remove the clutch hose as shown in the clutch hose routing diagram. Refer to “Clutch Hose Routing Diagram (Page 5C-2)”.

Installation

- 1) Install the clutch hose as shown in the clutch hose routing diagram. Refer to “Clutch Hose Routing Diagram (Page 5C-2)”.
- 2) Bleed air from the clutch system. Refer to “Air Bleeding from Clutch Fluid Circuit (Page 5C-4)”.
- 3) Reinstall the removed parts.

Clutch Control System Components

B718H15306007



I718H1530065-02

1. Push rod	7. Push rod	(b) : 6 N·m (0.6 kgf-m, 4.5 lb-ft)
2. Piston/Cup set	8. Clutch release cylinder set	: Apply brake fluid.
3. Clutch hose	9. Air bleeder	: Apply grease.
4. Reservoir cap	[A]: For GSF1250/A	: Apply silicone grease.
5. Plate	[B]: For GSF1250S/SA	: Do not reuse.
6. Diaphragm	(a) : 23 N·m (2.3 kgf-m, 16.5 lb-ft)	

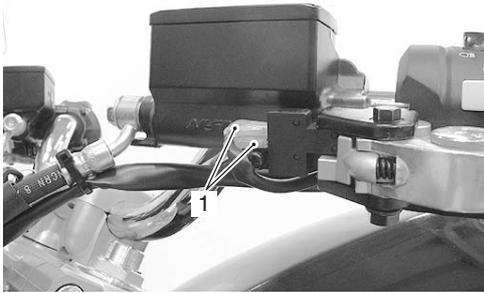
5C-7 Clutch:

Clutch Master Cylinder Assembly Removal and Installation

B718H15306008

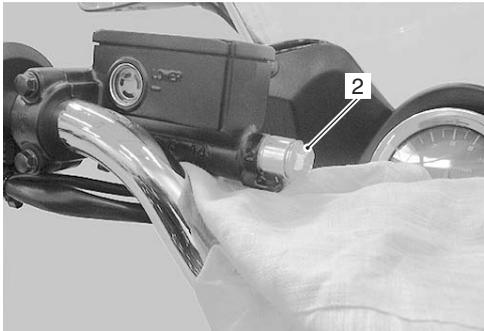
Removal

- 1) Drain clutch fluid. Refer to "Clutch Fluid Replacement (Page 5C-4)".
- 2) Disconnect the clutch lever position switch lead wires (1).



I718H1530017-01

- 3) Place a rag under the clutch hose union bolt (2) on the master cylinder to catch any spilt brake fluid.
- 4) Remove the clutch hose union bolt (2) and disconnect the clutch hose.



I718H1530018-01

- 5) Remove the left rear view mirror. (GSF1250/A)
- 6) Remove the master cylinder assembly.



I718H1530019-01

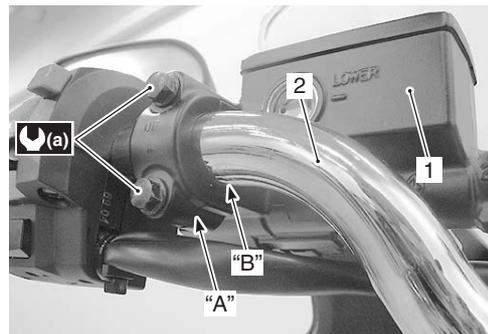
Installation

Install the clutch master cylinder in the reverse order of removal. Pay attention to the following points:

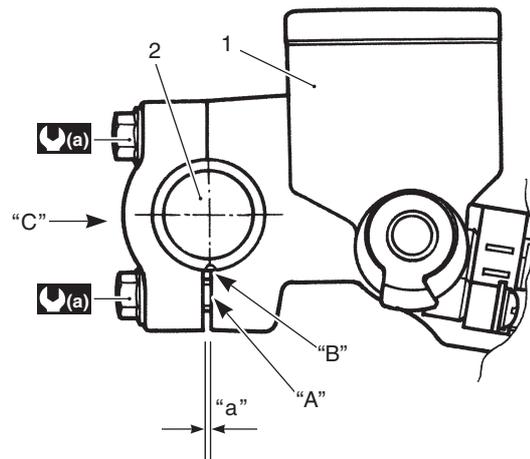
- When installing the master cylinder (1) onto the handlebars (2), align the master cylinder holder's mating surface "A" with the punch mark "B" on the handlebars (2) and tighten the upper holder bolt first. Refer to "Handlebar Construction in Section 6B (Page 6B-2)".

Tightening torque

Clutch master cylinder holder bolt (a): 10 N·m (1.0 kgf-m, 7.0 lb-ft)



I718H1530020-01



I718H1530073-01

"C": "UP" mark

"a": Clearance

- After setting the clutch hose union to the stopper, tighten the union bolt to the specified torque.

⚠ CAUTION

The seal washers should be replaced with the new ones to prevent fluid leakage.

Tightening torque

Clutch hose union bolt (b): 23 N·m (2.3 kgf·m, 16.5 lb-ft)



I718H1530021-01

- Bleed air from the clutch system. Refer to “Air Bleeding from Clutch Fluid Circuit (Page 5C-4)”.

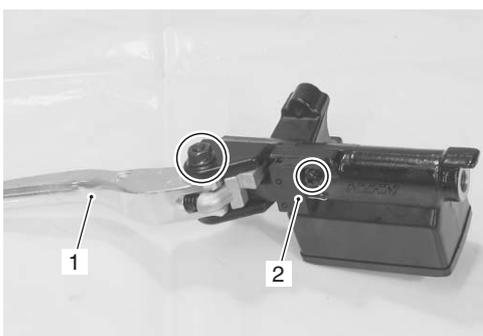
Clutch Master Cylinder / Clutch Lever Disassembly and Assembly

B718H15306009

Refer to “Clutch Master Cylinder Assembly Removal and Installation (Page 5C-7)”.

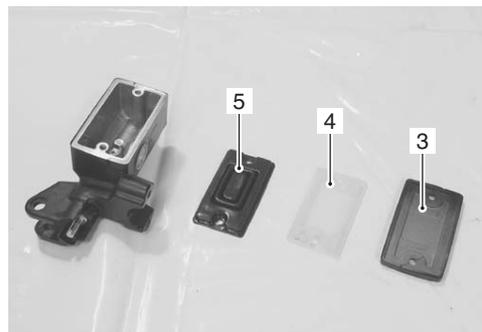
Disassembly

- 1) Remove the clutch lever (1) and clutch lever position switch (2).



I649G1530012-01

- 2) Remove the reservoir cap (3), plate (4) and diaphragm (5).

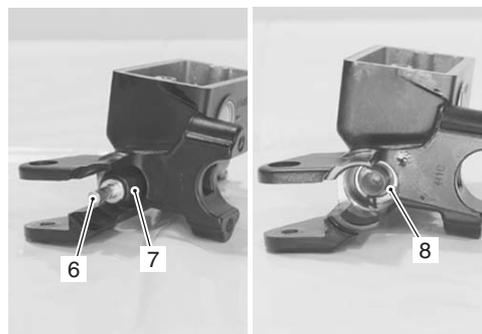


I649G1530013-01

- 3) Pull out the push rod (6) and dust boot (7).
- 4) Remove the snap ring (8).

Special tool

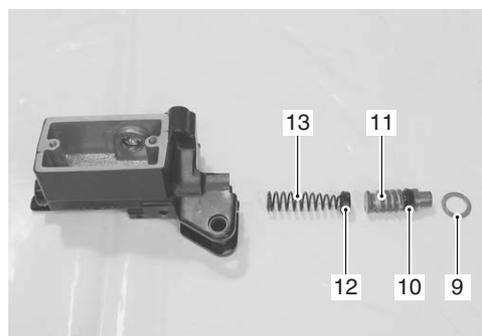
🔧 : 09900-06108 (Snap ring pliers)



I649G1530014-01

- 5) Remove the following parts from the master cylinder.

- Washer (9)
- Secondary cup (10)
- Piston (11)
- Primary cup (12)
- Spring (13)



I649G1530015-01

5C-9 Clutch:

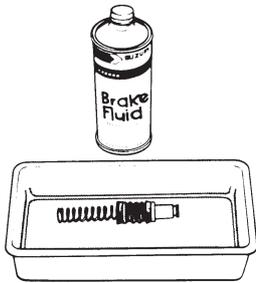
Assembly

Assemble the master cylinder in the reverse order of disassembly. Pay attention to the following points:

CAUTION

- Wash the master cylinder components with new brake fluid before reassembly.
- Do not wipe the clutch fluid off after washing the components.
- When washing the components, use the specified clutch fluid (Brake fluid). Never use different types of fluid or cleaning solvents such as gasoline, kerosine, etc.
- Apply brake fluid to the master cylinder bore and to all of the master cylinder components to be inserted into the bore.

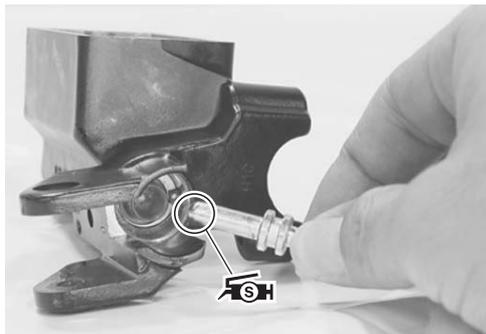
BF: Brake fluid (DOT 4)



I649G1530016-01

- Apply SUZUKI SILICONE GREASE to the push rod end.

 : Grease 99000-25100 (SUZUKI Silicone Grease or equivalent)



I649G1530017-02

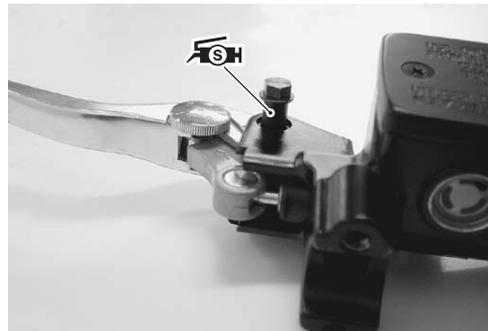
- When installing the clutch lever position switch, align the projection on the switch with the hole in the master cylinder.



I649G1530018-01

- Apply SUZUKI SILICONE GREASE to the clutch lever pivot bolt when installing.

 : Grease 99000-25100 (SUZUKI Silicone Grease or equivalent)



I718H1530069-01

Tightening torque

Clutch lever pivot bolt: 6.0 N·m (0.6 kgf-m, 4.5 lb-ft)

Clutch lever pivot bolt lock-nut: 6.0 N·m (0.6 kgf-m, 4.5 lb-ft)

Clutch Master Cylinder Parts Inspection

B718H15306010

Refer to "Clutch Master Cylinder / Clutch Lever Disassembly and Assembly (Page 5C-8)".

Master Cylinder

Inspect the master cylinder bore for any scratches or other damage.



I649G1530020-01

Piston

Inspect the piston surface for any scratches or other damage.

Rubber Parts

Inspect the primary cup, secondary cup and dust boot for wear or damage.



I649G1530021-01

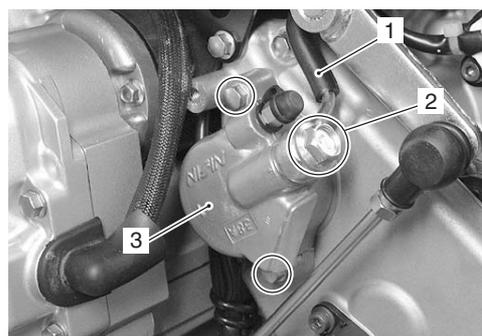
Clutch Release Cylinder / Push Rod Removal and Installation

B718H15306011

Removal

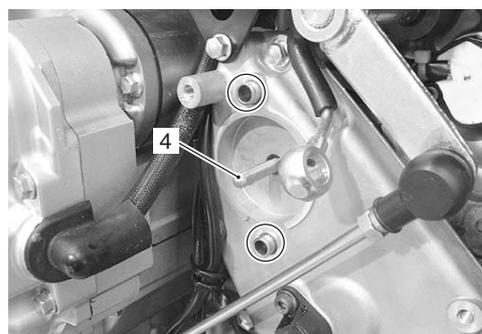
- 1) Drain clutch fluid. Refer to "Clutch Fluid Replacement (Page 5C-4)".
- 2) Remove the engine sprocket outer cover. Refer to "Engine Sprocket Removal and Installation in Section 3A (Page 3A-2)".
- 3) Disconnect the clutch hose (1) by removing the union bolt (2).

- 4) Remove the clutch release cylinder (3).



I718H1530070-01

- 5) Remove the dowel pins and push rod (4).



I718H1530023-01

Installation

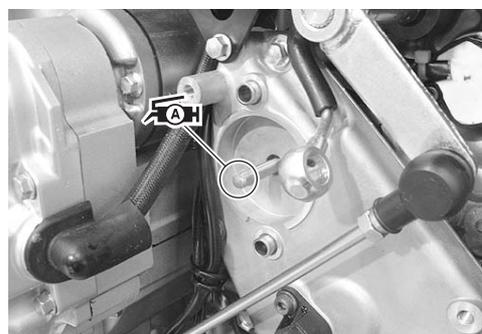
Install the clutch release cylinder in the reverse order of removal. Pay attention to the following points:

⚠ CAUTION

The seal washers should be replaced with the new ones to prevent fluid leakage.

- Apply a small quantity of SUZUKI SUPER GREASE "A" to the push rod.

🔧 : Grease 99000-25010 (SUZUKI SUPER GREASE A or equivalent)



I718H1530024-01

- Install the clutch hose as shown in the clutch hose routing diagram. Refer to "Clutch Hose Routing Diagram (Page 5C-2)".
- Bleed air from the clutch system. Refer to "Air Bleeding from Clutch Fluid Circuit (Page 5C-4)".

5C-11 Clutch:

Clutch Push Rod (Left) Inspection

B718H15306019

Inspect the push rod in the following procedures:

- 1) Remove the clutch push rod. Refer to "Clutch Release Cylinder / Push Rod Removal and Installation (Page 5C-10)".
- 2) Inspect the push rod for wear or bend. If any defects are found, replace it with a new one.



I718H1530025-01

- 3) Reinstall the removed parts. Refer to "Clutch Release Cylinder / Push Rod Removal and Installation (Page 5C-10)".

Clutch Release Cylinder Disassembly and Assembly

B718H15306012

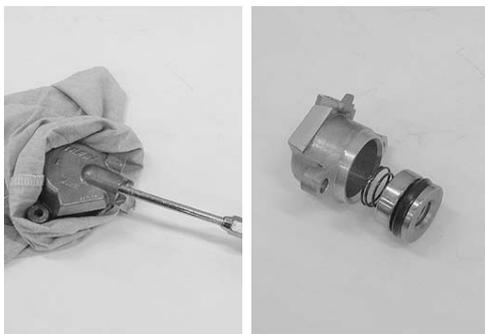
Refer to "Clutch Release Cylinder / Push Rod Removal and Installation (Page 5C-10)".

Disassembly

- 1) Place a rag over the piston to prevent popping up.
- 2) Force out the piston by using air gun.

⚠ CAUTION

Do not use high pressure air to prevent piston damage.



I718H1530026-01

Assembly

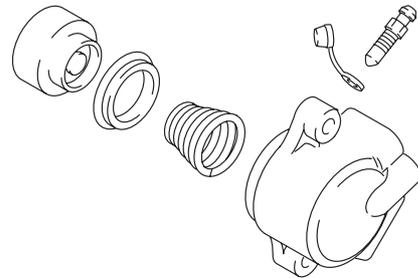
Assemble the clutch cylinder in the reverse order of disassembly. Pay attention to the following points:

- Wash the cylinder bore and piston with specified brake fluid.

BF: Brake fluid (DOT 4)

⚠ CAUTION

- Wash the cylinder components with fresh brake fluid before reassembly. Never use cleaning solvent or gasoline to wash them.
- Do not wipe the brake fluid off after washing the components.
- When washing the components, use the specified brake fluid. Never use different types of fluid or cleaning solvent such as gasoline, kerosine or the others.



I718H1530066-02

- Bleed air from the clutch system. Refer to "Air Bleeding from Clutch Fluid Circuit (Page 5C-4)".

Clutch Release Cylinder Inspection

B718H15306013

Refer to "Clutch Release Cylinder Disassembly and Assembly (Page 5C-11)".

Inspect the clutch cylinder bore wall for nicks, scratches or other damage.

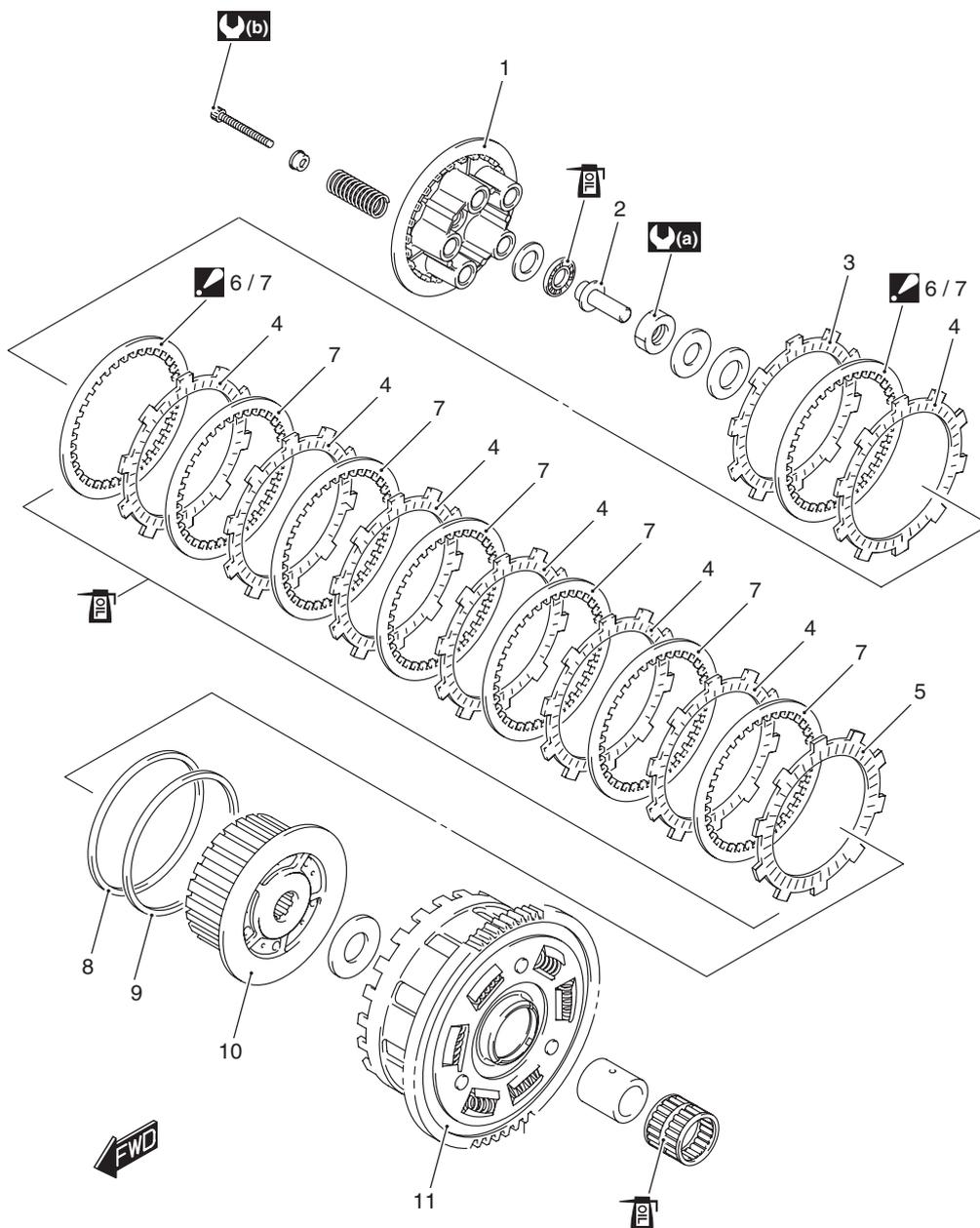
Inspect the piston surface for any scratches or other damage.



I718H1530028-03

Clutch Components

B718H15306014



I718H1530067-03

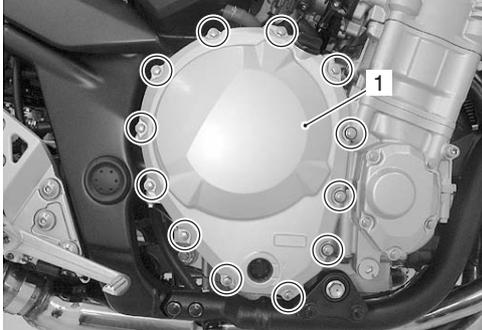
1. Clutch pressure plate	6. No.1 driven plate (0 – 2 pcs) : The No.1 and No.2 driven plates are 8 in total.	11. Primary driven gear assembly
2. Clutch push piece	7. No.2 driven plate (6 – 8 pcs)	(a) : 150 N-m (15.0 kgf-m, 108.5 lb-ft)
3. No.3 drive plate	8. Spring washer	(b) : 10 N-m (1.0 kgf-m, 7.0 lb-ft)
4. No.1 drive plate	9. Spring washer seat	Apply engine oil.
5. No.2 drive plate	10. Clutch sleeve hub	

5C-13 Clutch:

Clutch Removal

B718H15306016

- 1) Drain engine oil. Refer to "Engine Oil and Filter Replacement in Section 0B (Page 0B-10)".
- 2) Remove the clutch cover (1).



I718H1530029-01

- 3) Remove the gasket (2) and dowel pins.

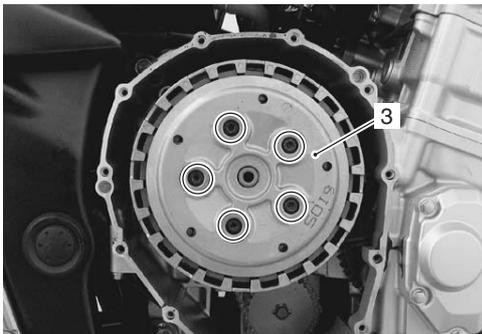


I718H1530030-01

- 4) Remove the clutch spring set bolts, clutch springs and pressure plate (3).

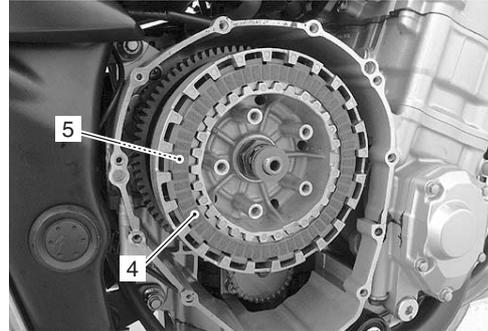
NOTE

Loosen the clutch spring set bolts little by little and diagonally.



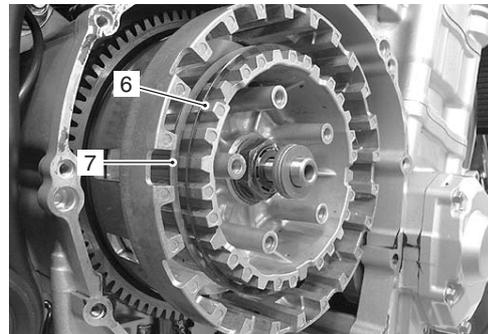
I718H1530071-01

- 5) Remove the clutch drive plates (4) and driven plates (5).



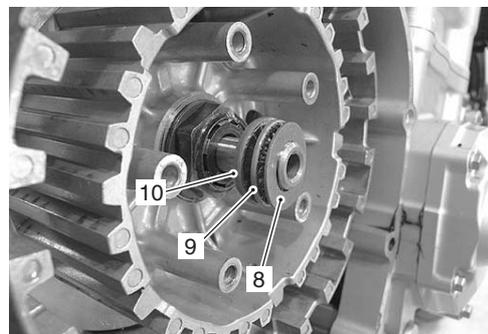
I718H1530033-01

- 6) Remove the spring washer (6) and its seat (7).



I718H1530034-02

- 7) Remove the thrust washer (8), bearing (9) and clutch push piece (10).

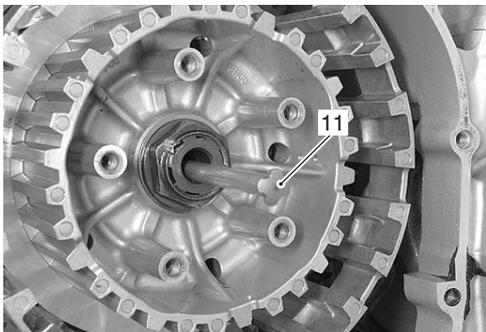


I718H1530035-02

8) Remove the clutch push rod (11).

NOTE

If it is difficult to pull out the push rod (11), use a magnetic hand or a wire.



I718H1530036-01

9) Unlock the clutch sleeve hub nut.



I718H1530037-01

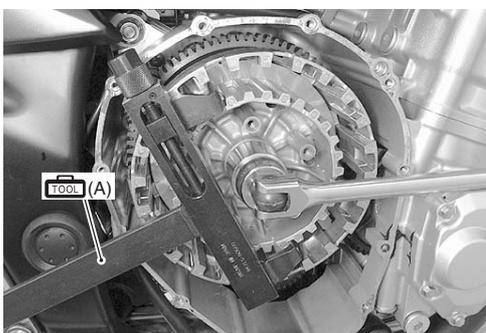
10) Hold the clutch sleeve hub with the special tools.

Special tool

TOOL (A): 09920-53740 (Clutch sleeve hub holder)

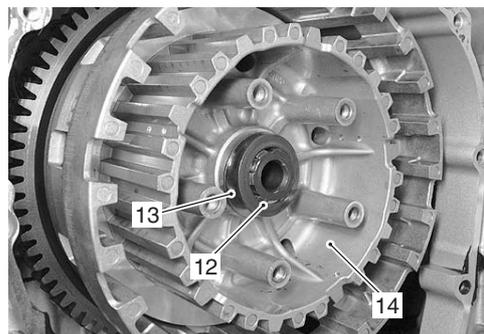
TOOL: 09920-31020 (Extension handle)

11) Remove the clutch sleeve hub nut.



I718H1530039-01

12) Remove the conical spring washer (12), washer (13) and clutch sleeve hub (14).



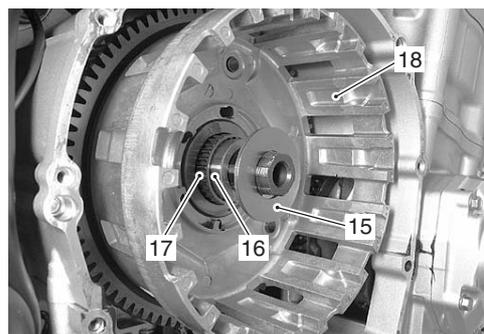
I718H1530040-01

13) Remove the thrust washer (15), spacer (16) and bearing (17).

14) Remove the primary driven gear assembly (18).

NOTE

If it is difficult to remove the primary driven gear, rotate the crankshaft.



I718H1530041-01

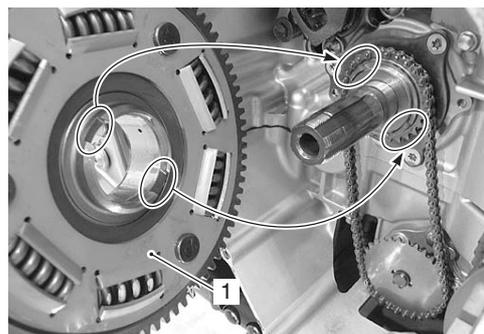
Clutch Installation

B718H15306017

1) Install the primary driven gear assembly (1).

NOTE

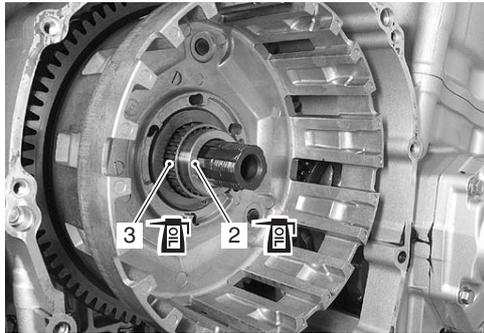
- If it is difficult to install the primary driven gear, rotate the crankshaft.
- Be sure to engage the oil pump drive sprocket with the primary driven gear.



I718H1530043-01

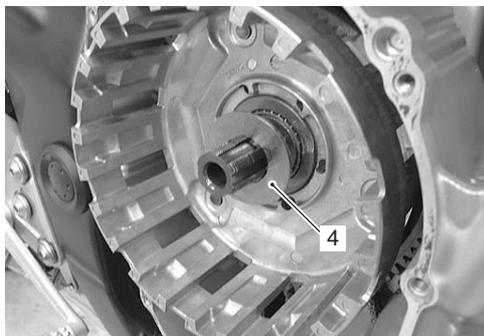
5C-15 Clutch:

- 2) Install the spacers (2) and bearing (3), and apply engine oil to them.



I718H1530042-01

- 3) Install the thrust washer (4).

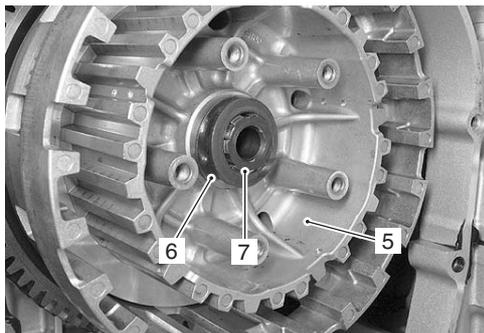


I718H1530044-01

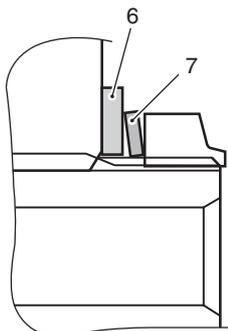
- 4) Install the clutch sleeve hub (5), washer (6) and spring washer (7)

NOTE

The conical curve side of spring washer (7) faces outside.



I718H1530045-01



I718H1530068-02

- 5) Hold the clutch sleeve hub with the special tools.

Special tool

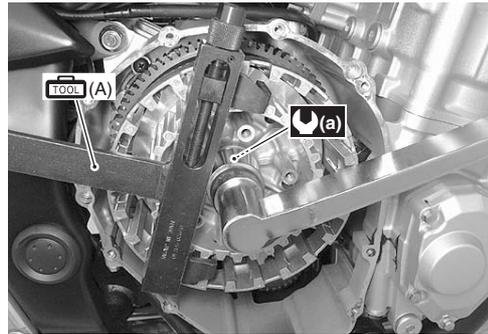
 (A): 09920-53740 (Clutch sleeve hub holder)

 : 09920-31020 (Extension handle)

- 6) Tighten the clutch sleeve hub nut to the specified torque.

Tightening torque

Clutch sleeve hub nut (a): 150 N·m (15.0 kgf·m, 108.5 lb-ft)



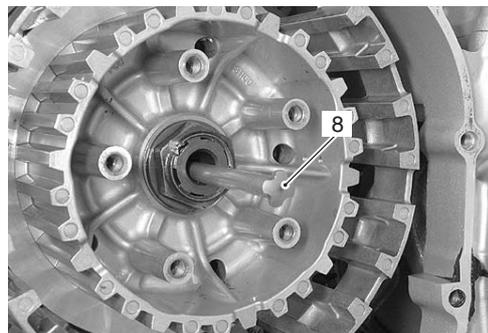
I718H1530047-01

- 7) Lock the clutch sleeve hub nut with a center punch.



I718H1530048-01

- 8) Install the clutch push rod (8) into the countershaft.

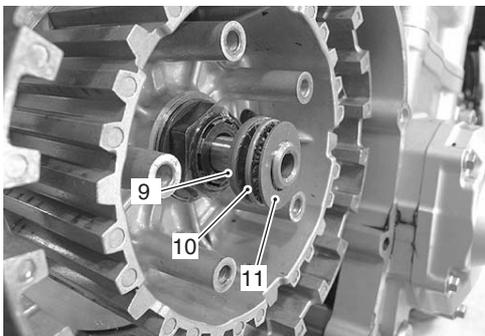


I718H1530049-01

9) Install the clutch push piece (9), bearing (10) and thrust washer (11) to the countershaft.

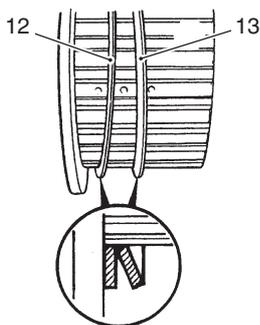
NOTE

Thrust washer (11) is located between the pressure plate and bearing (10).



I718H1530050-01

10) Install the spring washer seat (12) and spring washer (13) onto the clutch sleeve hub correctly.

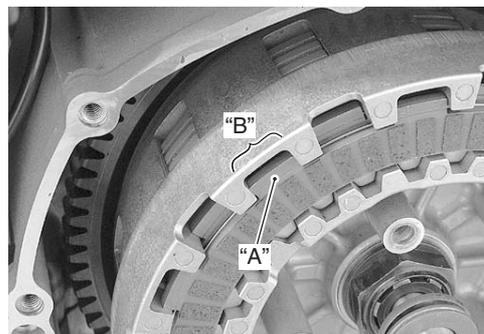


I718H1530051-01

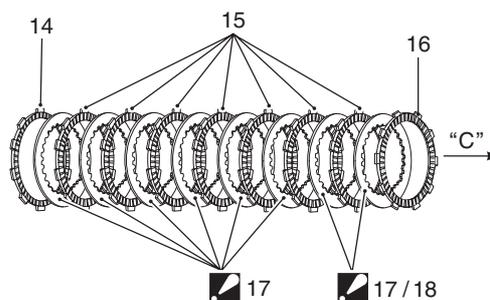
11) Insert the clutch drive plates and driven plates one by one into the clutch sleeve hub in the prescribed order.

NOTE

Insert the outermost No.2 drive plate claws "A" to the other slits "B" of clutch housing as shown.



I718H1530052-01

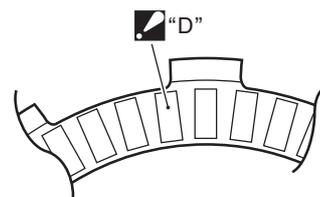


I718H1530053-05

14.	No.2 drive plate
15.	No.1 drive plate
16.	No.3 drive plate
17.	No.1 driven plate (6 – 8 pcs) : The No.1 and No.2 driven plates are 8 in total.
18.	No.2 driven plate (0 – 2 pcs) : The No.1 and No.2 driven plates are 8 in total.
"C": Direction of outside	

NOTE

For drive plate
Three kinds of the drive plate (No.1, No.2 and No.3) are equipped in the clutch system, they can be distinguished by the inside diameter and clutch facing "D".



I718H1530055-01

17	"D": Clutch facing : No.1 and No.2 drive plates resemble each other very closely in external appearance. Make sure to check the numbers of clutch facing, before installing them.
----	--

5C-17 Clutch:

Drive plate	I.D.	Clutch facing "D"
No.1	127 mm (5.0 in)	48 pcs
No.2	135 mm (5.3 in)	60 pcs
No.3	127 mm (5.0 in)	60 pcs

NOTE

For driven plate

Two kinds of the driven plate (No.1 and No.2) are equipped in the clutch system, they can be distinguished by the thickness. The No.1 and No.2 driven plates are 8 in total. The driven plate No.2 should be used within 2 pcs. The driven plate No.2 should be installed pressure plate side.

Driven plate	Thickness
No.1	2.0 mm (0.08 in)
No.2	2.3 mm (0.09 in)

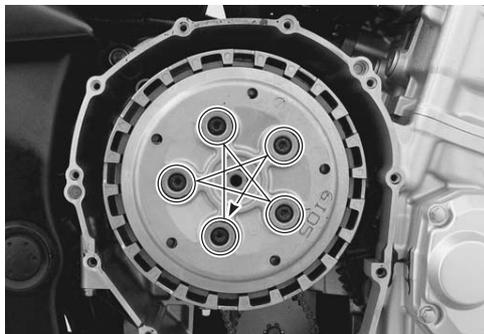
- 12) Install the pressure plate and clutch springs.
- 13) Tighten the clutch spring set bolts to the specified torque.

NOTE

Tighten the clutch spring set bolts diagonally.

Tightening torque

Clutch spring set bolt: 10 N·m (1.0 kgf-m, 7.0 lb-ft)



I718H1530072-01

- 14) Apply a light coat of the SUZUKI BOND "1207B" to the clutch cover gasket mating surface as shown.

1207B: Sealant 99000-31140 (SUZUKI Bond 1207B or equivalent)



I718H1530058-03

- 15) Install the dowel pins and gasket (19).

⚠ CAUTION

Use a new gasket to prevent oil leakage.



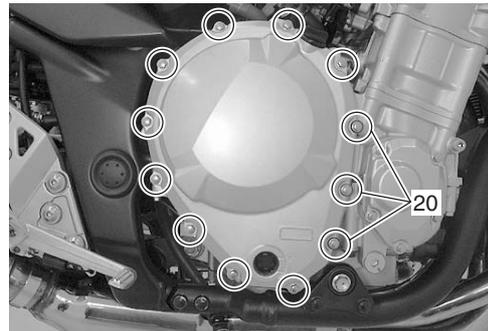
I718H1530059-01

- 16) Fit new gasket washer to the bolt (20).

⚠ CAUTION

Use the gasket washers to prevent oil leakage.

- 17) Install the clutch cover and tighten the clutch cover bolts.



I718H1530061-01

- 18) Pour engine oil. Refer to "Engine Oil and Filter Replacement in Section 0B (Page 0B-10)".

Clutch Parts Inspection

B718H15306018

Refer to "Clutch Removal (Page 5C-13)" and "Clutch Installation (Page 5C-14)".

Clutch Drive and Driven Plate

NOTE

Wipe off the engine oil from the drive and driven plates with a clean rag.

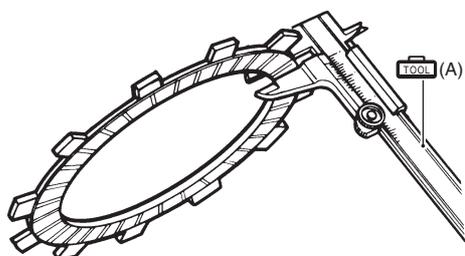
Measure the thickness of drive plates with a vernier calipers. If the drive plate thickness is found to have reached the limit, replace it with a new one.

Special tool

TOOL (A): 09900-20102 (Vernier calipers (1/20 mm, 200 mm))

Clutch drive plate thickness

Service limit (No.1, No.2 and No.3 drive plates): 3.42 mm (0.135 in)



I649G1530056-02

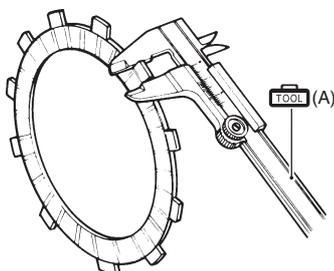
Measure the claw width of drive plates with a vernier calipers. Replace the drive plates found to have worn down to the limit.

Special tool

TOOL (A): 09900-20102 (Vernier calipers (1/20 mm, 200 mm))

Clutch drive plate claw width

Service limit (No.1, No.2 and No.3 drive plates): 13.1 mm (0.52 in)



I649G1530057-02

Measure each driven plate for distortion with a thickness gauge and surface plate.

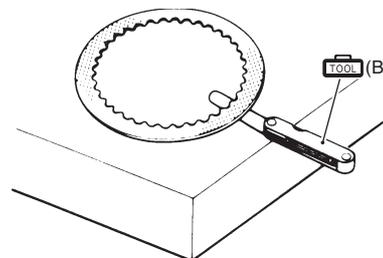
Replace driven plates which exceed the limit.

Special tool

TOOL (B): 09900-20803 (Thickness gauge)

Clutch driven plate distortion

Service limit: 0.10 mm (0.004 in)



I649G1530058-02

Clutch Spring

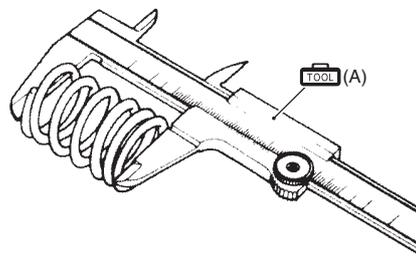
Measure the free length of each coil spring with a vernier calipers, and compare the length with the specified limit. Replace all the springs if any spring is not within the limit.

Special tool

TOOL (A): 09900-20102 (Vernier calipers (1/20 mm, 200 mm))

Clutch spring free length

Service limit: 61.8 mm (2.43 in)

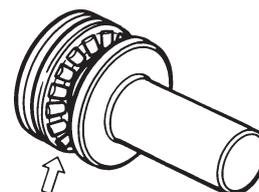


I718H1530062-01

Clutch Release Bearing

Inspect the clutch release bearing for any abnormality, especially cracks. When removing the bearing from the clutch, decide whether it can be reused or if it should be replaced.

Smooth engagement and disengagement of the clutch depends on the condition of this bearing.



I649G1530059-01

5C-19 Clutch:

Push Rod (Right)

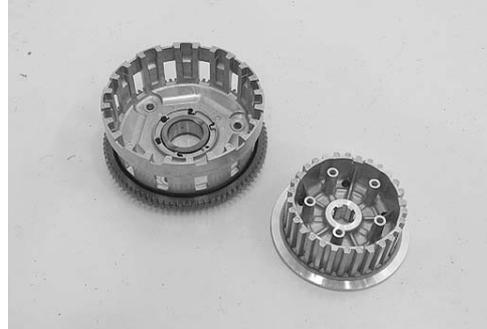
Inspect the push rod for wear and damage. If any defects are found, replace the push rod with a new one.



I718H1530063-01

Clutch Sleeve Hub and Primary Driven Gear Assembly

Inspect the slot of the clutch sleeve hub and primary driven gear assembly for damage or wear caused by the clutch plates. If necessary, replace it with a new one.



I718H1530064-01

Specifications

Service Data

B718H15307001

Clutch

Unit: mm (in)

Item	Standard		Limit
Clutch drive plate thickness	No.1, 2, 3	3.72 – 3.88 (0.146 – 0.153)	3.42 (0.135)
Clutch drive plate claw width	No.1, 2, 3	13.9 – 14.0 (0.547 – 0.551)	13.1 (0.52)
Clutch driven plate distortion	—		0.10 (0.004)
Clutch spring free length	65.0 (2.56)		61.8 (2.43)
Clutch master cylinder bore	14.000 – 14.043 (0.5511 – 0.5529)		—
Clutch master cylinder piston diam	13.957 – 13.984 (0.5495 – 0.5506)		—
Clutch release cylinder bore	38.18 – 38.23 (1.503 – 1.505)		—
Clutch release cylinder piston diam	38.08 – 38.13 (1.500 – 1.501)		—
Clutch fluid type	Brake fluid DOT 4		—

Tightening Torque Specifications

B718H15307002

Fastening part	Tightening torque			Note
	N·m	kgf·m	lb·ft	
Air bleeder valve (Clutch)	6	0.6	4.5	☞ (Page 5C-4) / ☞ (Page 5C-5)
Clutch master cylinder holder bolt	10	1.0	7.0	☞ (Page 5C-7)
Clutch hose union bolt	23	2.3	16.5	☞ (Page 5C-8)
Clutch lever pivot bolt	6.0	0.6	4.5	☞ (Page 5C-9)
Clutch lever pivot bolt lock-nut	6.0	0.6	4.5	☞ (Page 5C-9)
Clutch sleeve hub nut	150	15.0	108.5	☞ (Page 5C-15)
Clutch spring set bolt	10	1.0	7.0	☞ (Page 5C-17)

NOTE

The specified tightening torque is also described in the following.

“Clutch Hose Routing Diagram (Page 5C-2)”

“Clutch Control System Components (Page 5C-6)”

“Clutch Components (Page 5C-12)”

Reference:

For the tightening torque of fastener not specified in this section, refer to “Tightening Torque Specifications in Section 0C (Page 0C-7)”.

Special Tools and Equipment

Recommended Service Material

B718H15308001

Material	SUZUKI recommended product or Specification		Note
Brake fluid	DOT 4	—	☞ (Page 5C-4) / ☞ (Page 5C-9) / ☞ (Page 5C-11)
Grease	SUZUKI SUPER GREASE A or equivalent	P/No.: 99000-25010	☞ (Page 5C-10)
	SUZUKI Silicone Grease or equivalent	P/No.: 99000-25100	☞ (Page 5C-9) / ☞ (Page 5C-9)
Sealant	SUZUKI Bond 1207B or equivalent	P/No.: 99000-31140	☞ (Page 5C-17)

NOTE

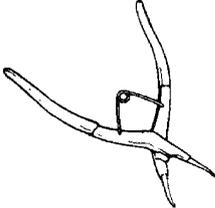
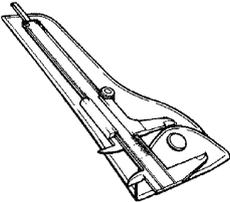
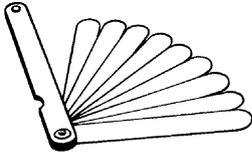
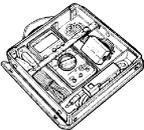
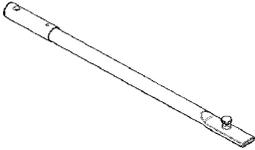
Required service material is also described in the following.

“Clutch Control System Components (Page 5C-6)”

“Clutch Components (Page 5C-12)”

Special Tool

B718H15308002

09900-06108 Snap ring pliers ☞ (Page 5C-8)		09900-20102 Vernier calipers (1/20 mm, 200 mm) ☞ (Page 5C-18) / ☞ (Page 5C-18) / ☞ (Page 5C-18)	
09900-20803 Thickness gauge ☞ (Page 5C-18)		09900-25008 Multi-circuit tester set ☞ (Page 5C-3)	
09920-31020 Extension handle ☞ (Page 5C-14) / ☞ (Page 5C-15)		09920-53740 Clutch sleeve hub holder ☞ (Page 5C-14) / ☞ (Page 5C-15)	