

SUZUKI

GSX150

SERVICE MANUAL

IMPORTANT NOTICE

WARNING / CAUTION / NOTICE / NOTE

Please read this manual and follow its instructions carefully. To emphasize special information, the symbol and the words **▲ WARNING**, **▲ CAUTION**, **NOTICE** and **NOTE** have special meanings. Pay special attention to the messages highlighted by these signal words.

▲ WARNING

Indicates a potential hazard that could result in death or serious injury.

▲ CAUTION

Indicates a potential hazard that could result in minor or moderate injury.

NOTICE

Indicates a potential hazard that could result in motorcycle or equipment damage.

NOTE

Indicates special information to make maintenance easier or instructions clearer.

Please note, however, that the warnings and cautions contained in this manual cannot possibly cover all potential hazards relating to the servicing, or lack of servicing, of the motorcycle. In addition to the WARNINGS, CAUTIONS and NOTICES stated, you must use good judgement and basic mechanical safety principles. If you are unsure about how to perform a particular service operation, ask a more experienced mechanic for advice.

FOREWORD

This manual contains an introductory description on the SUZUKI GSX150 and procedures for its inspection/service and overhaul of its main components.

Other information considered as generally known is not included.

Read the GENERAL INFORMATION section to familiarize yourself with the motorcycle and its maintenance.

Use this section as well as other sections to use as a guide for proper inspection and service.

This manual will help you know the motorcycle better so that you can assure your customers of fast and reliable service.

** This manual has been prepared on the basis of the latest specifications at the time of publication. If modifications have been made since then, differences may exist between the content of this manual and the actual motorcycle.*

** Illustrations in this manual are used to show the basic principles of operation and work procedures. They may not represent the actual motorcycle exactly in detail.*

** This manual is written for persons who have enough knowledge, skills and tools, including special tools, for servicing SUZUKI motorcycles. If you do not have the proper knowledge and tools, ask your authorized SUZUKI motorcycle dealer to help you.*

▲ WARNING

Inexperienced mechanics or mechanics without the proper tools and equipment may not be able to properly perform the services described in this manual.

Improper repair may result in injury to the mechanic and may render the motorcycle unsafe for the rider and passenger.

SUZUKI MOTORCYCLE INDIA PRIVATE LIMITED

Applicable Model / VIN

Applicable model

GSX150 L5 (2015)

Applicable VIN

Applicable Model	VIN Number	Country or Area
GSX150L5	MB8NG4BA8100001 –	India

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Section 00

00

Precautions

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Precautions

Precautions

General Precautions

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▲ WARNING

- Proper service and repair procedures are important for the safety of the service mechanic and the safety and reliability of the motorcycle.
- When 2 or more persons work together, pay attention to the safety of each other.
- When it is necessary to run the engine indoors, make sure that exhaust gas is forced outdoors.
- When working with toxic or flammable materials, make sure that the area you work in is well ventilated and that you follow all of the material manufacturer's instructions.
- To avoid getting burned, do not touch the engine, engine oil, radiator and exhaust system until they have cooled.

NOTICE

- Never use gasoline as a cleaning solvent.
- After servicing the fuel, oil, water, exhaust or brake systems, check all lines and fittings related to the system for leaks.
- If parts replacement is necessary, replace the parts with Suzuki Genuine Parts or their equivalent.
- When removing parts that are to be reused, keep them arranged in an orderly manner so that they may be reinstalled in the proper order and orientation.
- Be sure to use special tools when instructed.
- Make sure that all parts used in reassembly are clean. Lubricate them when specified.
- Use the specified lubricant, bond, or sealant.
- When removing the battery, disconnect the negative (–) cable first and then the positive (+) cable.
- When reconnecting the battery, connect the positive (+) cable first and then the negative (–) cable, and replace the terminal cover on the positive (+) terminal.

- When performing service to electrical parts, if the service procedures do not require use of battery power, disconnect the negative (–) cable from the battery.
- When tightening the cylinder head or case bolts and nuts, tighten the larger sizes first. Always tighten the bolts and nuts diagonally from the inside toward outside and to the specified tightening torque.
- Whenever you remove oil seals, gaskets, packing, O-rings, locking washers, self-locking nuts, cotter pins, circlips and certain other parts as specified, be sure to replace them with new ones. Also, before installing these new parts, be sure to remove any left over material from the mating surfaces.
- Never reuse a circlip. When installing a new circlip, take care not to expand the end gap larger than required to slip the circlip over the shaft. After installing a circlip, always ensure that it is completely seated in its groove and securely fitted.
- Use a torque wrench to tighten fasteners to the specified torque. Wipe off grease and oil if a thread is smeared with them.
- After reassembling, check parts for tightness and proper operation.
- To protect the environment, do not unlawfully dispose of used motor oil, engine coolant and other fluids: batteries, and tires.
- To protect Earth's natural resources, properly dispose of used motorcycle and parts.

Precautions for Electrical Circuit Service

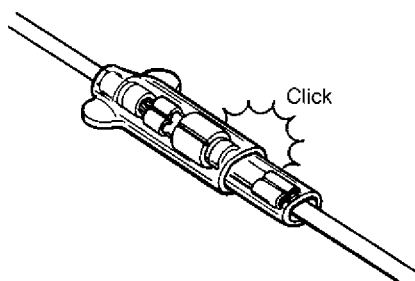
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When handling the electrical parts, observe the following points for the safety of the system.

Electrical Parts

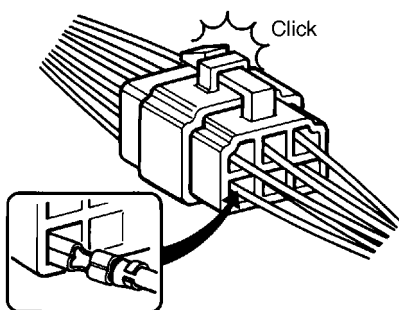
Connector / Coupler

- Faulty electrical system is often related to poor electrical contact of connector/coupler. Before servicing individual electronic part, check electrical contact of the connector/coupler.
- When connecting a connector, be sure to push it in until a click is felt.



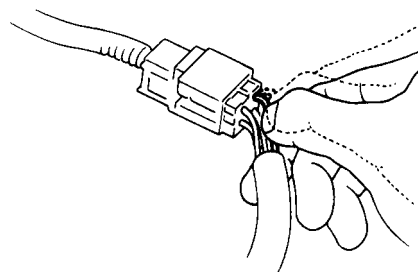
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- With a lock type coupler, be sure to release the lock when disconnecting, and push it in fully to engage the lock when connecting.
- When disconnecting the coupler, be sure to hold the coupler body and do not pull the lead wires.
- Inspect each terminal on the connector/coupler for looseness or bending.
- Push in the coupler straightly. An angled or skewed insertion may cause the terminal to be deformed, possibly resulting in poor electrical contact.
- Inspect each terminal for corrosion and contamination. The terminals must be clean and free of any foreign material which could impede proper terminal contact.
- Before refitting the sealed coupler, make sure its seal rubber is positioned properly. The seal rubber may possibly come off the position during disconnecting work and if the coupler is refitted with the seal rubber improperly positioned, it may result in poor water sealing.



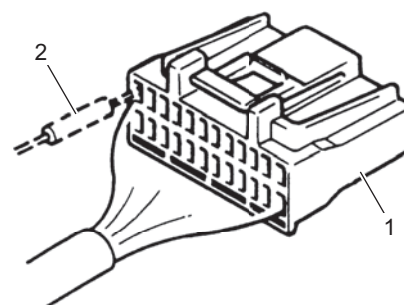
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- Inspect each lead wire circuit for poor connection by shaking it by hand lightly. If any abnormal condition is found, repair or replace.



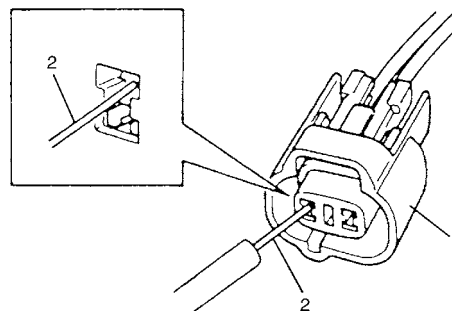
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- When taking measurements at electrical connector / coupler (1) using a tester probe (2), be sure to insert the probe from the wire harness side (rear) of the connector / coupler.



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- When connecting meter probe (2) from the terminal side of the coupler (1) because it cannot be connected from harness side, use extra care not to bend the male terminal of coupler or force its female terminal open for connection. In case of such coupler as shown connect probe as shown to avoid opening female terminal. Never connect probe where male terminal is supposed to fit.



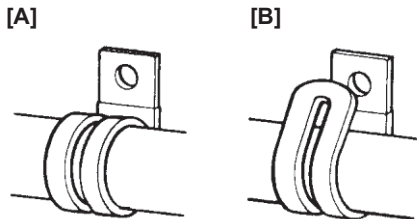
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- Avoid applying grease or other similar material to connector/coupler terminals to prevent electric trouble.

00-3 Precautions:

Clamp

- Clamp the wire harness at such positions as indicated in "Wiring Harness Routing Diagram" in Section 9A (Page 9A-5).
- Bend the clamp properly so that the wire harness is clamped securely.
- In clamping the wire harness, use care not to allow it to hang down.
- Do not use wire or any other substitute for the band type clamp.



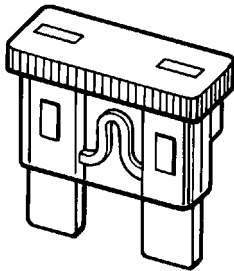
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[A]: Correct clamping

[B]: Incorrect clamping

Fuse

- When a fuse is blown, always investigate the cause to correct it and then replace the fuse.
- Do not use a fuse of different capacity.
- Do not use wire or any other substitute for the fuse.



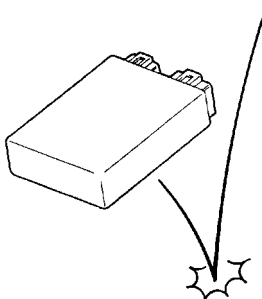
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Switch

Never apply grease material to switch contact points to prevent damage.

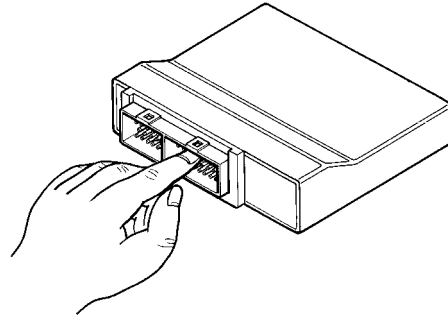
CDI unit / Various sensors

- Since each component is a high-precision part, great care should be taken not to apply any severe impacts during removal and installation.



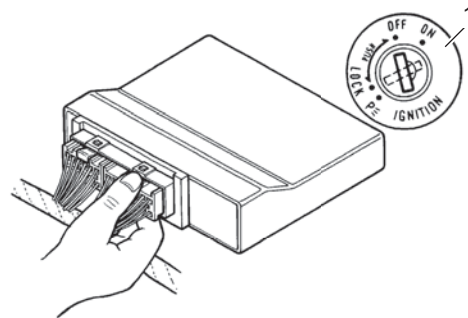
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- Be careful not to touch the electrical terminals of the electronic parts (CDI unit, etc.). The static electricity from your body may damage them.



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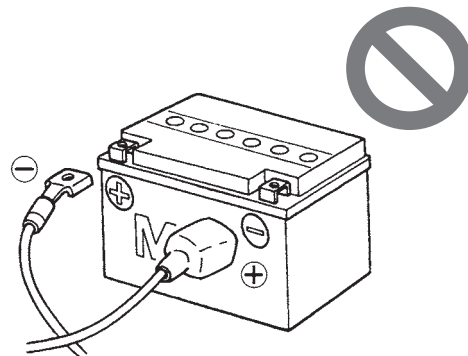
- When disconnecting and connecting the coupler, make sure to turn OFF the ignition switch (1), or electronic parts may get damaged.



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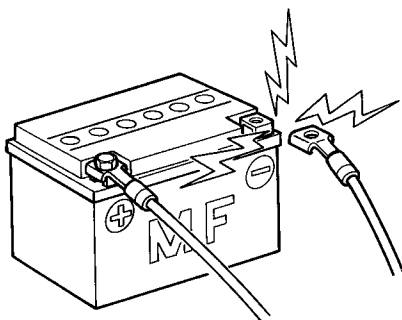
Battery

- Select the same type MF battery when replacing the battery.
- Battery connection in reverse polarity is strictly prohibited. Such a wrong connection will damage the components of the electrical systems instantly when reverse power is applied.



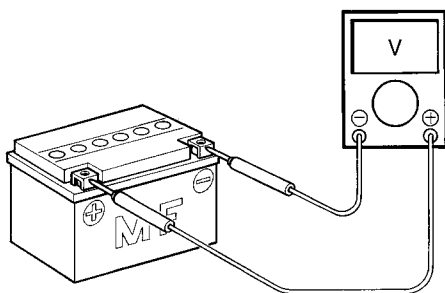
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- Removing any battery terminal of a running engine is strictly prohibited. The moment such removal is made, damaging counter electromotive force will be applied to the electronic unit which may result in serious damage.



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- Before measuring voltage at each terminal, check to make sure that battery voltage is 11 V or higher. Terminal voltage check with a low battery voltage will lead to erroneous diagnosis.



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- Never connect any tester (voltmeter, ohmmeter, or whatever) to the electronic unit when its coupler is disconnected. Otherwise, damage to electronic unit may result.
- Never connect an ohmmeter to the CDI unit with its coupler connected. If attempted, damage to CDI unit or sensors may result.
- Be sure to use a specified voltmeter/ohmmeter. Otherwise, accurate measurements may not be obtained and personal injury may result.

Electrical Circuit Inspection Procedure

While there are various methods for electrical circuit inspection, described here is a general method to check for open and short circuit using an ohmmeter and a voltmeter.

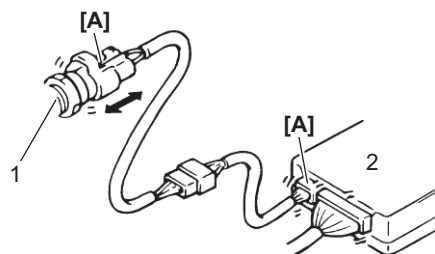
Open circuit check

Possible causes for the open circuit are as follows. As the cause can exist in the connector/coupler or terminal, they need to be checked carefully.

- Loose connection of connector/coupler
- Poor contact of terminal (due to dirt, corrosion or rust, poor contact tension, entry of foreign object etc.)
- Wire harness being open.
- Poor terminal-to-wire connection.

When checking system circuits including an electronic control unit such as CDI unit, etc., it is important to perform careful check, starting with items which are easier to check.

- 1) Disconnect the negative (–) cable from the battery.
- 2) Check each connector/coupler at both ends of the circuit being checked for loose connection. Also check for condition of the coupler lock if equipped.



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[A]: Check for loose connection

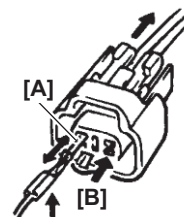
1. Sensor

2. CDI unit

- 3) Using a test male terminal, check the female terminals of the circuit being checked for contact tension.

Check each terminal visually for poor contact (possibly caused by dirt, corrosion, rust, entry of foreign object, etc.). At the same time, check to make sure that each terminal is fully inserted in the coupler and locked.

If contact tension is not enough, rectify the contact to increase tension or replace. The terminals must be clean and free of any foreign material which could impede proper terminal contact.



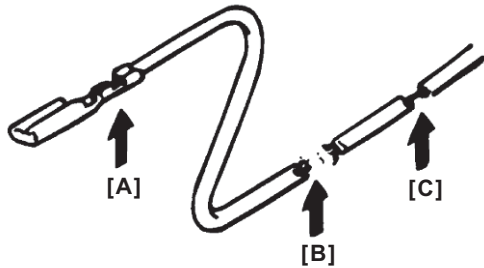
IE02K1000005-01

[A]: Check contact tension by inserting and removing.

[B]: Check each terminal for bend and proper alignment.

00-5 Precautions:

- 4) Using continuity inspect or voltage check procedure as described below, inspect the wire harness terminals for open circuit and poor connection. Locate abnormality, if any.

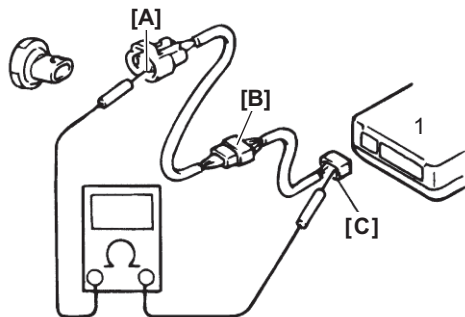


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[A]:	Looseness of crimping
[B]:	Open
[C]:	Thin wire (A few strands left)

Continuity check

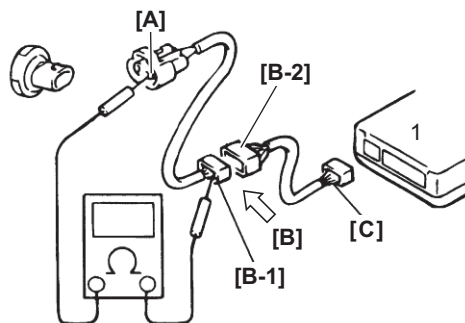
- 1) Measure resistance across coupler [B] (between [A] and [C] in the figure).
If no continuity is indicated (infinity or over limit), the circuit is open between terminals [A] and [C].



IE02K1000007-01

1. CDI unit

- 2) Disconnect the coupler [B] and measure resistance between couplers [A] and [B-1].
If no continuity is indicated, the circuit is open between couplers [A] and [B-1]. If continuity is indicated, there is an open circuit between couplers [B-2] and [C] or an abnormality in coupler [B-2] or coupler [C].



IE02K1000008-01

1. CDI unit

Voltage check

If voltage is supplied to the circuit being checked, voltage check can be used as circuit check.

- 1) With all connectors/couplers connected and voltage applied to the circuit being checked, measure voltage between each terminal and body ground.
- 2) If measurements were taken as shown in the figure and results were listed in the following, it means that the circuit is open between terminals [A] and [B].

Voltage between

[A] and body ground: 0 V

[B] and body ground: Approx. 5 V

[C] and body ground: Approx. 5 V

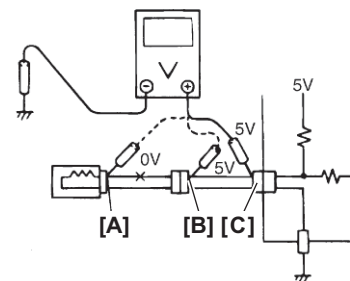
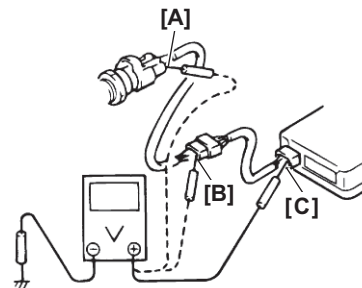
- 3) Also, if measured values are as listed following, a resistance (abnormality) exists which causes the voltage drop in the circuit between terminals [A] and [B].

Voltage between

[A] and body ground: 3 V – 2 V voltage drop

[B] and body ground: Approx. 5 V

[C] and body ground: Approx. 5 V



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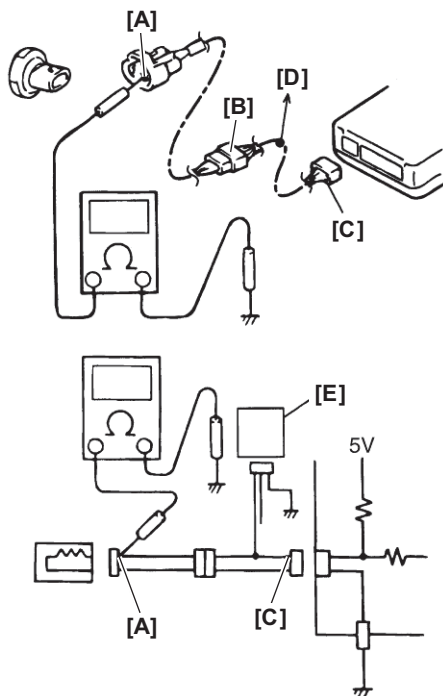
Short circuit check (Wire harness to ground)

- 1) Disconnect the negative (–) cable from the battery.
- 2) Disconnect the connectors/couplers at both ends of the circuit to be checked.

NOTE

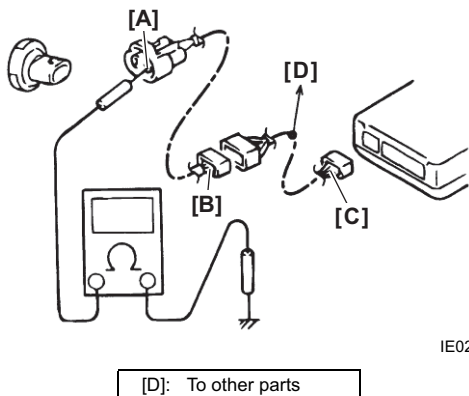
If the circuit to be checked branches to other parts as shown, disconnect all connectors/couplers of those parts. Otherwise, diagnosis will be wrong.

- 3) Measure resistance between terminal at one end of circuit ([A] terminal in the figure) and body ground. If continuity is indicated, there is a short circuit to ground between terminals [A] and [C].



IE02K1000010-01

- 4) Disconnect the connector/coupler included in circuit (coupler [B]) and measure resistance between terminal [A] and body ground. If continuity is indicated, the circuit is shorted to the ground between terminals [A] and [B].



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Precautions for Circuit Tester

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- Use the Suzuki multi circuit tester set.

Special tool

(A): Multi Circuit Tester

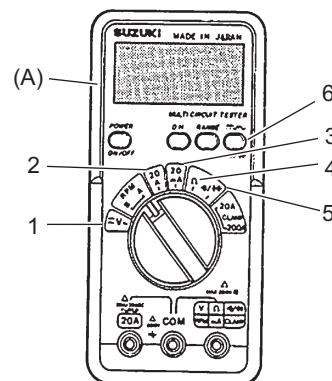
- The following items are included in the special tool.
 - Multi circuit tester body
 - Tachometer sensor
 - Test leads
 - Peak voltage adapter
 - Case
 - Instruction Manual
- Read the instruction manual to use the tester correctly.
- Be sure to set the tester to the correct testing range.
- If the voltage and current are not known, make measurements using the highest range.

Symbols

Symbol	Definition
---	DC
~	AC
Ω	Resistance
•)	Continuity
→ ←	Diode

Functions

	Function switch	--- / ~ •) / → ← key switch (6)
Voltage measurement	(1)	Select --- or ~ .
Current measurement	(2) or (3), whichever appropriate.	Select --- or ~ .
Resistance measurement	(4)	—
Continuity test	(5)	Select •) .
Diode test	(5)	Select → ← .



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Using Needle Pointed Probe

NOTICE

- When using the multi circuit tester, do not strongly touch the terminal of the CDI unit coupler with a needle pointed tester probe to prevent the terminal damage or terminal bend.
 - When connecting the multi circuit tester, use the needle pointed probe to the back side of the lead wire coupler and connect the probes of tester to them.
 - Use the needle pointed probe to prevent the rubber of the water proof coupler from damage.
-

Section 0

General Information

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General Information

General Description

Abbreviations



















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A.
AAT. Ambient Air Temperature
ABDC. After Bottom Dead Center
ABS. Anti-lock Brake System
AC. Alternating Current
ACL. Air Cleaner
AKI. Anti-knock index
AP. Atmospheric Pressure
API. American Petroleum Institute
APS. Atmospheric Pressure Sensor
ATDC. After Top Dead Center
A/F. Air Fuel Mixture
B.
BBDC. Before Bottom Dead Center
BTDC. Before Top Dead Center
B+. Battery Positive Voltage
C.
CDI. Capacitive Discharge Ignition
CKP. Crankshaft Position
CKPS. Crankshaft Position Sensor
CKT. Circuit
CLP. Clutch Lever Position
CMP. Camshaft Position
CMPS. Camshaft Position Sensor
CO. Carbon Monoxide
CPU. Central Processing Unit
CVT. Continuously Variable Transmission
D.
DC. Direct Current
DOHC. Double Over Head Camshaft
DRL. Daytime Running Light
DTC. Diagnostic Trouble code
E.
ECM. Engine Control Module
ECT. Engine Coolant Temperature
ECTS. Engine Coolant Temperature Sensor
EVAP. Evaporative Emission
EX.. Exhaust
EXCV. Exhaust control valve
EXCVA. Exhaust control valve actuator
F.
FI. Fuel Injection, Fuel Injector
FP. Fuel pump
FPR. Fuel Pressure Regulator
FTPC. Fuel Tank Pressure Control
FWD. Forward
G.
GEN. Generator
GND. Ground
GP. Gear Position
H.
HC. Hydrocarbons
HI. High
HO2. Heated Oxygen

HO2S. Heated Oxygen Sensor
HU. Hydraulic Unit
I.
IAP. Intake Air Pressure
IAPS. Intake Air Pressure Sensor
IAT. Intake Air Temperature
IATS. Intake Air Temperature Sensor
I.D.. Inside Diameter
IG. Ignition
IN.. Intake
ISC. Idle Speed Control
ISCV. Idle Speed Control Valve
J.
JASO. Japanese Automobile Standards Organization
L.
LCD. Liquid Crystal Display
LED. Light Emitting Diode
LH. Left Hand
LO. Low
M.
Max. Maximum
MIL. Malfunction Indicator Lamp
Min.. Minimum
MTBE. Methyl Tertiary Butyl Ether
N.
NOx. Nitrogen Oxides
O.
OHC. Over Head Camshaft
O.D.. Outside Diameter
OPS. Oil Pressure Switch
P.
PAIR. Pulsed Secondary Air Injection
PCV. Positive Crankcase Ventilation
PP. Pulley Position
R.
RH. Right Hand
ROM. Read Only Memory
RON. Research Octane Number
RPM. Engine speed
S.
SAE. Society of Automotive Engineers
SDS. Suzuki Diagnosis System
SRAD. Suzuki Ram Air Direct
STCS. Secondary Throttle Control System
STD. Standard
STP. Secondary Throttle Position
STPS. Secondary Throttle Position Sensor
STV. Secondary Throttle Valve
STVA. Secondary Throttle Valve Actuator
T.
TC. Traction control
TDC. Top Dead Center
TO. Tip-over
TOS. Tip-over Sensor
TP. Throttle Position
TPS. Throttle Position Sensor

Symbols

Listed in the table below are the symbols indicating instructions and other information necessary for servicing.
The meaning of each symbol is also included in the table.

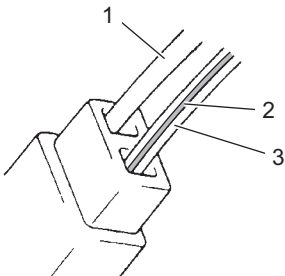
Symbol	Definition
	Torque control required. Data beside it indicate specified torque.
	Apply oil. Use engine oil unless otherwise specified.
	Apply molybdenum oil solution. (Mixture of engine oil and SUZUKI MOLY PASTE in a ratio of 1 : 1).
	Apply SUZUKI SUPER GREASE A. 99000-25011
	Apply SUZUKI MOLYBDENUM GREASE L. 99000-25280
	Apply SUZUKI MOLY PASTE. 99000-25140
	Apply SUZUKI SILICONE GREASE. 99000-25100
	Apply SUZUKI WATER RESISTANT GREASE EP2. 99000-25350
	Apply SUZUKI BOND 1207B. 99000-31140
	Apply SUZUKI BOND 1215. 99000-31110
	Apply THREAD LOCK CEMENT 1322D. 99000-32150
	Apply THREAD LOCK CEMENT. LOCTITE ***
	Use SUZUKI SUPER LONG LIFE COOLANT (BLUE). 99000-99032-20X Use SUZUKI LONG LIFE COOLANT (GREEN). 99000-99032-12X
	Use ENDURANCE FORK OIL TYPE 1F or equivalent.
	Apply or use brake fluid.
	Use special tool.
	Do not reuse.
	Note on reassembly.

Wire Color Symbols

BENF34J10101003

Symbol	Wire Color	Symbol	Wire Color
B	Black	Lg	Light green
Bl	Blue	O	Orange
Br	Brown	P	Pink
Dbr	Dark brown	R	Red
Dg	Dark green	V	Violet
G	Green	W	White
Gr	Gray	Y	Yellow
Lbl	Light blue		

There are two kinds of colored wire used in this vehicle. One is single-colored wire and the other is dual-colored (striped) wire. The single-colored wire uses only one color symbol (i.e. G). The dual-colored wire uses two color symbols (i.e. G/Y). The first symbol represents the base color of the wire and the second symbol represents the color of the stripe.



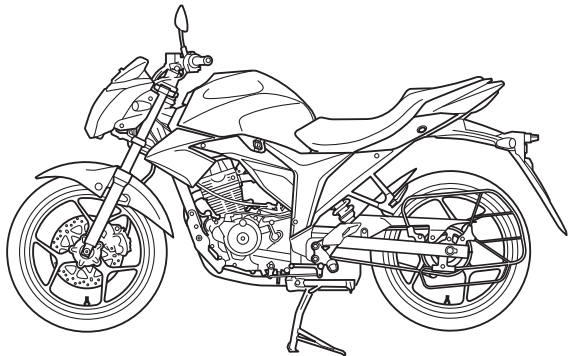
ID26J1010224-02

1. G (Base color)	3. G (Base Color)
2. Y (Stripe color)	

Vehicle Side View

SUZUKI GSX150 (2015-model)

BENF34J10101004

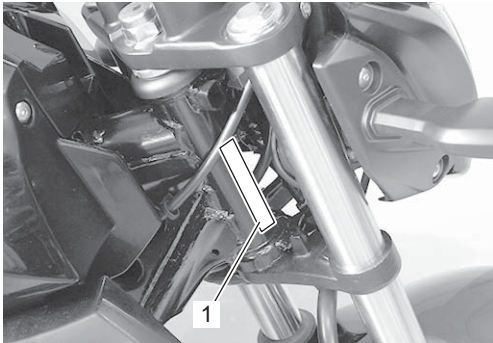


IF34J1010001-02

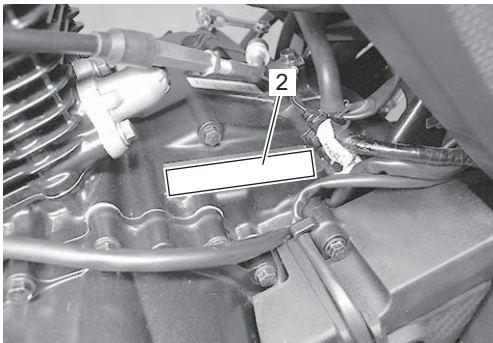
Vehicle Identification Number

BENF34J10101005

The frame serial number or V.I.N. (Vehicle Identification Number) is stamped on the right side of the frame down tube (1). The engine serial number is located on the left side of the crankcase (2).



IF34J1010002-01



IF34J1010003-02

Country and Area Codes

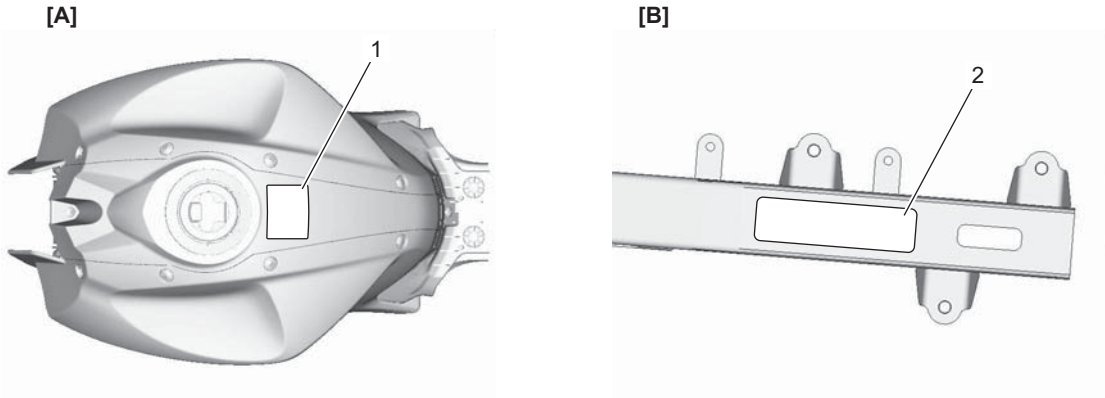
BENF34J10101006

The following code stand for the applicable country and area.

Code	Country or Area
P74	India

Warning, Caution and Information Labels Location

BENF34J10101007



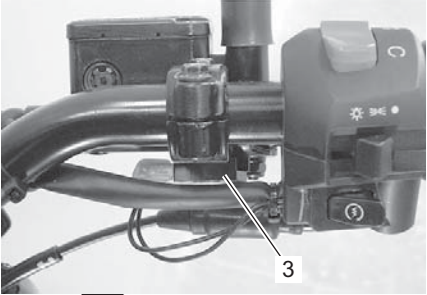
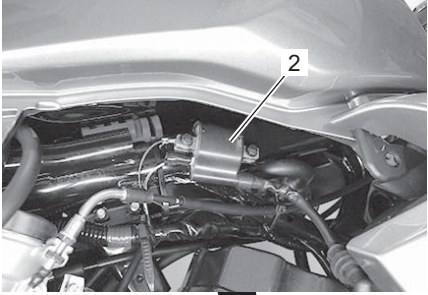
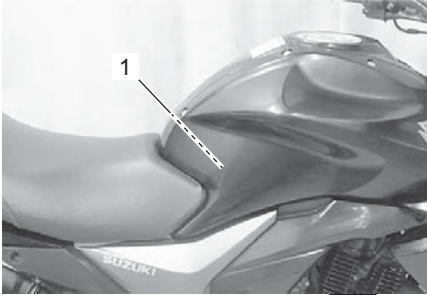
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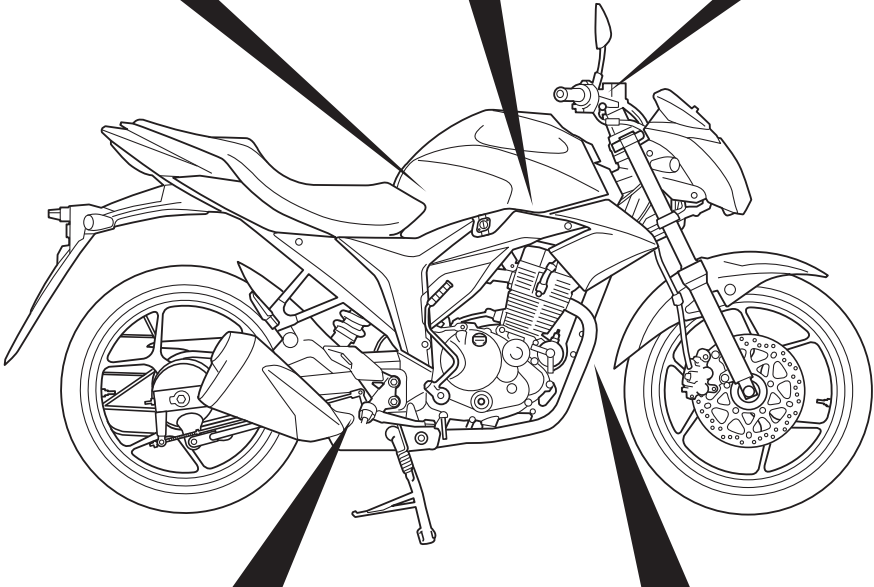
[A]: Fuel tank cover	1. General warning label
[B]: Swingarm	2. Tire information label

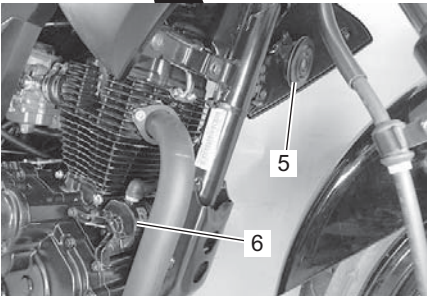
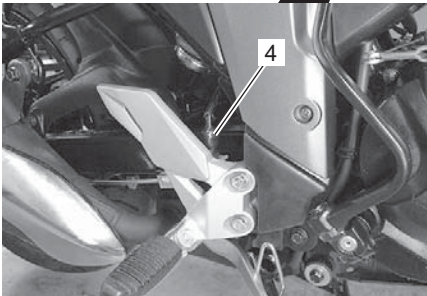
Component Location

Electrical Components Location

BENF34J10103001







1. Fuel level gauge

2. Ignition coil

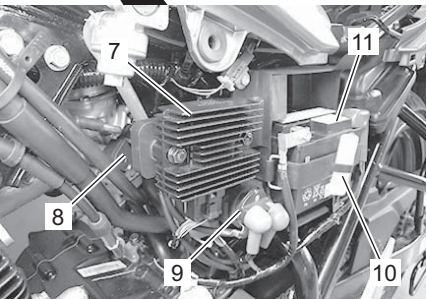
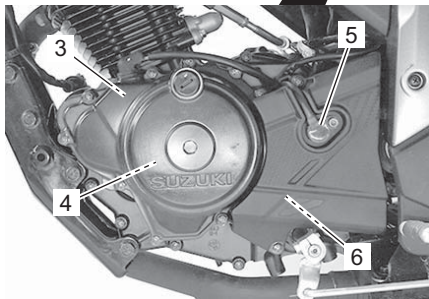
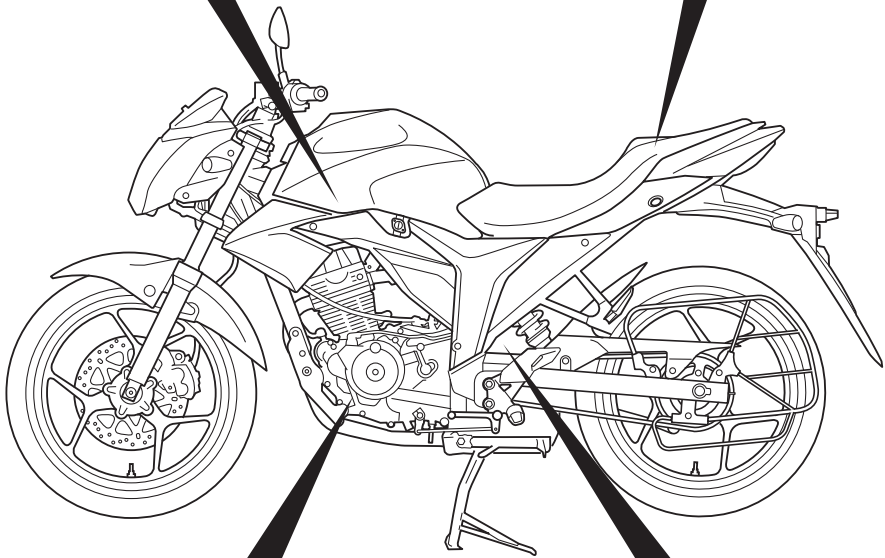
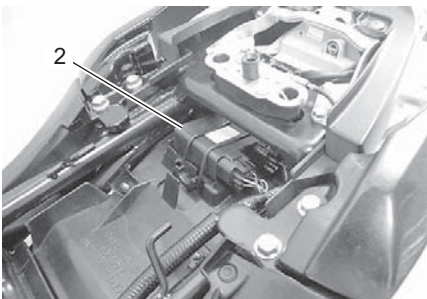
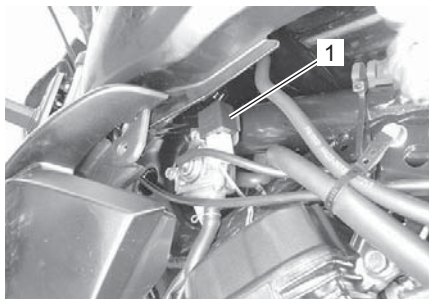
3. Front brake light switch

4. Rear brake light switch

5. Horn

6. Starter motor

IF34J1010006-02



IF34J1010005-02

1. Turn signal relay	4. Generator	7. Regulator/rectifier	10. Main fuse
2. CDI unit	5. Speed sensor	8. TP sensor	11. Battery
3. CKP sensor	6. GP switch	9. Starter relay	

Maintenance and Lubrication

Precautions

Precautions for Maintenance

BENF34J10200001

The “Periodic Maintenance Schedule Chart” lists the recommended intervals for all the required periodic service work necessary to keep the motorcycle operating at peak performance and economy. Maintenance intervals are expressed in terms of kilometers and months for your convenience.

NOTE

More frequent servicing may be required on motorcycles that are used under severe conditions.

Maintenance Chart

Periodic Maintenance Schedule Chart

Interval: This interval should be judged by odometer reading or days, whichever comes first.

S. No.	Services → Item		1	2	3	4	5	6	7	Subsequent Services
		Kms #	750-1000	3500-4000	7500-8000	11500-12000	15500-16000	19500-20000	23500-24000	Every 4000 kms
		Days#	30	120	210	300	395	485	575	90 days
1	Engine oil		R	R	R	R	R	R	R	Replace Engine oil every 4000 kms
2	Air cleaner Element		C	C	C	R	C	C	C	Replace every 12000 kms
3	Engine oil strainer screen		C	-	C	C	C	C	C	Clean strainer at the time of replacing oil except 2nd service
4	Engine oil filter		R	-	R	-	R	-	R	Replace every 8000 kms
5	Valve clearance		I, A	I, A	I, A	I, A	I, A	I, A	I, A	Inspect, adjust if required
6	Spark plug		I, C	I, C	R	-	R	I, C	R	Replace every 8000 kms
7	PAIR (air supply) System		-	I	I	I	I	I	I	Inspect in every service
8	Idle speed & CO testing		I, A	I, A	I, A	I, A	I, A	I, A	I, A	Check the RPM and CO adjust if required
9	Drive Chain		I, L, A	I, L, A	I, L, A	I, L, A	I, L, A	I, L, A	I, L, A	Inspect, Clean, Lubricate and adjust chain if reqd. at every 1000 km
10	Tyres/wheels		I	I	I	I	I	I	I	Check for wheel bend & tyre wear/cut
11	All fasteners incl. Engine mounting & Chassis bolts		T	T	T	T	T	T	T	Check for any looseness in every service
12	Steering play & Race bearing kit		I	I	I	G	I	I	G	Check for any looseness and adjust if required
13	Front fork		I	I	I	R	I	I	R	Check for any oil Leakage and replace oil every 12000 kms
14	Wheel bearings		I	I	I	G	I	I	G	Repack grease every 12000 kms
15	Control Cables- Throttle, Clutch Brakes		I, A	I, A	I, A	I, A	I, A	I, A	I, A	Inspect and adjust the play
16	Side stand Main Stand		L	L	L	L	L	L	L	Lubricate in every service
17	Headlight Focus		I	I	I	I	I	I	I	Check and adjust H/L focus if required
18	Fuel Hose		I	I	I	I	I	I	I	Inspect at every service and replace every 4 yrs
19	Rear suspension		I	I	I	I	I	I	I	Check operation, oil leakage & replace if necessary
20	Brake Fluid		I	I	I	I	I	I	I	Inspect for leakage replace every 2 years
21	Brake Pads		I	I	I	I	I	I	I	Inspect for wear replace if necessary
22	Brake Hose		I	I	I	I	I	I	I	Inspect every 4000 kms replace every 4 years

- Kms or days as mentioned whichever occurs first

NOTE:

I = Inspect
 A = Adjust
 R = Replace
 T = Tighten
 C = Clean
 G = Repack Grease
 L = Lubricate

Repair Instructions

Air Cleaner Element Replacement

BENF34J10206001

Refer to “Air Cleaner Element Removal and Installation” in Section 1D (Page 1D-6).

Air Cleaner Element Inspection and Cleaning

BENF34J10206002

Refer to “Air Cleaner Element Inspection and Cleaning” in Section 1D (Page 1D-6).

Exhaust Pipe Bolt and Muffler Mounting Bolt Inspection

BENF34J10206003

Refer to “Exhaust System Inspection” in Section 1K (Page 1K-3).

Valve Clearance Inspection and Adjustment

BENF34J10206005

Refer to “Valve Clearance Inspection and Adjustment” in Section 1D (Page 1D-10).

Spark Plug Replacement

BENF34J10206006

Refer to “Spark Plug Removal and Installation” in Section 1H (Page 1H-3).

Spark Plug Inspection and Cleaning

BENF34J10206007

Refer to “Spark Plug Inspection and Cleaning” in Section 1H (Page 1H-4).

Fuel Hose Inspection

BENF34J10206008

Refer to “Fuel Hose Inspection” in Section 1G (Page 1G-3).

Fuel Filter Replacement

BENF34J10206009

Refer to “Fuel Valve Removal and Installation” in Section 1G (Page 1G-5).

Fuel Filter Inspection

BENF34J10206037

Refer to “Fuel Filter Inspection and Cleaning” in Section 1G (Page 1G-6).

Engine Oil Filter Replacement

BENF34J10206038

Refer to “Oil Filter Replacement” in Section 1E (Page 1E-5).

Engine Oil Replacement

BENF34J10206010

Refer to “Engine Oil Replacement” in Section 1E (Page 1E-4).

Throttle Cable Play Inspection and Adjustment

BENF34J10206039

Refer to “Throttle Cable Play On-Vehicle Inspection and Adjustment” in Section 1D (Page 1D-8).

Idle Speed Inspection

BENF34J10206012

Refer to “Engine Idle Speed Inspection and Adjustment” in Section 1G (Page 1G-10).

PAIR System Inspection

BENF34J10206040

Refer to “PAIR System Hose Inspection” in Section 1B (Page 1B-3).

Clutch Cable Play Inspection and Adjustment

BENF34J10206041

Refer to “Clutch Cable Play On-Vehicle Inspection and Adjustment” in Section 5C (Page 5C-2).

Drive Chain Inspection and Adjustment

BENF34J10206024

Refer to “Drive Chain Inspection and Adjustment” in Section 3A (Page 3A-2).

Drive Chain Cleaning and Lubricating

BENF34J10206025

Refer to “Drive Chain Cleaning and Lubricating” in Section 3A (Page 3A-3).

Brake System Inspection

BENF34J10206026

Front Brake Pad

Refer to “Front Brake Pad Inspection” in Section 4B (Page 4B-1).



Front Brake Disc

Refer to “Front Brake Disc Inspection” in Section 4B (Page 4B-7).

Rear Brake Shoe

Refer to “Rear Brake Shoe Wear Inspection” in Section 4C (Page 4C-1).

Brake Light Switch

- Front:  (Page 4A-3)
- Rear:  (Page 4A-4)

Rear Brake Pedal

Refer to “Brake Pedal Free Travel Inspection and Adjustment” in Section 4A (Page 4A-5).

Brake Hose Inspection

BENF34J10206027

Refer to “Brake Hose Inspection” in Section 4A (Page 4A-5).

Brake Hose Replacement

BENF34J10206028

Refer to “Front Brake Hose Removal and Installation” in Section 4A (Page 4A-7).

Brake Fluid Inspection

BENF34J10206029

Refer to “Brake Fluid Level Check” in Section 4A (Page 4A-4).

Brake Fluid Replacement

BENF34J10206030

Refer to “Brake Fluid Replacement” in Section 4A (Page 4A-6).

Tire Inspection

BENF34J10206031

Refer to “Tire Inspection and Cleaning” in Section 2D (Page 2D-9).

Chassis Bolts and Nuts Inspection

Check that all chassis bolts and nuts are tightened to their specified torque.

BENF34J10206035

Steering System Inspection

BENF34J10206032

Refer to “Steering On-Vehicle Inspection” in Section 6B (Page 6B-7).

Front Fork Inspection

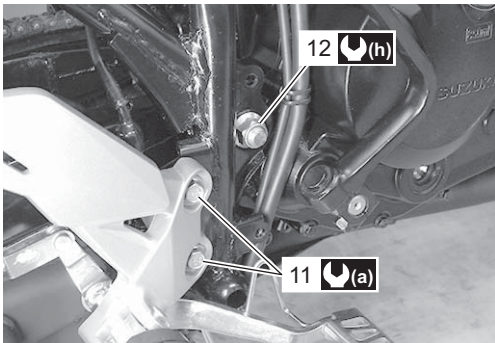
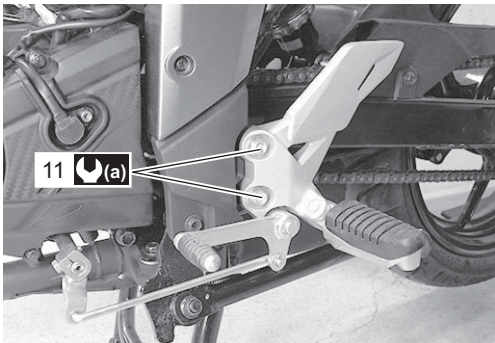
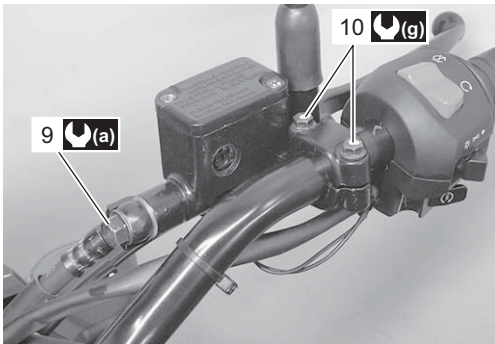
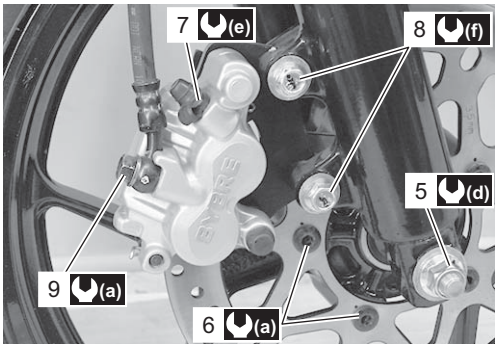
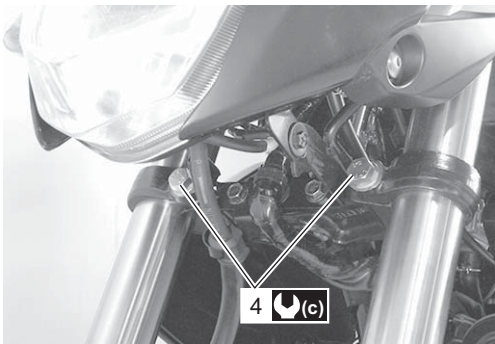
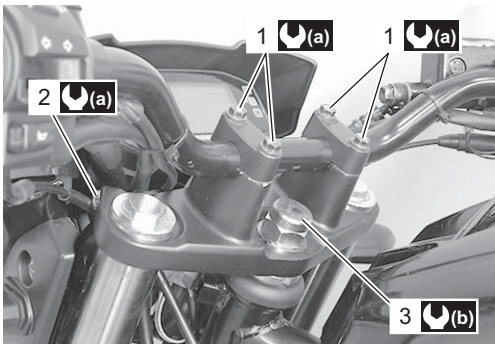
BENF34J10206033

Refer to “Front Fork On-Vehicle Inspection” in Section 2B (Page 2B-2).

Rear Suspension Inspection

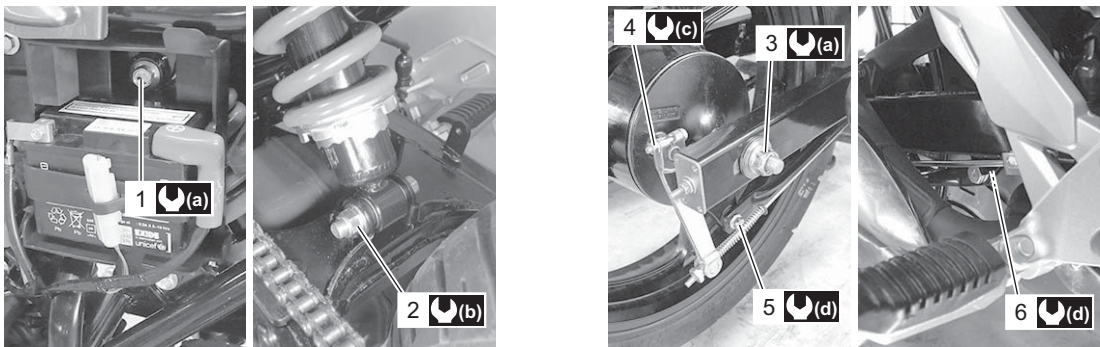
BENF34J10206034

Refer to “Rear Suspension On-vehicle Inspection” in Section 2C (Page 2C-2).



IF34J1020001-03

1. Handlebar clamp bolt	8. Brake caliper mounting bolt	(c): 29 N·m (3.0 kgf-m, 21.5 lbf-ft)
2. Front fork upper clamp bolt	9. Brake hose union bolt	(d): 44 N·m (4.5 kgf-m, 32.5 lbf-ft)
3. Steering stem head nut	10. Front brake master cylinder mounting bolt	(e): 7.5 N·m (0.76 kgf-m, 5.5 lbf-ft)
4. Front fork lower clamp bolt	11. Front footrest bracket bolt	(f): 26 N·m (2.7 kgf-m, 19.5 lbf-ft)
5. Front axle nut	12. Swingarm pivot nut	(g): 10 N·m (1.0 kgf-m, 7.5 lbf-ft)
6. Brake disc bolt	(a): 23 N·m (2.3 kgf-m, 17.0 lbf-ft)	(h): 58 N·m (5.9 kgf-m, 43.0 lbf-ft)
7. Brake air bleeder valve	(b): 90 N·m (9.2 kgf-m, 66.5 lbf-ft)	



IF34J1020002-02

1. Rear shock absorber upper mounting bolt	5. Torque link nut (rear)	(c): 7 N·m (0.71 kgf-m, 5.5 lbf-ft)
2. Rear shock absorber lower mounting nut	6. Torque link nut (front)	(d): 16 N·m (1.6 kgf-m, 12.0 lbf-ft)
3. Rear axle nut	(a): 65 N·m (6.6 kgf-m, 48.0 lbf-ft)	
4. Brake cam lever nut	(b): 78 N·m (8.0 kgf-m, 57.5 lbf-ft)	

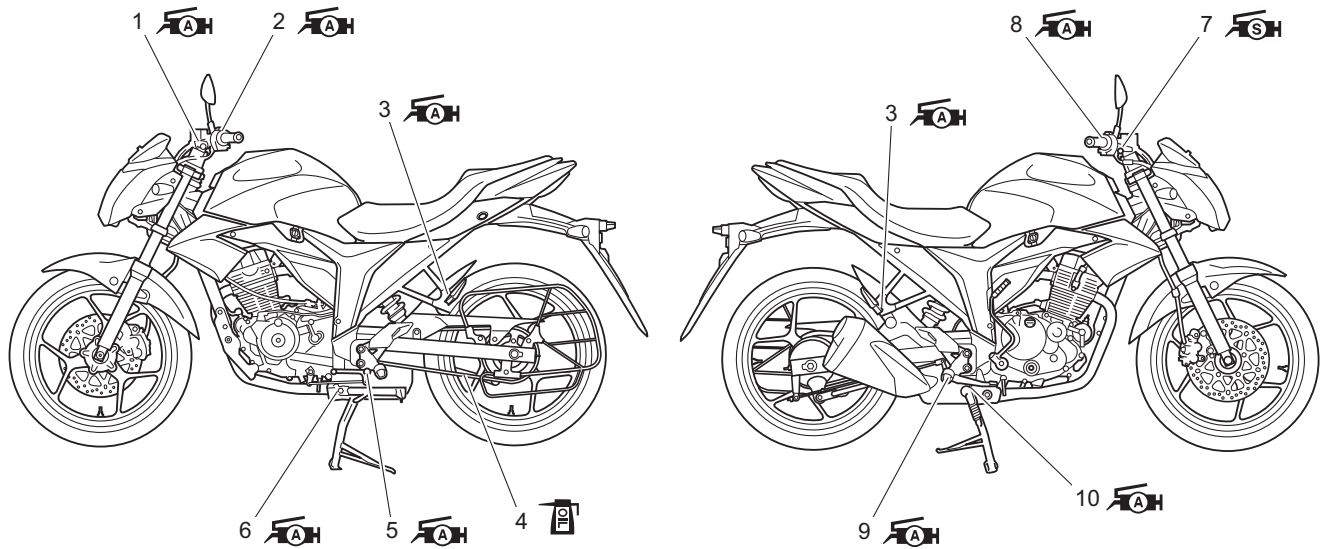
Lubrication Points

BENF34J10206036

Proper lubrication is important for smooth operation and long life of each working part of the motorcycle.
Major lubrication points are indicated as follows.

NOTE

- Before lubricating each part, clean off any rusty spots and wipe off any grease, oil, dirt or grime.
- Lubricate exposed parts which are subject to rust, with a rust preventative spray whenever the motorcycle has been operated under wet or rainy conditions.



IF34J1020003-02

1. Clutch lever holder	6. Side-stand pivot and spring hook	: Apply oil.
2. Starter cable	7. Brake lever holder	: Apply grease.
3. Pillion footrest	8. Throttle cable	: Apply silicone grease.
4. Drive chain	9. Brake pedal pivot	
5. Gearshift lever pivot	10. Center stand pivot and spring hook	

Special Tools and Equipment

Recommended Service Material

BENF34J10208001

NOTE

Required service materials are also described in:
“Lubrication Points” (Page 0B-4)

Service Data

Precautions

Precautions for Service Data

BENF34J10300001

NOTE

Specifications and service data are subject to change without notice.

Specifications

Specifications

BENF34J10307001

Dimensions and curb mass

Item	Specification	Remark
Overall length	2050 mm (80.71 in)	—
Overall width	785 mm (30.91 in)	—
Overall height	1030 mm (40.55 in)	—
Wheelbase	1330 mm (52.36 in)	—
Curb mass	135 kg (297.6 lb)	—

Engine

Item	Specification	Remark
Type	Four-stroke, air-cooled, OHC	—
Number of cylinders	1	—
Bore	56.0 mm (2.205 in)	—
Stroke	62.9 mm (2.476 in)	—
Displacement	154.9 cm ³ (9.45 cu. in)	—
Compression ratio	9.8 : 1	—
Carburetor	UCAL UCD29-9, single	—
Air cleaner	Non-woven fabric element	—
Starter system	Kick and electric	—
Lubrication system	Wet sump	—

Drive train

Item	Specification	Remark
Clutch	Wet multi-plate type	—
Transmission	5-speed constant mesh	—
Gearshift pattern	1-down, 4-up	—
Primary reduction ratio	3.181 (70/22)	—
Gear ratios	Low	2.750 (33/12)
	2nd	1.750 (28/16)
	3rd	1.300 (26/20)
	4th	1.045 (23/22)
	Top	0.875 (21/24)
Final reduction ratio	3.000 (45/15)	—
Drive chain	LGB R428NOR, 132 links	—

Chassis

Item	Specification	Remark
Front suspension	Telescopic, coil spring, oil damped	—
Rear suspension	Swingarm type, coil spring, oil damped, spring preload	—
Front fork stroke	120 mm (4.72 in)	—
Rear wheel travel	129 mm (5.08 in)	—
Steering angle	43° 30' (right & left)	—
Caster	27°	—
Front brake	Disc brake	—
Rear brake	Drum brake	—
Front tire size	100/80-17M/C 52P, tubeless	—
Rear tire size	140/60R17M/C 63P, tubeless	—

Electrical

Item	Specification	Remark
Ignition type	Electronic ignition (CDI)	—
Spark plug	NGK CPR7EA-9 DENSO U22EPR9 CHAMPION RG8YC	—
Battery	12 V 10.8 kC (3.0 Ah)/10HR	—
Generator	Single-phase A.C. generator	—
Main fuse	15 A	—
Headlight	12 V 35/35 W	—
Position light	12 V 5 W	—
Brake light/Tail light	LED	—
Turn signal light	12 V 10 W	—
License plate light	12 V 5 W	—
Tachometer light	LED	—
Speedometer light	LED	—
Turn signal indicator light	LED	—
Neutral indicator light	LED	—
High beam indicator light	LED	—
Engine RPM indicator light	LED	—

Capacities

Item	Specification	Remark
Fuel tank	Including reserve	12.0 L (3.17 US gal, 2.64 Imp gal)
	Reserve	2.4 L (2.54 US qt, 2.11 Imp qt)
Engine oil	Oil change	850 ml (0.90 US qt, 0.75 Imp qt)
	With filter change	950 ml (1.00 US qt, 0.84 Imp qt)
	Overhaul	1100 ml (1.16 US qt, 0.97 Imp qt)

Service Data**Engine Electrical Devices**

Item	Standard / Specification	Limit / Note
TP sensor power supply voltage	4.5 – 5.5 V	—
TP sensor output voltage	0.65 – 0.75 V	Closed
	4.5 V	Opened
CKP sensor peak voltage	1.2 V or more	When cranking
CKP sensor resistance	95 – 150 Ω	—

Engine Mechanical

Item	Standard / Specification		Limit / Note
Throttle cable play	2.0 – 4.0 mm (0.08 – 0.16 in)		—
Compression pressure	900 – 1300 kPa (9.2 – 13.3 kgf/cm ² , 130 – 188 psi)		500 kPa (5.1 kgf/cm ² , 72.5 psi)
Cam height	IN.&EX.	33.51 – 33.61 mm (1.319 – 1.323 in)	33.21 mm (1.307 in)
Rocker arm I.D.	IN.&EX.	9.003 – 9.018 mm (0.3544 – 0.3550 in)	—
Rocker arm shaft O.D.	IN.&EX.	8.981 – 8.990 mm (0.3536 – 0.3539 in)	—
Valve clearance (When engine is cold)	Intake	0.04 – 0.08 mm (0.0016 – 0.0031 in)	—
	Exhaust	0.12 – 0.16 mm (0.0047 – 0.0063 in)	
Valve diam.	Intake	29 mm (1.14 in)	—
	Exhaust	23 mm (0.91 in)	—
Valve stem runout	IN.&EX.	—	0.05 mm (0.002 in)
Valve head radial runout	IN.&EX.	—	0.03 mm (0.001 in)
Valve head thickness	IN.&EX.	—	0.5 mm (0.02 in)
Valve stem deflection	IN.&EX.	—	0.35 mm (0.014 in)
Valve stem O.D.	Intake	4.975 – 4.990 mm (0.1959 – 0.1965 in)	—
	Exhaust	4.955 – 4.970 mm (0.1951 – 0.1957 in)	—
Valve stem end length	IN.&EX.	—	2.5 mm (0.099 in)
Valve seat width	IN.&EX.	0.9 – 1.1 mm (0.035 – 0.043 in)	—
Valve guide I.D.	IN.&EX.	5.000 – 5.012 mm (0.1969 – 0.1973 in)	—
Valve guide to valve stem clearance	Intake	0.010 – 0.037 mm (0.0004 – 0.0015 in)	—
	Exhaust	0.030 – 0.057 mm (0.0012 – 0.0022 in)	—
Valve spring free length	IN.&EX.	—	39.0 mm (1.535 in)
Valve spring pre-load when compressed to 35.8 mm (1.41 in)	IN.&EX.	114 – 131 N (11.6 – 13.4 kgf, 25.6 – 29.4 lbf)	—
Cylinder head distortion	—		0.05 mm (0.002 in)
Cylinder distortion	—		0.05 mm (0.002 in)
Cylinder bore	56.000 – 56.015 mm (2.2047 – 2.2053 in)		56.095 mm (2.2085 in)
Piston diam.	55.960 – 55.975 (2.2031 – 2.2037 in) Measure at 10 mm (0.39 in) from the skirt end		55.880 mm (2.2000 in)
Piston to cylinder clearance	0.035 – 0.045 mm (0.0014 – 0.0018 in)		0.120 mm (0.0047 in)
Piston ring to groove clearance	1st	—	0.180 mm (0.0071 in)
	2nd	—	0.150 mm (0.0059 in)

0C-4 Service Data:

Item	Standard / Specification		Limit / Note
Piston ring groove width	1st	0.81 – 0.83 mm (0.0319 – 0.0327 in)	—
	2nd	0.81 – 0.83 mm (0.0319 – 0.0327 in)	—
	Oil	1.51 – 1.53 mm (0.0594 – 0.0602 in)	—
Piston ring thickness	1st	0.77 – 0.79 mm (0.0303 – 0.0311 in)	—
	2nd	0.77 – 0.79 mm (0.0303 – 0.0311 in)	—
Piston ring free end gap	1st	Approx. 8.3 mm (0.33 in)	6.6 mm (0.26 in)
	2nd	Approx. 7.8 mm (0.31 in)	6.2 mm (0.24 in)
Piston ring end gap	1st	0.08 – 0.20 mm (0.003 – 0.008 in)	0.50 mm (0.020 in)
	2nd	0.18 – 0.30 mm (0.007 – 0.012 in)	0.70 mm (0.028 in)
Piston pin bore I.D.	14.002 – 14.008 mm (0.5513 – 0.5515 in)		14.030 mm (0.5524 in)
Piston pin O.D.	13.996 – 14.000 mm (0.5510 – 0.5512 in)		13.980 mm (0.5504 in)
Conrod small end I.D.	14.006 – 14.024 mm (0.5514 – 0.5521 in)		14.040 mm (0.5528 in)
Conrod deflection	—		3.0 mm (0.12 in)
Conrod big end side clearance	0.10 – 0.45 mm (0.004 – 0.018 in)		1.0 mm (0.04 in)
Conrod big end width	13.95 – 14.00 mm (0.549 – 0.551 in)		—
Crank web to web width	49.9 – 50.1 mm (1.965 – 1.972 in)		—
Crankshaft thrust clearance	–0.02 – 0.07 mm (–0.0008 – 0.0028 in)		—
Crankshaft runout	—		0.080 mm (0.0031 in)
Balancer spring free length	—		10.1 mm (0.40 in)

Engine Lubrication System

Item	Standard / Specification		Limit / Note
Oil pressure (at 60°C, 140°F)	30 – 45 kPa (0.31 – 0.46 kgf/cm ² , 4.35 – 6.52 psi) at 3000 r/min		—
Necessary amount of engine oil	Oil change	850 ml (0.90 US qt, 0.75 Imp qt)	—
	Oil and filter change	950 ml (1.00 US qt, 0.84 Imp qt)	—
	Engine overhaul	1100 ml (1.16 US qt, 0.97 Imp qt)	—

Fuel System

Item	Standard / Specification	Limit / Note
Carburetor type	UCAL / UCD29-9	—
Bore size	29 mm (1.14 in)	—
I.D. No	34J0	—
Idle speed	1600 ± 100 r/min	—
Fuel level (From center of venturi tube)	32.0 ± 0.5 mm (1.26 ± 0.02 in)	—
Float height	7.1 ± 1.0 mm (0.28 ± 0.04 in)	—
Main jet (M.J.)	#135	—
Main air jet (M.A.J.)	0.9 mm (0.035 in)	—
Jet needle (J.N.)	V1	—
Needle jet (N.J.)	0 – 3	—
Throttle valve (Th.V.)	#110	—
Pilot jet (P.J.)	#12.5	—
Pilot screw (P.S.)	PRE-SET 2.0 turn counterclockwise	—
Fuel tank capacity	12.0 L (3.17 US gal, 2.64 Imp gal)	—

Ignition System

Item	Standard / Specification		Limit / Note
Spark plug	Type	NGK: CPR7EA-9 DENSO: U22EPR9 CHAMPION: RG8YC	—
	Gap	0.8 – 0.9 mm (0.031 – 0.035 in)	—
Spark performance	Over 8 mm (0.3 in) at 1 atm		—
Ignition coil primary peak voltage	150 V or more		—
Ignition coil resistance	Primary	0.315 – 0.385 Ω at 25 °C (77 °F)	Terminal - Ground
	Secondary	8.0 – 12.0 kΩ at 25 °C (77 °F)	Plug cap - Terminal

Starting System

Item	Standard / Specification	Limit / Note
Starter motor brush length	9.0 mm (0.35 in)	4.5 mm (0.18 in)
Starter relay resistance	3 – 6 Ω	—

Charging System

Item	Standard / Specification		Limit / Note
Battery leakage current	3 mA or less		—
Regulated voltage	14.0 – 15.0 V		5000 r/min
Generator coil resistance	0.6 – 1.5 Ω		—
Generator no-load voltage (When cold)	More than 80 V (AC)		5000 r/min
Recharging time	0.3 A for 5 to 10 hours		Standard charging
	3 A for 0.5 hours		Fast charging
Generator Max. output	Approx. 125 W		5000 r/min
Battery	Type designation	ETZ-4 or ATZ 4L	—
	Capacity	12 V 10.8 kC (3.0 Ah)/ 10 HR	—

Front Suspension

Item	Standard / Specification	Limit / Note
Front fork stroke	120 mm (4.7 in)	—
Front fork inner tube O.D.	41 mm (1.6 in)	—
Front fork oil level (Without spring, inner tube fully compressed)	130 mm (5.1 in)	—
Front fork spring free length	315 mm (12.4 in)	308 mm (12.1 in)
Front fork oil capacity (Each leg)	400 ml (13.5 US oz, 14.1 Imp oz)	—

Rear Suspension

Item	Standard / Specification	Limit / Note
Rear shock absorber spring adjuster	3rd position from softest end	—
Swingarm pivot shaft runout	—	0.3 mm (0.01 in)

Wheels and Tires

Item	Standard / Specification	Limit / Note
Front wheel rim runout	Axial	—
	Radial	—
Rear wheel rim runout	Axial	—
	Radial	—
Wheel axle runout	Front	—
	Rear	—
Tire size	Front	100/80-17M/C 52P, tubeless
	Rear	140/60R17M/C 63P, tubeless
Tire type	Front	MRF: NYLOGRIP ZAPPER-FX
	Rear	MRF: REVZ-M
Tire tread depth (Recommend depth)	Front	—
	Rear	—
Cold inflation tire pressure (Solo riding)	Front	200 kPa (2.00 kgf/cm ² , 29 psi)
	Rear	225 kPa (2.25 kgf/cm ² , 33 psi)
Cold inflation tire pressure (Dual riding)	Front	200 kPa (2.00 kgf/cm ² , 29 psi)
	Rear	225 kPa (2.25 kgf/cm ² , 33 psi)
Wheel rim size	Front	17 M/C x MT 2.50
	Rear	17 M/C x MT 3.50

Drive Chain / Drive Train / Drive Shaft

Item	Standard / Specification	Limit / Note
Drive chain	Type	LGB R428NOR
	Links	132 links
	20-pitch length	—
Drive chain slack (on side-stand/center stand)	20 – 30 mm (0.8 – 1.2 in)	—

Brake Control System and Diagnosis

Item	Standard / Specification	Limit / Note
Rear brake pedal height	32 – 42 mm (1.26 – 1.65 in)	—
Master cylinder bore / piston diameter	Front	Approx. 12.0 mm (0.47 in)
Rear brake pedal free travel	10 – 20 mm (0.4 – 0.8 in)	—

Front Brakes

Item	Standard / Specification	Limit / Note
Front brake disc thickness	3.8 – 4.2 mm (0.15 – 0.17 in)	3.5 mm (0.14 in)
Front brake disc runout	—	0.30 mm (0.012 in)
Front brake caliper cylinder bore / piston diameter	Approx. 28 mm (1.10 in)	—

Rear Brakes

Item	Standard / Specification	Limit / Note
Rear Brake drum I.D.	—	130.7 mm (5.15 in)

Manual Transmission

Item	Standard / Specification		Limit / Note
Primary reduction ratio	3.181 (70/22)		—
Final reduction ratio	3.000 (45/15)		—
Gear ratios	Low	2.750 (33/12)	—
	2nd	1.750 (28/16)	—
	3rd	1.300 (26/20)	—
	4th	1.045 (23/22)	—
	Top	0.875 (21/24)	—
Shift fork to groove clearance	No.1	0.1 – 0.3 mm (0.004 – 0.012 in)	0.5 mm (0.020 in)
	No.2	0.1 – 0.3 mm (0.004 – 0.012 in)	0.5 mm (0.020 in)
Shift fork groove width	No.1	5.0 – 5.1 mm (0.197 – 0.201 in)	—
	No.2	5.0 – 5.1 mm (0.197 – 0.201 in)	—
Shift fork thickness	No.1	4.8 – 4.9 mm (0.189 – 0.193 in)	—
	No.2	4.8 – 4.9 mm (0.189 – 0.193 in)	—
Gearshift lever height	23 – 37 mm (0.91 – 1.46 in)		—

Clutch

Item	Standard / Specification		Limit / Note
Clutch cable play	10 – 15 mm (0.4 – 0.6 in)		—
Drive plate thickness	No.1	2.9 – 3.1 mm (0.11 – 0.12 in)	2.6 mm (0.10 in)
	No.2	2.9 – 3.1 mm (0.11 – 0.12 in)	2.6 mm (0.10 in)
Drive plate claw width	No.1	11.9 – 12.0 mm (0.469 – 0.472 in)	11.1 mm (0.437 in)
	No.2	11.9 – 12.0 mm (0.469 – 0.472 in)	11.1 mm (0.437 in)
Driven plate distortion	—		0.10 mm (0.004 in)
Clutch spring free length	32.5 mm (1.28 in)		30.9 mm (1.22 in)

Steering / Handlebar

Item	Standard / Specification	Limit / Note
Steering tension initial force	2 – 5 N (0.20 – 0.51 kgf, 0.45 – 1.12 lbf)	—

Wiring Systems

Item	Standard / Specification		Limit / Note
Fuse size	Main	15 A	—

Lighting Systems

Item	Standard / Specification		Limit / Note
Headlight	Hi	12 V 35 W	—
	Lo	12 V 35 W	—
Position light	12 V 5 W		—
Brake light / Taillight	LED		—
Turn signal light	12 V 10 W		—
License light	12 V 5 W		—

Combination Meter / Others

Item	Standard / Specification	Limit / Note
Tachometer light	LED	—
Speedometer light	LED	—
Turn signal indicator light	LED	—
High beam indicator light	LED	—
Neutral indicator light	LED	—
RPM indicator light	LED	—

Fasteners Information

BENF34J10307003

Metric Fasteners

Most of the fasteners used for this vehicle are JIS-defined and ISO-defined metric fasteners. When replacing any fasteners, it is most important that replacement fasteners are of the correct diameter, thread pitch and strength.

NOTICE

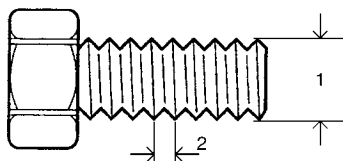
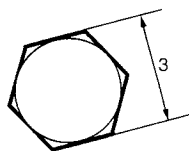
Combining male and female fasteners with different thread pitches will damage both fasteners.

It is important to note that, even when the nominal diameter (1) of the threads is the same, JIS-defined and ISO-defined fasteners may be different in thread pitch (2) or width across flats (3). Refer to the following table for these differences.

Before installing a fastener, check it for correct thread pitch and then, screw it in or on the mating fastener by hand. If the fastener is too tight to turn by hand, its thread pitch may be different from that of the mating fastener.

JIS-TO-ISO main fasteners comparison table

		Nominal diameter				
		M6	M8	M10	M12	M14
JIS	Thread pitch	1.0	1.25	1.25	1.25	1.5
	Width across flats	10	12	14	17	19
ISO	Thread pitch	1.0	1.25	1.5	1.5	1.5
	Width across flats	10	13	16	18	21



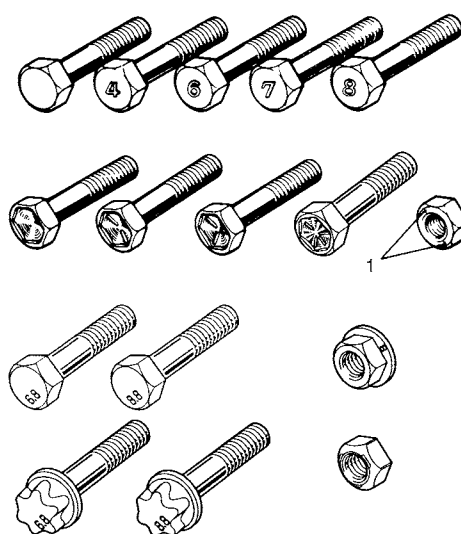
IE31J1030001-01

Fastener Strength Identification

Most commonly used strength classes of metric fasteners are 4T, 6.8, 7T and 8.8. Strength class is indicated by a number or radial line(s) embossed on the head of each bolt. Some metric nuts have a punched number, 6 or 8 on their end surfaces. Figure shows different strength markings.

When replacing metric fasteners, use bolts and nuts of the same strength class as or higher class than the original bolts and nuts. It is also important to select replacement fasteners of the correct diameter and thread pitch. Correct replacement bolts and nuts are available as SUZUKI spare parts.

Metric bolts and nuts: Strength class numbers or marks (The larger the number, the greater the strength).



IE31J1030002-01

1. Nut strength identification

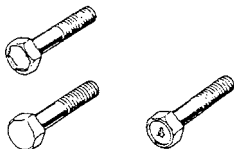



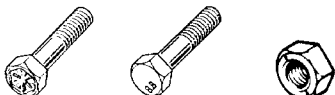

Standard Tightening Torques

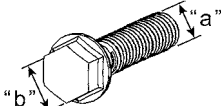
Each fastener should be tightened to the torque specified in each section. If no torque description or specification is provided in the relevant section, refer to the following tightening torque chart for the applicable torque for each fastener. When a fastener of greater strength than the original one is used, use the torque specified for the original fastener.

NOTE

- For flanged bolts, flanged nuts and self-locking nuts of the 4T and 7T strength classes, add 10% to the applicable tightening torques given in the following chart.
- The following chart is applicable only where the fastened parts are made of steel or light alloy.

Tightening torque chart

Strength	Unit	Thread diameter (Nominal diameter) (mm)								
		4	5	6	8	10	12	14	16	18
Fastener of strength class equivalent to 4T	N·m	1.5	3.0	5.5	13	29	45	65	105	160
	kgf·m	0.15	0.31	0.56	1.3	3.0	4.6	6.6	10.7	16.3
	lbf·ft	1.5	2.5	4.0	9.5	21.5	33.5	48.0	77.5	118.0
 IE31J1030003-01	N·m	2.4	4.7	8.4	20	42	80	125	193	280
	kgf·m	0.24	0.48	0.86	2.0	4.3	8.2	12.7	19.7	28.6
	lbf·ft	2.0	3.5	6.5	15.0	31.0	59.0	92.5	142.5	206.5
 IE31J1030004-01	N·m	2.4	4.9	8.8	21	44	84	133	203	298
	kgf·m	0.24	0.50	0.90	2.1	4.5	8.6	13.6	20.7	30.4
	lbf·ft	2.0	4.0	6.5	15.5	32.5	62.0	98.5	150.0	220.0
Flanged fastener of strength class equivalent to 6.8 *: Self-locking nut (6 strength)	N·m	2.4	4.9	8.8	21	44	84	133	203	298
	kgf·m	0.24	0.50	0.90	2.1	4.5	8.6	13.6	20.7	30.4
	lbf·ft	2.0	4.0	6.5	15.5	32.5	62.0	98.5	150.0	220.0
 IE31J1030005-01	N·m	2.3	4.5	10	23	50	85	135	210	240
	kgf·m	0.23	0.46	1.0	2.3	5.1	8.7	13.8	21.4	24.5
	lbf·ft	2.0	3.5	7.5	17.0	37.0	63.0	99.5	155.0	177.0
 IE31J1030006-01	N·m	3.1	6.3	11	27	56	105	168	258	373
	kgf·m	0.32	0.64	1.1	2.8	5.7	10.7	17.1	26.3	38
	lbf·ft	2.5	5.0	8.5	20.0	41.5	77.5	124.0	190.5	275.5
 IE31J1030007-01	N·m	3.1	6.3	11	27	56	105	168	258	373
	kgf·m	0.32	0.64	1.1	2.8	5.7	10.7	17.1	26.3	38
	lbf·ft	2.5	5.0	8.5	20.0	41.5	77.5	124.0	190.5	275.5
Flanged fastener of strength class equivalent to 8.8 (bolt) or 8 (nut)	N·m	3.2	6.5	12	29	59	113	175	270	395
	kgf·m	0.33	0.66	1.2	3.0	6.0	11.5	17.8	27.5	40.3
	lbf·ft	2.5	5.0	9.0	21.5	43.5	83.5	129.0	199.5	291.5
 IE31J1030008-01	N·m	3.2	6.5	12	29	59	113	175	270	395
	kgf·m	0.33	0.66	1.2	3.0	6.0	11.5	17.8	27.5	40.3
	lbf·ft	2.5	5.0	9.0	21.5	43.5	83.5	129.0	199.5	291.5

Small crown shape bolt	Width across flats "b" [mm]	Thread diameter "a" [mm]	Unit		
			N·m	kgf·m	lbf·ft
 ID26J1030004-01	7	5	4.5	0.46	3.5
	8	6	10	1.0	7.5

*: Self-locking nut

Special Tools and Equipment

Fuel / Oil / Fluid Recommendation

BENF34J10308001

Fuel

NOTICE

Do not use leaded gasoline. If it is used, the engine and the emission control system will be damaged.

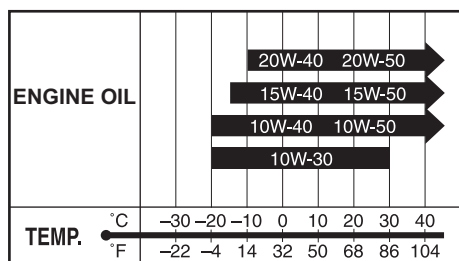
Use unleaded gasoline with an octane rating of 91 RON or higher.

Engine Oil

Use engine oils which meet the following requirements.

- API service classification: SG or higher
- JASO T903 standard: MA
- Viscosity: SAE 10W-40

If SAE 10W-40 engine oils are not available, select oils of an appropriate viscosity grade according to the following chart.



IF34J1030001-01

Suzuki does not recommend the use of engine oils which have an "ENERGY CONSERVING" or "RESOURCE CONSERVING" indication in the API service symbol for any of its motorcycles / ATVs. They can affect the engine life and the clutch performance.



ID26J1030005-01

Brake Fluid

Specification and classification: DOT 3 or DOT 4

▲ WARNING

Since the brake system of this motorcycle is filled with a glycol-based brake fluid by the manufacturer, do not use or mix different types of fluid such as silicone-based and petroleum-based fluid for refilling the system, otherwise serious damage will result.

Do not use any brake fluid taken from old or used or unsealed containers.

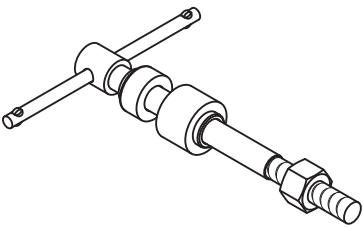
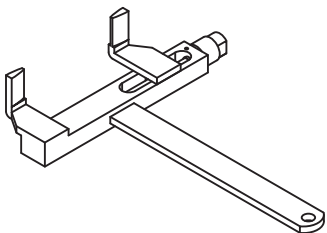
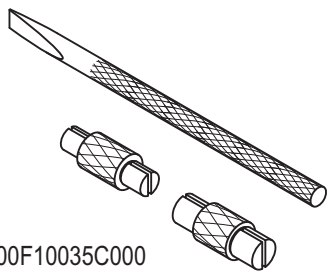
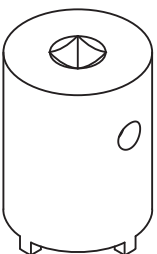
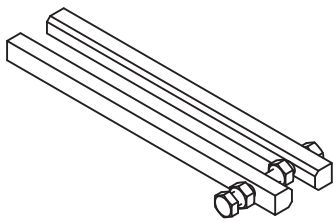
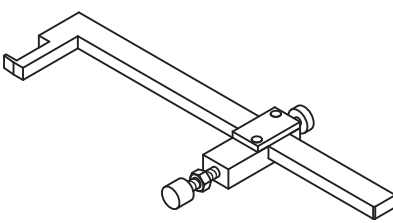
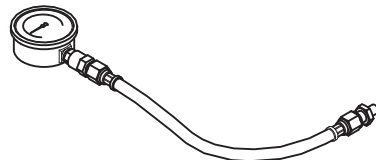
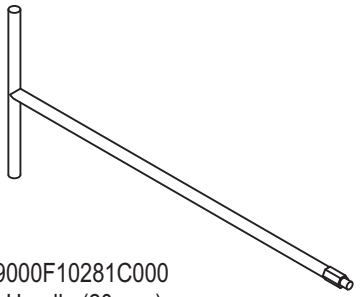
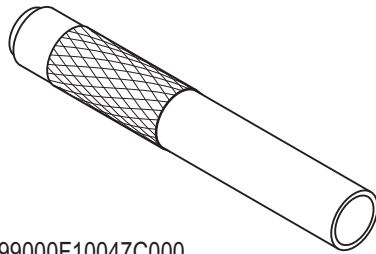
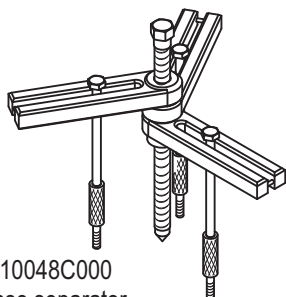
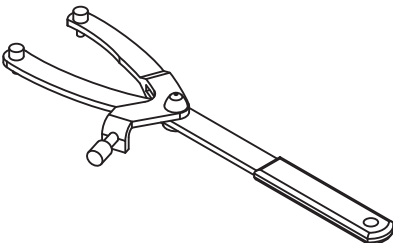
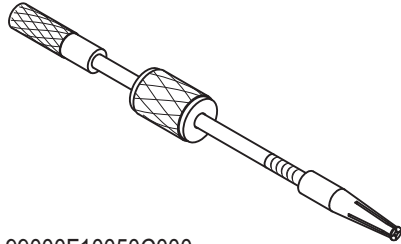
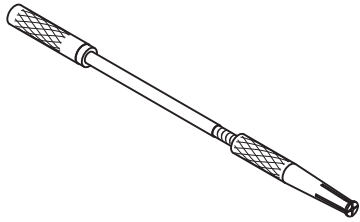
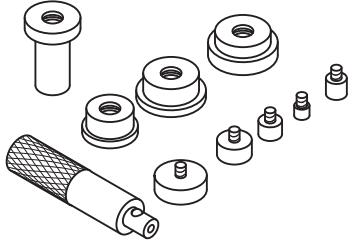
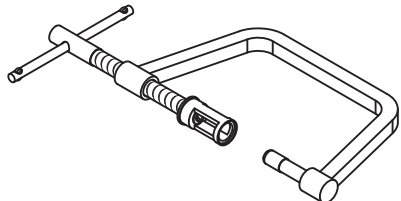
Never reuse brake fluid left over from a previous servicing, which has been stored for a long period.

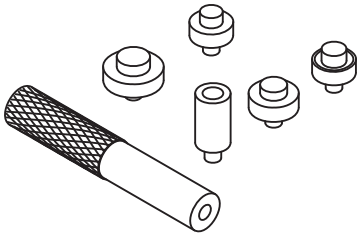
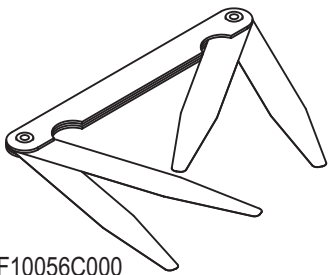
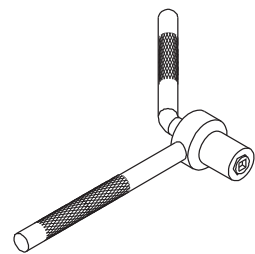
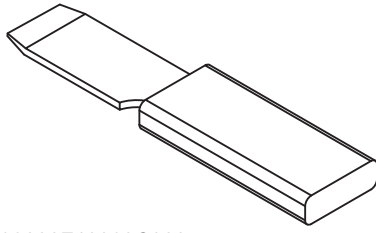
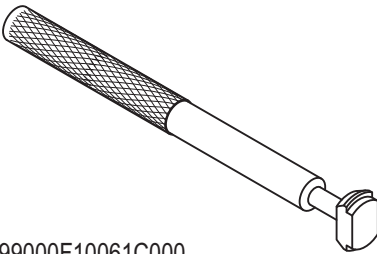
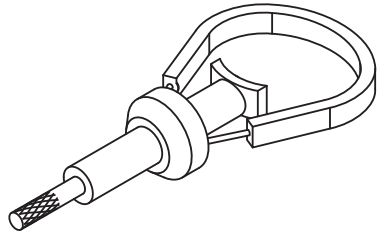

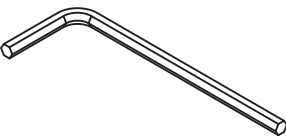
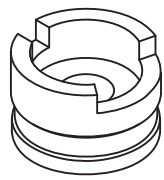
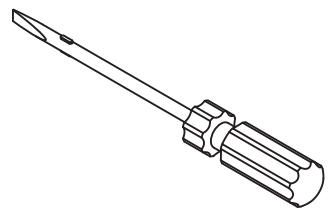
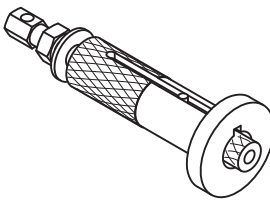
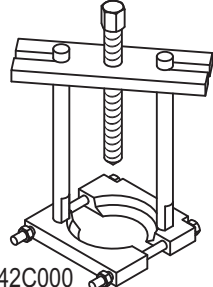
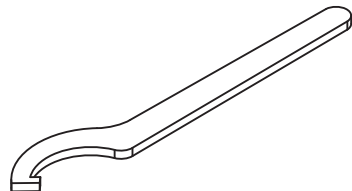
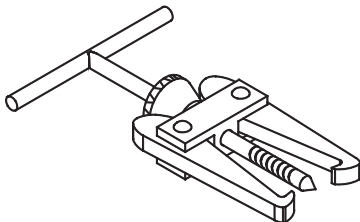
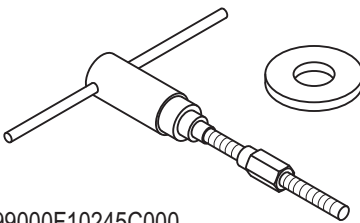
Front Fork Oil

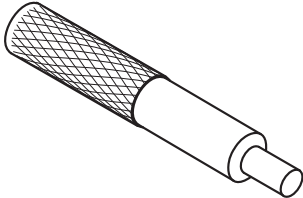
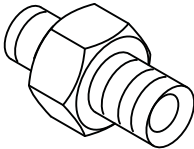
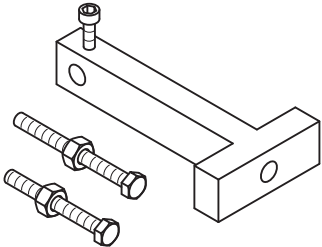
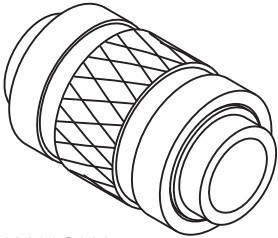
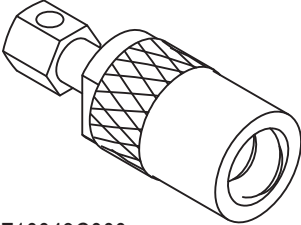
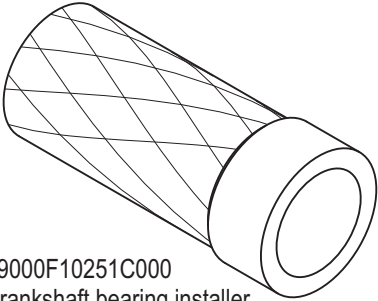
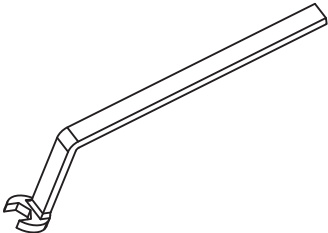
Use ENDURANCE FORK OIL TYPE 1F or equivalent.

Fork oil (ENDURANCE FORK OIL TYPE 1F or equivalent)

SPECIAL TOOLS

 <p>99000F10033C000 Steering race installer</p>	 <p>99000F10034C000 Clutch sleeve hub holder</p>	 <p>99000F10035C000 Wheel bearing remover set</p>
 <p>99000F10036C000 Steering stem nut socket wrench</p>	 <p>99000F10037C000 Con rod holder</p>	 <p>99000F10040C000 Oil seal remover</p>
 <p>99000F10041C000 Oil pressure gauge</p>	 <p>99000F10281C000 T- Handle (20 mm)</p>	 <p>99000F10047C000 Steering race installer lower</p>
 <p>99000F10048C000 Crankcase separator</p>	 <p>99000F10049C000 Engine sprocket holder</p>	 <p>99000F10050C000 N.R.B. remover</p>
 <p>99000F10051C000 Cylinder head bearing remover</p>	 <p>99000F10053C000 Engine bearing installer</p>	 <p>99000F10054C000 Valve spring compressor</p>

 <p>99000F10057C000 Oil Seal Installer (Handle with 5 Pilots)</p>	 <p>99000F10056C000 Thickness gauge</p>	 <p>99000F10042C000 Valve adjusting wrench (tappet & socket)</p>
 <p>99000F10060C000 Scraper</p>	 <p>99000F10061C000 Steering race remover</p>	 <p>99000F10098C000 Rotor holder</p>
 <p>99000F10124C000 Engine bearing installer 15 mm</p>	 <p>99000F10125C000 Allen key 6 mm</p>	 <p>99000F10261C000 Spacer Crankshaft Bearing Installer</p>
 <p>99000F10127C000 Screwdriver 903</p>	 <p>99000F10038C000 Crankshaft installer</p>	 <p>99000F10242C000 Crankshaft bearing puller</p>
 <p>99000F10243C000 Shocker adjuster C spanner</p>	 <p>99000F10272C000 Bearing Puller (Camshaft)</p>	 <p>99000F10245C000 Engine bearing puller with plate</p>

 <p>99000F10262C000 Piston pin replacer</p>	 <p>99000F10240C000 Adapter pressure gauge</p>	 <p>99000F10248C000 Engine mounting bracket</p>
 <p>99000F10280C000 TFF Oil Seal Installer (41 mm)</p>	 <p>9900F10043C000 Rotor Remover</p>	 <p>99000F10251C000 Crankshaft bearing installer</p>
 <p>99000F10254C000 Steering nut tightening tool - 28 mm</p>		

NOTE:
When ordering a special tool, please confirm whether it is available or not.

Section 1

Engine

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Precautions

Precautions

Precautions for Engine

BENF34J11000001

Refer to “General Precautions” in Section 00 (Page 00-1), “Precautions for Electrical Circuit Service” in Section 00 (Page 00-2) and “Precautions for Circuit Tester” in Section 00 (Page 00-6).

Engine General Information and Diagnosis

Diagnostic Information and Procedures

Engine Symptom Diagnosis

BENF34J11104001

Condition	Possible cause	Correction / Reference Item
Engine will not start or is hard to start (Compression too low)	Valve clearance out of adjustment.	Adjust. (Page 1D-10)
	Worn valve guide or poor seating of valve.	Repair or replace. (Page 1D-25)
	Mistimed valve.	Adjust. (Page 1D-10)
	Excessively worn piston rings.	Replace. (Page 1D-28)
	Worn-down cylinder bore.	Replace. (Page 1D-18)
	Too slow starter motor cranking.	Refer to "Starting System Diagram" in Section 1I (Page 1I-1).
	Poor seating of spark plug.	Retighten. (Page 1H-3)
Engine will not start or is hard to start (Plug not sparking)	Defective spark plug.	Replace. (Page 1H-3)
	Too wide spark plug gap.	Adjust or replace. (Page 1H-4)
	Fouled spark plug.	Clean. (Page 1H-4)
	Wet spark plug.	Clean and dry. (Page 1H-4)
	Defective ignition coil.	Replace. (Page 1H-4)
	Defective stator coil.	Replace. (Page 1J-5) (Page 1J-6)
	Defective CKP sensor.	Replace. (Page 1J-5) (Page 1J-6)
	Defective CDI unit.	Replace. (Page 1C-1)
	Open-circuited wiring connection.	Repair or replace. (Page 9A-4)
Engine will not start or is hard to start (No fuel reaching the carburetor)	Clogged fuel filter or fuel hose.	Clean or replace. (Page 1G-6)
	Defective carburetor needle valve.	Replace. (Page 1G-11)
Engine idles poorly	Valve clearance out of adjustment.	Adjust. (Page 1D-10)
	Poor seating of valves.	Replace or repair. (Page 1D-27)
	Defective valve guides.	Replace. (Page 1D-25)
	Worn rocker arms and/or cam surfaces.	Replace. (Page 1D-11) (Page 1D-12)
	Too wide spark plug gap.	Adjust or replace. (Page 1H-4)
	Defective ignition coil.	Replace. (Page 1H-4)
	Defective stator coil.	Replace. (Page 1J-5) (Page 1J-6)
	Defective CKP sensor.	Replace. (Page 1J-5) (Page 1J-6)
	Defective CDI unit.	Replace. (Page 1C-1)
	Defective TP sensor.	Replace. (Page 1C-2)
	Clogged carburetor jets.	Clean or replace. (Page 1G-16)
	Throttle stop screw out of adjustment.	Adjust. (Page 1G-10)
	Pilot screw out of adjustment.	Adjust. (Page 1G-11)
	Damaged or cracked vacuum hose.	Replace.
	Clogged air cleaner element.	Clean or replace. (Page 1D-6)
	Incorrect float chamber fuel level.	Adjust float height. (Page 1G-16)

1A-2 Engine General Information and Diagnosis:

Condition	Possible cause	Correction / Reference Item
Engine stalls often	Fouled spark plug.	Clean. ⌚(Page 1H-4)
	Defective CKP sensor or CDI unit.	Replace. ⌚(Page 1J-5) ⌚(Page 1J-6) ⌚(Page 1C-1)
	Clogged fuel hose.	Clean.
	Clogged carburetor jets.	Clean. ⌚(Page 1G-16)
	Valve clearance out of adjustment.	Adjust. ⌚(Page 1D-10)
	Air leaking from carburetor.	Tighten or replace.
	Clogged exhaust pipe.	Replace. ⌚(Page 1K-2)
	Open or short circuited wiring connection.	Repair or replace. ⌚(Page 9A-4)
Noisy engine (Excessive valve chatter)	Too large valve clearance.	Adjust. ⌚(Page 1D-10)
	Weakened or broken valve springs.	Replace. ⌚(Page 1D-21)
	Worn rocker arms and/or cam surfaces.	Replace. ⌚(Page 1D-11) ⌚(Page 1D-12)
	Worn or burnt camshaft bearings.	Replace. ⌚(Page 1D-11) ⌚(Page 1D-12)
Noisy engine (Noise seems to come from piston)	Worn down piston or cylinder.	Replace. ⌚(Page 1D-27) ⌚(Page 1D-18)
	Combustion chamber fouled with carbon.	Clean. ⌚(Page 1D-21)
	Worn piston pin or piston pin bore.	Replace. ⌚(Page 1D-27)
	Worn piston rings or ring grooves.	Replace. ⌚(Page 1D-28)
Noisy engine (Noise seems to come from cam chain)	Stretched cam chain.	Replace. ⌚(Page 1D-31)
	Worn sprockets.	Replace. ⌚(Page 1D-36) ⌚(Page 1D-37) ⌚(Page 1D-11) ⌚(Page 1D-12)
	Cam chain tension adjuster not working.	Repair or replace. ⌚(Page 1D-11) ⌚(Page 1D-12)
Noisy engine (Noise seems to come from clutch)	Worn splines of countershaft or clutch sleeve hub.	Replace. ⌚(Page 5B-4) ⌚(Page 5C-6) ⌚(Page 5C-7)
	Worn teeth of clutch plates.	Replace. ⌚(Page 5C-6) ⌚(Page 5C-7)
	Distorted clutch plates, driven and drive.	Replace. ⌚(Page 5C-6) ⌚(Page 5C-7)
	Worn clutch release bearing.	Replace. ⌚(Page 5C-6) ⌚(Page 5C-7)
	Weakened clutch dampers.	Replace the primary driven gear. ⌚(Page 5C-6) ⌚(Page 5C-7)
	Weakened clutch springs.	Replace. ⌚(Page 5C-6) ⌚(Page 5C-7)
	Worn or rubbing primary gears.	Replace. ⌚(Page 5C-6) ⌚(Page 5C-7) ⌚(Page 5C-12)
Noisy engine (Noise seems to come from crankshaft)	Rattling bearing due to wear.	Replace. ⌚(Page 1D-41)
	Worn or burnt big-end bearing.	Replace. ⌚(Page 1D-36) ⌚(Page 1D-37)
	Worn or burnt crankcase bearings.	Replace. ⌚(Page 1D-41)
	Too large crankshaft thrust clearance	Adjust. ⌚(Page 1D-42)
Noisy engine (Noise seems to come from transmission)	Worn or rubbing gears.	Replace. ⌚(Page 5B-4)
	Worn countershaft and/or driveshaft splines.	Replace. ⌚(Page 5B-4)
	Worn or rubbing primary gears.	Replace. ⌚(Page 5C-6) ⌚(Page 5C-7) ⌚(Page 5C-12)
	Worn transmission bearings.	Replace. ⌚(Page 5B-7)

Condition	Possible cause	Correction / Reference Item
Engine runs poorly in high speed range	Weakened valve spring.	Replace. ⌚(Page 1D-21)
	Worn camshaft and/or rocker arms.	Replace. ⌚(Page 1D-11) ⌚(Page 1D-12)
	Valve timing out of adjustment.	Adjust. ⌚(Page 1D-10)
	Too narrow spark plug gap.	Adjust. ⌚(Page 1H-4)
	Ignition not advanced sufficiently due to poorly working timing advance circuit.	Replace CDI unit. ⌚(Page 1C-1)
	Defective ignition coil.	Replace. ⌚(Page 1H-4)
	Defective CKP sensor.	Replace. ⌚(Page 1J-5) ⌚(Page 1J-6)
	Defective CDI unit.	Replace. ⌚(Page 1C-1)
	Clogged air cleaner element.	Replace. ⌚(Page 1D-6)
	Clogged fuel hose, resulting in inadequate fuel supply to carburetor.	Clean and prime.
	Low float chamber fuel level.	Adjust float height. ⌚(Page 1G-16)
	Defective TP sensor.	Replace. ⌚(Page 1C-2)
Engine lacks power	Loss of valve clearance.	Adjust. ⌚(Page 1D-10)
	Weakened valve springs.	Replace. ⌚(Page 1D-21)
	Valve timing out of adjustment.	Adjust. ⌚(Page 1D-10)
	Worn piston rings or cylinder.	Replace. ⌚(Page 1D-28) ⌚(Page 1D-18)
	Poor seating of valves.	Repair. ⌚(Page 1D-27)
	Fouled spark plug.	Clean or replace. ⌚(Page 1H-3)
	Incorrect spark plug.	Adjust or replace. ⌚(Page 1H-4)
	Clogged carburetor jets.	Clean. ⌚(Page 1G-16)
	Incorrect float chamber fuel level.	Adjust float height. ⌚(Page 1G-16)
	TP sensor out of adjustment.	Adjust. ⌚(Page 1C-1)
	Clogged air cleaner element.	Clean or replace. ⌚(Page 1D-6)
	Sucking air from intake pipe.	Retighten or replace. ⌚(Page 1D-5)
	Too much engine oil.	Drain out excess oil. ⌚(Page 1E-4)
	Defective CDI unit.	Replace. ⌚(Page 1C-1)
	Defective CKP sensor and ignition coil.	Replace. ⌚(Page 1J-5) ⌚(Page 1J-6) ⌚(Page 1H-4)
Engine overheats	Heavy carbon deposit on piston crown.	Clean.
	Not enough oil in the engine.	Add oil. ⌚(Page 1E-4)
	Defective oil pump or clogged oil circuit.	Replace or clean. ⌚(Page 1E-6)
	Low float chamber fuel level.	Adjust float height. ⌚(Page 1G-16)
	Sucking air from intake pipe.	Retighten or replace. ⌚(Page 1D-5)
	Use of incorrect engine oil.	Change. ⌚(Page 1E-4)
	Clogged air intake with dust.	Clean.
Dirty or heavy exhaust smoke	Too much engine oil.	Drain out excess oil. ⌚(Page 1E-4)
	Worn piston rings or cylinder.	Replace. ⌚(Page 1D-28) ⌚(Page 1D-18)
	Worn valve guides.	Replace. ⌚(Page 1D-25)
	Scored or scuffed cylinder wall.	Replace. ⌚(Page 1D-18)
	Worn valve stems.	Replace. ⌚(Page 1D-21)
	Defective valve stem seal.	Replace. ⌚(Page 1D-21)
	Worn oil ring side rails.	Replace. ⌚(Page 1D-28)

Emission Control Devices

Precautions

Precautions for Emission Control Devices

BENF34J11200001

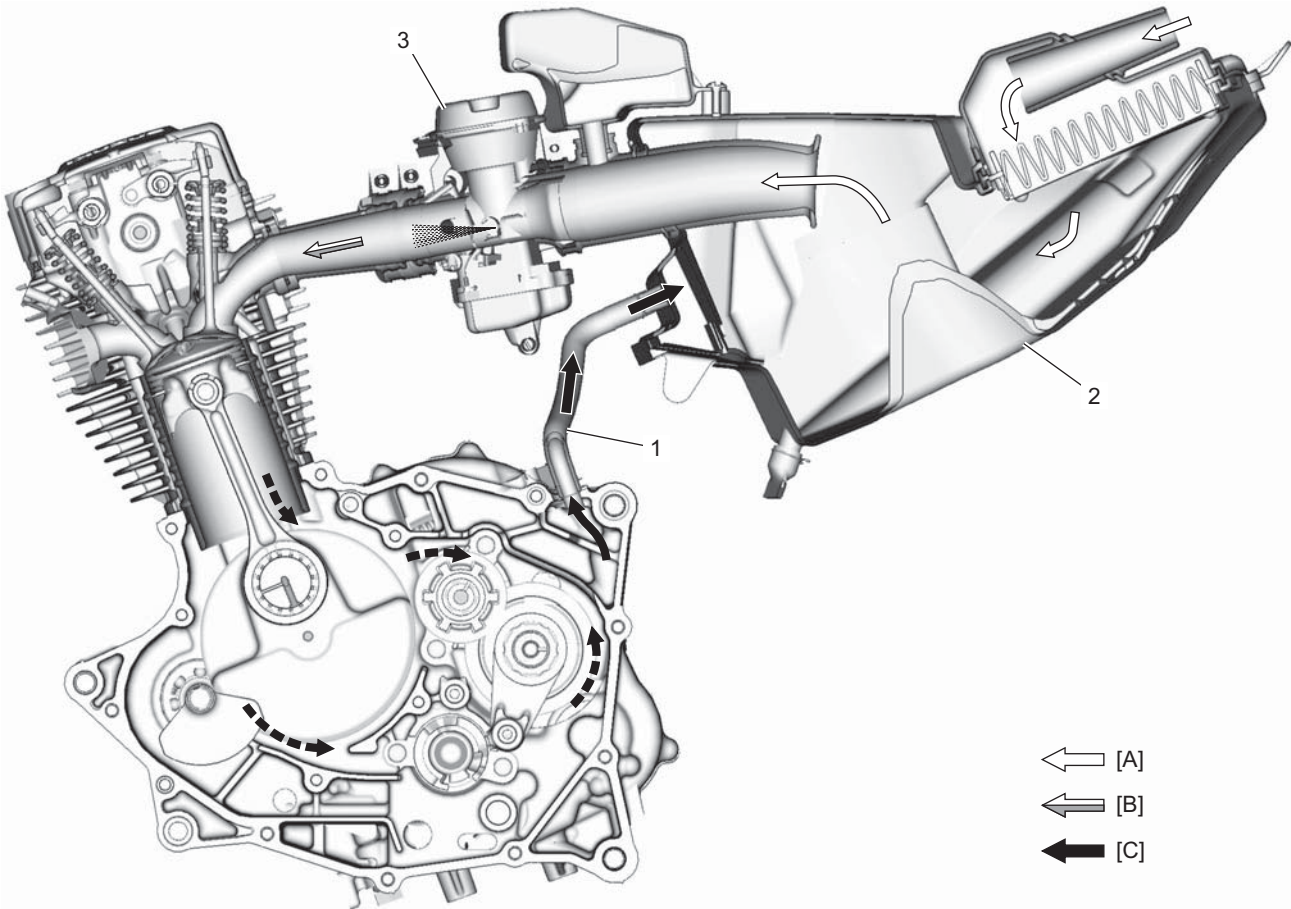
Refer to “General Precautions” in Section 00 (Page 00-1).

General Description

Crankcase Emission Control System Description

BENF34J11201002

The engine is equipped with a PCV system. Blow-by gas in the engine is constantly drawn into the crankcase, which is returned to the combustion chamber through the PCV (breather) hose (1), air cleaner box (2) and carburetor (3).



- ← [A]
- ← [B]
- ← [C]

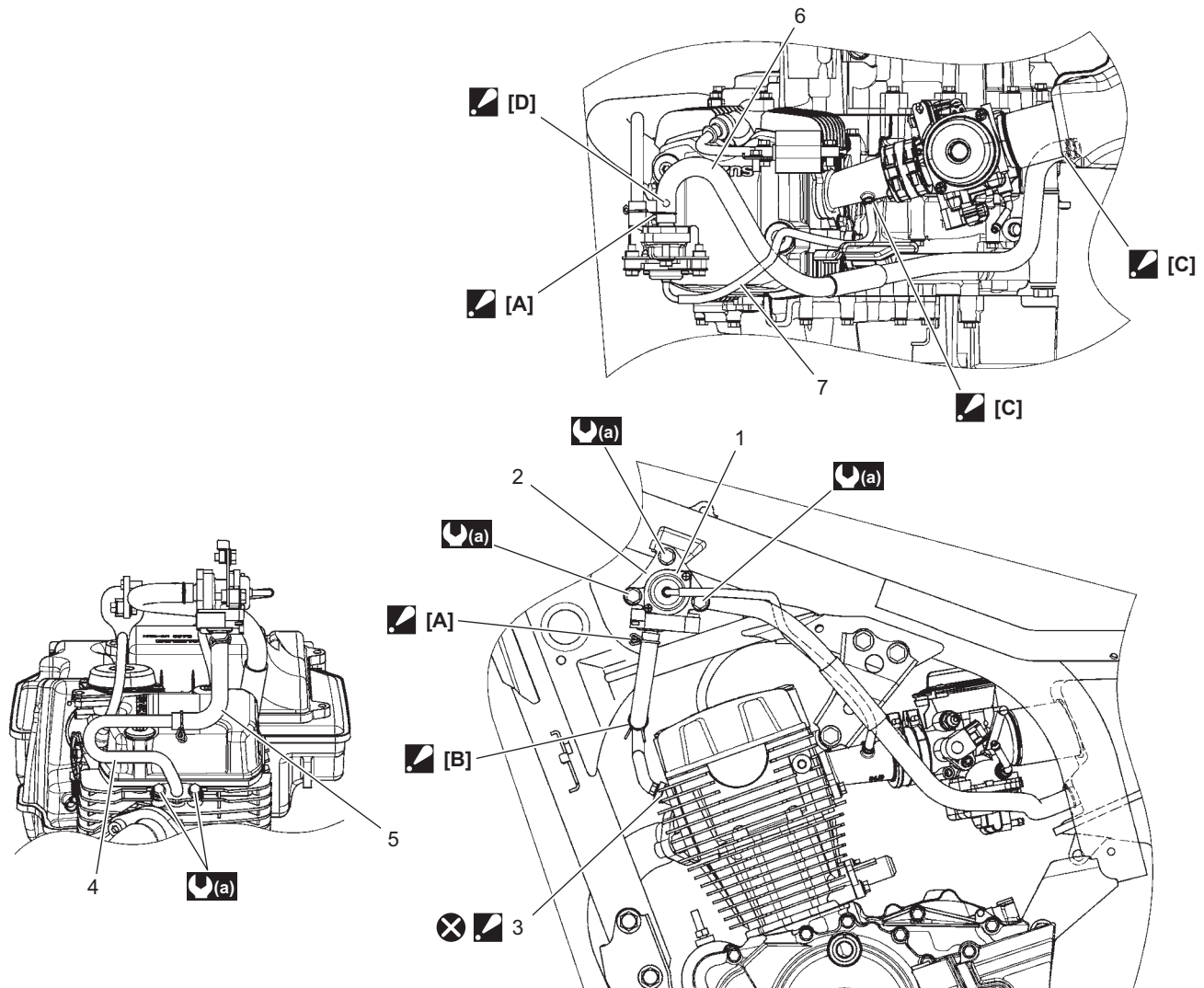
IF34J1120001-02

[A]: Fresh air	[B]: Fuel/Air mixture	[C]: Blow-by gas
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Schematic and Routing Diagram

PAIR System Hose Routing Diagram

BENF34J11202001



IF34J1120002-03

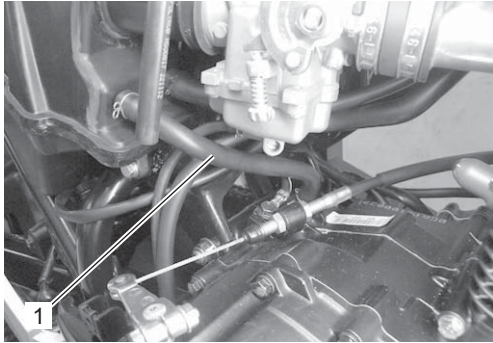
[A]: Face the tip of the clamp forward.	2. PAIR valve bracket	7. PAIR vacuum hose
[B]: Face the tip of the clamp downward.	3. PAIR pipe gasket : Face the sealant side to the PAIR pipe.	: 10 N·m (1.0 kgf-m, 7.5 lbf-ft)
[C]: Face the tip of the clamp upward.	4. PAIR pipe	: Do not reuse.
[D]: Face the match mark upward.	5. PAIR valve hose	
1. PAIR valve assembly	6. PAIR cleaner hose	

Repair Instructions

PCV Hose Inspection

BENF34J11206001

- 1) Remove the right frame side cover. (Page 9D-12)
- 2) Inspect the PCV hose (1) for wear and damage.
If it is worn or damaged, replace the PCV hose with a new one.
- 3) Check that the PCV hose (1) is securely connected.



IF34J1120003-01

- 4) Install the removed parts.

PCV Hose Removal and Installation

BENF34J11206002

Refer to "Intake System Components" in Section 1D (Page 1D-5).

Removal

- 1) Remove the right frame side cover. (Page 9D-12)
- 2) Remove the PCV hose.

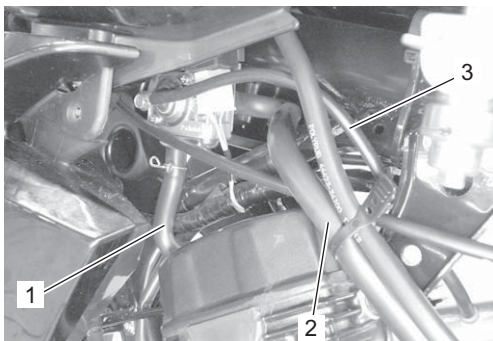
Installation

- 1) Install the PCV hose.
- 2) Install the removed parts.

PAIR System Hose Inspection

BENF34J11206003

- 1) Remove the frame side cover, right and left. (Page 9D-12)
- 2) Inspect the PAIR valve hose (1), PAIR cleaner hose (2) and PAIR vacuum hose (3) for wear and damage.
If any defect is found, replace the hose with a new one.
- 3) Check that the PAIR valve hose, PAIR cleaner hose and PAIR vacuum hoses are securely connected.



IF34J1120004-01

- 4) Install the removed parts.

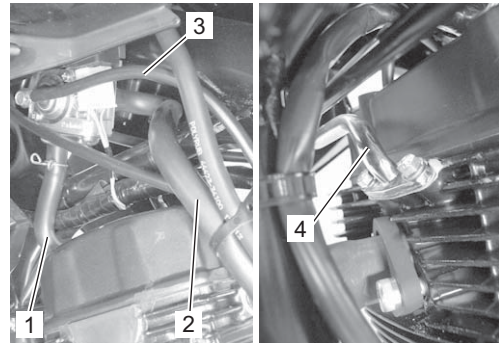
PAIR System Hose / Pipe Removal and Installation

BENF34J11206004

Refer to "PAIR System Hose Routing Diagram" (Page 1B-2).

Removal

- 1) Remove the following parts.
 - Frame side cover, right and left: (Page 9D-12)
 - Left frame front cover: (Page 9D-13)
- 2) Remove the PAIR valve hose (1), PAIR cleaner hose (2) and PAIR vacuum hose (3).
- 3) Remove the PAIR pipe (4).



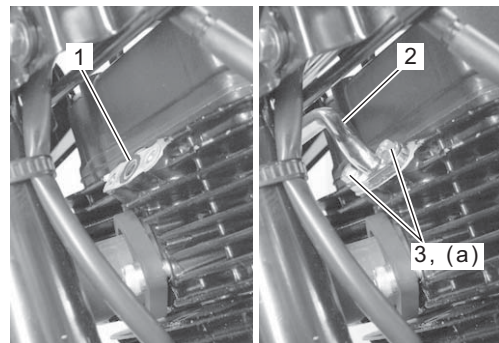
IF34J1120005-01

Installation

- 1) Install the PAIR pipe new gasket to the cylinder head facing its sealant side (1) outward.
- 2) Install the PAIR pipe (2) and tighten its bolts (3) to the specified torque.

Tightening torque

PAIR pipe bolt (a): 10 N·m (1.0 kgf-m, 7.5 lbf-ft)





IF34J1120006-02

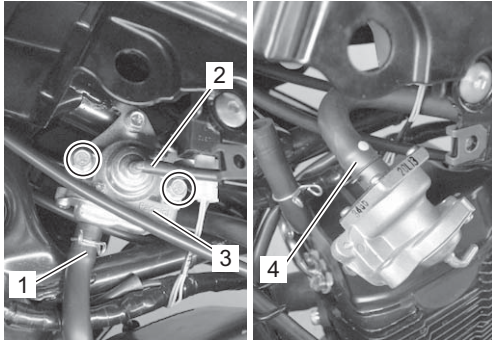
- 3) Install the PAIR valve hose, PAIR cleaner hose and PAIR vacuum hose.
- 4) Install the removed parts.

PAIR Control Valve Assembly Removal and Installation

BENF34J11206005

Removal

- 1) Remove the following parts.
 - Left frame side cover:  (Page 9D-12)
 - Left frame front cover:  (Page 9D-13)
- 2) Disconnect the PAIR valve hose (1) and PAIR vacuum hose (2).
- 3) Remove the PAIR control valve assembly (3).
- 4) Disconnect the PAIR cleaner hose (4).



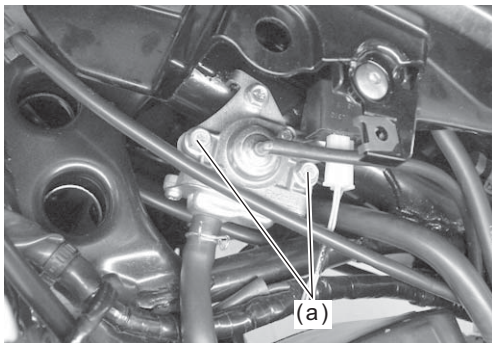
IF34J1120007-01

Installation

- 1) Install the PAIR control valve assembly and tighten the bolts to the specified torque.

Tightening torque

PAIR control valve assembly bolt (a): 10 N·m (1.0 kgf-m, 7.5 lbf-ft)



IF34J1120008-01

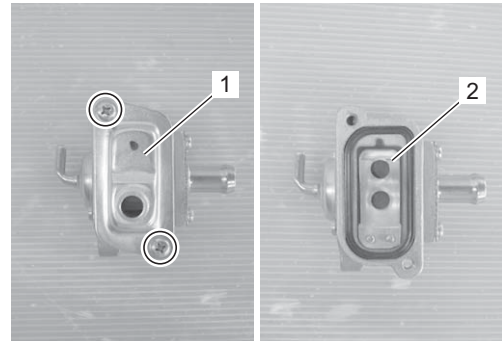
- 2) Install the removed parts.

PAIR Control Valve Assembly Inspection

BENF34J11206006

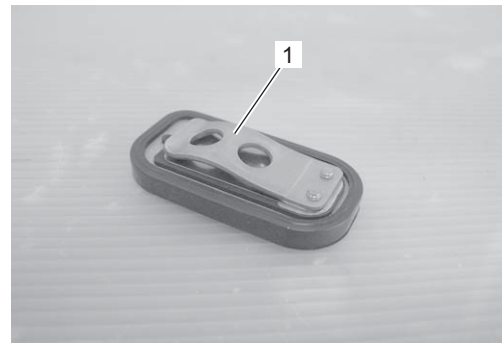
Refer to "PAIR Control Valve Assembly Removal and Installation" (Page 1B-4).

- 1) Remove the PAIR reed valve cover (1) and PAIR reed valve (2).



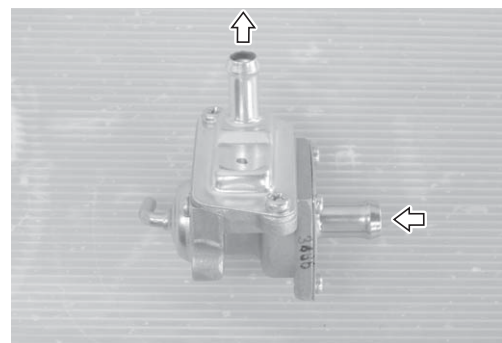
IF34J1120009-01

- 2) Inspect the reed valve (1) for the carbon deposit. If the carbon deposit is found in the reed valve, replace the PAIR reed valve with a new one.



IF34J1120010-01

- 3) Install the PAIR reed valve and PAIR reed valve cover.
- 4) Inspect the air flow through the PAIR control valve air inlet port to the air outlet port. If air does not flow out, replace the PAIR control valve with a new one.



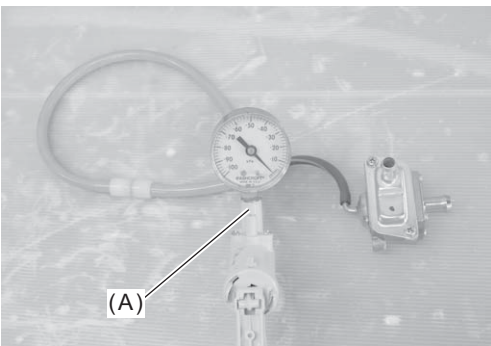
IF34J1120011-01

1B-5 Emission Control Devices:

- 5) Connect the special tool to the vacuum port of the PAIR control valve as shown in the figure.
- Special tool

(A): Vacuum Pump Gauge Set
- 6) Apply negative pressure slowly to the PAIR control valve and inspect the air flow. If air does not flow out, the PAIR control valve is in normal condition. If the PAIR control valve does not function, replace the PAIR control valve with a new one.
- Negative pressure range

Standard: -48.7 kPa (395 mmHg)



IF34J1120012-01

Specifications

Tightening Torque Specifications

BENF34J11207001

Fastening part	Tightening torque			Note
	N·m	kgf·m	lbf·ft	
PAIR pipe bolt	10	1.0	7.5	☞ (Page 1B-3)
PAIR control valve assembly bolt	10	1.0	7.5	☞ (Page 1B-4)

Reference:
For the tightening torques of fasteners not specified in this page, refer to:
“PAIR System Hose Routing Diagram” (Page 1B-2)
“Fasteners Information” in Section 0C (Page 0C-8)

Special Tools and Equipment

Special Tool

BENF34J11208001

<div>Vacuum pump gauge set</div> <div>☞ (Page 1B-5)</div> <div></div>	
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Engine Electrical Devices

Precautions

Precautions for Engine Electrical Device

BENF34J11300001

Refer to "General Precautions" in Section 00 (Page 00-1), "Precautions for Electrical Circuit Service" in Section 00 (Page 00-2) and "Precautions for Circuit Tester" in Section 00 (Page 00-6).

Component Location

Engine Electrical Components Location

BENF34J11303001

Refer to "Electrical Components Location" in Section 0A (Page 0A-5).

Diagnostic Information and Procedures

Engine Symptom Diagnosis

BENF34J11304001

Refer to "Engine Symptom Diagnosis" in Section 1A (Page 1A-1).

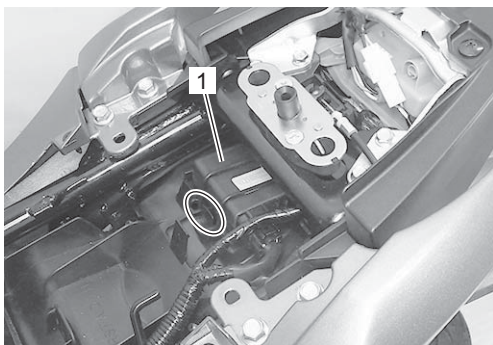
Repair Instructions

CDI Unit Removal and Installation

BENF34J11306001

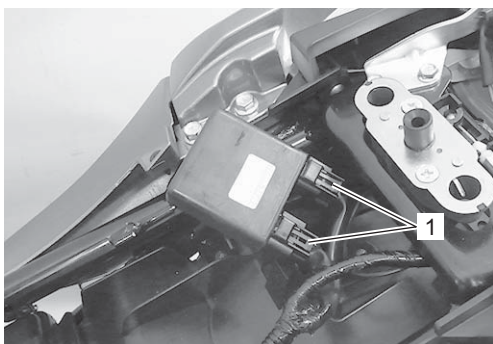
Removal

- 1) Remove the seat. (Page 9D-11)
- 2) Unhook the band and remove the CDI unit (1).



IF34J1130001-02

- 3) Disconnect the CDI unit couplers (1).



IF34J1130002-02

Installation

Install the CDI unit in the reverse order of removal.

TP Sensor Inspection and Adjustment

BENF34J11306002

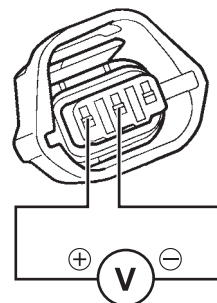
Inspection

TP sensor power supply voltage

- 1) Disconnect the TP sensor coupler. Refer to "TP Sensor Removal and Installation" (Page 1C-2).
- 2) Turn the ignition switch ON.
- 3) Measure the voltage between the BI wire and B/W wire. If the voltage is not within the specified value, check the wire harness. If wire harness is good condition, replace the CDI unit.

TP sensor power supply voltage

(+) BI – (–) B/W: 4.5 – 5.5 V



IF34J1130003-01

TP sensor output voltage

- 1) Check that the throttle cable play is within the specification. ⚙️ (Page 1D-8)
- 2) Check the engine idle speed is within the specification. ⚙️ (Page 1G-10)
- 3) Disconnect the TP sensor coupler. Refer to "TP Sensor Removal and Installation" (Page 1C-2).
- 4) Connect the special tool to the TP sensor.

Special tool

(A): TP Sensor Test Lead

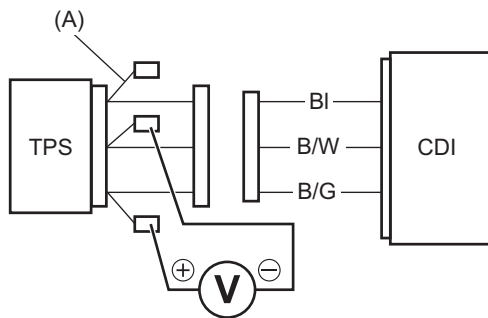
- 5) Turn the ignition switch ON.
- 6) Measure the TP sensor output voltage between each terminal with turning the throttle grip open and close. If the output voltage is not within the specified value, adjust or replace the TP sensor.

TP sensor output voltage

Throttle valve is closed: 0.65 – 0.75 V

Throttle valve is opened: 4.5 V

(+) terminal: B/G – (–) terminal: B/W



Adjustment

- 1) Check that the throttle cable play is within the specification. ⚙️ (Page 1D-8)
- 2) Check the engine idle speed is within the specification. ⚙️ (Page 1G-10)
- 3) Disconnect the TP sensor coupler. Refer to "TP Sensor Removal and Installation" (Page 1C-2).
- 4) Connect the special tool to the TP sensor.

Special tool

TP Sensor Test Lead

- 5) Turn the ignition switch ON.

- 6) Loosen the TP sensor mounting screw (1) using the special tool and adjust the TP sensor output voltage to the specification.

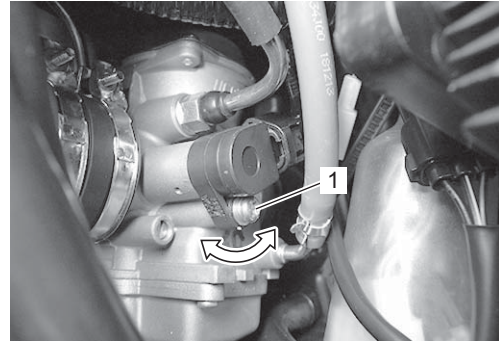
Special tool

Torx Wrench

TP sensor output voltage

Throttle valve is closed: 0.65 – 0.75 V

(+) terminal: B/G – (–) terminal: B/W



- 7) Tighten the TP sensor mounting screw to the specified torque. Refer to "TP Sensor Removal and Installation" (Page 1C-2).
- 8) After adjusting the TP sensor, reinstall the removed parts.

TP Sensor Removal and Installation

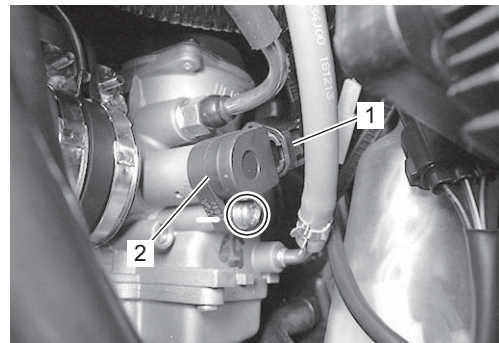
BENF34J11306003

Removal

- 1) Remove the left frame side cover. ⚙️ (Page 9D-12)
- 2) Disconnect the TP sensor coupler (1).
- 3) Prior to disassembly, mark the sensor's original position with a paint or scribe for accurate reinstallation.
- 4) Remove the TP sensor (2) using the special tool.

Special tool

Torx Wrench



Installation

Install the TP sensor in the reverse order of removal.

Pay attention to the following points:

- Apply a thin coat of engine oil to the O-ring (1).
- Apply grease to the throttle shaft end (2), if necessary.

“A” : (SUZUKI SUPER GREASE A)

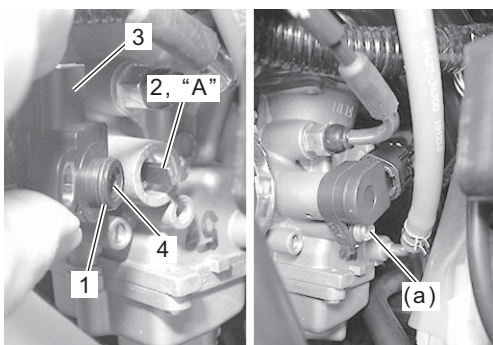
- With the throttle valve fully closed, install the TP sensor (3) aligning the throttle shaft end with the groove (4) of the TP sensor.
- Tighten the TP sensor mounting screw to the specified torque.

Special tool

Torx Wrench

Tightening torque

TP sensor mounting screw (a): 3 N·m (0.31 kgf-m, 2.5 lbf-ft)



IF34J1130007-01

- Check the throttle valve operating smoothly.
- Adjust the position of TP sensor. (Page 1C-1)

CKP Sensor Inspection

BENF34J11306004

CKP Sensor Peak Voltage

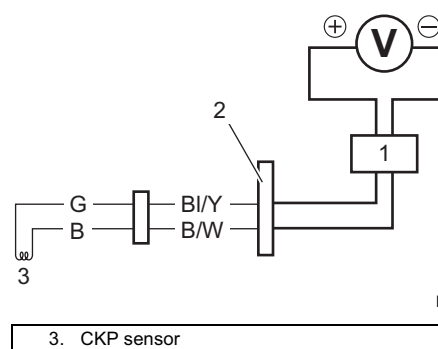
- 1) Remove the seat. (Page 9D-11)
- 2) Disconnect the CDI unit couplers. Refer to “CDI Unit Removal and Installation” (Page 1C-1).
- 3) Connect the multi circuit tester with the peak voltage adapter (1) as follows.

CDI unit coupler – circuit tester connection

	(+) Probe	(-) Probe
CDI unit coupler (2)	BI/Y wire terminal	B/W wire terminal

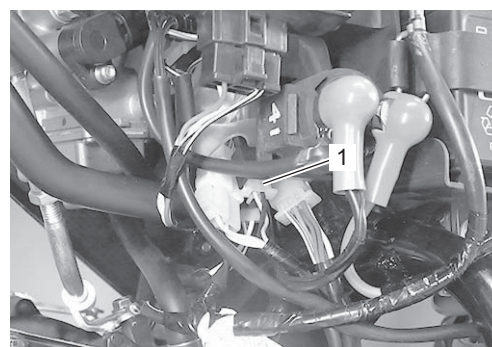
CKP sensor peak voltage

(+) BI/Y – (-) B/W: 1.2 V or more



IF34J1130008-01

- 4) Measure the CKP sensor peak voltage in the following procedures:
 - a) Shift the transmission to the neutral and turn the ignition switch ON.
 - b) Grasp the clutch lever.
 - c) Press the starter switch and allow the engine to crank for a few seconds, and then measure the CKP sensor peak voltage.
- 5) Repeat the c) procedure several times and measure the highest CKP sensor peak voltage. If the peak voltage measured on the CDI unit coupler is lower than standard range, measure the peak voltage on the CKP sensor coupler as follows.
- 6) Turn the ignition switch OFF.
- 7) Remove the left frame side cover. (Page 9D-12)
- 8) Disconnect the CKP sensor coupler (1).



IF34J1130009-02

1C-4 Engine Electrical Devices:

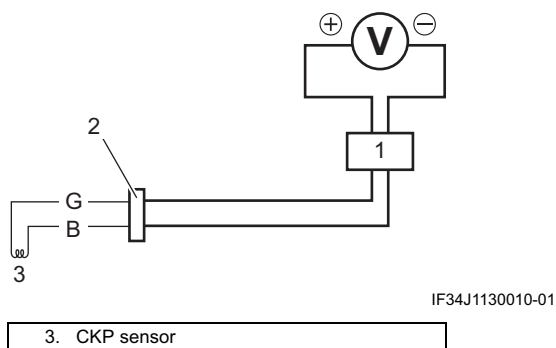
- 9) Connect the multi circuit tester with the peak voltage adapter (1) as follows.

CKP sensor coupler – circuit tester connection

	(+) Probe	(-) Probe
CKP sensor coupler (2)	G wire terminal	B wire terminal

CKP sensor peak voltage

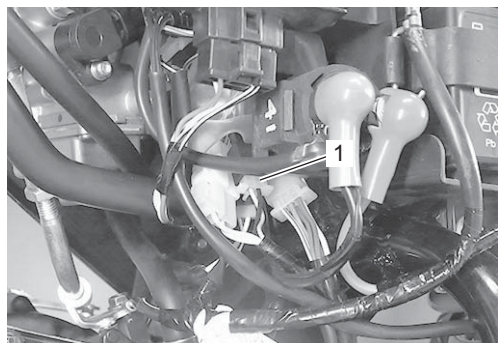
(+) G – (–) B: 1.2 V or more



- 10) Measure the CKP sensor peak voltage in the same manner as on the CDI unit coupler. If the peak voltage on the CKP sensor coupler is within specification, but on the CDI unit coupler is not within specification, replace the wire harness with a new one. If both peak voltages are out of specification, replace the CKP sensor with a new one. Refer to “Generator Removal” in Section 1J (Page 1J-5) and “Generator Installation” in Section 1J (Page 1J-6).
- 11) After measuring the CKP sensor peak voltage, reinstall the removed parts.

CKP Sensor Resistance

- 1) Remove the left frame side cover. (Page 9D-12)
- 2) Disconnect the CKP sensor coupler (1).

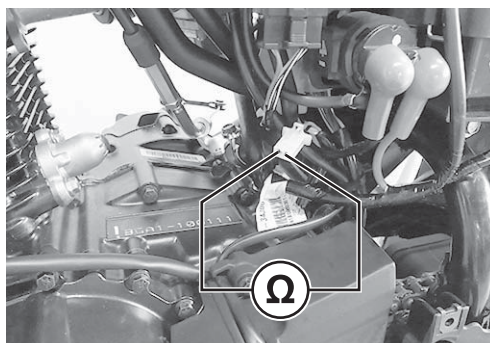


IF34J1130009-02

- 3) Measure the resistance between the terminals of CKP sensor coupler. If the resistance is not within the standard range, replace the CKP sensor with a new one. Refer to “Generator Removal” in Section 1J (Page 1J-5) and “Generator Installation” in Section 1J (Page 1J-6).

CKP sensor resistance at 20 °C (68 °F)

G – B: Approx. 95 – 150 Ω



IF34J1130011-02

- 4) After measuring the CKP sensor resistance, reinstall the removed parts.

CKP Sensor Removal and Installation

BENF34J11306005

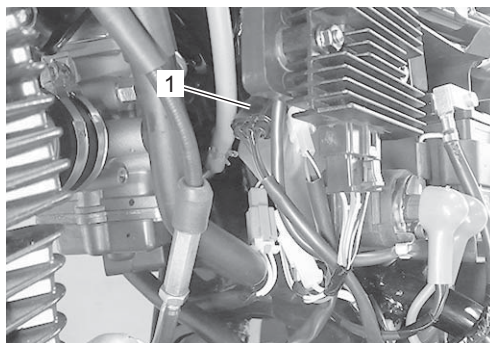
Refer to “Generator Removal” in Section 1J (Page 1J-5) and “Generator Installation” in Section 1J (Page 1J-6).

Speed Sensor Removal and Installation

BENF34J11306006

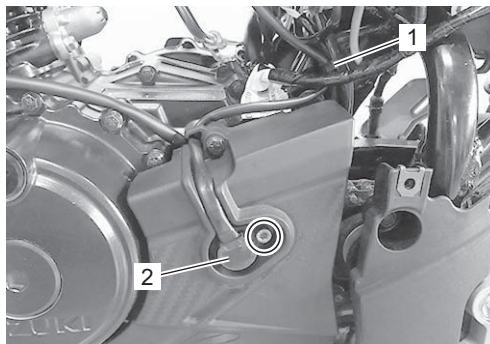
Removal

- 1) Remove the left frame side cover. (Page 9D-12)
- 2) Disconnect the speed sensor lead wire coupler (1).



IF34J1130012-02

- 3) Remove the clamp (1).
- 4) Remove the speed sensor (2).



IF34J1130013-02

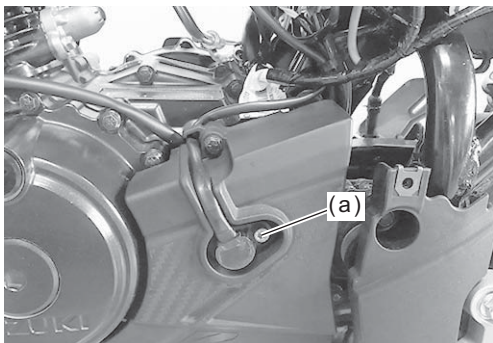
Installation

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

- Tighten the speed sensor bolt to the specified torque.

Tightening torque

Speed sensor bolt (a): 4.5 N·m (0.46 kgf-m, 3.5 lbf-ft)



IF34J1130014-02

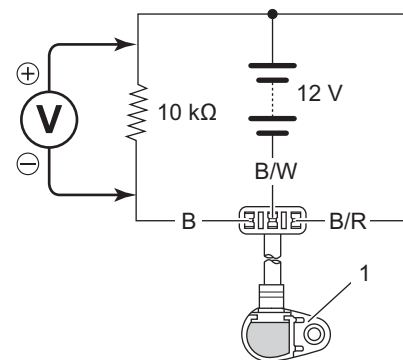
- Route the speed sensor lead wire. Refer to "Wiring Harness Routing Diagram" in Section 9A (Page 9A-5).

Speed Sensor Inspection

BENF34J11306007

Refer to "Speed Sensor Removal and Installation" (Page 1C-4).

- 1) Connect a 12 V battery, 10 kΩ resistor and multi circuit tester to the speed sensor (1) as shown in the figure.

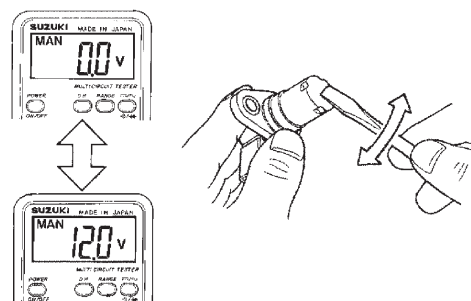


IF34J1130015-01

- 2) Move a screwdriver back and forth across the pickup surface of the speed sensor. The voltage readings should cycle as follows (0 V → 12 V or 12 V → 0 V). If the voltage reading does not change, replace the speed sensor with a new one.

NOTE

While testing, the highest voltage reading should be the same as the battery voltage (12 V).



ID26J1110254-01

Specifications

Tightening Torque Specifications

BENF34J11307001

Fastening part	Tightening torque			Note
	N·m	kgf-m	lbf-ft	
TP sensor mounting screw	3	0.31	2.5	(Page 1C-3)
Speed sensor bolt	4.5	0.46	3.5	(Page 1C-5)

Reference:

For the tightening torques of fasteners not specified in this page, refer to:

"Fasteners Information" in Section 0C (Page 0C-8)

Special Tools and Equipment

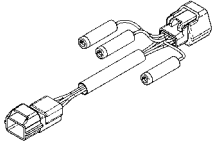
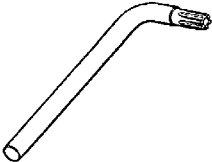
Recommended Service Material

BENF34J11308001

Material	SUZUKI recommended product or Specification	Note
Grease	SUZUKI SUPER GREASE A	(Page 1C-3)

Special Tool

BENF34J11308002

TP Sensor test lead (Page 1C-2) / (Page 1C-2) 	Torx® wrench (T25H) (Page 1C-2) / (Page 1C-2) / (Page 1C-3) 
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Torx® is the registered trademark of Camcar Division of Textron inc. U.S.A.

Engine Mechanical

Precautions

Precautions for Engine Mechanical

BENF34J11400001

Refer to "General Precautions" in Section 00 (Page 00-1) and "Precautions for Electrical Circuit Service" in Section 00 (Page 00-2).

NOTE

Identify the position of each removed part. Organize the parts in their respective groups (e.g., intake, exhaust) so that they can be reinstalled in their original positions.

Diagnostic Information and Procedures

Compression Pressure Check

BENF34J11404001

The compression pressure reading of a cylinder is a good indicator of its internal condition. The decision to overhaul the cylinder is often based on the results of a compression test. Periodic maintenance records kept at your dealership should include compression readings for each maintenance service.

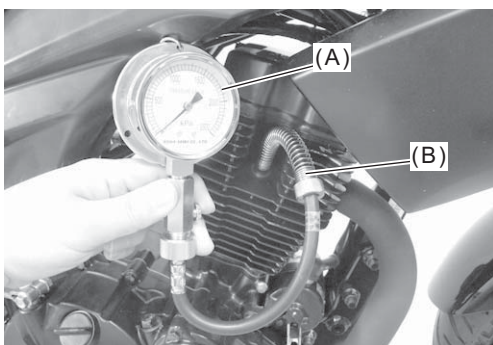
NOTE

- Before checking the engine for compression pressure, make sure that the cylinder head bolts are tightened to the specified torque values and the valves are properly adjusted.
- Make sure that the battery is in fully-charged condition.

- 1) Warm up the engine.
- 2) Remove the spark plug. (Page 1H-3)
- 3) Install the compression gauge and adaptor in the spark plug hole. Make sure that the connection is tight.

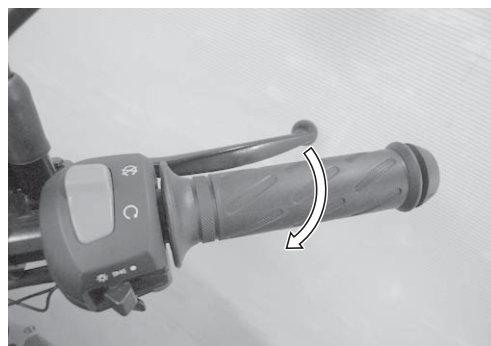
Special tool

- (A): Compression Gauge
(B): Adaptor



IF34J1140001-01

- 4) Keep the throttle grip in the fully-opened position.



IF34J1140002-01

- 5) Press the starter switch and crank the engine for a few seconds. Record the maximum gauge reading as the cylinder compression.

Compression pressure

Standard: 900 – 1300 kPa (9.2 – 13.3 kgf/cm², 130 – 188 psi)

Service limit: 500 kPa (5.1 kgf/cm², 72.5 psi)

If compression pressure is less than the service limit, it is considered any of the following reasons:

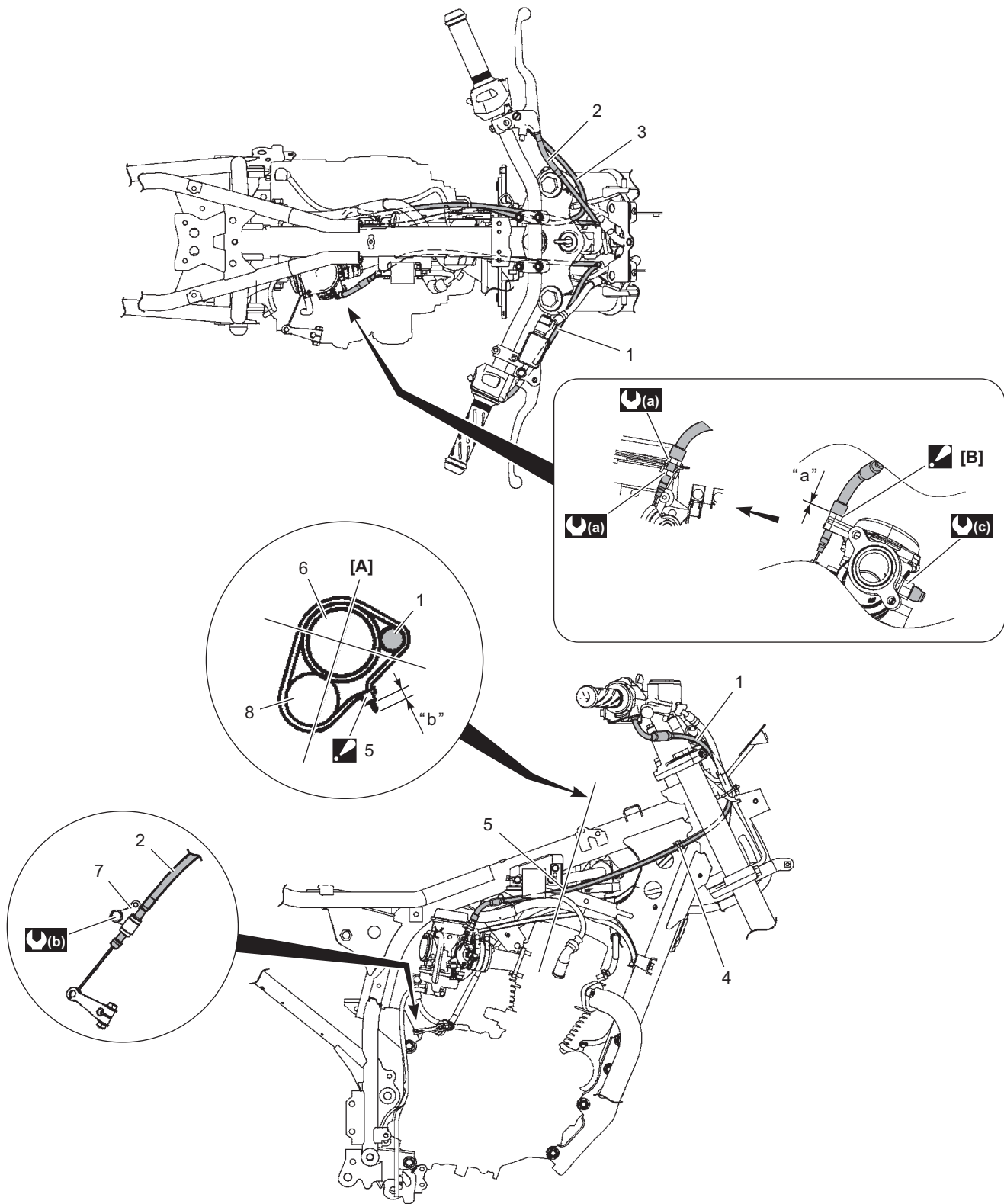
- Excessively worn cylinder walls
- Worn piston or piston rings
- Piston rings stuck in grooves
- Poor valve seating
- Ruptured or otherwise defective cylinder head gasket

- 6) After checking the compression pressure, install the removed parts.






Schematic and Routing Diagram

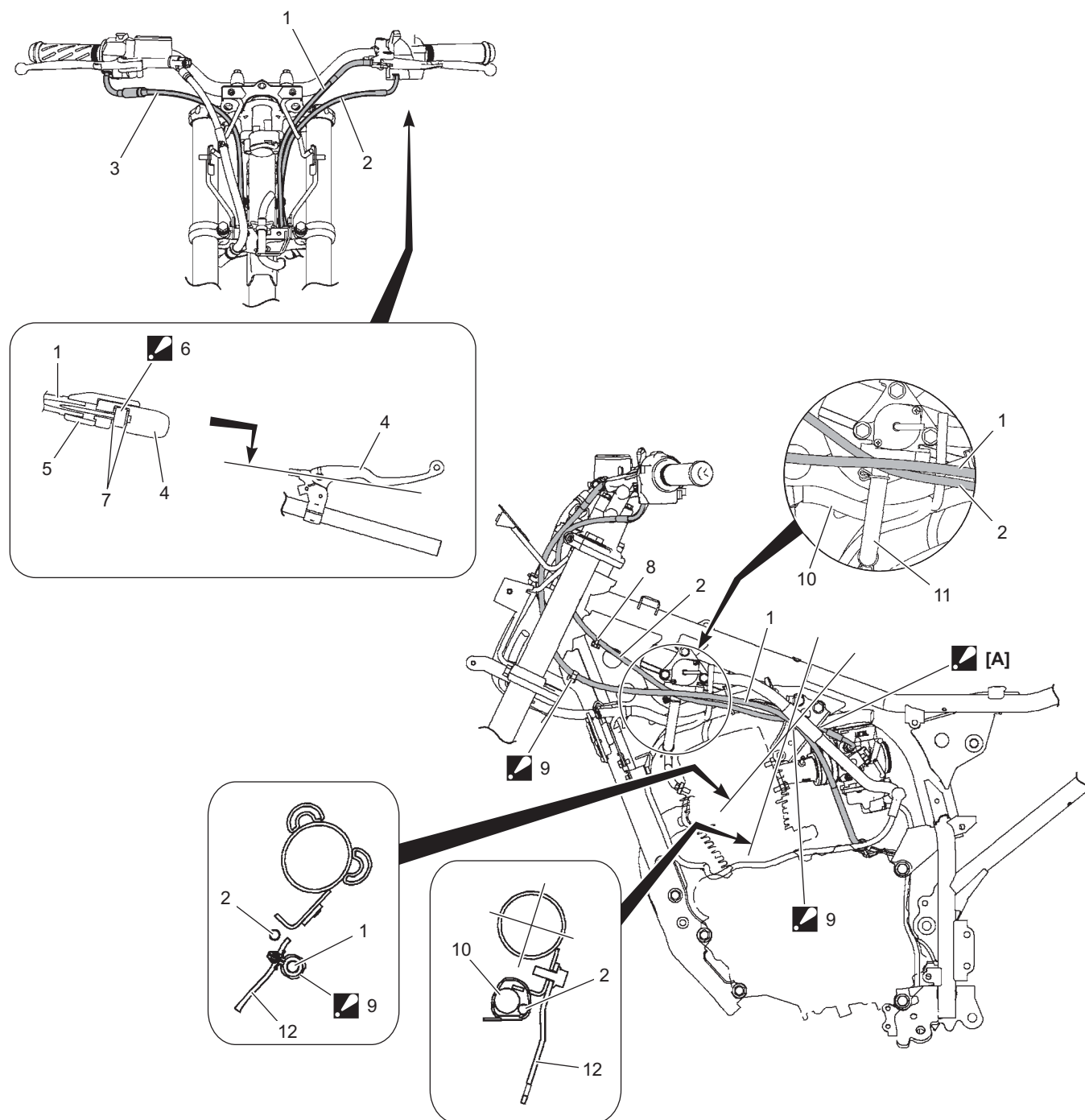
Throttle Cable Routing Diagram

BENF34J11402002



IF34J1140003-03

[A]: Upper side	4. Throttle cable clamp	"a": 0 mm (0 in)
 [B]: Position the throttle cable putting the throttle cable upper nut to the end of the throttle cable adjusting thread.	 5. Clamp : Cut off the excess tip of the clamp.	"b": 0 – 5 mm (0 – 0.20 in)
1. Throttle cable	6. Frame	 (a) : 4.5 N·m (0.46 kgf-m, 3.5 lbf-ft)
2. Clutch cable	7. Clutch cable stopper	 (b) : 10 N·m (1.0 kgf-m, 7.5 lbf-ft)
3. Starter cable	8. Wiring harness	 (c) : 2.5 N·m (0.25 kgf-m, 2.0 lbf-ft)



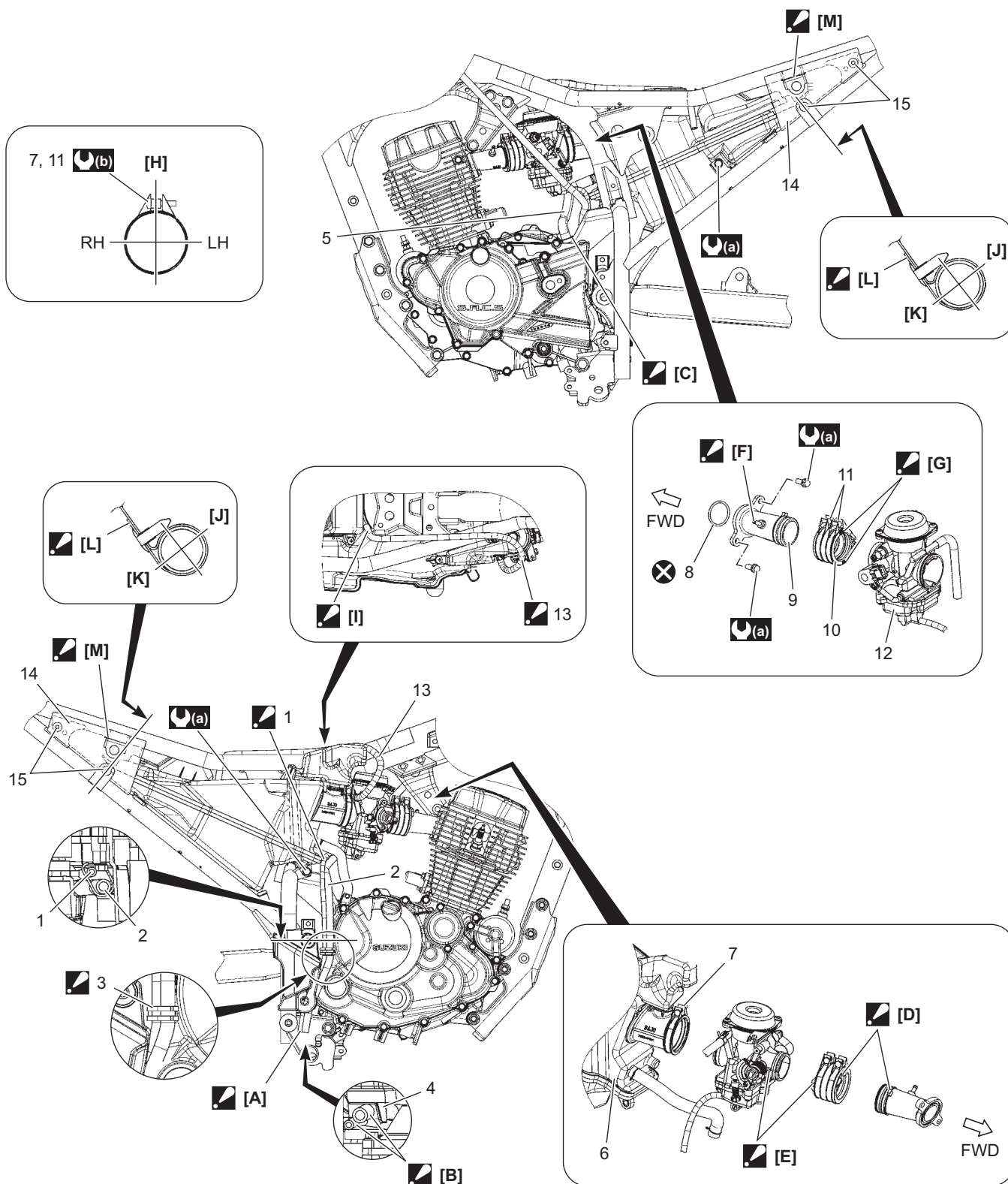
IF34J1140004-05

<p>☑ [A]: Pass the starter cable behind the engine mounting upper plate.</p>	5. Clutch lever holder	10. Wiring harness
1. Clutch cable	<p>☑ 6. Clutch cable end : Insert the clutch cable end into the lever hole correctly. Make sure that the cable end moves smoothly without catch on edge of the lever hole.</p>	11. PAIR valve hose
2. Starter cable	7. Bushing	12. Engine mounting upper plate
3. Throttle cable	8. Starter cable clamp	
4. Clutch lever	<p>☑ 9. Clutch cable clamp : Insert the clutch cable clamp into the hole fully and check that it is fixed.</p>	

Repair Instructions

Intake System Components

BENF34J11406001



IF34J1140005-04

1D-6 Engine Mechanical:

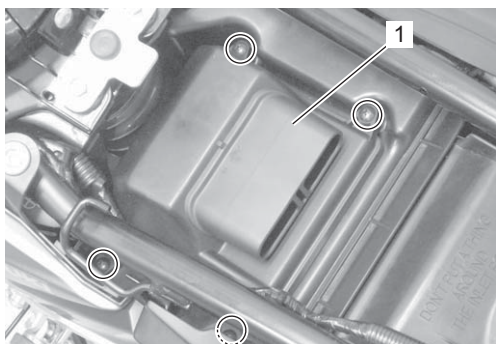
<div> [A]: Align lower end of the carburetor overflow hose with the fuel tank water drain hose end. </div>	<div> [L]: Wrap the air cleaner inlet sheet at the tab around the frame from the inside and fix it with the clip. </div>	10. Joint tube
<div> [B]: Pass the hoses inside of the right frame lower cover. </div>	<div> [M]: Pass the slit of the air cleaner inlet sheet through the frame bracket. </div>	11. Joint tube clamp
<div> [C]: Face the tip of the clamp backward. </div>	<div> 1. Carburetor overflow hose : Check that the hose is not folded or crushed. </div>	12. Carburetor assembly
<div> [D]: Align protrusion on the intake pipe with cutaway in the joint tube. </div>	2. Fuel tank water drain hose	<div> 13. Carburetor air vent hose : Check that the hose is not folded or crushed. </div>
<div> [E]: Align protrusion on the carburetor with cutaway in the joint tube. </div>	<div> 3. Fuel tank water drain hose clamp : Clamp the carburetor overflow hose and fuel tank water drain hose together. </div>	14. Air cleaner inlet sheet
<div> [F]: Face the intake pipe nipple diagonally to the upper left. </div>	4. Right frame lower cover	15. Air cleaner inlet sheet clip
<div> [G]: Face the embossed mark on the joint tube to the carburetor. </div>	5. PCV hose	<div> (a) : 10 N·m (1.0 kgf-m, 7.5 lbf-ft) </div>
[H]: Upper side	6. Air cleaner box	<div> (b) : 1.5 N·m (0.15 kgf-m, 1.5 lbf-ft) </div>
<div> [I]: Insert the end of the carburetor air vent hose in the gap of the air cleaner box directing downward. </div>	7. Air cleaner outlet tube clamp	<div> : Do not reuse. </div>
[J]: Inside	8. Intake pipe O-ring	
[K]: Outside	9. Intake pipe	

Air Cleaner Element Removal and Installation

BENF34J11406002

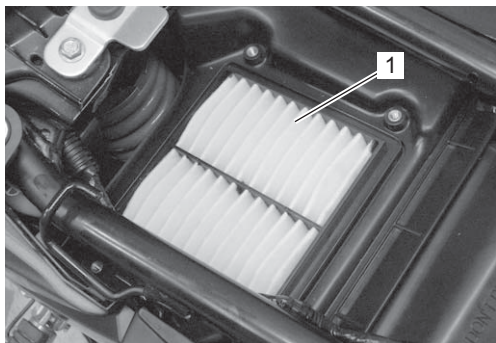
Removal

- 1) Remove the seat. (Page 9D-11)
- 2) Remove the air cleaner cover (1).



IF34J1140006-01

- 3) Remove the air cleaner element (1).



IF34J1140007-01

Installation

Install the air cleaner element in the reverse order of removal.

Air Cleaner Element Inspection and Cleaning

BENF34J11406003

Refer to "Air Cleaner Element Removal and Installation" (Page 1D-6).

Inspection

Inspect the air cleaner element for clogging. If it is clogged with dirt, clean or replace it.

NOTICE

If driving under dusty conditions, clean the air cleaner element more frequently. Make sure that the air cleaner is in good condition at all times. Life of the engine depends largely on this component.



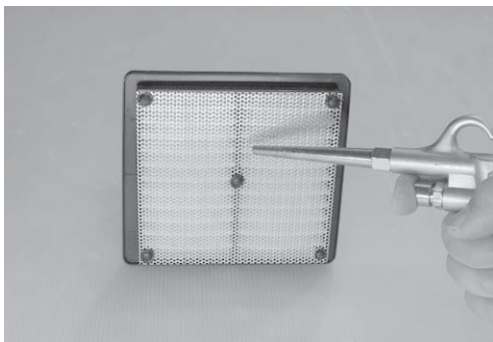
IF34J1140008-01

Cleaning

- 1) Carefully use compressed air to blow the dust from the air cleaner element.

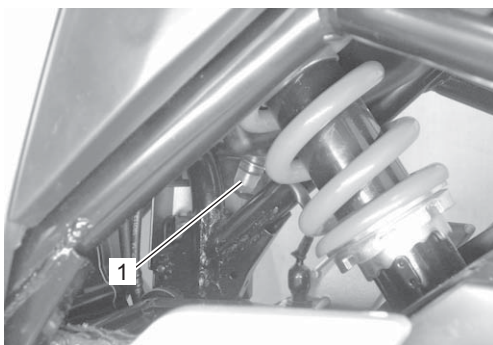
NOTICE

Always apply compressed air to the inside of the air cleaner element. If compressed air is applied to the outside, dirt will be forced into the pores of the air cleaner element, restricting air flow through the air cleaner element.



IF34J1140009-01

- 2) Remove the drain plug (1) and drain water from the air cleaner box.



IF34J1140010-01

- 3) Install the drain plug.

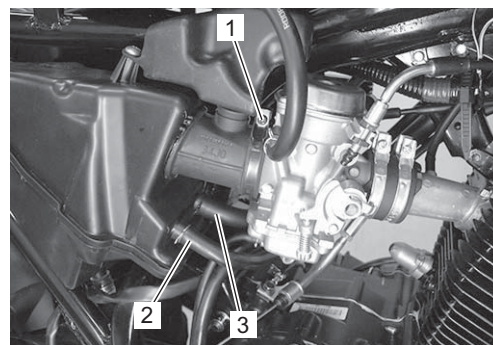
Air Cleaner Box Removal and Installation

BENF34J11406004

Removal

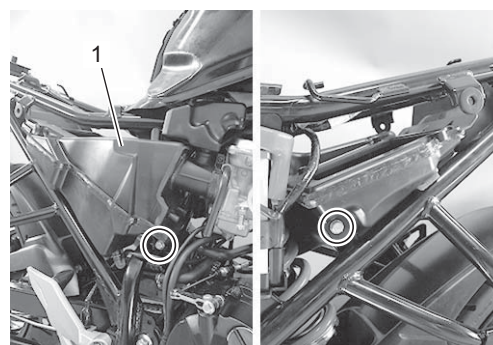
- 1) Remove the following parts.
 - Frame upper covers: (Page 9D-14)
 - Fuel tank side covers: (Page 9D-16)
 - Air cleaner element: (Page 1D-6)

- 2) Loosen the air cleaner outlet tube clamp screw (1).
- 3) Disconnect the PCV hose (2) and PAIR cleaner hose (3).



IF34J1140011-02

- 4) Remove the air cleaner box (1) to the right side.



IF34J1140012-01

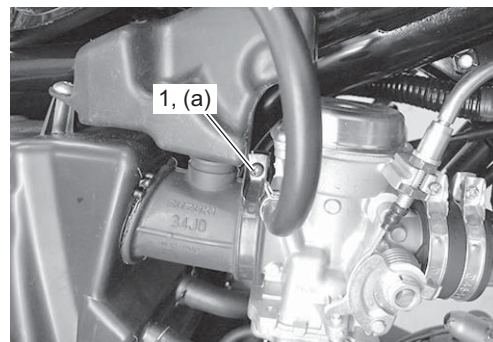
Installation

Install the air cleaner box in the reverse order of removal. Pay attention to the following points:

- Connect the PCV hose. Refer to "Intake System Components" (Page 1D-5).
- Connect the PAIR cleaner hose. Refer to "PAIR System Hose Routing Diagram" in Section 1B (Page 1B-2).
- Position the air cleaner outlet tube clamp and tighten the air cleaner outlet tube clamp screw (1) to the specified torque. (Page 1D-5)

Tightening torque

Air cleaner outlet tube clamp screw (a): 1.5 N·m (0.15 kgf-m, 1.5 lbf-ft)



IF34J1140013-02

Throttle Cable Play On-Vehicle Inspection and Adjustment

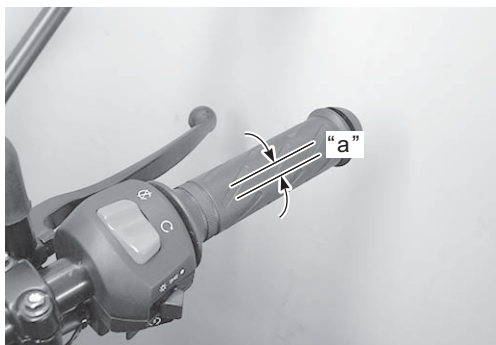
BENF34J11406041

Inspection

Turn the throttle grip slowly and inspect the throttle cable play "a" at the periphery of the grip.

Throttle cable play "a"

2.0 – 4.0 mm (0.08 – 0.16 in)



IF34J1140014-01

Adjustment

- 1) Move the rubber boot (1).
- 2) Loosen the lock-nut (2) of the throttle cable.
- 3) Turn the adjuster (3) in or out until the throttle cable play (at the throttle grip) is within the specification.

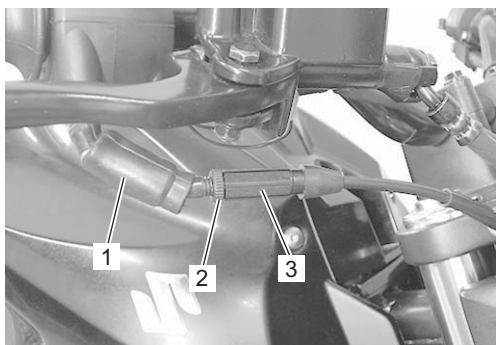
Throttle cable play

2.0 – 4.0 mm (0.08 – 0.16 in)

- 4) Tighten the lock-nut while holding the adjuster.

⚠ WARNING

After the adjustment is completed, check that handlebar movement does not raise the engine idle speed and the throttle grip returns smoothly and automatically.



IF34J1140015-01

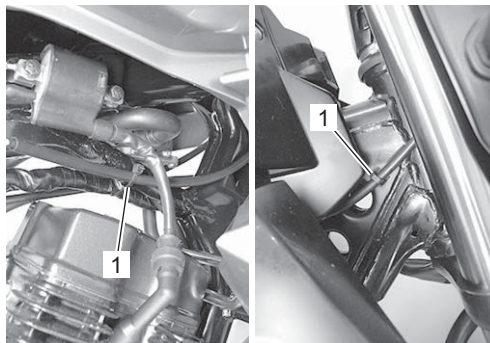
- 5) Install the rubber boot.

Throttle Cable Removal and Installation

BENF34J11406042

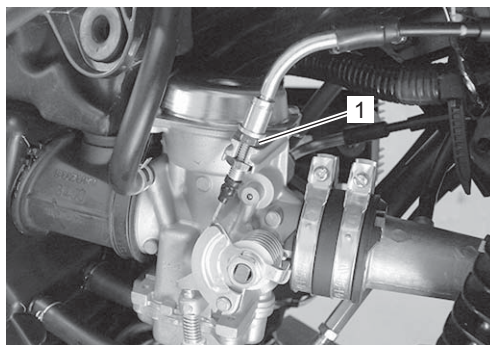
Removal

- 1) Disconnect the throttle cable from right handle switch. Refer to "Handlebar Removal and Installation" in Section 6B (Page 6B-3).
- 2) Remove the clamps (1).



IF34J1140016-02

- 3) Loosen the lock-nut (1) and disconnect the throttle cable from carburetor.



IF34J1140017-02

Installation

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

- Install the throttle cable as shown in the throttle cable routing diagram. Refer to "Throttle Cable Routing Diagram" (Page 1D-2).
- After installing, check the throttle cable play and proper operation. (Page 1D-8)

Throttle Cable Inspection

BENF34J11406043

Check that the throttle cable moves smoothly from full close to full open, and in the reverse direction. If it does not move smoothly, lubricate the throttle cable.

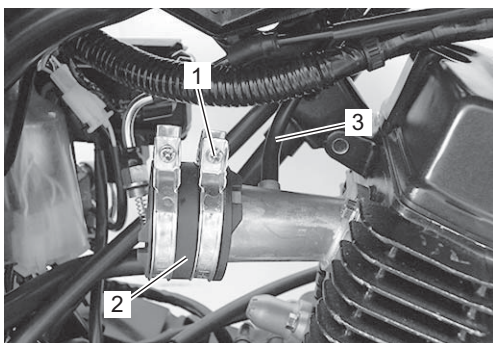
Intake Pipe Removal and Installation

BENF34J11406044

Refer to "Carburetor Assembly Removal and Installation" in Section 1G (Page 1G-10)

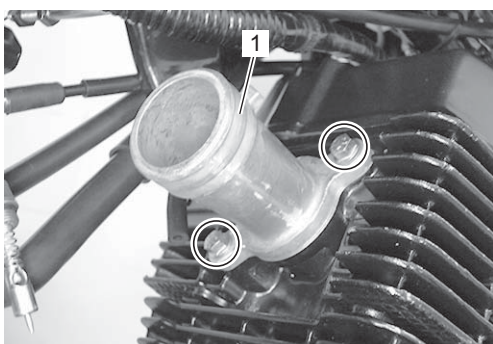
Removal

- 1) Loosen the joint tube clamp screw (1) and remove the joint tube (2).
- 2) Disconnect the PAIR vacuum hose (3).



IF34J1140018-01

- 3) Remove the intake pipe (1).



IF34J1140019-01

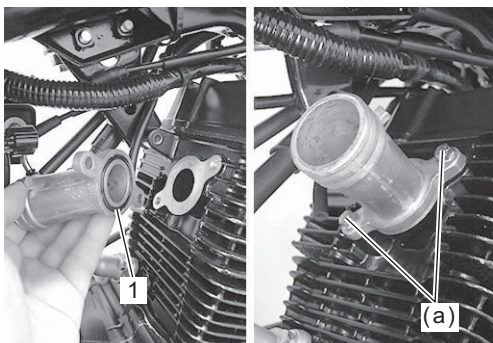
Installation

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

- Install the new O-ring (1).
- Tighten the intake pipe mounting bolts to the specified torque.

Tightening torque

Intake pipe mounting bolt (a): 10 N·m (1.0 kgf-m, 7.5 lbf-ft)

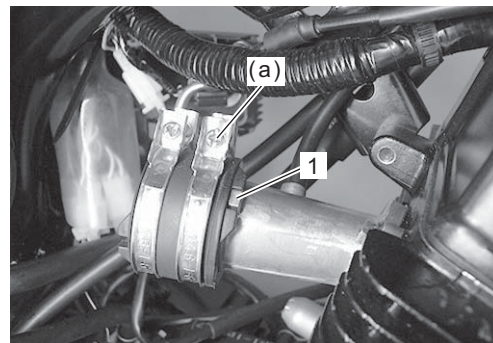


IF34J1140020-01

- Align protrusion (1) on the intake pipe with cutaway in the joint tube.
- Tighten the joint tube clamp screw to the specified torque.

Tightening torque

Joint tube clamp screw (a): 1.5 N·m (0.15 kgf-m, 1.5 lbf-ft)



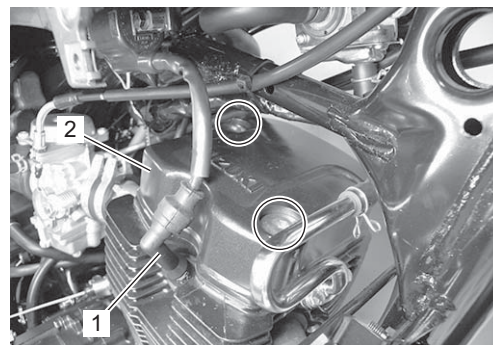
IF34J1140021-01

Cylinder Head Cover Removal and Installation

BENF34J11406005

Removal

- 1) Remove the following parts.
 - Frame side covers: (Page 9D-12)
 - Frame front covers: (Page 9D-13)
- 2) Disconnect the spark plug cap (1).
- 3) Remove the cylinder head cover (2) and its gasket.



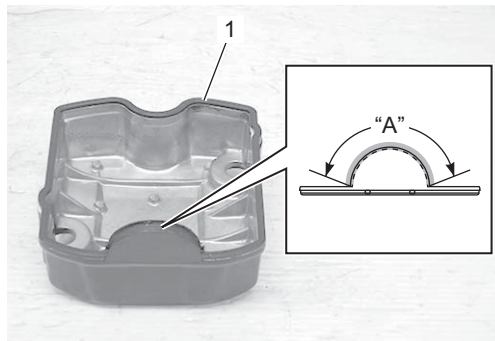
IF34J1140023-02

Installation

Install the cylinder head cover in the reverse order of removal. Pay attention to the following points:

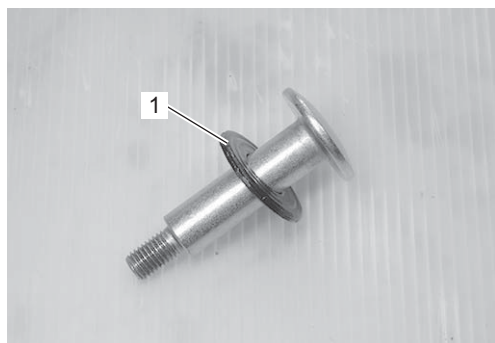
- Install the new gasket (1) to the cylinder head cover.
- Apply sealant to the “A” of the gasket as shown.

“A” : (SUZUKI BOND 1207B)



IF34J1140024-01

- Set the new gasket (1) to the cylinder head cover bolt and coat the both sides of the gasket with engine oil.

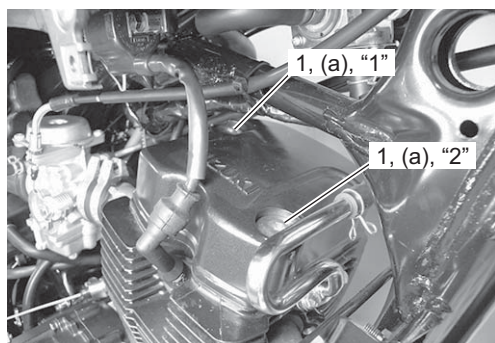


IF34J1140025-01

- Tighten the cylinder head cover bolts (1) to the specified torque in order of “1” → “2”.

Tightening torque

Cylinder head cover bolt (a): 14 N·m (1.4 kgf·m, 10.5 lbf·ft)



IF34J1140026-02

Valve Clearance Inspection and Adjustment

BENF34J11406045

Refer to “Cylinder Head Cover Removal and Installation” (Page 1D-9) and “Spark Plug Removal and Installation” in Section 1H (Page 1H-3).

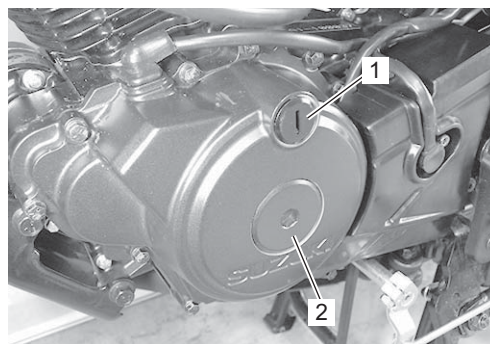
Inspection

The valve clearance specification is different between the intake and exhaust valves. Valve clearance adjustment must be checked and adjusted, a) at the time of periodic inspection, b) when the valve mechanism is serviced, and c) when the camshaft is removed for servicing.

NOTE

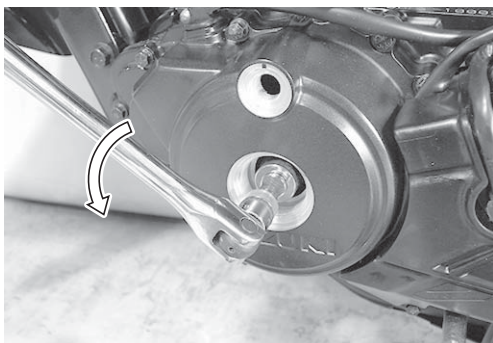
- The piston must be at “TDC” in the compression stroke in order to check the valve clearance or to adjust valve clearance.
- The clearance specification is in COLD state.
- For checking the valve clearance, rotate the crankshaft in the normal running direction.

- 1) Remove the valve timing inspection plug (1) and generator cover plug (2).

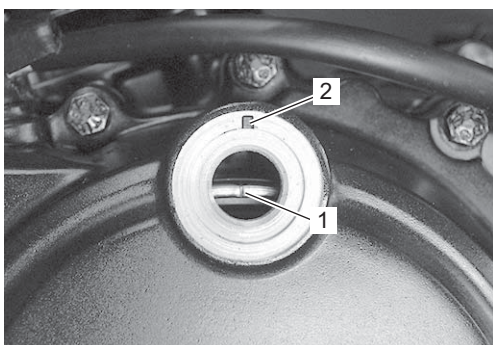


IF34J1140027-01

- 2) Turn the crankshaft to bring the "TDC" line (1) on the generator rotor to the index mark (2) on the generator cover.



IF34J1140028-01



IF34J1140029-01

- 3) Measure the valve clearance inserting a thickness gauge between the valve stem end and adjusting screw (1). If the clearance is out of specification, loosen the lock-nut (2) and adjust the adjusting screw to the specified range.

Special tool

(A): Thickness Gauge

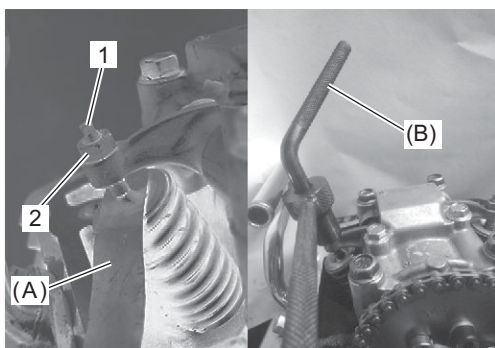
(B): Valve adjusting wrench (tappet & socket)

Valve clearance (cold) (IN.)

Standard: 0.04 – 0.08 mm (0.0016 – 0.0031 in)

Valve clearance (cold) (EX.)

Standard: 0.12 – 0.16 mm (0.0047 – 0.0063 in)

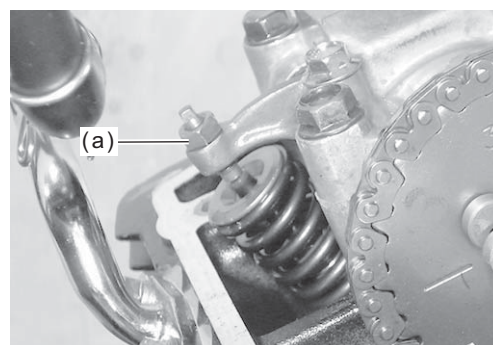


IF34J1140030-01

- 4) After finishing the valve clearance adjustment, tighten the lock-nut to the specified torque.

Tightening torque

Valve clearance adjusting screw lock-nut (a): 10 N·m (1.0 kgf-m, 7.5 lbf-ft)



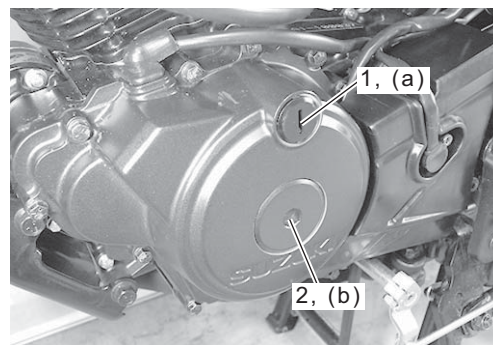
IF34J1140031-01

- 5) Install the new O-rings to valve timing inspection plug (1) and generator cover plug (2), and then tighten each plug to the specified torque.

Tightening torque

Valve timing inspection plug (a): 2.3 N·m (0.23 kgf-m, 2.0 lbf-ft)

Generator cover plug (b): 11 N·m (1.1 kgf-m, 8.5 lbf-ft)

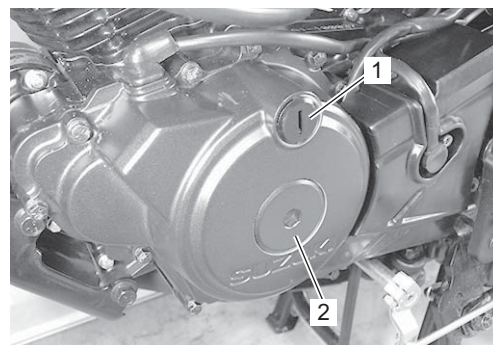


IF34J1140032-01

Cam Chain Tension Adjuster / Camshaft Housing / Camshaft Removal

BENF34J11406046

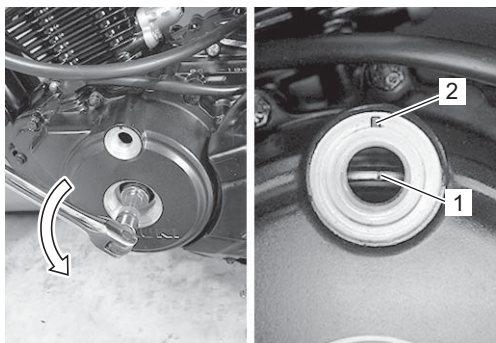
- 1) Remove the cylinder head cover. (Page 1D-9)
- 2) Remove the spark plug. (Page 1H-3)
- 3) Remove the valve timing inspection plug (1) and generator cover plug (2).



IF34J1140027-01

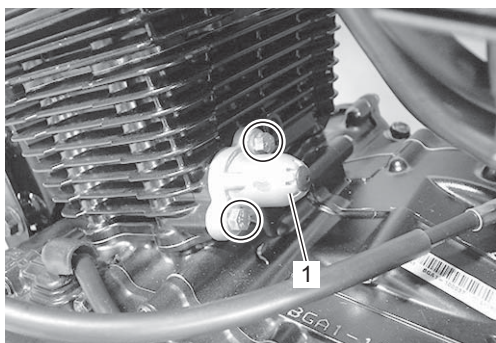
1D-12 Engine Mechanical:

- 4) Turn the crankshaft to bring the "TDC" line (1) on the generator rotor to the index mark (2) on the generator cover.



IF34J1140033-01

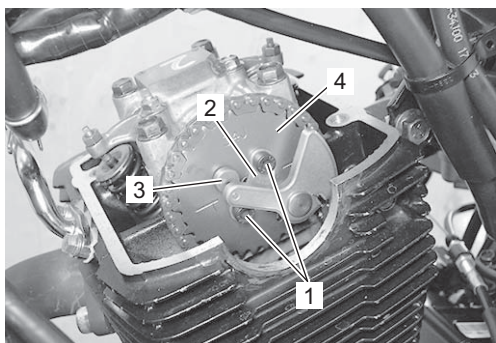
- 5) Remove the cam chain tension adjuster (1) and gasket.



IF34J1140034-01

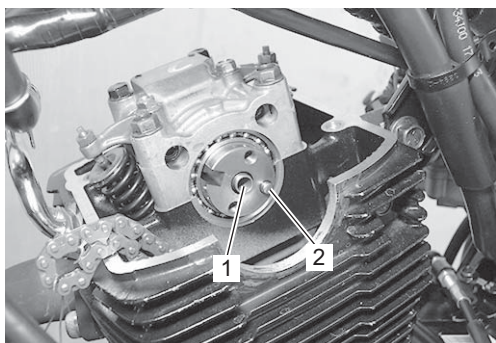
- 6) Hold the crankshaft and remove the bolts (1).

- 7) Remove the washer (2), decompression cam (3) and camshaft sprocket (4).



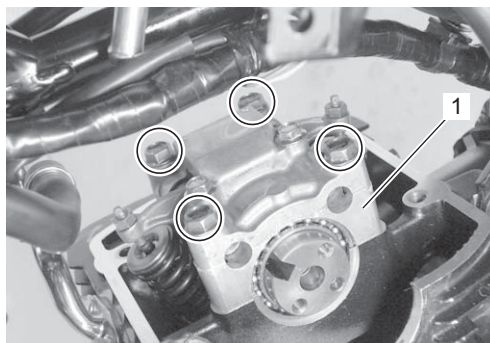
IF34J1140035-01

- 8) Remove the dowel pin (1) and locating pin (2).



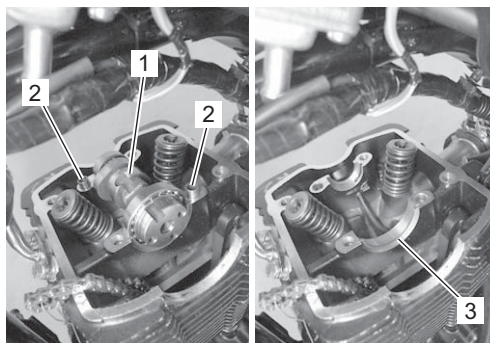
IF34J1140036-01

- 9) Remove the camshaft housing (1).



IF34J1140037-01

- 10) Remove the camshaft (1), dowel pins (2) and C-ring (3).

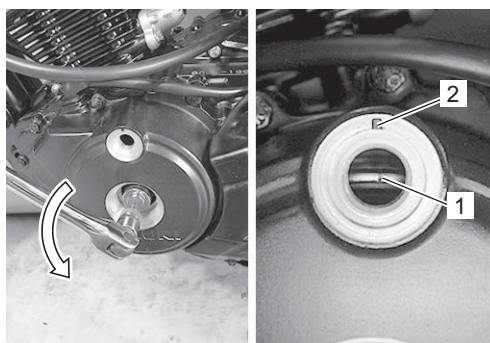


IF34J1140038-01

Cam Chain Tension Adjuster / Camshaft Housing / Camshaft Installation

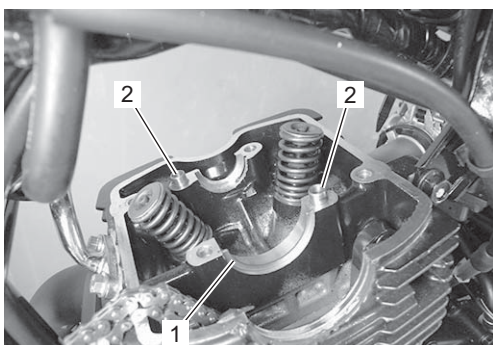
BENF34J11406047

- 1) Turn the crankshaft to align the "TDC" line (1) on the generator rotor with the index mark (2) on the generator cover while keeping the cam chain pulled upward.



IF34J1140033-01

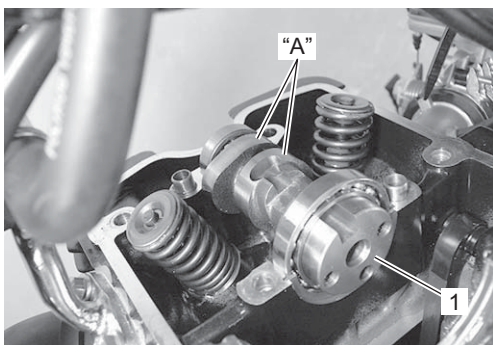
- 2) Install the C-ring (1) and dowel pins (2).



IF34J1140039-02

- 3) Apply molybdenum oil solution to the cam faces and install the camshaft (1).

“A”: Assembly lubrication (Molybdenum oil solution)

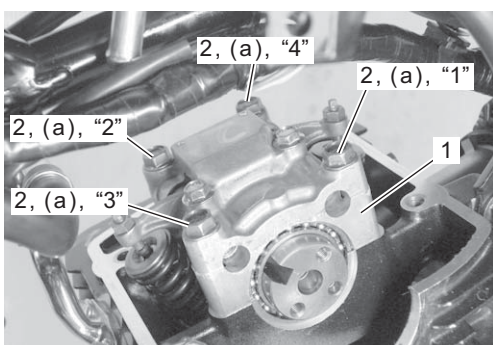


IF34J1140155-01

- 4) Install the camshaft housing (1) and tighten the bolts (2) to the specified torque in order of “1” → “4”.

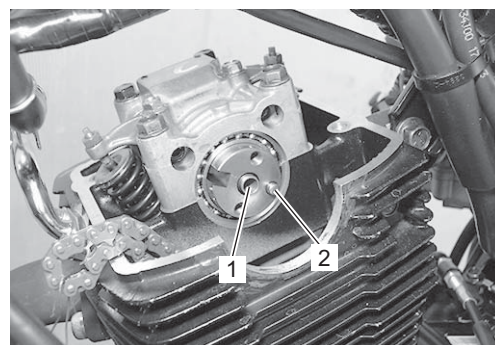
Tightening torque

Camshaft housing bolt (a): 10 N·m (1.0 kgf-m, 7.5 lbf-ft)



IF34J1140040-01

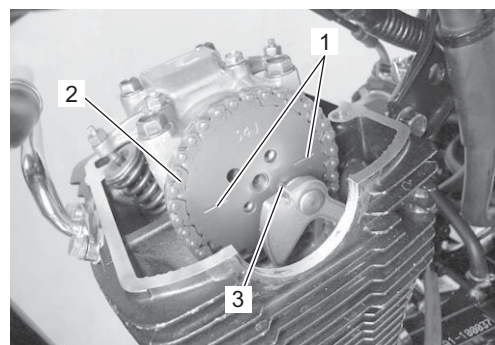
- 5) Install the dowel pin (1) and locating pin (2).



IF34J1140036-01

- 6) Align the engraved lines (1) on the camshaft sprocket with the cylinder head top surface and engage the cam chain (2) with the camshaft sprocket.

- 7) Make sure that the locating pin (3) on the camshaft aligns with the locating pin hole on the camshaft sprocket.



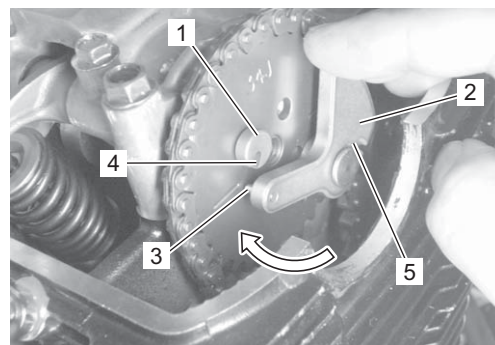
IF34J1140041-02

- 8) Install the decompression cam (1).

- 9) Turn the decompression arm (2) 140° clockwise and align the decompression arm pin (3) with the decompression cam cutaway (4).

NOTE

Make sure that the decompression spring (5) is hooked on the decompression arm cutaway.



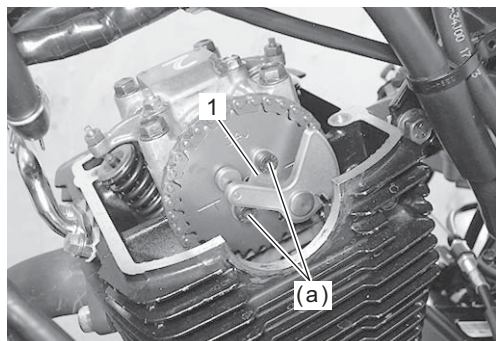
IF34J1140042-01

1D-14 Engine Mechanical:

- 10) Install the washer (1) and tighten the camshaft sprocket bolts to the specified torque.

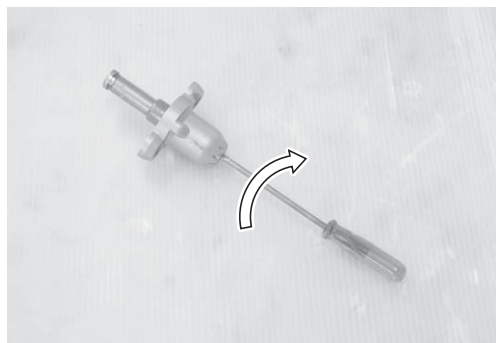
Tightening torque

Camshaft sprocket bolt (a): 10 N·m (1.0 kgf-m, 7.5 lbf-ft)



IF34J1140043-01

- 11) Turn the adjusting screw clockwise with a flat-bladed screwdriver.



IF34J1140044-03

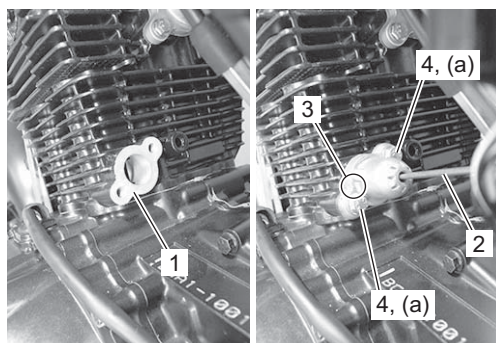
- 12) Fit a new gasket (1).

- 13) Holding the push rod with the flat-bladed screwdriver (2), install the cam chain tension adjuster with "UP" mark (3) faced to the top of cylinder head.

- 14) Tighten the bolts (4) to the specified torque.

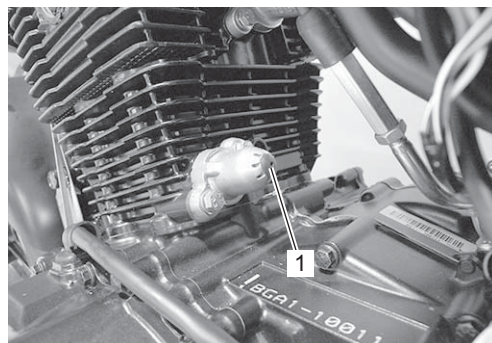
Tightening torque

Cam chain tension adjuster mounting bolt (a): 10 N·m (1.0 kgf-m, 7.5 lbf-ft)



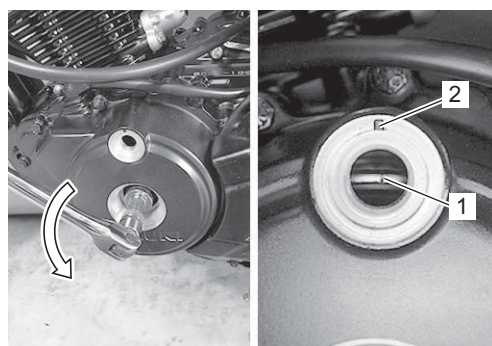
IF34J1140045-02

- 15) Install the rubber cap (1).



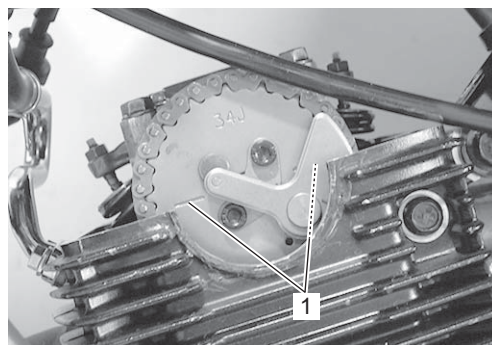
IF34J1140046-02

- 16) Turn the crankshaft 720 degrees (2 turns) and align the "TDC" line (1) on the generator rotor with the index mark (2) on the generator cover.



IF34J1140033-01

- 17) Recheck the positions of the engraved lines (1) on the camshaft sprocket with the cylinder head top surface.



IF34J1140047-01

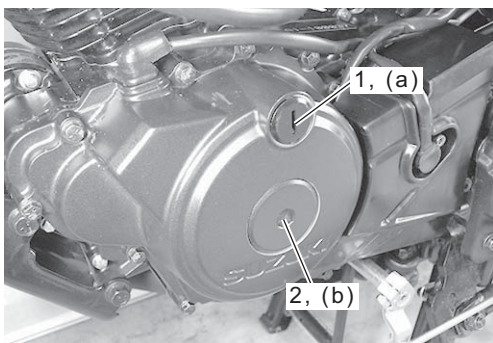
- 18) Inspect the valve clearance. (Page 1D-10)

- 19) Install the new O-rings to valve timing inspection plug (1) and generator cover plug (2), and then tighten each plug to the specified torque.

Tightening torque

Valve timing inspection plug (a): 2.3 N·m (0.23 kgf-m, 2.0 lbf-ft)

Generator cover plug (b): 11 N·m (1.1 kgf-m, 8.5 lbf-ft)



IF34J1140032-01

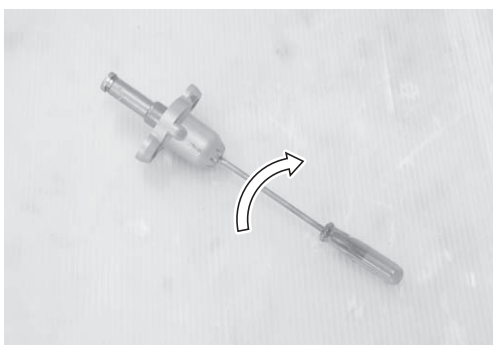
- 20) Install the spark plug. (Page 1H-3)
 21) Install the cylinder head cover. (Page 1D-9)

Cam Chain Tension Adjuster Inspection

BENF34J11406048

Refer to “Cam Chain Tension Adjuster / Camshaft Housing / Camshaft Removal” (Page 1D-11) and “Cam Chain Tension Adjuster / Camshaft Housing / Camshaft Installation” (Page 1D-12).

Insert a (–) screwdriver into the slotted end of cam chain tension adjuster and turn it clockwise to lessen the tension and release the (–) screwdriver. Then check the push rod movement. If the push rod is stuck or spring mechanism failed, replace the cam chain tension adjuster with a new one.



IF34J1140044-03

Camshaft Sprocket Inspection

BENF34J11406049

Refer to “Cam Chain Tension Adjuster / Camshaft Housing / Camshaft Removal” (Page 1D-11) and “Cam Chain Tension Adjuster / Camshaft Housing / Camshaft Installation” (Page 1D-12).

Check the camshaft sprocket teeth for wear or damage. If any defects are found, replace the camshaft sprocket and cam chain as a set. (Page 1D-31)



IF34J1140048-01

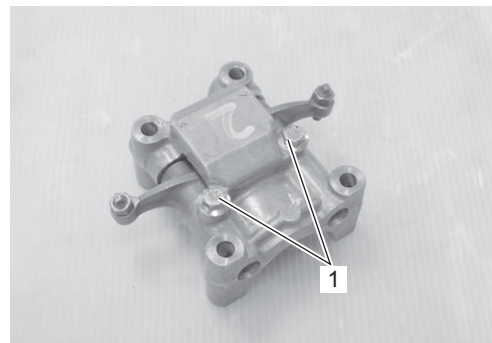
Camshaft Housing Disassembly and Reassembly

BENF34J11406050

Refer to “Cam Chain Tension Adjuster / Camshaft Housing / Camshaft Removal” (Page 1D-11) and “Cam Chain Tension Adjuster / Camshaft Housing / Camshaft Installation” (Page 1D-12).

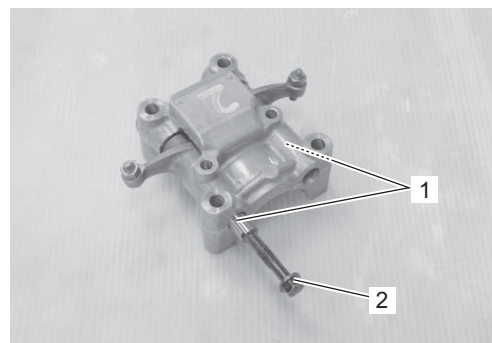
Disassembly

- 1) Remove the rocker arm shaft bolts (1).



IF34J1140049-01

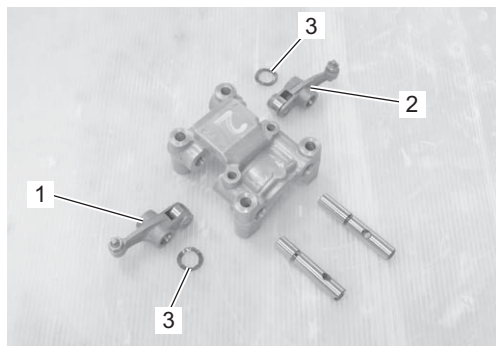
- 2) Pull out the rocker arm shafts (1) using an appropriate length of M6 bolt (2).



IF34J1140050-01

1D-16 Engine Mechanical:

- 3) Remove the exhaust valve rocker arm (1), intake valve rocker arm (2) and wave washers (3).

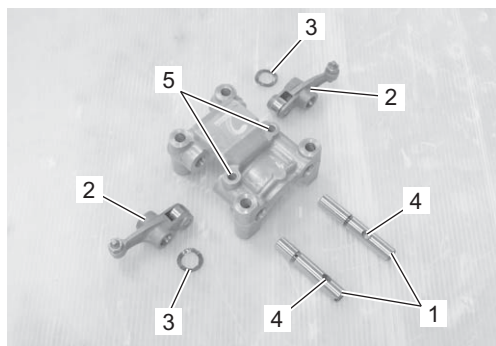


IF34J1140051-01

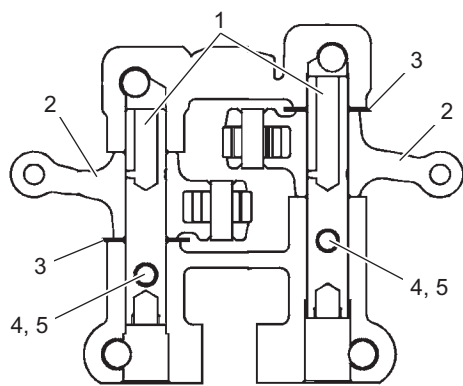
Reassembly

Reassemble the camshaft housing in the reverse order of disassembly. Pay attention to the following points:

- Apply engine oil to the rocker arm shafts (1) sufficiently.
- Install the rocker arms (2), wave washers (3) and rocker arm shafts, and then align the rocker arm shaft bolt holes (4) with the camshaft housing holes (5).



IF34J1140156-01



[A]

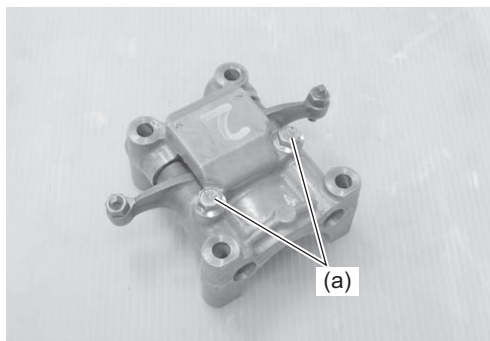
IF34J1140157-01

[A]: Camshaft sprocket side

- Tighten the rocker arm shaft bolts to the specified torque.

Tightening torque

Rocker arm shaft bolt (a): 4 N·m (0.41 kgf-m, 3.0 lbf-ft)



IF34J1140158-01

Rocker Arm Shaft / Rocker Arm Inspection

BENF34J11406051

Refer to "Camshaft Housing Disassembly and Reassembly" (Page 1D-15).

Rocker Arm Shaft

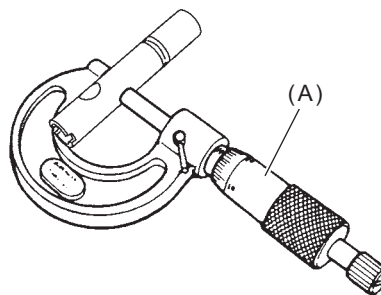
On the sliding surface, take two measurements at right angle to each other. If the outside diameter is less than the standard value, replace the shaft.

Special tool

(A): Micrometer

Rocker arm shaft O.D. (IN. & EX.)

Standard: 8.981 – 8.990 mm (0.3536 – 0.3539 in)



IF34J1140053-02

Rocker Arm

Measure the rocker arm inside diameter in two directions at right angle to each other. If the inside diameter measured exceeds the standard value, replace the rocker arm.

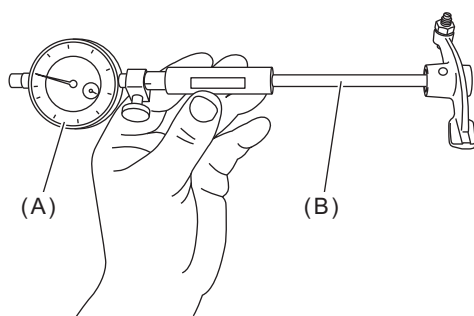
Special tool

(A): Dial Gauge

(B): Small Bore Gauge attachment

Rocker arm I.D. (IN. & EX.)

Standard: 9.003 – 9.018 mm (0.3544 – 0.3550 in)



IF34J1140159-02

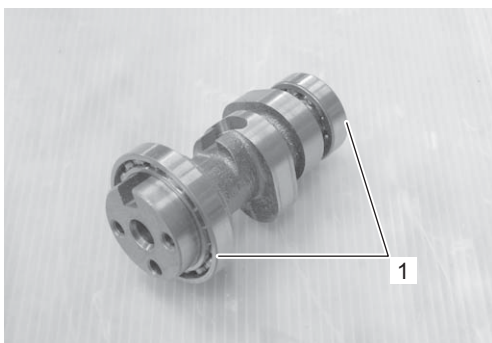
Camshaft Inspection

BENF34J11406052

Refer to “Cam Chain Tension Adjuster / Camshaft Housing / Camshaft Removal” (Page 1D-11) and “Cam Chain Tension Adjuster / Camshaft Housing / Camshaft Installation” (Page 1D-12).

Camshaft Bearing

Rotate the camshaft bearing outer races (1) by finger to inspect for abnormal play, noise and smooth rotation. Replace the bearing if there is anything unusual.



IF34J1140054-02

Camshaft

Check for abnormal surface damage or wear on the cam face.

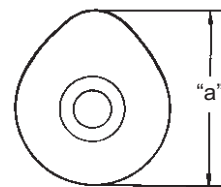
Measure the cam height “a” with a micrometer. Replace the camshaft if found worn down to the service limit.

Special tool

Micrometer

Cam height (IN. & EX.)

Service limit: 33.21 mm (1.307 in)



IF34J1140161-01

Camshaft Bearing Removal and Installation

BENF34J11406053

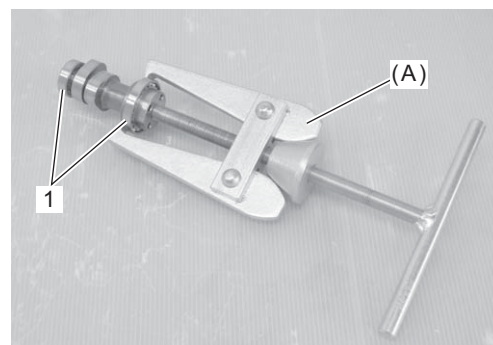
Refer to “Cam Chain Tension Adjuster / Camshaft Housing / Camshaft Removal” (Page 1D-11) and “Cam Chain Tension Adjuster / Camshaft Housing / Camshaft Installation” (Page 1D-12).

Removal

Remove the camshaft bearings (1) with the special tool.

Special tool

(A): Bearing / Gear Puller



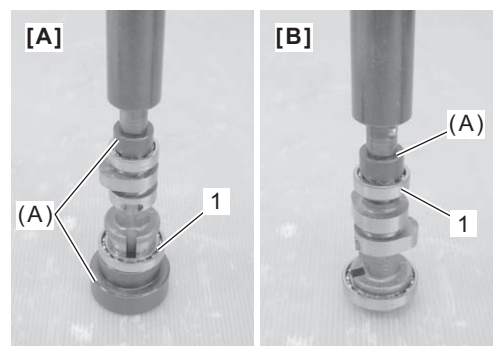
IF34J1140055-01

Installation

Install the new camshaft bearings (1) with the special tool.

Special tool

(A): Bearing Installer Set



IF34J1140056-02

[A]: Left side





[B]: Right side

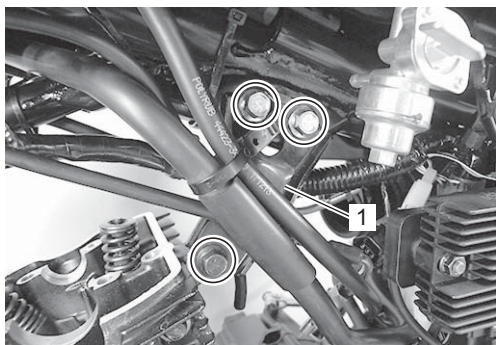
Cylinder Head Assembly / Cam Chain Guide / Cylinder Removal and Installation

BENF34J11406054

Refer to "Cam Chain Tension Adjuster / Camshaft Housing / Camshaft Removal" (Page 1D-11) and "Cam Chain Tension Adjuster / Camshaft Housing / Camshaft Installation" (Page 1D-12).

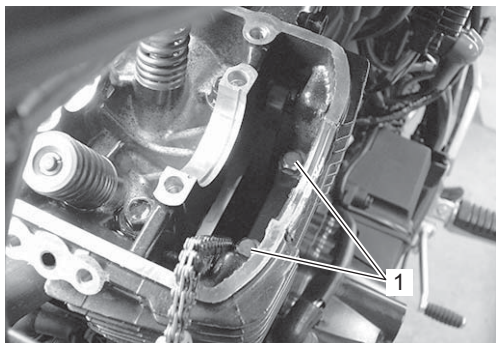
Removal

- 1) Remove the following parts.
 - Muffler:  (Page 1K-2)
 - Intake pipe:  (Page 1D-9)
 - PAIR pipe:  (Page 1B-3)
 - PAIR control valve assembly:  (Page 1B-4)
- 2) Remove the engine mounting upper plate (1).



IF34J1140057-01

- 3) Remove the cylinder head bolts (M6) (1).



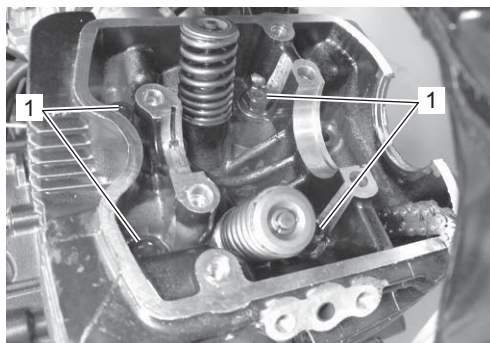
IF34J1140058-02

- 4) Remove the cylinder head bolts (M8) (1) and washers.

NOTE

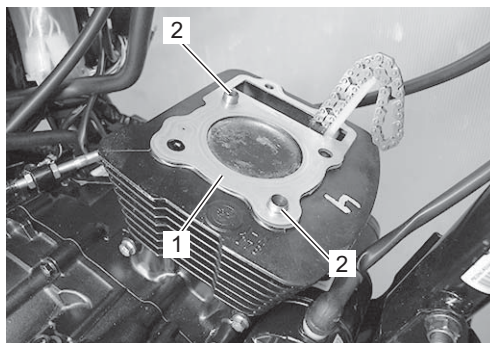
Be sure to loosen the cylinder head bolts (M8) evenly and in a crisscross pattern.

- 5) Remove the cylinder head assembly.



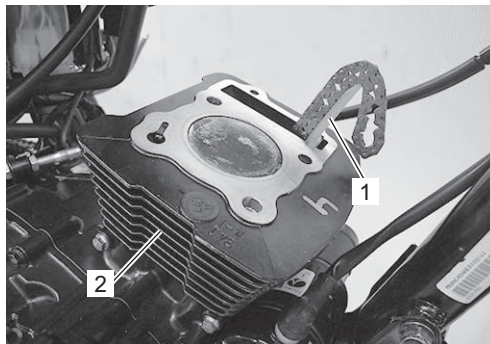
IF34J1140059-02

- 6) Remove the cylinder head gasket (1) and dowel pins (2).



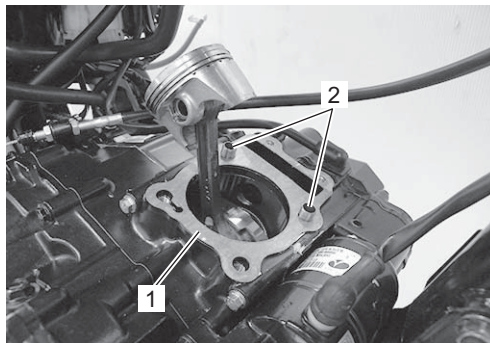
IF34J1140060-01

- 7) Remove the cam chain guide (1) and cylinder (2).



IF34J1140061-01

- 8) Remove the cylinder gasket (1) and dowel pins (2).

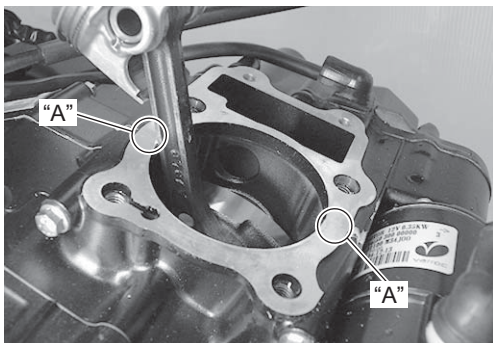


IF34J1140062-01

Installation

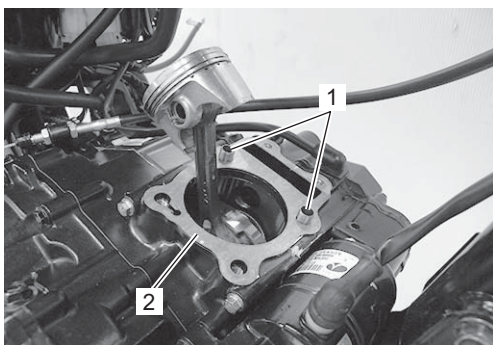
- 1) Thoroughly wipe off oil from the fitting surface of the crankcase.
- 2) Coat sealant lightly to the mating surfaces at the parting line between the right and left crankcases as shown.

“A”: (SUZUKI BOND 1207B)



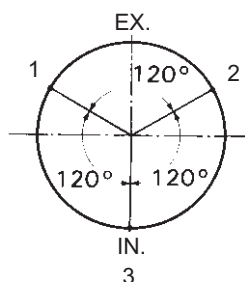
IF34J1140063-01

- 3) Install the dowel pins (1) and new cylinder gasket (2).



IF34J1140160-01

- 4) Position the gaps of the three rings and side rails as shown.

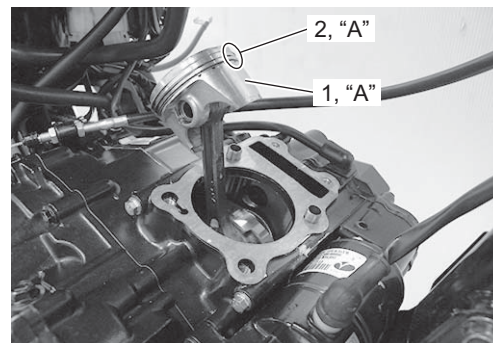


ID26J1140121-04

1.	2nd ring and lower side rail
2.	Upper side rail
3.	1st ring and spacer

- 5) Apply molybdenum oil to the sliding surface of the piston (1), piston rings (2) and cylinder wall.

“A”: Assembly lubrication (Molybdenum oil solution)

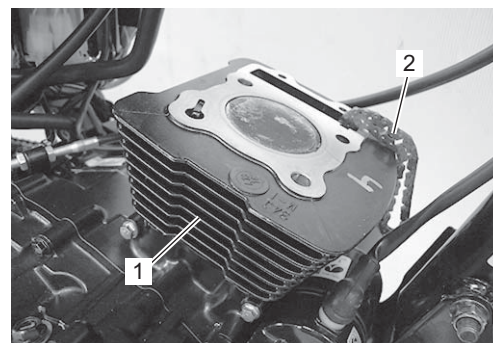


IF34J1140064-03

- 6) Hold the piston rings in proper positions, and insert the piston into the cylinder (1). (Page 1D-28)

NOTE

- When inserting the piston into the cylinder, take care not to bend the piston rings.
- When installing the cylinder, keep the cam chain (2) taut.

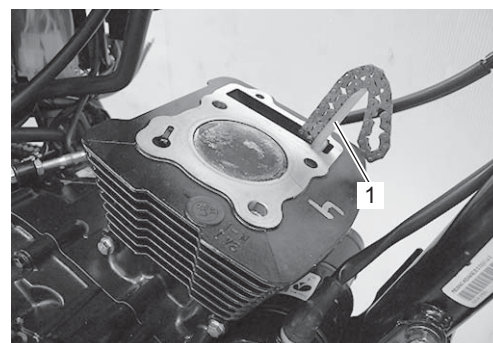


IF34J1140065-01

- 7) Install the cam chain guide (1).

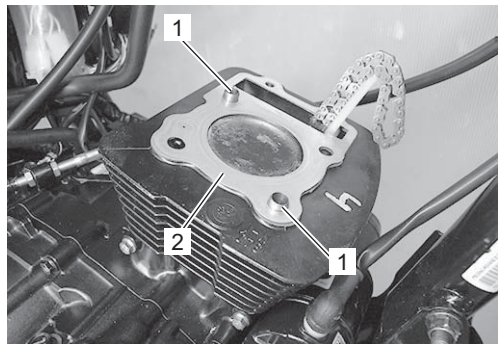
NOTE

There is a guide holder at the bottom of cam chain guide cast in the crankcase. Be sure that the cam chain guide is inserted to the holder properly.



IF34J1140066-01

- 8) Install the dowel pins (1) and new cylinder head gasket (2).



IF34J1140067-01

- 9) Place the cylinder head assembly on the cylinder.

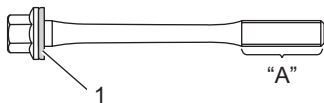
NOTE

When installing the cylinder head, keep the cam chain taut.

- 10) Apply engine oil to the washers (1) and thread portion "A" of the cylinder head bolts before installing them.

NOTE

The rounded side of the washer should be positioned upside.

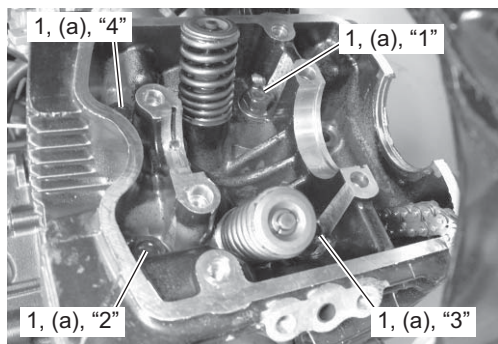


IE12J1140074-01

- 11) Tighten the cylinder head bolts (M8) (1) to the specified torque in order of in order of "1" → "4".

Tightening torque

Cylinder head bolt (M8) (a): 25 N·m (2.5 kgf-m, 18.5 lbf-ft)

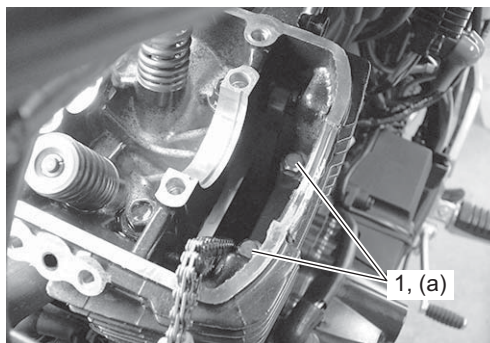


IF34J1140068-02

- 12) Tighten the cylinder head bolts (M6) (1) to the specified torque.

Tightening torque

Cylinder head bolt (M6) (a): 10 N·m (1.0 kgf-m, 7.5 lbf-ft)



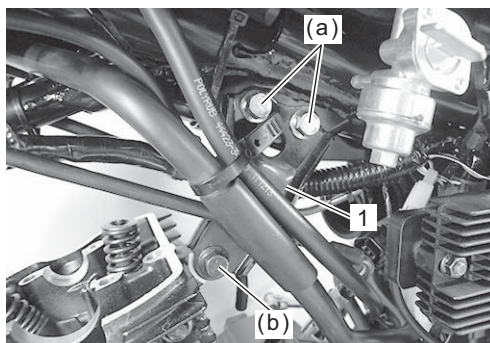
IF34J1140069-02

- 13) Install the engine mounting upper plate (1) and tighten the bolts to the specified torque.

Tightening torque

Engine mounting upper plate bolt (a): 23 N·m (2.3 kgf-m, 17.0 lbf-ft)

Engine mounting upper bolt (b): 23 N·m (2.3 kgf-m, 17.0 lbf-ft)



IF34J1140070-01

- 14) Install the removed parts.

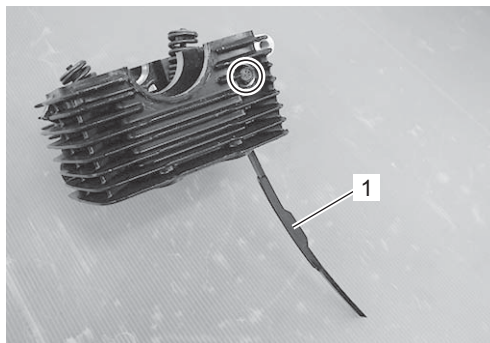
Cylinder Head Disassembly and Reassembly

BENF34J11406055

Refer to "Cylinder Head Assembly / Cam Chain Guide / Cylinder Removal and Installation" (Page 1D-18).

Disassembly

- 1) Remove the cam chain tensioner (1).



IF34J1140071-02

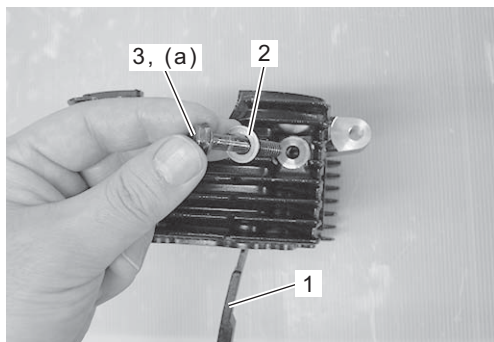
- 2) Remove the valves and valve springs. (Page 1D-21)

Reassembly

- 1) Install the valves and valve springs. (Page 1D-21)
- 2) Install the cam chain tensioner (1).
- 3) Install the new washer (2) to the bolt (3), and then tighten the bolt to the specified torque.

Tightening torque

Cam chain tensioner bolt (a): 10 N·m (1.0 kgf-m, 7.5 lbf-ft)



IF34J1140072-01

Cylinder Head Inspection

BENF34J11406056

Refer to "Cylinder Head Assembly / Cam Chain Guide / Cylinder Removal and Installation" (Page 1D-18).

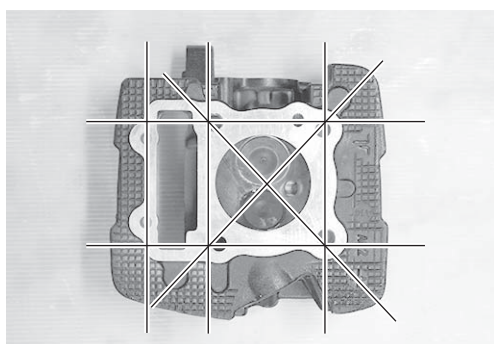
- 1) Decarbonize the combustion chamber.
- 2) Check the gasket surface of the cylinder head for distortion with a straightedge and thickness gauge, taking a clearance reading at several places as indicated. If the largest reading at any position of the straightedge exceeds the limit, replace the cylinder head.

Special tool

Thickness Gauge

Cylinder head distortion

Service limit: 0.05 mm (0.002 in)



IF34J1140073-01

Cam Chain Tensioner Inspection

BENF34J11406057

Refer to "Cylinder Head Disassembly and Reassembly" (Page 1D-20).

Check the contacting surface of the cam chain tensioner. If it is worn or damaged, replace it with a new one.



IF34J1140074-02

Cam Chain Guide Inspection

BENF34J11406058

Refer to "Cylinder Head Assembly / Cam Chain Guide / Cylinder Removal and Installation" (Page 1D-18).

Check the contacting surface of the cam chain guide. If it is worn or damaged, replace it with a new one.



IF34J1140075-01

Valve / Valve Spring Removal and Installation

BENF34J11406017

Refer to "Cylinder Head Assembly / Cam Chain Guide / Cylinder Removal and Installation" (Page 1D-18).

NOTICE

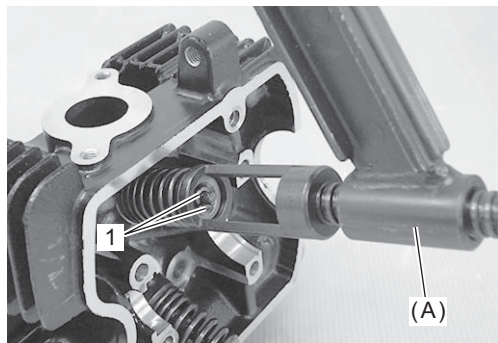
**Identify the position of each removed part.
Organize the parts so that they can be
reinstalled in their original positions.**

Removal

- 1) Using the special tools, compress the valve spring and remove the two cotter halves (1) from the valve stem.

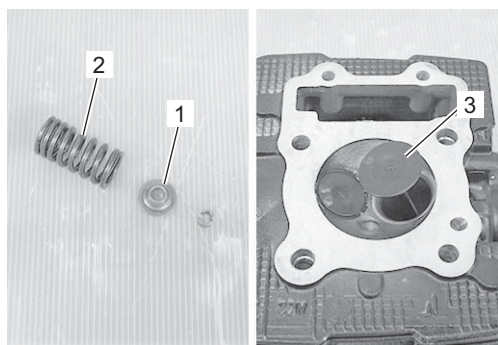
Special tool

(A): Valve spring compressor



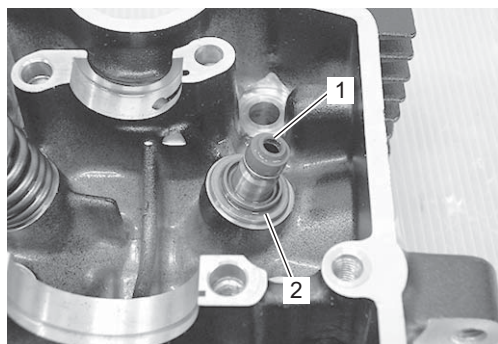
IF34J1140076-01

- 2) Remove the valve spring retainer (1) and valve spring (2).
- 3) Pull out the valve (3) from the combustion chamber side.



IF34J1140077-01

- 4) Remove the oil seal (1) and spring seat (2).



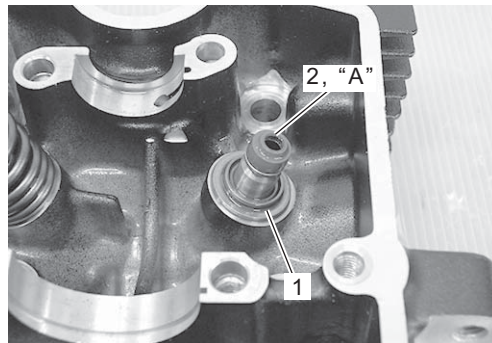
IF34J1140078-01

- 5) Remove the other valve in the same manner as described previously.

Installation

- 1) Install the valve spring seat (1).
- 2) Apply molybdenum oil solution to the new oil seal (2), and press-fit it into position.

“A”: Assembly lubrication (Molybdenum oil solution)



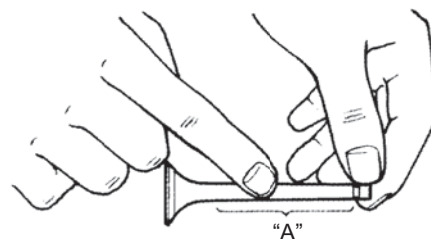
IF34J1140079-01

- 3) Insert the valve, with its stem coated with molybdenum oil solution all around and along the full stem length without any break.

NOTICE

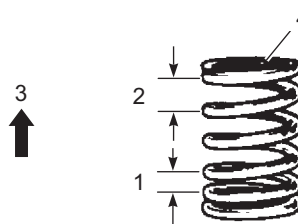
When inserting the valve, take care not to damage the lip of the oil seal.

“A”: Assembly lubrication (Molybdenum oil solution)



ID26J1140087-01

- 4) Install the valve spring with the small-pitch portion (1) facing cylinder head.



ID26J1140274-03

2. Large-pitch portion	4. Paint
3. UPWARD	

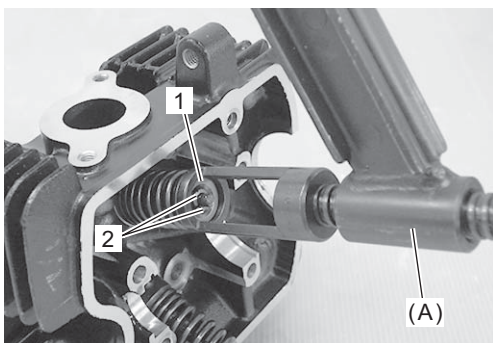
- 5) Put on the valve spring retainer (1), and using the special tools, press down the spring, fit the cotter halves (2) to the stem end, and release the lifter to allow the cotter halves to wedge in between retainer and stem.

NOTICE

- Be sure to restore each spring and valve to their original positions.
- Be careful not to damage the valve and valve stem when handling it.
- Compressing of the valve spring must be restricted to the extent only necessary to prevent the spring from fatigue.

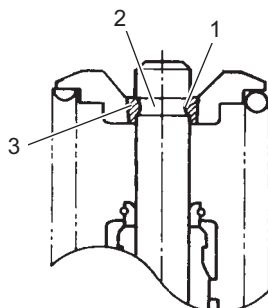
Special tool

(A): Valve spring compressor



IF34J1140080-01

- 6) Be sure that the rounded lip (1) of the cotter (3) fits snugly into the groove (2) in the stem end.



IE12J1140082-01

Valve Inspection

BENF34J11406018

Refer to "Valve / Valve Spring Removal and Installation" (Page 1D-21).

Valve Stem Runout

Support the valve using V-blocks, and check its runout using the dial gauge as shown in the figure. If the runout exceeds the service limit, replace the valve.

Special tool

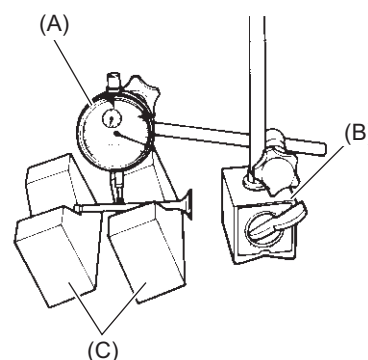
(A): Dial Gauge

(B): Dial Gauge Check

(C): V Block

Valve stem runout (IN. & EX.)

Service limit: 0.05 mm (0.002 in)



ID26J1140091-01

Valve Head Radial Runout

Place the dial gauge at a right angle to the valve head face and measure the valve head radial runout. If it measures more than the service limit, replace the valve.

Special tool

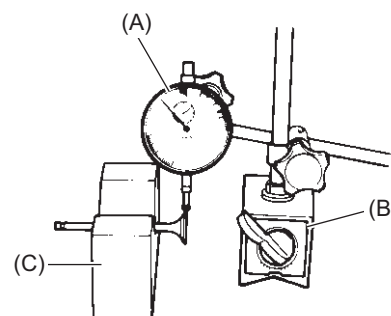
(A): Dial Gauge

(B): Dial Gauge Check

(C): V Block

Valve head radial runout (IN. & EX.)

Service limit: 0.03 mm (0.001 in)



ID26J1140092-01

Valve Face Wear

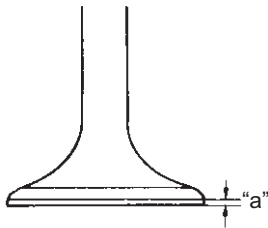
Visually inspect each valve face for wear. Replace any valve with an abnormally worn face. The thickness of the valve face decreases as the face wears. Measure the valve head "a". If it is out of specification replace the valve with a new one.

Special tool

Vernier Caliper

Valve head thickness "a" (IN. & EX.)

Service limit: 0.5 mm (0.02 in)



IF34J1140162-01

Valve Stem Deflection

Lift the valve about 10 mm (0.39 in) from the valve seat. Measure the valve stem deflection in two directions, (1) and (2), perpendicular to each other, positioning the dial gauge as shown in the figure. If the deflection measured exceeds the service limit, then determine whether the valve or the guide should be replaced with a new one.

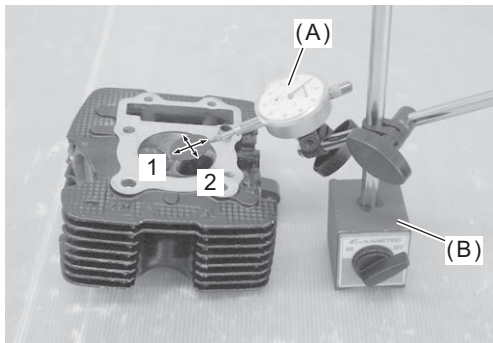
Special tool

(A): Dial Gauge

(B): Dial Gauge Check

Valve stem deflection (IN. & EX.)

Service limit: 0.35 mm (0.014 in)



IF34J1140081-01

Valve Stem Wear

Measure the valve stem O.D. using the micrometer. If the valve stem is worn down to the limit, as measured with a micrometer, replace the valve. If the stem is within the limit, then replace the guide. After replacing valve or guide, be sure to recheck the deflection.

Special tool

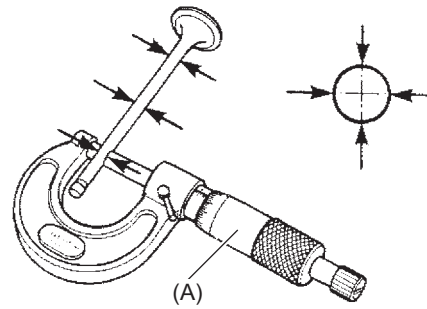
(A): Micrometer

Valve stem O.D. (IN.)

Standard: 4.975 – 4.990 mm (0.1959 – 0.1965 in)

Valve stem O.D. (EX.)

Standard: 4.955 – 4.970 mm (0.1951 – 0.1957 in)



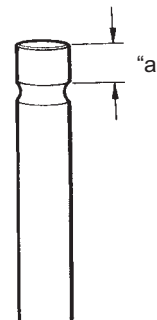
ID26J1140094-01

Valve Stem End Condition

Inspect the valve stem end face for pitting and wear. If pitting or wear is present, resurface the valve stem end. Make sure that the length "a" is not less than service limit. If this length becomes less than service limit, replace the valve.

Valve stem end length (IN. & EX.)

Service limit: 2.5 mm (0.099 in)



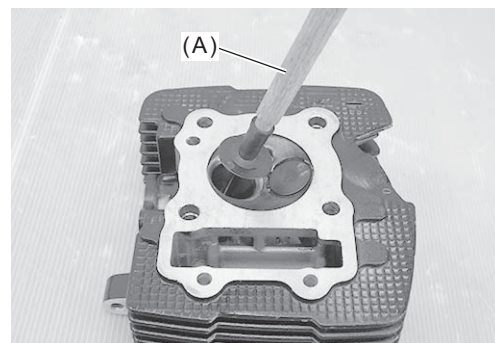
IE12J1140084-01

Valve Seat Width

- 1) Visually check for valve seat width on each valve face. If the valve face has worn abnormally, replace the valve.
- 2) Coat the valve seat with a red lead (Prussian Blue) and set the valve in place.
- 3) Rotate the valve with light pressure.

Special tool

(A): Valve Lapper Set



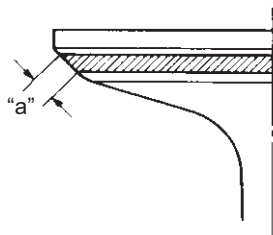
IF34J1140082-01

- 4) Check that the transferred red lead (Blue) on the valve face is uniform all around and in center of the valve face.

If the seat width "a" measured exceeds the standard value, or seat width is not uniform reface the seat using the seat cutter. (Page 1D-27)

Valve seat width (IN. & EX.)

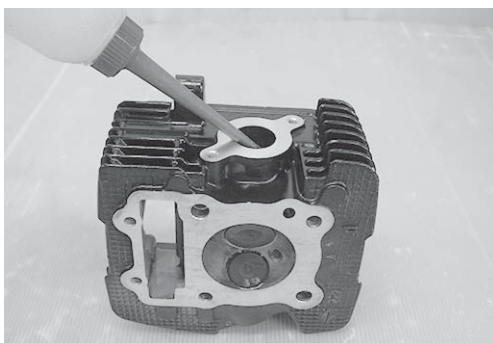
Standard: 0.9 – 1.1 mm (0.035 – 0.043 in)



IF34J1140163-01

Valve Seat Sealing Condition

- 1) Clean and assemble the cylinder head and valve components.
- 2) Fill the intake and exhaust ports with gasoline to check for leaks. If any leaks occur, inspect the valve seat and face for burrs or other things that could prevent the valve from sealing. (Page 1D-27)



IF34J1140083-01

Valve Spring Inspection

BENF34J11406020

Refer to "Valve / Valve Spring Removal and Installation" (Page 1D-21).

The force of the coil spring keeps the valve seat tight. Weakened spring results in reduced engine power output and often accounts for the chattering noise coming from the valve mechanism.

Check the valve springs for proper strength by measuring its free length and also by the force required to compress it. If the spring length is less than the service limit or if the force required to compress the spring does not fall within the range specified, replace spring as a set.

Special tool

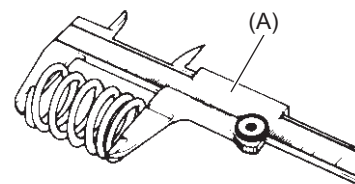
(A): Vernier Caliper

Valve spring free length (IN. & EX.)

Service limit: 39.0 mm (1.535 in)

Valve spring preload when compressed to 35.8 mm (1.41 in) (IN. & EX.)

Standard: 114 – 131 N (11.6 – 13.4 kgf, 25.6 – 29.4 lbf)



ID26J1140098-01



ID26J1140263-01

Valve Guide Replacement

BENF34J11406023

Refer to "Valve / Valve Spring Removal and Installation" (Page 1D-21)

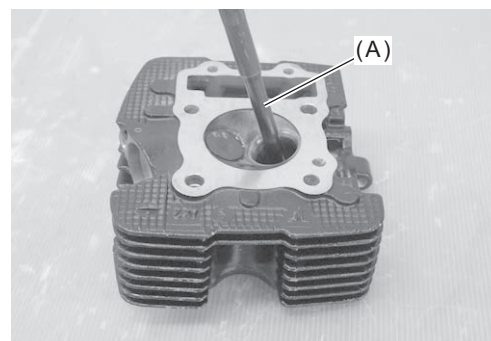
- 1) Using the special tool, drive the valve guide out toward the camshaft side.

Special tool

(A): Valve Guide Installer / Remover

NOTE

- Discard the removed valve guide sub assemblies.
- Only oversized valve guides are available as replacement parts. (Part No. 11115-34J70)



IF34J1140084-01

1D-26 Engine Mechanical:

- 2) Refinish the valve guide holes in the cylinder head using the special tools.
- 3) Remove the special tools by turning clockwise and raising them at the same time.

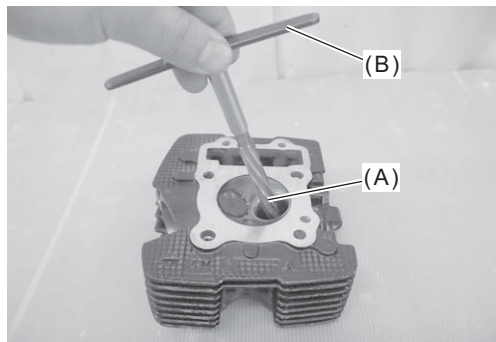
NOTICE

Never turn the special tools counterclockwise, as this will dull the blades.

Special tool

(A): Valve Guide Reamer

(B): Reamer Handle



IF34J1140085-01

- 4) Cool down the new valve guides in a freezer for about one hour and heat the cylinder head to 100 – 150 °C (212 – 302 °F).

NOTICE

Do not use a burner to heat the valve guide hole to prevent cylinder head distortion.

- 5) Apply engine oil to each valve guide and valve guide hole.

NOTICE

Failure to oil the valve guide hole before driving the new guide into place may result in a damaged guide or head.

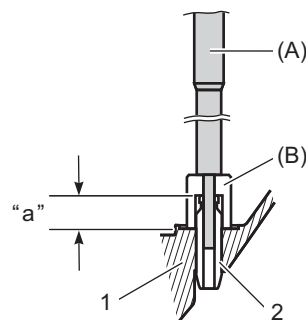
- 6) Drive the guide into the guide hole using the valve guide installer and attachment.

NOTE

Install the valve guide until the attachment contacts the cylinder head.

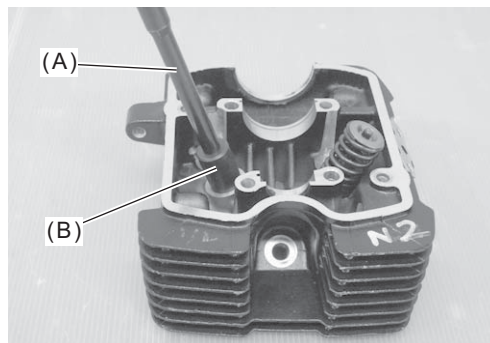
Special tool

(A): Valve Guide Installer / Remover



ID26J1140106-01

1. Cylinder head	"a": 17.0 mm (0.67 in)
2. Valve guide	



IF34J1140086-01

- 7) After installing the valve guides, refinish their guiding bores using the reamer. Be sure to clean and oil the guides after reaming.

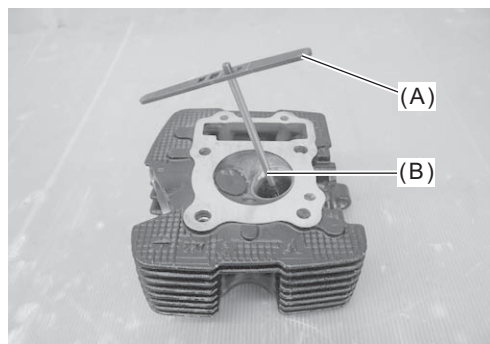
NOTE

- Cool down the cylinder head to ambient air temperature.
- Insert the reamer from the combustion chamber and always turn the reamer handle clockwise.

Special tool

(A): Reamer Handle

(B): Valve Guide Reamer



IF34J1140087-01

Valve Seat Repair

BENF34J11406019

Refer to "Valve / Valve Spring Removal and Installation" (Page 1D-21).

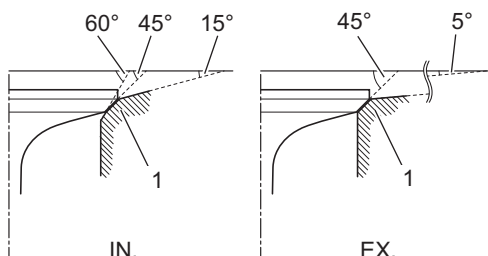
The valve seats (1) for intake and exhaust valves are machined to two or three different angles. The seat contact surface is cut at 45°.

NOTICE

- The valve seat contact area must be inspected after each cut.
- Do not use lapping compound after the final cut is made. The finished valve seat should have a velvety smooth finish but not a highly polished or shiny finish. This will provide a soft surface for the final seating of the valve which will occur during the first few seconds of engine operation.

NOTE

After servicing the valve seats, be sure to check the valve clearance after the cylinder head has been installed. (Page 1D-10)



IF34J1140088-01

	Intake	Exhaust
Seat angle	15°/45°/60°	5°/45°
Seat width	0.9 – 1.1 mm (0.035 – 0.043 in)	←
Valve diameter	29 mm (1.14 in)	23 mm (0.91 in)
Valve guide I.D.	5.000 – 5.012 mm (0.1969 – 0.1973 in)	←

Cylinder Inspection

BENF34J11406024

Refer to "Cylinder Head Assembly / Cam Chain Guide / Cylinder Removal and Installation" (Page 1D-18).

Cylinder Distortion

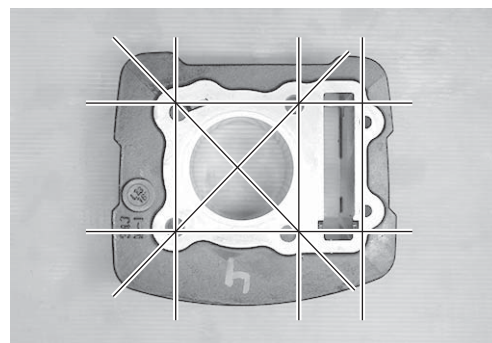
Check the gasket surface of the cylinder for distortion with a straightedge and thickness gauge, taking a clearance reading at several places as indicated. If the largest reading at any position of the straightedge exceeds the limit, replace the cylinder.

Special tool

Thickness Gauge

Cylinder distortion

Service limit: 0.05 mm (0.002 in)



IF34J1140089-01

Cylinder Bore

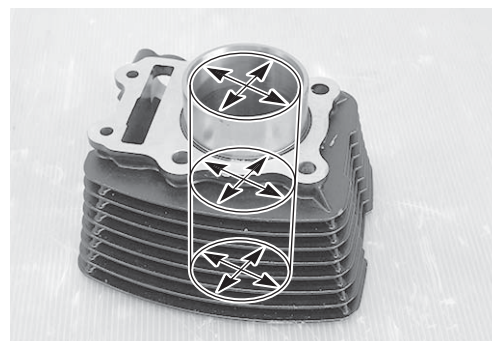
Check the cylinder wall for any scratches, nicks or other damage. Measure the cylinder bore diameter at six places.

Special tool

Cylinder Gauge Set

Cylinder bore

Standard: 56.000 – 56.015 mm (2.2047 – 2.2053 in)



IF34J1140090-01

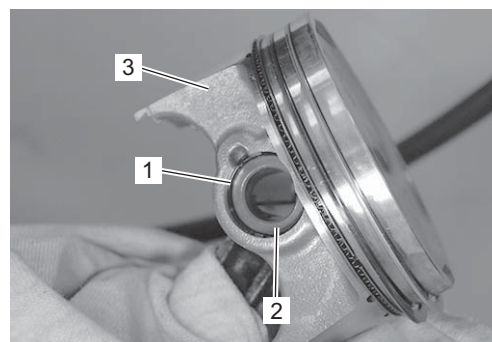
Piston Removal and Installation

BENF34J11406025

Refer to "Cylinder Head Assembly / Cam Chain Guide / Cylinder Removal and Installation" (Page 1D-18).

Removal

- 1) Place a clean rag over the cylinder base so as not to drop the piston pin circlip (1) into the crankcase.
- 2) Remove the piston pin circlip.
- 3) Draw out the piston pin (2) and remove the piston (3).



IF34J1140091-01

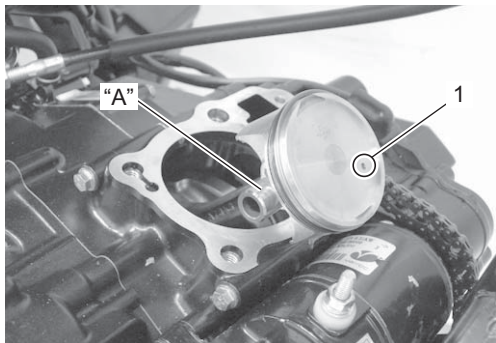
Installation

- 1) When installing the piston pin, apply molybdenum oil solution onto the piston pin.

NOTE

When installing the piston, the indent (1) on the piston head must be faced to exhaust side.

"A": Assembly lubrication (Molybdenum oil solution)

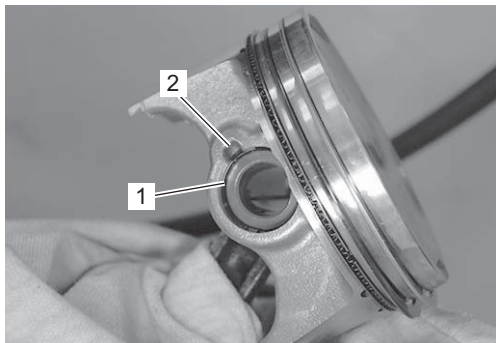


IF34J1140092-01

- 2) Place a clean rag over the cylinder base so as not to drop the piston pin circlip (1) into the crankcase.
- 3) Install the new piston pin circlip.

NOTE

End gap of the circlip should not be aligned with the cutaway (2) in the piston pin bore.



IF34J1140093-01

Piston Ring Removal and Installation

BENF34J11406026

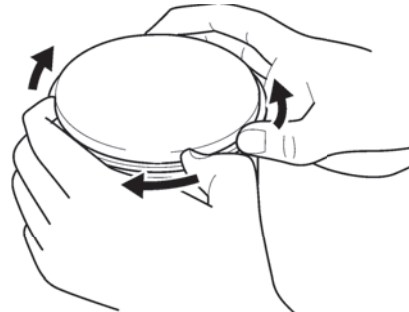
Refer to "Piston Removal and Installation" (Page 1D-27).

Removal

- 1) Carefully spread the ring opening with your thumbs and then push up the opposite side of the 1st ring to remove it.

NOTE

Do not expand the piston ring excessively since it is apt to be broken down.



I831G1140178-01

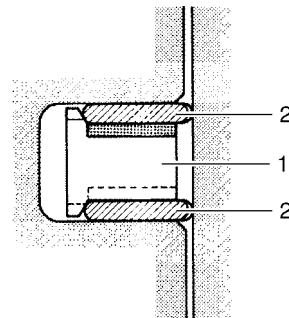
- 2) Remove the 2nd ring and oil ring in the same procedure.

Installation

NOTE

- When installing the piston ring, be careful not to damage the piston.
- Do not expand the piston ring excessively since it is apt to be broken down.

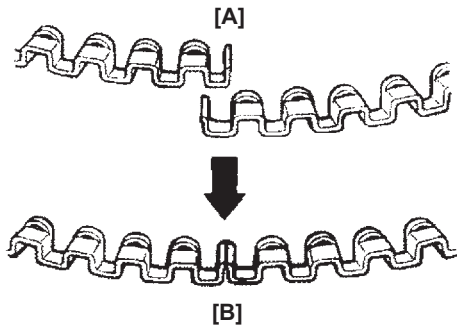
- 1) Install the piston rings in the order of the oil ring, 2nd ring and 1st ring.
 - a) The first member to go into the of the oil ring groove is a spacer (1). After placing the spacer, fit the two side rails (2).



IE39J1140163-01

NOTICE

When installing the spacer, be careful not to allow its two ends to overlap in the groove.



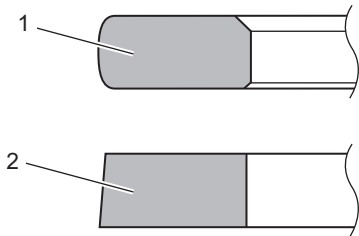
IF34J1140094-02

[A]: Incorrect	[B]: Correct
----------------	--------------

b) Install the 2nd ring (1) and 1st ring (2) to piston.

NOTE

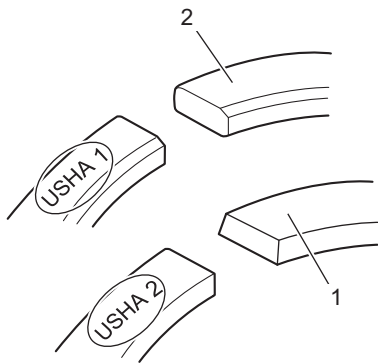
1st ring (2) and 2nd ring (1) differ in shape.



IF34J1140095-01

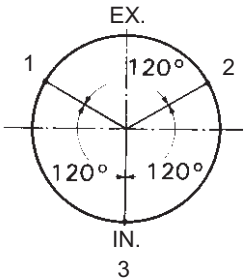
NOTE

Face the side with the stamped mark upward when assembling.



IF34J1140096-01

2) Position the gaps of the three rings and side rails as shown. Before inserting piston into the cylinder, check that the gaps are so located.



ID26J1140121-04

1. 2nd ring and lower side rail
2. Upper side rail
3. 1st ring and spacer

Piston and Piston Ring Inspection

BENF34J11406027

Refer to "Piston Ring Removal and Installation" (Page 1D-28).

Piston Diameter

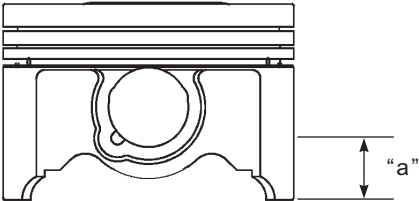
Measure the piston diameter using the micrometer at 10 mm (0.4 in) "a" from the skirt end. If the piston diameter is less than the service limit, replace the piston.

Special tool

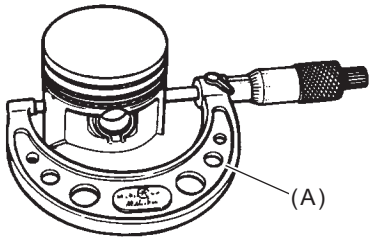
(A): Micrometer

Piston diameter

Service limit: 55.880 mm (2.2000 in)



IE12J1140101-01



IE12J1140102-01

Piston to Cylinder Clearance

Subtract the piston diameter from the cylinder bore diameter. If the piston to cylinder clearance exceeds the service limit, replace both the cylinder and the piston.

Piston to cylinder clearance

Service limit: 0.120 mm (0.0047 in)

Piston Ring to Groove Clearance

Measure the side clearances of the 1st and 2nd piston rings using the thickness gauge. If any of the clearances exceed the limit, replace both the piston and piston rings.

Special tool

- (A): Thickness Gauge
(B): Micrometer

Piston ring to groove clearance

Service limit: (1st): 0.180 mm (0.0071 in)

Service limit: (2nd): 0.150 mm (0.0059 in)

Piston ring groove width

Standard: (1st): 0.81 – 0.83 mm (0.0319 – 0.0327 in)

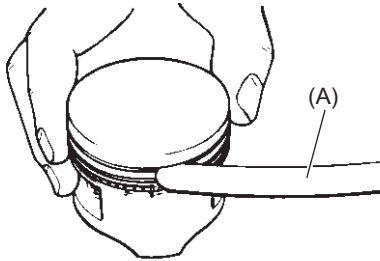
Standard: (2nd): 0.81 – 0.83 mm (0.0319 – 0.0327 in)

Standard: (Oil): 1.51 – 1.53 mm (0.0594 – 0.0602 in)

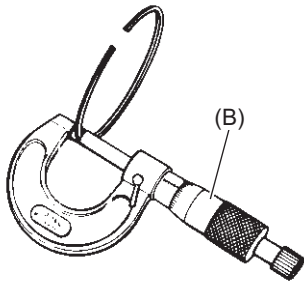
Piston ring thickness

Standard: (1st): 0.77 – 0.79 mm (0.0303 – 0.0311 in)

Standard: (2nd): 0.77 – 0.79 mm (0.0303 – 0.0311 in)



ID26J1140124-01



ID26J1140125-01

Piston Ring Free End Gap and Piston Ring End Gap

Measure the piston ring free end gap using vernier calipers. Next, fit the piston ring squarely into the cylinder and measure the piston ring end gap using the thickness gauge. If any of the measurements exceed the service limit, replace the piston ring with a new one.

Special tool

- (A): Vernier Caliper
(B): Thickness Gauge

Piston ring free end gap

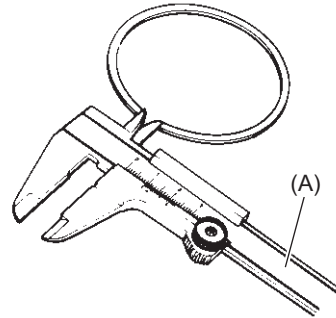
Service limit: (1st): 6.6 mm (0.26 in)

Service limit: (2nd): 6.2 mm (0.24 in)

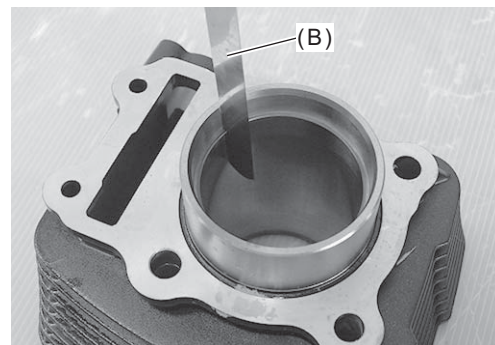
Piston ring end gap

Service limit: (1st): 0.50 mm (0.020 in)

Service limit: (2nd): 0.70 mm (0.028 in)



ID26J1140126-02



IF34J1140097-01

Piston Pin Bore

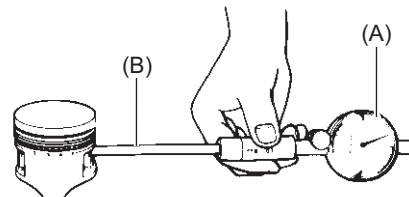
Measure the piston pin bore inside diameter using the small bore gauge. If measurement is out of specification, replace the piston.

Special tool

- (A): Dial Gauge
(B): Small Bore Gauge

Piston pin bore I.D.

Service limit: 14.030 mm (0.5524 in)



ID26J1140128-01

Piston Pin

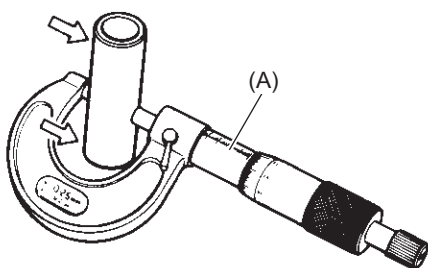
Measure the piston pin outside diameter at three positions using the micrometer. If any of the measurements are out of specification, replace the piston pin.

Special tool

(A): Micrometer

Piston pin O.D.

Service limit: 13.980 mm (0.5504 in)



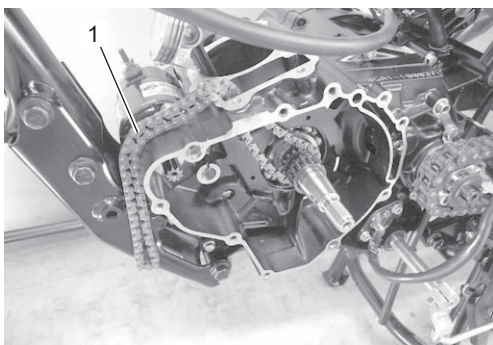
ID26J1140129-01

Cam Chain Removal and Installation

BENF34J11406059

Removal

- 1) Remove the cylinder. (Page 1D-18)
- 2) Remove the starter clutch gear. (Page 1I-7)
- 3) Remove the cam chain (1).



IF34J1140098-01

Installation

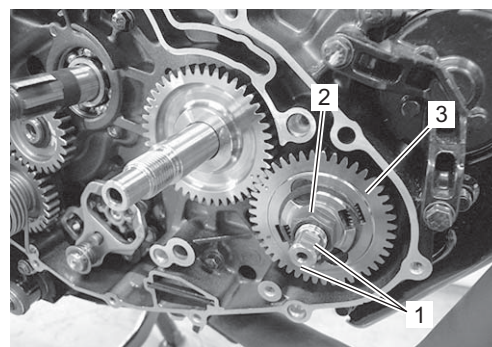
Install the cam chain in the reverse order of removal.

Balancer Shaft Drive / Driven Gear Removal and Installation

BENF34J11406060

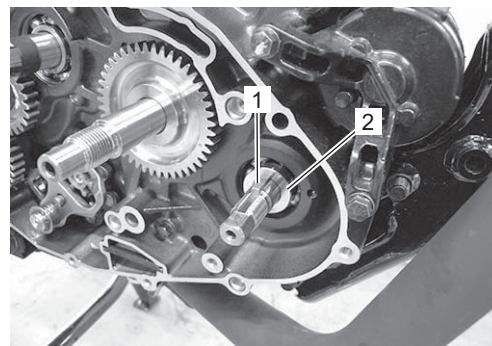
Removal

- 1) Remove the following parts.
 - Clutch component parts: (Page 5C-6)
 - Oil pump component parts: (Page 1E-6)
- 2) Hold the crank balancer shaft at the width across flats (1) and remove the crank balancer shaft nut (2).
- 3) Remove the crank balancer driven gear (3).



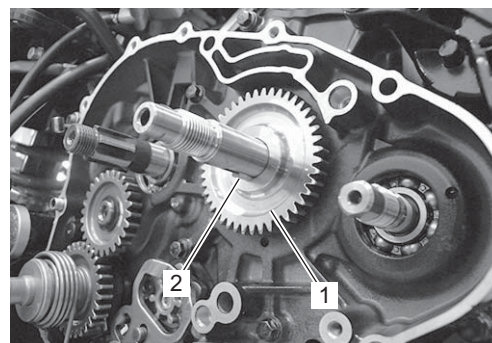
IF34J1140099-02

- 4) Remove the key (1) and spacer (2).



IF34J1140100-02

- 5) Remove the crank balancer drive gear (1) and key (2).

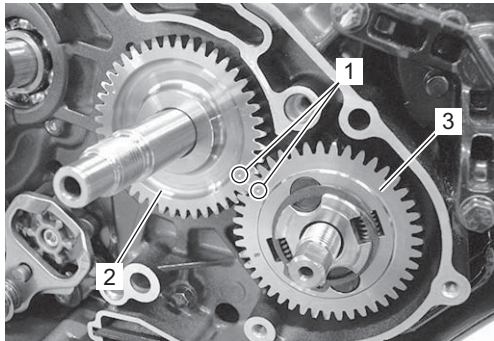


IF34J1140101-02

Installation

Install the balancer shaft drive gear and driven gear in the reverse order of removal. Pay attention to the following points:

- Align the punch marks (1) on the balancer shaft drive gear (2) and balancer shaft driven gear (3).

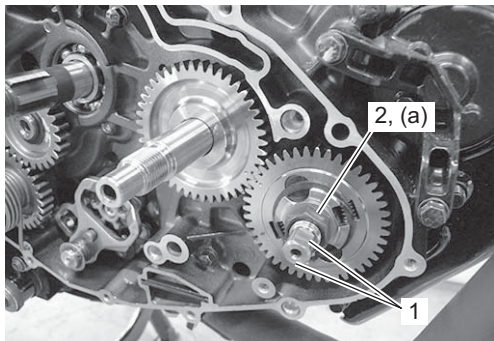


IF34J1140102-02

- Hold the crank balancer shaft at the width across flats (1) and tighten the balancer shaft driven gear nut (2) to the specified torque.

Tightening torque

Balancer shaft driven gear nut (a): 50 N·m (5.1 kgf-m, 37.0 lbf-ft)



IF34J1140103-02

Balancer Shaft Driven Gear Disassembly and Reassembly

BENF34J11406061

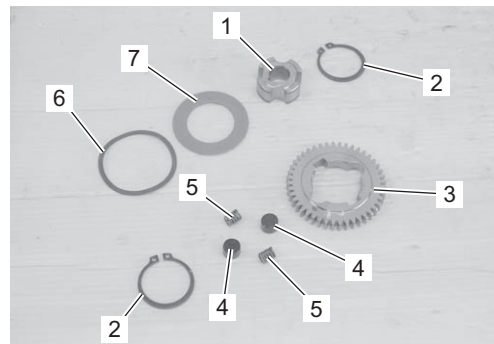
Refer to "Balancer Shaft Drive / Driven Gear Removal and Installation" (Page 1D-31).

Disassembly

- Remove the following parts from the balancer shaft driven gear inner race (1).
 - Snap rings (2)
 - Balancer shaft driven gear (3)
 - Dampers (4)
 - Springs (5)
 - Wave washer (6)
 - Washer (7)

Special tool

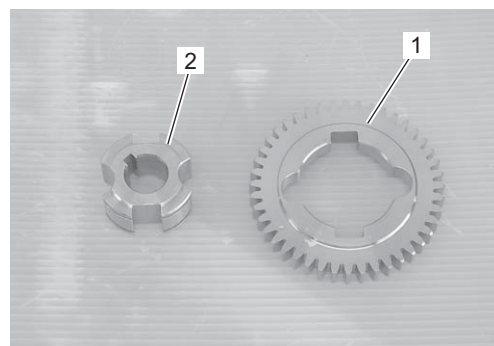
Snapping Pliers



IF34J1140104-01

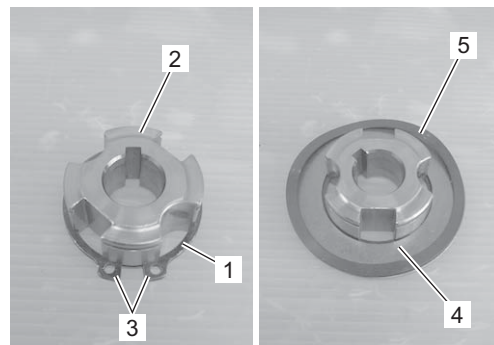
Reassembly

- Apply engine oil to the sliding surfaces of the balancer shaft driven gear (1) and inner race (2).



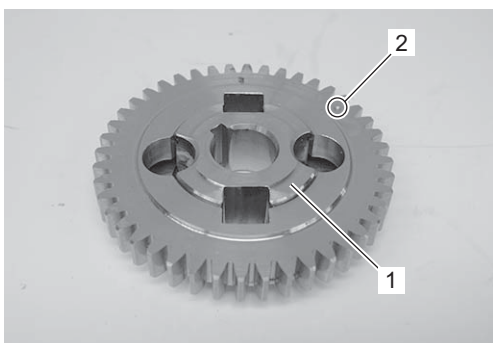
IF34J1140105-01

- Facing the sharp edge side of the snap ring (1) outward, fit it to the balancer shaft driven gear inner race (2). Position the opening (3) of the snap ring in the center of the rib portion as shown in the figure.
- Install the washer (4) and wave washer (5).



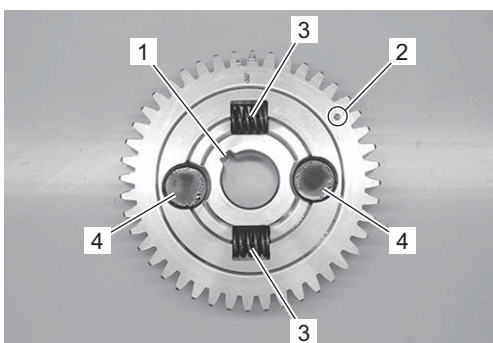
IF34J1140106-01

- 4) Aligning the protrusion (1) with the punch mark (2), combine the balancer shaft driven gear inner race with the balancer shaft driven gear.



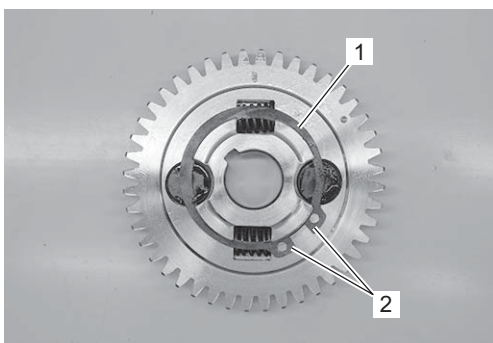
IF34J1140107-02

- 5) Align the cutaway (1) of the balancer shaft driven gear inner race with the punch mark (2) of the balancer shaft driven gear as shown in the figure and install springs (3) and dampers (4).



IF34J1140108-02

- 6) Facing the sharp edge side of the snap ring (1) outward, fit it to the balancer shaft driven gear inner race. Position the opening (2) of the snap ring in the center of the rib portion as shown in the figure.



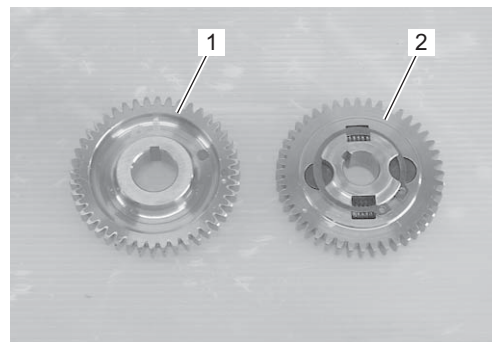
IF34J1140109-02

Balancer Shaft Drive / Driven Gear Inspection

BENF34J11406062

Refer to "Balancer Shaft Drive / Driven Gear Removal and Installation" (Page 1D-31).

Inspect the balancer shaft drive gear (1) and driven gear (2) for wear or damage. If any defects are found, replace them with new ones.

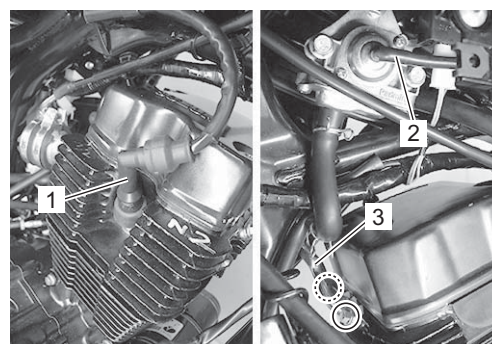


IF34J1140110-01

Engine Assembly Removal

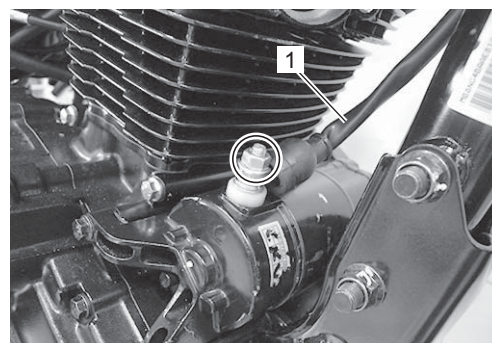
BENF34J11406063

- 1) Drain engine oil. (Page 1E-4)
- 2) Remove the following parts.
 - Frame side covers: (Page 9D-12)
 - Frame front covers: (Page 9D-13)
 - Right frame lower cover: (Page 9D-12)
- 3) Disconnect the battery (–) lead wire. (Page 1J-10)
- 4) Remove the muffler. (Page 1K-2)
- 5) Remove the carburetor assembly. (Page 1G-10)
- 6) Disconnect the spark plug cap (1), PAIR vacuum hose (2) and remove the PAIR pipe (3).



IF34J1140111-01

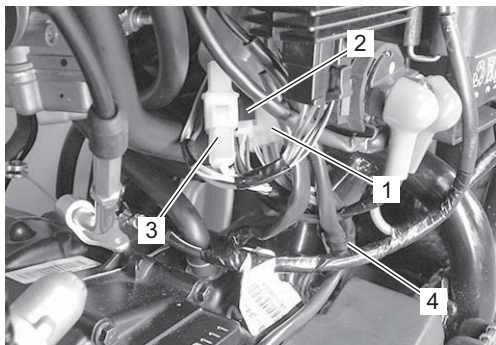
- 7) Disconnect the starter motor lead wire (1).



IF34J1140112-01

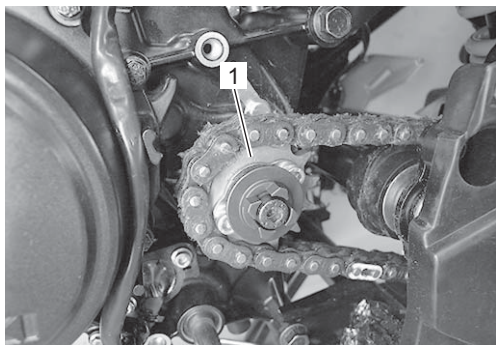
1D-34 Engine Mechanical:

- 8) Disconnect the GP switch lead wire coupler (1), CKP sensor lead wire coupler (2) and generator lead wire coupler (3).
- 9) Release the clamp (4).



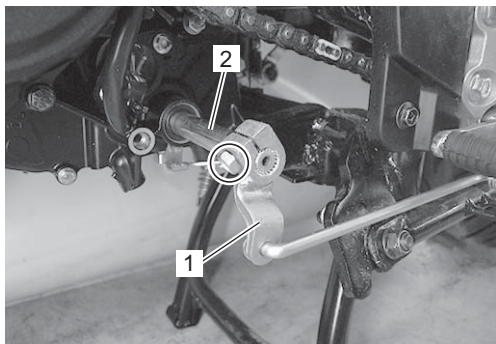
IF34J1140113-02

- 10) Remove the engine sprocket (1). (Page 3A-4)



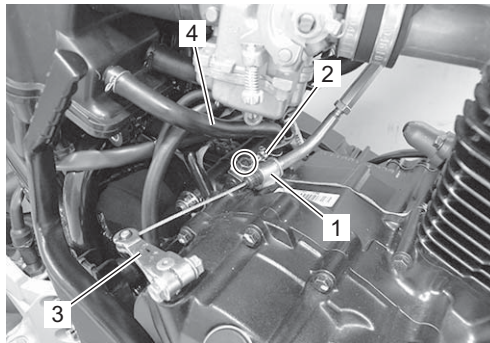
IF34J1140114-01

- 11) Disconnect the gearshift link arm (1) from gearshift shaft (2).



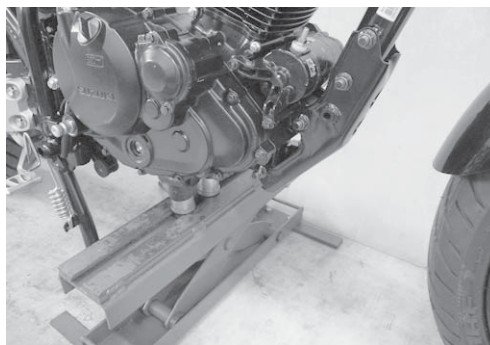
IF34J1140115-01

- 12) Remove the clutch cable stopper (1) and disconnect the engine ground wire (2).
- 13) Disconnect the clutch cable end from the clutch release arm (3). Refer to "Clutch Cable Removal and Installation" in Section 5C (Page 5C-2).
- 14) Disconnect the PCV hose (4) from the left crankcase.



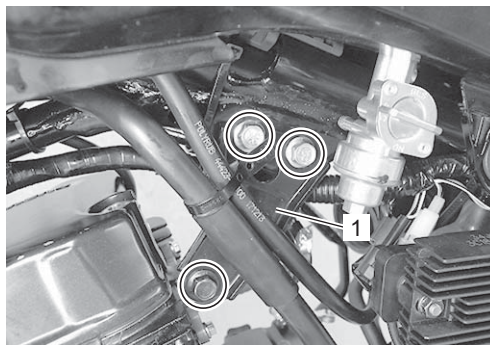
IF34J1140116-02

- 15) Support the engine using a jack.



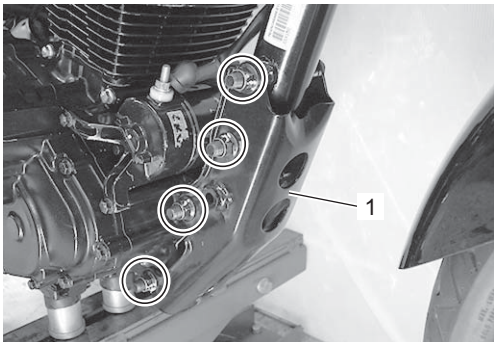
IF34J1140117-01

- 16) Remove the engine mounting upper plate (1).



IF34J1140118-01

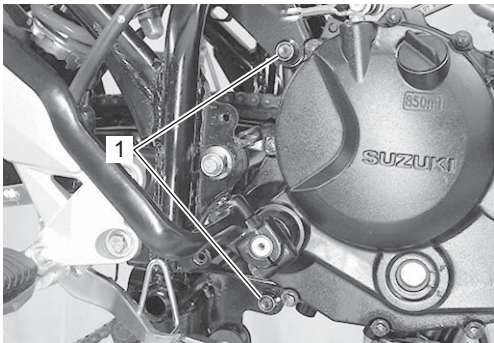
17) Remove the engine mounting lower bracket (1).



IF34J1140119-01

18) Remove the engine mounting nuts (1) and bolts.

19) Gradually lower the engine. Then, remove the engine assembly from the frame.



IF34J1140120-01

Engine Assembly Installation

BENF34J11406064

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

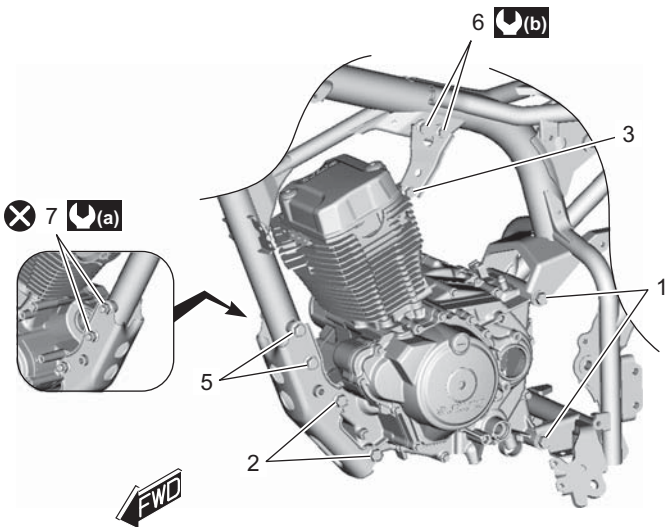
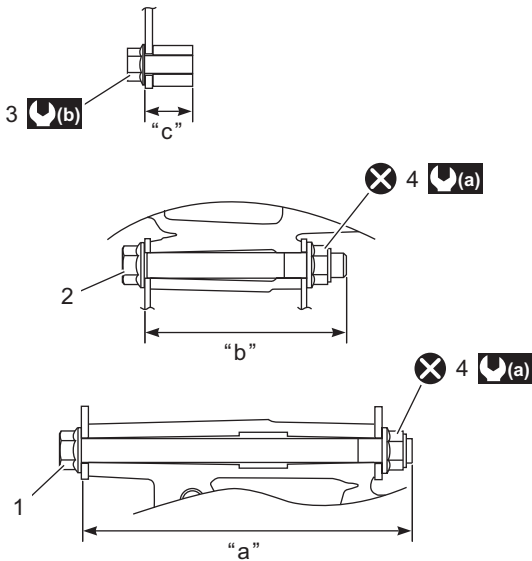
- Install the engine assembly using a jack.

NOTICE

Be careful not to catch the wiring harness and hoses between the frame and the engine.

- Insert the engine mounting bolts (1) and (2) from left side, and install their new nuts (4).
- Install the engine mounting upper plate and engine mounting lower bracket.
- Tighten the each bolts and nuts to the specified torque, referring to the following illustration.

LH ← → RH



IF34J1140122-03

1. Engine mounting rear bolt	"a": 140 mm (5.51 in)
2. Engine mounting lower bolt	"b": 85 mm (3.35 in)
3. Engine mounting upper bolt	"c": 20 mm (0.79 in)
4. Engine mounting nut	Ⓐ : 65 N·m (6.6 kgf-m, 48.0 lbf-ft)
5. Engine mounting lower bracket bolt	Ⓑ : 23 N·m (2.3 kgf-m, 17.0 lbf-ft)
6. Engine mounting upper plate bolt	✕ : Do not reuse.
7. Engine mounting lower bracket nut	

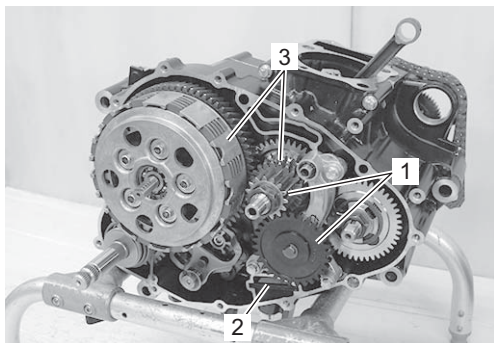
1D-36 Engine Mechanical:

- Check the wiring harness routing. (Page 9A-5)
- After finishing the engine installation, check the following items.
 - Drive chain slack. (Page 3A-2)
 - Gearshift lever height. (Page 5B-11)
 - Throttle cable play: (Page 1D-8)
 - Clutch cable play: (Page 5C-2)
 - Engine oil leakage: (Page 1E-4)

Crankcase Assembly Disassembly

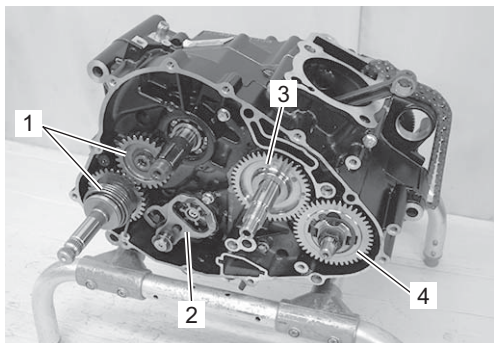
BENF34J11406030

- 1) Remove the engine assembly. (Page 1D-33)
- 2) Remove the piston. (Page 1D-27)
- 3) Remove the starter motor assembly. (Page 1I-3)
- 4) Remove the oil pump component parts (1). (Page 1E-6)
- 5) Remove the oil sump filter (2). (Page 1E-6)
- 6) Remove the clutch component parts (3). (Page 5C-6)



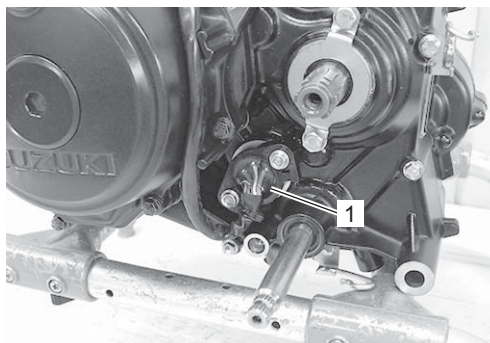
IF34J1140121-01

- 7) Remove the kick starter component parts (1). (Page 1I-12)
- 8) Remove the gearshift component parts (2). (Page 5B-12)
- 9) Remove the crank balancer drive gear (3) and crank balancer driven gear (4). (Page 1D-31)



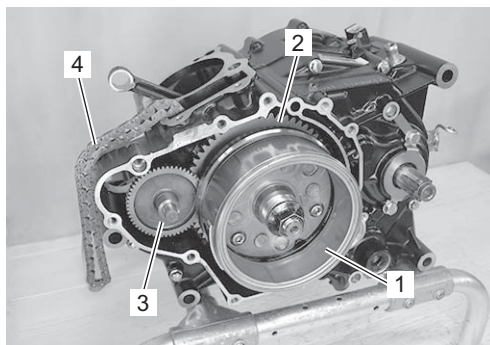
IF34J1140123-02

- 10) Remove the GP switch (1). (Page 5B-9)



IF34J1140124-01

- 11) Remove the generator rotor (1). (Page 1J-5)
- 12) Remove the starter clutch gear (2) and starter idle gear (3). (Page 1I-7)
- 13) Remove the cam chain (4). (Page 1D-31)

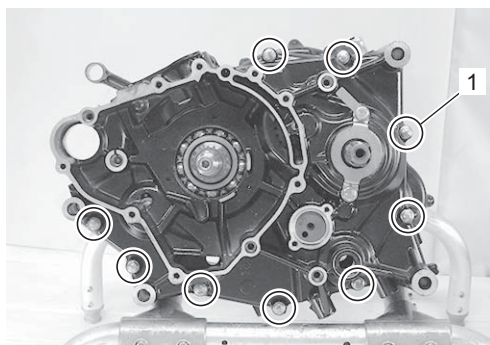


IF34J1140125-01

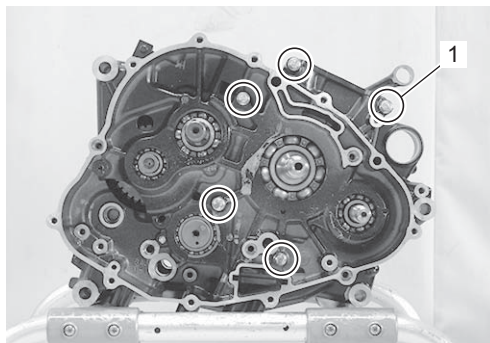
- 14) Remove the crankcase bolts (1).

NOTE

Loosen the crankcase bolts diagonally.



IF34J1140126-01



IF34J1140127-01

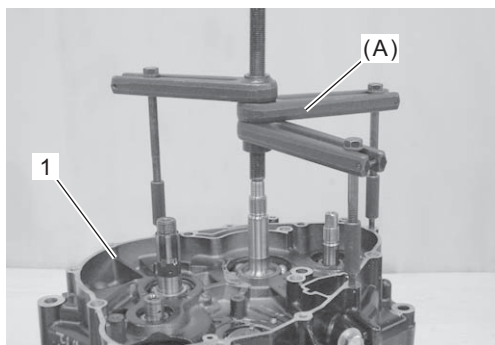
15) Remove the right crankcase (1) with the special tool.

NOTE

- Fit the crankcase separating tool, so that the tool arms are in parallel with the side of crankcase.
- The crankshaft and transmission components should remain in the left crankcase half.

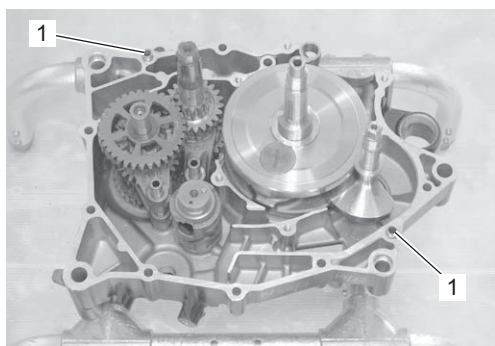
Special tool

(A): Crankcase Separator



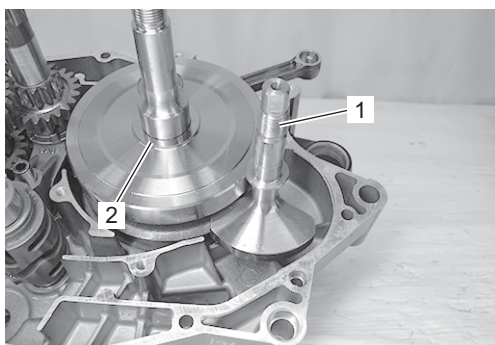
IF34J1140128-01

16) Remove the dowel pins (1).



IF34J1140129-01

17) Remove the crank balancer shaft (1) and shim (2).



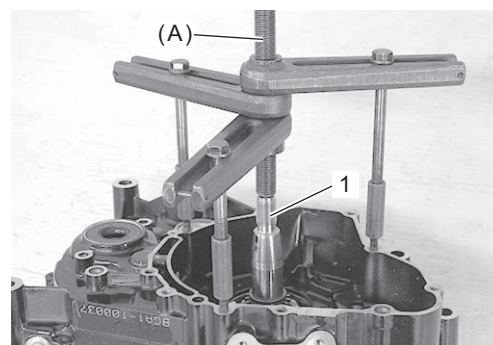
IF34J1140130-01

18) Remove the transmission component parts. (Page 5B-3)

19) Remove the crankshaft assembly (1) with the special tool.

Special tool

(A): Crankcase Separator



IF34J1140131-01

20) Remove the crankcase bearings. (Page 1D-41)

Crankcase Assembly Reassembly

BENF34J11406031

- 1) Install the crankcase bearings: (Page 1D-41)
- 2) Install the crankshaft assembly into the left crankcase using the special tools.

NOTICE

- Do not hit the crankshaft with a plastic mallet or the like to install it into the crankcase.
- Make sure that the direction of conrod is turned toward the cylinder hole.

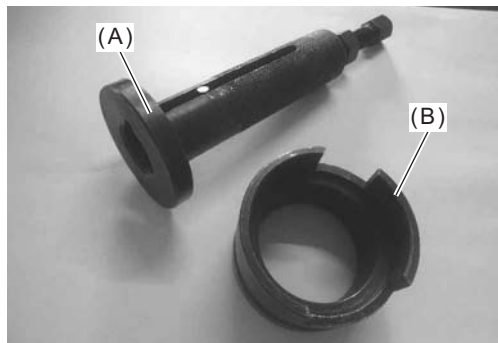
NOTE

When installing the crankshaft into the crankcase, insert the (b) Crankshaft Installer Spacer between (a) Crankshaft Installer and crankcase from LHS.

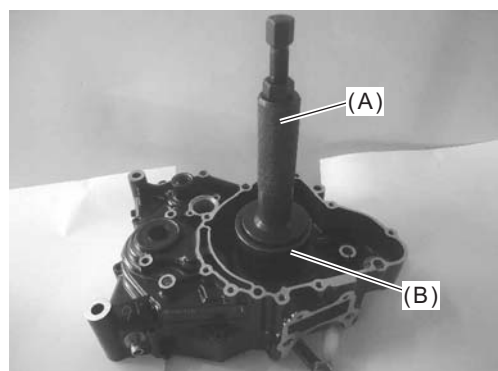
Special tool

(A): Crankshaft Installer

(B): Crankshaft Installer Spacer



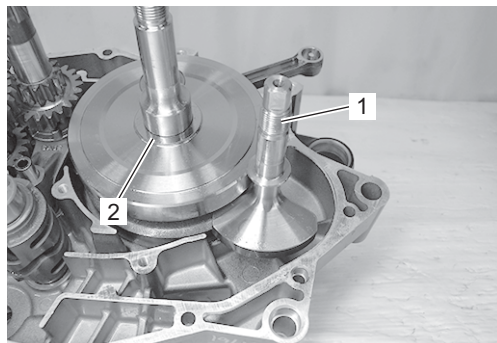
IF34J1140133-01



IF34J1140132-01

3) Install the transmission component parts. (Page 5B-3)

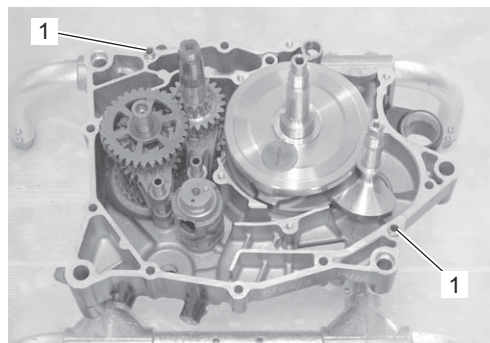
4) Install the crank balancer shaft (1) and shim (2).



IF34J1140130-01

5) Clean the mating surfaces of the left and right crankcase halves.

6) Install the dowel pins (1) into the left crankcase.



IF34J1140129-01

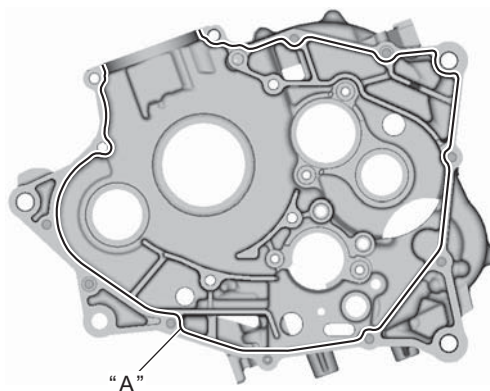
7) Apply engine oil to each running and sliding part.

8) Apply sealant to the mating surface of the right crankcase.

NOTE

- Make surfaces free from moisture, oil, dust and other foreign materials.
- Spread on surfaces thinly to form an even layer, and assemble the crankcases within few minutes.
- Take extreme care not to apply any sealant to the oil hole, oil groove and bearing.
- Apply to distorted surfaces as it forms a comparatively thick film.

“A”: (SUZUKI BOND 1215)



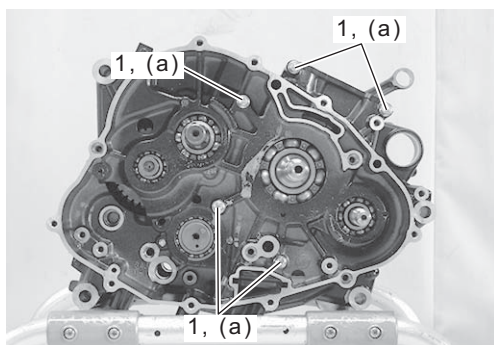
IF34J1140134-02

9) Assemble the right and left crankcase halves.

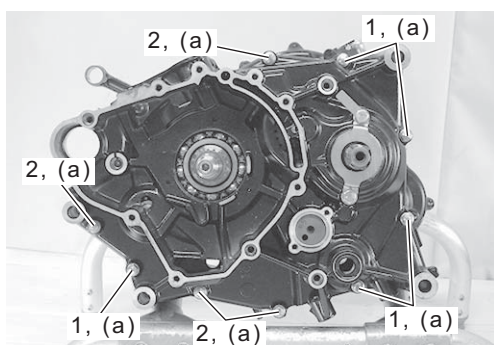
- 10) Tighten the crankcase bolts (L60) (1) and (L50) (2) a little at a time to equalize the pressure.

Tightening torque

Crankcase bolt (a): 10 N·m (1.0 kgf-m, 7.5 lbf-ft)

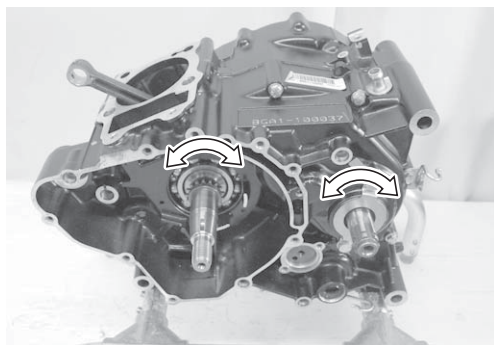


IF34J1140135-01

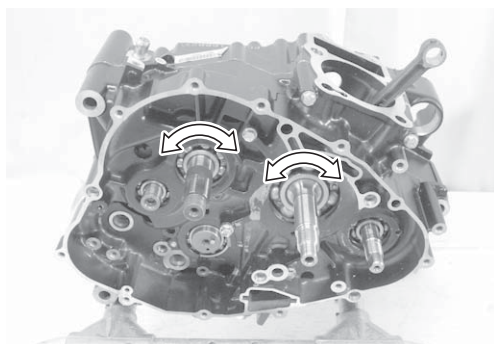


IF34J1140136-01

- 11) After the crankcase bolts have been tightened, check if the crankshaft, driveshaft and countershaft rotate smoothly.



IF34J1140137-01



IF34J1140138-01

- 12) Install the removed parts.

Conrod / Crankshaft Inspection

BENF34J11406065

Refer to "Crankcase Assembly Disassembly" (Page 1D-36) and "Crankcase Assembly Reassembly" (Page 1D-37).

Conrod Small End I.D.

Measure the conrod small end inside diameter with a pair of dial calipers.

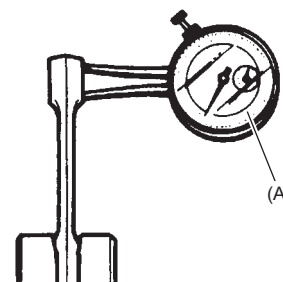
If the conrod small end inside diameter exceeds the service limit, replace the crankshaft assembly.

Special tool

(A): Dial Caliper

Conrod small end I.D.

Service limit: 14.040 mm (0.5528 in)



IF34J1140164-01

Conrod Big End Side Clearance

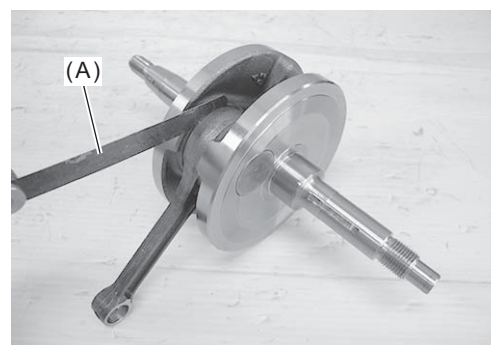
Push the big end of the conrod to one side and measure the side clearance using a thickness gauge. If the clearance exceeds the service limit, replace crankshaft assembly.

Special tool

(A): Thickness Gauge

Conrod big end side clearance

Service limit: 1.0 mm (0.04 in)



IF34J1140139-01

Conrod Deflection

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

If the deflection exceeds the service limit, replace the crankshaft assembly.

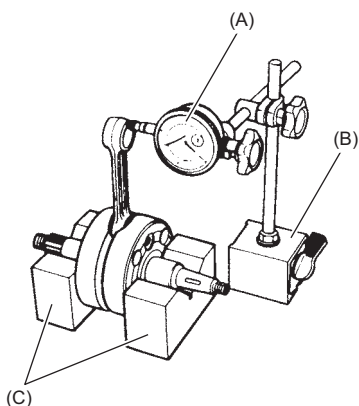
- Move the small end sideways while holding the big end immovable in thrust direction.
- Measure the amount of deflection.
- Turn the conrod and see if it moves smoothly without play and noise.

Conrod deflection

Service limit: 3.0 mm (0.12 in)

Special tool

- (A): Dial Gauge
(B): Dial Gauge Check
(C): V Block



IF34J1140165-01

Crankshaft Runout

With the right and left crank journals supported with V-blocks, turn the crankshaft slowly. At this time, measure the crankshaft end runout using a dial gauge. If the runout exceeds the service limit, replace the crankshaft assembly.

NOTE

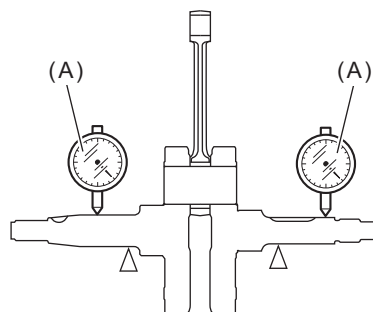
Set the V-blocks so that the crankshaft becomes horizontal.

Crankshaft runout

Service limit: 0.08 mm (0.0031 in)

Special tool

- (A): Dial Gauge
Dial Gauge Check
V Block



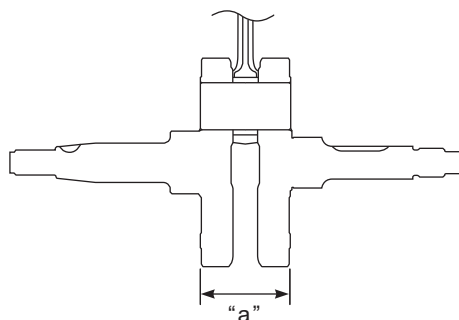
IF34J1140140-01

Width Between Crankshaft Webs

Measure the width "a" between crankshaft webs. If the width is out of specification, replace the crankshaft assembly.

Width between crankshaft webs "a"

Standard: 49.9 – 50.1 mm (1.965 – 1.972 in)



IF34J1140141-01

Balancer Shaft Inspection

BENF34J11406066

Refer to "Crankcase Assembly Disassembly" (Page 1D-36) and "Crankcase Assembly Reassembly" (Page 1D-37).

Inspect the balancer shaft for wear or damage. If any wear or damage is found, replace the balancer shaft with a new one.



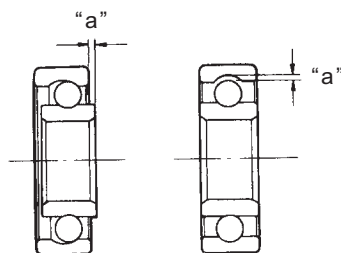
IF34J1140142-01

Crankcase Bearing / Oil Seal Inspection

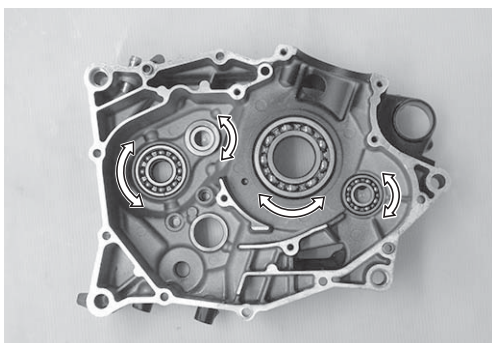
BENF34J11406067

Refer to "Crankcase Assembly Disassembly" (Page 1D-36) and "Crankcase Assembly Reassembly" (Page 1D-37).

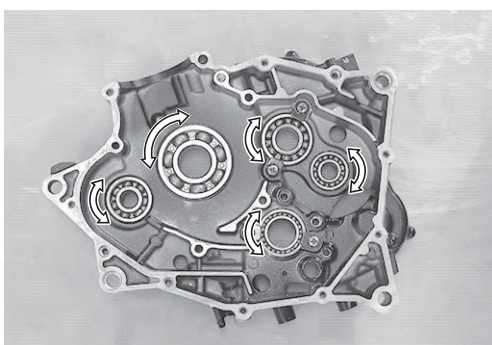
- 1) Inspect the play "a" of the bearings by hand while it is in the crankcase or installed in the crankshaft. Rotate the inner race or outer race by hand to inspect for abnormal noise and smooth rotation. Replace the bearings if there is anything unusual. (Page 1D-41)



ID26J1140287-02

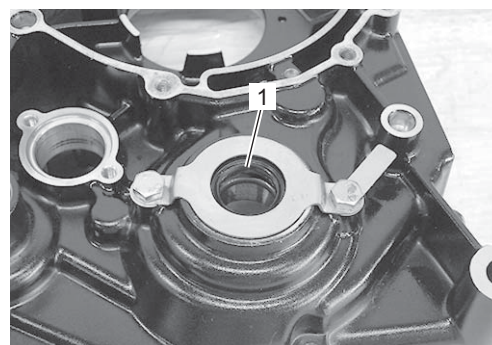


IF34J1140143-02



IF34J1140144-01

- 2) Inspect oil seal lip (1) for wear or damage. If any defects are found, replace the oil seal with a new one. (Page 5B-7)



IF34J1140146-01

Crankcase Bearing Removal and Installation

BENF34J11406068

Refer to "Crankcase Assembly Disassembly" (Page 1D-36) and "Crankcase Assembly Reassembly" (Page 1D-37).

Removal

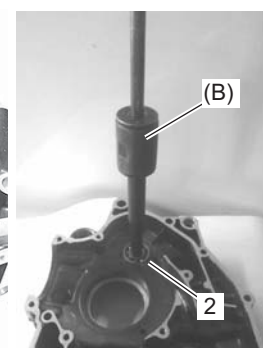
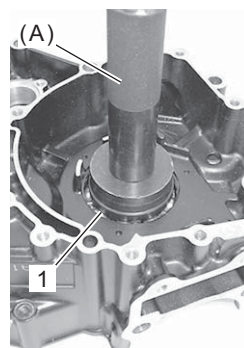
Left crankcase

- 1) Remove the crankshaft bearing (1) and balancer shaft bearing (2) with the special tools.

Special tool

(A): Bearing Installer Set

(B): Bearing Remover



IF34J1140147-02

- 2) Remove the driveshaft bearing and countershaft bearing. (Page 5B-7)

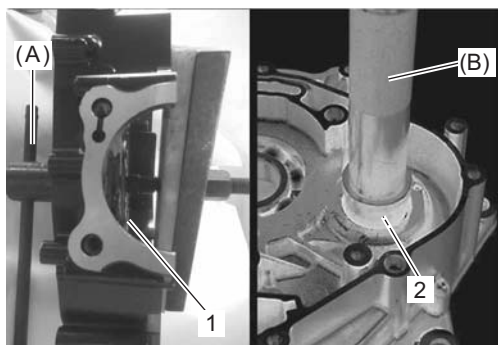
Right crankcase

- 1) Remove the crankshaft bearing (1) and balancer shaft bearing (2) with the special tool.

Special tool

(A): Engine Bearing Puller With Plate

(B): Bearing Installer Set



IF34J1140149-01

- 2) Remove the driveshaft bearing, countershaft bearing and gearshift cam bearing. (Page 5B-7)

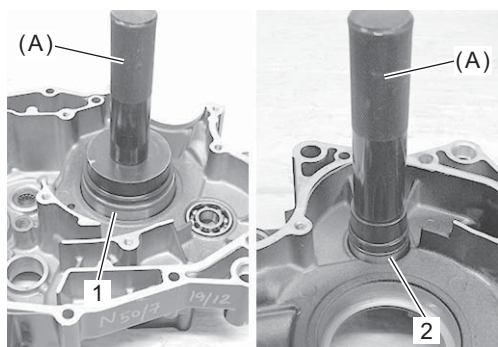
Installation

Left crankcase

- 1) Install the new crankshaft bearing (1) and balancer shaft bearing (2) using the special tool.

Special tool

(A): Bearing Installer Set



IF34J1140150-01

- 2) Install the driveshaft bearing and countershaft bearing. (Page 5B-7)

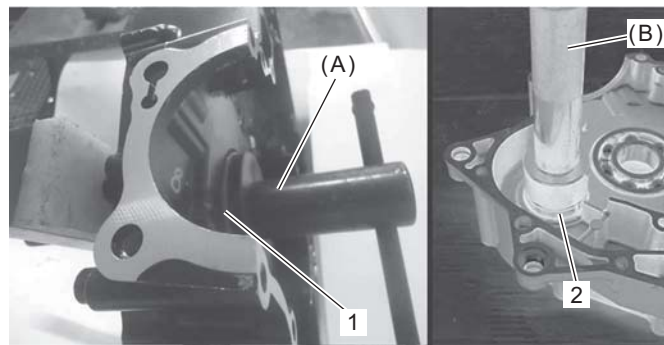
Right crankcase

- 1) Install the new crankshaft bearing (1) and balancer shaft bearing (2) using the special tool.

Special tool

(A): Engine Bearing Puller With Plate

(B): Bearing Installer Set



IF34J1140151-01

- 2) Install the driveshaft bearing, countershaft bearing and gearshift cam bearing. (Page 5B-7)

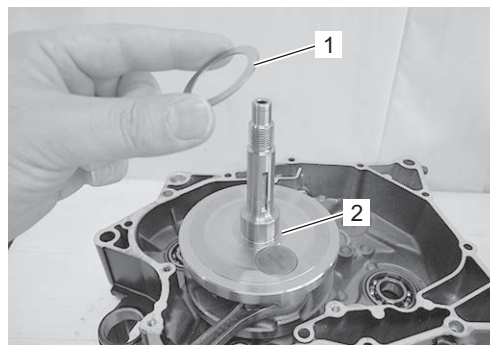
Crankshaft Thrust Clearance Inspection and Shim Selection

BENF34J11406069

Refer to "Crankcase Assembly Disassembly" (Page 1D-36) and "Crankcase Assembly Reassembly" (Page 1D-37).

Inspection

- 1) Install the crankshaft into the left crankcase.
- 2) Clean and degrease the contact surfaces of the crankshaft, shim and inner race of the right crankshaft bearing.
- 3) Install the removed shim (1) onto the crankshaft (2).

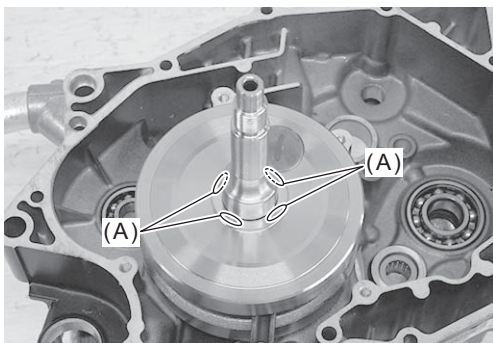


IF34J1140152-01

- 4) Put the plastigage (special tool) of about 10 mm (0.39 in) on the shim as shown.

Special tool

(A): Plastigage



IF34J1140153-01

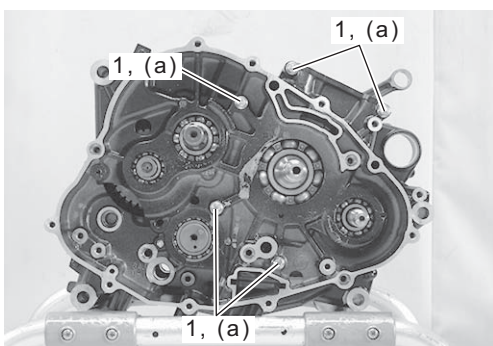
- 5) Install the right crankcase and tighten the bolts (L60) (1) and (L50) (2) to the specified torque.

NOTE

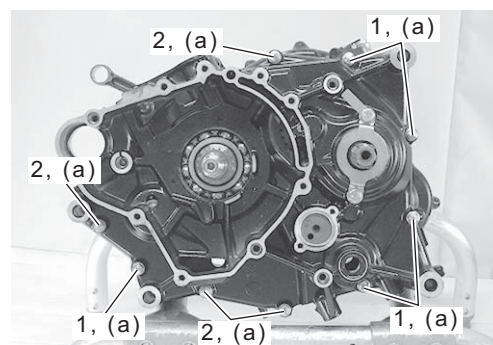
Do not apply sealant to the mating surfaces in this stage.

Tightening torque

Crankcase bolt (a): 10 N·m (1.0 kgf-m, 7.5 lbf-ft)



IF34J1140135-01



IF34J1140136-01

- 6) Separate the crankcase into 2 parts, left and right.
7) Measure the width of compressed plastigage with the envelope scale.

Crankshaft thrust clearance

Standard: -0.02 – 0.07 mm (-0.0008 – 0.0028 in)



IF34J1140154-01

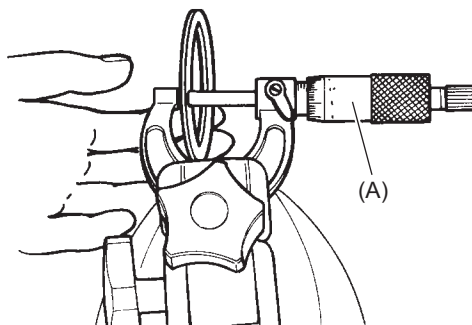
- 8) If the thrust clearance is out of standard value, select an appropriate shim.

Selection

- 1) Remove the thrust shim and measure its thickness using the micrometer.

Special tool

(A): Micrometer



ID26J1140236-01

1D-44 Engine Mechanical:

2) Select a suitable shim from the following table.

Crankshaft thrust clearance (measured value) + shim thickness (measured value)	Part No.	Thrust shim thickness
0.60 – 0.65 mm (0.024 – 0.026 in)	09181-28187	0.58 – 0.62 mm (0.023 – 0.024 in)
0.65 – 0.70 mm (0.026 – 0.028 in)	09181-28021	0.63 – 0.67 mm (0.025 – 0.026 in)
0.70 – 0.75 mm (0.028 – 0.030 in)	09181-28188	0.68 – 0.72 mm (0.027 – 0.028 in)
0.75 – 0.80 mm (0.030 – 0.031 in)	09181-28189	0.73 – 0.77 mm (0.029 – 0.030 in)
0.80 – 0.85 mm (0.031 – 0.033 in)	09181-28190	0.78 – 0.82 mm (0.031 – 0.032 in)
0.85 – 0.90 mm (0.033 – 0.035 in)	09181-28191	0.83 – 0.87 mm (0.033 – 0.034 in)
0.90 – 0.95 mm (0.035 – 0.037 in)	09181-28192	0.88 – 0.92 mm (0.035 – 0.036 in)
0.95 – 1.00 mm (0.037 – 0.039 in)	09181-28193	0.93 – 0.97 mm (0.037 – 0.038 in)
1.00 – 1.05 mm (0.039 – 0.041 in)	09181-28194	0.98 – 1.02 mm (0.039 – 0.040 in)
1.05 – 1.10 mm (0.041 – 0.043 in)	09181-28197	1.03 – 1.07 mm (0.041 – 0.042 in)
1.10 – 1.15 mm (0.043 – 0.045 in)	09181-28200	1.08 – 1.12 mm (0.043 – 0.044 in)
1.15 – 1.20 mm (0.045 – 0.047 in)	09181-28202	1.13 – 1.17 mm (0.044 – 0.046 in)
1.20 – 1.25 mm (0.047 – 0.049 in)	09181-28204	1.18 – 1.22 mm (0.046 – 0.048 in)
1.25 – 1.30 mm (0.049 – 0.051 in)	09181-28207	1.23 – 1.27 mm (0.048 – 0.050 in)
1.30 – 1.34 mm (0.051 – 0.053 in)	09181-28209	1.28 – 1.32 mm (0.050 – 0.052 in)

Specifications

Tightening Torque Specifications

BENF34J11407001

Fastening part	Tightening torque			Note
	N·m	kgf·m	lbf·ft	
Air cleaner outlet tube clamp screw	1.5	0.15	1.5	☞ (Page 1D-7)
Intake pipe mounting bolt	10	1.0	7.5	☞ (Page 1D-9)
Joint tube clamp screw	1.5	0.15	1.5	☞ (Page 1D-9)
Cylinder head cover bolt	14	1.4	10.5	☞ (Page 1D-10)
Valve clearance adjusting screw lock-nut	10	1.0	7.5	☞ (Page 1D-11)
Valve timing inspection plug	2.3	0.23	2.0	☞ (Page 1D-11) / ☞ (Page 1D-15)
Generator cover plug	11	1.1	8.5	☞ (Page 1D-11) / ☞ (Page 1D-15)
Camshaft housing bolt	10	1.0	7.5	☞ (Page 1D-13)
Camshaft sprocket bolt	10	1.0	7.5	☞ (Page 1D-14)
Cam chain tension adjuster mounting bolt	10	1.0	7.5	☞ (Page 1D-14)
Rocker arm shaft bolt	4	0.41	3.0	☞ (Page 1D-16)
Cylinder head bolt (M8)	25	2.5	18.5	☞ (Page 1D-20)
Cylinder head bolt (M6)	10	1.0	7.5	☞ (Page 1D-20)
Engine mounting upper plate bolt	23	2.3	17.0	☞ (Page 1D-20)
Engine mounting upper bolt	23	2.3	17.0	☞ (Page 1D-20)
Cam chain tensioner bolt	10	1.0	7.5	☞ (Page 1D-21)
Balancer shaft driven gear nut	50	5.1	37.0	☞ (Page 1D-32)
Crankcase bolt	10	1.0	7.5	☞ (Page 1D-39) / ☞ (Page 1D-43)

Reference:

For the tightening torques of fasteners not specified in this page, refer to:

“Throttle Cable Routing Diagram” (Page 1D-2)

“Intake System Components” (Page 1D-5)

“Engine Assembly Installation” (Page 1D-35)

“Fasteners Information” in Section 0C (Page 0C-8)

Special Tools and Equipment

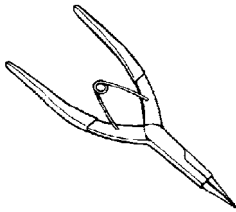
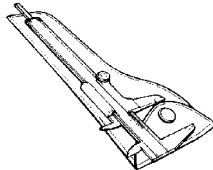
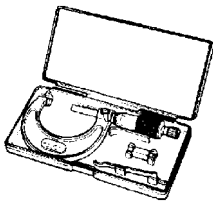
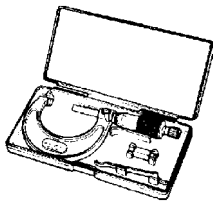
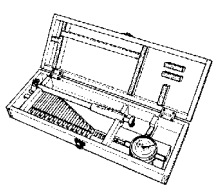
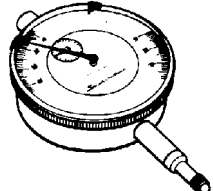
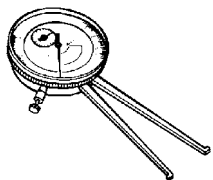
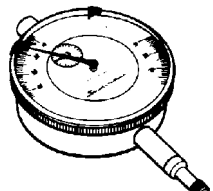
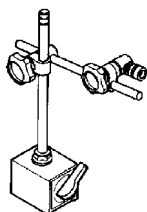
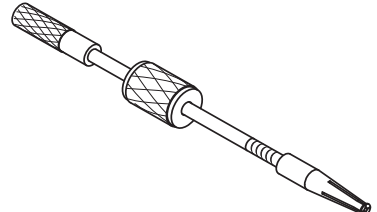
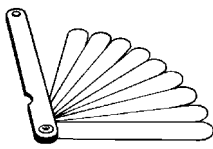
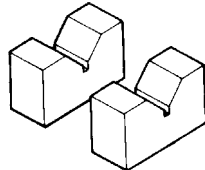
Recommended Service Material

BENF34J11408001


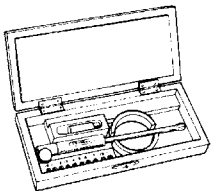
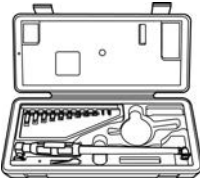
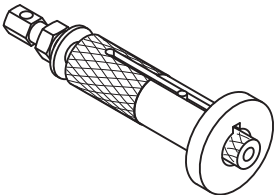
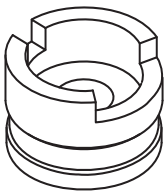
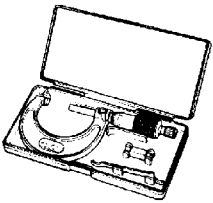
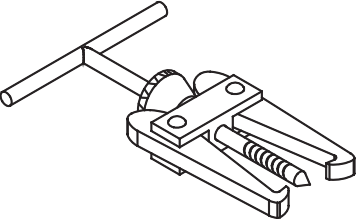
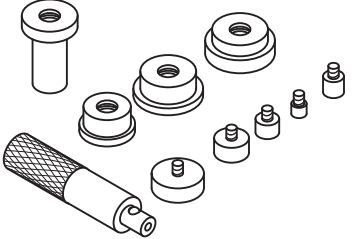

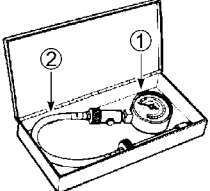
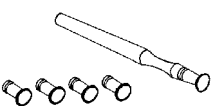
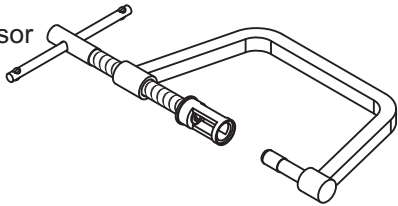
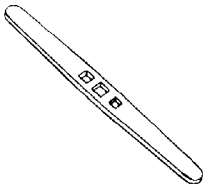
Material	SUZUKI recommended product or Specification		Note
Assembly lubrication	Molybdenum oil solution	—	☞ (Page 1D-13) / ☞ (Page 1D-19) / ☞ (Page 1D-22) / ☞ (Page 1D-22) / ☞ (Page 1D-28)
Sealant	SUZUKI BOND 1215		☞ (Page 1D-38)
	SUZUKI BOND 1207B		☞ (Page 1D-10) / ☞ (Page 1D-19)


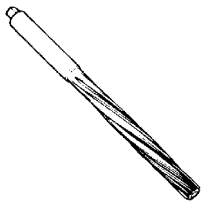

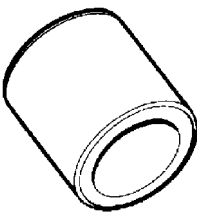
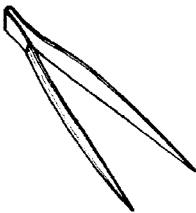
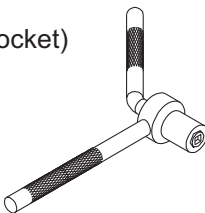
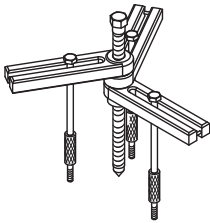
Special Tool

BENF34J11408002

Snap ring pliers (External) ☞ (Page 1D-32)		Vernier calipers (200 mm) ☞ (Page 1D-24) / ☞ (Page 1D-25) / ☞ (Page 1D-30)	
Micrometer (25 - 50 mm) ☞ (Page 1D-17)		Micrometer (50 - 75 mm) ☞ (Page 1D-29)	
Cylinder gauge set ☞ (Page 1D-27)		Dial gauge (1 x 0.001 mm) ☞ (Page 1D-17) / ☞ (Page 1D-30)	
Dial calipers (10 - 34 mm) ☞ (Page 1D-39)		Dial gauge (10 x 0.01 mm) ☞ (Page 1D-23) / ☞ (Page 1D-23) / ☞ (Page 1D-24) / ☞ (Page 1D-40) / ☞ (Page 1D-40)	
Dial gauge chuck ☞ (Page 1D-23) / ☞ (Page 1D-23) / ☞ (Page 1D-24) / ☞ (Page 1D-40) / ☞ (Page 1D-40)		Bearing remover set ☞ (Page 1D-41)	
Thickness gauge ☞ (Page 1D-11) / ☞ (Page 1D-21) / ☞ (Page 1D-27) / ☞ (Page 1D-30) / ☞ (Page 1D-30) / ☞ (Page 1D-39)		V blocks ☞ (Page 1D-23) / ☞ (Page 1D-23) / ☞ (Page 1D-40) / ☞ (Page 1D-40)	

1D-46 Engine Mechanical:

Plastigage (0.025 - 0.076 mm) ☞ (Page 1D-43) 	Small bore gauge (10 - 18 mm) ☞ (Page 1D-30) 
Small bore gauge attachment (6-10mm) ☞ (Page 1D-17) 	Crankshaft installer 1. Main unit 2. Attachment ☞ (Page 1D-38) 
Spacer Crankshaft Installer ☞ (Page 1D-38) 	Micrometer (0 - 25 mm) ☞ (Page 1D-16) / ☞ (Page 1D-24) / ☞ (Page 1D-30) / ☞ (Page 1D-31) / ☞ (Page 1D-43) 
Bearing / gear puller ☞ (Page 1D-17) 	Bearing installer set ☞ (Page 1D-17) / ☞ (Page 1D-38) / ☞ (Page 1D-41) / ☞ (Page 1D-42) / ☞ (Page 1D-42) / ☞ (Page 1D-42) 
Compression gauge adapter ☞ (Page 1D-1) 	Compression gauge set (2500 kpa) 1. Gauge 2. Hose (Adapter) ☞ (Page 1D-1) 
Valve lapper set ☞ (Page 1D-24) 	Valve Spring Compressor ☞ (Page 1D-22) / ☞ (Page 1D-23) 
Reamer handle ☞ (Page 1D-26) / ☞ (Page 1D-26) 	

<p>Valve guide reamer (ø5.0) ☞ (Page 1D-26)</p>		<p>Valve guide reamer (ø10.8) ☞ (Page 1D-26)</p>	
<p>Valve guide installer / remover ☞ (Page 1D-25) / ☞ (Page 1D-26)</p>		<p>Valve Guide Installer ☞ (Page 1D-26)</p>	
<p>Tweezers ☞ (Page 1D-22) / ☞ (Page 1D-23)</p>		<p>Valve adjusting wrench (tappet & socket) ☞ (Page 1D-11)</p>	
<p>Crankcase separator Attachment ☞ (Page 1D-37) / ☞ (Page 1D-37)</p>			

Engine Lubrication System

Precautions

Precautions for Engine Oil

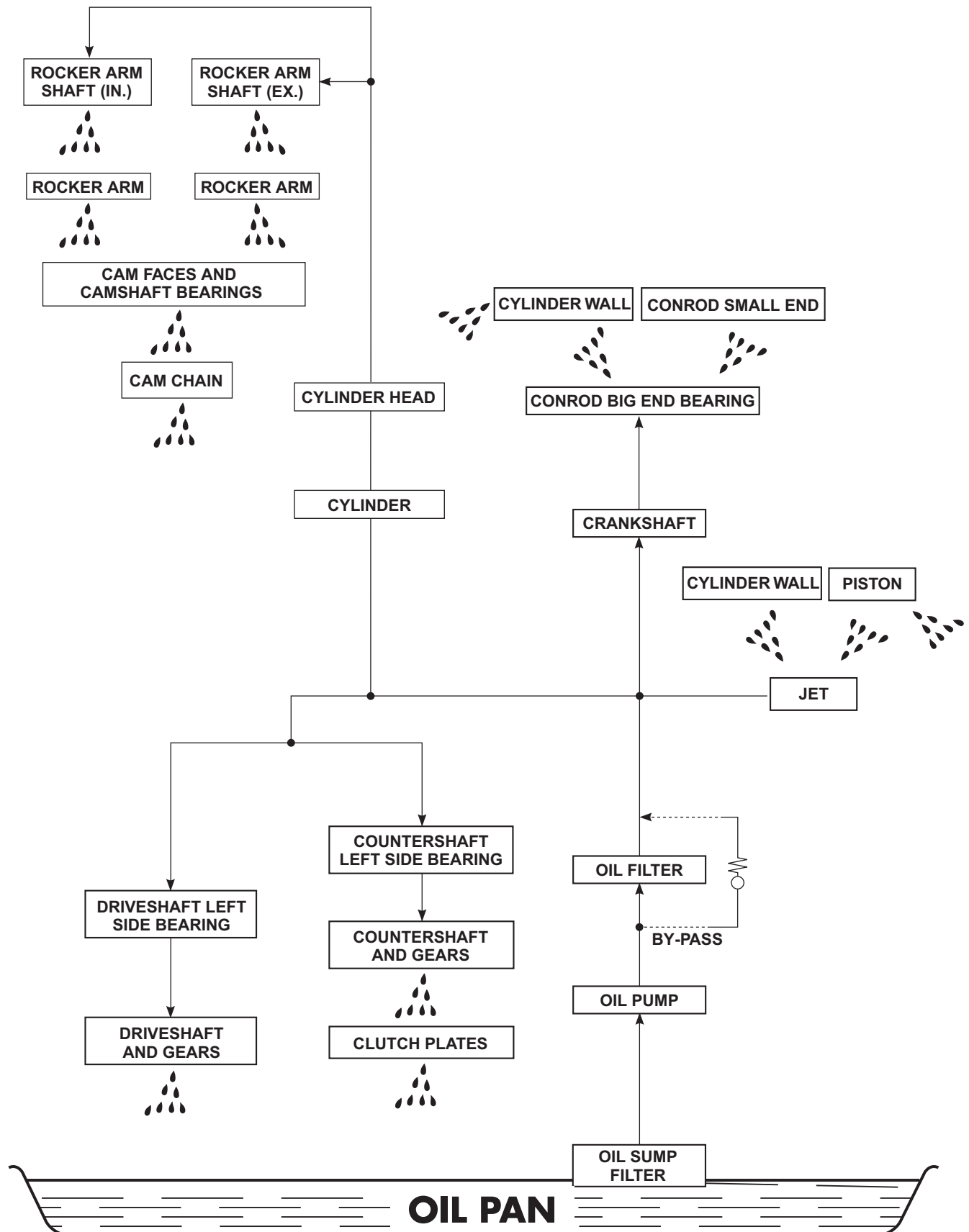
Refer to “Fuel / Oil / Fluid Recommendation” in Section 0C (Page 0C-10).

BENF34J11500001

Schematic and Routing Diagram

Engine Lubrication System Chart Diagram

BENF34J11502001



IF34J1150001-02

Diagnostic Information and Procedures

Engine Lubrication Symptom Diagnosis

BENF34J11504001

Condition	Possible cause	Correction / Reference Item
Engine overheats	Insufficient amount of engine oil.	Check level and add. (Page 1E-4)
	Defective oil pump.	Replace. (Page 1E-6)
	Clogged oil circuit.	Clean.
	Incorrect engine oil.	Change. (Page 1E-4)
Exhaust smoke is dirty or thick	Excessive amount of engine oil.	Check level and drain. (Page 1E-4)
Engine lacks power	Excessive amount of engine oil.	Check level and drain. (Page 1E-4)

Oil Pressure Check

BENF34J11504002

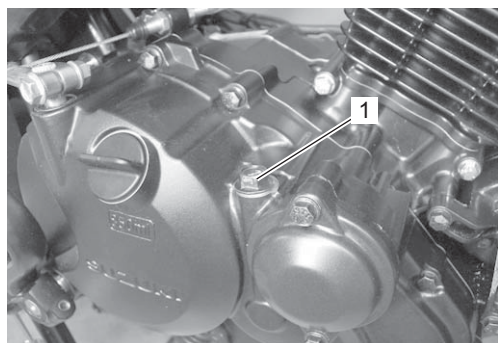
Check the engine oil pressure periodically. This will give a good indication of the condition of the moving parts.

NOTE

Before checking the oil pressure, check the following:

- Oil level: (Page 1E-4)
- Oil leaks (If leak is found, repair it.)
- Oil quality (If oil is discolored or deteriorated, replace it.)

- 1) Remove the oil gallery plug (M8) (1).

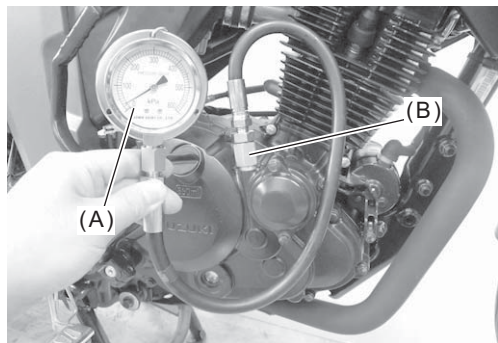


IF34J1150002-01

- 2) Install the oil pressure gauge and attachment into the oil gallery.

Special tool

- (A): Oil Pressure Gauge Set
(B): Oil Pressure Gauge Hose



IF34J1150003-01

- 3) Warm up the engine as follows:

Summer: 10 min. at 2000 r/min

Winter: 20 min. at 2000 r/min

- 4) After warm up, increase the engine speed to 3000 r/min and read the oil pressure gauge.
If the oil pressure is lower or higher than the specification, the following causes may be considered.

Oil pressure specification when oil temp. is 60 °C (140 °F)

30 – 45 kPa (0.31 – 0.46 kgf/cm², 4.35 – 6.52 psi)
at 3000 r/min

High oil pressure	Low oil pressure
<ul style="list-style-type: none"> • Engine oil viscosity is too high • Clogged oil passage • Combination of the above items 	<ul style="list-style-type: none"> • Clogged oil filter • Oil leakage from the oil passage • Damaged O-ring • Defective oil pump • Combination of the above items

- 5) Stop the engine and remove the oil pressure gauge and attachment.

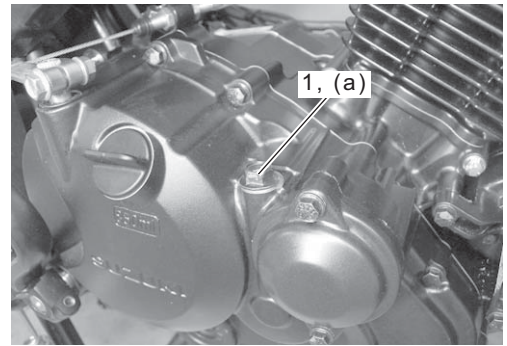
⚠ WARNING

To avoid the risk of being burned, remove the oil pressure gauge when the oil has cooled.

- 6) Install the new gasket to the oil gallery plug (M8) (1).
- 7) Install the oil gallery plug (M8) and tighten it to the specified torque.

Tightening torque

Oil gallery plug (M8) (a): 12 N·m (1.2 kgf-m, 9.0 lbf-ft)



IF34J1150004-01

- 8) Check the engine oil level. (Page 1E-4)

Repair Instructions

Engine Oil Inspection

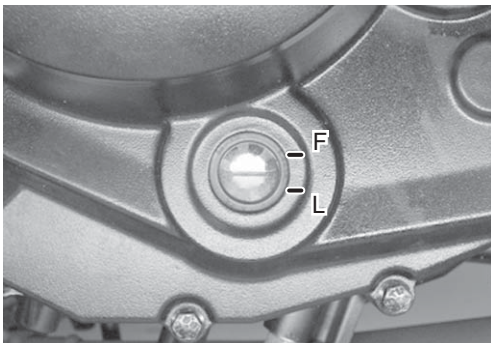
BENF34J11506001

Engine Oil Leakage Inspection

Visually check the cylinder, crankcase, etc. for oil leakage.

Engine Oil Level Inspection

- 1) Keep the motorcycle upright.
- 2) Start the engine and allow it to run for three minutes at idling speed.
- 3) Turn off the engine and wait about three minutes, then check the oil level through the inspection window. If the level is below mark "L", add oil to "F" level. If the level is above mark "F", drain oil to "F" level.



IF34J1150005-01

Engine Oil Replacement

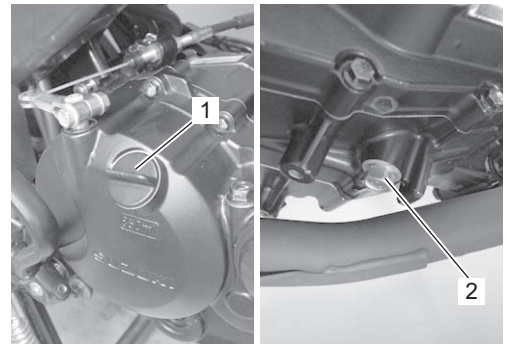
BENF34J11506002

- 1) Keep the motorcycle upright with the center stand.

- 2) Place an oil pan below the engine and remove the oil filler cap (1).
- 3) Drain engine oil by removing the oil drain plug (2).

NOTE

Warming up of the engine will facilitate draining of the engine oil due to reduction of the oil viscosity.

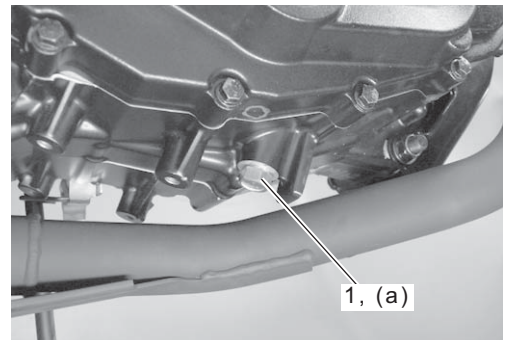


IF34J1150006-01

- 4) Install the new gasket washer to the oil drain plug (1).
- 5) Tighten the oil drain plug to the specified torque.

Tightening torque

Oil drain plug (a): 18 N·m (1.8 kgf-m, 13.5 lbf-ft)



IF34J1150007-01

1E-5 Engine Lubrication System:

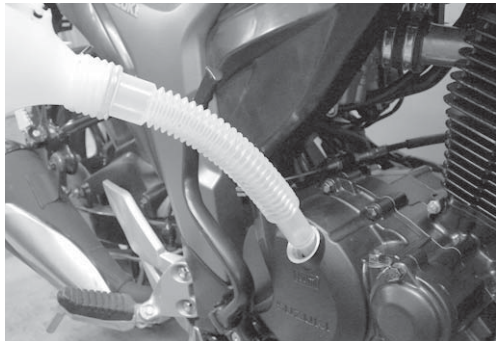
6) Pour new oil through the oil filler hole.

Necessary amount of engine oil

Oil change: 850 ml (0.90 US qt, 0.75 Imp qt)

Oil and filter change: 950 ml (1.00 US qt, 0.84 Imp qt)

Engine overhaul: 1100 ml (1.16 US qt, 0.97 Imp qt)



IF34J1150008-01

7) Install the oil filler cap.

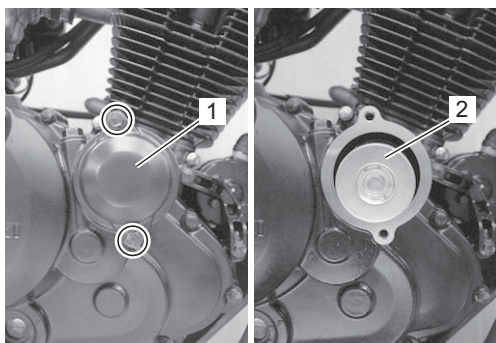
8) Check the engine oil level. (Page 1E-4)

Oil Filter Replacement

BENF34J11506003

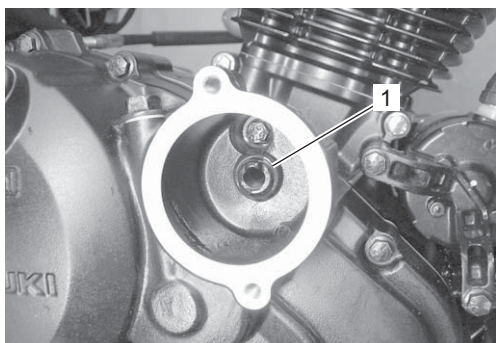
1) Drain engine oil. (Page 1E-4)

2) Remove the oil filter cap (1) and oil filter (2).



IF34J1150009-01

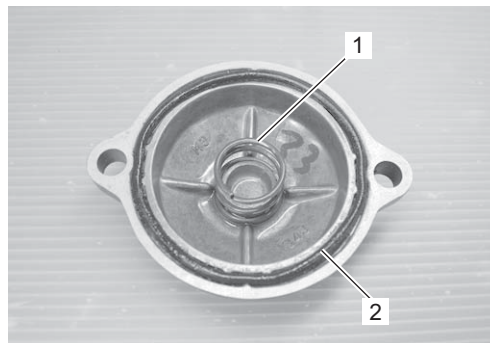
3) Replace the oil filter O-ring (1) with a new one and apply engine oil to it.



IF34J1150010-01

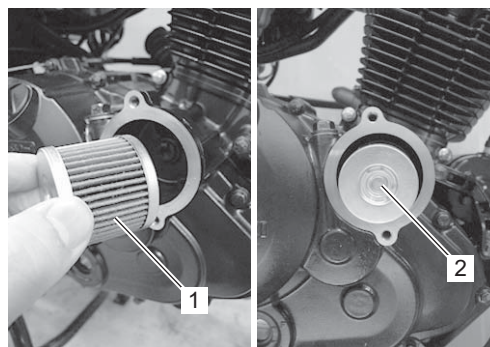
4) Fix the spring (1) to the oil filter cap firmly.

5) Replace the oil filter cap O-ring (2) with a new one and apply engine oil to it.



IF34J1150011-01

6) Position the oil filter (1) so that the valve (2) comes outside.

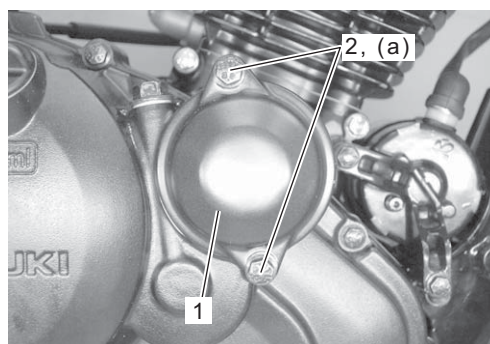


IF34J1150012-01

7) Install the oil filter cap (1) and tighten the bolts (2) to the specified torque.

Tightening torque

Oil filter cap bolt (a): 10 N·m (1.0 kgf-m, 7.5 lbf-ft)



IF34J1150013-01

8) Add new engine oil. (Page 1E-4)

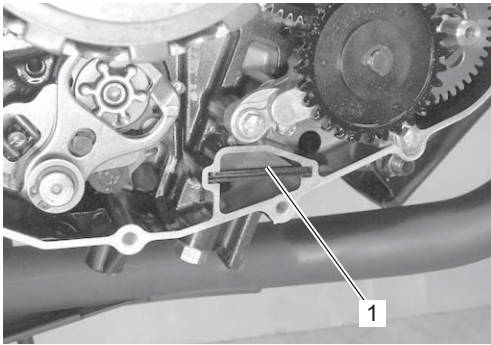
9) Check the engine oil level. (Page 1E-4)

Oil Sump Filter Removal and Installation

BENF34J11506004

Removal

- 1) Remove the clutch cover and gasket. (Page 5C-6)
- 2) Remove the oil sump filter (1).



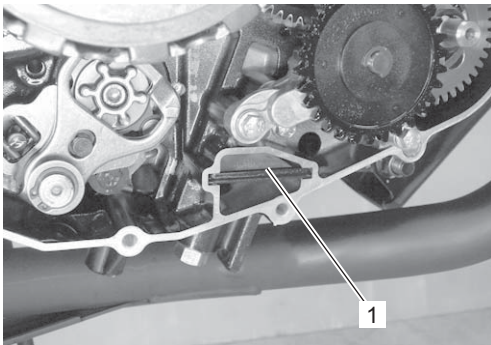
IF34J1150014-01

Installation

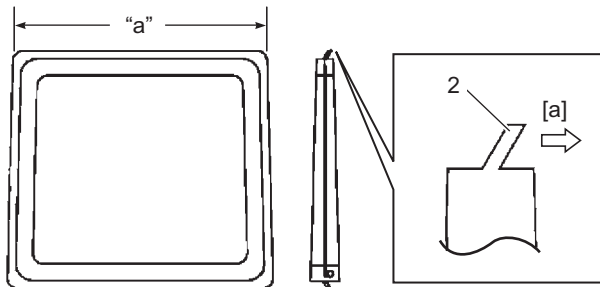
- 1) Install the oil sump filter (1).

NOTICE

- The lip (2) of the oil sump filter should be positioned downward.
- The shorter side of the oil sump filter should be positioned inside.



IF34J1150014-01



IF34J1150026-02

"a": Shorter side

[a]: Down side

- 2) Install the clutch cover. (Page 5C-7)

Oil Sump Filter Inspection and Cleaning

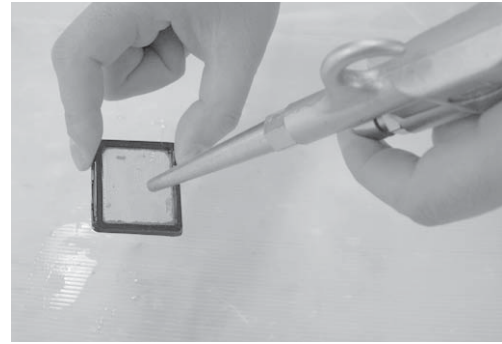
BENF34J11506005

Refer to "Oil Sump Filter Removal and Installation" (Page 1E-6).

If the oil sump filter is clogged with sediment or rust, clean the oil sump filter using compressed air.

NOTE

When the oil sump filter is dirtied excessively, replace it with a new one.



IF34J1150015-01

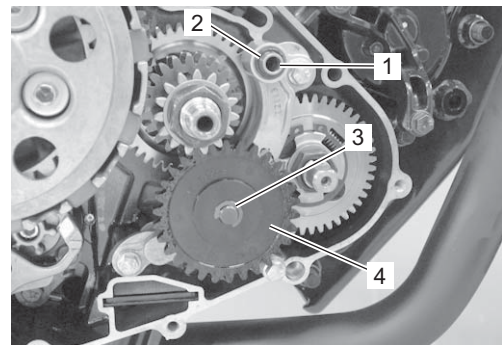
Oil Pump Removal and Installation

BENF34J11506011

Removal**NOTICE**

Do not attempt to disassemble the oil pump assembly. The oil pump is available only as an assembly.

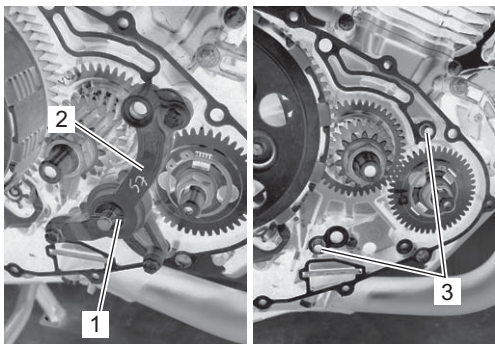
- 1) Remove the clutch cover and gasket. Refer to "Clutch Removal" in Section 5C (Page 5C-6).
- 2) Remove the dowel pin (1), O-ring (2), E-ring (3) and oil pump driven gear (4).



IF34J1150016-01

1E-7 Engine Lubrication System:

- 3) Remove the pin (1), oil pump (2) and dowel pins (3).



IF34J1150017-01

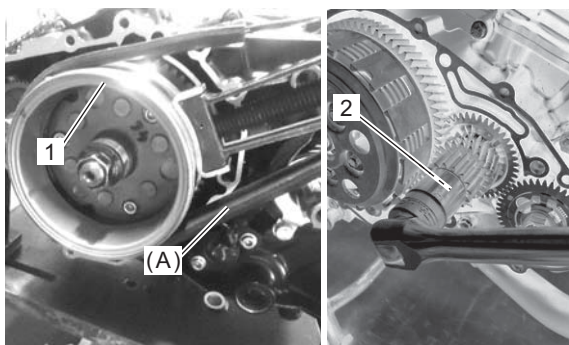
- 4) Remove the generator cover. Refer to “Generator Removal” in Section 1J (Page 1J-5).
5) Hold the generator rotor (1) with the special tool and remove the oil pump drive gear nut (2).

NOTE

This oil pump drive gear nut has left-hand threads.

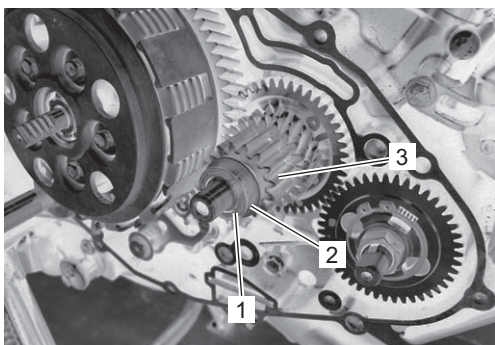
Special tool

(A): Rotor Holder



IF34J1150018-01

- 6) Remove the conical spring washer (1), washer (2) and oil pump drive gear (3).



IF34J1150019-01

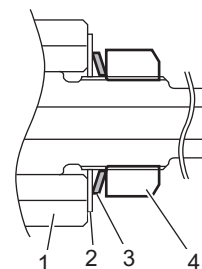
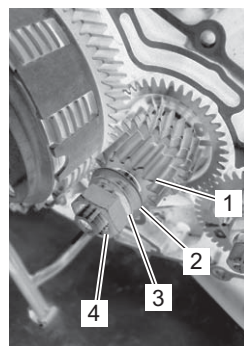
Installation

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

- Install the oil pump drive gear (1), washer (2), conical spring washer (3) and oil pump drive gear nut (4).

NOTE

- The conical curve side of spring washer faces outside.
- The primary drive gear nut has left-hand threads.



IF34J1150020-01

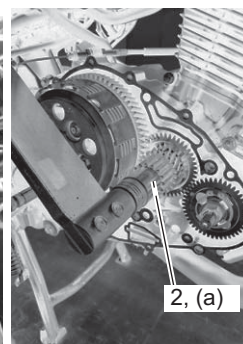
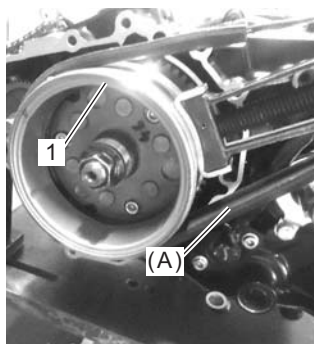
- Hold the generator rotor (1) with the special tool and tighten the oil pump drive gear nut (2) to the specified torque.

Special tool

(A): Rotor Holder

Tightening torque

Oil pump drive gear nut (a): 50 N·m (5.1 kgf-m, 37.0 lbf-ft)

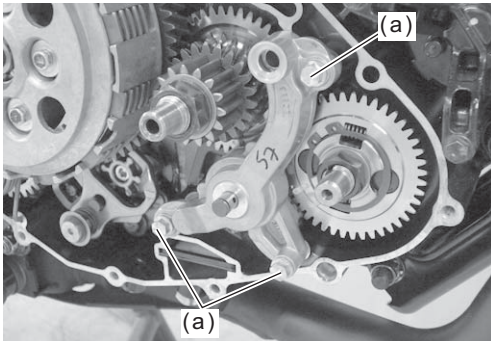


IF34J1150021-02

- Tighten the oil pump mounting bolts to the specified torque.

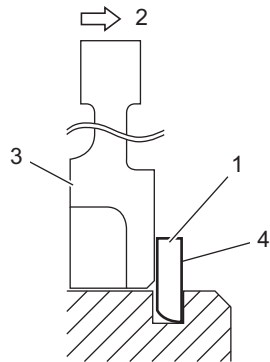
Tightening torque

Oil pump mounting bolt (a): 10 N·m (1.0 kgf-m, 7.5 lbf-ft)



IF34J1150022-01

- When installing a new E-ring (1), pay attention to its direction. Fit it to the side where the thrust (2) is as shown in the illustration.

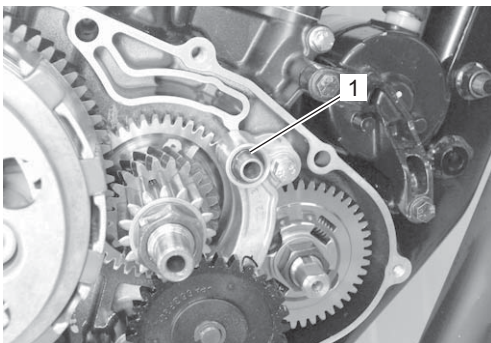


IF34J1150023-01

3. Oil pump driven gear

4. Sharp edge

- Apply engine oil to the new O-ring (1) and install it.



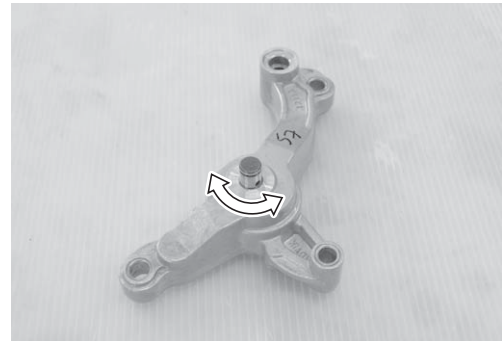
IF34J1150024-01

Oil Pump Inspection

BENF34J11506012

Refer to "Oil Pump Removal and Installation" (Page 1E-6).

Rotate the oil pump by hand and check that it moves smoothly. If it does not move smoothly, replace the oil pump assembly.



IF34J1150025-01

Specifications

Tightening Torque Specifications

BENF34J11507001

Fastening part	Tightening torque			Note
	N·m	kgf-m	lbf-ft	
Oil gallery plug (M8)	12	1.2	9.0	☞ (Page 1E-4)
Oil drain plug	18	1.8	13.5	☞ (Page 1E-4)
Oil filter cap bolt	10	1.0	7.5	☞ (Page 1E-5)
Oil pump drive gear nut	50	5.1	37.0	☞ (Page 1E-7)
Oil pump mounting bolt	10	1.0	7.5	☞ (Page 1E-8)

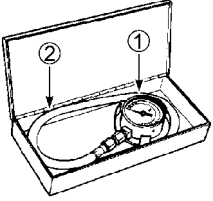
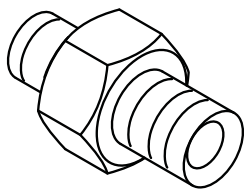
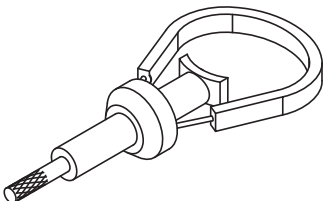
Reference:

For the tightening torques of fasteners not specified in this page, refer to:
 “Fasteners Information” in Section 0C (Page 0C-8)

Special Tools and Equipment

Special Tool

BENF34J11508001

Oil pressure gauge set (600 kpa) 1. Gauge 2. Hose ☞ (Page 1E-3) 	Adapter Pressure Gauge ☞ (Page 1E-3) 
Rotor holder ☞ (Page 1E-7) / ☞ (Page 1E-7) 	

Fuel System

Precautions

Precautions for Fuel System

BENF34J11700001

⚠ WARNING

- Keep away from fire or spark.
- During disassembling, use care to minimize spillage of gasoline.
- Spilled gasoline should be wiped off immediately.
- Work in a well-ventilated area.

⚠ CAUTION

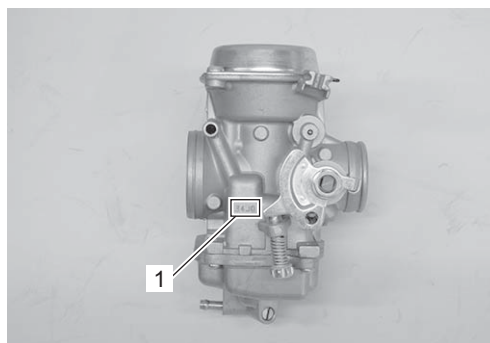
- To prevent the fuel system (fuel tank, fuel hose, etc.) from contamination with foreign particles, blind all openings.
- After removing the carburetor, tape the cylinder intake section to prevent foreign particles from entering.

General Description

I.D. No. Location

BENF34J11701001

The carburetor has an I.D. number (1) printed on its body.

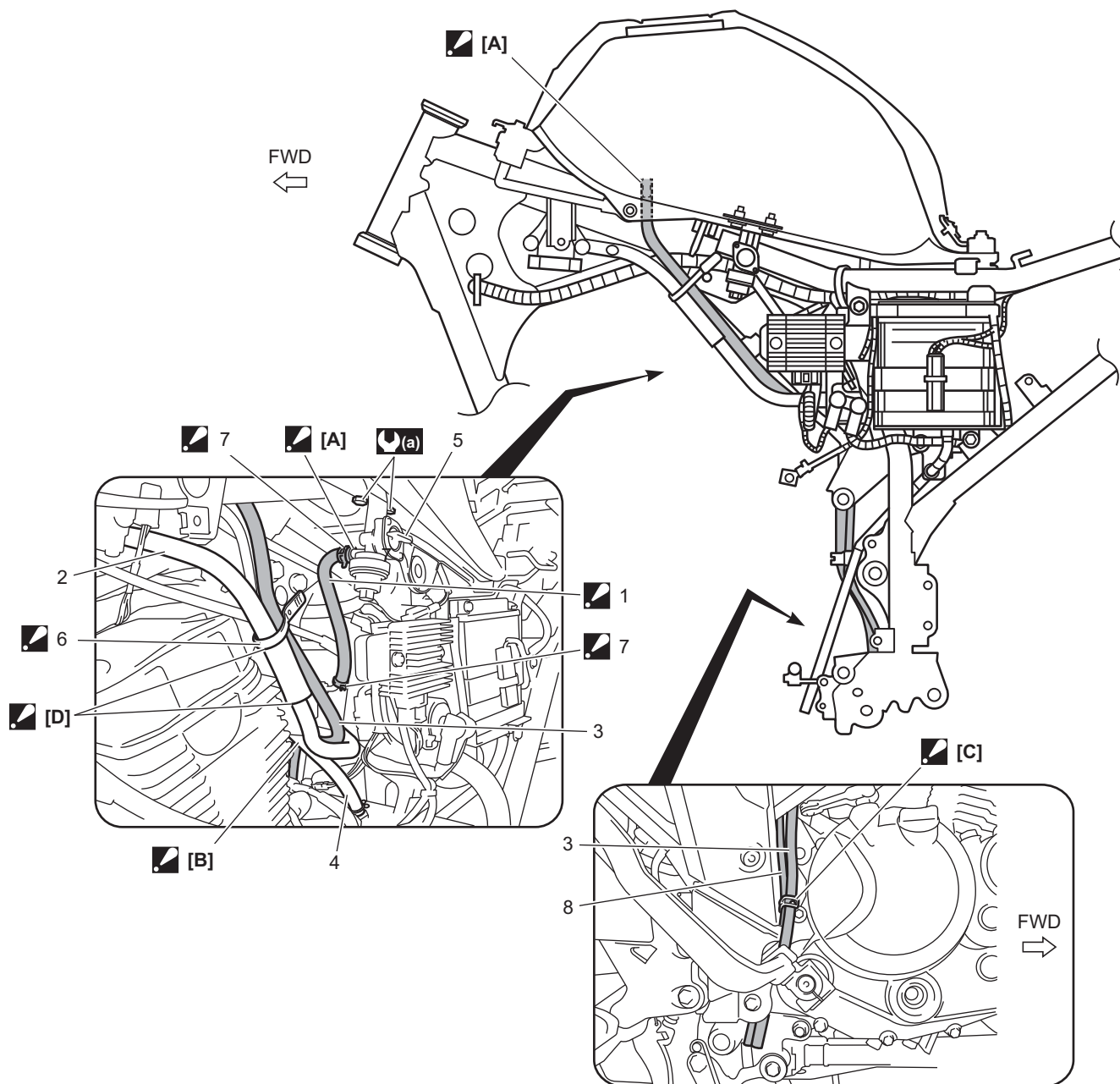


IF34J1170001-02

Schematic and Routing Diagram

Fuel Hose Routing Diagram

BENF34J11702001



IF34J1170002-03

[A]: Insert the hose to the nipple up to the end of the strait part of the nipple.	2. PAIR cleaner hose	[7]: Clamp : Face the tip of the clamp front side.
[B]: Pass the fuel tank water drain hose behind the PCV hose.	3. Fuel tank water drain hose	8. carburetor overflow hose
[C]: Clamp the fuel tank water drain hose at the white mark together with the carburetor overflow hose and push them inside until they touch the clutch cover.	4. PCV hose	(a): 4.4 N-m (0.45 kgf-m, 3.5 lbf-ft)
[D]: PAIR cleaner hose protector end	5. Fuel valve	
[1]: Fuel hose : Position the long straight side of the hose toward the carburetor.	[6]: Clamp : Clamp the fuel tank water drain hose and PAIR cleaner hose at out of the PAIR cleaner hose protector front end positioning its tab upward and the protrusion inward.	

Diagnostic Information and Procedures

Fuel System Symptom Diagnosis

BENF34J11704001

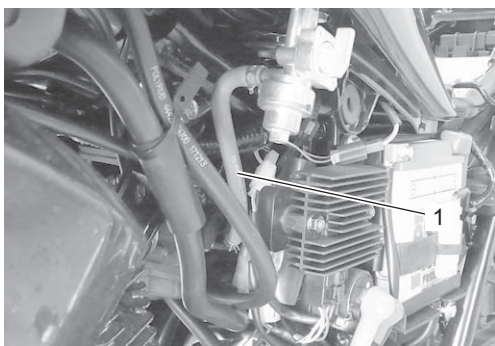
Condition	Possible cause	Correction / Reference Item
Starting difficulty	Clogged starter jet.	Clean. ⌚(Page 1G-16)
	Clogged starter jet passage.	Clean. ⌚(Page 1G-16)
	Air leaking from joint between starter body and carburetor.	Tighten, adjust or replace gasket. ⌚(Page 1D-5)
	Improperly working starter plunger.	Check. ⌚(Page 1G-10) Clean. ⌚(Page 1G-16)
Idling or low-speed trouble	Clogged or loose slow jet.	Clean or tighten. ⌚(Page 1G-16)
	Clogged slow jet passage.	Clean. ⌚(Page 1G-16)
	Clogged pilot outlet port.	Clean. ⌚(Page 1G-16)
	Clogged bypass port.	Clean. ⌚(Page 1G-16)
	Starter plunger not fully closed.	Check. ⌚(Page 1G-10)
	Improperly set pilot screw.	Adjust. ⌚(Page 1G-11)
	Incorrect float height.	Adjust. ⌚(Page 1G-16)
Medium-or high speed trouble	Clogged main jet.	Clean. ⌚(Page 1G-16)
	Clogged main air jet.	Clean. ⌚(Page 1G-16)
	Clogged needle jet.	Clean. ⌚(Page 1G-16)
	Improperly working throttle valve.	Check. ⌚(Page 1G-16)
	Clogged fuel filter.	Clean or replace. ⌚(Page 1G-6)
	Incorrect float height.	Adjust. ⌚(Page 1G-16)
	Starter plunger not fully closed.	Check. ⌚(Page 1G-10)
Overflow and fuel level fluctuations	Worn or damaged needle valve.	Replace. ⌚(Page 1G-11)
	Broken needle valve.	Replace. ⌚(Page 1G-11)
	Improperly working float.	Adjust or replace. ⌚(Page 1G-16)
	Foreign matter on the needle valve.	Clean or replace with needle valve seat. ⌚(Page 1G-16)
	Incorrect float chamber fuel level.	Adjust float height. ⌚(Page 1G-16)

Repair Instructions

Fuel Hose Inspection

BENF34J11706039

- 1) Remove the left frame side cover. ⌚(Page 9D-12)
- 2) Inspect the fuel hose (1) for damage and fuel leakage. If any defects are found, replace the fuel hose with a new one.

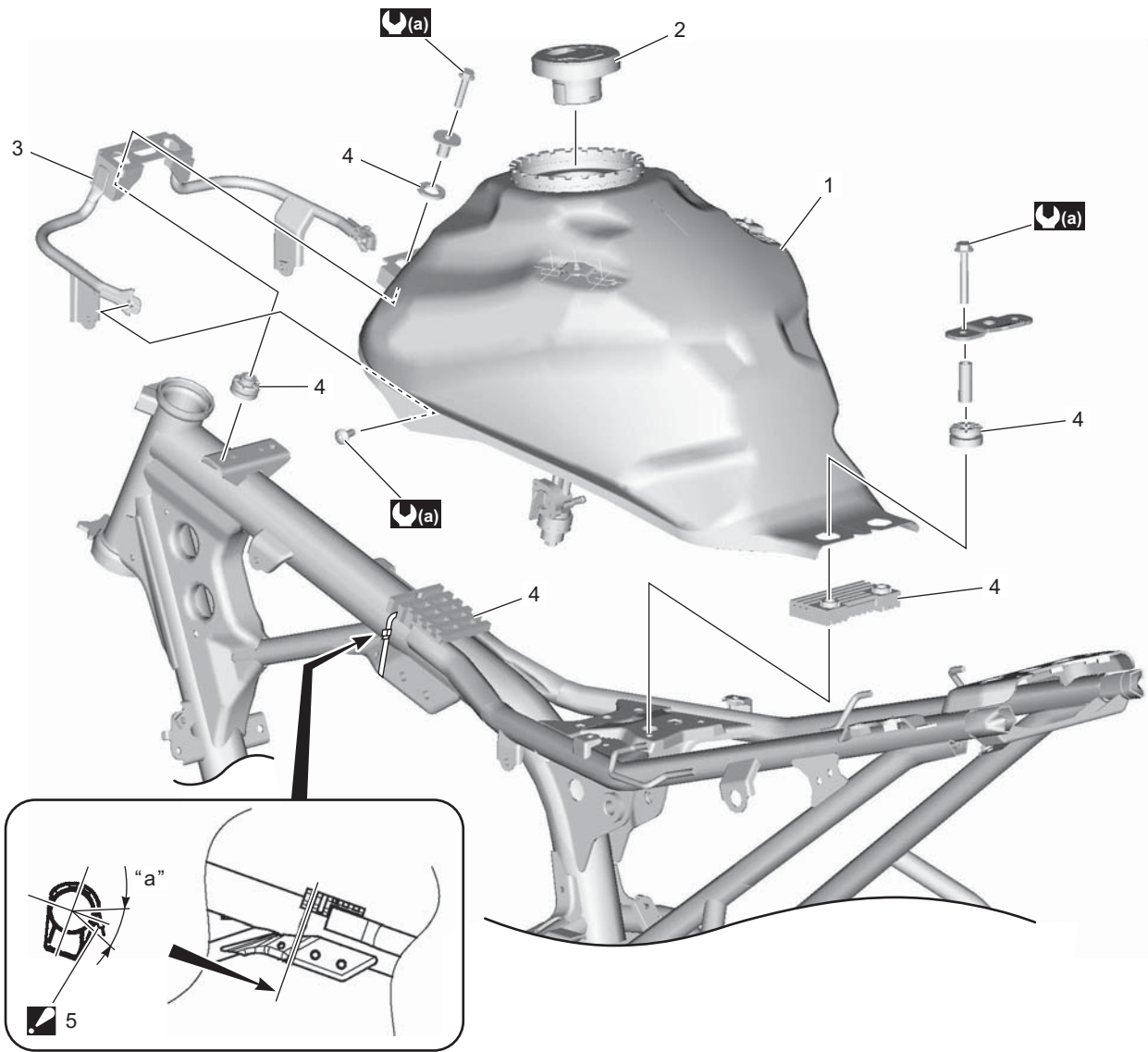


IF34J1170003-01

- 3) After finishing the fuel hose inspection, reinstall the removed parts.

Fuel Tank Construction

BENF34J11706001



IF34J1170004-01

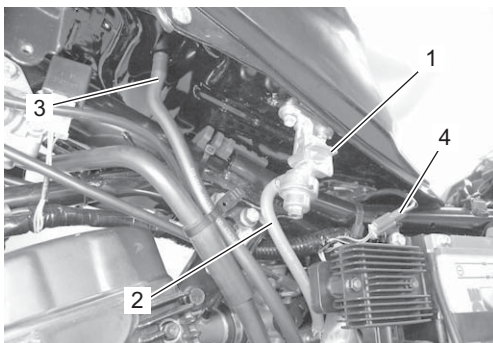
1. Fuel tank	5. Clamp : Cut off the tip of the clamp leaving 10 mm (0.39 in) at the maximum. : Position the clamp end within the range as shown in the figure.
2. Fuel cap assembly	"a": 45°
3. Fuel tank brace	(a) : 10 N·m (1.0 kgf·m, 7.5 lbf·ft)
4. Cushion	

Fuel Tank Removal and Installation

BENF34J11706002

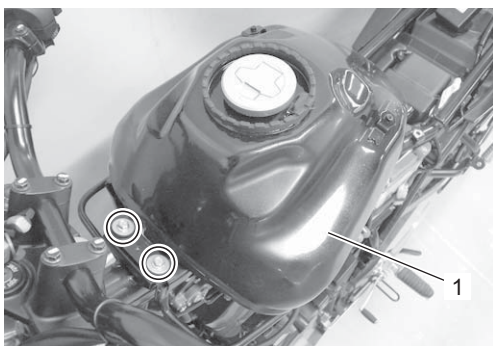
Removal

- 1) Remove the fuel tank covers. (Page 9D-16)
- 2) Turn the fuel valve (1) to OFF position.
- 3) Disconnect the fuel hose (2), fuel tank water drain hose (3) and fuel level gauge lead wire coupler (4).



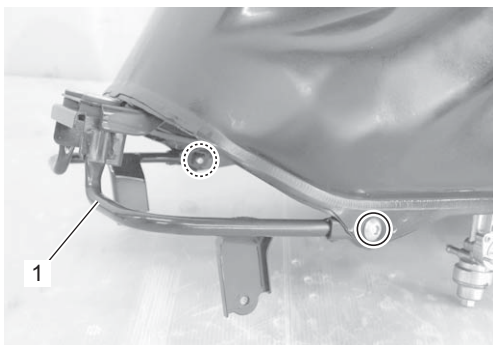
IF34J1170005-01

- 4) Remove the fuel tank (1).



IF34J1170006-01

- 5) Remove the fuel tank brace (1).



IF34J1170007-01

- 6) Drain fuel completely.

Installation

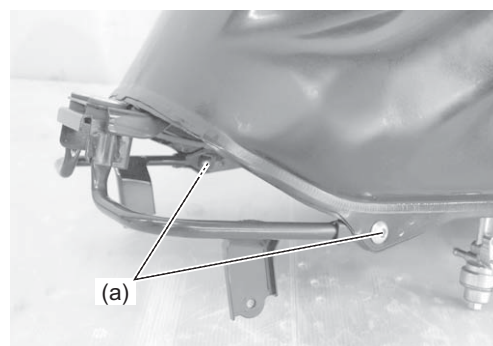
Install the fuel tank in the reverse order of removal. Pay attention to the following point:

- Tighten the fuel tank brace mounting bolts and fuel tank mounting bolts to the specified torque.

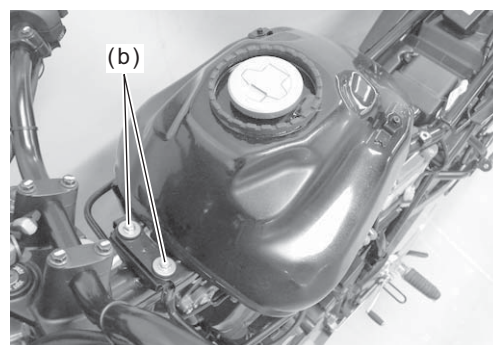
Tightening torque

Fuel tank brace mounting bolt (a): 10 N·m (1.0 kgf-m, 7.5 lbf-ft)

Fuel tank mounting bolt (b): 10 N·m (1.0 kgf-m, 7.5 lbf-ft)



IF34J1170008-01



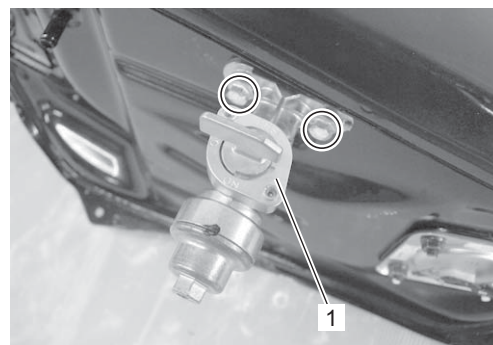
IF34J1170009-01

Fuel Valve Removal and Installation

BENF34J11706003

Removal

- 1) Remove the fuel tank. (Page 1G-5)
- 2) Remove the fuel valve (1).



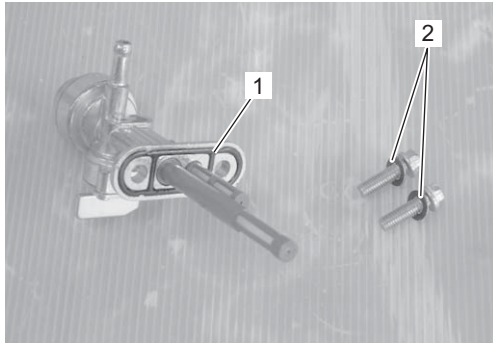
IF34J1170010-01

1G-6 Fuel System:

Installation

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

- Install the new gasket (1) and gasket washers (2).

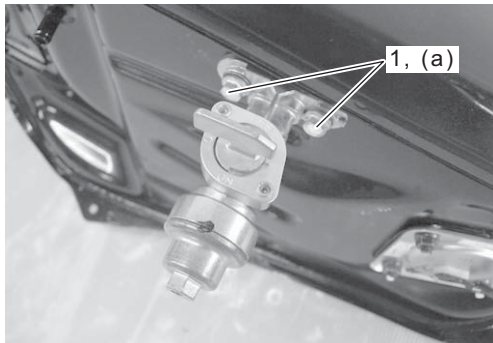


IF34J1170011-01

- Tighten the fuel valve bolts (1) to the specified torque.

Tightening torque

Fuel valve bolt (a): 4.4 N·m (0.45 kgf-m, 3.5 lbf-ft)



IF34J1170012-01

Fuel Filter Inspection and Cleaning

BENF34J11706004

Refer to “Fuel Valve Removal and Installation” (Page 1G-5).

Inspect and cleaning the fuel filter.

If the fuel filter is clogged excessively, replace the fuel valve with a new one.



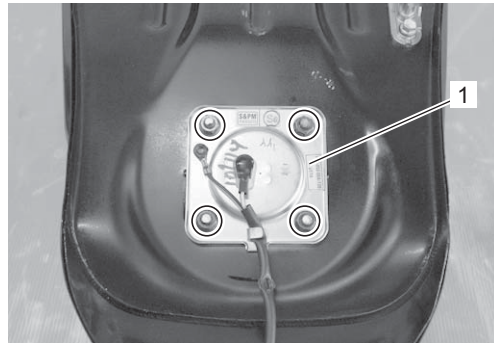
IF34J1170013-02

Fuel Level Gauge Removal and Installation

BENF34J11706005

Removal

- 1) Remove the fuel tank. (Page 1G-5)
- 2) Remove the fuel level gauge (1).



IF34J1170014-01

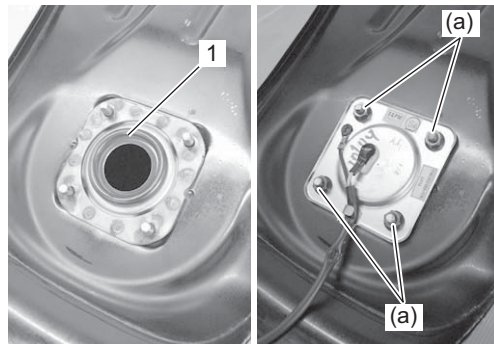
Installation

Install the fuel level gauge in the reverse order of removal. Pay attention to the following points:

- Install the new O-ring (1).
- Tighten the fuel gauge mounting nuts to the specified torque.

Tightening torque

Fuel gauge mounting nut (a): 5 N·m (0.51 kgf-m, 4.0 lbf-ft)



IF34J1170015-01

Fuel Level Gauge Inspection

BENF34J11706006

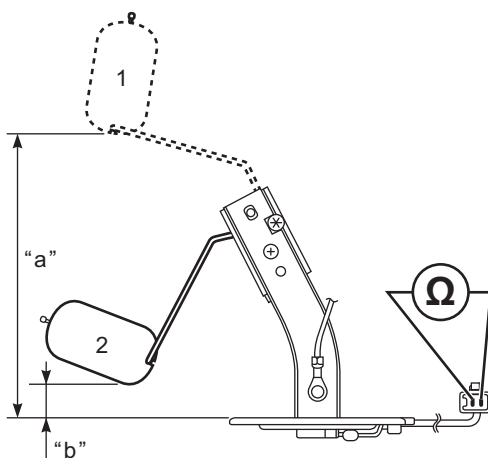
Refer to "Fuel Level Gauge Removal and Installation" (Page 1G-6).

- 1) Inspect the float (1) of the fuel gauge assembly moves smoothly.
- 2) Using the multi circuit tester, measure the resistance between the terminals at full position (1) and empty position (2) of the fuel level gauge float. If the resistance is incorrect, replace the fuel level gauge with a new one.

Fuel level gauge resistance

Full: 8 – 17 Ω

Empty: 209 – 219 Ω



IF34J1170016-01

"a": 126.3 – 132.3 mm (4.97 – 5.21 in)

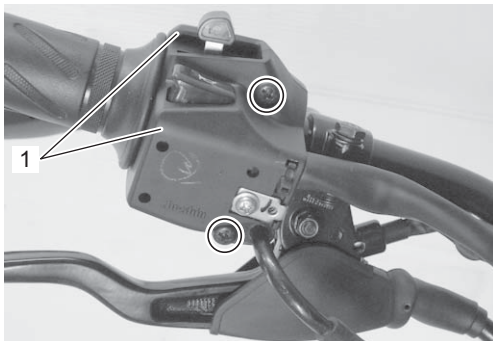
"b": 12.7 – 18.7 mm (0.50 – 0.74 in)

Starter Cable Removal and Installation

BENF34J11706010

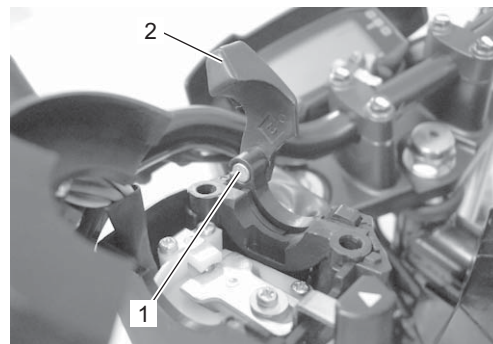
Removal

- 1) Remove the frame side covers. Refer to "Frame Side Cover Removal and Installation" in Section 9D (Page 9D-12).
- 2) Remove the left handle switch (1).



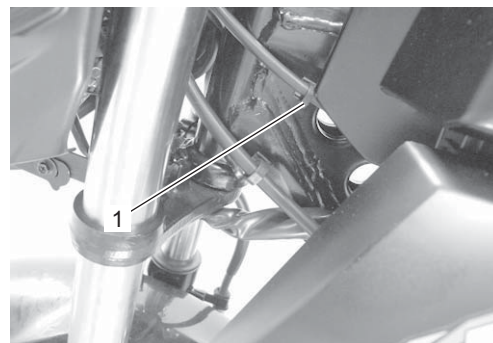
IF34J1170017-01

- 3) Disconnect the starter cable end (1) from starter lever (2).



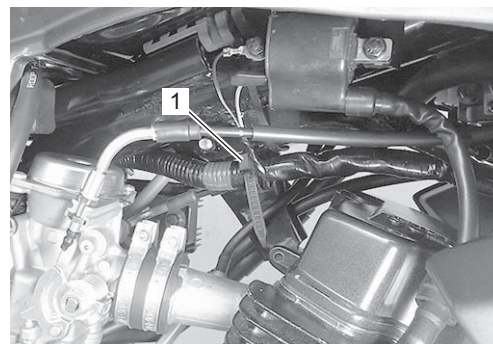
IF34J1170018-01

- 4) Release the starter cable from the clamp (1).



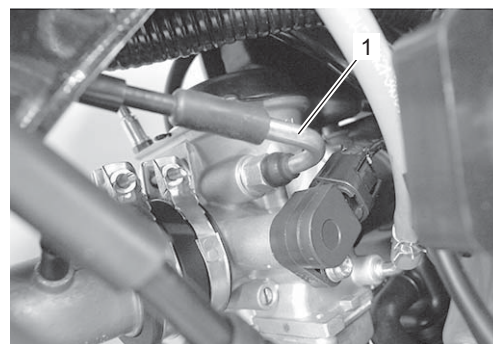
IF34J1170019-01

- 5) Remove the clamp (1).



IF34J1170056-01

- 6) Remove the starter cable (1) from carburetor assembly.



IF34J1170020-02

1G-8 Fuel System:

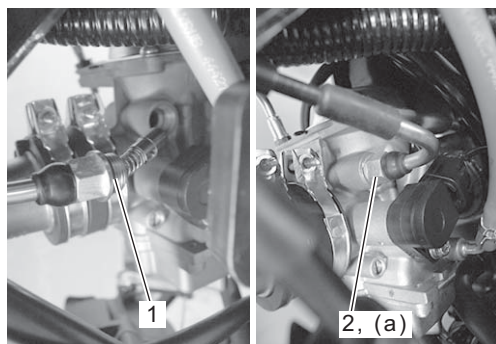
Installation

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

- Install the starter cable as shown in the throttle cable routing diagram. Refer to "Throttle Cable Routing Diagram" in Section 1D (Page 1D-2).
- Install the new O-ring (1) and tighten the starter cable guide holder (2) to the specified torque.

Tightening torque

Starter cable guide holder (a): 2.5 N·m (0.25 kgf-m, 2.0 lbf-ft)



IF34J1170021-02

- After installing, check the proper operation.

Starter Cable On-Vehicle Inspection

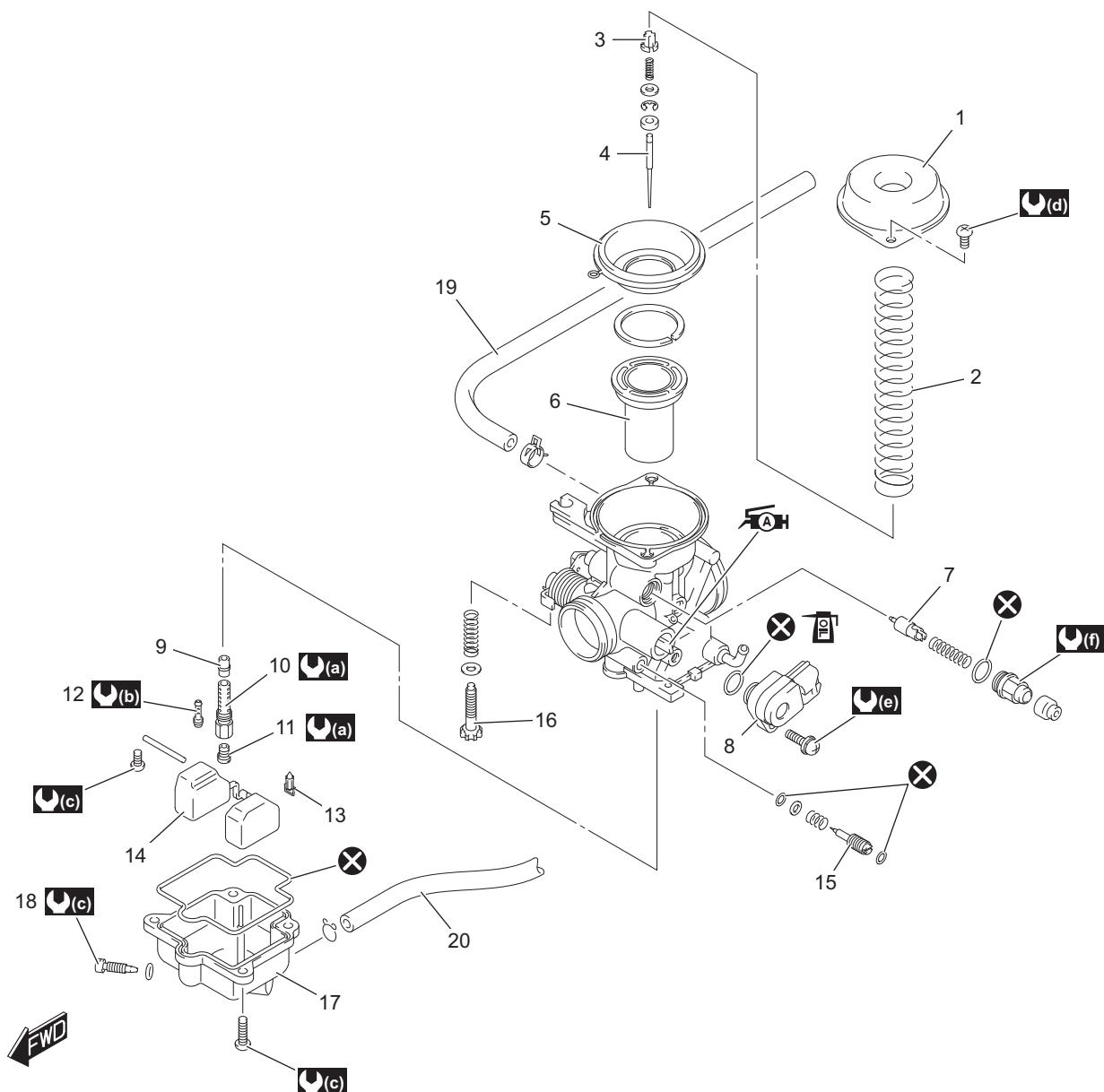
BENF34J11706011

Refer to "Frame Side Cover Removal and Installation" in Section 9D (Page 9D-12).

Check that the starter knob moves smoothly from full open to full close. If it does not smoothly, lubricate the starter cable.

Carburetor Components

BENF34J11706013



IF34J1170022-01

1. Carburetor top cap	11. Main jet	(a) : 1.8 N·m (0.18 kgf-m, 1.5 lbf-ft)
2. Spring	12. Pilot jet	(b) : 0.8 N·m (0.08 kgf-m, 0.5 lbf-ft)
3. Holder	13. Needle valve	(c) : 2.0 N·m (0.20 kgf-m, 1.5 lbf-ft)
4. Jet needle	14. Float	(d) : 3.5 N·m (0.36 kgf-m, 2.5 lbf-ft)
5. Diaphragm	15. Pilot screw	(e) : 3.0 N·m (0.31 kgf-m, 2.5 lbf-ft)
6. Piston valve	16. Throttle stop screw	(f) : 2.5 N·m (0.25 kgf-m, 2.0 lbf-ft)
7. Starter plunger	17. Float chamber body	A : Apply grease.
8. TP sensor	18. Fuel drain screw	F : Apply engine oil.
9. Needle jet	19. Carburetor air vent hose	X : Do not reuse.
10. Needle jet holder	20. Carburetor overflow hose	X : Do not reuse.

Engine Idle Speed Inspection and Adjustment

BENF34J11706040

- 1) Remove the following parts.
 - Right frame front cover: (Page 9D-13)
 - Right frame side cover: (Page 9D-12)
- 2) Before inspection the engine idle speed, check the throttle cable play. (Page 1D-8)
- 3) Warm up the engine.
- 4) Turn the ignition switch OFF.
- 5) Connect the special tool to the high-tension cord.

Special tool

(A): Techometer

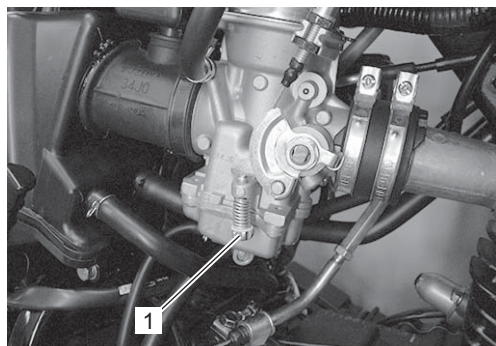


IF34J1170023-01

- 6) Start the engine and set the engine idle speed within the specified range by turning the throttle stop screw (1).

Engine idle speed

1600 ± 100 r/min



IF34J1170024-02

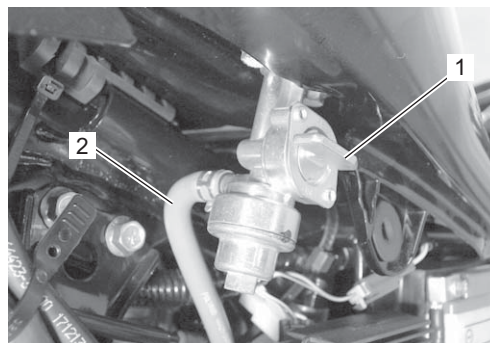
- 7) Turn the ignition switch OFF.
- 8) Remove the special tool and install the removed parts.

Carburetor Assembly Removal and Installation

BENF34J11706014

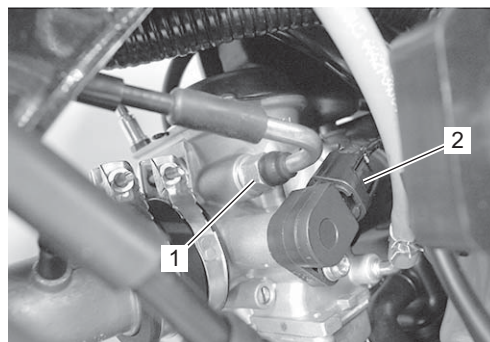
Removal

- 1) Remove the following parts.
 - Frame side covers: (Page 9D-12)
 - Frame upper covers: (Page 9D-14)
- 2) Turn the fuel valve (1) to OFF position and disconnect the fuel hose (2).



IF34J1170025-01

- 3) Disconnect the starter cable (1) and TP sensor coupler (2).

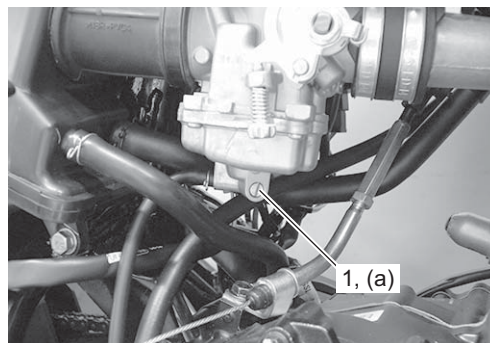


IF34J1170026-02

- 4) Loosen the fuel drain screw (1) and drain gasoline.
- 5) Tighten the fuel drain screw.

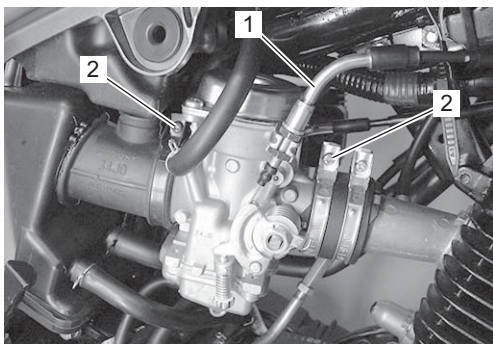
Tightening torque

Fuel drain screw (a): 2 N·m (0.20 kgf-m, 1.5 lbf-ft)



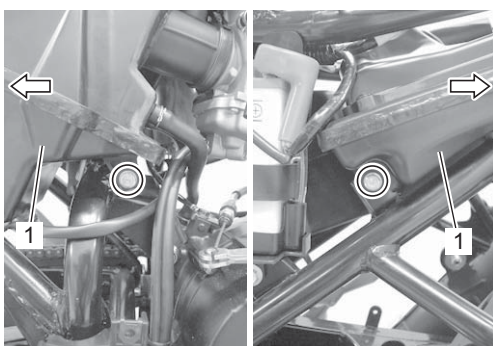
IF34J1170027-02

- 6) Disconnect the throttle cable (1) and loosen the clamp screws (2).



IF34J1170028-02

- 7) Slightly move the air cleaner box (1) backward and remove the carburetor assembly.

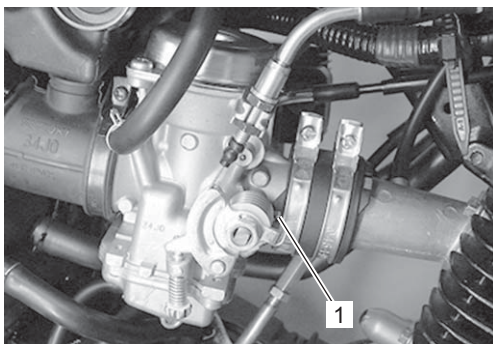


IF34J1170029-02

Installation

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

- Align protrusion (1) on the carburetor with cutaway in the joint tube.



IF34J1170030-02

- Route the fuel hoses properly. Refer to "Intake System Components" in Section 1D (Page 1D-5) and "Fuel Hose Routing Diagram" (Page 1G-2).
- Install the new O-ring and tighten the starter cable guide holder to the specified torque. Refer to "Starter Cable Removal and Installation" (Page 1G-7).
- Tighten the throttle cable lock-nut to the specified torque. Refer to "Throttle Cable Routing Diagram" in Section 1D (Page 1D-2).
- Tighten the air cleaner box bolts and clamp screws to the specified torque. Refer to "Intake System Components" in Section 1D (Page 1D-5).

- Perform the following adjustments.
 - Engine idle speed. Refer to "Engine Idle Speed Inspection and Adjustment" (Page 1G-10).
 - Throttle cable play. Refer to "Throttle Cable Play On-Vehicle Inspection and Adjustment" in Section 1D (Page 1D-8).

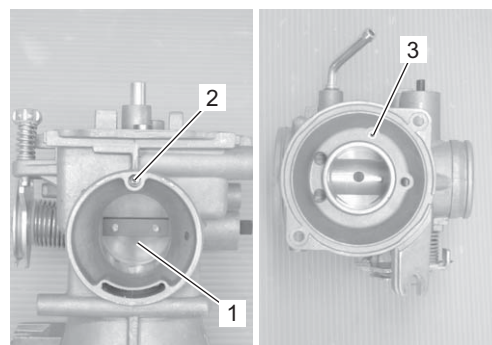
Carburetor Disassembly and Reassembly

BENF34J11706015

Refer to "Carburetor Assembly Removal and Installation" (Page 1G-10)

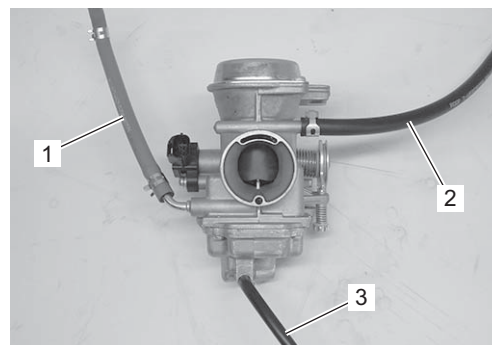
NOTICE

- Never remove the throttle valve (1).
- Never remove the jets (2) and (3). They are press fitted at the factory and attempting to remove them will cause damage.
- Do not use compressed air on the carburetor body before removing the diaphragm; this may damage the diaphragm.



IF34J1170039-01

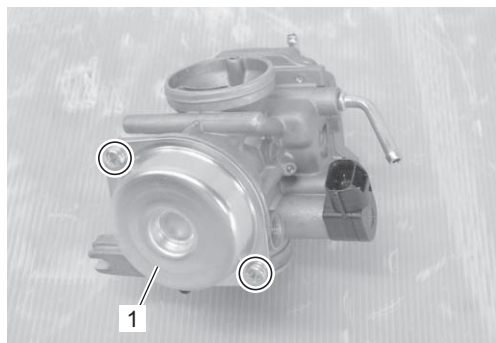
- 1) Remove the fuel hose (1), air vent hose (2) and overflow hose (3).



IF34J1170031-02

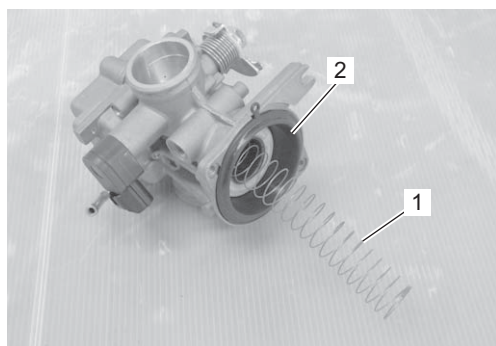
1G-12 Fuel System:

2) Remove the carburetor top cap (1).



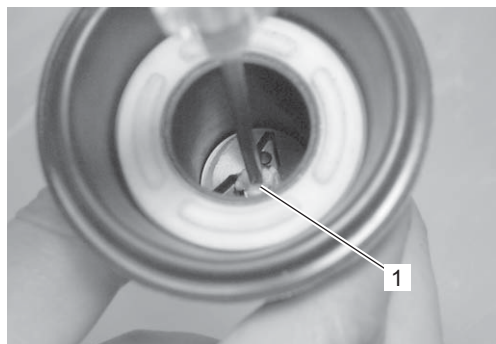
IF34J1170032-01

3) Remove the spring (1) and diaphragm (2).



IF34J1170033-01

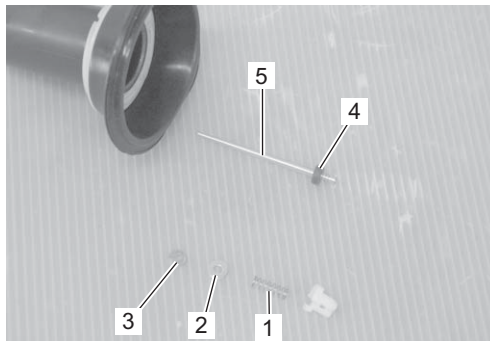
4) Remove the holder (1) from diaphragm by turning it counterclockwise with a screwdriver.



IF34J1170034-01

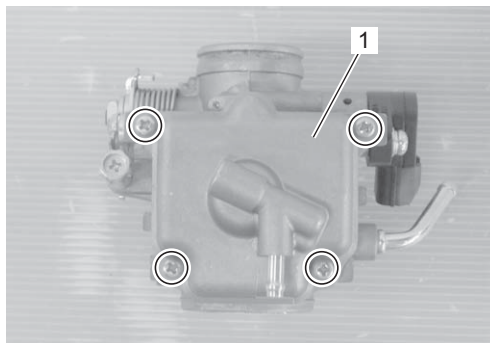
5) Remove the following parts.

- Spring (1)
- Washer (2)
- E-ring (3)
- Ring (4)
- Jet needle (5)



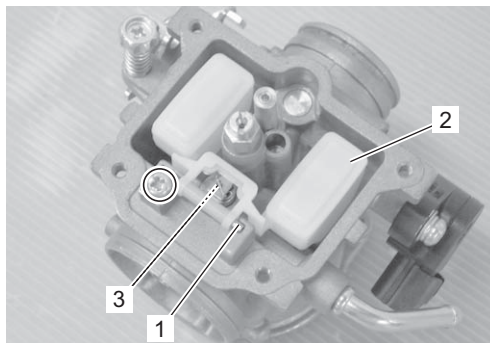
IF34J1170035-01

6) Remove the float chamber body (1).



IF34J1170036-01

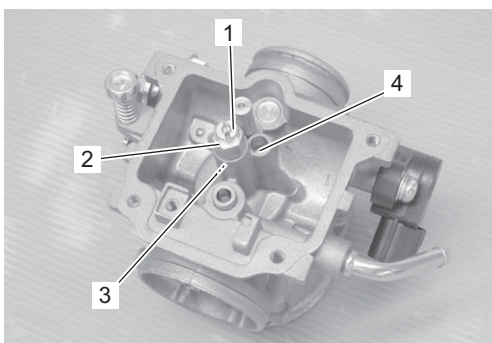
7) Remove the float pin (1), float (2) and needle valve (3).



IF34J1170037-01

8) Remove the following parts.

- Main jet (1)
- Needle jet holder (2)
- Needle jet (3)
- Pilot jet (4)



IF34J1170038-01

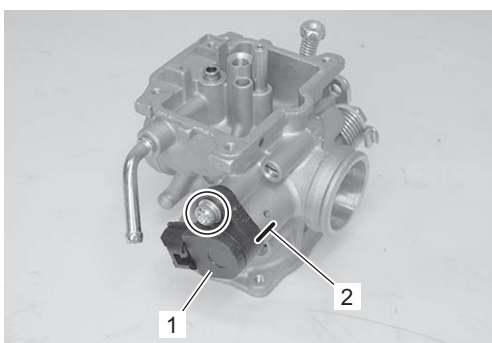
9) Remove the throttle position sensor (1) using the special tool.

NOTE

Prior to disassembly, mark (2) on the throttle position sensor original position with paint or scribe for accurate reinstallation.

Special tool

Torx Wrench

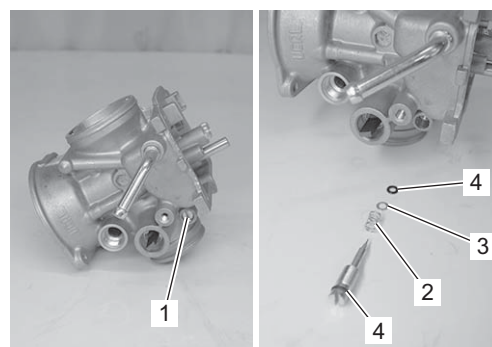


IF34J1170040-02

10) Remove the pilot screw (1), spring (2), washer (3) and O-rings (4).

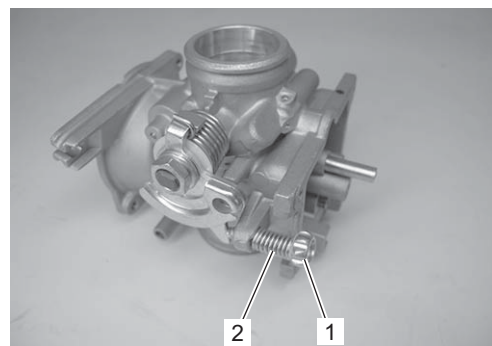
NOTE

Before removing the pilot screw, determine the setting by slowly turning it clockwise and count the number of turns required to lightly seat the screw. This counted number is important when reassembling pilot screw to original position.



IF34J1170041-03

11) Remove the throttle stop screw (1) and spring (2).

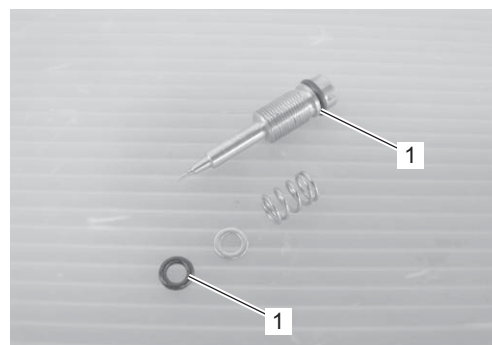


IF34J1170051-01

Reassembly

Reassemble the carburetor in the reverse order of disassembly. Pay attention to the following points:

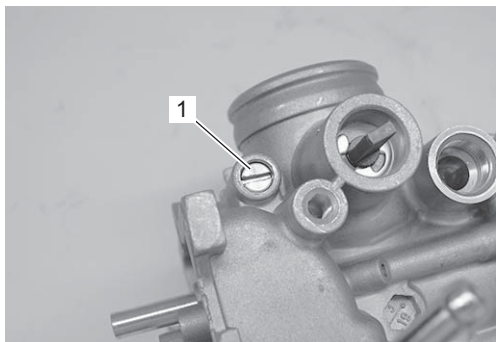
- Install the new pilot screw O-rings (1).



IF34J1170042-01

1G-14 Fuel System:

- Install the pilot screw to the original setting by turning the screw (1) in until it lightly seats, and then backing it out the same number of turns counted during disassembly.



IF34J1170043-02

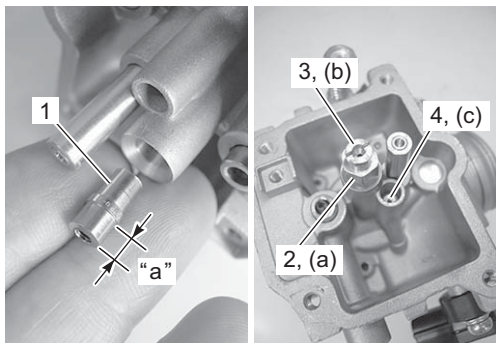
- Install the needle jet (1) with the shorter flange "a" facing the main jet side.
- Install the needle jet holder (2), main jet (3) and pilot jet (4), and tighten them to the specified torque.

Tightening torque

Needle jet holder (a): 1.8 N·m (0.18 kgf-m, 1.5 lbf-ft)

Main jet (b): 1.8 N·m (0.18 kgf-m, 1.5 lbf-ft)

Pilot jet (c): 0.8 N·m (0.08 kgf-m, 0.5 lbf-ft)

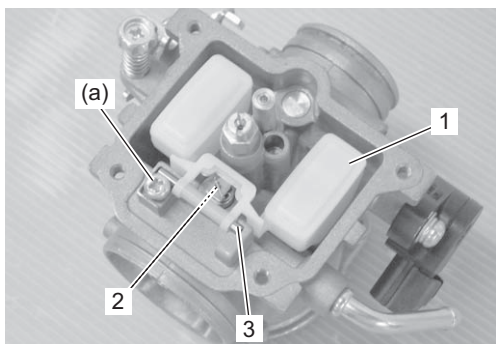


IF34J1170052-01

- Install the float (1), needle valve (2) and float pin (3) as a set, and tighten the float pin screw to the specified torque.

Tightening torque

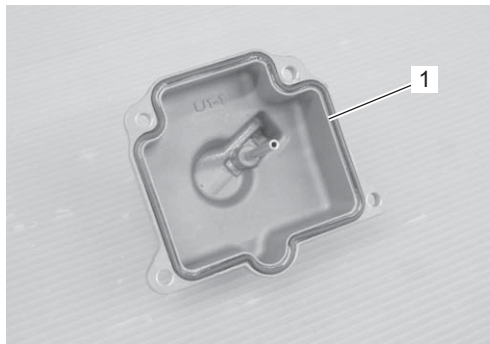
Float pin screw (a): 2.0 N·m (0.20 kgf-m, 1.5 lbf-ft)



IF34J1170053-01

- Check the float height. (Page 1G-16)

- Install a new O-ring (1) to the float chamber body properly.

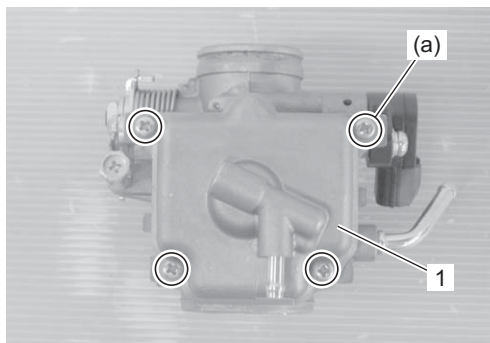


IF34J1170044-01

- Install the float chamber body (1), and tighten the screws to the specified torque.

Tightening torque

Float chamber body screw (a): 2.0 N·m (0.20 kgf-m, 1.5 lbf-ft)

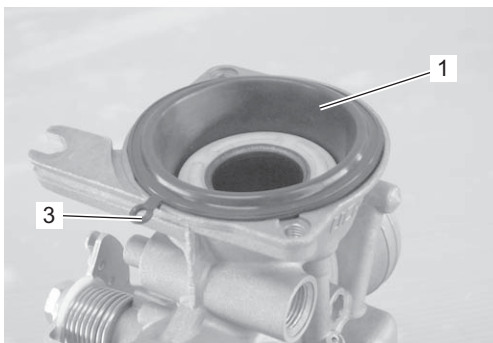


IF34J1170054-01

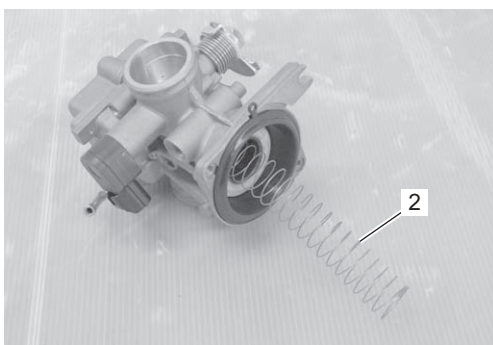
- Install the diaphragm (1) and spring (2).

NOTE

When installing the diaphragm, make sure the tab (3) of the diaphragm is aligned with the concave section of the carburetor body's rim.



IF34J1170045-02

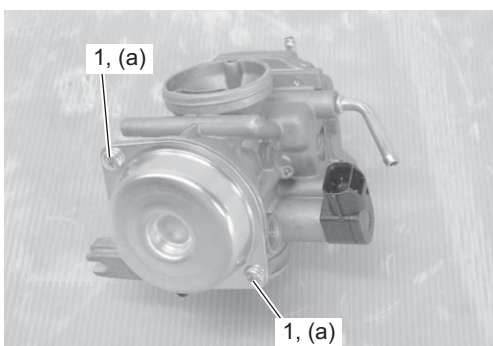


IF34J1170057-01

- Tighten the carburetor top cap screws (1) to the specified torque.

Tightening torque

Carburetor top cap screw (a): 3.5 N·m (0.36 kgf-m, 2.5 lbf-ft)



IF34J1170055-01

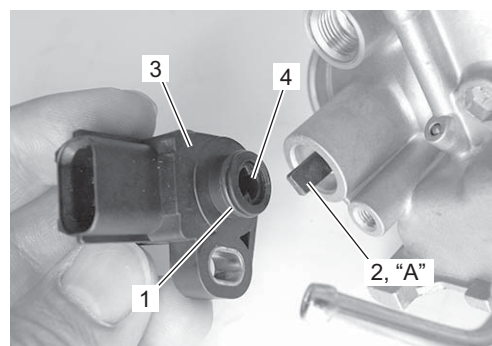
- Apply a thin coat of engine oil to the new O-ring (1).
- Apply grease to the throttle shaft end (2), if necessary.

“A”: (SUZUKI SUPER GREASE A)

- With the throttle valve fully closed, install the TP sensor (3) aligning the throttle shaft end with the groove (4) of the TP sensor.
- Tighten the TP sensor mounting screw to the specified torque.

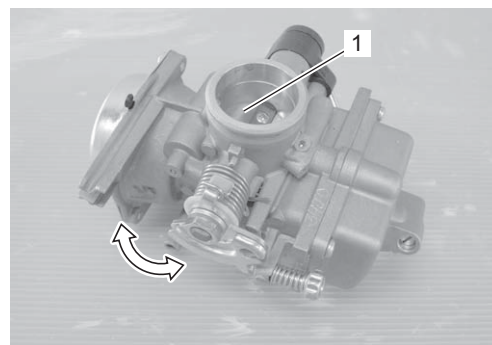
Tightening torque

TP sensor mounting screw: 3.0 N·m (0.31 kgf-m, 2.5 lbf-ft)



IF34J1170046-02

- After installing the TP sensor, make sure the throttle valve (1) opens or closes smoothly, and adjust the TP sensor position. (Page 1C-1)



IF34J1170047-01

- After installing the carburetor to the engine, adjust the engine idle speed. (Page 1G-10)

Float Height Inspection and Adjustment

BENF34J11706017

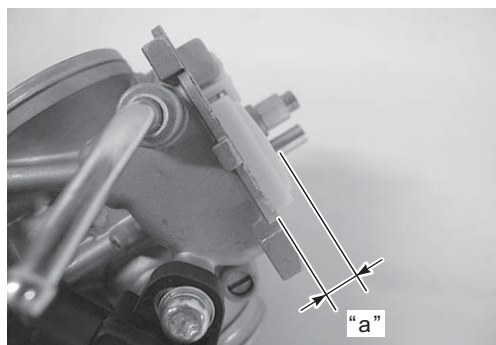
Refer to “Carburetor Assembly Removal and Installation” (Page 1G-10).

- 1) Remove the float chamber body. Refer to “Carburetor Disassembly and Reassembly” (Page 1G-11).
- 2) To check the float height, tilt the carburetor as shown.
- 3) Measure the float height “a” while the float arm is just contacting the needle valve using vernier calipers. Bend the tongue (1) as necessary to bring the float height “a” to the specified level.

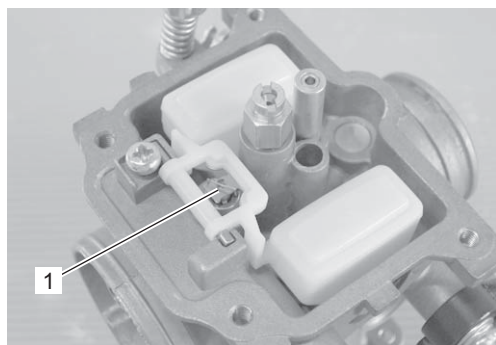
Special tool

09900–20102

Float height “a”

 $7.1 \pm 1.0 \text{ mm } (0.28 \pm 0.04 \text{ in})$


IF34J1170048-02



IF34J1170049-01

- 4) Install the float chamber body. Refer to “Carburetor Disassembly and Reassembly” (Page 1G-11).

Carburetor Inspection and Cleaning

BENF34J11706018

Refer to “Carburetor Disassembly and Reassembly” (Page 1G-11).

Inspection

Carburetor parts

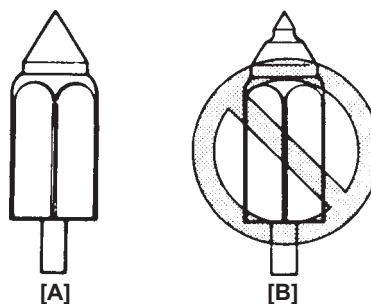
Check the following items for any damage or clogging. If they are clogged, clean the fuel passage.

- Main jet
- Pilot jet
- Main air jet
- Pilot air jet
- Needle jet holder air bleeding holes
- Float
- Jet needle
- Piston valve
- Starter plunger
- O-rings
- Diaphragm
- Pilot outlet and bypass ports

Needle Valve

Check the needle valve for damage or worn.

If foreign matter is caught between the valve seat and the needle valve, the gasoline will continue flowing and overflow. If the valve seat and needle valve are worn beyond the permissible limits, similar trouble will occur. Conversely, if the needle valve sticks, the gasoline will not flow into the float chamber. Clean the float chamber and float parts with gasoline. If the needle valve is worn, as shown in the illustration, replace it along with a new valve seat.



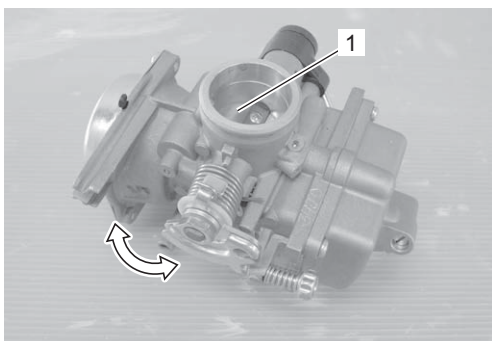
IF34J1170050-01

[A]: Correct

[B]: Incorrect

Throttle Valve

Check the throttle valve (1) moves smoothly from full open to full close. If it does not smoothly, clean the carburetor.



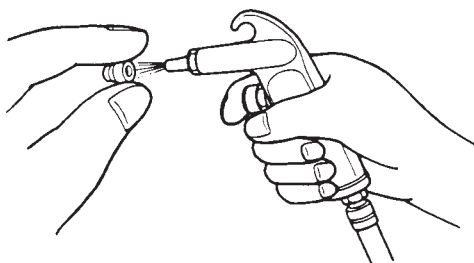
IF34J1170047-01

Cleaning

⚠ WARNING

Some carburetor cleaning chemicals, especially dip-type soaking solutions, are very corrosive and must be handled carefully. Always follow the chemical manufacturer's instructions on proper use, handling and storage.

- 1) Clean all jets with a spray-type carburetor cleaner and dry them using compressed air.



I649G1170063-02

- 2) Clean all circuits of the carburetor thoroughly – not just the perceived problem area.
- 3) Clean the circuits in the carburetor body with a spray-type cleaner and allow each circuit to soak, if necessary, to loosen dirt and varnish.
- 4) Blow the body dry using compressed air.

NOTICE

Do not use a wire to clean the jets or passageways. A wire can damage the jets and passageways. If the components cannot be cleaned with a spray cleaner it may be necessary to use a dip-type cleaning solution and allow them to soak.

Specifications

Tightening Torque Specifications

BENF34J11707001

Fastening part	Tightening torque			Note
	N·m	kgf·m	lbf·ft	
Fuel tank brace mounting bolt	10	1.0	7.5	(Page 1G-5)
Fuel tank mounting bolt	10	1.0	7.5	(Page 1G-5)
Fuel valve bolt	4.4	0.45	3.5	(Page 1G-6)
Fuel gauge mounting nut	5	0.51	4.0	(Page 1G-6)
Starter cable guide holder	2.5	0.25	2.0	(Page 1G-8)
Fuel drain screw	2	0.20	1.5	(Page 1G-10)
Needle jet holder	1.8	0.18	1.5	(Page 1G-14)
Main jet	1.8	0.18	1.5	(Page 1G-14)
Pilot jet	0.8	0.08	0.5	(Page 1G-14)
Float pin screw	2.0	0.20	1.5	(Page 1G-14)
Float chamber body screw	2.0	0.20	1.5	(Page 1G-14)
Carburetor top cap screw	3.5	0.36	2.5	(Page 1G-15)
TP sensor mounting screw	3.0	0.31	2.5	(Page 1G-15)

Reference:

For the tightening torques of fasteners not specified in this page, refer to:

“Fuel Hose Routing Diagram” (Page 1G-2)

“Fuel Tank Construction” (Page 1G-4)

“Carburetor Components” (Page 1G-9)

“Fasteners Information” in Section 0C (Page 0C-8)

Special Tools and Equipment

Recommended Service Material

BENF34J11708001

Material	SUZUKI recommended product or Specification	Note
Grease	SUZUKI SUPER GREASE A	(Page 1G-15)

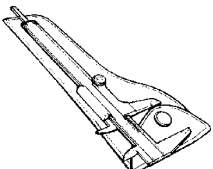
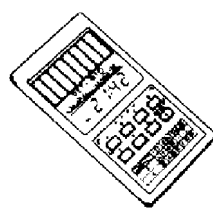
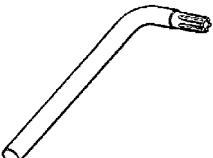
NOTE

Required service materials are also described in:

“Carburetor Components” (Page 1G-9)

Special Tool

BENF34J11708002

Vernier calipers (200 mm) (Page 1G-16) 	Engine tachometer (Page 1G-10) 
Torx® wrench (T25H) (Page 1G-13) 	

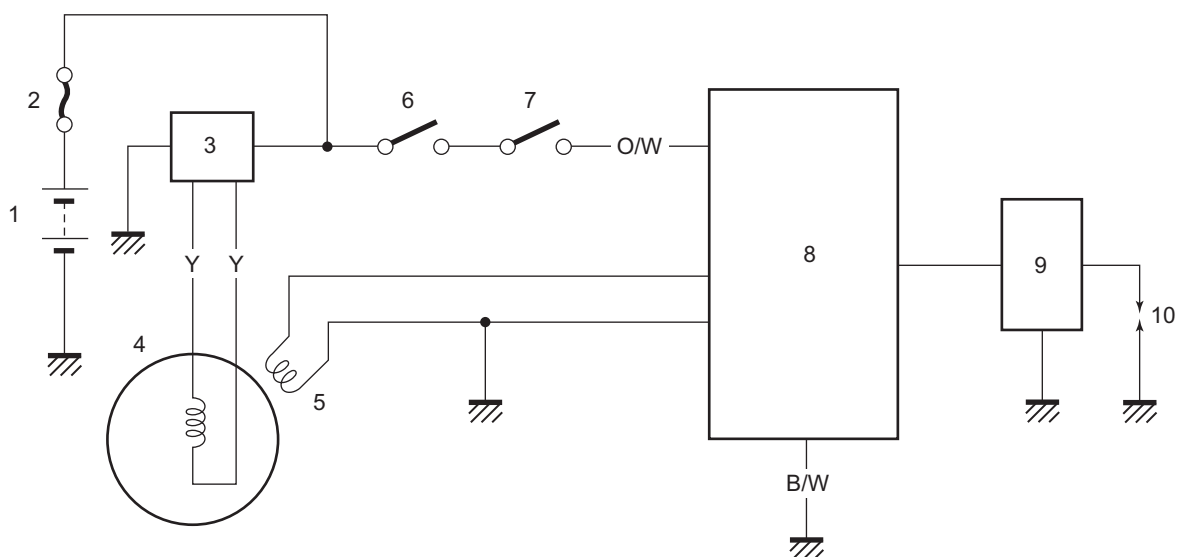
Torx® is the registered trademark of Camcar Division of Textron inc. U.S.A.

Ignition System

Schematic and Routing Diagram

Ignition System Diagram

BENF34J11802001



IF34J1180001-01

1. Battery	5. CKP sensor	9. Ignition coil
2. Fuse	6. Ignition switch	10. Spark plug
3. Regulator/rectifier	7. Engine stop switch	
4. Generator	8. CDI unit	

Ignition System Components Location

BENF34J11802002

Refer to "Electrical Components Location" in Section 0A (Page 0A-5).

Diagnostic Information and Procedures

Ignition System Symptom Diagnosis

BENF34J11804001

Condition	Possible cause	Correction / Reference Item
Spark plug not sparking	Damaged spark plug.	Replace. ☞(Page 1H-3)
	Fouled spark plug.	Replace. ☞(Page 1H-3)
	Wet spark plug.	Dry or replace. ☞(Page 1H-4)
	Defective ignition coil or spark plug cap.	Replace. ☞(Page 1H-4)
	Defective CKP sensor.	Replace. ☞(Page 1J-5) ☞(Page 1J-6)
	Defective CDI unit.	Replace. ☞(Page 1C-1)
	Open-circuited wiring connections.	Repair or replace. ☞(Page 9A-4)
	Open or short in high-tension cord.	Replace. ☞(Page 1H-4)
Engine stalls easily (No spark)	Fouled spark plug.	Replace. ☞(Page 1H-3)
	Defective CKP sensor.	Replace. ☞(Page 1J-5) ☞(Page 1J-6)
	Defective CDI unit.	Replace. ☞(Page 1C-1)
Spark plug is wet or quickly becomes fouled with carbon	Excessively rich air/fuel mixture.	Adjust carburetor.
	Excessively idling speed.	Adjust carburetor. ☞(Page 1G-10)
	Incorrect gasoline.	Change.
	Dirty air cleaner element.	Replace. ☞(Page 1D-6)
	Incorrect spark plug (Cold type).	Change to standard spark plug. ☞(Page 1H-3)

1H-2 Ignition System:

Condition	Possible cause	Correction / Reference Item
Spark plug quickly becomes fouled with oil or carbon	Worn piston rings.	Replace. ⌚(Page 1D-27)
	Worn piston.	Replace. ⌚(Page 1D-27)
	Worn cylinder.	Replace. ⌚(Page 1D-18)
	Excessive valve-stem to valve-guide clearance.	Replace. ⌚(Page 1D-21)
	Worn valve stem oil seals.	Replace. ⌚(Page 1D-21)
Spark plug electrodes overheat or burn	Incorrect spark plug (Hot type).	Change to standard spark plug. ⌚(Page 1H-3)
	Overheated engine.	Tune-up.
	Loose spark plug.	Tighten. ⌚(Page 1H-3)
	Excessively lean air/fuel mixture.	Adjust carburetor.

No Spark or Poor Spark

BENF34J11804002

Troubleshooting

Step 1

- 1) Check that the transmission is in neutral and the engine stop switch is in the "RUN" position.
- 2) Check that the fuse is not blown and the battery is fully-charged before diagnosing.
- 3) Check the ignition system couplers for poor connections.

Are check result OK?

Yes Go to Step 2.

No Repair or replace defective part.

Step 2

- 1) Turn the ignition switch ON.
- 2) Measure the battery voltage between O/W wire (+) and B/W wire (–) of CDI unit. Refer to "Ignition System Diagram" (Page 1H-1).

Is the voltage OK?

Yes Go to Step 3.

No

- Faulty ignition switch.
- Faulty engine stop switch.
- Broken wire harness or poor connection of related circuit couplers.

Step 3

Measure the ignition coil primary peak voltage. Refer to "Ignition Coil Inspection" (Page 1H-5).

Is the peak voltage OK?

Yes Go to Step 4.

No Go to Step 5.

Step 4

Inspect the spark plug. ⌚(Page 1H-4)

Is the spark plug OK?

Yes Go to Step 5.

No Faulty spark plug.

Step 5

Inspect the ignition coil. ⌚(Page 1H-5)

Is the ignition coil OK?

Yes Go to Step 6.

No Faulty ignition coil.

Step 6

Measure the CKP sensor peak voltage and its resistance. Refer to "CKP Sensor Inspection" in Section 1C (Page 1C-3).

Are the peak voltage and resistance OK?

Yes

- Faulty CDI unit.
- Open or short circuit in wire harness.
- Poor connection of ignition couplers.

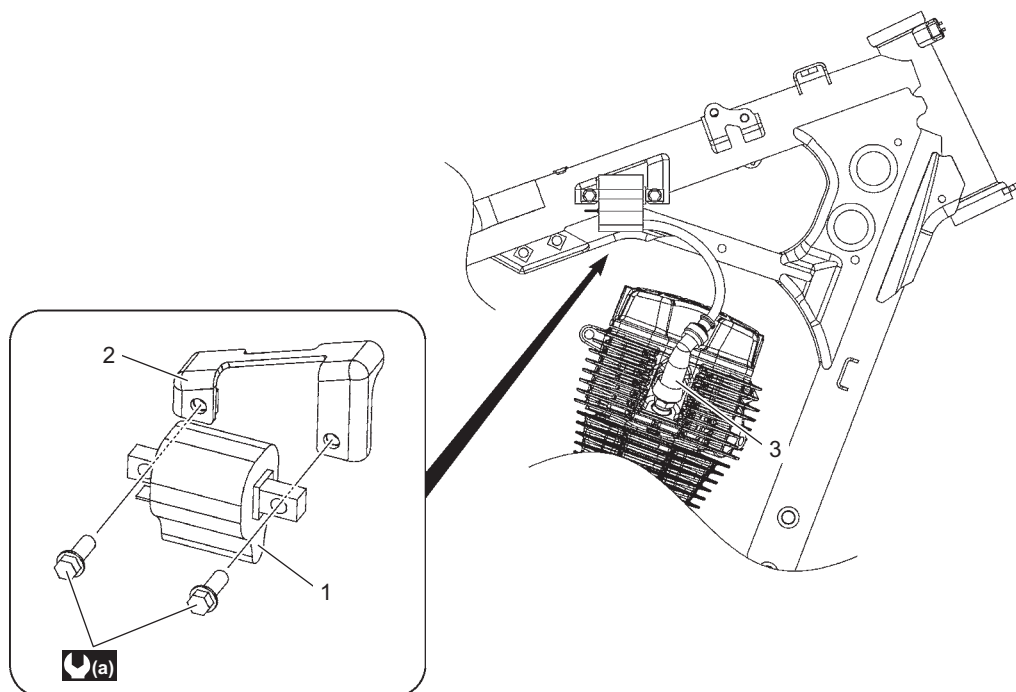
No

- Faulty CKP sensor.
- Metal particles or foreign material being stuck on the CKP sensor and rotor tip.

Repair Instructions

Ignition Coil Construction

BENF34J11806001



IF34J1180002-01

1. Ignition coil	3. Spark plug cap
2. Ignition coil bracket	(a): 10 N·m (1.0 kgf-m, 7.5 lbf-ft)

Spark Plug Removal and Installation

BENF34J11806002

Removal

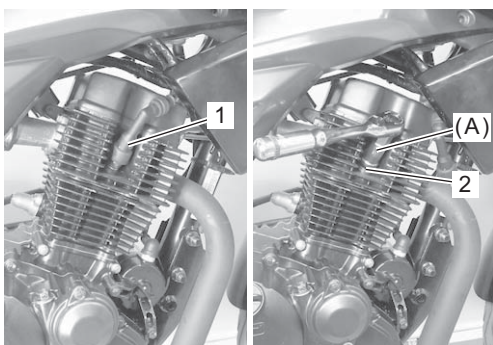
⚠ WARNING

**The hot engine can burn you.
Wait until the engine is cool enough to touch.**

- 1) Turn the ignition switch OFF.
- 2) Disconnect the spark plug cap (1).
- 3) Remove the spark plug (2) using the special tool.

Special tool

(A): Spark Plug Socket Set



IF34J1180003-01

Installation

Install the spark plug in the reverse order of removal. Pay attention to the following point:

- Screw the spark plug into the cylinder head with fingers, and then tighten it to the specified torque.

NOTICE

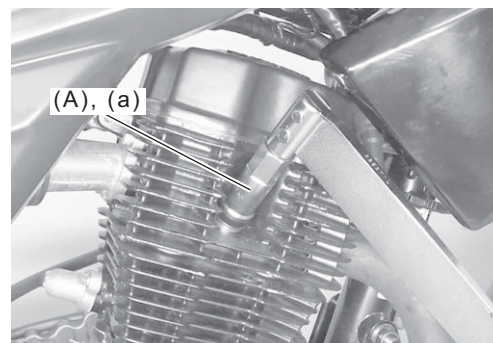
Do not cross thread or over tighten the spark plug, or such an operation will damage the aluminum threads of the cylinder head.

Special tool

(A): Spark Plug Socket Set

Tightening torque

Spark plug (a): 11 N·m (1.1 kgf-m, 8.5 lbf-ft)



IF34J1180004-01

1H-4 Ignition System:

Spark Plug Inspection and Cleaning

BENF34J11806003

Refer to "Spark Plug Removal and Installation" (Page 1H-3).

Heat Range

Check spark plug heat range by observing electrode color.

If the electrode of the spark plug is wet appearing or dark color, replace the spark plug with hotter type one.

If it is white or glazed appearing, replace the spark plug with colder type one.

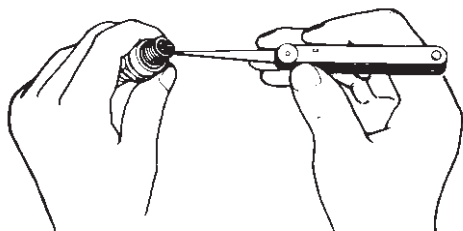
Heat range

	Hot type	Standard	Cold type
NGK	CPR6EA-9	CPR7EA-9	CPR8EA-9
DENSO	U20EPR9	U22EPR9	U24EPR9
CHAMPION	RG6YC	RG8YC	RG10YC

Carbon Deposits

Check carbon deposits on the spark plug.

If carbon is deposited, remove it using a spark plug cleaner machine or carefully use a tool with a pointed end.



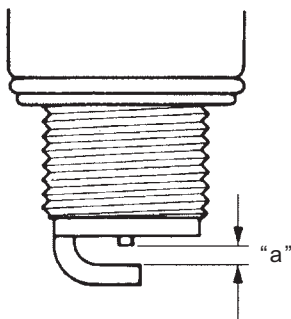
I649G1020010-02

Spark Plug Gap

Measure the spark plug gap "a" using a thickness gauge. Adjust the spark plug gap if necessary.

Spark plug gap

Standard: 0.8 – 0.9 mm (0.031 – 0.035 in)



ID26J1180010-02

Electrodes Condition

Check the worn or burnt condition of the electrodes.

If it is extremely worn or burnt, replace the spark plug.

And also replace the spark plug if it has a broken insulator, or damaged thread.

NOTICE

Confirm the thread size and reach when replacing the spark plug. If the reach is too short, carbon will be deposited on the screw portion of the spark plug hole and engine damage may result.

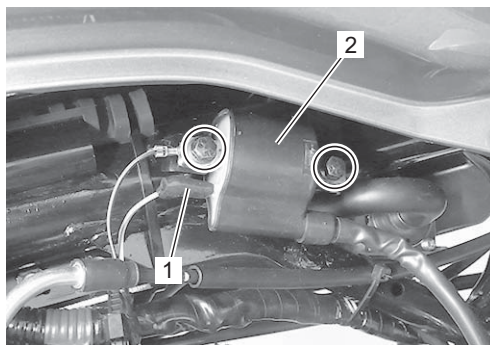
Ignition Coil Removal and Installation

BENF34J11806004

Refer to "Ignition Coil Construction" (Page 1H-3).

Removal

- 1) Turn the ignition switch OFF.
- 2) Remove the right frame side cover. (Page 9D-12)
- 3) Disconnect the spark plug cap. Refer to "Spark Plug Removal and Installation" (Page 1H-3).
- 4) Disconnect the ignition coil primary lead wire (1).
- 5) Remove the ignition coil (2).



IF34J1180005-03

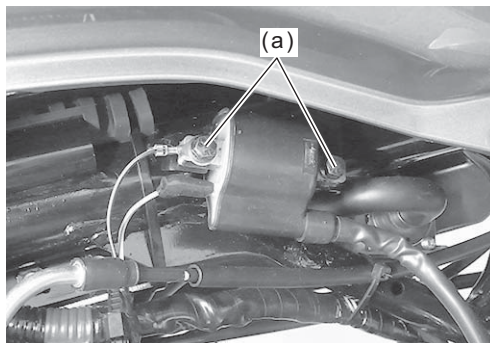
Installation

Install the ignition coil in the reverse order of removal. Pay attention to the following point:

- Tighten the ignition coil mounting bolts to the specified torque.

Tightening torque

Ignition coil mounting bolt (a): 10 N·m (1.0 kgf-m, 7.5 lbf-ft)



IF34J1180006-02

Ignition Coil Inspection

BENF34J11806005

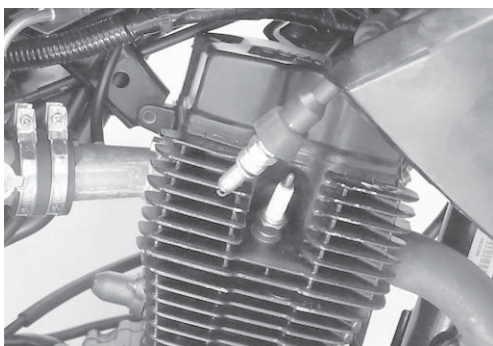
Refer to "Frame Side Cover Removal and Installation" in Section 9D (Page 9D-12).

Ignition Coil Primary Peak Voltage

- 1) Disconnect the spark plug cap. Refer to "Spark Plug Removal and Installation" (Page 1H-3).
- 2) Connect a new spark plug to the spark plug cap and ground it to the cylinder head.

NOTE

Be sure that the spark plug is connected properly and the battery used is in fully-charged condition.



IF34J1180007-01

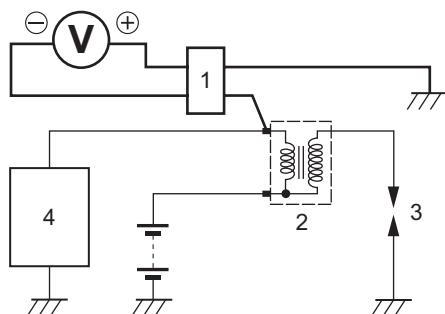
- 3) Connect the multi circuit tester with the peak voltage adaptor (1) as follows:

NOTE

Do not disconnect the ignition coil primary lead wire.

Ignition coil – circuit tester connection

	(-) Probe	(+) Probe
Ignition coil (2)	W/BI wire terminal	Ground



IF34J1180008-02

3. New spark plug	4. CDI unit
-------------------	-------------

- 4) Measure the ignition coil primary peak voltage in the following procedures:

⚠ WARNING

Do not touch the tester probes and spark plug to prevent an electric shock while testing.

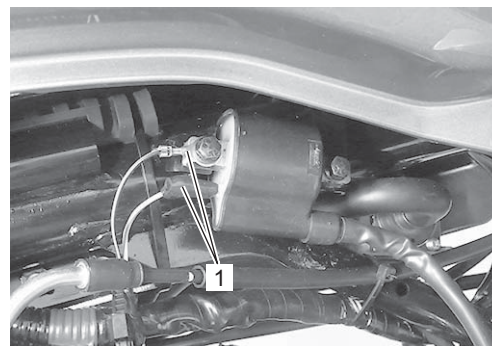
- a) Shift the transmission to the neutral and turn the ignition switch ON.
 - b) Grasp the clutch lever.
 - c) Press the starter switch and allow the engine to crank for a few seconds, and then measure the ignition coil primary peak voltage.
- 5) Repeat the c) procedure several times and measure the highest peak voltage.
If the voltage is lower than standard range, replace the ignition coil. (Page 1H-4)

Ignition coil primary peak voltage **150 V or more**

- 6) After measuring the ignition coil primary peak voltage, install the removed parts.

Ignition Coil Resistance

- 1) Disconnect the spark plug cap. Refer to "Spark Plug Removal and Installation" (Page 1H-3).
- 2) Disconnect the ignition coil lead wires (1).



IF34J1180009-02

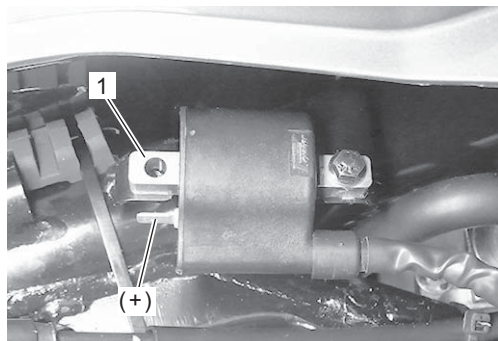
1H-6 Ignition System:

- 3) Measure the ignition coil for resistance in both primary and secondary coils. If the resistance is not within the standard range, replace the ignition coil with a new one.

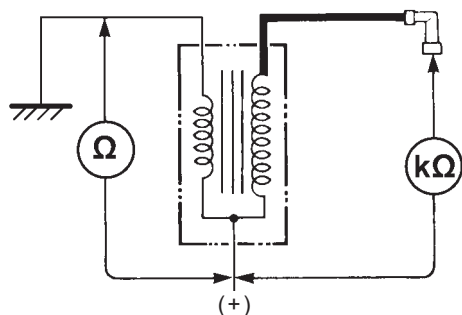
Ignition coil resistance at 25 °C (77 °F)

Primary: 0.315 – 0.385 Ω ((+) terminal – Ground (1))

Secondary: 8.0 – 12.0 k Ω ((+) terminal – Plug cap)



IF34J1180010-02



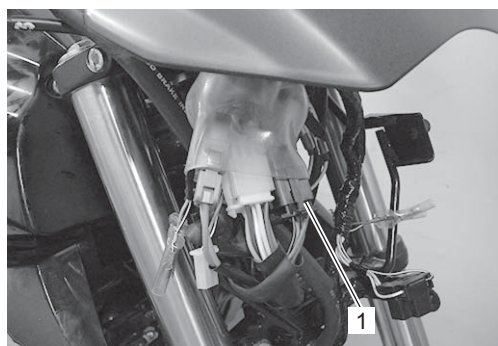
IF34J1180011-01

- 4) After measuring the ignition coil resistance, install the removed parts.

Engine Stop Switch Inspection

BENF34J11806006

- 1) Turn the ignition switch OFF.
- 2) Remove the headlight assembly. (Page 9B-3)
- 3) Disconnect the right handle switch coupler (1).



IF34J1180012-01

- 4) Inspect the engine stop switch for continuity with a circuit tester. If any defect is found, replace the right handle switch assembly with a new one. (Page 6B-3)

Color	Br/W	B/R
Position		
OFF (X)		
RUN (C)	○	○

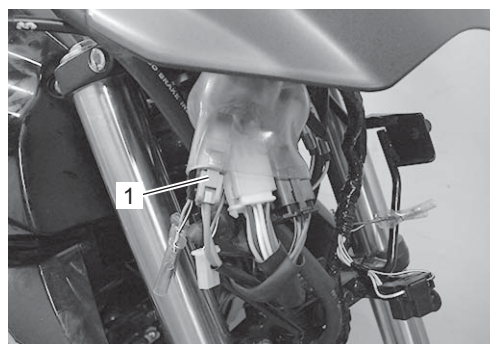
IF34J1180013-02

- 5) After finishing the engine stop switch inspection, install the removed parts.

Ignition Switch Inspection

BENF34J11806007

- 1) Turn the ignition switch OFF.
- 2) Remove the headlight assembly. (Page 9B-3)
- 3) Disconnect the ignition switch coupler (1).



IF34J1180014-01

- 4) Inspect the ignition switch for continuity with a circuit tester. If any defect is found, replace the ignition switch with a new one.

Color	R	O
Position		
ON	○	○
OFF		
LOCK		

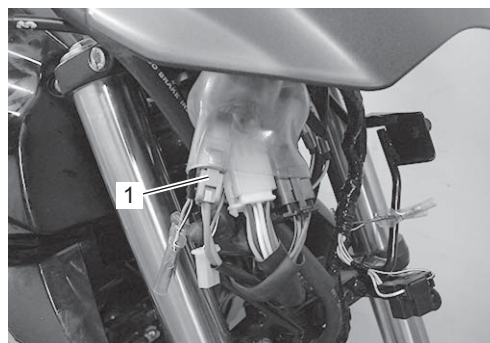
IF34J1180015-01

Ignition Switch Removal and Installation

BENF34J11806008

Removal

- 1) Turn the ignition switch OFF.
- 2) Remove the headlight assembly. (Page 9B-3)
- 3) Disconnect the ignition switch coupler (1).



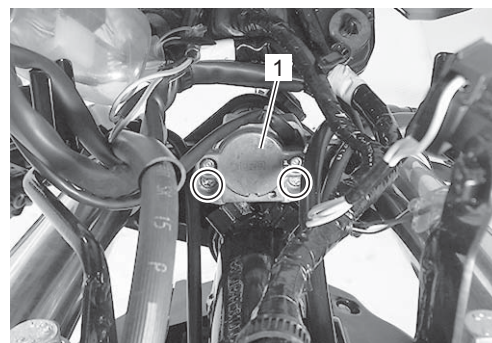
IF34J1180014-01

- 4) Remove the ignition switch (1) using the special tools.

Special tool

Torx Bit

Torx Bit Holder



IF34J1180016-01

Installation

Install the ignition switch in the reverse order of removal.

Specifications

Tightening Torque Specifications

BENF34J11807001

Fastening part	Tightening torque			Note
	N·m	kgf-m	lbf-ft	
Spark plug	11	1.1	8.5	☞ (Page 1H-3)
Ignition coil mounting bolt	10	1.0	7.5	☞ (Page 1H-4)

Reference:

For the tightening torques of fasteners not specified in this page, refer to:

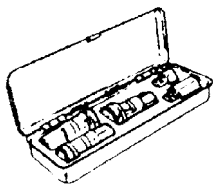
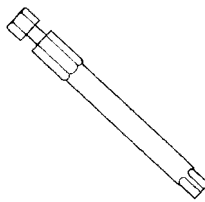
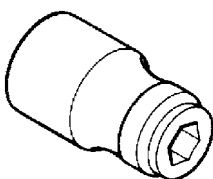
“Ignition Coil Construction” (Page 1H-3)

“Fasteners Information” in Section 0C (Page 0C-8)

Special Tools and Equipment

Special Tool

BENF34J11808001

Spark plug socket set ☞ (Page 1H-3) / ☞ (Page 1H-3)		Torx® bit (JT30H) ☞ (Page 1H-7)	
Torx® bit holder (3/8 sq.) ☞ (Page 1H-7)			

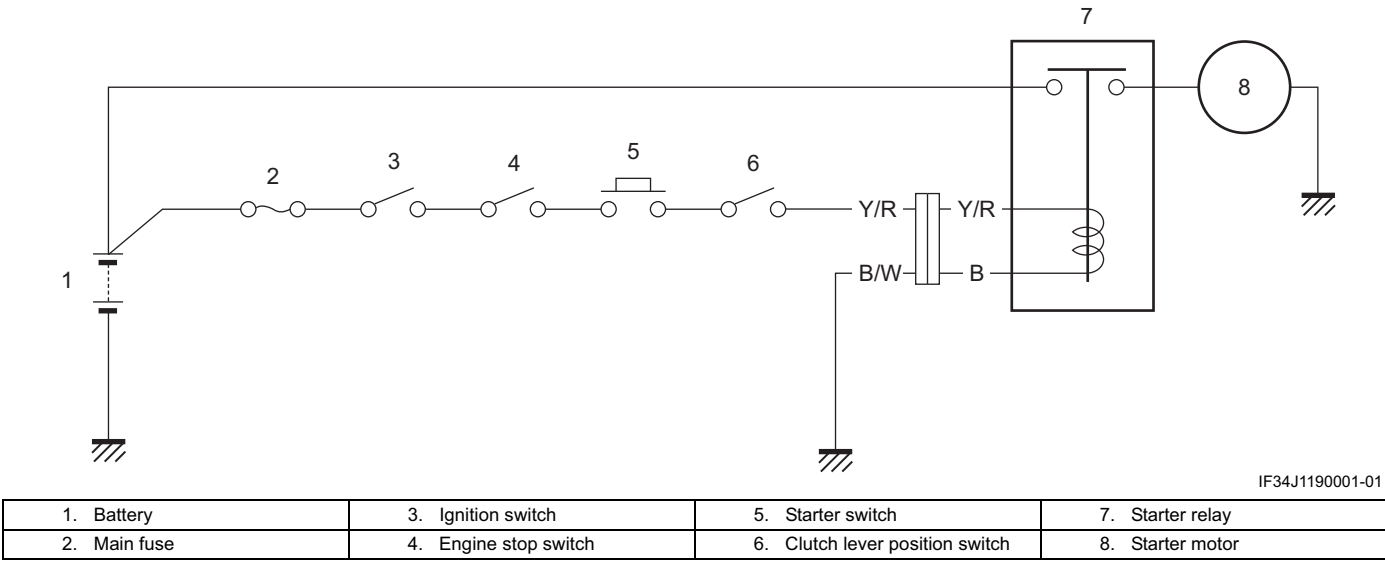
Torx® is the registered trademark of Camcar Division of Textron inc. U.S.A.

Starting System

Schematic and Routing Diagram

Starting System Diagram

BENF34J11902001



IF34J1190001-01

Component Location

Starting System Components Location

BENF34J11903001

Refer to “Electrical Components Location” in Section 0A (Page 0A-5).

Diagnostic Information and Procedures

Starting System Symptom Diagnosis

BENF34J11904001

Condition	Possible cause	Correction / Reference Item
Engine does not turn though the starter motor runs	Faulty starter clutch.	Replace. (Page 1I-7)
Starter switch is not effective	Run down battery.	Repair or replace. (Page 1J-9)
	Defective switch contacts.	Replace. (Page 6B-3)
	Brushes not seating properly on starter motor commutator.	Repair or replace. (Page 1I-5)
	Defective starter relay or starter interlock switch.	Replace. (Page 1I-6)
	Defective main fuse.	Replace.

Starter Motor Will Not Run

BENF34J11904002

NOTE

Check the main fuse and charge the battery fully before diagnosing.

Troubleshooting**Step 1**

- 1) Shift the transmission into neutral.
- 2) Grasp the clutch lever, turn on the ignition switch with the engine stop switch in the "RUN" position and listen for a click from the starter relay when the starter switch is pushed.

Does the starter relay click?

Yes Go to Step 2.

No Go to Step 3.

Step 2

Check if the starter motor runs when its terminal is connected to the battery (+) terminal.

NOTICE

Do not use thin "wire" because a large amount of current flows.

Does the starter motor run?

- Yes
- Faulty starter relay.
 - Loose or disconnected starter motor lead wire.
 - Loose or disconnected between starter relay and battery (+) terminal.

No Faulty starter motor.

Step 3


Measure the voltage between Y/R wire (+) and B/W wire (–) at the starter relay coupler when the starter switch is pushed.

Is the voltage OK?

Yes Go to Step 4.

- No
- Faulty ignition switch.
 - Faulty engine stop switch.
 - Faulty starter switch.
 - Faulty clutch lever position switch.
 - Poor contact of connector.
 - Open circuit in wire harness.

Step 4

Check the starter relay.  (Page 11-7)

Is the starter relay OK?

Yes Poor contact of the starter relay.

No Faulty starter relay.

Starter Motor Runs But Does Not Crank the Engine

BENF34J11904003

Step 1

Check the starter clutch.  (Page 11-9)

Is the starter clutch OK?

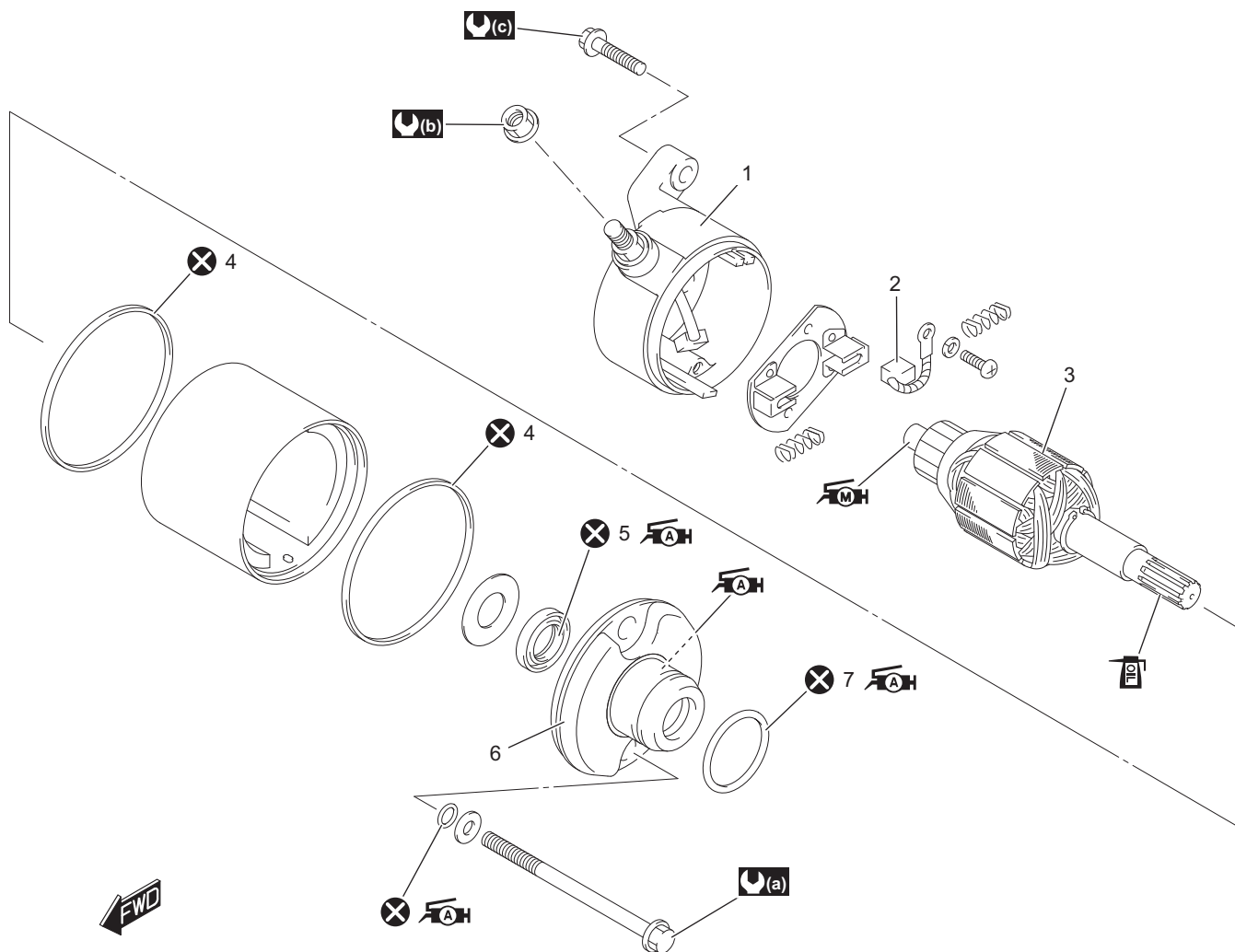
Yes Faulty starter motor.

No Faulty starter clutch.








Repair Instructions

Starter Motor Components

BENF34J11906001




IF34J1190002-03

1. Rear bracket	5. Oil seal	 (b) : 3.4 N-m (0.35 kgf-m, 2.5 lbf-ft)	 : Apply engine oil.
2. Brush	6. Front bracket	 (c) : 10 N-m (1.0 kgf-m, 7.5 lbf-ft)	 : Do not reuse.
3. Armature	7. O-ring	 (d) : Apply grease.	
4. O-ring	 (a) : 2.7 N-m (0.28 kgf-m, 2.0 lbf-ft)	 (e) : Apply moly past.	

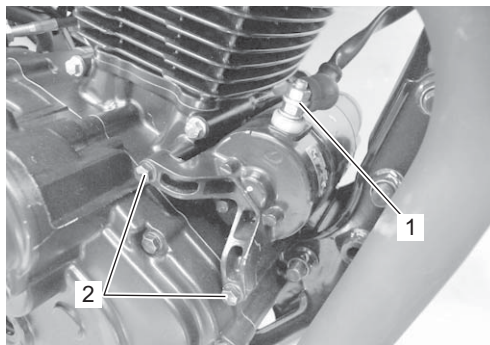
Starter Motor Assembly Removal and Installation

BENF34J11906002

Removal

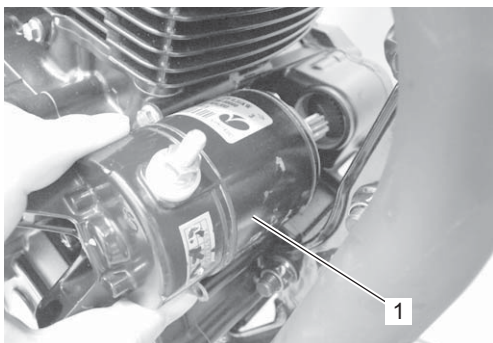
- 1) Turn the ignition switch OFF and disconnect the battery (–) lead wire.  (Page 1J-10)

- 2) Disconnect the starter motor read wire (1) and remove the starter motor mounting bolts (2).



IF34J1190003-01

- 3) Remove the starter motor (1).



IF34J1190004-01

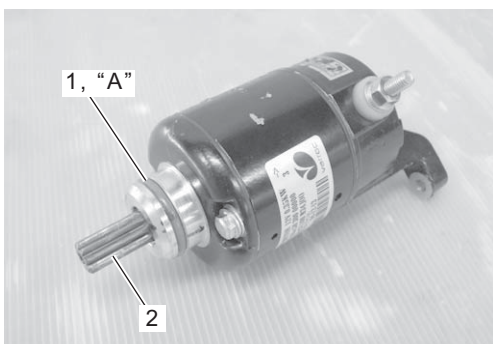
Installation

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

- Apply grease to the new O-ring (1).

“A” : (SUZUKI SUPER GREASE A)

- Apply engine oil to the armature shaft (2).



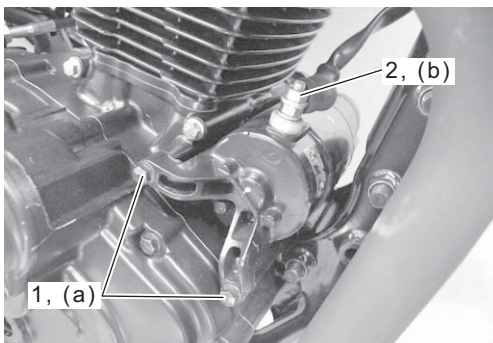
IF34J1190005-01

- Tighten the starter motor mounting bolts (1) to the specified torque.
- Set the starter motor read wire in the specified position and tighten the mounting nut (2) to the specified torque. (Page 9A-5)

Tightening torque

Starter motor mounting bolt (a): 10 N·m (1.0 kgf-m, 7.5 lbf-ft)

Starter motor lead wire mounting nut (b): 3.4 N·m (0.35 kgf-m, 2.5 lbf-ft)



IF34J1190006-01

Starter Motor Disassembly and Reassembly

BENF34J11906003

Disassembly

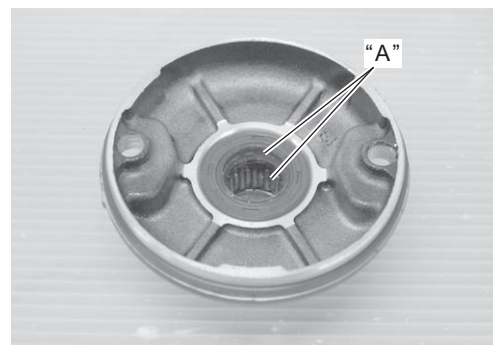
Disassemble the starter motor. (Page 11-3)

Reassembly

Reassemble the starter motor in the reverse order of disassembly. Pay attention to the following points:

- Replace the O-rings with new ones.
- Apply grease to the lip of the oil seal and bearing.

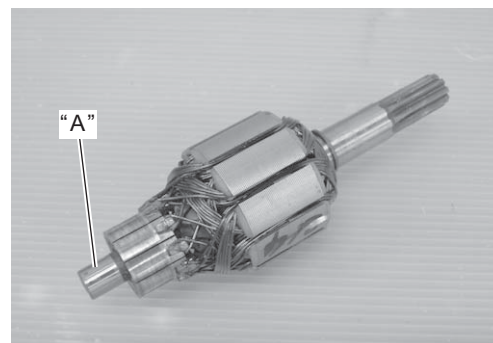
“A”: (SUZUKI SUPER GREASE A)



IF34J1190007-02

- Apply a small quantity of moly paste to the armature shaft.

“A”: (SUZUKI MOLY PASTE)



IF34J1190008-01

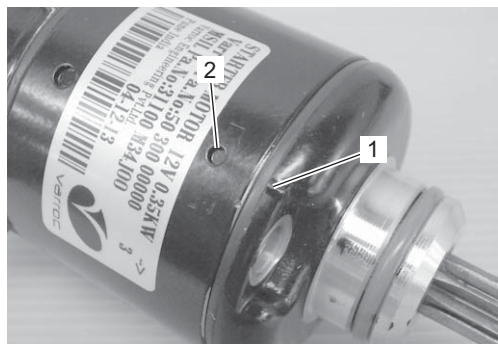
- Align the groove (1) on the rear bracket with the punch mark (2) on the starter motor case.



IF34J1190009-01

1I-5 Starting System:

- Align the projection (1) on the front bracket with the punch mark (2) on the starter motor case.



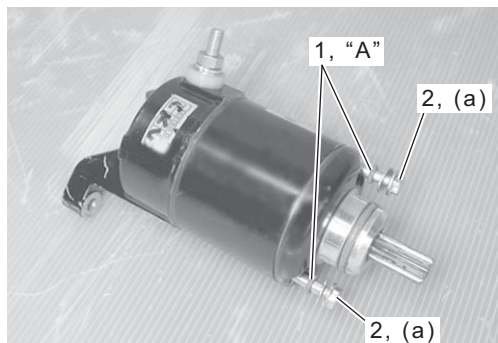
IF34J1190010-01

- Apply grease to the new O-ring (1) and then tighten the housing bolt (2) to the specified torque.

"A" : (SUZUKI SUPER GREASE A)

Tightening torque

Housing bolt (a): 2.7 N·m (0.28 kgf-m, 2.0 lbf-ft)



IF34J1190011-02

Starter Motor Inspection

BENF34J11906004

Refer to "Starter Motor Disassembly and Reassembly" (Page 1I-4).

Carbon Brush

Inspect the carbon brushes for abnormal wear, cracks or smoothness in the brush holder.

If any damages are found, replace the brush holder or brush terminal set with a new one.

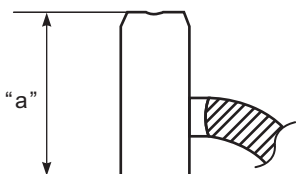
Make sure that the length "a" is not less than the service limit. If this length becomes less than the service limit, replace the brush with a new one.

Brush length "a"

Service limit: 4.5 mm (0.18 in)

Special tool

Vernier Caliper



IF34J1190054-01

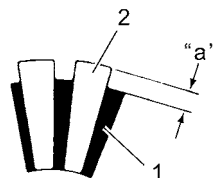
Commutator

Inspect the commutator for discoloration, abnormal wear or undercut "a".

If the commutator is abnormally worn, replace the armature.

If the commutator surface is discolored, polish it with #400 sandpaper and wipe it using a clean, dry cloth.

If there is no undercut, scrape out the insulator (1) with a saw blade.



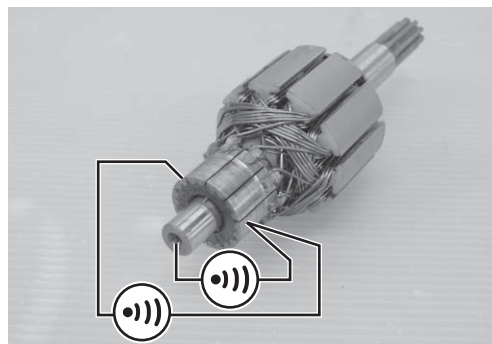
IE31J1190009-01

2. Segment

Armature Coil

Measure for continuity between each segment. Measure for continuity between each segment and the armature shaft.

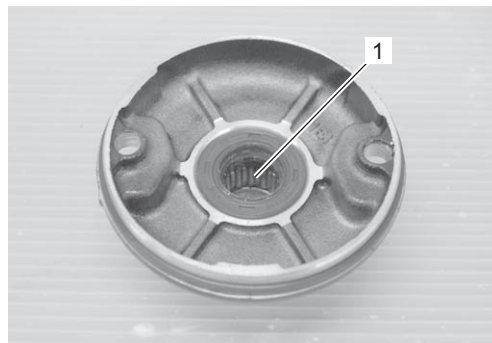
If there is no continuity between the segments or there is continuity between the segments and shaft, replace the armature with a new one.



IF34J1190012-01

Bearing

Inspect the armature shaft bearing (1) for abnormal noise and smooth rotation. If there is anything unusual, replace the front bracket with a new one.

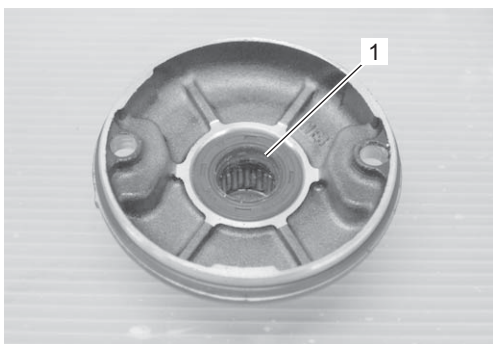


IF34J1190013-01

Oil Seal

Check the seal lip (1) for damage.

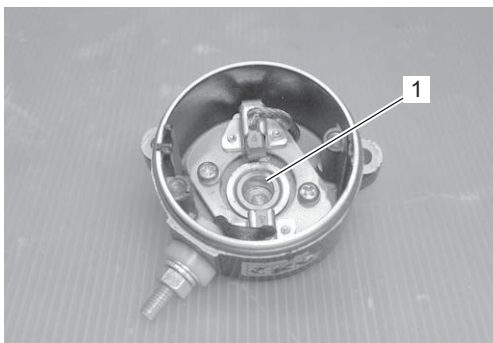
If any damage is found, replace the oil seal with a new one.



IF34J1190014-01

Bushing

Inspect the bushing (1) for wear and damage. If any defects are found, replace the rear bracket with a new one.



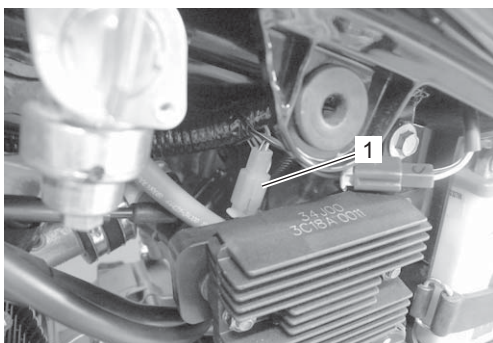
IF34J1190015-01

Starter Relay Removal and Installation

BENF34J11906005

Removal

- 1) Remove the left frame side cover. (Page 9D-12)
- 2) Disconnect the battery (–) lead wire from the battery. (Page 1J-10)
- 3) Disconnect the starter relay coupler (1).



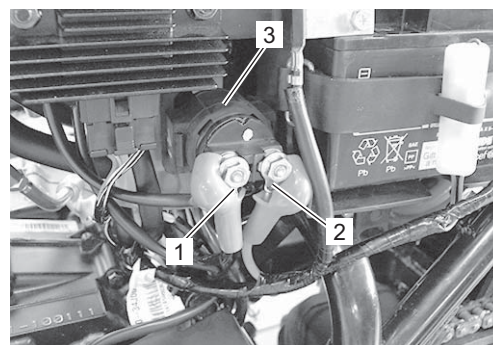
IF34J1190016-01

- 4) Disconnect the starter motor lead wire (1) and battery (+) lead wire (2).

NOTE

Be sure to disconnect the starter motor lead wire (1) first, then disconnect the battery (+) lead wire (2).

- 5) Remove the starter relay (3).



IF34J1190017-02

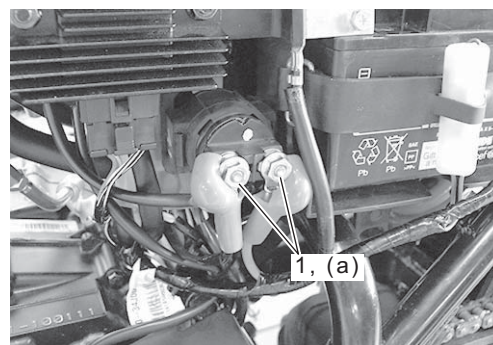
Installation

Install the starter relay in the reverse order of removal. Pay attention to the following point:

- Tighten the starter relay terminal nuts (1) to the specified torque.

Tightening torque

Starter relay terminal nut (a): 4.4 N·m (0.45 kgf-m, 3.5 lbf-ft)



IF34J1190052-03

Starter Relay Inspection

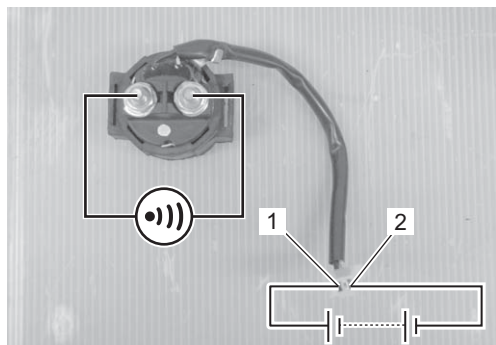
BENF34J11906006

Refer to "Starter Relay Removal and Installation" (Page 11-6).

- 1) Apply 12 V to (1) and (2) terminals and check for continuity between the positive and negative terminals using the multi circuit tester. If the starter relay clicks and continuity is found, the relay is OK.

NOTICE

Do not apply battery voltage to the starter relay for five seconds or more, otherwise the relay coil may overheat and get damaged.

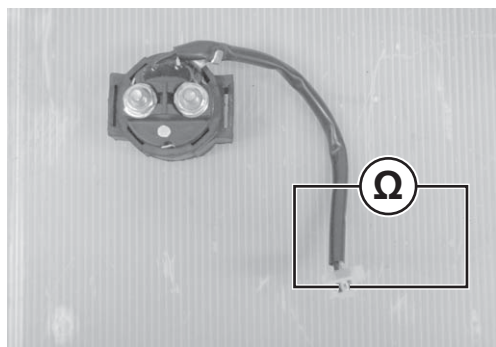


IF34J1190018-01

- 2) Measure the relay coil resistance between the terminals using the circuit tester. If the resistance is not within the specified value, replace the starter relay with a new one.

Starter relay resistance

3 – 6 Ω



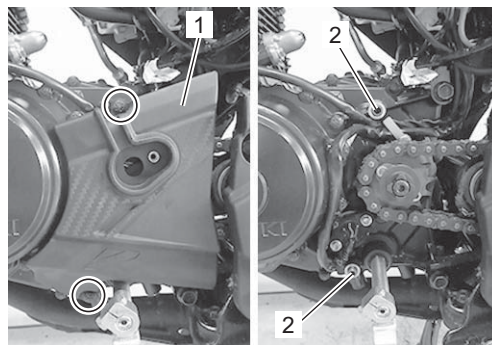
IF34J1190019-01

Starter Clutch Removal and Installation

BENF34J11906009

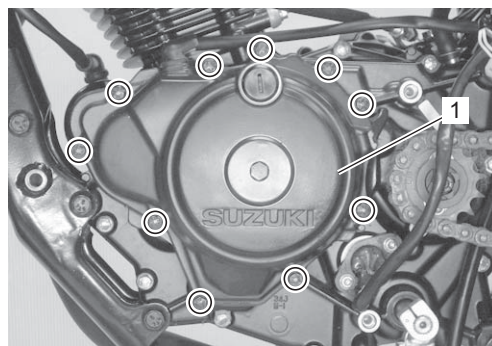
Removal

- 1) Drain the engine oil. (Page 1E-4)
- 2) Remove the speed sensor from the engine sprocket cover. (Page 1C-4)
- 3) Remove the engine sprocket cover (1) and dowel pins (2).



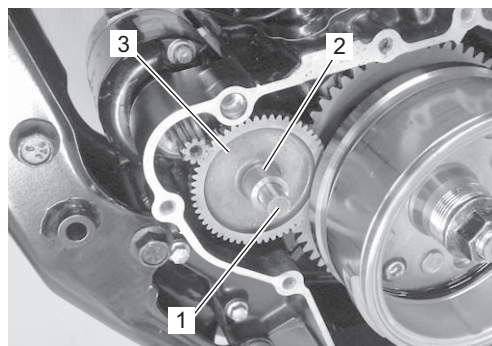
IF34J1190053-01

- 4) Remove the generator cover (1).



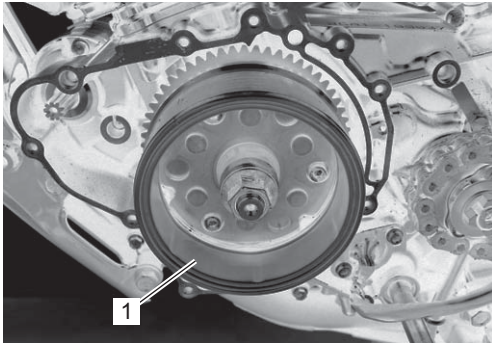
IF34J1190020-01

- 5) Remove the shaft (1), spacer (2) and starter idle gear (3).



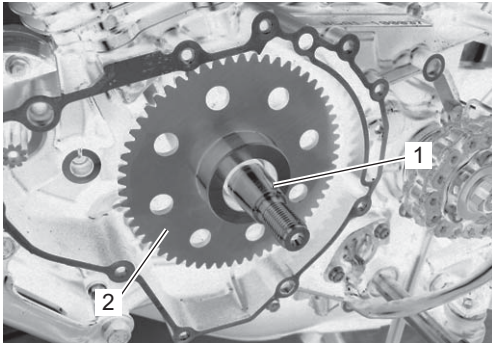
IF34J1190021-01

6) Remove the generator rotor (1).) (Page 1J-5)



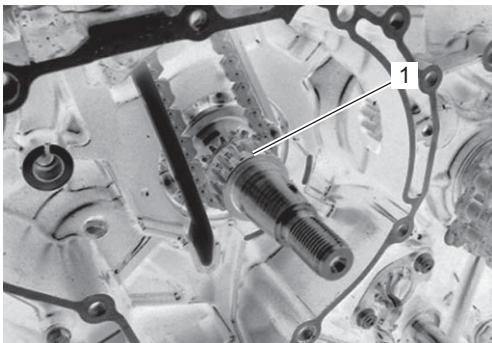
IF34J1190022-01

7) Remove the key (1) and starter clutch gear (2).



IF34J1190023-01

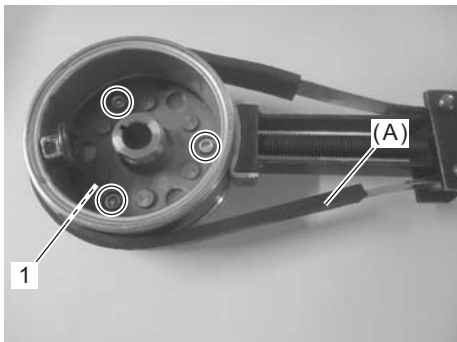
8) Remove the starter clutch gear bearing (1).



IF34J1190024-01

9) Hold the generator rotor with the special tool and remove the starter clutch (1).

Special tool
(A): Rotor Holder

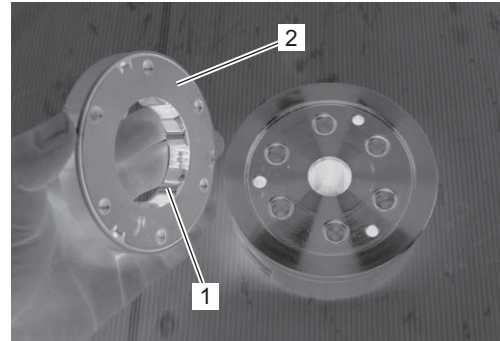


IF34J1190025-01

Installation

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

- Apply engine oil to the one way clutch (1).
- Install the one way clutch pointing the plate side (2) toward the generator rotor.



IF34J1190026-01

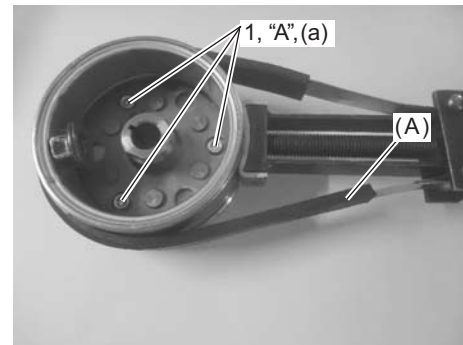
- Apply thread lock to the bolts (1), and then tighten them to the specified torque with the special tool.

"A": (THREAD LOCK CEMENT 1322D)

Special tool
(A): Rotor Holder

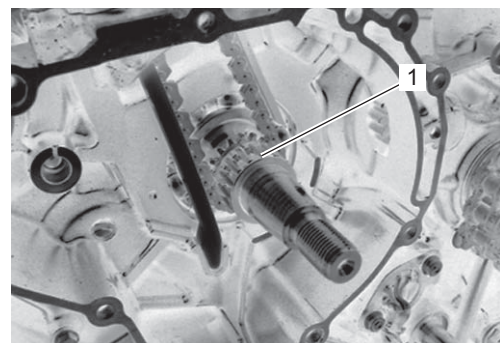
Tightening torque

Starter clutch bolt (a): 10 N·m (1.0 kgf-m, 7.5 lbf-ft)



IF34J1190027-01

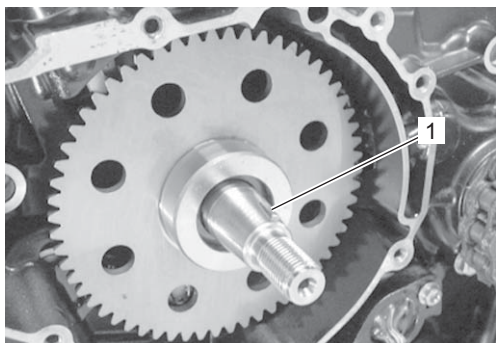
- Apply engine oil to the starter clutch gear bearing (1) and install it to the crankshaft.



IF34J1190024-01

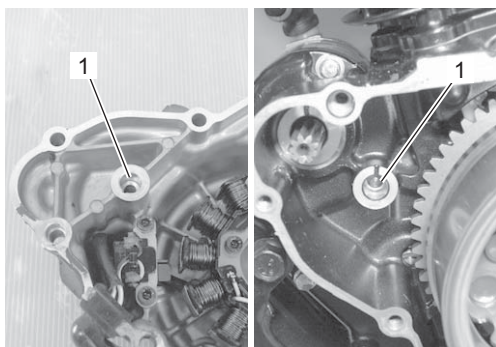
11-9 Starting System:

- Fit the key (1) in the key slot on the crankshaft.

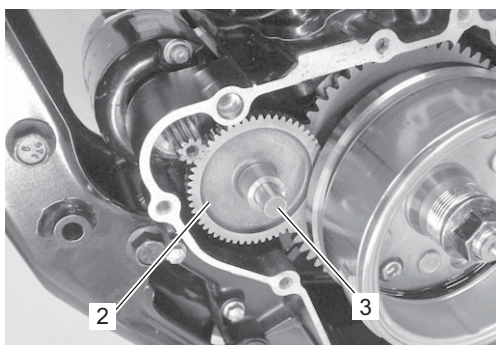


IF34J1190028-01

- Install the generator rotor onto crankshaft. (Page 1J-6)
- Apply engine oil to the starter idle gear shaft holes (1), starter idle gear (2) and shaft (3).



IF34J1190029-01



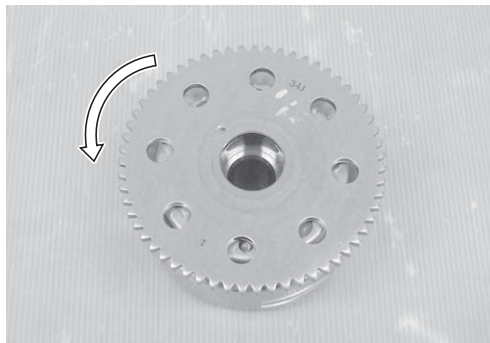
IF34J1190030-01

Starter Clutch Inspection

BENF34J11906011

Starter Clutch

- Install the starter clutch gear onto the starter clutch.
- Turn the starter clutch gear by hand to inspect the starter clutch for a smooth movement. The gear turns in one direction only. If a large resistance is felt for rotation, inspect the starter clutch or the starter clutch contacting surface on the starter clutch gear for wear or damage. If they are found to be damaged, replace them with new ones.



IF34J1190031-01

Starter Idle Gear

Inspect the starter idle gear for wear or damage. If any defects are found, replace it with a new one.



IF34J1190032-01

Starter Clutch Gear Bearing

Inspect the starter clutch gear bearing for any abnormality, especially cracks. If any defects are found, replace the starter clutch gear bearing with a new one.

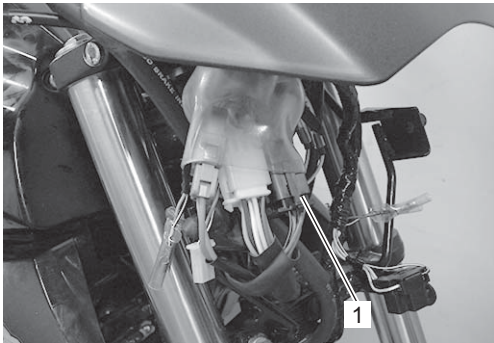


IF34J1190033-01

Starter Switch Inspection

BENF34J11906012

- 1) Turn the ignition switch OFF.
- 2) Remove the headlight assembly. (Page 9B-3)
- 3) Disconnect the right handle switch lead wire coupler (1).



IF34J1190034-01

- 4) Inspect the starter switch for continuity with a tester. If any defect is found, replace the right handle switch with a new one. Refer to “Handlebar Removal and Installation” in Section 6B (Page 6B-3).

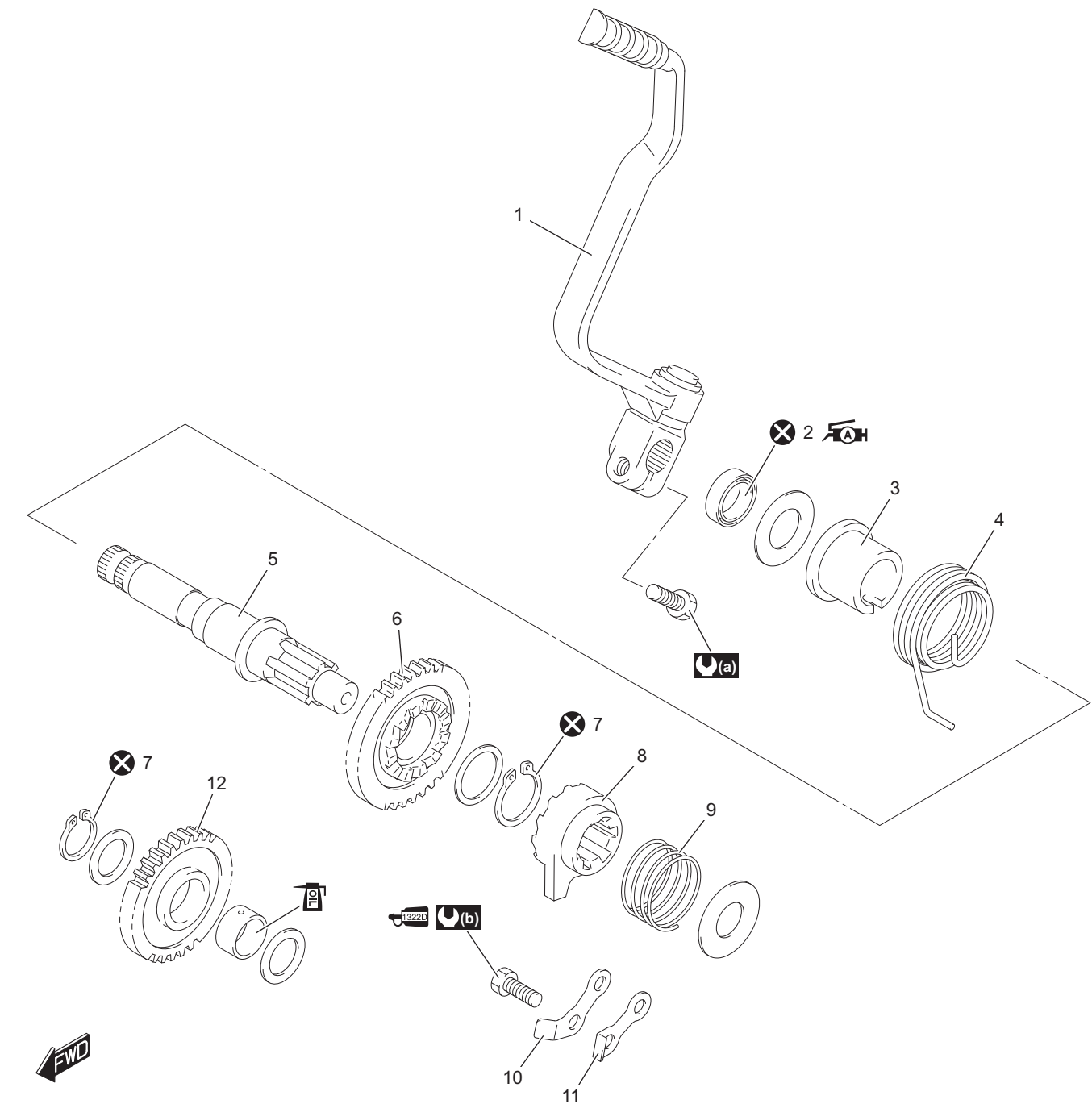
Color Position	Y/G	B/R
•		
PUSH	○ ——— ○	○ ——— ○

IF34J1190035-02

- 5) After finishing the starter switch inspection, install the removed parts.

Kick Starter Components

BENF34J11906013



IF34J1190036-02

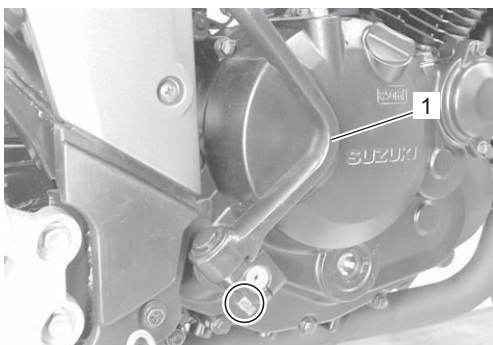
1. Kick starter lever	7. Snap ring	(a) : 23 N·m (2.3 kgf-m, 17.0 lbf-ft)
2. Kick starter shaft oil seal	8. Kick starter	(b) : 10 N·m (1.0 kgf-m, 7.5 lbf-ft)
3. Spring guide	9. Spring	(c) : Apply grease.
4. Return spring	10. Kick starter guide	(d) : Apply engine oil.
5. Kick starter shaft	11. Kick starter stopper	(e) : Apply thread lock to the thread part.
6. Kick starter drive gear	12. Kick starter idle gear	(f) : Do not reuse.

Kick Starter Lever Removal and Installation

BENF34J11906014

Removal

- 1) Remove the kick starter lever (1).



IF34J1190037-02

Installation

- 1) Install the kick starter lever (1) as shown in the illustration.

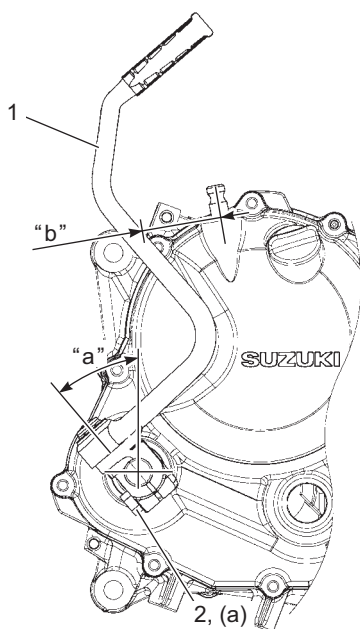
NOTE

Install the kick starter lever positioning it at the closest to but not in contact with the clutch cover.

- 2) Tighten the kick starter lever bolt (2) to the specified torque.

Tightening torque

Kick starter lever bolt (a): 23 N·m (2.3 kgf-m, 17.0 lbf-ft)



IF34J1190038-01

"a": Approx. 40.5°

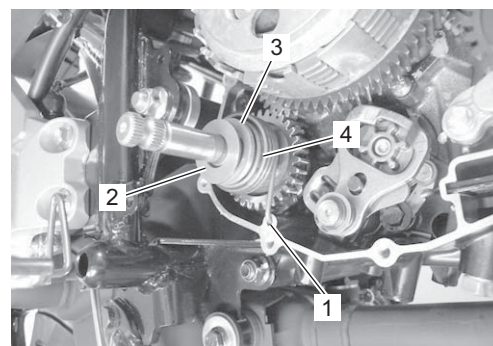
"b": 38.5 – 51.0 mm (15.2 – 20.1 in)

Kick Starter Shaft Removal and Installation

BENF34J11906015

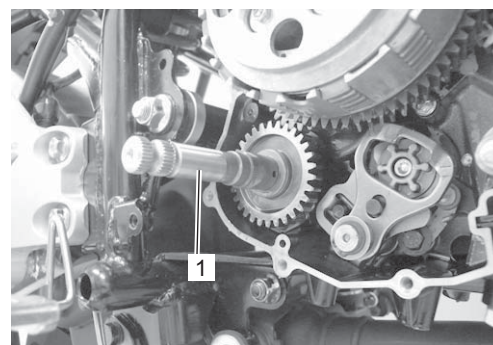
Removal

- 1) Remove the clutch cover and gasket. (Page 5C-6)
- 2) Unhook the return spring end (1) from crank case and remove washer (2), spring guide (3) and return spring (4) from the kick starter shaft.



IF34J1190039-01

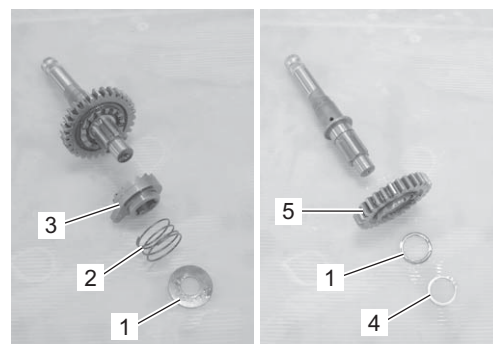
- 3) Remove the kick starter shaft assembly (1).



IF34J1190040-01

- 4) Remove the following parts from the kick starter shaft.

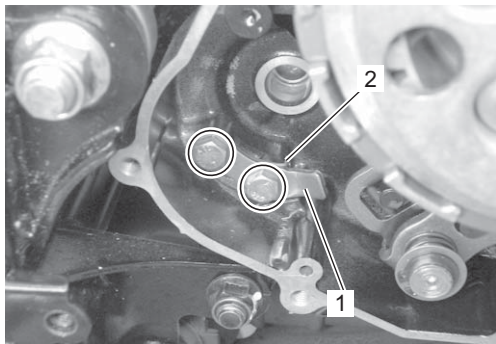
- Washers (1)
- Spring (2)
- Kick starter (3)
- Snap ring (4)
- Kick starter drive gear (5)



IF34J1190041-01

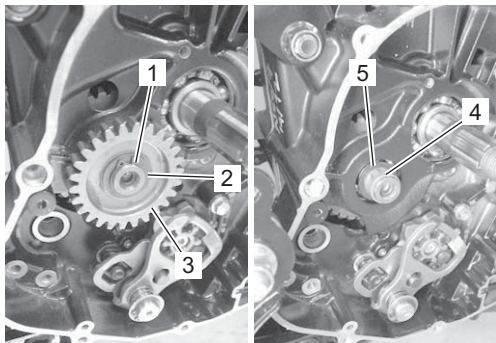
11-13 Starting System:

- 5) Remove the kick starter guide (1) and kick starter stopper (2).



IF34J1190042-01

- 6) Remove the clutch component parts. Refer to "Clutch Removal" in Section 5C (Page 5C-6).
- 7) Remove the following parts from the drive shaft.
- Snap ring (1)
 - Washer (2)
 - Kick starter idle gear (3)
 - Busing (4)
 - Washer (5)

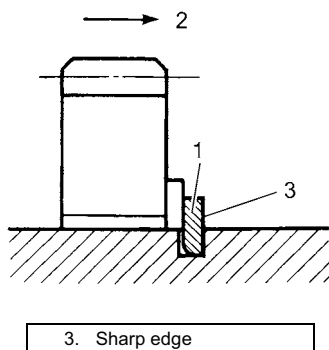


IF34J1190043-01

Installation

Install the kick starter shaft in the reverse order of removal. Pay attention to the following points:

- When installing a new snap ring (1), pay attention to its direction. Fit it to the side where the thrust (2) is as shown in the illustration.



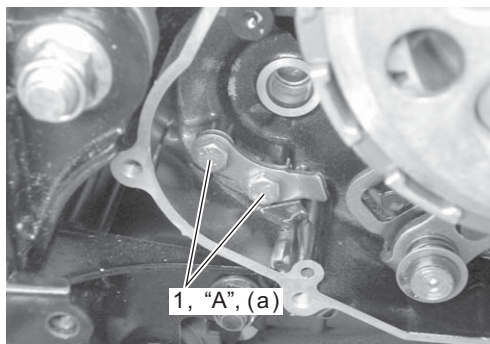
IE31J1520022-01

- Apply thread lock to the kick starter guide bolts (1) and tighten them to the specified torque.

"A": (THREAD LOCK CEMENT 1322D)

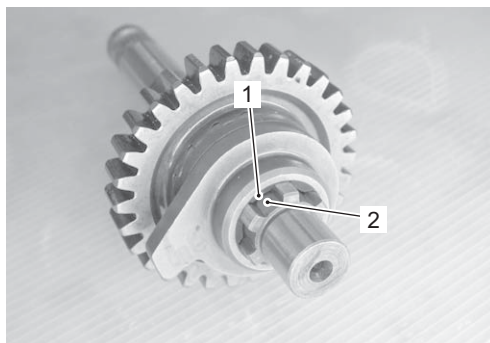
Tightening torque

Kick starter guide bolt (a): 10 N·m (1.0 kgf-m, 7.5 lbf-ft)



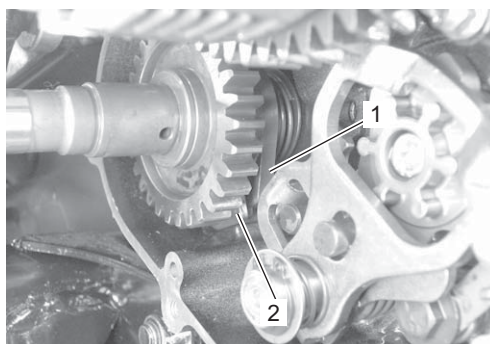
IF34J1190044-01

- Aligning the punch mark (1) on the kick starter with the punch mark (2) on the kick starter shaft, install the kick starter to the kick starter shaft.



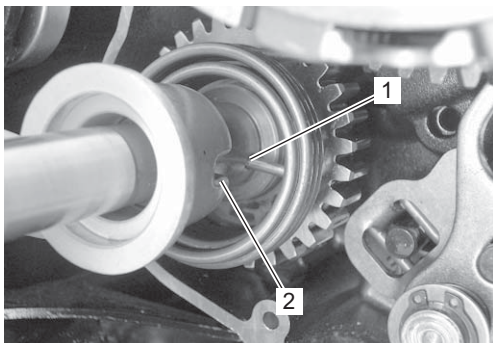
IF34J1190045-01

- Install the kick starter shaft assembly into the crankcase and engage the kick starter (1) with the kick starter guide (2).



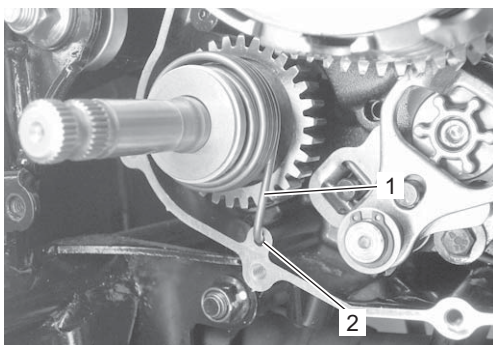
IF34J1190046-01

- Insert the return spring end into the hole (1) of the kick starter shaft.
- Fit the cutout (2) of the spring guide with the return spring.



IF34J1190047-01

- Turn the return spring (1) clockwise using pliers and hook the spring end into the hole (2) of the crankcase.



IF34J1190048-01

Kick Starter Parts Inspection

BENF34J11906016

Refer to "Kick Starter Shaft Removal and Installation" (Page 11-12).

Kick Starter Shaft

Inspect the kick starter shaft for wear or bend. If any defects are found, replace the kick starter shaft with a new one.



IF34J1190049-01

Return Spring

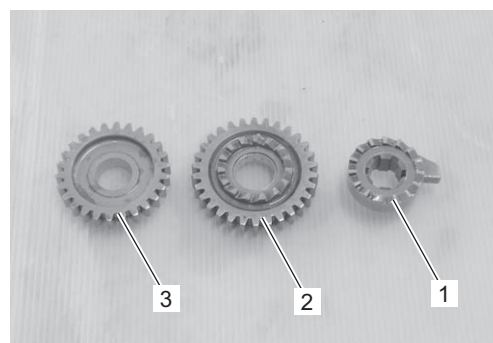
Inspect the return spring for damage or fatigue. If any defects are found, replace the return spring with a new one.



IF34J1190050-01

Kick Starter / Kick Starter Drive Gear / Kick Starter Idle Gear

Inspect the kick starter (1), kick starter drive gear (2) and kick starter idle gear (3) for wear and damage. If any defects are found, replace the defective part with a new one.



IF34J1190051-01

Specifications

Tightening Torque Specifications

BENF34J11907001

Fastening part	Tightening torque			Note
	N·m	kgf·m	lbf·ft	
Starter motor mounting bolt	10	1.0	7.5	☞ (Page 11-4)
Starter motor lead wire mounting nut	3.4	0.35	2.5	☞ (Page 11-4)
Housing bolt	2.7	0.28	2.0	☞ (Page 11-5)
Starter relay terminal nut	4.4	0.45	3.5	☞ (Page 11-6)
Starter clutch bolt	10	1.0	7.5	☞ (Page 11-8)
Kick starter lever bolt	23	2.3	17.0	☞ (Page 11-12)
Kick starter guide bolt	10	1.0	7.5	☞ (Page 11-13)

Reference:

For the tightening torques of fasteners not specified in this page, refer to:

“Starter Motor Components” (Page 11-3)

“Kick Starter Components” (Page 11-11)

“Fasteners Information” in Section 0C (Page 0C-8)

Special Tools and Equipment

Recommended Service Material

BENF34J11908001

Material	SUZUKI recommended product or Specification	Note
Assembly lubrication	SUZUKI MOLY PASTE	☞ (Page 11-4)
Grease	SUZUKI SUPER GREASE A	☞ (Page 11-4) / ☞ (Page 11-4) / ☞ (Page 11-5)
Thread lock cement	THREAD LOCK CEMENT 1322D	☞ (Page 11-8) / ☞ (Page 11-13)

NOTE

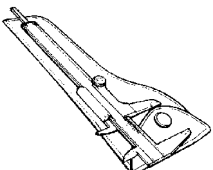
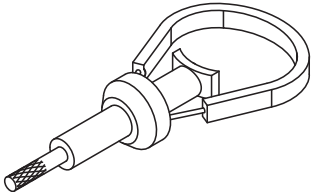
Required service materials are also described in:

“Starter Motor Components” (Page 11-3)

“Kick Starter Components” (Page 11-11)

Special Tool

BENF34J11908002

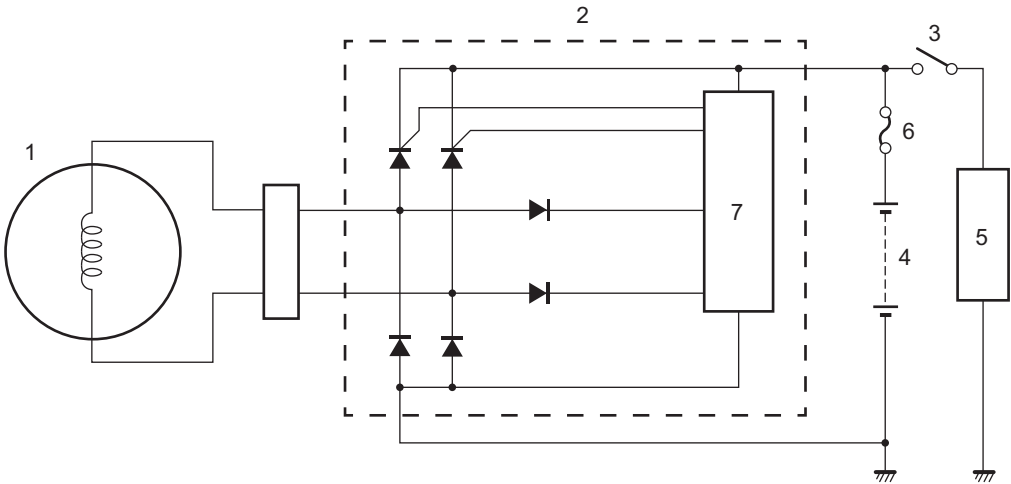
Vernier calipers (200 mm) ☞ (Page 11-5) 	Rotor holder ☞ (Page 11-8) / ☞ (Page 11-8) 
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Charging System

Schematic and Routing Diagram

Charging System Diagram

BENF34J11A02001



IF34J11A0001-03

1. Generator	4. Battery	7. IC
2. Regulator/rectifier	5. Load	
3. Ignition switch	6. Main fuse	

Component Location

Charging System Components Location

BENF34J11A03001

Refer to "Electrical Components Location" in Section 0A (Page 0A-5).

Diagnostic Information and Procedures

Charging System Symptom Diagnosis

BENF34J11A04001

Condition	Possible cause	Correction / Reference Item
Generator does not charge	Open- or short-circuited lead wires, or loose lead connections.	<i>Repair, replace or connect properly.</i>
	Short-circuited, grounded or open generator coil.	<i>Replace. ⌚(Page 1J-5) ⌚(Page 1J-6)</i>
	Short-circuited or punctured regulator/rectifier.	<i>Replace. ⌚(Page 1J-8)</i>
Generator does charge, but charging rate is below the specification	Lead wires tend to get short- or open-circuited or loosely connected at terminals.	<i>Repair or retighten.</i>
	Grounded or open-circuited generator coil.	<i>Replace. ⌚(Page 1J-5) ⌚(Page 1J-6)</i>
	Defective regulator/rectifier.	<i>Replace. ⌚(Page 1J-8)</i>
	Defective cell plates in the battery.	<i>Replace the battery. ⌚(Page 1J-10)</i>
Generator overcharges	Internal short-circuit in the battery.	<i>Replace the battery. ⌚(Page 1J-10)</i>
	Damaged or defective regulator/rectifier.	<i>Replace. ⌚(Page 1J-8)</i>
	Poorly grounded regulator/rectifier.	<i>Clean and tighten ground connection.</i>
Unstable charging	Lead wire insulation frayed due to vibration, resulting in intermittent short-circuiting.	<i>Repair or replace.</i>
	Internally short-circuited generator.	<i>Replace. ⌚(Page 1J-5) ⌚(Page 1J-6)</i>
	Defective regulator/rectifier.	<i>Replace. ⌚(Page 1J-8)</i>
Battery overcharges	Faulty regulator/rectifier.	<i>Replace. ⌚(Page 1J-8)</i>
	Faulty battery.	<i>Replace. ⌚(Page 1J-10)</i>
	Poor contact of generator lead wire coupler.	<i>Repair.</i>
Battery runs down quickly	Trouble in charging system.	<i>Check the generator, regulator/rectifier and circuit connections and make necessary adjustments to obtain specified charging operation. ⌚(Page 1J-4)</i>
	Cell plates have lost much of their active materials a result of overcharging.	<i>Replace the battery and correct the charging system. ⌚(Page 1J-10)</i>
	Internal short-circuit in the battery.	<i>Replace the battery. ⌚(Page 1J-10)</i>
	Too low battery voltage.	<i>Recharge the battery fully. ⌚(Page 1J-9)</i>
	Too old battery.	<i>Replace the battery. ⌚(Page 1J-10)</i>
Battery "sulfation"	Incorrect charging rate. (When not in use battery should be checked at least once a month to avoid sulfation.)	<i>Replace the battery. ⌚(Page 1J-10)</i>
	The battery was left unused in a cold climate for too long.	<i>Replace the battery if badly sulfated. ⌚(Page 1J-10)</i>
"Sulfation", acidic white powdery substance or spots on surface of cell plates	Cracked battery case.	<i>Replace the battery. ⌚(Page 1J-10)</i>
	Battery has been left in a run-down condition for a long time.	<i>Replace the battery. ⌚(Page 1J-10)</i>

Battery Runs Down Quickly

BENF34J11A04002

Troubleshooting**Step 1**

Check accessories which use excessive amounts of electricity.

Are accessories installed?

- Yes Remove accessories.
- No Go to Step 2.

Step 2

Check the battery for current leakage. ⚙️ (Page 1J-4)

Is the battery for current leakage OK?

- Yes Go to Step 3.
- No • Short circuit of wire harness.
• Faulty electrical equipment.

Step 3

Measure the regulated voltage between the battery terminals. ⚙️ (Page 1J-4)

Is the regulated voltage OK?

- Yes • Faulty battery.
• Abnormal driving condition.
- No Go to Step 4.

Step 4

Measure the resistance of the generator coil. ⚙️ (Page 1J-4)

Is the resistance of generator coil OK?

- Yes Go to Step 5.
- No • Faulty generator coil.
• Poor contact of couplers.

Step 5

Measure the generator no-load performance. ⚙️ (Page 1J-4)

Is the generator no-load performance OK?

- Yes Go to Step 6.
- No Faulty generator.

Step 6

Inspect the regulator/rectifier. ⚙️ (Page 1J-8)

Is the regulator/rectifier OK?

- Yes Go to Step 7.
- No Faulty regulator/rectifier.

Step 7

Inspect wirings.

Is the wirings OK?

- Yes Faulty battery.
- No • Short circuit of wire harness.
• Poor contact of couplers.

Repair Instructions

Battery Current Leakage Inspection

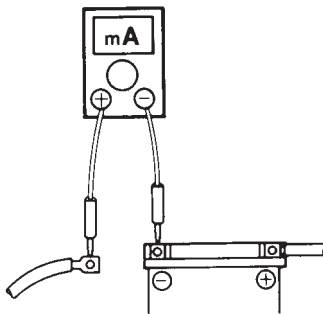
BENF34J11A06001

- 1) Turn the ignition switch OFF.
- 2) Remove the left frame side cover and disconnect the battery (–) lead wire. (Page 1J-10)
- 3) Measure the current between battery (–) terminal and the battery (–) lead wire using the multi circuit tester. If the reading exceeds the specified value, leakage is evident.

NOTICE

- In case of a large current leak, turn the tester to high range first to avoid tester damage.
- Do not turn the ignition switch to ON position when measuring current.

Battery leakage current
3 mA or less



I649G11A0002-02

- 4) Connect the battery (–) terminal and install the left frame side cover. (Page 1J-10)

Regulated Voltage Inspection

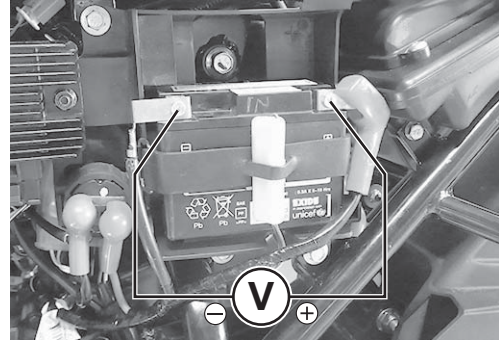
BENF34J11A06002

- 1) Remove the left frame side cover. (Page 9D-12)
- 2) Start the engine and keep it running at 5000 r/min with the dimmer switch turned HI position.
- 3) Measure the DC voltage between the battery (+) and (–) terminals using the multi circuit tester. If the voltage is not within the specified value, inspect the generator and regulator/rectifier.
 - Generator: (Page 1J-4)
 - Regulator/rectifier: (Page 1J-8)

NOTE

When making this test, be sure that the battery is in fully charged condition.

Regulated voltage (Charging output)
Standard: 14.0 – 15.0 V at 5000 r/min



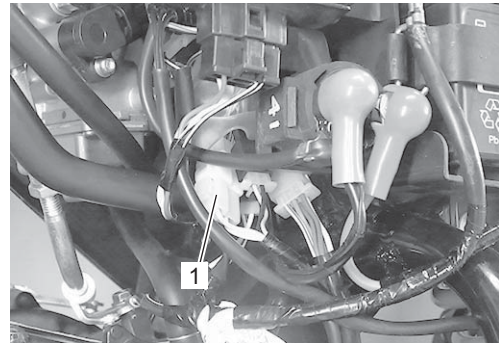
IF34J11A0002-02

Generator Inspection

BENF34J11A06003

Generator Coil Resistance

- 1) Remove the left frame side cover. (Page 9D-12)
- 2) Disconnect the generator lead wire coupler (1).

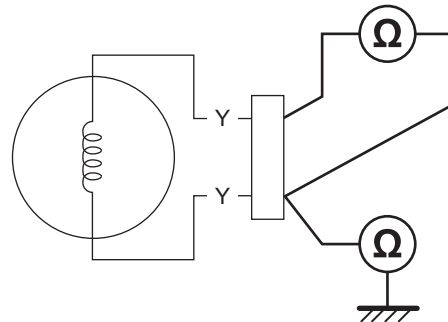


IF34J11A0003-03

- 3) Measure the resistance of the generator coil. If the resistance is out of specified value, replace the generator stator with a new one. Also, check that the generator core is insulated properly.

Generator coil resistance

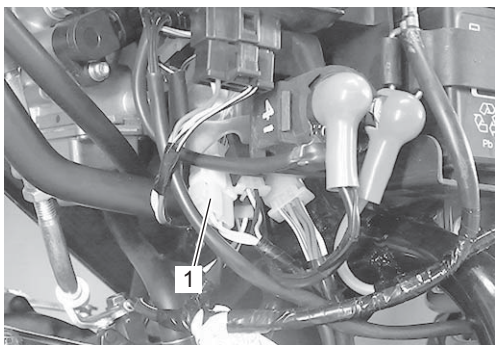
0.6 – 1.5 Ω (Y – Y)
 ∞ Ω (Y – Ground)



IF34J11A0004-02

No-load Performance

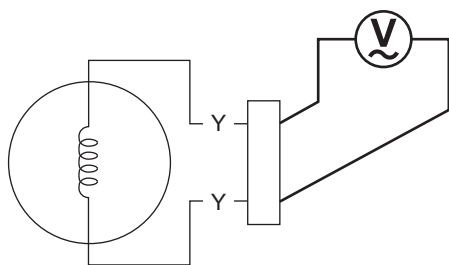
- 1) Remove the left frame side cover. (Page 9D-12)
- 2) Disconnect the generator lead wire coupler (1).



IF34J11A0003-03

- 3) Start the engine and keep it running at 5000 r/min.
- 4) Using the multi circuit tester, measure the voltage of the generator coil.
If the tester reads under the specified value, replace the generator stator with a new one.

Generator no-load voltage (When engine is cold)
80 V (AC) or more at 5000 r/min

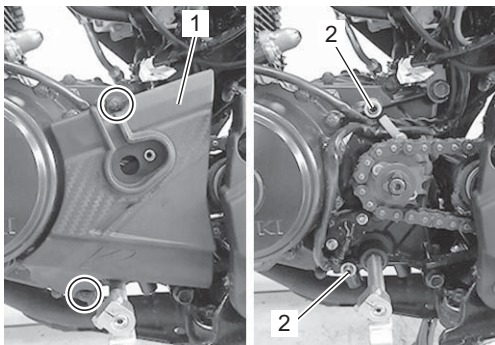


IF34J11A0005-02

Generator Removal

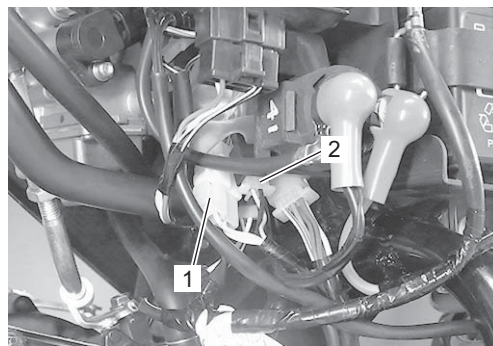
BENF34J11A06004

- 1) Disconnect the battery (–) lead wire. (Page 1J-10)
- 2) Drain engine oil. (Page 1E-4)
- 3) Remove the speed sensor from the engine sprocket cover. (Page 1C-4)
- 4) Remove the engine sprocket cover (1) and dowel pins (2).



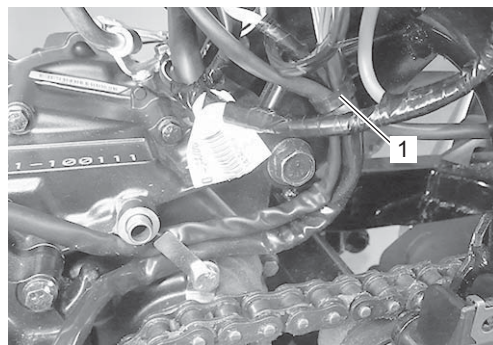
IF34J11A0028-01

- 5) Disconnect the CKP sensor lead wire coupler (1) and generator lead wire coupler (2).



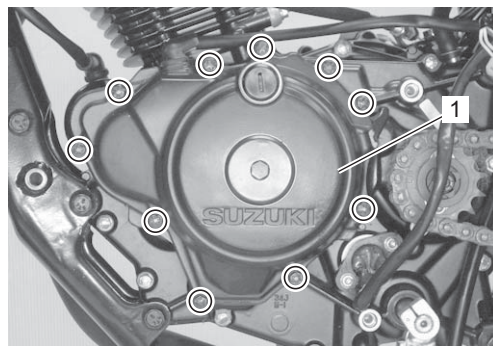
IF34J11A0006-03

- 6) Remove the clamp (1).



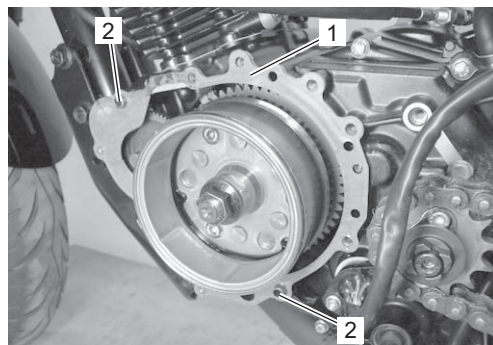
IF34J11A0007-02

- 7) Remove the generator cover (1).



IF34J11A0008-01

- 8) Remove the gasket (1) and dowel pins (2).



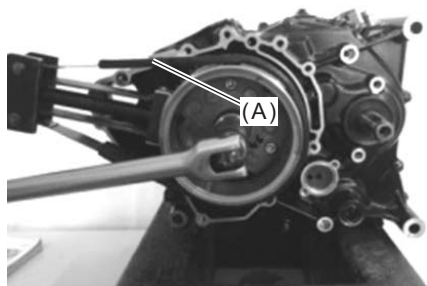
IF34J11A0009-01

1J-6 Charging System:

- 9) Hold the generator rotor with the special tool and remove the generator rotor nut.

Special tool

(A): Rotor Holder

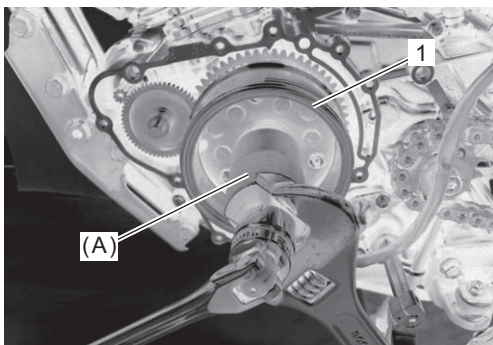


IF34J11A0010-01

- 10) Remove the generator rotor (1) with the special tools.

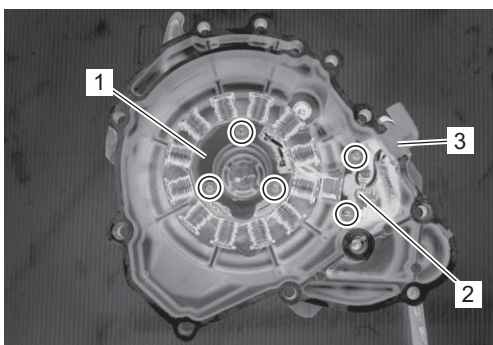
Special tool

(A): Rotor Remover



IF34J11A0011-01

- 11) Remove the generator stator (1), CKP sensor (2), lead wire clamp and grommet (3).



IF34J11A0012-01

Generator Installation

BENF34J11A06005

- 1) Install the generator stator (1), lead wire clamp (2) and CKP sensor (3), and tighten the bolts to the specified torque.

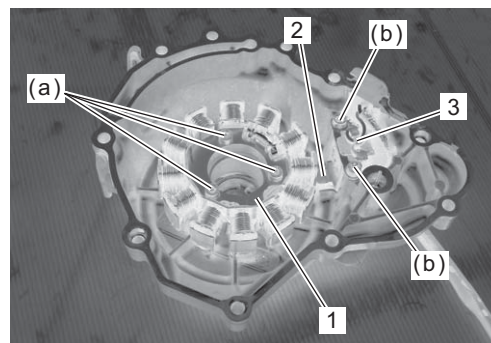
NOTE

Pass the generator lead wire (4) between the generator cover ribs (5) and lead wire clamp. Be careful not to pinch the wire.

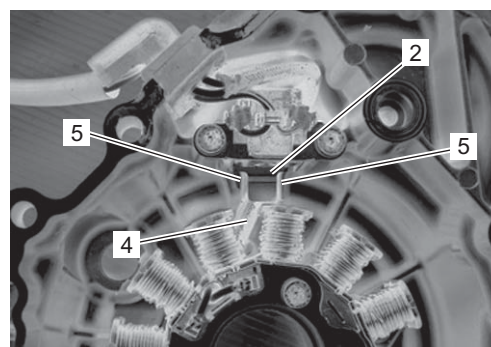
Tightening torque

Generator stator bolt (a): 5 N·m (0.51 kgf-m, 4.0 lbf-ft)

CKP sensor bolt (b): 5 N·m (0.51 kgf-m, 4.0 lbf-ft)



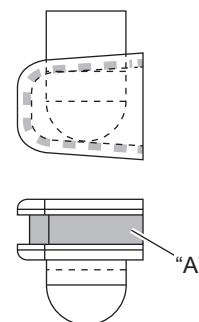
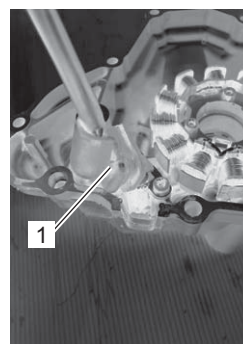
IF34J11A0013-03



IF34J11A0014-01

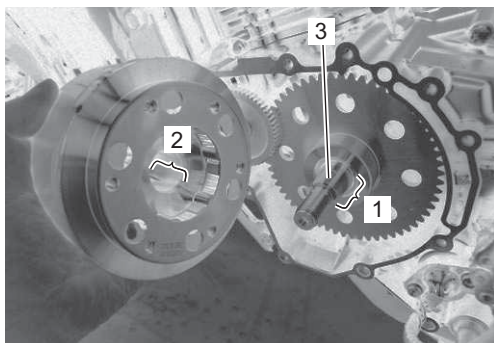
- 2) Apply sealant to the grommet (1) as shown and install it to the generator cover.

“A”: (SUZUKI BOND 1207B)



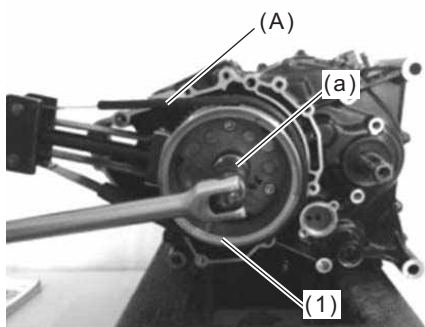
IF34J11A0015-01

- 3) Degrease the tapered portion (1) of crankshaft and also the generator rotor (2). Use nonflammable cleaning solvent to wipe off oily or greasy matter and make these surfaces completely dry.
- 4) Align the key (3) and key slot on the generator rotor.



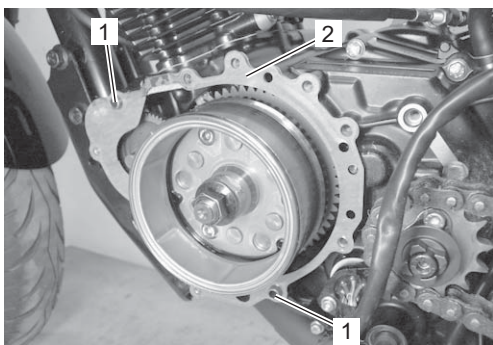
IF34J11A0016-01

- 5) Install the generator rotor (1) on the crankshaft.
- 6) Hold the generator rotor with the special tool and tighten its nut to the specified torque.

Special tool**(A): Rotor Holder****Tightening torque****Generator rotor nut (a): 120 N·m (12.2 kgf-m, 88.5 lbf-ft)**

IF34J11A0017-01

- 7) Install the dowel pins (1) and new gasket (2).

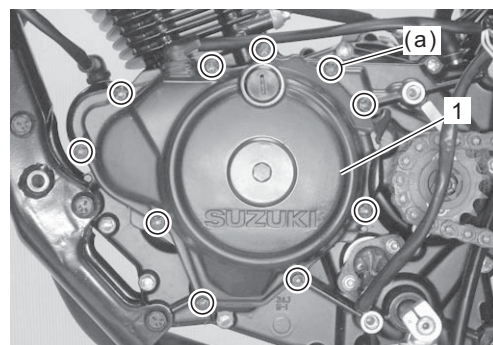


IF34J11A0018-01

- 8) Install the generator cover (1) and tighten the bolts to the specified torque.

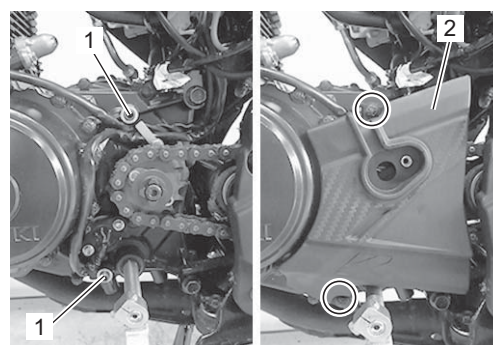
▲ CAUTION

Be careful not to pinch the finger between the generator cover and the crankcase.

Tightening torque**Generator cover bolt (a): 10 N·m (1.0 kgf-m, 7.5 lbf-ft)**

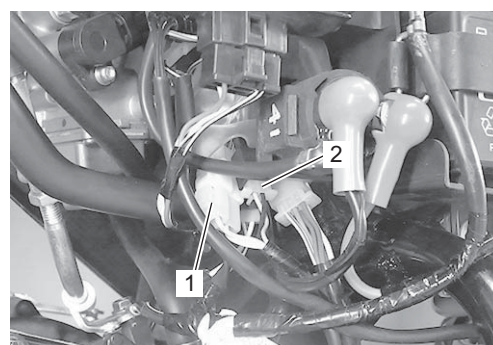
IF34J11A0019-01

- 9) Route the GP switch lead wire. Refer to "Wiring Harness Routing Diagram" in Section 9A (Page 9A-5).
- 10) Install the dowel pins (1) and engine sprocket cover (2).



IF34J11A0029-01

- 11) Install the speed sensor. (Page 1C-4)
- 12) Connect the generator lead wire coupler (1) and CKP sensor lead wire coupler (2).



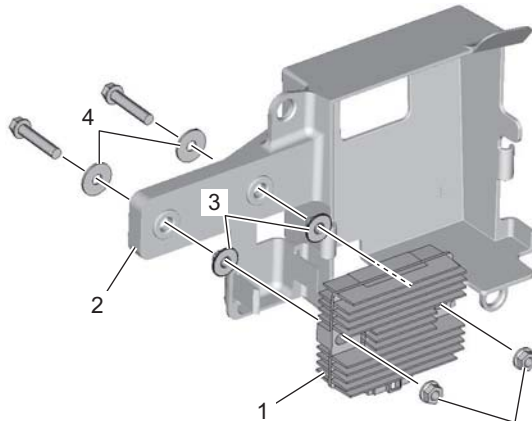
IF34J11A0006-03

1J-8 Charging System:

- 13) Clamp the generator lead wire and CKP sensor lead wire. (Page 9A-5)
- 14) Connect the battery (–) lead wire. (Page 1J-10)
- 15) Pour engine oil. (Page 1E-4)

Regulator / Rectifier Construction

BENF34J11A06011



IF34J11A0020-01

1. Regulator/rectifier	4. Washer
2. Battery No.1 holder	(a) : 10 N·m (1.0 kgf-m, 7.5 lbf-ft)
3. Spacer	

Regulator / Rectifier Inspection

BENF34J11A06006

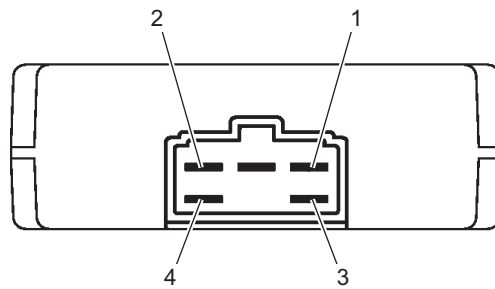
Refer to “Regulator / Rectifier Removal and Installation” (Page 1J-8).

- 1) Set the “Diode test” of the multi circuit tester. Refer to “Precautions for Circuit Tester” in Section 00 (Page 00-6).
- 2) Check that the tester reads 1.4 V or more.

NOTE

If the tester reads less than 1.4 V when the tester probes are not connected, replace its battery.

- 3) Measure the voltage between the terminals using the circuit tester as indicated in the following table. If the voltage is not within the specified value, replace the regulator/rectifier with a new one.



IF34J11A0021-01

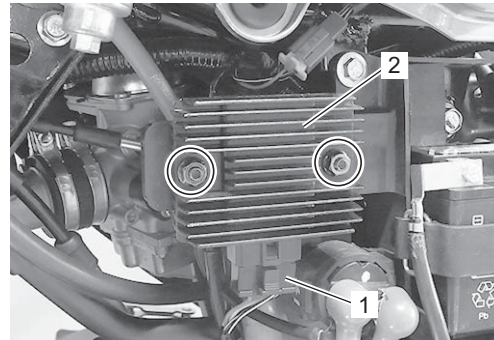
		(+) probe of tester to:			
		(1)	(2)	(3)	(4)
(-) probe of tester to:	(1)	–	*	*	*
	(2)	–	–	*	*
	(3)	0.3 – 0.8 V	*	–	*
	(4)	0.3 – 0.8 V	*	*	–
* Tester's battery voltage: 1.4 V or more					

Regulator / Rectifier Removal and Installation

BENF34J11A06007

Removal

- 1) Remove the left frame side cover. (Page 9D-12)
- 2) Disconnect the regulator/rectifier coupler (1).
- 3) Remove the regulator/rectifier (2).



IF34J11A0022-02

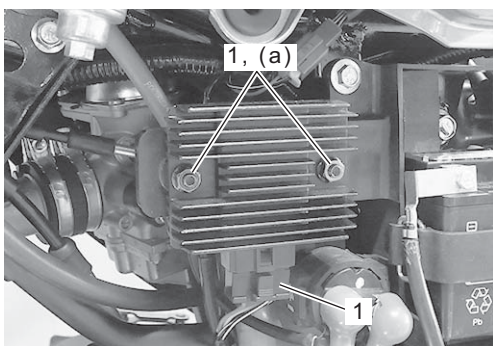
Installation

Install the regulator/rectifier in the reverse order of removal. Pay attention to the following point:

- Tighten the regulator/rectifier nuts (1) to the specified torque.

Tightening torque

Regulator/rectifier nut (a): 10 N·m (1.0 kgf-m, 7.5 lbf-ft)



IF34J11A0023-02

Battery Charging

BENF34J11A06008

Initial Charging

For initial charging, use the charger specially designed for MF battery.

NOTICE

- For charging the battery, make sure to use the charger specially designed for MF battery. Otherwise, the battery may be overcharged resulting in shortened service life.
- Do not remove the cap during charging.
- Position the battery with the cap facing upward during charging.

Battery Recharging**NOTICE**

Do not remove the caps on the battery top while recharging.

NOTE

When the motorcycle is not used for a long period, check the battery every 1 month to prevent the battery discharge.

- 1) Remove the battery from the motorcycle. (Page 1J-10)

- 2) Measure the battery voltage using the multi circuit tester.

If the voltage reading is less than the 12 V (DC), recharge the battery with a battery charger.

Recharging time

0.3 A for 5 to 10 hours or 3 A for 0.5 hour

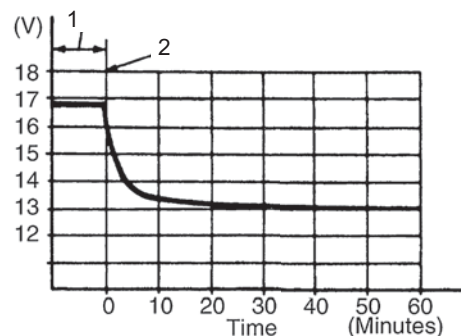
NOTICE

Be careful not to permit the charging current to exceed 5 A at any time.

- 3) After recharging, wait at least 30 minutes and then measure the battery voltage using the multi circuit tester.

If the battery voltage is less than 12.5 V, recharge the battery again.

If the battery voltage is still less than 12.5 V after recharging, replace the battery with a new one.

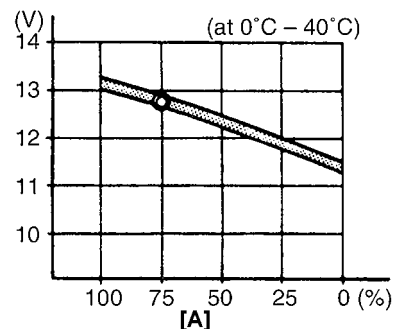


ID26J11A0039-02

1. Charging period

2. Stop charging

- 4) Install the battery to the motorcycle. (Page 1J-10)



IF34J11A0032-01

[A]: Battery charged condition

Battery Removal and Installation

BENF34J11A06009

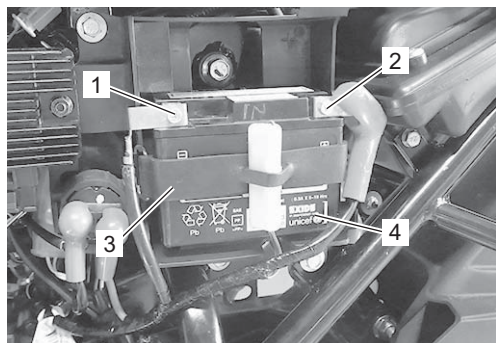
Removal

- 1) Remove the left frame side cover. (Page 9D-12)
- 2) Disconnect the battery (–) lead wire (1).
- 3) Disconnect the battery (+) lead wire (2).

NOTE

Disconnect the battery (–) lead wire (1) first, then disconnect the battery (+) lead wire (2).

- 4) Remove the battery band (3) and battery (4) from the motorcycle.



IF34J11A0026-02

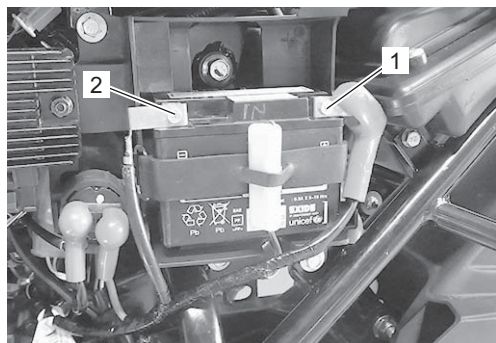
Installation

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

NOTICE

Never use anything except the specified battery.

- Connect the battery (+) lead wire (1) first, then connect battery (–) lead wire (2).
- Tighten the battery lead wire mounting bolts securely.



IF34J11A0027-02

Battery Visual Inspection

BENF34J11A06010

- 1) Remove the left frame side cover. (Page 9D-12)
- 2) Visually inspect the surface of the battery container. If any signs of cracking or electrolyte leakage from the sides of the battery have occurred, replace the battery with a new one. (Page 1J-10)
If the battery terminals are found to be coated with rust or an acidic white powdery substance, clean the battery terminals with sandpaper.
- 3) Install the left frame side cover. (Page 9D-12)

Specifications

Tightening Torque Specifications

BENF34J11A07001

Fastening part	Tightening torque			Note
	N·m	kgf·m	lbf·ft	
Generator stator bolt	5	0.51	4.0	☞ (Page 1J-6)
CKP sensor bolt	5	0.51	4.0	☞ (Page 1J-6)
Generator rotor nut	120	12.2	88.5	☞ (Page 1J-7)
Generator cover bolt	10	1.0	7.5	☞ (Page 1J-7)
Regulator/rectifier nut	10	1.0	7.5	☞ (Page 1J-9)

Reference:

For the tightening torques of fasteners not specified in this page, refer to:

“Regulator / Rectifier Construction” (Page 1J-8)

“Fasteners Information” in Section 0C (Page 0C-8)

Special Tools and Equipment

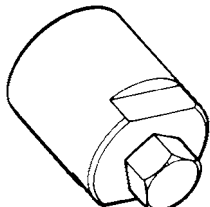
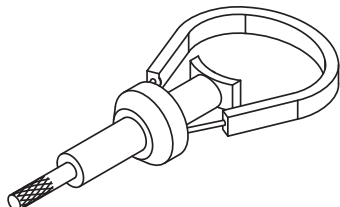
Recommended Service Material

BENF34J11A08001

Material	SUZUKI recommended product or Specification	Note
Sealant	SUZUKI BOND 1207B	☞ (Page 1J-6)

Special Tool

BENF34J11A08002

Rotor remover ☞ (Page 1J-6)		Rotor holder ☞ (Page 1J-6) / ☞ (Page 1J-7)	
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Exhaust System

Precautions

Precautions for Exhaust System

BENF34J11B00001

⚠ WARNING

To avoid the risk of being burned, do not touch the exhaust system when the system is hot.

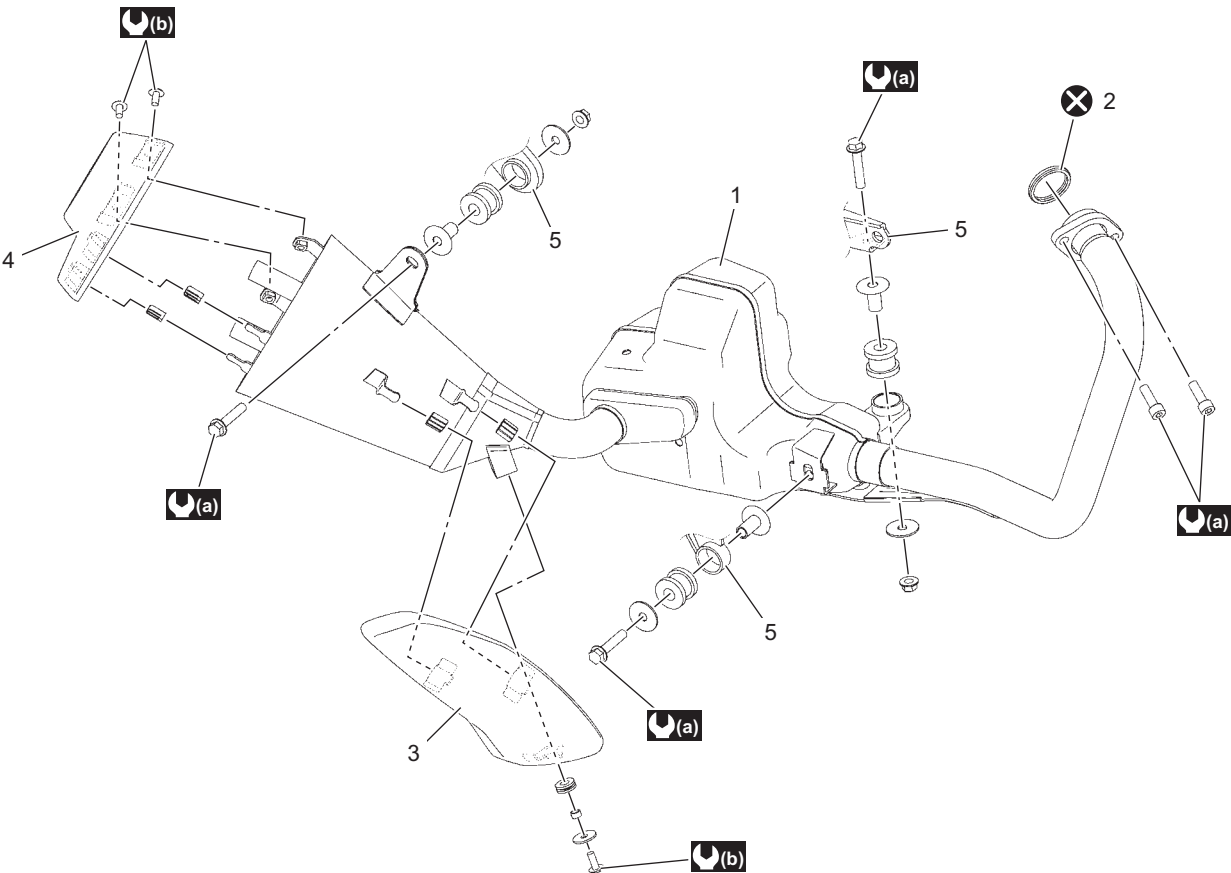
NOTICE

After installation of the muffler, make sure that there is no leakage of exhaust gas.

Repair Instructions

Exhaust System Components

BENF34J11B06002



IF34J11B0001-02

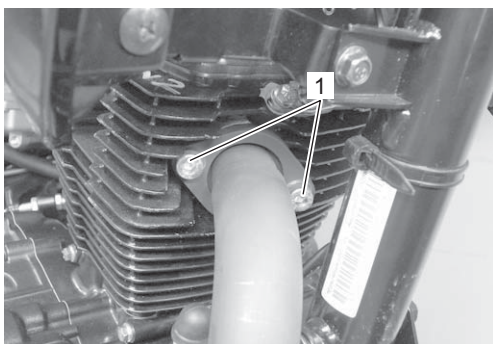
1. Muffler	4. Muffler rear cover	⚙(b) : 10 N·m (1.0 kgf-m, 7.5 lbf-ft)
2. Gasket	5. Frame	⊗ : Do not reuse.
3. Muffler cover	⚙(a) : 23 N·m (2.3 kgf-m, 17.0 lbf-ft)	

Muffler Removal and Installation

BENF34J11B06008

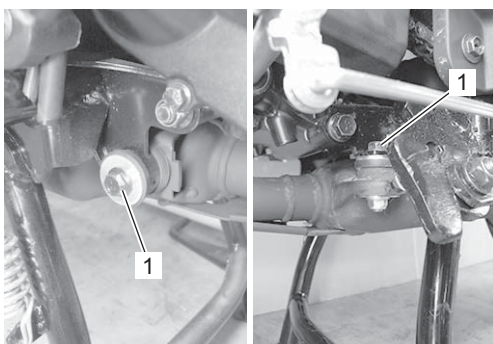
Removal

- 1) Support the motorcycle with the center stand.
- 2) Remove the exhaust pipe bolts (1).

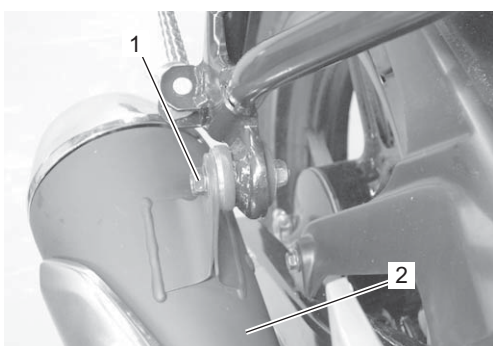


IF34J11B0002-01

- 3) Remove the muffler mounting bolts (1) and muffler (2).

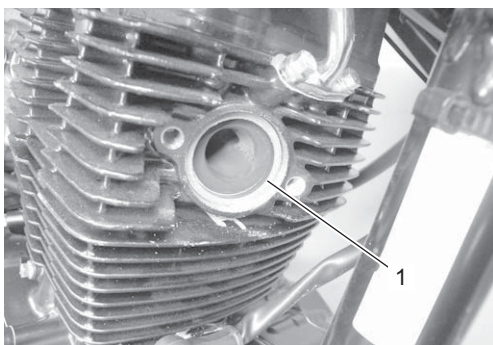


IF34J11B0004-02



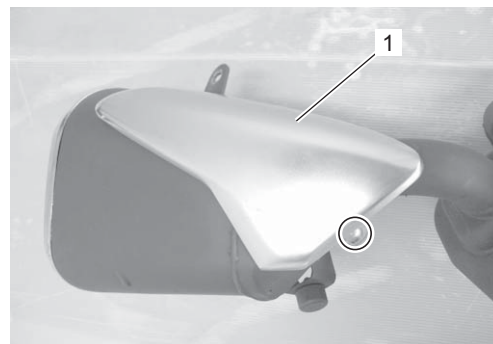
IF34J11B0005-01

- 4) Remove the exhaust pipe gasket (1).

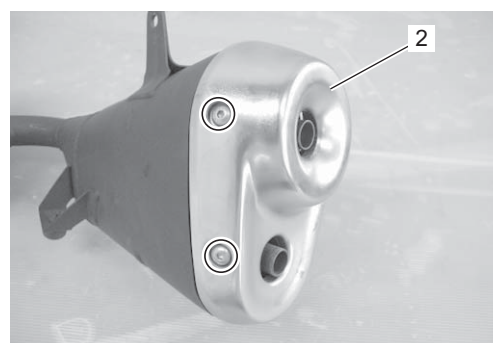


IF34J11B0006-01

- 5) Remove the muffler cover (1) and muffler rear cover (2).



IF34J11B0007-01



IF34J11B0008-02

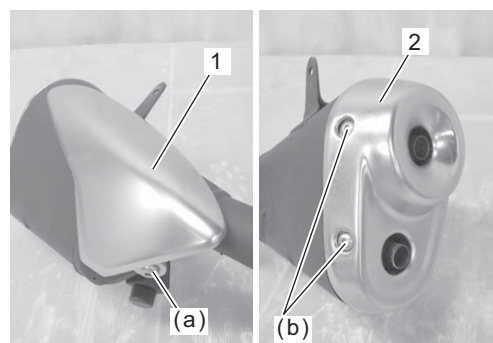
Installation

- 1) Install the muffler cover (1) and rear muffler cover (2), and tighten the bolts to the specified torque.

Tightening torque

Muffler cover bolt (a): 10 N·m (1.0 kgf-m, 7.5 lbf-ft)

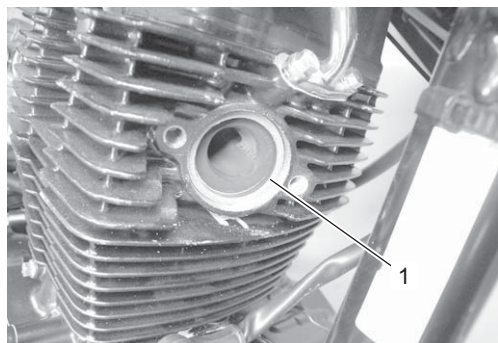
Muffler rear cover bolt (b): 10 N·m (1.0 kgf-m, 7.5 lbf-ft)



IF34J11B0009-02

1K-3 Exhaust System:

- 2) Install the new exhaust pipe gasket (1).



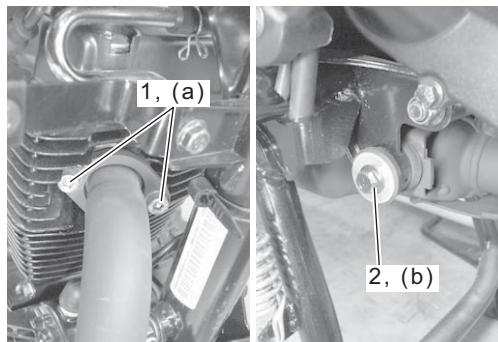
IF34J11B0006-01

- 3) Install the muffler.
- 4) Tighten the exhaust pipe bolts (1) first, and then tighten the muffler mounting bolts (2) to the specified torque.

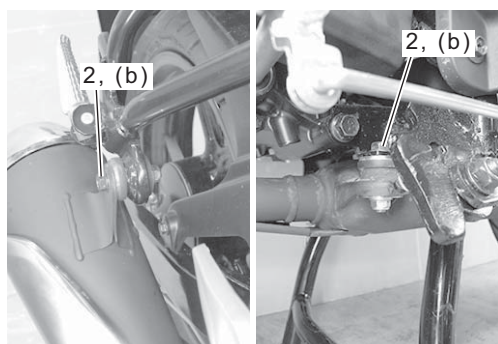
Tightening torque

Exhaust pipe bolt (a): 23 N·m (2.3 kgf-m, 17.0 lbf-ft)

Muffler mounting bolt (b): 23 N·m (2.3 kgf-m, 17.0 lbf-ft)



IF34J11B0010-01



IF34J11B0011-02

Exhaust System Inspection

BENF34J11B06010

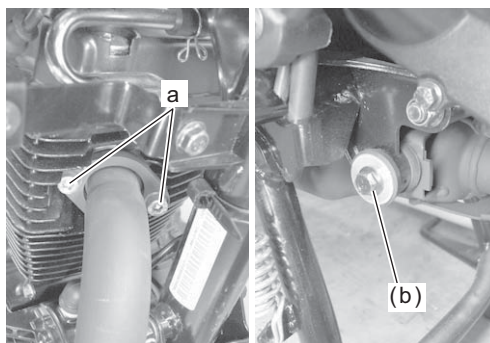
Inspect the muffler connection for exhaust gas leakage and mounting condition. If any defect is found, replace the muffler with a new one.

Check the exhaust pipe bolts and muffler mounting bolt are tightened to their specified torque.

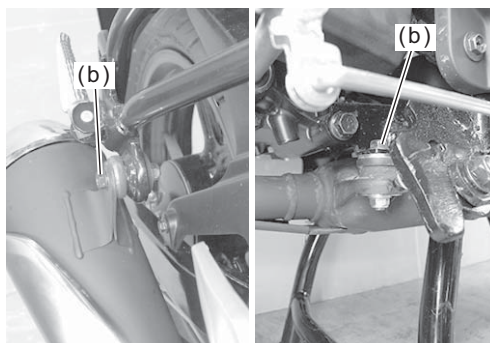
Tightening torque

Exhaust pipe bolt (a): 23 N·m (2.3 kgf-m, 17.0 lbf-ft)

Muffler mounting bolt (b): 23 N·m (2.3 kgf-m, 17.0 lbf-ft)



IF34J11B0012-01



IF34J11B0013-02

Specifications

Tightening Torque Specifications

BENF34J11B07001

Fastening part	Tightening torque			Note
	N·m	kgf·m	lbf·ft	
Muffler cover bolt	10	1.0	7.5	☞ (Page 1K-2)
Muffler rear cover bolt	10	1.0	7.5	☞ (Page 1K-2)
Exhaust pipe bolt	23	2.3	17.0	☞ (Page 1K-3) / ☞ (Page 1K-3)
Muffler mounting bolt	23	2.3	17.0	☞ (Page 1K-3) / ☞ (Page 1K-3)

Reference:

For the tightening torques of fasteners not specified in this page, refer to:
“Exhaust System Components” (Page 1K-1)
“Fasteners Information” in Section 0C (Page 0C-8)

Section 2

Suspension

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Precautions

Precautions

Precautions for Suspension

BENF34J12000001

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

⚠ WARNING

- **Never attempt to heat, quench or straighten any suspension part. If any damage or deformation is found, replace the part with a new one without correct it.**
 - **When removing or installing the suspension or wheel, place the motorcycle on a level surface and support it securely with a hoist or jack etc.**
 - **Do not support the motorcycle with the muffler.**
-

Suspension General Diagnosis

Diagnostic Information and Procedures

Suspension and Wheel Symptom Diagnosis

BENF34J12104001

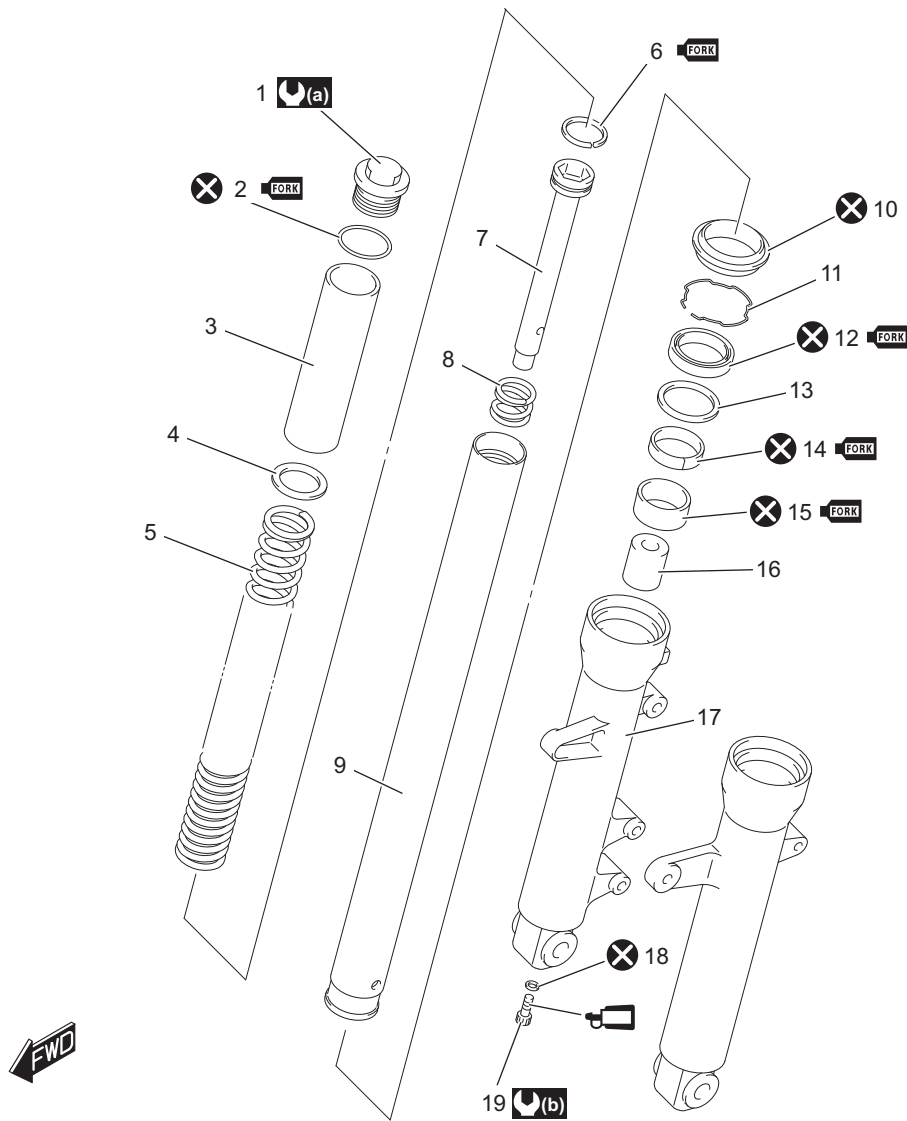
Condition	Possible cause	Correction / Reference Item
Wobbly front wheel	Distorted wheel rim.	Replace. ⌚(Page 2D-10)
	Worn front wheel bearings.	Replace. ⌚(Page 2D-2)
	Defective or incorrect tire.	Replace. ⌚(Page 2D-10)
	Loose front axle nut.	Tighten. ⌚(Page 2D-2)
	Incorrect fork oil level.	Adjust. ⌚(Page 2B-3)
Front suspension too soft	Insufficiently viscous fork oil.	Replace. ⌚(Page 2B-3)
	Insufficient fork oil.	Check level and add. ⌚(Page 2B-3)
	Weak spring.	Replace. ⌚(Page 2B-3)
Front suspension too stiff	Excessively viscous fork oil.	Replace. ⌚(Page 2B-3)
	Excessive fork oil.	Check level and drain. ⌚(Page 2B-3)
Front suspension too noisy	Insufficient fork oil.	Check level and add. ⌚(Page 2B-3)
	Loose front suspension fastener.	Tighten. ⌚(Page 2B-2)
Wobbly rear wheel	Distorted wheel rim.	Replace. ⌚(Page 2D-10)
	Worn rear wheel bearings.	Replace. ⌚(Page 2D-6)
	Defective or incorrect tire.	Replace. ⌚(Page 2D-10)
	Worn swingarm bearings.	Replace. ⌚(Page 2C-7)
	Loose rear suspension fastener.	Tighten. ⌚(Page 2C-2)
	Loose rear axle nut.	Tighten. ⌚(Page 2D-5)
Rear suspension too soft	Weak rear shock absorber spring.	Replace. ⌚(Page 2C-2)
	Rear shock absorber leaks oil.	Replace. ⌚(Page 2C-2)
	Improper suspension setting.	Adjust. ⌚(Page 2C-2)
Rear suspension too stiff	Bent rear shock absorber shaft.	Replace. ⌚(Page 2C-2)
	Worn swingarm bearings.	Replace. ⌚(Page 2C-7)
	Bent swingarm pivot shaft.	Replace. ⌚(Page 2C-3)
	Improper suspension setting.	Adjust. ⌚(Page 2C-2)
Rear suspension too noisy	Loose rear suspension fastener.	Tighten. ⌚(Page 2C-2)
	Worn swingarm bearings.	Replace. ⌚(Page 2C-7)

Front Suspension

Repair Instructions

Front Fork Components

BENF34J12206001



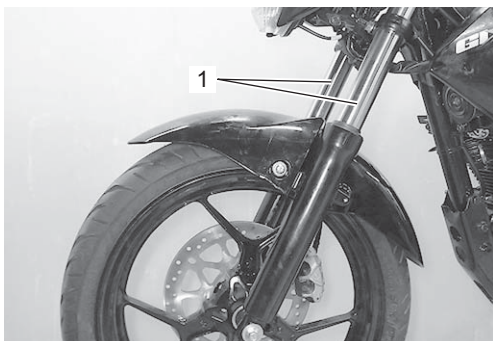
IF34J1220001-03

1. Front fork cap bolt	7. Damper rod	13. Oil seal retainer	19. Damper rod bolt
2. O-ring	8. Rebound spring	14. Outer tube slide metal	: 27 N·m (2.8 kgf·m, 20.0 lbf·ft)
3. Spacer	9. Inner tube	15. Inner tube slide metal	: 24 N·m (2.4 kgf·m, 18.0 lbf·ft)
4. Washer	10. Dust seal	16. Oil lock piece	: Apply fork oil.
5. Spring	11. Oil seal stopper ring	17. Outer tube	: Apply thread lock to the thread part.
6. Damper rod ring	12. Oil seal	18. Damper rod bolt gasket	: Do not reuse.

Front Fork On-Vehicle Inspection

BENF34J12206002

Inspect the front forks for oil leakage, scoring or scratches on the outer surface of the inner tubes (1). Replace any defective parts, if necessary. Refer to "Front Fork Disassembly and Reassembly" (Page 2B-3).



IF34J1220002-01

Front Fork Assembly Removal and Installation

BENF34J12206004

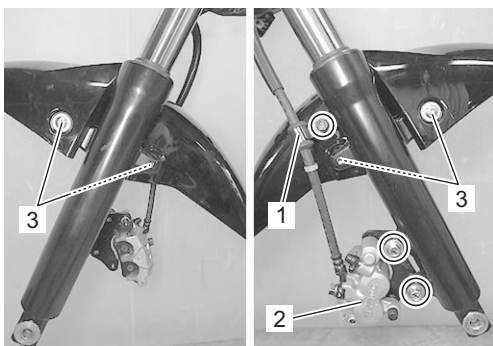
Refer to "Front Wheel Assembly Removal and Installation" in Section 2D (Page 2D-2).

NOTE

The right and left front forks are installed symmetrically (except front brake caliper) and therefore the removal procedure for one side is the same as that for the other side.

Removal

- 1) Remove the brake hose clamp (1) and front brake caliper (2). (Right side only)
- 2) Remove the front fender by removing the left and right bolts (3).

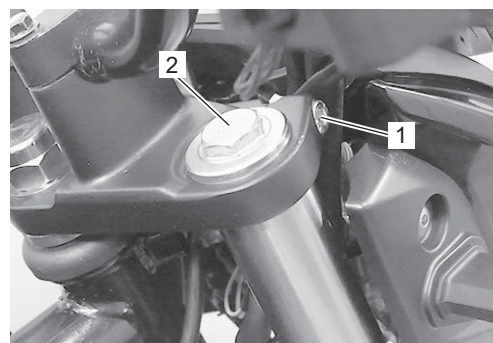


IF34J1220003-01

- 3) Loosen the front fork upper clamp bolt (1).

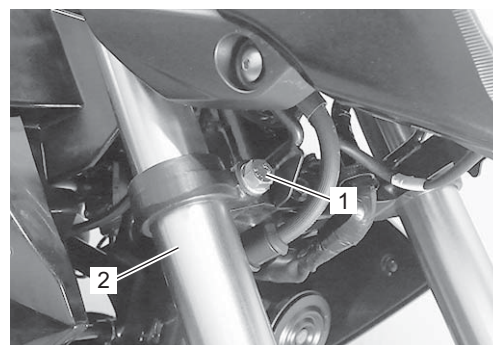
NOTE

Slightly loosen the front fork cap bolt (2) to facilitate later disassembly.



IF34J1220004-01

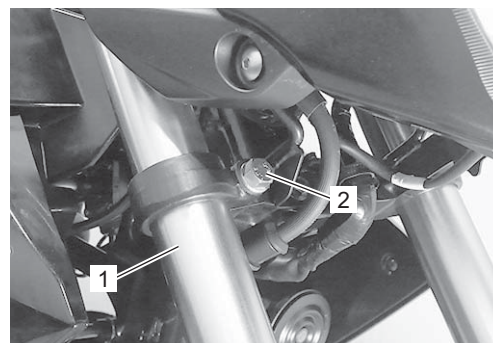
- 4) Loosen the front fork lower clamp bolt (1), and then remove the front fork (2) by supporting it.



IF34J1220005-01

Installation

- 1) Set the front fork (1) to the steering stem lower bracket temporarily by tightening the lower clamp bolt (2).



IF34J1220006-01

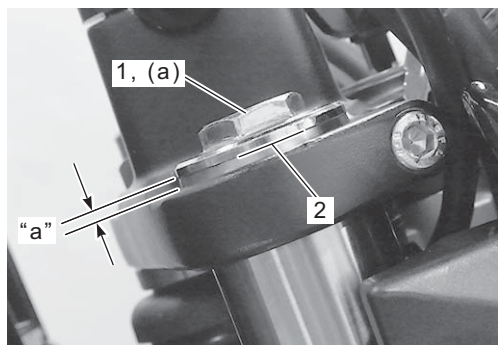
2B-3 Front Suspension:

- 2) Tighten the front fork cap bolt (1) to the specified torque.

Tightening torque

Front fork cap bolt (a): 27 N·m (2.8 kgf-m, 20.0 lbf-ft)

- 3) Loosen the lower clamp bolts.
4) Set the front fork with the upper surface (2) of the inner tube positioned "a" from the upper surface of the steering stem upper bracket.



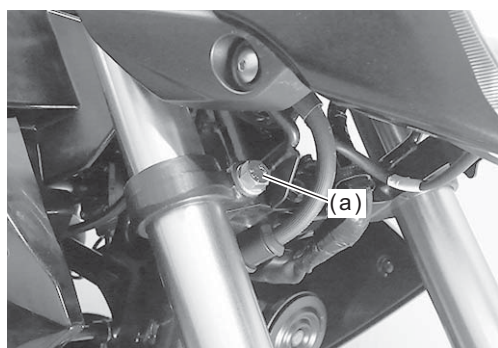
IF34J1220007-01

"a": 2.0 mm (0.16 in)

- 5) Tighten the front fork lower clamp bolt to the specified torque.

Tightening torque

Front fork lower clamp bolt (a): 29 N·m (3.0 kgf-m, 21.5 lbf-ft)

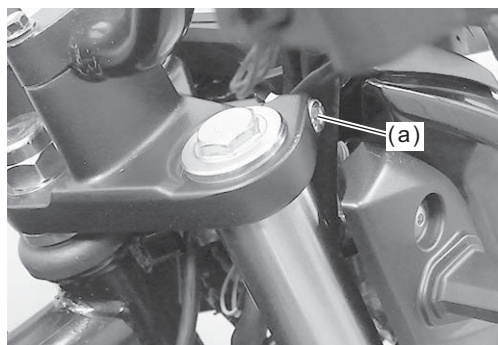


IF34J1220008-01

- 6) Tighten the front fork upper clamp bolt.

Tightening torque

Front fork upper clamp bolt (a): 23 N·m (2.3 kgf-m, 17.0 lbf-ft)



IF34J1220009-01

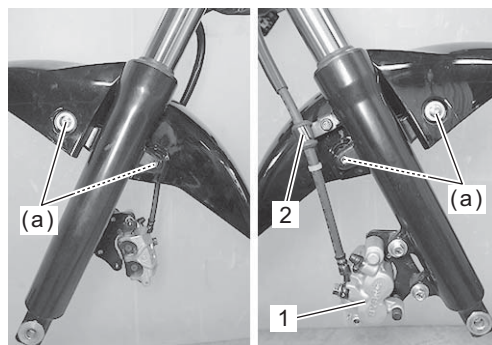
- 7) Install the front fender and tighten the front fender mounting bolts.

Tightening torque

Front fender mounting bolt (a): 10 N·m (1.0 kgf-m, 7.5 lbf-ft)

- 8) Install the front brake caliper (1) and brake hose clamp (2).

- Front brake caliper: (Page 4B-3)
- Brake hose clamp: (Page 4A-2)



IF34J1220010-01

Front Fork Disassembly and Reassembly

BENF34J12206005

Refer to "Front Fork Assembly Removal and Installation" (Page 2B-2).

NOTE

The right and left front forks are installed symmetrically and therefore the disassembly procedure for one side is the same as that for the other side.

Disassembly

- 1) Remove the front fork cap bolt (1).

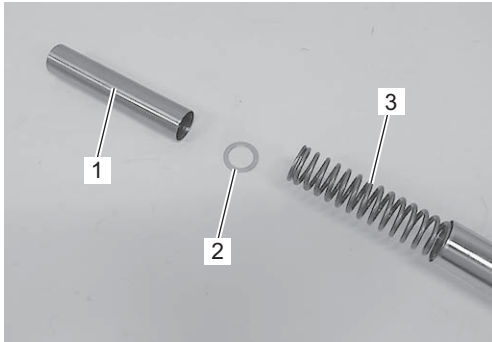
NOTICE

Hold the front fork cap bolt by hand when removing the bolt. The cap bolt may pop up pushed by the spring.



IF34J1220011-01

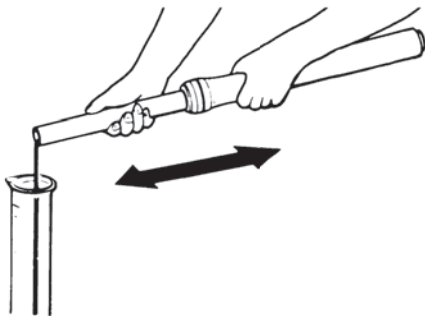
- 2) Remove the spacer (1), washer (2) and spring (3).



IF34J1220012-01

- 3) Invert the fork and stroke it several times to drain out fork oil.

- 4) Hold the fork inverted for a few minutes to drain oil.



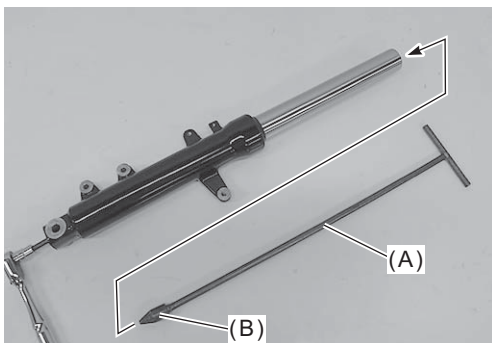
I649G1220012-02

- 5) Remove the damper rod bolt using the special tools.

Special tool

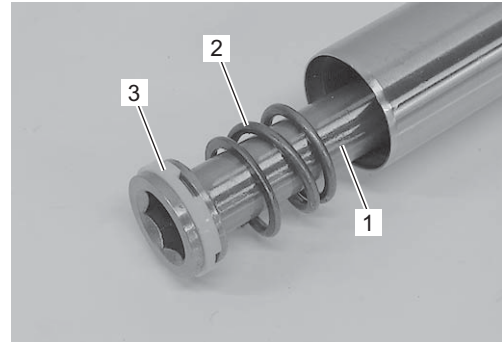
(A): T-Handle

(B): Front Fork Assembling Attachment



IF34J1220013-01

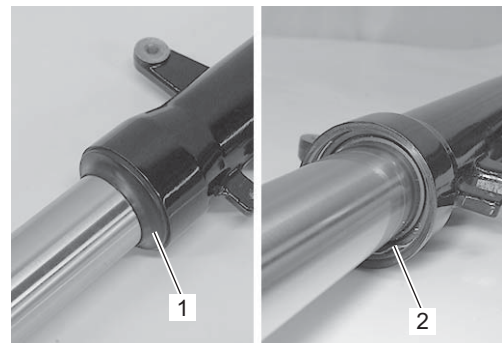
- 6) Remove the damper rod (1), rebound spring (2) and damper rod ring (3).



IF34J1220014-01

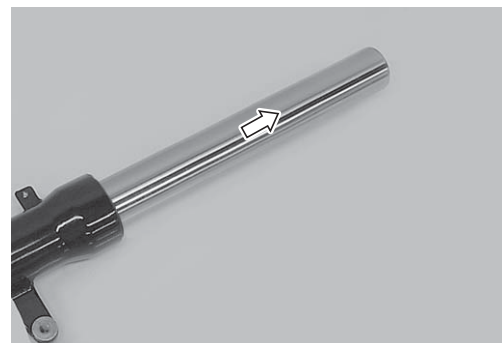
- 7) Remove the dust seal (1).

- 8) Remove the oil seal stopper ring (2).



IF34J1220015-01

- 9) Remove the oil seal by pulling out the inner tube.

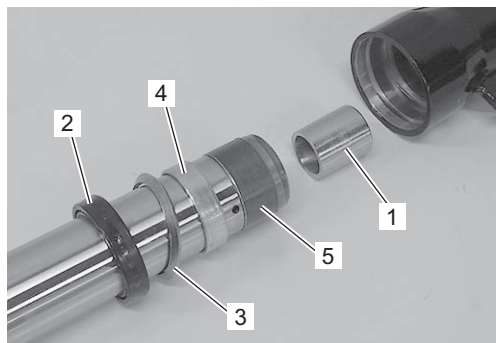


IF34J1220016-01

2B-5 Front Suspension:

10) Remove the following parts.

- Oil lock piece (1)
- Oil seal (2)
- Oil seal retainer (3)
- Outer tube slide metal (4)
- Inner tube slide metal (5)



IF34J1220017-01

Reassembly

NOTICE

- Thoroughly wash all the component parts being assembled. Insufficient washing can result in oil leakage or premature wear of the parts.
- When reassembling the front fork, use new fork oil.
- Use the specified fork oil for the front fork.
- Use care not to cause damage to the slide metal surfaces since the surfaces are teflon coated.

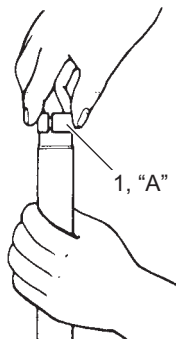
1) Hold the inner tube vertically, clean the metal groove and install the inner tube slide metal by hand.

NOTICE

Do not damage the Teflon coated surface of the inner tube's slide metal when mounting it.

2) Apply fork oil to the new inner tube slide metal (1).

"A": Fork oil (ENDURANCE FORK OIL TYPE 1F or equivalent)



ID26J1220021-01

3) Install the following parts onto the inner tube.

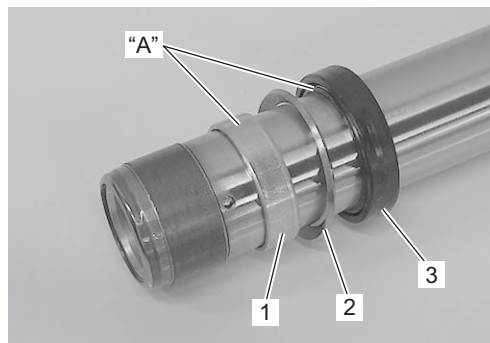
- New outer tube slide metal (1)
- Oil seal retainer (2)
- New oil seal (3)

NOTICE

When installing the oil seal to the inner tube, be careful not to damage the oil seal lip.

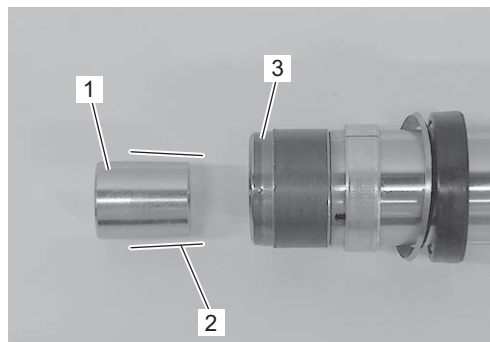
4) Apply fork oil to the outer slide metal and oil seal lip.

"A": Fork oil (ENDURANCE FORK OIL TYPE 1F or equivalent)



IF34J1220018-01

5) When installing the oil lock piece (1), insert the tapered end (2) of the oil lock piece into the inner tube (3).



IF34J1220019-01

6) Install the inner tube into the outer tube with care not to drop the oil lock piece out.

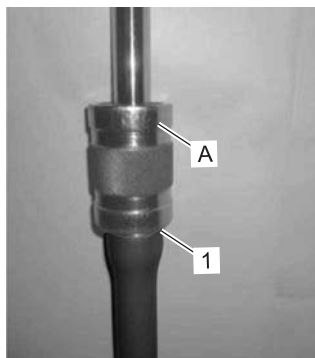
NOTE

After installing the inner tube into the outer tube, keep the oil lock piece into the inner tube by compressing the front fork fully.

- 7) Install the new oil seal (1) into the outer tube using the special tool.

Special tool

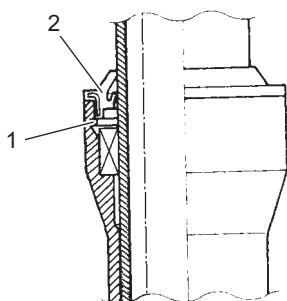
(A): Front Fork Oil Seal Installer Set



ID26J1220024-02

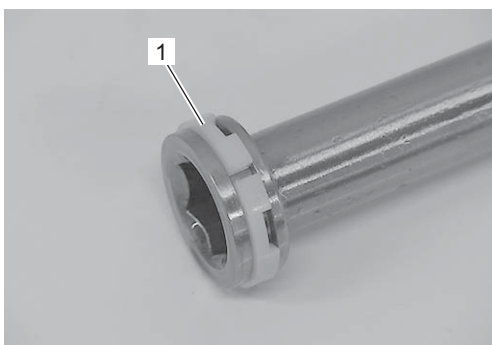
- 8) When installing the oil seal stopper ring (1), make sure that the oil seal stopper ring is fitted securely into the groove.

- 9) Install the new dust seal (2).



IF34J1220020-01

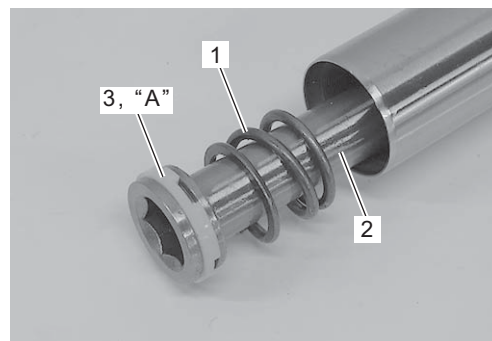
- 10) Install the damper rod ring (1) to the damper rod.



IF34J1220021-01

- 11) Install the rebound spring (1) to the damper rod (2).
- 12) Apply fork oil to the damper rod ring (3) and insert the damper rod into the inner tube.

"A": Fork oil (ENDURANCE FORK OIL TYPE 1F or equivalent)



IF34J1220022-01

- 13) Install the new damper rod bolt gasket (1).

- 14) Apply thread lock to the damper rod bolt (2), and tighten it to the specified torque using a 8 mm hexagon wrench and special tools.

NOTE

Check the front fork for smoothness by stroking it after installing the damper rod.

Special tool

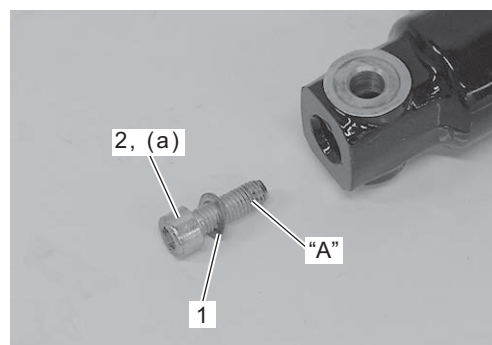
(A): T-Handle

(B): Front Fork Assembling Attachment

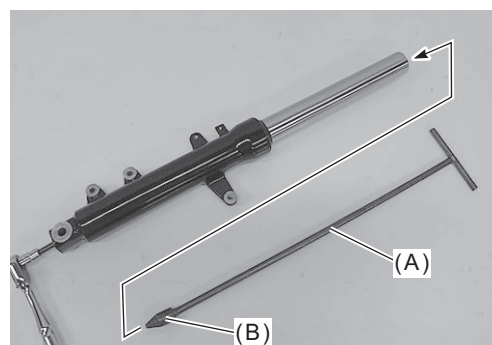
"A": Thread lock cement (LOCTITE® *)**

Tightening torque

Front fork damper rod bolt (a): 24 N·m (2.4 kgf-m, 18.0 lbf-ft)



IF34J1220023-01



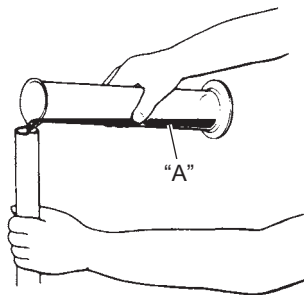
IF34J1220013-01

2B-7 Front Suspension:

- 15) Place the front fork vertically without spring.
- 16) Compress it fully.
- 17) Pour specified front fork oil to the inner tube.

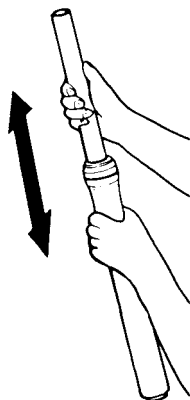
“A”: Fork oil (ENDURANCE FORK OIL TYPE 1F or equivalent)

Front fork oil capacity (each leg)
400 ml (13.5 US oz, 14.1 Imp oz)



ID26J1220030-01

- 18) Move the inner tube up and down several strokes until bubbles do not come out from the oil.
- 19) Keep the front fork vertically and wait 5 – 6 minutes.



I717H1220029-01

- 20) Hold the front fork vertically and adjust fork oil level “a” with the special tool.

NOTE

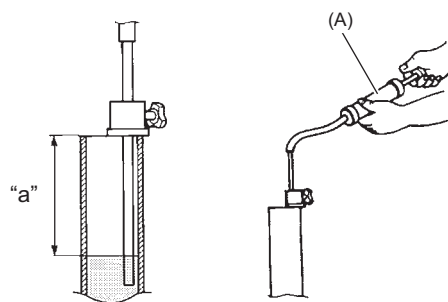
When adjusting the fork oil level, remove the fork spring and compress the inner tube fully.

Special tool

(A): Front Fork Oil Level Gauge

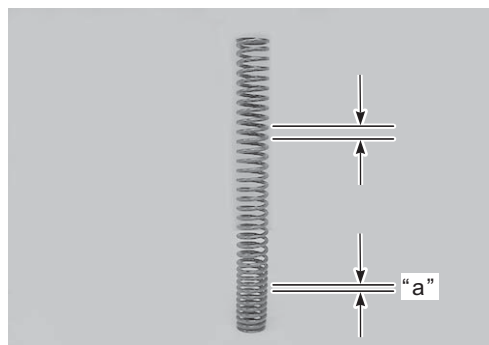
Fork oil level

130 mm (5.1 in)

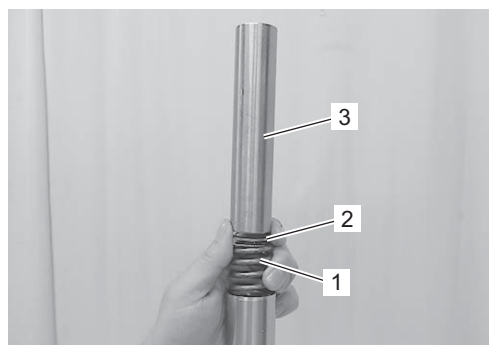


IF34J1220030-01

- 21) Install the fork spring (1) into the inner tube with its smaller pitch “a” facing the bottom side.
- 22) Install the washer (2) and spacer (3).



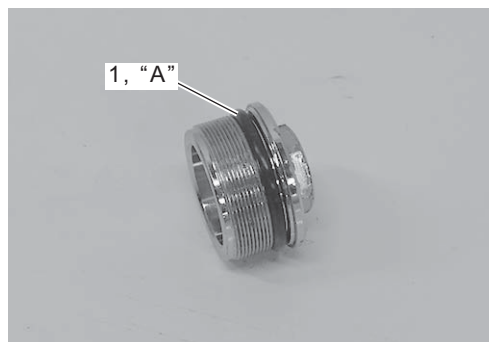
IF34J1220024-01



IF34J1220025-01

- 23) Apply fork oil lightly to the new front fork cap bolt O-ring (1).

“A”: Fork oil (ENDURANCE FORK OIL TYPE 1F or equivalent)



IF34J1220026-01

- 24) Temporarily tighten the front fork cap bolt (1) pushing it down.



IF34J1220011-01

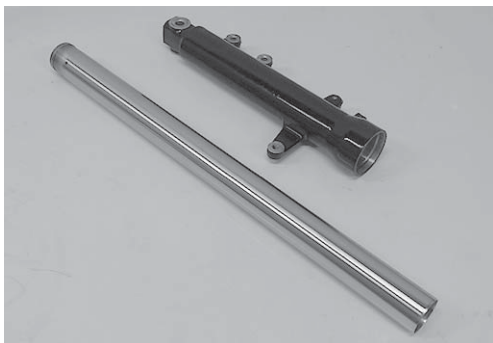
Front Fork Inspection

BENF34J12206006

Refer to "Front Fork Disassembly and Reassembly" (Page 2B-3).

Inner Tube / Outer Tube

Inspect the inner tube sliding surface and outer tube sliding surface for scuffing. If any defect is found, replace the part with a new one.



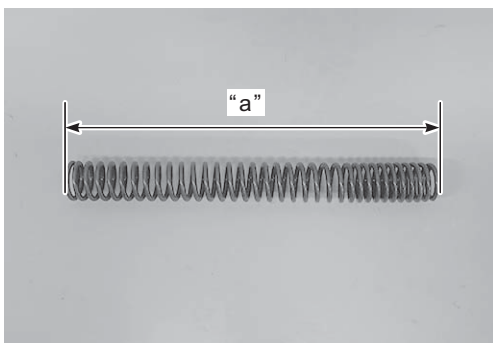
IF34J1220027-01

Fork Spring

Measure the fork spring free length "a". If it is shorter than the service limit, replace it with a new one.

Front fork spring free length

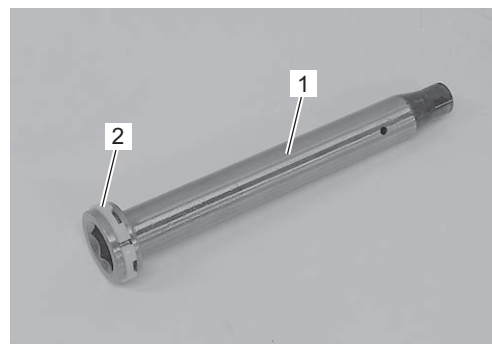
Service limit: 308 mm (12.1 in)



IF34J1220028-01

Damper Rod / Damper Rod Ring

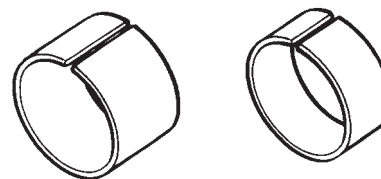
Inspect the damper rod (1) and damper rod ring (2) for wear or damage. If any defects are found, replace the damper rod or damper rod ring with a new one.



IF34J1220029-01

Outer Tube Slide Metal / Inner Tube Slide Metal

- Inspect the outer tube slide metal and inner tube slide metal for wear or damage. If any defect is found, replace the part with a new one.
- Check the Teflon coated surface for dirt. If any dirt is found, clean the surface with fork oil and nylon blush.



ID26J1220043-02

Specifications

Tightening Torque Specifications

BENF34J12207001

Fastening part	Tightening torque			Note
	N·m	kgf-m	lbf-ft	
Front fork cap bolt	27	2.8	20.0	☞ (Page 2B-3)
Front fork lower clamp bolt	29	3.0	21.5	☞ (Page 2B-3)
Front fork upper clamp bolt	23	2.3	17.0	☞ (Page 2B-3)
Front fender mounting bolt	10	1.0	7.5	☞ (Page 2B-3)
Front fork damper rod bolt	24	2.4	18.0	☞ (Page 2B-6)

Reference:

For the tightening torques of fasteners not specified in this page, refer to:

“Front Fork Components” (Page 2B-1)

“Fasteners Information” in Section 0C (Page 0C-8)

Special Tools and Equipment

Recommended Service Material

BENF34J12208001

Material	SUZUKI recommended product or Specification		Note
Fork oil	ENDURANCE FORK OIL TYPE 1F or equivalent	—	☞ (Page 2B-5) / ☞ (Page 2B-5) / ☞ (Page 2B-6) / ☞ (Page 2B-7) / ☞ (Page 2B-7)
Thread lock cement	LOCTITE® ***	—	☞ (Page 2B-6)

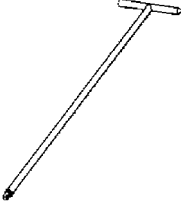
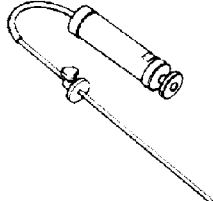
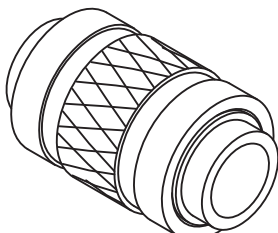
NOTE

Required service materials are also described in:

“Front Fork Components” (Page 2B-1)

Special Tool

BENF34J12208002

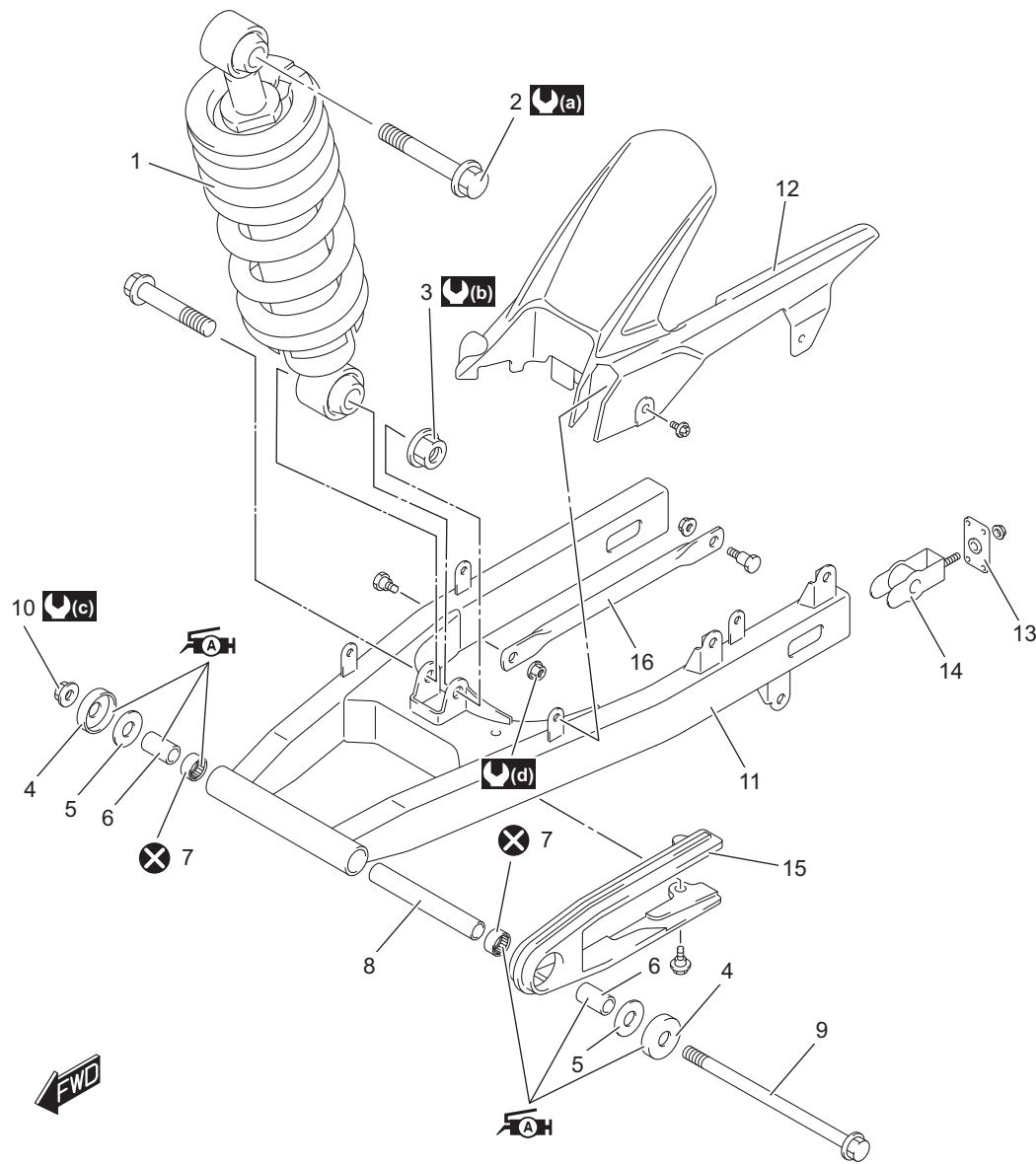
T-handle (20 mm) ☞ (Page 2B-4) / ☞ (Page 2B-6) 	Front fork oil level gauge ☞ (Page 2B-7) 
Front fork oil seal installer set ☞ (Page 2B-6) 	

Rear Suspension

Repair Instructions

Rear Suspension Components

BENF34J12306001



IF34J1230001-01

1. Rear shock absorber	9. Swingarm pivot shaft	: 65 N·m (6.6 kgf-m, 48.0 lbf-ft)
2. Rear shock absorber upper mounting bolt	10. Swingarm pivot nut	: 78 N·m (8.0 kgf-m, 57.5 lbf-ft)
3. Rear shock absorber lower mounting nut	11. Swingarm	: 58 N·m (5.9 kgf-m, 43.0 lbf-ft)
4. Dust cover	12. Chain case	: 16 N·m (1.6 kgf-m, 12.0 lbf-ft)
5. Thrust washer	13. Chain adjuster guide plate	: Apply grease.
6. Spacer	14. Chain adjuster	: Do not reuse.
7. Pivot bearing	15. Chain buffer	
8. Center spacer	16. Torque link	

2C-2 Rear Suspension:

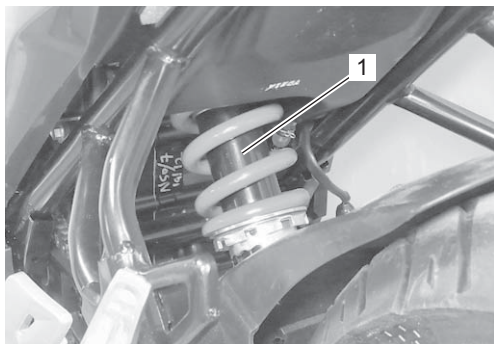
Rear Suspension On-vehicle Inspection

BENF34J12306002

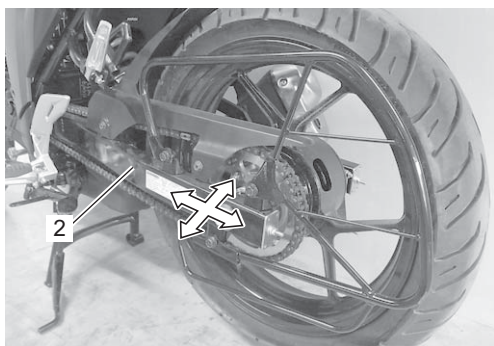
Inspect the rear shock absorber (1) for oil leakage and check that there is no play in the swingarm (2).

Replace any defective parts, if necessary.

- Rear shock absorber replacement: ⚙️ (Page 2C-2)
- Swingarm pivot shaft and bearing inspection: ⚙️ (Page 2C-5)
- Swingarm inspection: ⚙️ (Page 2C-5)



IF34J1230002-01



IF34J1230003-01

Rear Shock Absorber Adjustment

BENF34J12306003

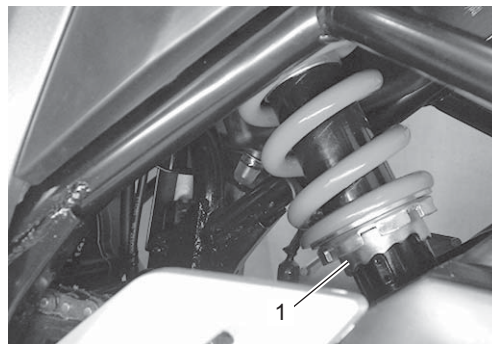
- 1) Set the center stand upright position and hold the vehicle vertically.

- 2) Turn the adjuster (1) clockwise or counterclockwise to the appropriate position.

NOTE

Position 1 provides the softest spring pre-load and 7 provides the stiffest spring pre-load.

**Rear shock absorber spring adjuster
Standard: 3rd position from softest end**



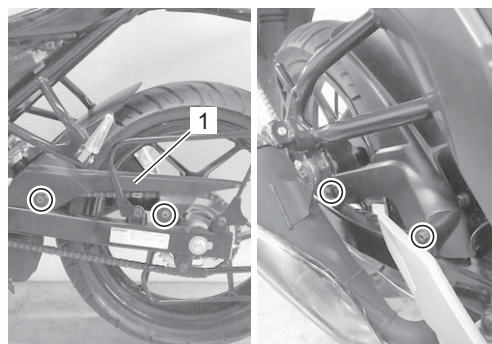
IF34J1230004-01

Rear Shock Absorber Removal and Installation

BENF34J12306004

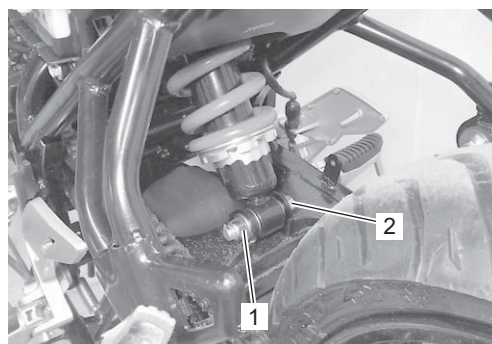
Removal

- 1) Support the motorcycle with the center stand to relieve load on the rear shock absorber.
- 2) Remove the chain case (1).



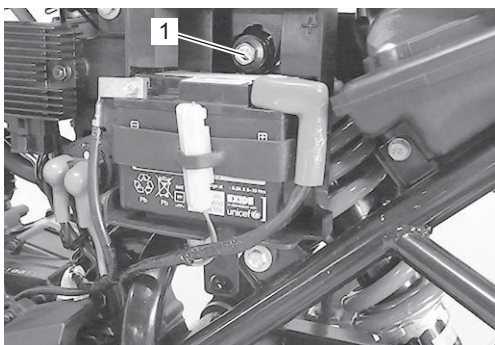
IF34J1230005-01

- 3) Remove the rear shock absorber lower mounting nut (1) and bolt (2).



IF34J1230006-01

- 4) Remove the rear shock absorber upper mounting bolt (1).
- 5) Remove the rear shock absorber.



IF34J1230007-02

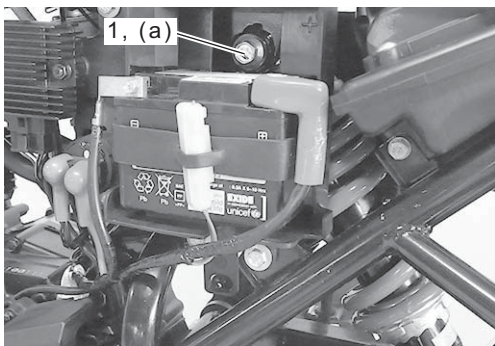
Installation

- 1) Install the rear shock absorber.
- 2) Insert the rear shock absorber upper mounting bolt (1) from the left side and lower mounting bolt (2) from the right side.
- 3) Tighten the upper mounting bolt and lower mounting nut to the specified torque.

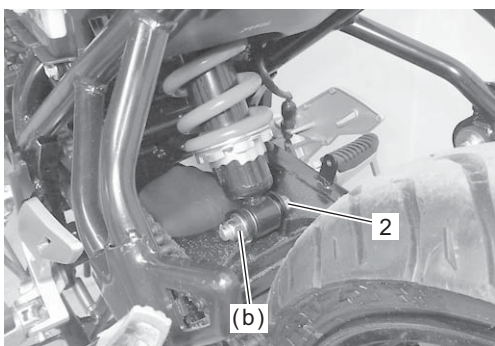
Tightening torque

Rear shock absorber upper mounting bolt (a):
65 N·m (6.6 kgf-m, 48.0 lbf-ft)

Rear shock absorber lower mounting nut (b): 78 N·m (8.0 kgf-m, 57.5 lbf-ft)



IF34J1230008-02



IF34J1230009-01

Rear Shock Absorber Inspection

BENF34J12306005

Refer to "Rear Shock Absorber Removal and Installation" (Page 2C-2).

Inspect the rear shock absorber for damage and oil leakage, and absorber bushing for wear and damage. If any defect is found, replace the rear shock absorber with a new one.

NOTICE

Do not attempt to disassemble the rear shock absorber. It is unserviceable.



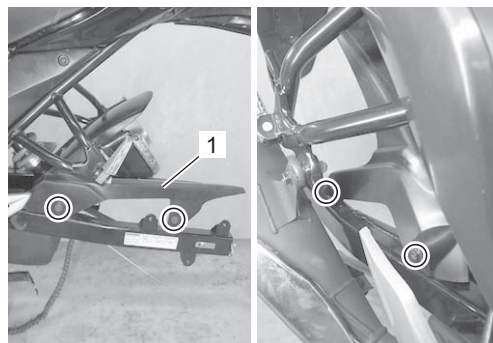
IF34J1230010-01

Swingarm Removal and Installation

BENF34J12306013

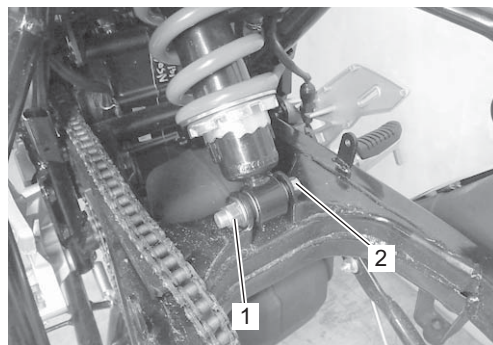
Removal

- 1) Remove the rear wheel assembly. (Page 2D-5)
- 2) Remove the rear side guard. (Page 9D-18)
- 3) Remove the chain case (1).



IF34J1230011-01

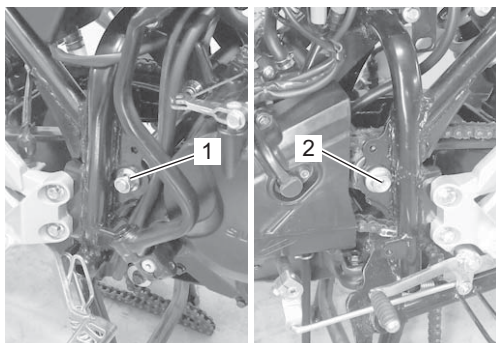
- 4) Remove the rear shock absorber lower mounting nut (1) and bolt (2).



IF34J1230012-02

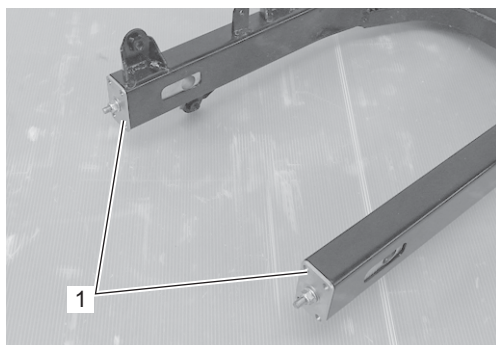
2C-4 Rear Suspension:

- 5) Remove the left and right frame lower covers.
(Page 9D-12)
- 6) Remove the swingarm pivot nut (1) and draw out the pivot shaft (2).
- 7) Remove the swingarm assembly.



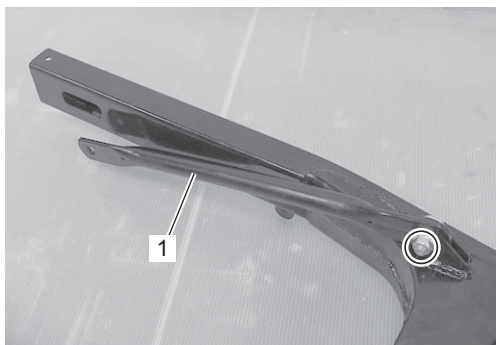
IF34J1230013-01

- 8) Remove the chain adjusters (1).



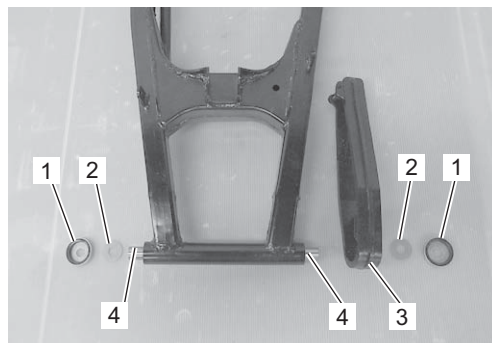
IF34J1230014-01

- 9) Remove the torque link (1).



IF34J1230015-01

- 10) Remove the dust covers (1) and thrust washers (2).
- 11) Remove the chain buffer (3) by removing the bolt.
- 12) Remove the spacers (4).



IF34J1230016-01

Installation

- 1) Apply a small quantity of grease to the spacer outer surfaces and install the spacers (1).

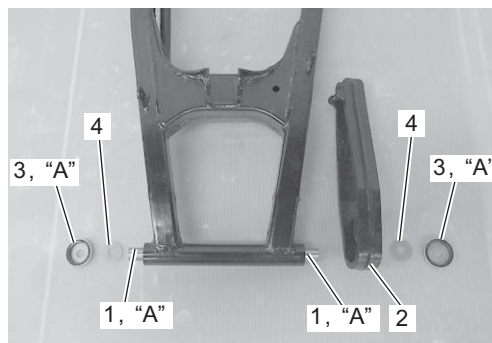
“A” : (SUZUKI SUPER GREASE A)

- 2) Install the chain buffer (2).

- 3) Apply a small quantity of grease to the seal lip of dust covers (3).

“A” : (SUZUKI SUPER GREASE A)

- 4) Install the thrust washers (4) and dust covers.

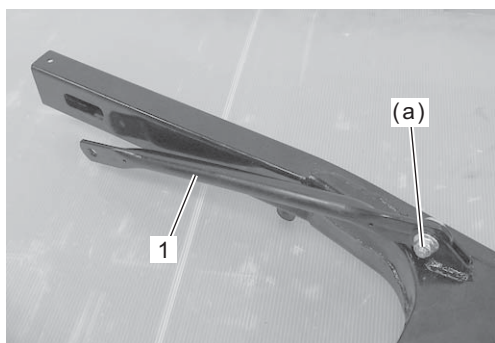


IF34J1230017-01

- 5) Install the torque link (1) and tighten the torque link nut (front) to the specified torque.

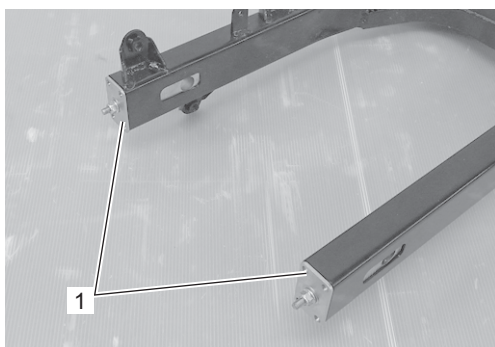
Tightening torque

Torque link nut (front) (a): 16 N·m (1.6 kgf-m, 12.0 lbf-ft)



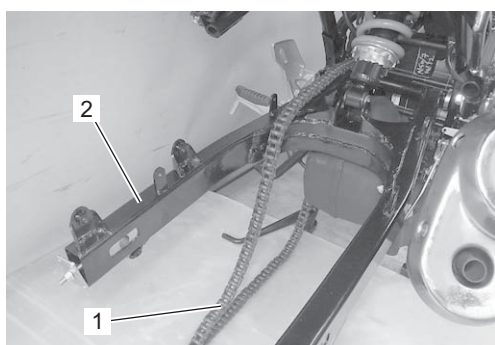
IF34J1230018-01

- 6) Install the chain adjusters (1).



IF34J1230014-01

- 7) Pass the drive chain (1) to the swingarm and then install the swingarm assembly (2).

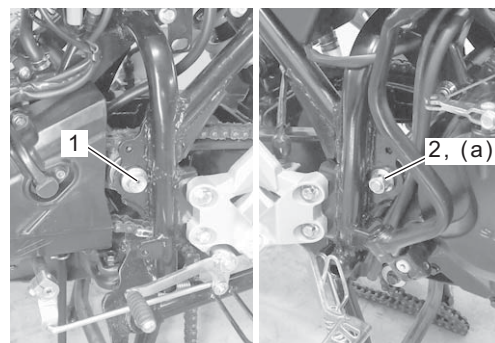


IF34J1230019-02

- 8) Insert the swingarm pivot shaft (1) from left side and tighten the swingarm pivot nut (2) to the specified torque.

Tightening torque

Swingarm pivot nut (a): 58 N·m (5.9 kgf-m, 43.0 lbf-ft)



IF34J1230020-01

- 9) Install the left and right frame lower covers. (Page 9D-12)

- 10) Tighten the rear shock absorber lower mounting nut to the specified torque and install the chain case. Refer to "Rear Shock Absorber Removal and Installation" (Page 2C-2).

- 11) Install the rear side guard. (Page 9D-18)

- 12) Install the rear wheel assembly. (Page 2D-5)

Swingarm Inspection

BENF34J12306014

Refer to "Swingarm Removal and Installation" (Page 2C-3).

Spacers

Inspect the spacers for wear and damage. If any defects are found, replace the spacers with new ones.



IF34J1230021-01

2C-6 Rear Suspension:

Chain Buffer

Inspect the chain buffer for wear and damage. If any defect is found, replace the chain buffer with a new one.



IF34J1230022-02

Torque Link

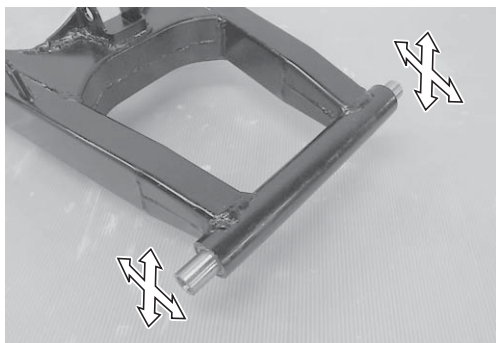
Inspect the torque link for damage. If any defect is found, replace the torque link with a new one.



IF34J1230023-01

Swingarm Bearing

- 1) Insert the spacers into bearings.
- 2) Check the play by moving the spacers up and down. If excessive play is noted, replace the bearings with new ones. (Page 2C-7)



IF34J1230024-01

Swingarm

Inspect the swingarm for damage. If any defect is found, replace the swingarm with a new one.



IF34J1230025-01

Swingarm Pivot Shaft

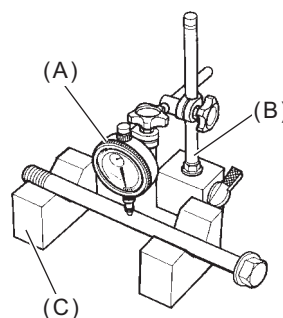
Using a dial gauge, check the swingarm pivot shaft for runout. If the runout exceeds the service limit, replace the pivot shaft.

Special tool

- (A): Dial Gauge
- (B): Dial Gauge Check
- (C): V Blocks

Swingarm pivot shaft runout

Service limit: 0.3 mm (0.01 in)



IF34J1230026-01

Swingarm Bearing Removal and Installation

BENF34J12306015

Refer to "Swingarm Removal and Installation" (Page 2C-3).

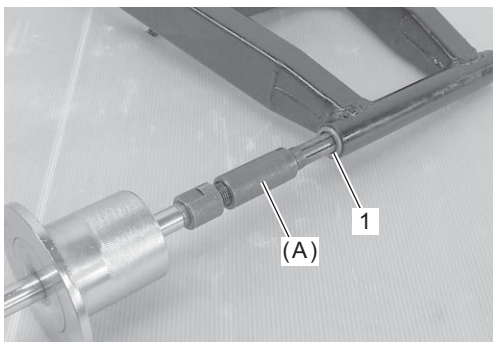
Refer to "Rear Suspension Components" (Page 2C-1).

Removal

- 1) Remove the swingarm pivot bearings (1) on both sides using the special tools.

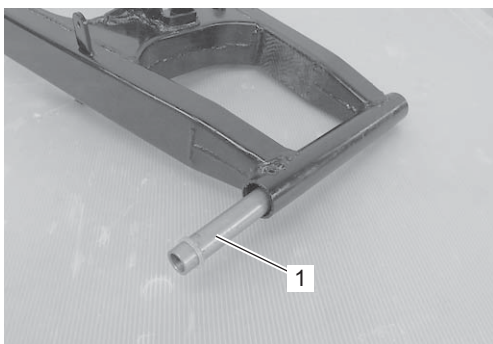
Special tool

(A): Bearing remover



IF34J1230027-01

- 2) Remove the center spacer (1).



IF34J1230028-01

Installation

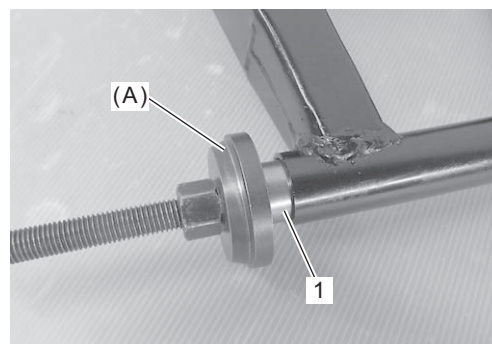
- 1) Install the center spacer.
- 2) Press the new pivot bearings (1) into the swingarm using the special tool.

NOTE

The stamped mark side of the pivot bearing faces outside.

Special tool

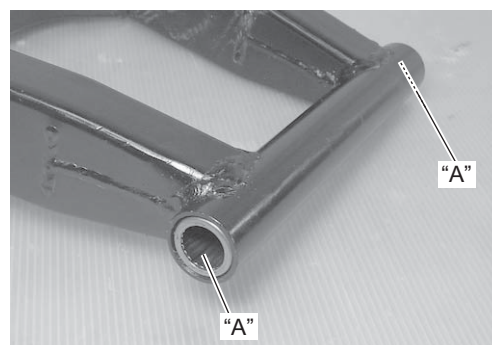
(A): Bearing installer set



IF34J1230029-01

- 3) Apply grease to the bearings.

"A": (SUZUKI SUPER GREASE A)



IF34J1230030-01

Specifications

Tightening Torque Specifications

BENF34J12307001

Fastening part	Tightening torque			Note
	N·m	kgf·m	lbf·ft	
Rear shock absorber upper mounting bolt	65	6.6	48.0	(Page 2C-3)
Rear shock absorber lower mounting nut	78	8.0	57.5	(Page 2C-3)
Torque link nut (front)	16	1.6	12.0	(Page 2C-5)
Swingarm pivot nut	58	5.9	43.0	(Page 2C-5)

Reference:

For the tightening torques of fasteners not specified in this page, refer to:

“Rear Suspension Components” (Page 2C-1)

“Fasteners Information” in Section 0C (Page 0C-8)

Special Tools and Equipment

Recommended Service Material

BENF34J12308001

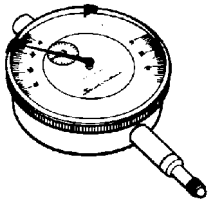
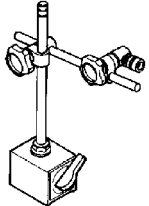
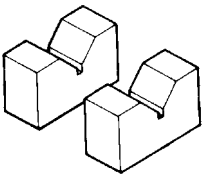
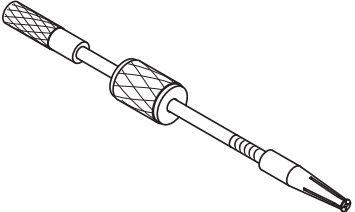
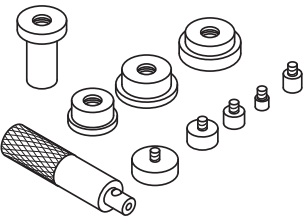
Material	SUZUKI recommended product or Specification	Note
Grease	SUZUKI SUPER GREASE A	(Page 2C-4) / (Page 2C-4) / (Page 2C-7)

NOTE

Required service materials are also described in:
“Rear Suspension Components” (Page 2C-1)

Special Tool

BENF34J12308002

Dial gauge (10 x 0.01 mm) (Page 2C-6) 	Dial gauge chuck (Page 2C-6) 
V blocks (Page 2C-6) 	Bearing remover (ø17) (Page 2C-7) 
Bearing installer set (Page 2C-7) 	

Wheels and Tires

Precautions

Precautions for Wheel and Tire

BENF34J12400001

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

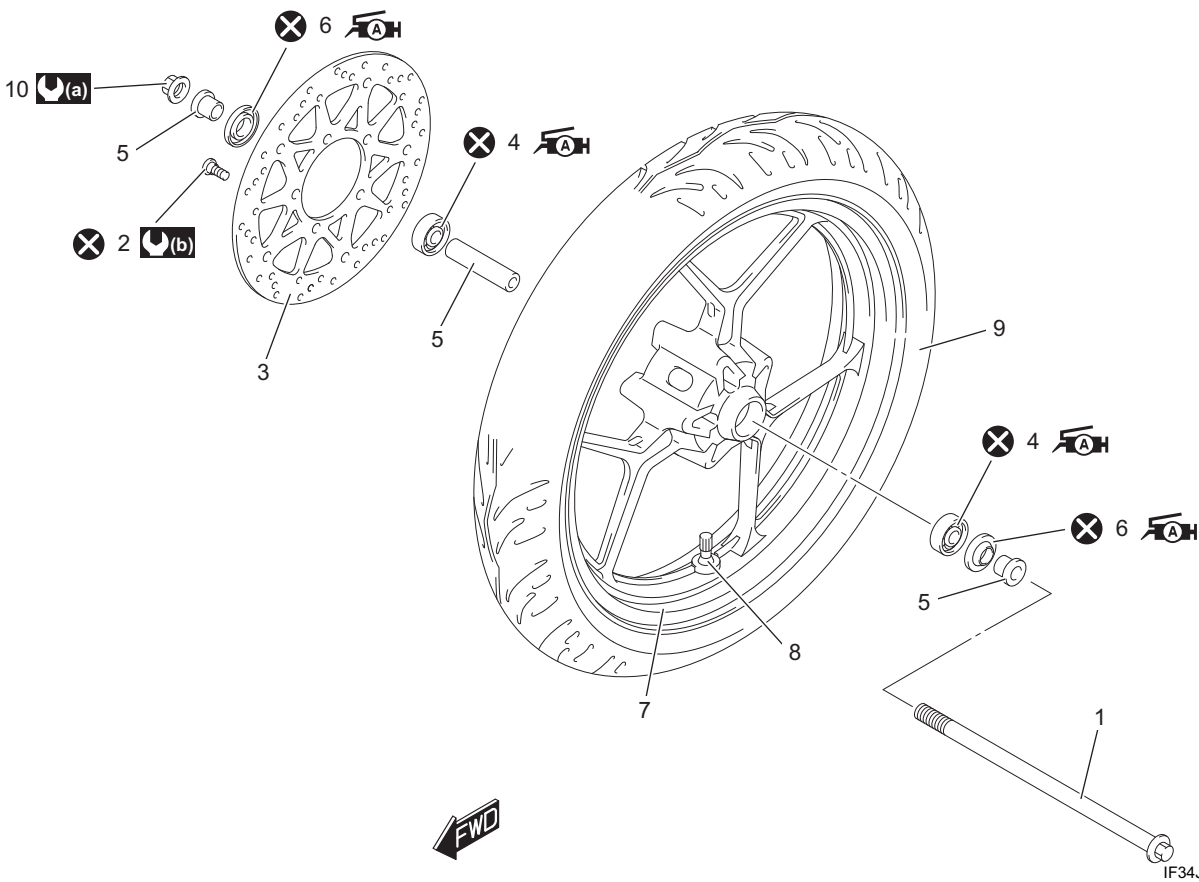
⚠ WARNING

- Replace the wheel when wheel runout exceed the service limit or if find damage such as distortion, crack, nick or scratch.
- When tire replacement is necessary, the original equipment type tire should be used.

Repair Instructions

Front Wheel Components

BENF34J12406001



IF34J1240012-01

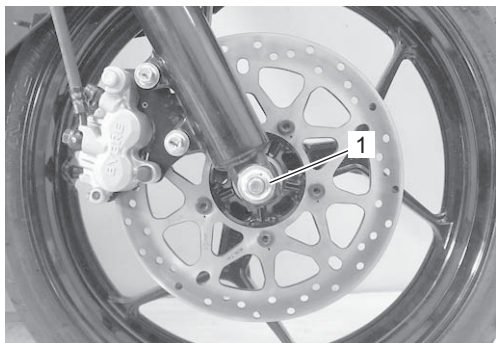
1. Front axle	5. Spacer	9. Front tire	: Apply grease.
2. Brake disc bolt	6. Dust seal	10. Front axle nut	: Do not reuse.
3. Brake disc	7. Front wheel	: 44 N·m (4.5 kgf·m, 32.5 lbf·ft)	
4. Bearing	8. Air valve	: 23 N·m (2.3 kgf·m, 17.0 lbf·ft)	

Front Wheel Assembly Removal and Installation

BENF34J12406002

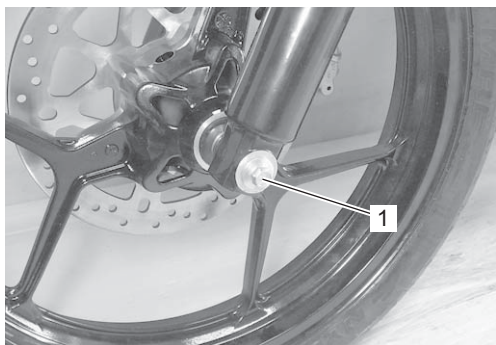
Removal

- 1) Remove the front axle nut (1).



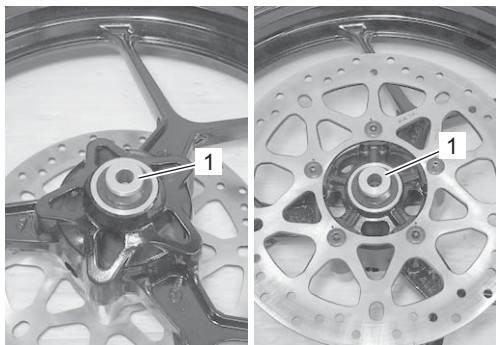
IF34J1240001-01

- 2) Raise the front wheel off the ground and support the motorcycle with a jack or a wooden block.
- 3) Draw out the front axle (1) and remove the front wheel.



IF34J1240002-01

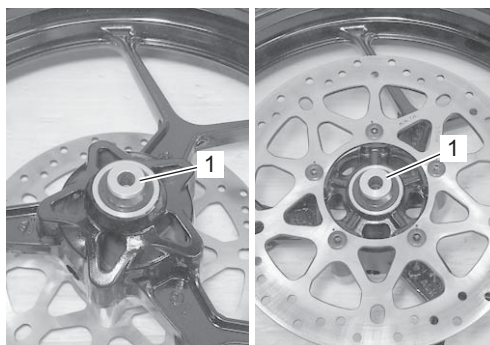
- 4) Remove the spacers (1).



IF34J1240003-01

Installation

- 1) Install the spacers (1) into the both sides of the wheel.

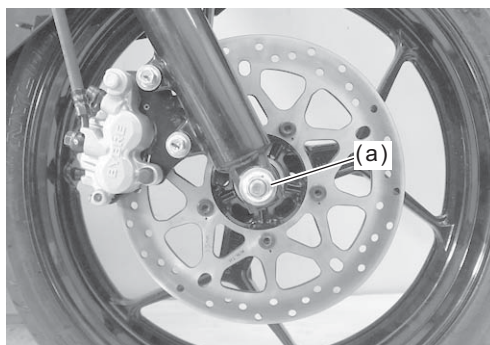


IF34J1240003-01

- 2) Install the front wheel with the front axle and tighten the front axle nut temporarily.
- 3) Remove the jack or the wooden block.
- 4) Tighten the front axle nut to the specified torque.

Tightening torque

Front axle nut (a): 44 N·m (4.5 kgf-m, 32.5 lbf-ft)



IF34J1240004-01

Front Wheel Dust Seal / Front Wheel Bearing Removal and Installation

BENF34J12406003

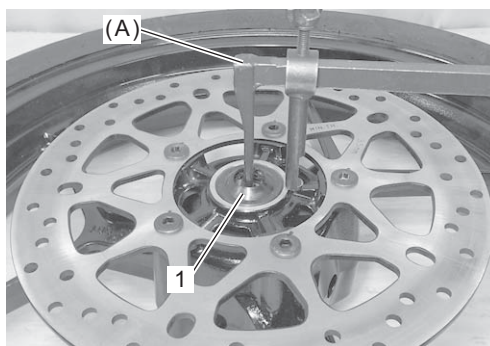
Refer to "Front Wheel Assembly Removal and Installation" (Page 2D-2).

Removal

- 1) Remove the dust seals (1) on both sides using the special tool.

Special tool

(A): Oil seal remover

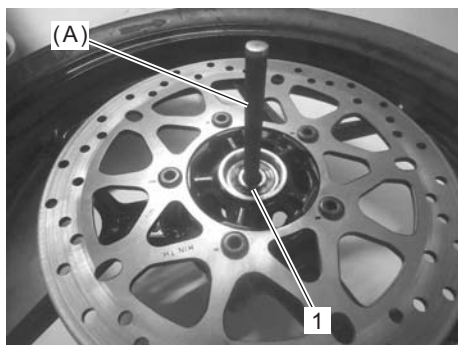


IF34J1240005-01

- 2) Remove the bearings (1) on both sides using the special tool.

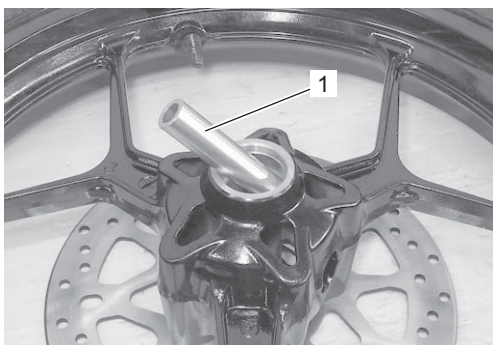
Special tool

(A): Wheel Bearing Removal Set



IF34J1240006-01

- 3) Remove the spacer (1).

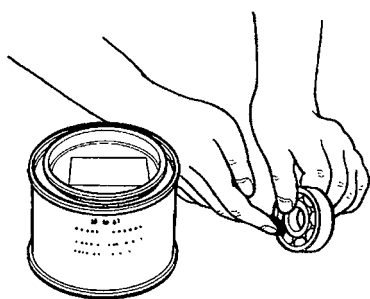


IF34J1240007-02

Installation

- 1) Apply grease to the new wheel bearings.

(SUZUKI SUPER GREASE A)



I649G1240019-02

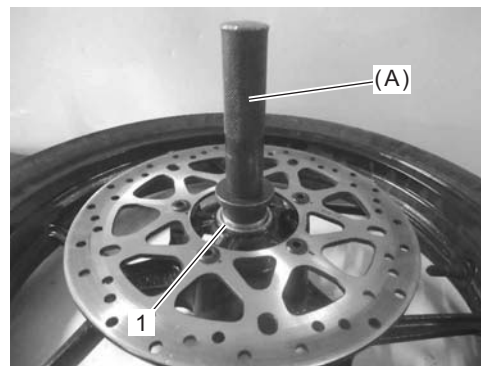
- 2) First install the right wheel bearing (1), then install the spacer (2) and left wheel bearing (3) using the special tool.

NOTICE

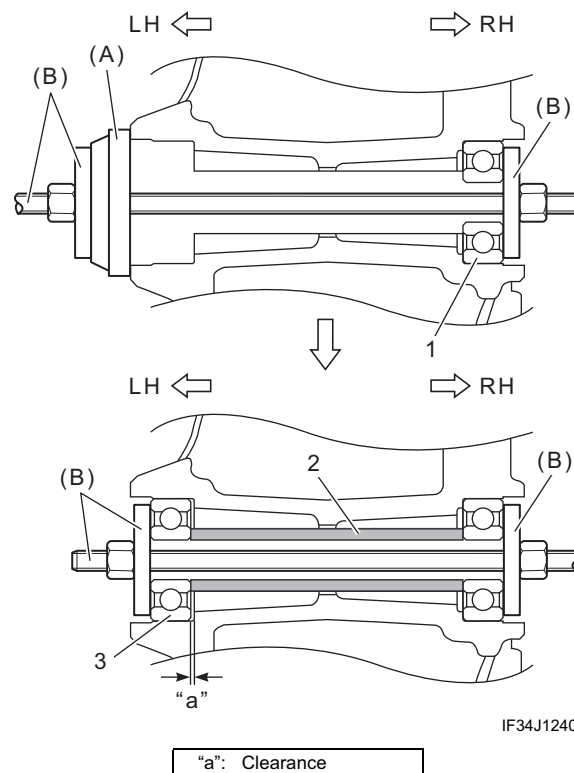
The sealed cover of the bearing must face outside.

Special tool

(A): Bearing installer set



IF34J1240008-01

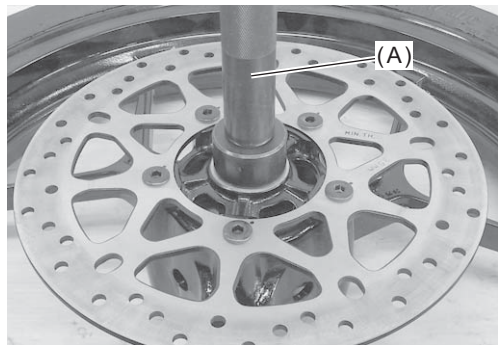


IF34J1240009-01

2D-4 Wheels and Tires:

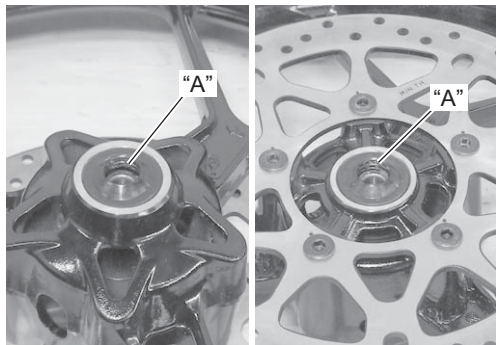
3) Install the new dust seals on both sides using the special tool.

Special tool
(A): Bearing installer set



IF34J1240010-01

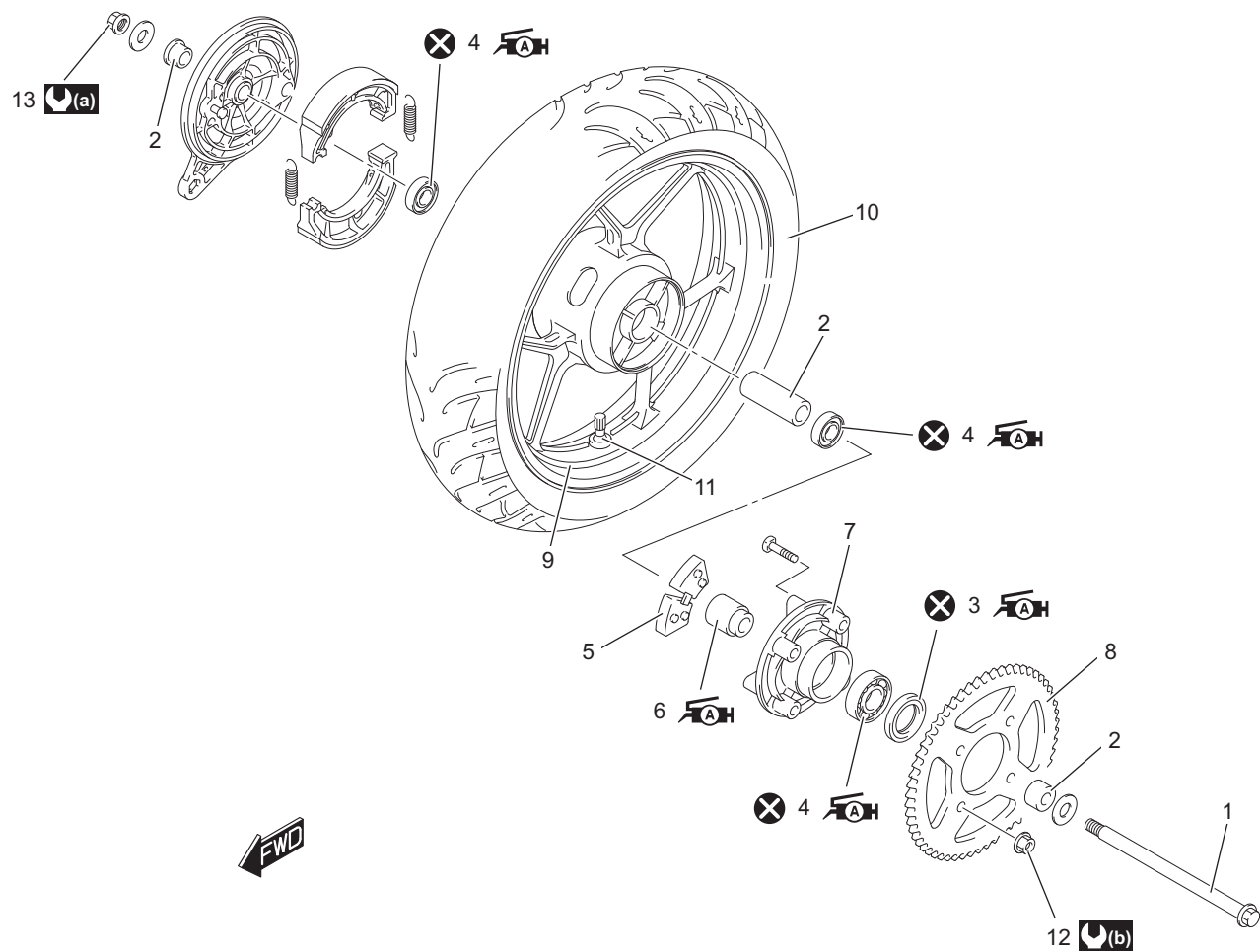
4) Apply grease to the lip of the dust seals.
“A”: (SUZUKI SUPER GREASE A)



IF34J1240011-01

Rear Wheel Components

BENF34J12406004



IF34J1240013-01

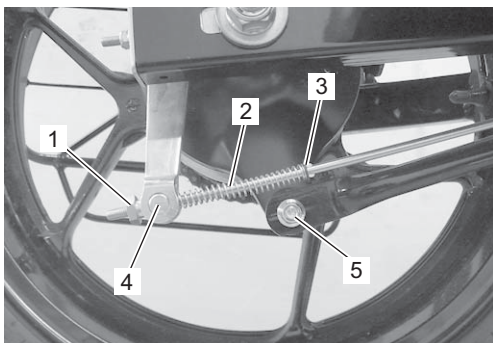
1. Rear axle	7. Rear sprocket mounting drum	13. Rear axle nut
2. Spacer	8. Rear sprocket	⤿(a) : 65 N·m (6.6 kgf·m, 48.0 lbf·ft)
3. Dust seal	9. Rear wheel	⤿(b) : 29 N·m (3.0 kgf·m, 21.5 lbf·ft)
4. Bearing	10. Rear tire	⚙️: Apply grease.
5. Rear wheel damper	11. Air valve	⊗: Do not reuse.
6. Retainer	12. Rear sprocket nut	

Rear Wheel Assembly Removal and Installation

BENF34J12406005

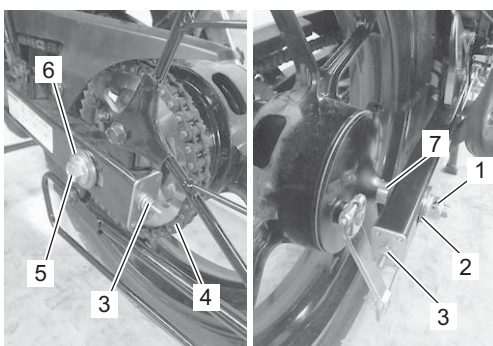
Removal

- 1) Support the motorcycle with the center stand.
- 2) Remove the rear brake adjuster nut (1), spring (2), washer (3) and pin (4).
- 3) Remove the torque link nut and bolt (5).



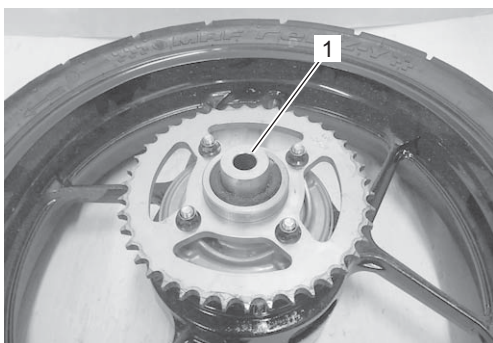
IF34J1240014-01

- 4) Remove the rear axle nut (1) and washer (2).
- 5) Loosen the drive chain adjuster nuts (3).
- 6) Disengage the drive chain (4) from the rear sprocket.
- 7) Draw out the rear axle (5) and washer (6), and then remove the right spacer (7).
- 8) Remove the rear wheel assembly.



IF34J1240015-01

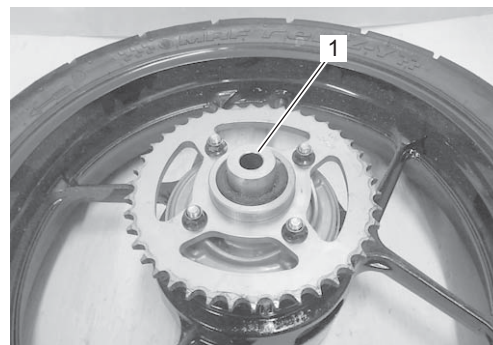
- 9) Remove the left spacer (1).



IF34J1240016-01

Installation

- 1) Install the left spacer (1).



IF34J1240016-01

- 2) Install the rear wheel assembly.

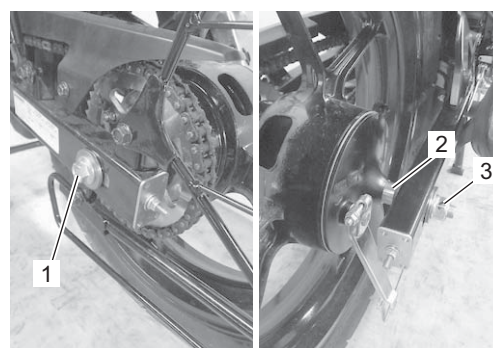
⚠ WARNING

The directional arrow on the tire should point to the wheel rotation, when installing the wheel.



IF34J1240017-01

- 3) Engage the drive chain to the rear sprocket.
- 4) Install the rear axle (1) and right spacer (2).
- 5) Tighten the rear axle nut (3) temporarily.



IF34J1240018-01

- 6) Adjust the drive chain slack. Refer to "Drive Chain Inspection and Adjustment" in Section 3A (Page 3A-2).

2D-6 Wheels and Tires:

- 7) Install the torque link (1) and tighten the torque link nut (rear) to the specified torque.

Tightening torque

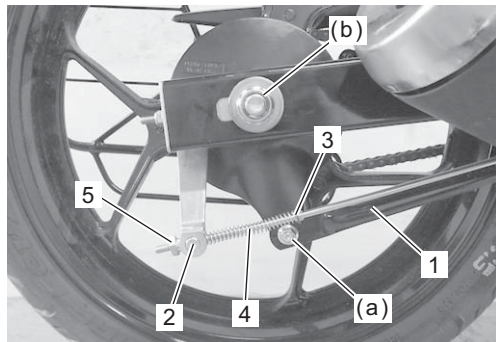
Torque link nut (rear) (a): 16 N·m (1.6 kgf-m, 12.0 lbf-ft)

- 8) Tighten the rear axle nut to the specified torque.

Tightening torque

Rear axle nut (b): 65 N·m (6.6 kgf-m, 48.0 lbf-ft)

- 9) Install the pin (2), washer (3), spring (4) and rear brake adjuster nut (5).



IF34J1240019-01

- 10) Adjust the brake pedal free travel. (Page 4A-5)

Rear Wheel Bearing Removal and Installation

BENF34J12406006

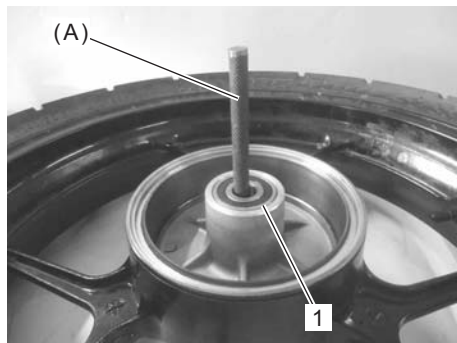
Refer to "Rear Sprocket Mounting Drum Assembly Removal and Installation" in Section 3A (Page 3A-5) and "Rear Brake Panel Removal and Installation" in Section 4C (Page 4C-2).

Removal

- 1) Remove the rear wheel dampers. (Page 2D-8)
- 2) Remove the bearings (1) on both sides using the special tool.

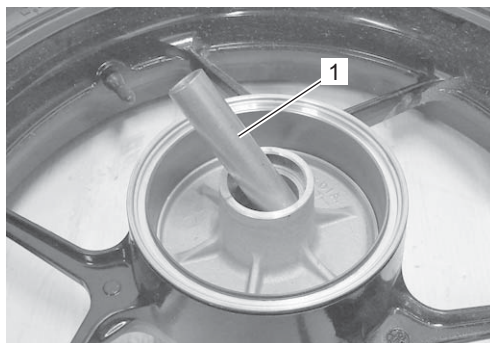
Special tool

(A): Wheel Bearing Removal Set



IF34J1240020-01

- 3) Remove the spacer (1).

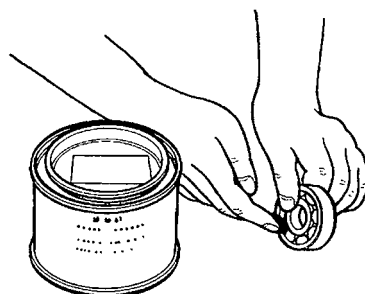


IF34J1240021-01

Installation

- 1) Apply grease to the new wheel bearings.

SUZUKI SUPER GREASE A



I649G1240019-02

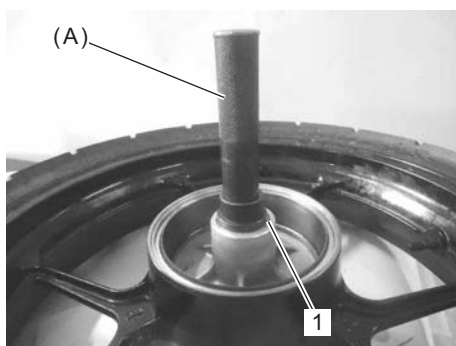
- 2) First install the right wheel bearing (1), then install the spacer (2) and left wheel bearing (3) using the special tools.

NOTICE

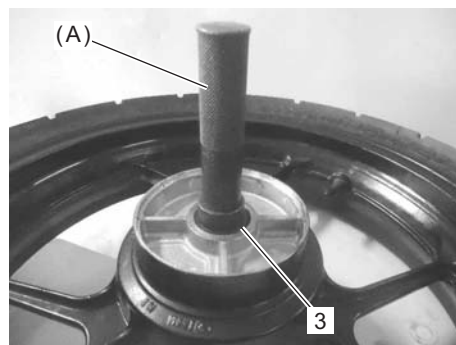
The sealed cover of the bearing must face outside.

Special tool

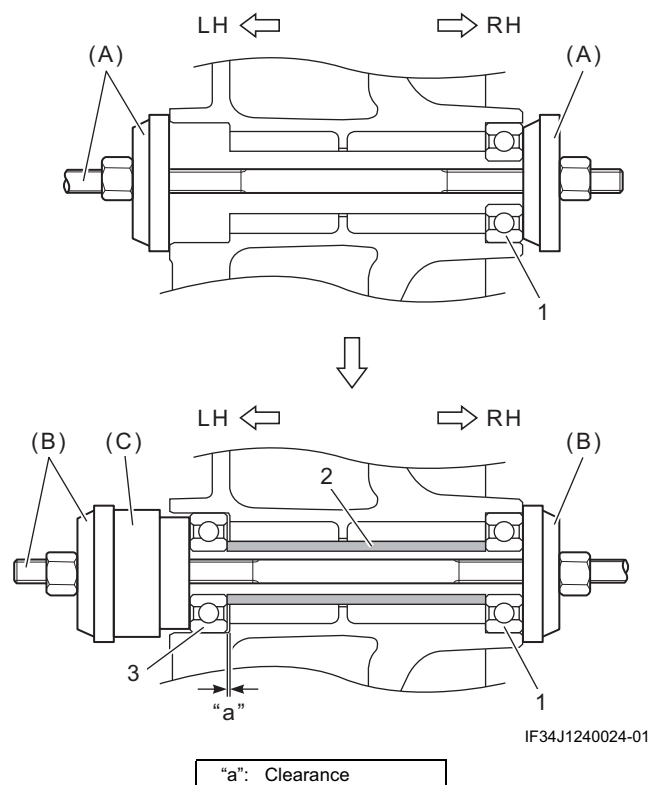
(A): Bearing installer set



IF34J1240022-01



IF34J1240023-01



IF34J1240024-01

- 3) Install the rear wheel dampers. (Page 2D-8)

Wheel / Wheel Axle Inspection

BENF34J12406007

Refer to "Front Wheel Assembly Removal and Installation" (Page 2D-2).

Refer to "Rear Wheel Assembly Removal and Installation" (Page 2D-5).

Wheel

- 1) Remove the brake pads. (Page 4B-2)
- 2) Make sure that the wheel runout checked as shown does not exceed the service limit. An excessive runout is usually due to worn or loosened wheel bearings and can be reduced by replacing the bearings.

- Front: (Page 2D-2)

- Rear: (Page 2D-6)

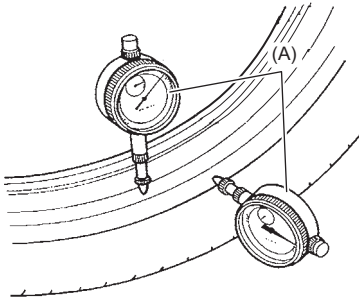
If bearing replacement fails to reduce the runout, replace the wheel.

Wheel rim runout

Service limit (Axial and Radial): 2.0 mm (0.08 in)

Special tool

(A): Dial gauge



ID26J1240033-01

3) Install the brake pads. (Page 4B-2)

Wheel Axle

Using a dial gauge, check the wheel axle for runout. If the runout exceeds the limit, replace the wheel axle.

Wheel axle runout

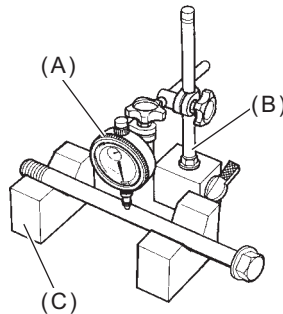
Service limit: 0.25 mm (0.010 in)

Special tool

(A): Dial gauge

(B): Dial gauge chuck

(C): V blocks

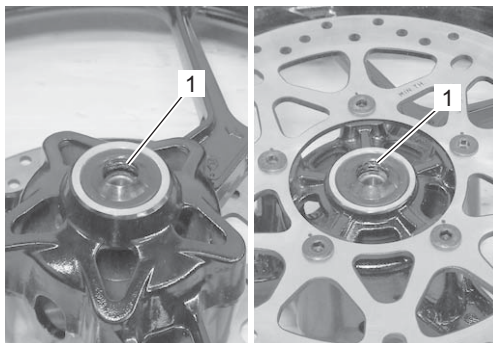


IF34J1240025-01

Dust Seal

Inspect the dust seals lip (1) for wear or damage. If any defect is found, replace the dust seals with new ones.

(Page 2D-2)



IF34J1240026-01

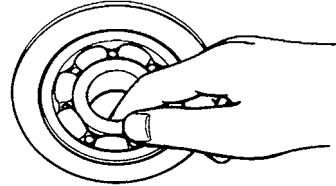
Wheel Bearing

1) Remove the rear sprocket mounting drum assembly and rear brake panel (Rear wheel only).

- Rear sprocket mounting drum: (Page 3A-5)
- Rear brake panel: (Page 4C-2)

2) Inspect the play of the wheel bearings by hand while they are in the wheel. Rotate the inner race by hand to inspect for abnormal noise and smooth rotation. Replace the bearing if there is anything unusual.

- Front: (Page 2D-2)
- Rear: (Page 2D-6)



I649G1240015-02

3) Install the rear sprocket mounting drum assembly and rear brake panel (Rear wheel only).

- Rear sprocket mounting drum: (Page 3A-5)
- Rear brake panel: (Page 4C-2)

Brake Disc

Refer to "Front Brake Disc Inspection" in Section 4B (Page 4B-7).

Rear Brake Drum

Refer to "Rear Brake Parts Inspection" in Section 4C (Page 4C-3).

Rear Sprocket

Refer to "Rear Sprocket Mounting Drum / Sprocket Inspection" in Section 3A (Page 3A-6).

Tire

Refer to "Tire Inspection and Cleaning" (Page 2D-9).

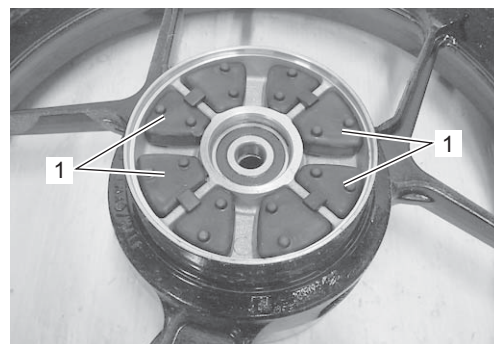
Rear Wheel Damper Removal and Installation

BENF34J12406008

Refer to "Rear Sprocket Mounting Drum Assembly Removal and Installation" in Section 3A (Page 3A-5).

Removal

Remove the rear wheel dampers (1).

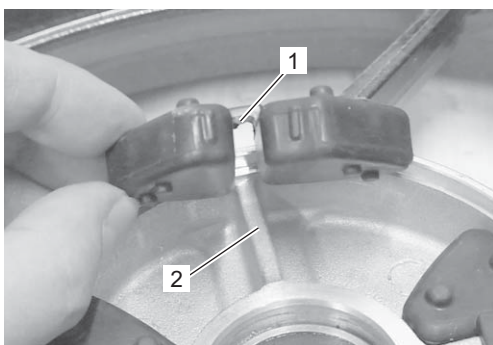


IF34J1240027-01

Installation

Install the rear wheel dampers in the reverse order of removal. Pay attention to the following point:

- Install the rear wheel damper aligning its groove (1) with the rib (2) of the rear wheel.



IF34J1240028-01

Rear Wheel Damper Inspection

BENF34J12406009

Inspect the rear wheel damper for wear and damage. Replace the damper if there is anything unusual.



IF34J1240029-01

Tire Inspection and Cleaning

BENF34J12406010

Tire

Wipe the tire clean and check for the following points:

- Nick and rupture on side wall
- Tread separation
- Abnormal, uneven wear on tread
- Surface damage on bead
- Localized tread wear due to skidding (Flat spot)
- Abnormal condition of inner liner

Front tire size

100/80-17M/C 52P, tubeless

Rear tire size

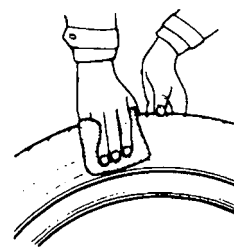
140/60R17M/C 63P, tubeless

Front tire type

MRF: NYLOGRIP ZAPPER-FX

Rear tire type

MRF: REVZ-M



I649G1240042-02

Tire tread condition

Operating the motorcycle with excessively worn tires will decrease riding stability and consequently invite a dangerous situation. It is highly recommended to replace a tire when the remaining depth of tire tread reaches the following specification.

Front tire tread depth (Service limit)

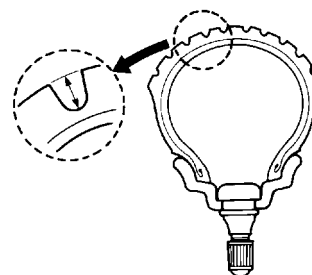
Service limit: 1.6 mm (0.06 in)

Rear tire tread depth (Service limit)

Service limit: 2.0 mm (0.08 in)

Special tool

Tire Depth Gauge



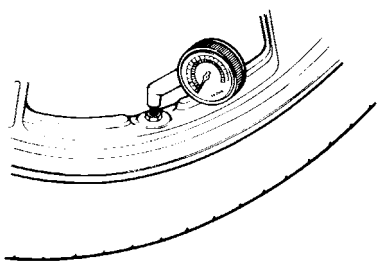
I310G1020068-02

Tire pressure

If the tire pressure is too high or too low, steering will be adversely affected and tire wear increased. Therefore, maintain the correct tire pressure for good roadability or shorter tire life will result. Cold inflation tire pressure is as follows.

Cold inflation tire pressure

	Front	Rear
Solo riding	200 kPa (2.00 kgf/cm ² , 29 psi)	225 kPa (2.25 kgf/cm ² , 33 psi)
Dual riding	200 kPa (2.00 kgf/cm ² , 29 psi)	225 kPa (2.25 kgf/cm ² , 33 psi)



I310G1020069-02

Tire Removal and Installation

BENF34J12406011

Refer to "Front Wheel Assembly Removal and Installation" (Page 2D-2).

Refer to "Rear Sprocket Mounting Drum Assembly Removal and Installation" in Section 3A (Page 3A-5).

NOTICE

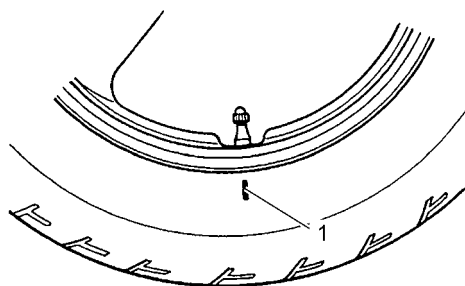
For removal and installation procedure of tire onto the wheel, follow the instructions given by the tire changer manufacturer.

Removal

The most critical factor of a tubeless tire is the seal between the wheel rim and the tire bead. For this reason, it is recommended to use a tire changer that can satisfy this sealing requirement and can make the operation efficient as well as functional.

NOTE

When replacing the tire with a new one, the tire mark (1) should be aligned with the valve position. However, when removing the tire in case of repair or inspection, mark the tire with a chalk to indicate the tire position relative to the valve position. Even though the tire is refitted to the original position after repairing puncture, the tire may have to be balanced again since such a repair can cause imbalance.



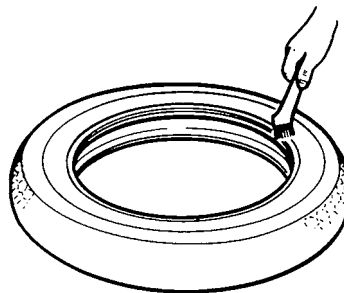
IE31J1240036-01

Installation

NOTICE

- Do not use oil, grease or gasoline on the tire bead in place of tire lubricant.
- Do not reuse the air valve which has been once removed.

1) Apply tire lubricant to the tire bead.

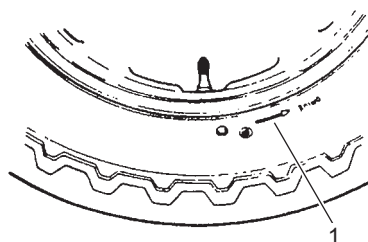


I649G1240038-02

2) Install the tire aligning the arrow (1) on the side wall with the direction of the wheel rotation.

NOTE

Align the chalk mark put on the tire at the time of removal with the valve position.



ID26J1240047-02

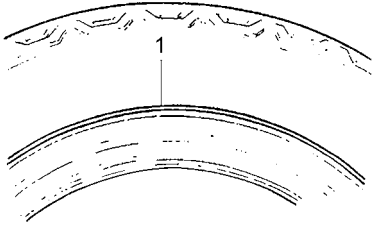
3) Bounce the tire several times while rotating. This makes the tire bead expand outward to contact the wheel, thereby facilitating air inflation.

4) Inflate the tire.

⚠ WARNING

- Do not inflate the tire to more than 400 kPa (4.0 kgf/cm², 57 psi). If inflated beyond this limit, the tire can burst and possibly cause injury. Do not stand directly over the tire while inflating.
- In the case of preset pressure air inflator, pay special care for the set pressure adjustment.

- 5) In this condition, check the "rim line" (1) cast on the tire side walls. The line must be equidistant from the wheel rim all around.
- 6) If the distance between the "rim line" and wheel rim varies, this indicates that the bead is not properly seated. If this is the case, deflate the tire completely and unseat the bead for both sides. Coat the bead with lubricant and fit the tire again.



IE31J1240037-01

- 7) When the bead has been fitted properly, install the valve core and adjust the pressure to the specification. (Page 2D-9)

Wheel Rim / Air Valve Inspection and Cleaning

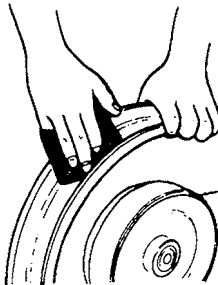
BENF34J12406012

Refer to "Tire Removal and Installation" (Page 2D-10).
Refer to "Air Valve Removal and Installation" (Page 2D-11).

Wheel Rim

Wipe the wheel clean and check for the following points:

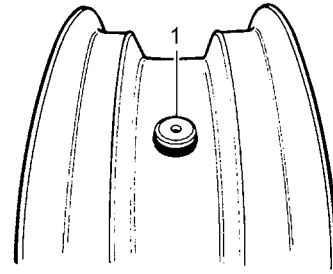
- Distortion and crack.
- Any flaws and scratches at the bead seating area.
- Wheel rim runout. Refer to "Wheel / Wheel Axle Inspection" (Page 2D-7).



I649G1240041-02

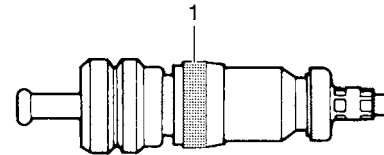
Air Valve

- Inspect the air valve (1) for peeling and damage. If any defect is found, replace the air valve with a new one.



IE31J1240038-01

- Inspect the valve core seal (1) for wear and damage. If any defect is found, replace the valve core with a new one.



IE31J1240039-01

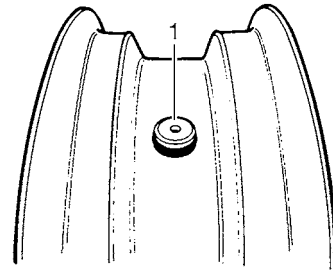
Air Valve Removal and Installation

BENF34J12406013

Refer to "Tire Removal and Installation" (Page 2D-10).

Removal

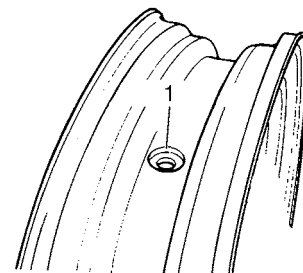
- 1) Remove the air valve (1) from the wheel.



IE31J1240040-01

Installation

- 1) Any dust or rust around the valve hole (1) must be cleaned off.



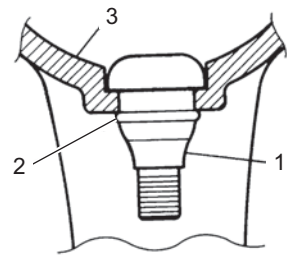
IE31J1240041-01

2D-12 **Wheels and Tires:**

2) Install the new air valve (1) into the air valve hole with a special tire lubricant or neutral soapy liquid applied at the valve lip (2).

NOTICE

Be careful not to damage the valve lip of the air valve.



IF34J1240030-01

3. Wheel

Specifications

Tightening Torque Specifications

BENF34J12407001

Fastening part	Tightening torque			Note
	N·m	kgf·m	lbf·ft	
Front axle nut	44	4.5	32.5	☞ (Page 2D-2)
Torque link nut (rear)	16	1.6	12.0	☞ (Page 2D-6)
Rear axle nut	65	6.6	48.0	☞ (Page 2D-6)

Reference:

For the tightening torques of fasteners not specified in this page, refer to:
“Front Wheel Components” (Page 2D-1)
“Rear Wheel Components” (Page 2D-4)
“Fasteners Information” in Section 0C (Page 0C-8)

Special Tools and Equipment

Recommended Service Material

BENF34J12408001

Material	SUZUKI recommended product or Specification	Note
Grease	SUZUKI SUPER GREASE A	☞ (Page 2D-3) / ☞ (Page 2D-4) / ☞ (Page 2D-6)

NOTE

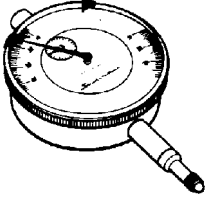
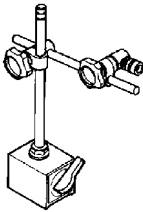
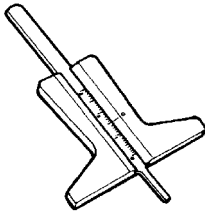
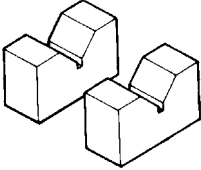
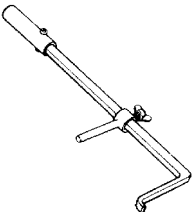
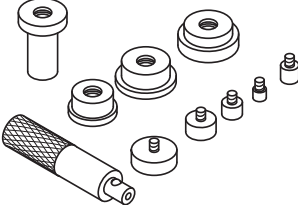
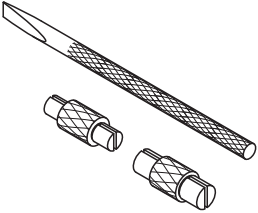
Required service materials are also described in:

“Front Wheel Components” (Page 2D-1)

“Rear Wheel Components” (Page 2D-4)

Special Tool

BENF34J12408002

Dial gauge (10 x 0.01 mm) ☞ (Page 2D-8) / ☞ (Page 2D-8)		Dial gauge chuck ☞ (Page 2D-8)	
Tire depth gauge ☞ (Page 2D-9)		V blocks ☞ (Page 2D-8)	
Oil seal remover ☞ (Page 2D-2)		Bearing installer set ☞ (Page 2D-4) / ☞ (Page 2D-7)	
Wheel Bearing Remover Set ☞ (Page 2D-3) / ☞ (Page 2D-6)			

Section 3

Driveline / Axle

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Precautions for Driveline / Axle	3-1	Removal and Installation.....	3A-5
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Drive Chain and Sprocket Symptom		Rear Sprocket Mounting Drum Dust Seal /	
Diagnosis	3A-1	Bearing Removal and Installation	3A-7
Repair Instructions	3A-1	Drive Chain Replacement	3A-8
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Drive Chain Inspection and Adjustment.....	3A-2	Tightening Torque Specifications.....	3A-9
Drive Chain Cleaning and Lubricating.....	3A-3	Special Tools and Equipment	3A-9
Engine Sprocket Removal and Installation	3A-4	Recommended Service Material	3A-9
		Special Tool	3A-9

Precautions

Precautions

Precautions for Driveline / Axle

BENF34J13000001

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

▲ WARNING

Never inspect or adjust the drive chain while the engine is running.

NOTICE

- Do not use trichloroethylene, gasoline or any similar solvent. These fluids will damage the O-rings of the drive chain.
 - Clean the drive chain with a spray-type chain cleaner and blow dry with compressed air. If the drive chain cannot be cleaned with a spray cleaner, it may be necessary to use a kerosine. Always follow the chemical manufacturer’s instructions on proper use, handling and storage.
 - Lubricate the drive chain with a heavy weight motor oil. Wipe off any excess oil or chain lubricant. Do not use any oil sold commercially as “drive chain oil”. Such oil can damage the O-rings.
-

Drive Chain / Drive Train / Drive Shaft

Diagnostic Information and Procedures

Drive Chain and Sprocket Symptom Diagnosis

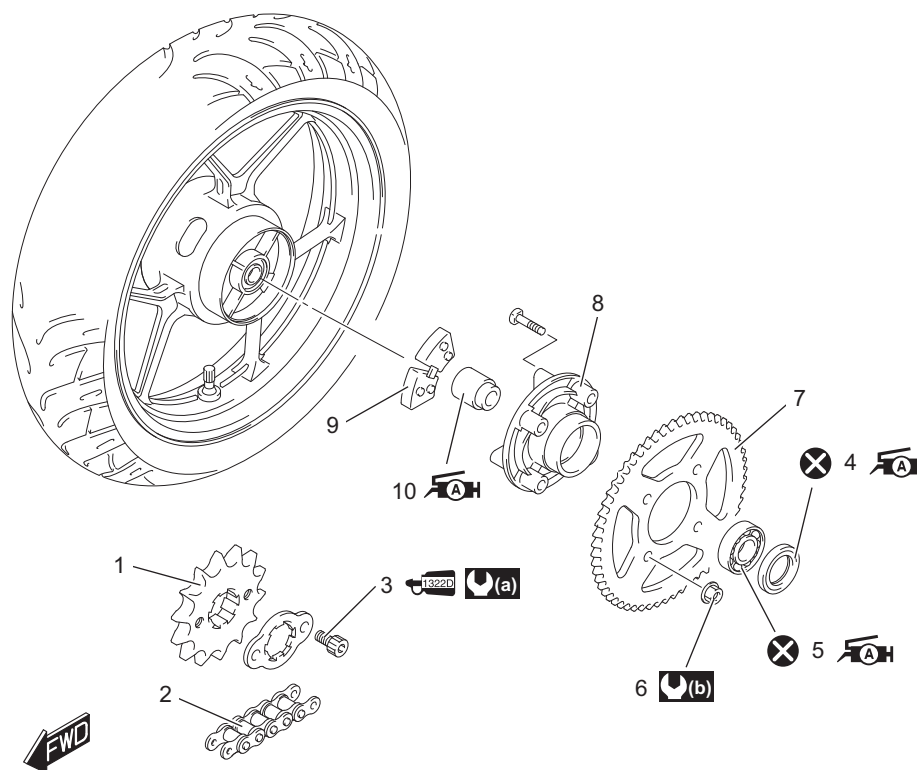
BENF34J13104001

Condition	Possible cause	Correction / Reference Item
Noisy Drive Chain	Worn sprocket.	Replace. ⚙️ (Page 3A-4) ⚙️ (Page 3A-5)
	Worn drive chain.	Replace. ⚙️ (Page 3A-8)
	Stretched drive chain.	Replace. ⚙️ (Page 3A-8)
	Too large drive chain slack.	Adjust. ⚙️ (Page 3A-2)
	Drive chain out of adjustment.	Adjust. ⚙️ (Page 3A-2)

Repair Instructions

Drive Chain Related Components

BENF34J13106001



IF34J1310001-02

1. Engine sprocket	6. Rear sprocket nut	⚙️(a) : 10 N·m (1.0 kgf-m, 7.5 lbf-ft)
2. Drive chain	7. Rear sprocket	⚙️(b) : 29 N·m (3.0 kgf-m, 21.5 lbf-ft)
3. Engine sprocket bolt	8. Rear sprocket mounting drum	⚙️(AH) : Apply grease.
4. Dust seal	9. Wheel damper	⚙️1322D : Apply thread lock to the thread part.
5. Bearing	10. Retainer	⊗ : Do not reuse.

Drive Chain Inspection and Adjustment

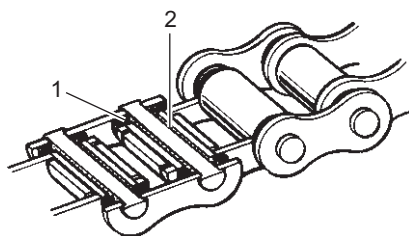
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Drive Chain Visual Check

- 1) With the transmission in neutral, support the motorcycle with the center stand and turn the rear wheel slowly by hand.
- 2) Visually check the drive chain for the possible defects listed as follows. If any defects are found, the drive chain must be replaced. (Page 3A-8)
 - Loose pins
 - Damaged rollers
 - Dry or rusted links
 - Kinked or binding links
 - Excessive wear
 - Improper chain adjustment
 - Missing O-rings (1)

NOTE

When replacing the drive chain, replace the drive chain and sprockets as a set.

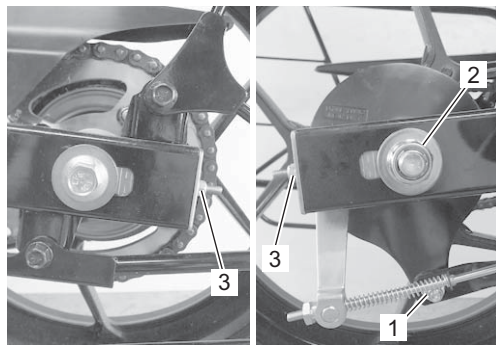


IF34J1310002-01

2. Grease

Drive Chain Length Inspection

- 1) Support the motorcycle with the center stand.
- 2) Loosen the torque link nut (rear) (1).
- 3) Loosen the rear axle nut (2).
- 4) Give tension to the drive chain fully by turning both chain adjuster nuts (3).

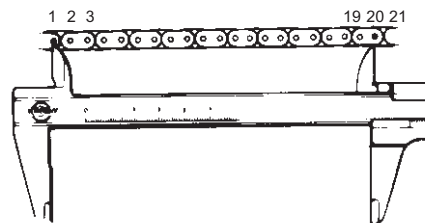


IF34J1310003-01

- 5) Count out 21 pins (20 pitches) on the chain and measure the distance between the two points. If the distance exceeds the service limit, the chain must be replaced. (Page 3A-8)

Drive chain 20-pitch length

Service limit: 255.5 mm (10.06 in)

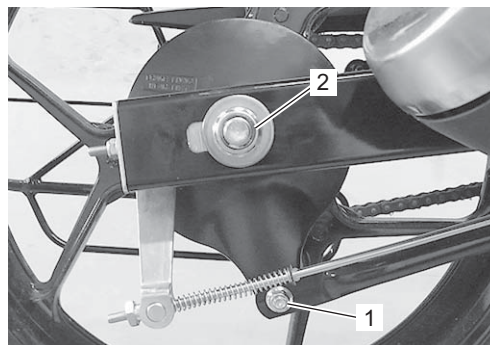


IF34J1310030-01

- 6) After finishing the drive chain length inspection, adjust the drive chain slack. (Page 3A-2)

Drive Chain Slack Adjustment

- 1) Support the motorcycle with the center stand.
- 2) Loosen the torque link nut (rear) (1).
- 3) Loosen the rear axle nut (2).



IF34J1310028-01

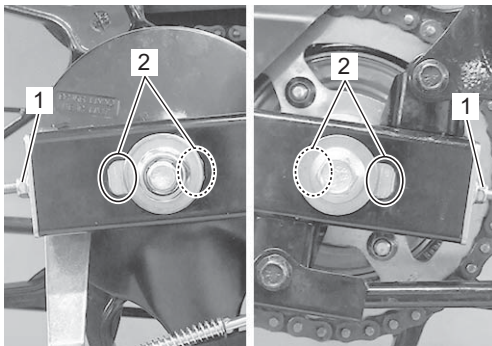
- 4) Loosen or tighten both chain adjuster nuts (1) until the slack "a" at the middle of the chain between the engine and rear sprockets becomes within the standard range.

NOTICE

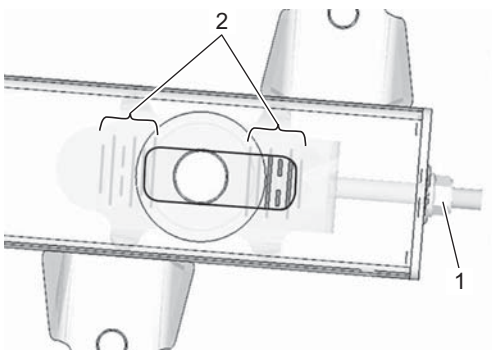
The reference marks (2) on both sides of the chain adjuster and the edge of each swingarm hole (rear side or front side) must be aligned to ensure that the front and rear wheels are correctly aligned.

Drive chain slack "a"

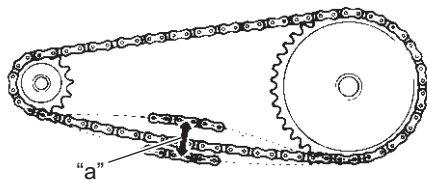
Standard: 20 – 30 mm (0.8 – 1.2 in)



IF34J1310004-02



IF34J1310029-01



IF34J1310031-02

- 5) After adjusting the drive chain, tighten the rear axle nut and torque link nut (rear) to the specified torque.

Tightening torque

Rear axle nut: 65 N·m (6.6 kgf-m, 48.0 lbf-ft)

Torque link nut (rear): 16 N·m (1.6 kgf-m, 12.0 lbf-ft)

- 6) Recheck the drive chain slack after tightening the axle nut.
7) Tighten both chain adjuster nuts securely.
8) Check the brake pedal free travel. (Page 4A-5)

Drive Chain Cleaning and Lubricating

BENF34J13106003

- 1) Remove dirt and dust from the drive chain (1). Be careful not to damage the O-rings.
- 2) Clean the drive chain (1) with a sealed drive chain cleaner, or water and neutral detergent.

NOTICE

Cleaning the drive chain improperly can damage O-rings and ruin the drive chain.

- Do not use a volatile solvent such as paint thinner, kerosene and gasoline.
- Do not use high pressure cleaner to clean the drive chain.
- Do not use wire brush to clean the drive chain.

- 3) Use a soft brush to clean the drive chain (1). Be careful not to damage the O-rings even through using a soft brush.
- 4) Wipe off water and neutral detergent.
- 5) Lubricate with a motorcycle sealed drive chain lubricant or high viscosity oil.

NOTICE

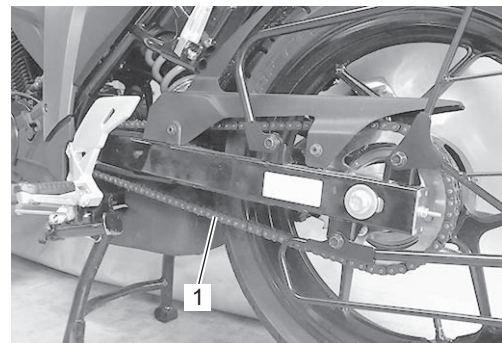
Some drive chain lubricant contains solvents and additives which could damage the O-rings in the drive chain.

Use sealed drive chain lubricant which is specifically intended for use with sealed drive chains.

- 6) Lubricate both front and back plates of the drive chain (1).
- 7) Wipe off excess lubricant after lubricating all around of the drive chain (1).

NOTE

The standard drive chain is a LGB R428NOR, 132 Links. SUZUKI recommends to use this standard drive chain as a replacement.



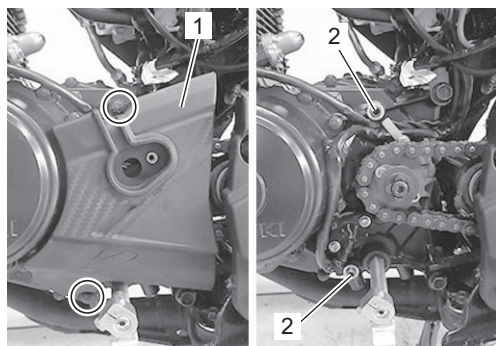
IF34J1310005-02

Engine Sprocket Removal and Installation

BENF34J13106004

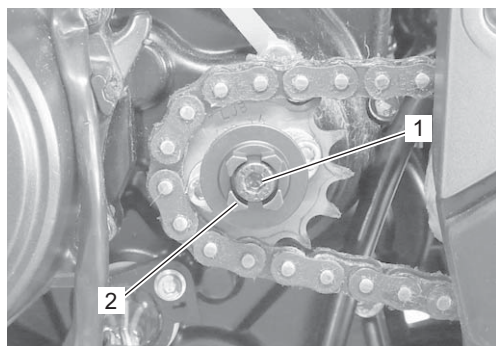
Removal

- 1) Remove the speed sensor from the engine sprocket cover. (Page 1C-4)
- 2) Remove the engine sprocket cover (1) and dowel pins (2).



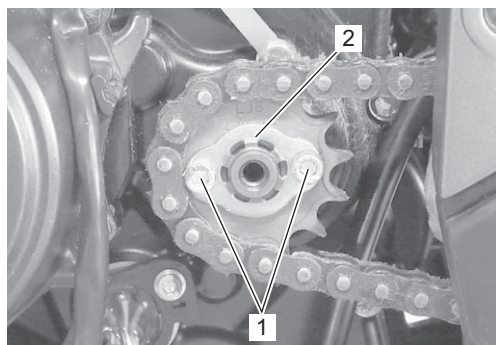
IF34J1310006-02

- 3) Remove the speed sensor rotor bolt (1) while depressing the rear brake pedal.
- 4) Remove the speed sensor rotor (2).



IF34J1310007-01

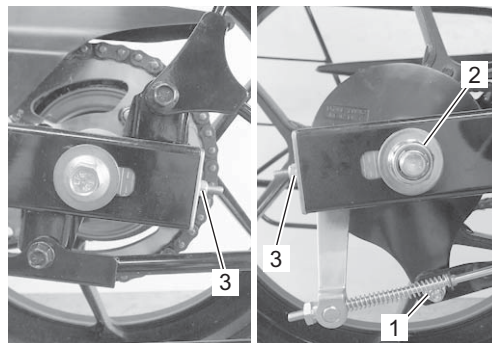
- 5) Remove the engine sprocket bolts (1) while depressing the rear brake pedal.
- 6) Remove the lock washer (2).



IF34J1310008-01

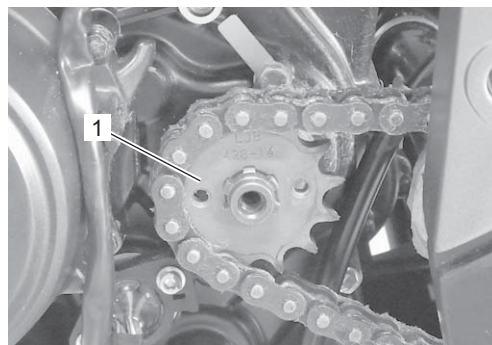
- 7) Support the motorcycle with the center stand.

- 8) Loosen the torque link nut (rear) (1).
- 9) Loosen the rear axle nut (2).
- 10) Loosen the adjuster nuts (3) to provide additional chain slack.



IF34J1310003-01

- 11) Remove the engine sprocket (1).



IF34J1310009-01

Installation

- 1) Install the engine sprocket (1) and lock washer (2).
- 2) Apply thread lock to the engine sprocket bolts.

“A”: THREAD LOCK CEMENT 1322D)

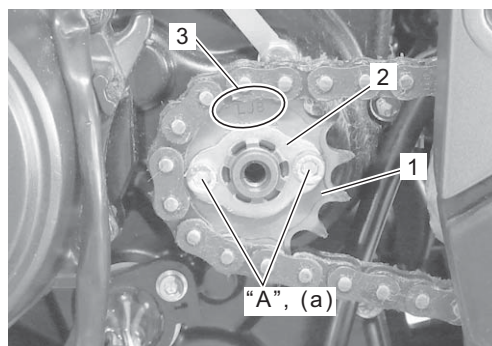
- 3) Tighten the engine sprocket bolts to the specified torque.

NOTE

The stamped mark (3) on the engine sprocket should face outside.

Tightening torque

Engine sprocket bolts (a): 10 N·m (1.0 kgf-m, 7.5 lbf-ft)

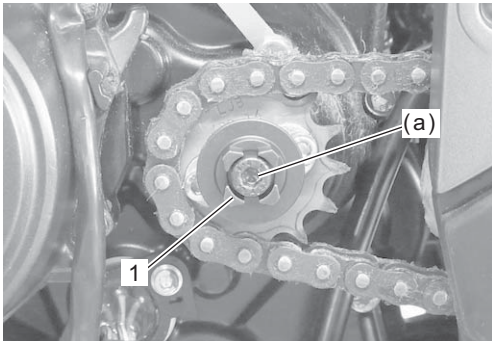


IF34J1310010-02

- 4) Install the speed sensor rotor (1) and tighten its bolt to the specified torque.

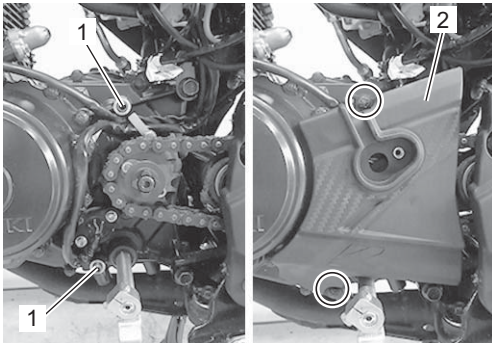
Tightening torque

Speed sensor rotor bolt (a): 23 N·m (2.3 kgf-m, 17.0 lbf-ft)



IF34J1310011-01

- 5) Install the dowel pins (1) and engine sprocket cover (2).



IF34J1310012-02

- 6) Install the speed sensor. (Page 1C-4)
7) Adjust the drive chain slack. Refer to "Drive Chain Inspection and Adjustment" (Page 3A-2).

Rear Sprocket Removal and Installation

BENF34J13106005

Refer to "Rear Wheel Assembly Removal and Installation" in Section 2D (Page 2D-5).

Removal

- 1) Remove the rear sprocket (1).



IF34J1310013-01

Installation

Install the rear sprocket in the reverse order of removal. Pay attention to the following point:

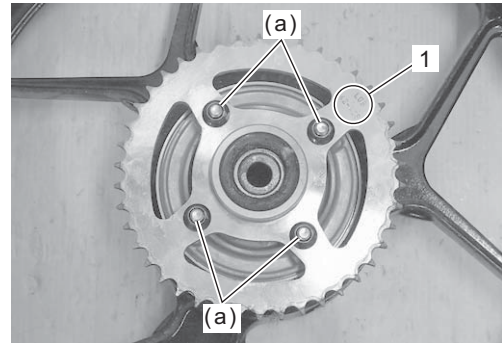
- Tighten the rear sprocket nuts to the specified torque.

NOTE

The stamped mark (1) on the sprocket should face outside.

Tightening torque

Rear sprocket nut (a): 29 N·m (3.0 kgf-m, 21.5 lbf-ft)



IF34J1310014-01

Rear Sprocket Mounting Drum Assembly Removal and Installation

BENF34J13106006

Refer to "Rear Wheel Assembly Removal and Installation" in Section 2D (Page 2D-5).

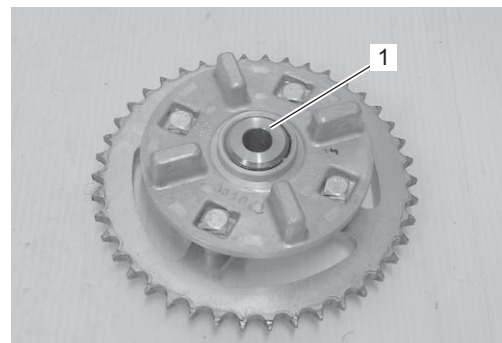
Removal

- 1) Remove the rear sprocket mounting drum assembly (1).



IF34J1310015-01

- 2) Remove the retainer (1).

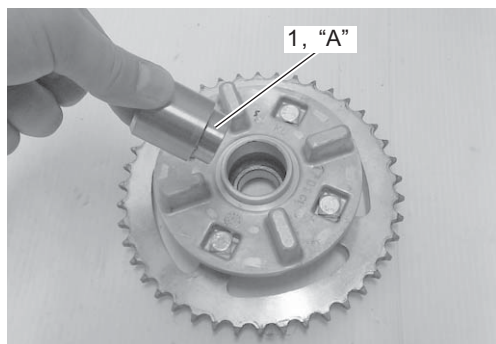


IF34J1310016-01

Installation

- 1) Apply grease to the retainer (1).

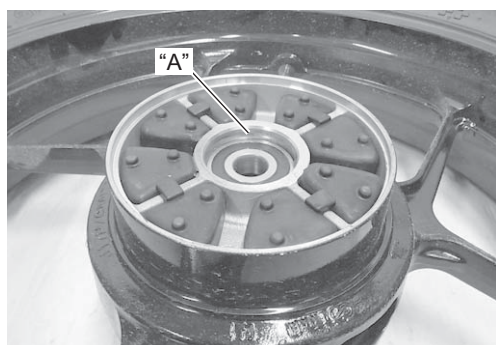
“A”: (SUZUKI SUPER GREASE A)



IF34J1310017-01

- 2) Apply grease to the contacting surface between the rear wheel hub and the rear sprocket mounting drum.

“A”: (SUZUKI SUPER GREASE A)



IF34J1310018-01

- 3) Install the rear sprocket mounting drum assembly to the rear wheel assembly.

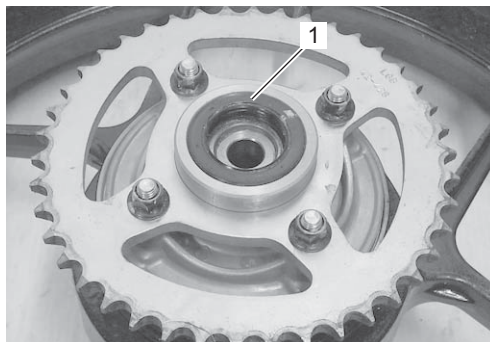
Rear Sprocket Mounting Drum / Sprocket Inspection

BENF34J13106007

Refer to “Rear Wheel Assembly Removal and Installation” in Section 2D (Page 2D-5).

Dust Seal

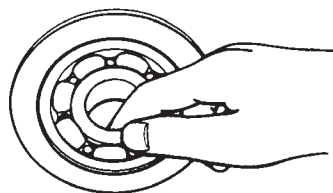
Inspect the sprocket mounting drum dust seal (1) for wear or damage. If any defect is found, replace the dust seal with a new one. ⚙ (Page 3A-7)



IF34J1310019-01

Bearing

Inspect the play of the sprocket mounting drum bearings by hand while they are in the wheel and drum. Rotate the inner race by hand to inspect for abnormal noise and smooth rotation. Replace the bearing if there is anything unusual. ⚙ (Page 3A-7)

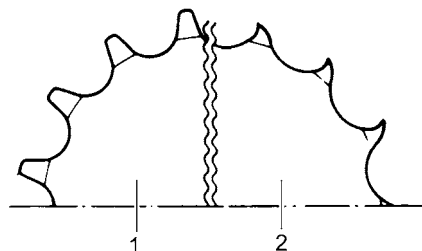


I649G1310015-02

Sprocket

- 1) Remove the engine sprocket cover. (Engine sprocket only) Refer to “Engine Sprocket Removal and Installation” (Page 3A-4).
- 2) Inspect the sprocket teeth for wear. If they are worn as shown, replace the engine sprocket, rear sprocket and drive chain as a set.

- Engine: ⚙ (Page 3A-4)
- Rear: ⚙ (Page 3A-5)



IE31J1310022-01

1. Normal wear	2. Excessive wear
----------------	-------------------

- 3) Install the engine sprocket cover (Engine sprocket only). Refer to “Engine Sprocket Removal and Installation” (Page 3A-4).

Wheel Damper

Refer to "Rear Wheel Damper Inspection" in Section 2D (Page 2D-9).

Drive Chain

Refer to "Drive Chain Inspection and Adjustment" (Page 3A-2).

**Rear Sprocket Mounting Drum Dust Seal /
Bearing Removal and Installation**

BENF34J13106008

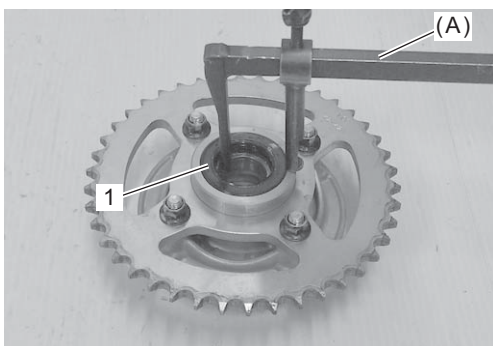
Refer to "Rear Sprocket Mounting Drum Assembly Removal and Installation" (Page 3A-5).

Removal

- 1) Remove the dust seal (1) using the special tool.

Special tool

(A): Oil seal remover

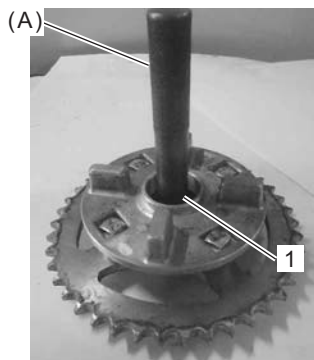


IF34J1310020-01

- 2) Remove the bearing (1) using the special tool.

Special tool

(A): Bearing removal set



IF34J1310021-01

Installation

- 1) Apply grease to the new bearing.

(SUZUKI SUPER GREASE A)



I649G1310020-02

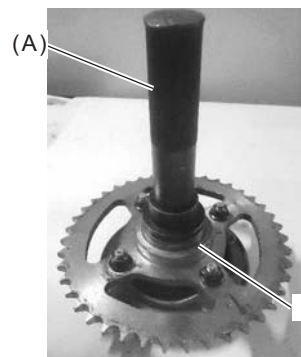
- 2) Install the bearing (1) using the special tool.

NOTICE

The sealed cover of the bearing must face inside.

Special tool

(A): Bearing installer

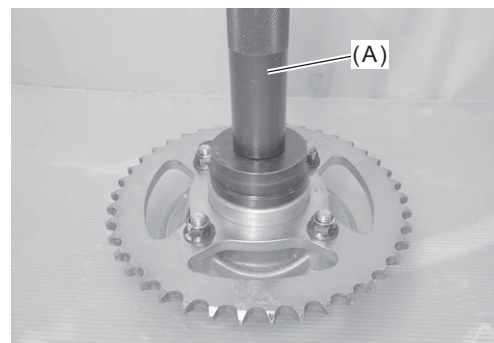


IF34J1310022-01

- 3) Install a new dust seal using the special tool.

Special tool

(A): Bearing installer



IF34J1310023-01

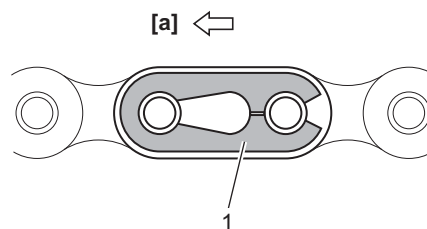
- 4) Apply grease to the dust seal lip.

“A”: (SUZUKI SUPER GREASE A)



IF34J1310024-01

- 6) Install the new drive chain joint clip (1). It should be attached in the way that the slit end faces opposite to the direction of the chain travel [a].



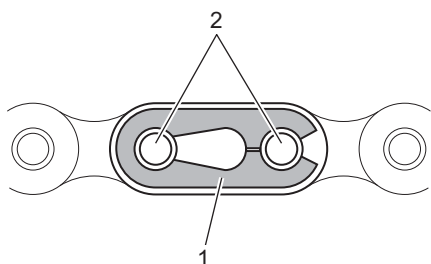
IF34J1310027-01

- 7) Adjust the drive chain slack, after connecting the chain. Refer to “Drive Chain Inspection and Adjustment” (Page 3A-2).

Drive Chain Replacement

BENF34J13106009

- 1) Remove the drive chain clip (1) from the joint pins (2) using pliers, and disengage the drive chain from the rear sprocket.

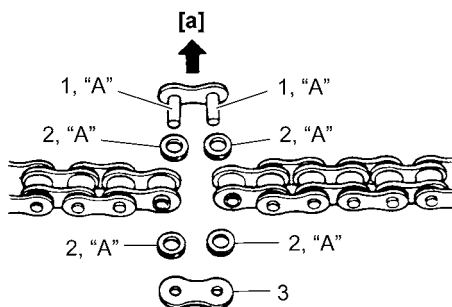


IF34J1310025-01

- 2) Remove the drive chain from the motorcycle.
3) Engage the new drive chain onto the sprockets.
4) Apply grease to the new joint pins (1), new O-rings (2) and new plate (3).

“A”: (SUZUKI SUPER GREASE A)

- 5) Connect both ends of the drive chain with the joint pins (1) inserted from the wheel side [a].



IF34J1310026-02

Specifications

Tightening Torque Specifications

BENF34J13107001

Fastening part	Tightening torque			Note
	N·m	kgf-m	lbf-ft	
Rear axle nut	65	6.6	48.0	☞ (Page 3A-3)
Torque link nut (rear)	16	1.6	12.0	☞ (Page 3A-3)
Engine sprocket bolts	10	1.0	7.5	☞ (Page 3A-4)
Speed sensor rotor bolt	23	2.3	17.0	☞ (Page 3A-5)
Rear sprocket nut	29	3.0	21.5	☞ (Page 3A-5)

Reference:

For the tightening torques of fasteners not specified in this page, refer to:

“Drive Chain Related Components” (Page 3A-1)

“Fasteners Information” in Section 0C (Page 0C-8)

Special Tools and Equipment

Recommended Service Material

BENF34J13108001

Material	SUZUKI recommended product or Specification	Note
Grease	SUZUKI SUPER GREASE A	☞ (Page 3A-6) / ☞ (Page 3A-6) / ☞ (Page 3A-7) / ☞ (Page 3A-8) / ☞ (Page 3A-8)
Thread lock cement	THREAD LOCK CEMENT 1322D	☞ (Page 3A-4)

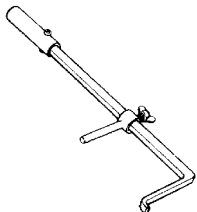
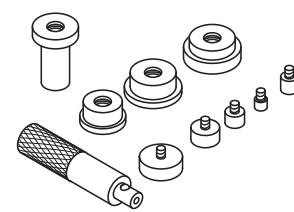
NOTE

Required service materials are also described in:

“Drive Chain Related Components” (Page 3A-1)

Special Tool

BENF34J13108002

Oil seal remover ☞ (Page 3A-7) 	Bearing installer set ☞ (Page 3A-7) 

Section 4

Brakes

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Precautions

Precautions

Precautions for Brake System

BENF34J14000001

Refer to “General Precautions” in Section 00 (Page 00-1) and “Precautions for Electrical Circuit Service” in Section 00 (Page 00-2).

Brake Fluid Information

BENF34J14000002

▲ WARNING

- This brake system is filled with an ethylene glycol-based DOT 3 or 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 which has been stored for a long period of time.
- When storing brake fluid, seal the container completely and keep it away from children.
- When replenishing brake fluid, take care not to get dust into the fluid.
- When washing brake components, use new brake fluid. Never use cleaning solvent.
- A contaminated brake disc or brake pad reduces braking performance. Discard contaminated pads and clean the disc with high quality brake cleaner or neutral detergent.

NOTICE

The brake fluid is damaging to painted surfaces, plastics and rubber materials, and do not allow the fluid to spill on the surrounding parts.

If the fluid is spilled, flush it with water immediately.

Brake Control System and Diagnosis

Diagnostic Information and Procedures

Brake Symptom Diagnosis

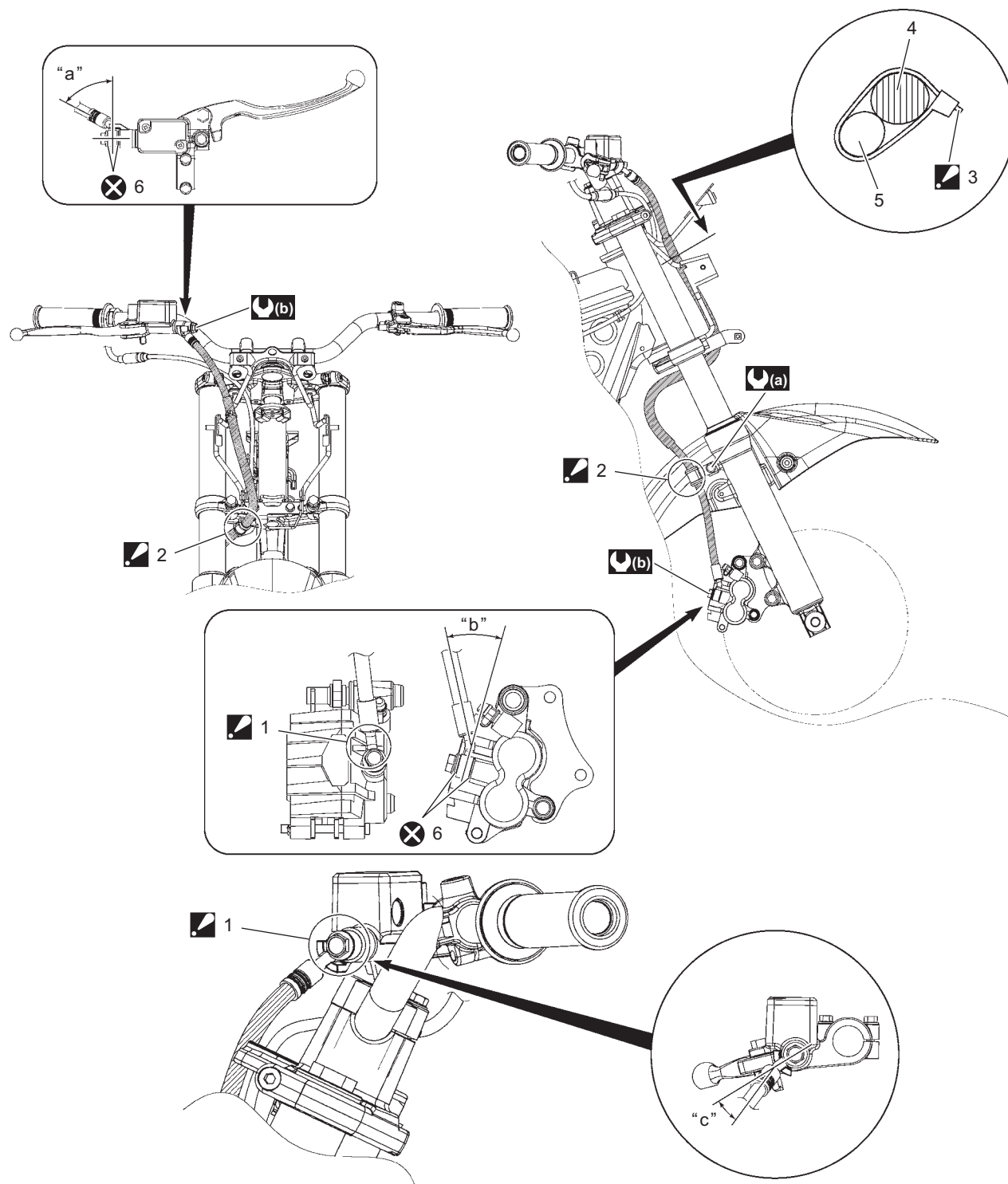
BENF34J14104001

Condition	Possible cause	Correction / Reference Item
Insufficient brake power	Leakage of brake fluid from hydraulic system.	Repair or replace. (Page 4A-5)
	Worn brake pads and/or disc.	Replace. (Page 4B-2) (Page 4B-7)
	Oil adhesion on friction surface of pads.	Clean disc and pads.
	Worn brake shoes and/or drum.	Replace. (Page 4C-1) (Page 2D-5)
	Air in hydraulic system.	Bleed air. (Page 4A-5)
	Not enough brake fluid in the reservoir.	Replenish. (Page 4A-4)
	Oil on brake shoe surfaces.	Clean.
	Excessive brake pedal play.	Adjust. (Page 4A-5)
Brake squeaking	Carbon adhesion on brake pad and/or brake shoe surfaces.	Repair surface with sandpaper.
	Tilted brake pads and/or brake shoes.	Correct brake pads and/or shoes fitting or replace. (Page 4B-2) (Page 4C-1)
	Damaged wheel bearings.	Replace. (Page 2D-2) (Page 2D-6)
	Loose front wheel axle or rear wheel axle.	Tighten to specified torque.
	Worn brake pads and/or disc.	Replace. (Page 4B-2) (Page 4B-7)
	Foreign material in brake fluid.	Replace brake fluid. (Page 4A-6)
	Clogged return port of master cylinder.	Disassemble and clean master cylinder.
	Worn brake shoes and/or drum.	Replace. (Page 4C-1) (Page 2D-5)
Excessive brake lever or brake pedal stroke	Air in hydraulic system.	Bleed air. (Page 4A-5)
	Insufficient brake fluid.	Replenish fluid to specified level. (Page 4A-4)
	Improper quality of brake fluid.	Replace with correct fluid. (Page 4A-6)
	Worn brake cam.	Replace. (Page 4C-2)
	Excessively worn brake shoes and/or drum.	Replace. (Page 4C-1) (Page 2D-5)
Leakage of brake fluid	Insufficient tightening of connection joints.	Tighten to specified torque.
	Cracked hose.	Replace. (Page 4A-7)
	Worn piston and/or cup.	Replace piston and/or cup. (Page 4A-9)
	Worn piston seal and dust seal.	Replace piston seal and dust seal. (Page 4B-4)
Brake drags	Rusty part.	Clean and lubricate. (Page 0B-4)
	Insufficient brake lever or brake pedal pivot lubrication.	Lubricate. (Page 0B-4)

Repair Instructions

Front Brake Hose Routing Diagram

BENF34J14106001

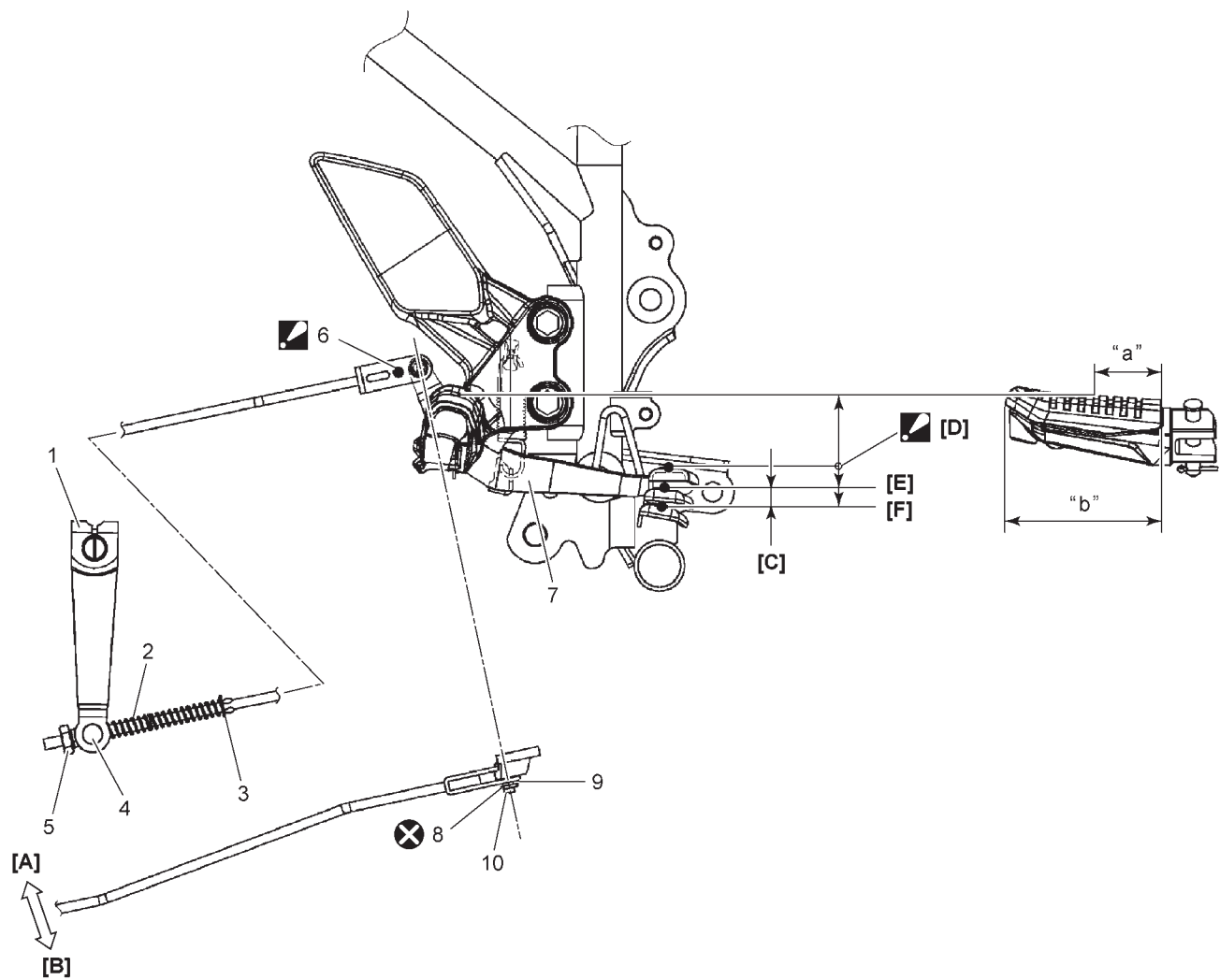


IF34J1410001-02

1. Stopper : After the brake hose union has contacted the stopper, tighten the union bolt to the specified torque.	5. Headlight housing brace	"c": 21°
2. Clamp : Fix the hose sleeve to the clamp firmly.	6. Seal washer	(a): 10 N·m (1.0 kgf-m, 7.5 lbf-ft)
3. Clamp : Cut off the excess tip of the clamp.	"a": 49°	(b): 23 N·m (2.3 kgf-m, 17.0 lbf-ft)
4. Front brake hose	"b": 28°	: Do not reuse.

Rear Brake Pedal Construction

BENF34J14106002



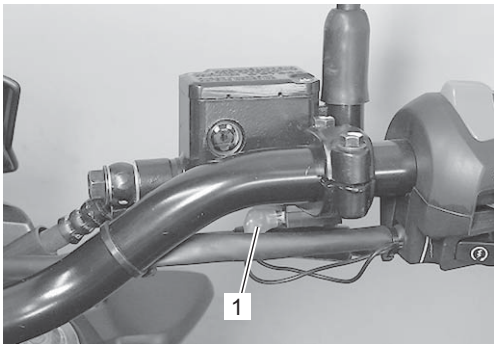
IF34J1410002-02

[A]: Outside	2. Spring	9. Front washer
[B]: Inside	3. Rear washer	10. Front pin
[C]: Brake pedal free travel adjusting area	4. Rear pin	"a": 38.5 mm (1.52 in)
▣ [D]: Brake pedal initial position : Approx. 42 mm (1.7 in) between the brake pedal top face and footrest.	5. Rear brake adjuster nut	"b": 88 mm (3.46 in)
[E]: 10 mm (0.4 in) from the brake pedal initial position.	▣ 6. Brake rod : Face the marking of the brake rod joint outside.	⊗ : Do not reuse.
[F]: 20 mm (0.8 in) from the brake pedal initial position.	7. Brake pedal	
1. Brake cam lever	8. Cotter pin	

Front Brake Light Switch Inspection

BENF34J14106003

- 1) Disconnect the front brake light switch lead wire couplers (1).



IF34J1410003-01

4A-4 Brake Control System and Diagnosis:

- 2) Inspect the switch for continuity with a circuit tester.
If any defect is found, replace the front brake light switch with a new one. (Page 4A-9)

Color Position	Terminal (B)	Terminal (B)
OFF		
ON		

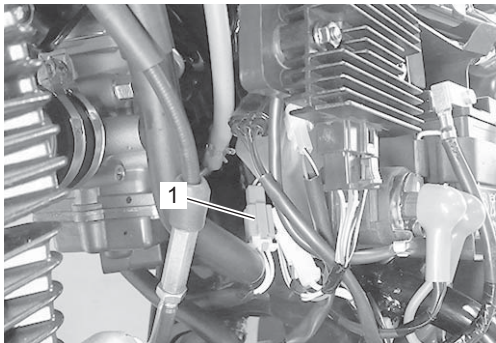
IF34J1410004-01

- 3) Connect the front brake light switch lead wire couplers.

Rear Brake Light Switch Inspection

BENF34J14106004

- 1) Remove the left frame side cover. (Page 9D-12)
2) Disconnect the rear brake light switch lead wire coupler (1).



IF34J1410005-03

- 3) Inspect the switch for continuity with a circuit tester.
If any defect is found, replace the rear brake light switch with a new one.

Color Position	Terminal (W)	Terminal (W/B)
OFF		
ON		

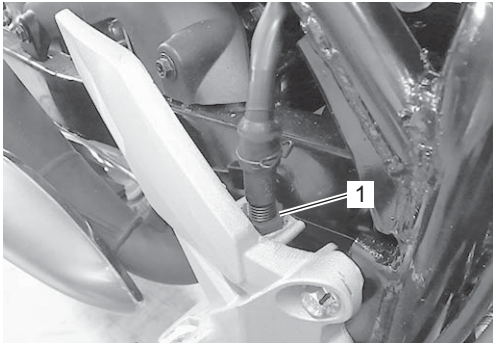
IF34J1410006-02

- 4) Connect the rear brake light switch lead wire coupler.
5) Install the left frame side cover. (Page 9D-12)

Rear Brake Light Switch Inspection and Adjustment

BENF34J14106005

Check the rear brake light switch so that the brake light will come on just before pressure is felt when the brake pedal is depressed. If the brake light switch adjustment is necessary, turn the adjuster nut (1) in or out while holding the brake pedal.



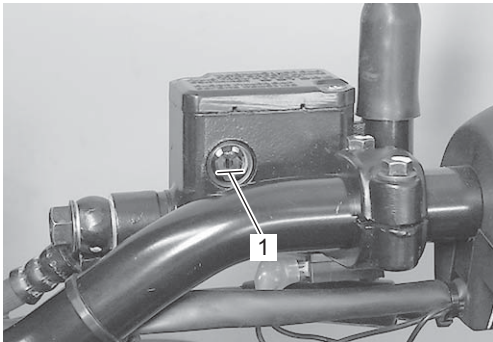
IF34J1410007-02

Brake Fluid Level Check

BENF34J14106006

- 1) Keep the motorcycle upright and place the handlebars straight.
2) Check the brake fluid level by observing the lower limit line (1) on the front brake fluid reservoir. When the brake fluid level is below the lower limit line, inspect for brake pad wear and leaks and replenish with brake fluid that meets the following specification.

Brake fluid (DOT 3)
Brake fluid (DOT 4)

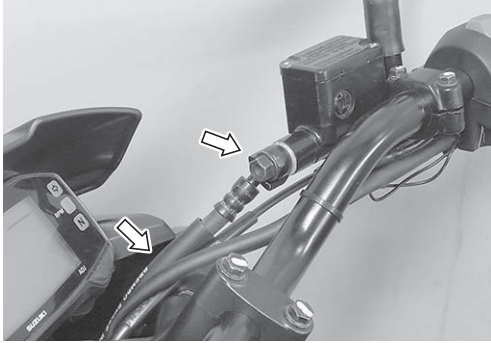


IF34J1410008-01

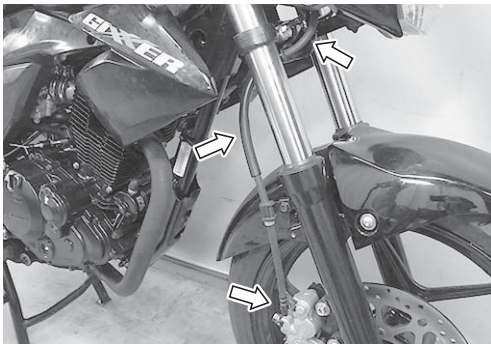
Brake Hose Inspection

BENF34J14106007

Inspect the brake hose and hose joints for crack, damage or brake fluid leakage. If any defects are found, replace the brake hose with a new one. (Page 4A-7)



IF34J1410009-01



IF34J1410010-01

Brake Pedal Free Travel Inspection and Adjustment

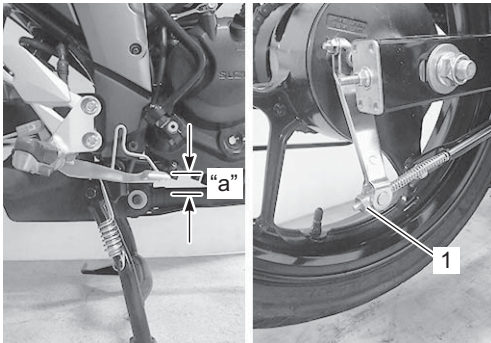
BENF34J14106008

- 1) Inspect the brake pedal free travel "a" at the brake pedal top face depressing the brake pedal until pressure is felt. If the brake pedal free travel is out of the specification, adjust the brake pedal free travel.

Brake pedal free travel "a"

Standard: 10 – 20 mm (0.4 – 0.8 in)

- 2) Turn the adjuster nut (1) to obtain the specification of brake pedal free travel.



IF34J1410011-02

- 3) After finishing the brake pedal free travel inspection and adjustment, check the rear brake light switch. (Page 4A-4)
- 4) Check that the rear brake shoe wear limit indicator is within the specified range. (Page 4C-1)

Air Bleeding from Brake Line

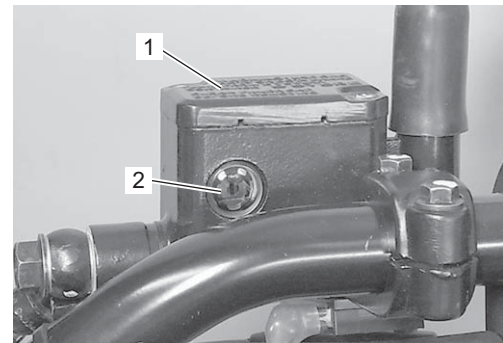
BENF34J14106009

Trapped air in the brake line acts like a cushion to absorb a large proportion of the pressure developed by the master cylinder and thus greatly reduces the braking force. The presence of air bubbles is indicated by a "spongy" feel in the brake lever and low braking force. This condition is extremely dangerous, and therefore the air must be bled every time after replacing any parts in the brake line in the following manner.

- 1) Place the motorcycle on a level surface and keep the handlebars straight.
- 2) Remove the reservoir cap (1), plate and diaphragm.
- 3) Fill the master cylinder reservoir with new brake fluid to the top of the inspection window (2).

Brake fluid (DOT 3)

Brake fluid (DOT 4)

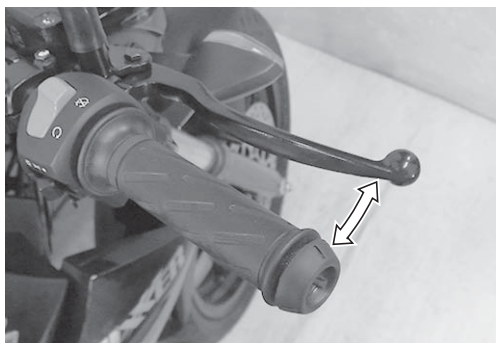


IF34J1410012-01

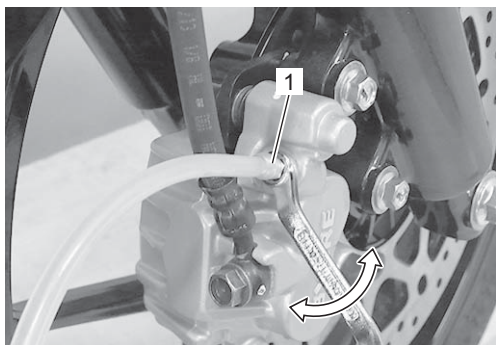
- 4) Attach a clear hose to the air bleeder valve, and insert the free end of the hose into a receptacle.

4A-6 Brake Control System and Diagnosis:

- 5) Operate the brake lever several times and, while holding the lever gripped, loosen the air bleeder valve (1) and drain the brake fluid into a receptacle.



IF34J1410013-01



IF34J1410014-01

- 6) Tighten the air bleeder valve and release the brake lever slowly.
- 7) Repeat the steps 5) and 6) until the fluid is flowing out without bubbles.

NOTE

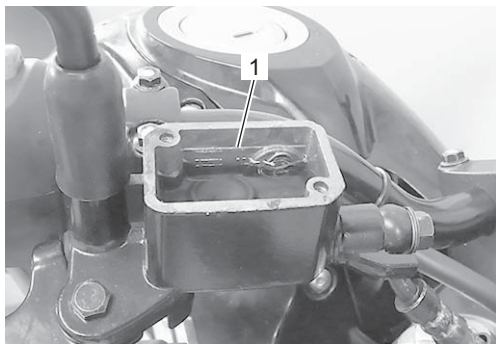
While bleeding the brake system, replenish the reservoir with the brake fluid as necessary to keep the fluid above the lower level.

- 8) Tighten the air bleeder valve to the specified torque.

Tightening torque

Brake air bleeder valve: 7.5 N·m (0.76 kgf-m, 5.5 lbf-ft)

- 9) Fill the reservoir with brake fluid to the upper line (1) of the reservoir.



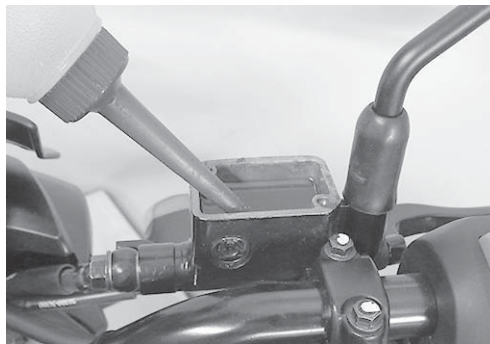
IF34J1410015-01

- 10) Install the diaphragm, plate and reservoir cap.

Brake Fluid Replacement

BENF34J14106010

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



IF34J1410016-01

- 4) Fill the reservoir with new brake fluid.

Brake fluid (DOT 3)

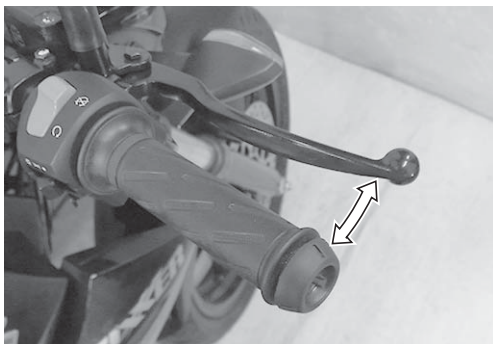
Brake fluid (DOT 4)

- 5) Attach a clear hose to the air bleeder valve (1) and insert the free end of the hose into a receptacle.

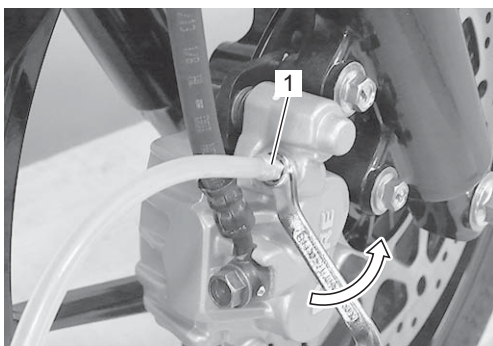
- 6) Loosen the air bleeder valve, squeeze and release the brake lever and drain the old brake fluid out of the brake system.

NOTE

While bleeding the brake system, replenish the reservoir with the brake fluid as necessary to keep the fluid above the lower level.



IF34J1410013-01



IF34J1410017-01

- 7) Bleed air from the front brake system. ☞ (Page 4A-5)

Front Brake Hose Removal and Installation

BENF34J14106011

Refer to "Front Brake Hose Routing Diagram" (Page 4A-2).

Removal

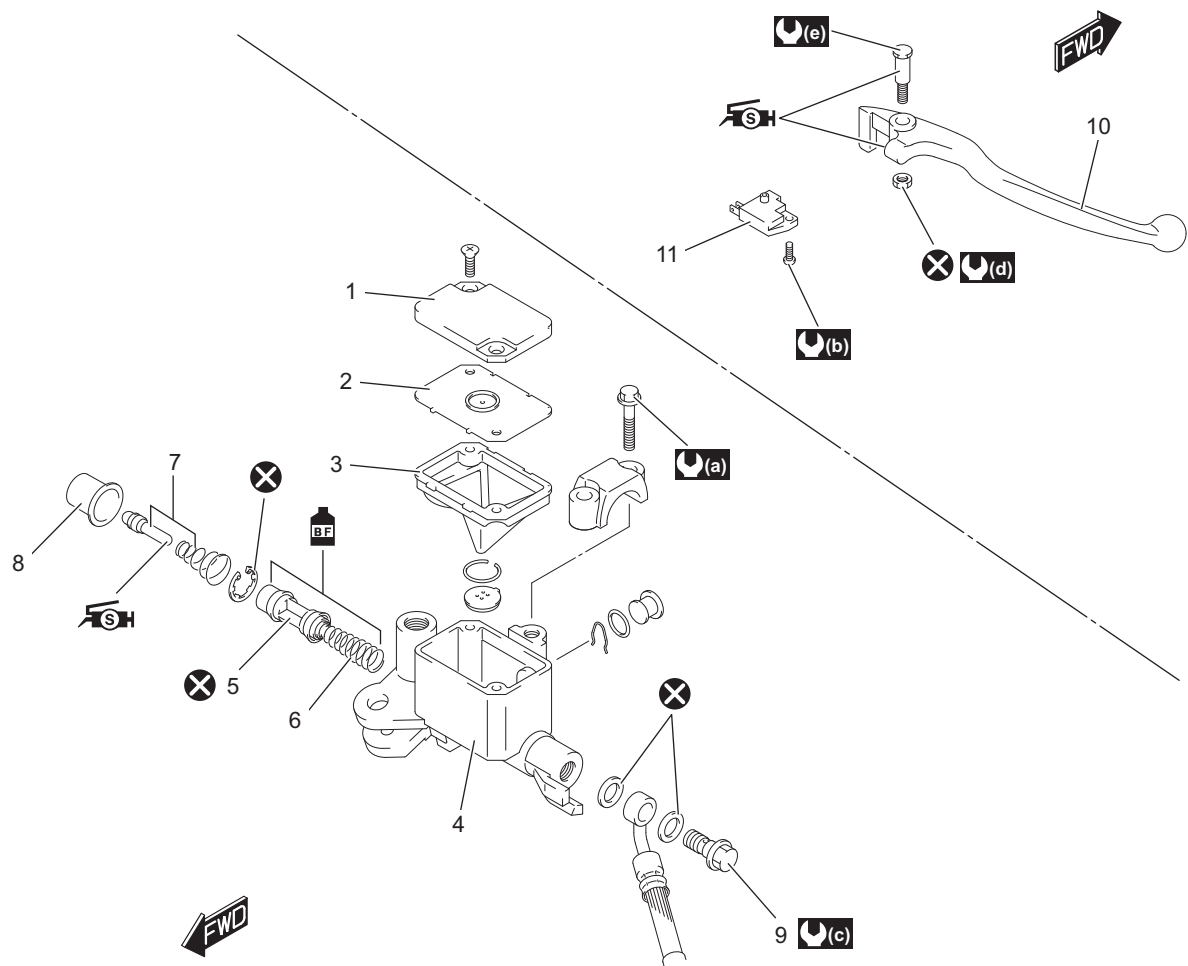
- 1) Drain brake fluid. ☞ (Page 4A-6)
- 2) Remove the front brake hose.

Installation

- 1) Install the front brake hose.
- 2) Bleed air from the front brake system. ☞ (Page 4A-5)

Front Brake Master Cylinder Assembly / Brake Lever Components

BENF34J14106013



IF34J1410018-02

1. Reservoir cap	6. Return spring	11. Brake light switch	: 1 N·m (0.10 kgf-m, 1.0 lbf-ft)
2. Plate	7. Push rod	: 10 N·m (1.0 kgf-m, 7.5 lbf-ft)	: Apply silicone grease.
3. Diaphragm	8. Dust boot	: 1.2 N·m (0.12 kgf-m, 1.0 lbf-ft)	: Apply brake fluid.
4. Master cylinder	9. Brake hose union bolt	: 23 N·m (2.3 kgf-m, 17.0 lbf-ft)	: Do not reuse.
5. Piston/cup set	10. Brake lever	: 6 N·m (0.61 kgf-m, 4.5 lbf-ft)	

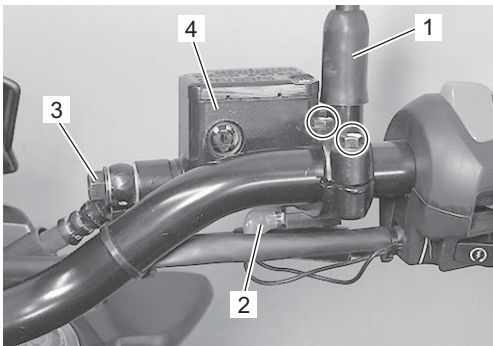
Front Brake Master Cylinder Assembly Removal and Installation

BENF34J14106014

Removal

- 1) Drain brake fluid. (Page 4A-6)
- 2) Remove the right rear view mirror (1).
- 3) Disconnect the front brake light switch lead wire couplers (2).
- 4) Place a rag underneath the brake hose union bolt (3) on the master cylinder to catch any spilt brake fluid.
- 5) Remove the brake hose union bolt and disconnect the brake hose.

- 6) Remove the master cylinder assembly (4) by removing the bolts.



IF34J1410019-02

Installation

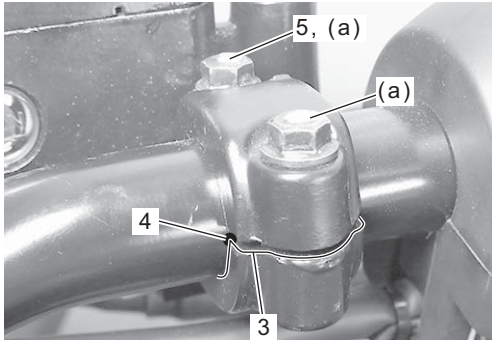
- 1) Install the master cylinder assembly (1) onto the handlebars (2) aligning the edge of master cylinder holder (3) with the punch mark (4) on the handlebars and tighten the front mounting bolt (5) first.

NOTE

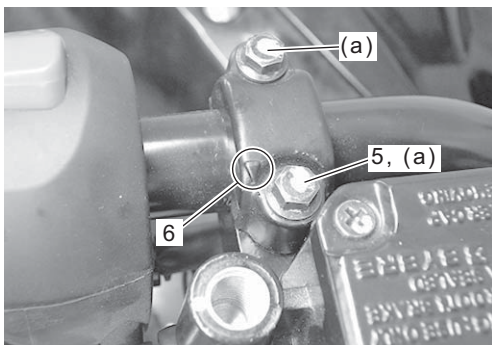
Face the front mark (6) forward.

Tightening torque

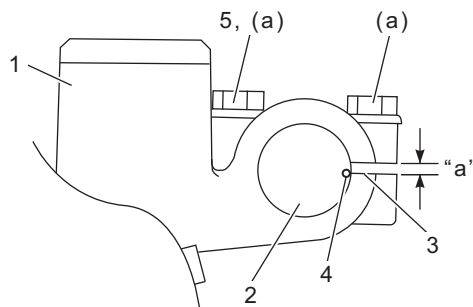
Front brake master cylinder mounting bolt (a):
10 N·m (1.0 kgf-m, 7.5 lbf-ft)



IF34J1410020-02



IF34J1410021-02



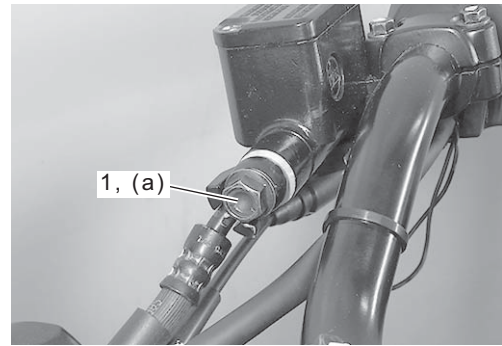
IF34J1410022-02

"a": Clearance

- 2) Install the brake hose union bolt and new seal washers to brake hose.
- 3) After setting the brake hose union to the stopper, tighten the union bolt (1) to the specified torque.

Tightening torque

Brake hose union bolt (a): 23 N·m (2.3 kgf-m, 17.0 lbf-ft)



IF34J1410023-01

- 4) Connect the front brake light switch lead wire couplers.
- 5) Install the right rear view mirror.
- 6) Bleed air from the brake system. (Page 4A-5)

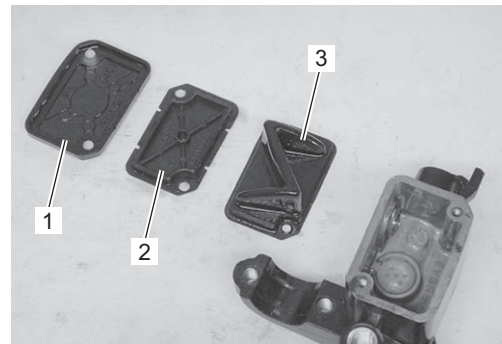
Front Brake Master Cylinder Assembly / Brake Lever Disassembly and Reassembly

BENF34J14106015

Refer to "Front Brake Master Cylinder Assembly Removal and Installation" (Page 4A-8).

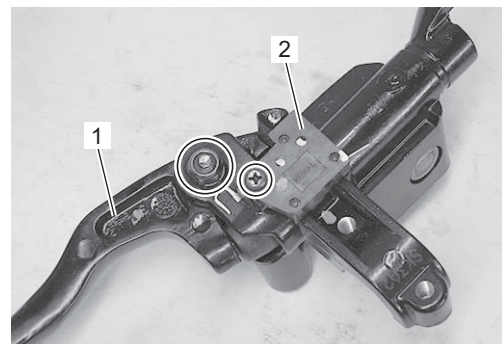
Disassembly

- 1) Remove the reservoir cap (1), plate (2) and diaphragm (3).



IF34J1410024-01

- 2) Remove the brake lever (1) and brake light switch (2).

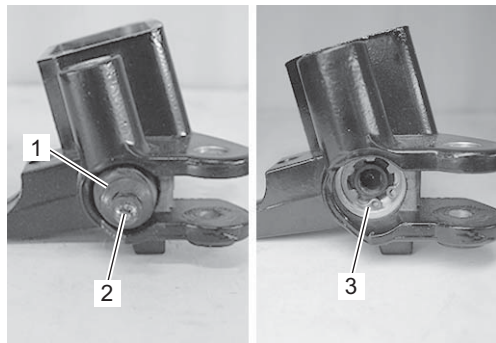


IF34J1410025-01

4A-10 Brake Control System and Diagnosis:

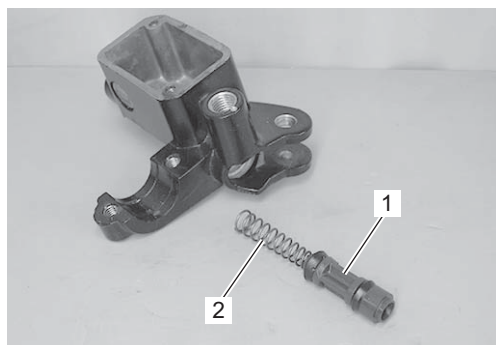
- 3) Pull out the dust boot (1) with the push rod (2).
- 4) Remove the snap ring (3) using the special tool.

Special tool Snapping Pliers



IF34J1410026-01

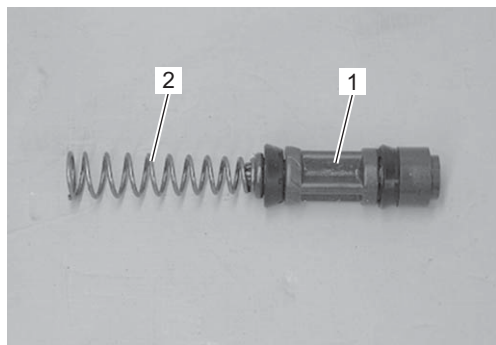
- 5) Remove the following parts from the master cylinder.
 - Piston/cup set (1)
 - Return spring (2)



IF34J1410027-01

Reassembly

- 1) Install the new piston/cup set (1) to the return spring (2).



IF34J1410028-01

NOTICE

- Wash the master cylinder components with new brake fluid before reassembly.
- 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 solvents such as gasoline, kerosine, etc.
- Apply brake fluid to the master cylinder bore and all of the master cylinder component to be inserted into the bore.

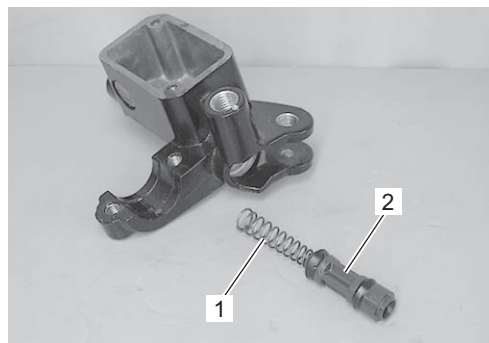
Brake fluid (DOT 3)

Brake fluid (DOT 4)



I649G1410036-02

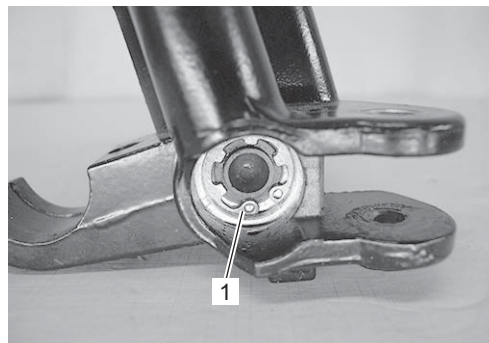
- 2) Install the return spring (1) and new piston/cup set (2) to the master cylinder.



IF34J1410029-01

- 3) Install the new snap ring (1) using the special tool.

Special tool Snapping Pliers

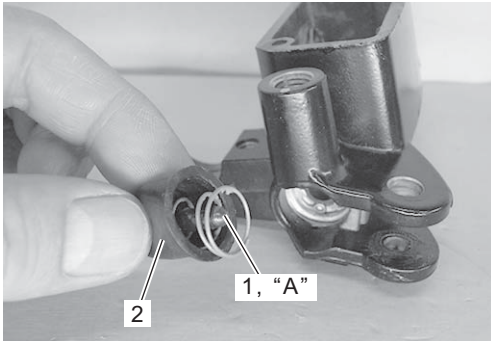


IF34J1410030-01

- 4) Apply grease to the push rod (1).

"A": (SUZUKI SILICONE GREASE)

- 5) Set the push rod with the dust boot (2) to the master cylinder securely.

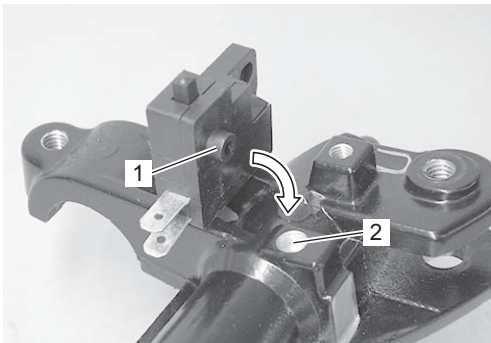


IF34J1410031-01

- 6) Install the brake light switch aligning the projection (1) on the switch with the hole (2) in the master cylinder.
7) Tighten the brake light switch mounting screw to the specified torque.

Tightening torque

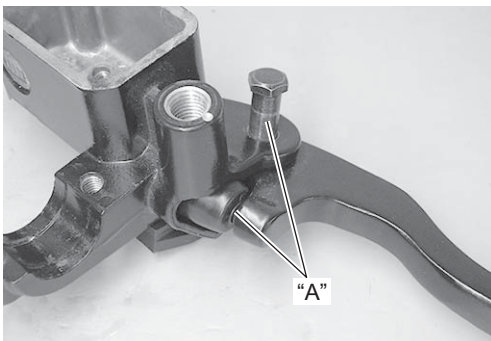
Brake light switch screw: 1.2 N·m (0.12 kgf-m, 1.0 lbf-ft)



IF34J1410032-01

- 8) Apply grease to the brake lever pivot bolt.
9) Apply grease to the contact point between push rod and brake lever.

"A": (SUZUKI SILICONE GREASE)



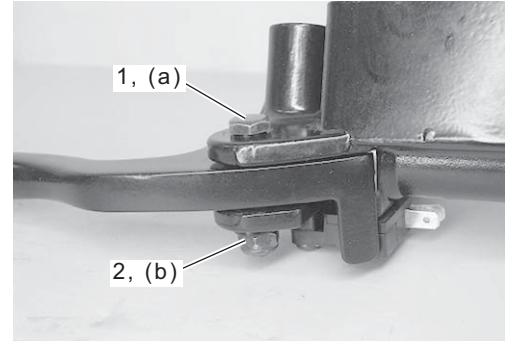
IF34J1410033-01

- 10) Tighten the pivot bolt (1) and new lock-nut (2) to the specified torque.

Tightening torque

Brake lever pivot bolt (a): 1 N·m (0.10 kgf-m, 1.0 lbf-ft)

Brake lever pivot bolt lock-nut (b): 6 N·m (0.61 kgf-m, 4.5 lbf-ft)



IF34J1410034-01

- 11) Install the diaphragm, plate and reservoir cap to the master cylinder.

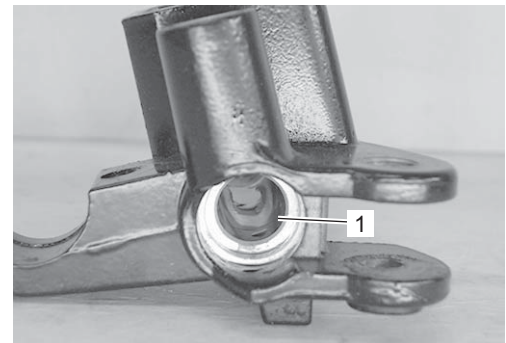
Front Brake Master Cylinder Parts Inspection

BENF34J14106016

Refer to "Front Brake Master Cylinder Assembly / Brake Lever Disassembly and Reassembly" (Page 4A-9).

Master Cylinder

Inspect the master cylinder bore (1) for any scratches or other damage. If any defect is found, replace the master cylinder with a new one.



IF34J1410035-01

Piston / Cup Set

Inspect the piston/cup set for any scratches or other damage. If any defect is found, replace it with a new one.



IF34J1410036-01

Dust Boot

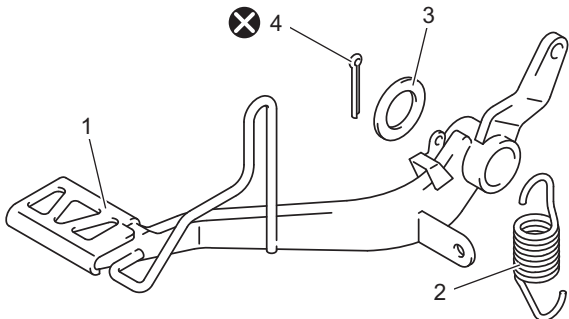
Inspect the dust boot for wear or damage. If any defect is found, replace it with a new one.



IF34J1410037-01

Rear Brake Pedal Components

BENF34J14106017



IF34J1410038-01

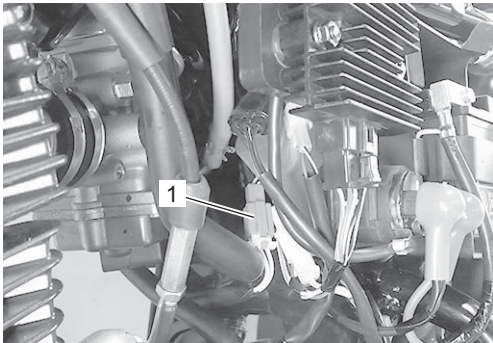
1. Rear brake pedal	4. Cotter pin
2. Rear brake pedal return spring	⊗ : Do not reuse.
3. Washer	

Rear Brake Pedal Removal and Installation

BENF34J14106018

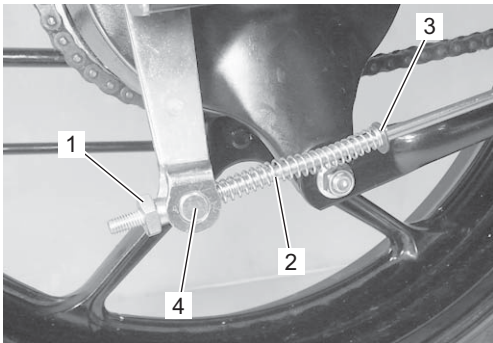
Removal

- 1) Remove the left and right frame side covers.
⚙ (Page 9D-12)
- 2) Disconnect the rear brake light switch coupler (1).



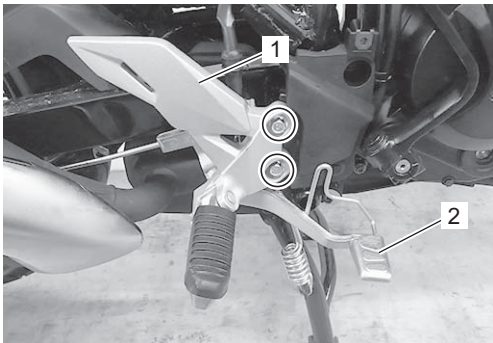
IF34J1410005-03

- 3) Remove the rear brake adjuster nut (1), spring (2), washer (3) and pin (4).



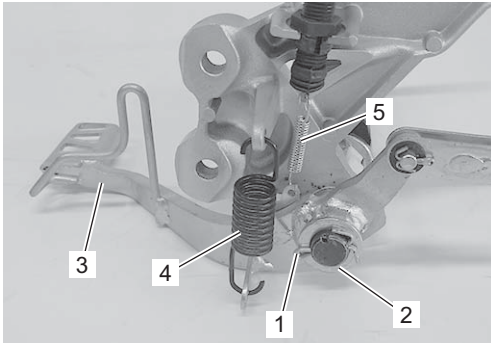
IF34J1410039-01

- 4) Remove the front footrest bracket (1) with the rear brake pedal (2).



IF34J1410040-02

- 5) Remove the cotter pin (1), washer (2) and rear brake pedal (3).
- 6) Remove the rear brake pedal return spring (4) and rear brake light switch spring (5).

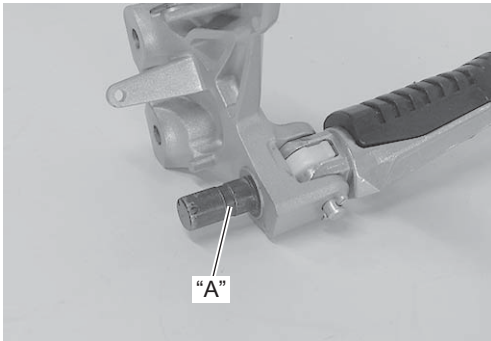


IF34J1410041-02

Installation

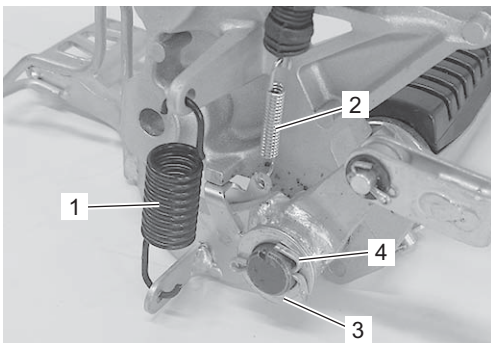
Install the rear brake pedal in the reverse order of removal. Pay attention to the following points:

- Apply grease to the rear brake pedal shaft of the front footrest bracket.
“A” : (SUZUKI SUPER GREASE A)



IF34J1410042-02

- Install the rear brake pedal return spring (1) and rear brake light switch spring (2) in correct direction as shown.
- Install the washer (3) and new cotter pin (4).

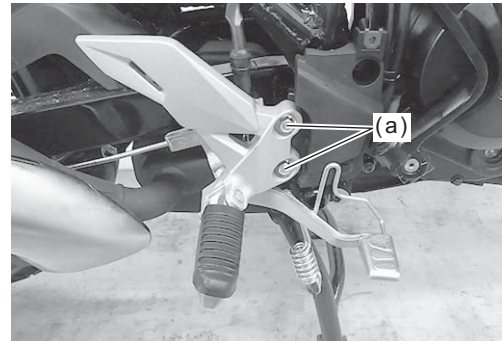


IF34J1410043-02

- Tighten the front footrest bracket bolts to the specified torque.

Tightening torque

Front footrest bracket bolt (a): 23 N·m (2.3 kgf-m, 17.0 lbf-ft)



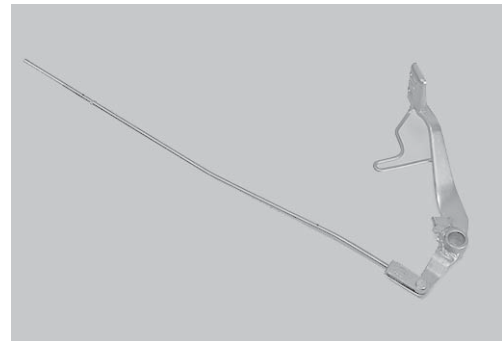
IF34J1410044-02

Rear Brake Pedal Inspection

BENF34J14106019

Refer to “Rear Brake Pedal Removal and Installation” (Page 4A-12).

Inspect the brake pedal and rod for damage and excessive bend. If any defect is found, replace them with new ones.



IF34J1410045-02

Specifications

Tightening Torque Specifications

BENF34J14107001

Fastening part	Tightening torque			Note
	N·m	kgf-m	lbf-ft	
Brake air bleeder valve	7.5	0.76	5.5	☞ (Page 4A-6)
Front brake master cylinder mounting bolt	10	1.0	7.5	☞ (Page 4A-9)
Brake hose union bolt	23	2.3	17.0	☞ (Page 4A-9)
Brake light switch screw	1.2	0.12	1.0	☞ (Page 4A-11)
Brake lever pivot bolt	1	0.10	1.0	☞ (Page 4A-11)
Brake lever pivot bolt lock-nut	6	0.61	4.5	☞ (Page 4A-11)
Front footrest bracket bolt	23	2.3	17.0	☞ (Page 4A-13)

Reference:

For the tightening torques of fasteners not specified in this page, refer to:

“Front Brake Hose Routing Diagram” (Page 4A-2)

“Front Brake Master Cylinder Assembly / Brake Lever Components” (Page 4A-8)

“Fasteners Information” in Section 0C (Page 0C-8)

Special Tools and Equipment

Recommended Service Material

BENF34J14108001

Material	SUZUKI recommended product or Specification		Note
Brake fluid	DOT 3	—	☞ (Page 4A-4) / ☞ (Page 4A-5) / ☞ (Page 4A-6) / ☞ (Page 4A-10)
	DOT 4	—	☞ (Page 4A-4) / ☞ (Page 4A-5) / ☞ (Page 4A-6) / ☞ (Page 4A-10)
Grease	SUZUKI SUPER GREASE A		☞ (Page 4A-13)
	SUZUKI SILICONE GREASE		☞ (Page 4A-11) / ☞ (Page 4A-11)

NOTE

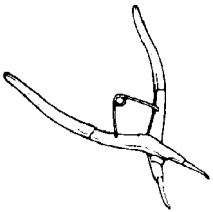
Required service materials are also described in:

“Front Brake Master Cylinder Assembly / Brake Lever Components” (Page 4A-8)

“Rear Brake Pedal Components” (Page 4A-12)

Special Tool

BENF34J14108002

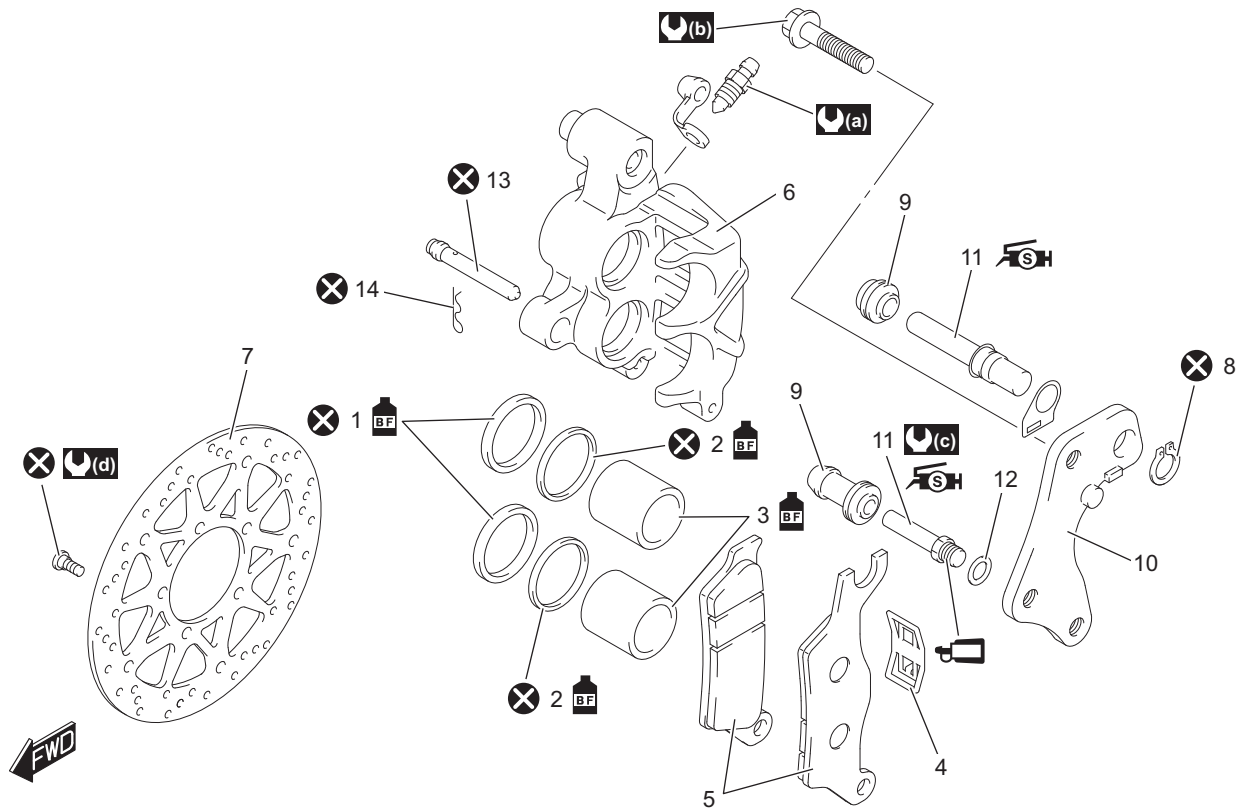
Snap ring pliers (Internal) ☞ (Page 4A-10) / ☞ (Page 4A-10)		
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Front Brakes

Repair Instructions

Front Brake Components

BENF34J14206001



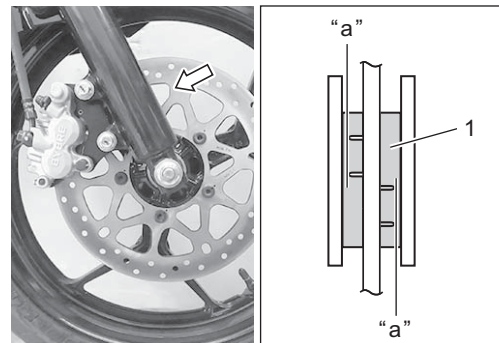
IF34J1420001-03

1. Piston seal	9. Rubber boot	: 8.5 N·m (0.87 kgf-m, 6.5 lbf-ft)
2. Dust seal	10. Brake caliper bracket	: 23 N·m (2.3 kgf-m, 17.0 lbf-ft)
3. Piston	11. Brake caliper bracket pin	: Apply grease.
4. Brake pad spring	12. Spacer	: Apply thread lock to the thread part.
5. Brake pad	13. Brake pad mounting pin	: Apply brake fluid.
6. Front brake caliper	14. Clip	: Do not reuse.
7. Front brake disc	: 7.5 N·m (0.76 kgf-m, 5.5 lbf-ft)	
8. Snap ring	: 26 N·m (2.7 kgf-m, 19.5 lbf-ft)	

Front Brake Pad Inspection

BENF34J14206002

The extent of brake pads (1) wear can be checked by observing the grooved limit line "a" on the pads. When the wear exceeds the grooved limit line, replace the pads with new ones. (Page 4B-2)



IF34J1420002-01

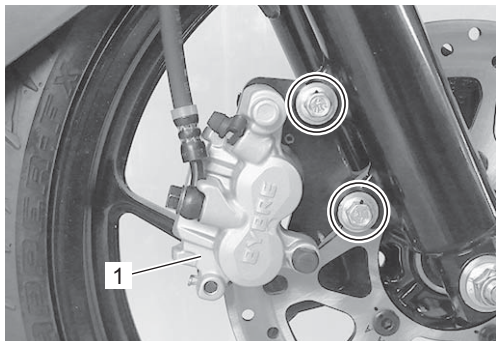
Front Brake Pad Replacement

BENF34J14206003

NOTE

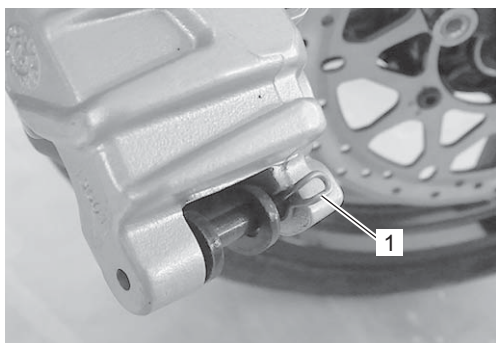
After replacing the brake pads, pump the brake lever several times to check for proper brake operation and then check the brake fluid level.

- 1) Remove the brake caliper (1).



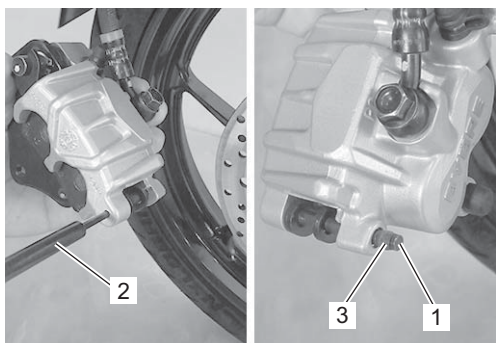
IF34J1420005-02

- 2) Remove the clip (1).



IF34J1420003-02

- 3) Push out the pad mounting pin (1) gradually tapping it with a suitable bar (2) and release fitting of the pad mounting pin ring (3).

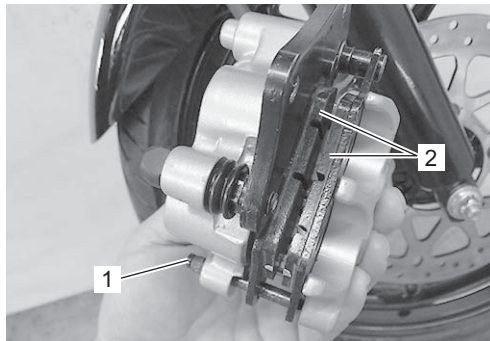


IF34J1420004-02

- 4) Remove the pad mounting pin (1) and brake pads (2).

NOTE

Do not operate the brake lever while removing the brake pads.

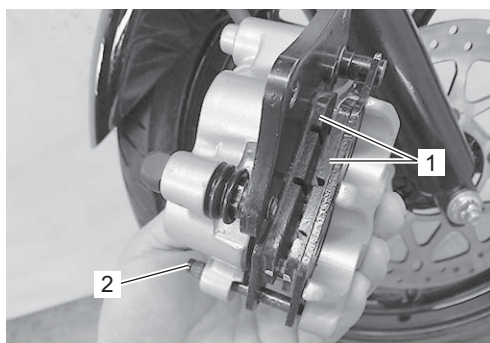


IF34J1420006-01

- 5) Clean up the caliper especially around the caliper pistons.
6) Install the new brake pads (1) and temporarily new pad mounting pin (2).

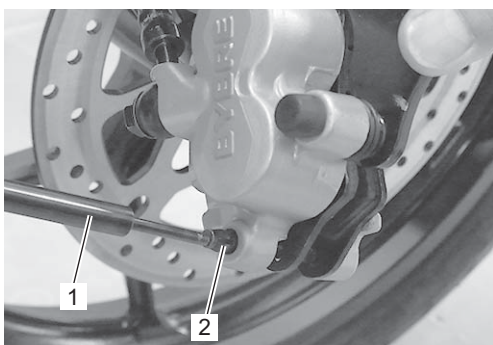
NOTE

- Replace the brake pads as a set.
- Pushing back the caliper pistons into the caliper will facilitate installation of the brake pads. At the time, observe the reservoir level not to exceed the upper level.



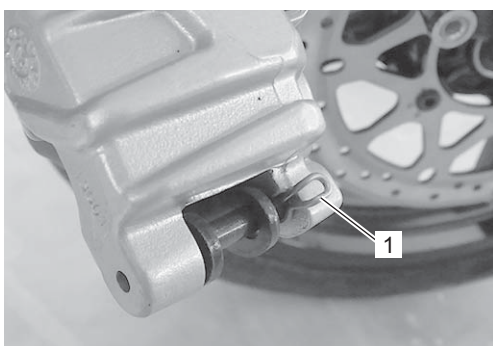
IF34J1420007-01

- 7) Insert the pad mounting pin gradually tapping it with the suitable bar (1) and fit the pad mounting pin ring (2).



IF34J1420009-02

- 8) Install the new clip (1).

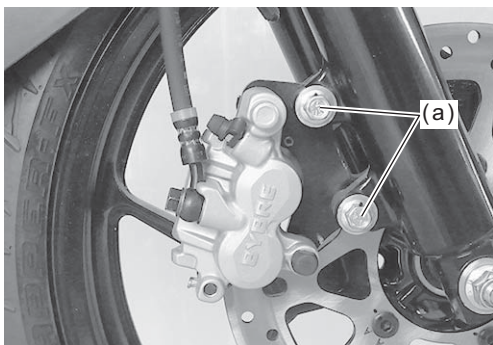


IF34J1420003-02

- 9) Tighten the brake caliper mounting bolts to the specified torque.

Tightening torque

Caliper mounting bolt (a): 26 N·m (2.7 kgf-m, 19.5 lbf-ft)



IF34J1420008-02

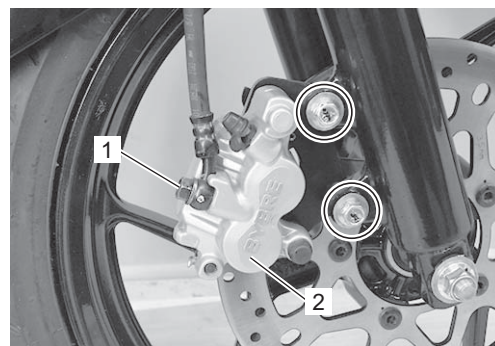
Front Brake Caliper Removal and Installation

BENF34J14206004

Removal

- 1) Drain brake fluid. (Page 4A-6)
- 2) Place a rag underneath the union bolt on the brake caliper to catch any spilt brake fluid.
- 3) Remove the brake hose from the caliper by removing the union bolt (1) and catch the brake fluid in a suitable receptacle.

- 4) Remove the caliper (2) by removing the caliper mounting bolts.



IF34J1420010-01

Installation

- 1) Install the brake caliper (1).
- 2) Tighten caliper mounting bolts (2) to the specified torque.

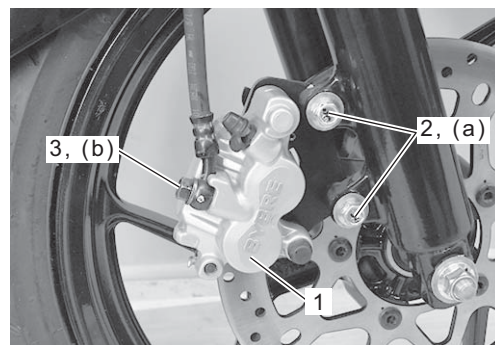
Tightening torque

Caliper mounting bolt (a): 26 N·m (2.7 kgf-m, 19.5 lbf-ft)

- 3) Install the brake hose union bolt (3) and new seal washers to brake hose.
- 4) After setting the brake hose union to the stopper, tighten the union bolt to the specified torque.

Tightening torque

Brake hose union bolt (b): 23 N·m (2.3 kgf-m, 17.0 lbf-ft)



IF34J1420011-01

- 5) Bleed air from the brake system after installing the caliper. (Page 4A-5)
- 6) Check the brake fluid leakage referring to "Brake Hose Inspection" in Section 4A (Page 4A-5) and brake operation.

Front Brake Caliper Disassembly and Reassembly

BENF34J14206005

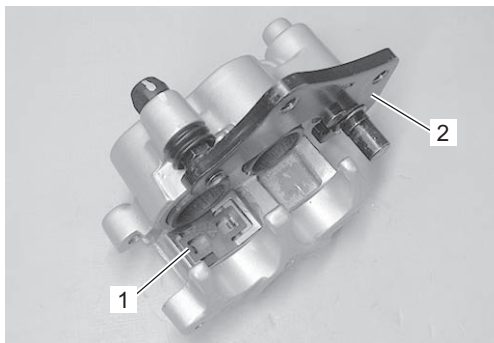
Refer to "Front Brake Caliper Removal and Installation" (Page 4B-3).

NOTICE

Take care not to damage piston and caliper cylinder of front brake caliper.

Disassembly

- 1) Remove the brake pads. (Page 4B-2)
- 2) Remove the pad spring (1) and caliper bracket (2).

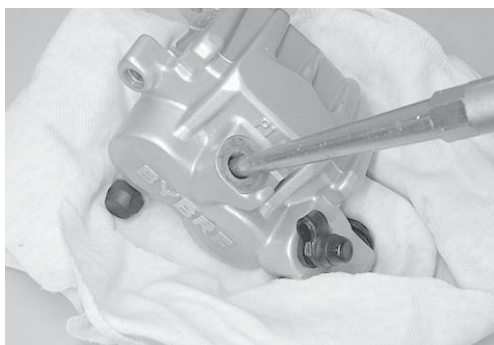


IF34J1420012-01

- 3) Remove the caliper pistons applying compressed air gradually from the hole for the brake hose.

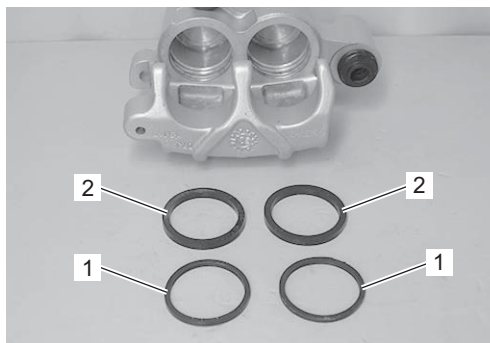
⚠ WARNING

Do not apply highly compressed air to the piston as it is. Place a cloth to prevent brake piston from jumping-out. Gradually apply compressed air. Do not place your fingers in front of brake piston while applying compressed air.



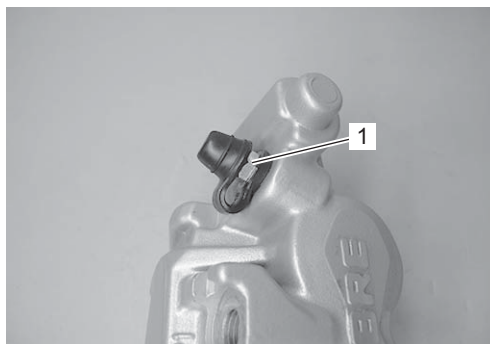
IF34J1420013-01

- 4) Remove the dust seals (1) and piston seals (2).



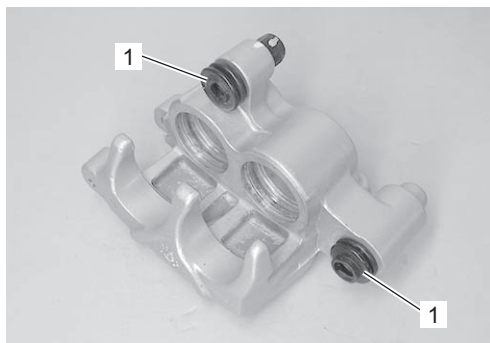
IF34J1420014-01

- 5) Remove the brake air bleeder valve (1).



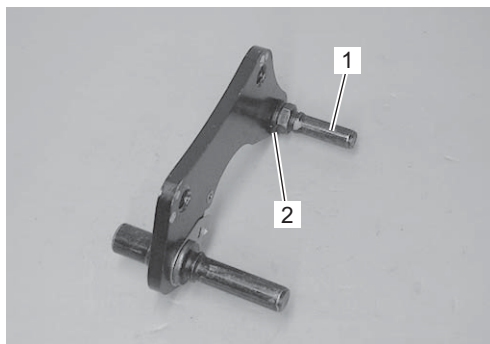
IF34J1420015-01

- 6) Remove the rubber boots (1).



IF34J1420030-01

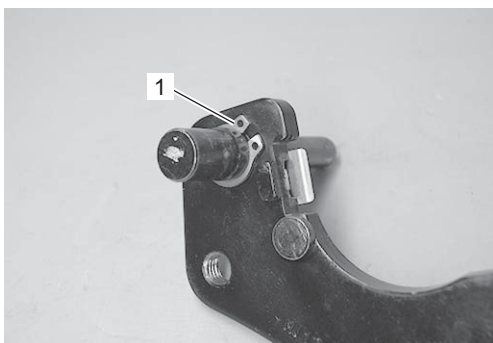
- 7) Remove the caliper bracket pin (1) and spacer (2).



IF34J1420031-01

- 8) Remove the snap ring (1) using the special tool.

Special tool
Snap Ring Pliers



IF34J1420034-01

Reassembly

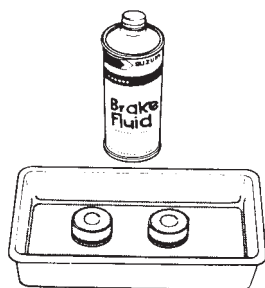
- 1) Wash the caliper bores and pistons with specified brake fluid. Particularly wash the dust seal grooves and piston seal grooves.

NOTICE

- Wash the caliper 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.

Brake fluid (DOT 3)

Brake fluid (DOT 4)



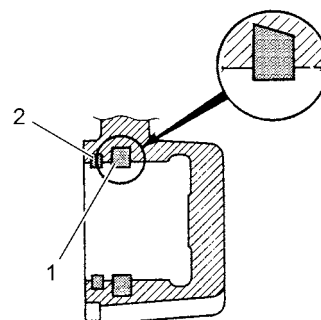
I649G1420012-02

- 2) Apply the brake fluid to new piston seals (1) and new dust seals (2).

Brake fluid (DOT 3)

Brake fluid (DOT 4)

- 3) Install the piston seals and dust seals.

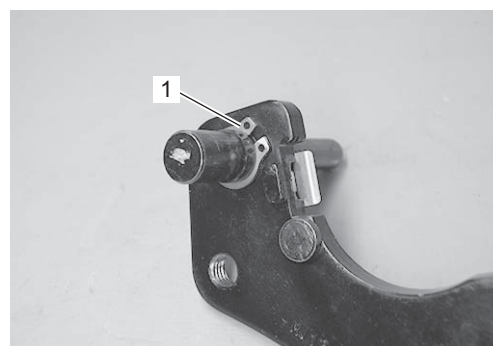


IE31J1420012-02

- 4) Install the caliper pistons to the brake caliper.

- 5) Install the new snap ring (1) using the special tool.

Special tool
Snap Ring Pliers



IF34J1420032-01

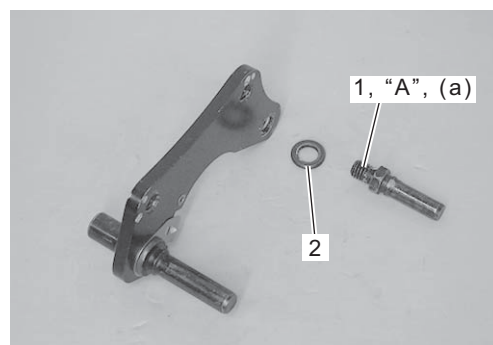
- 6) Apply thread lock to the thread portion of the caliper bracket pin (1).

"A": Thread lock cement (LOCTITE® *)**

- 7) Install the spacer (2) and caliper bracket pin, and tighten the caliper bracket pin to the specified torque.

Tightening torque

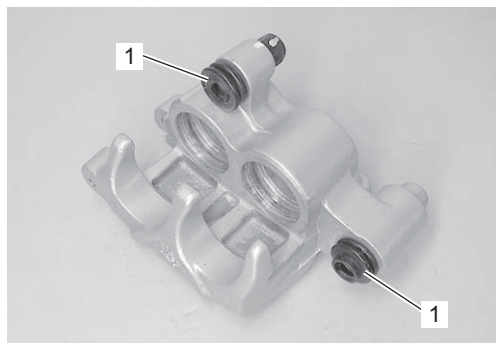
Caliper bracket pin (a): 8.5 N·m (0.87 kgf-m, 6.5 lbf-ft)



IF34J1420033-01

4B-6 Front Brakes:

- 8) Install the rubber boots (1).

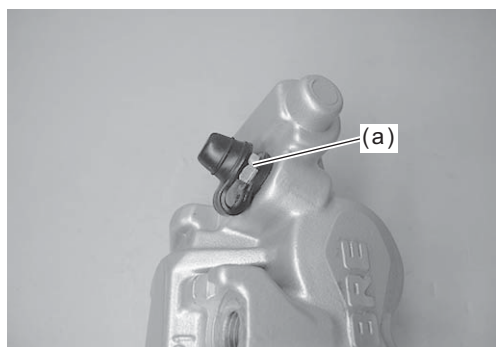


IF34J1420016-01

- 9) Install the brake air bleeder valve and tighten it to the specified torque.

Tightening torque

Brake air bleeder valve (a): 7.5 N·m (0.76 kgf-m, 5.5 lbf-ft)

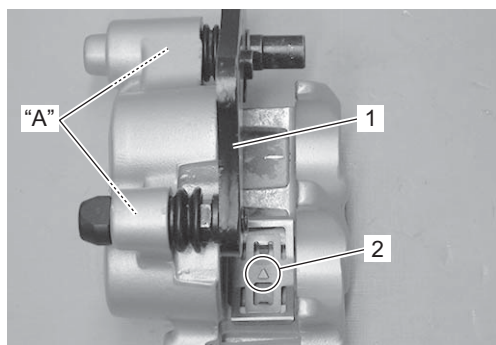


IF34J1420020-01

- 10) Apply grease to the sliding surface of the caliper bracket pins and install the caliper bracket (1).

“A”: (SUZUKI SILICONE GREASE)

- 11) Install the pad spring pointing the triangle mark (2) toward the brake disc rotation.



IF34J1420021-01

- 12) Install the brake pads. (Page 4B-2)

Front Brake Caliper Parts Inspection

BENF34J14206006

Refer to “Front Brake Caliper Disassembly and Reassembly” (Page 4B-4).

Brake Caliper Cylinder

Inspect the brake caliper cylinder wall for nicks, scratches or other damage. If any defect is found, replace the brake caliper with a new one.



IF34J1420022-01

Brake Caliper Piston

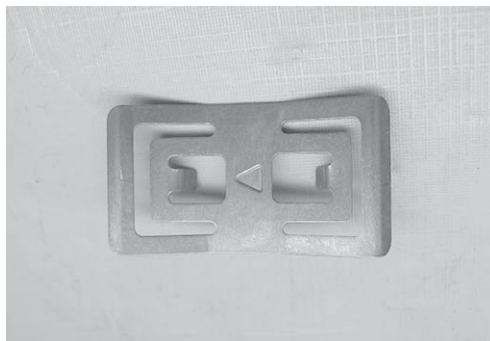
Inspect the brake caliper pistons surface for any scratches or other damage. If any defect is found, replace them with new ones.



IF34J1420023-01

Brake Pad Spring

Inspect the brake pad spring for damage and excessive bend. If any defects are found, replace it with a new one.



IF34J1420025-01

Brake Caliper Bracket / Brake Caliper Bracket Pin

Inspect the brake caliper bracket and caliper bracket pins for wear and other damage. If any defect is found, replace them with new ones.



IF34J1420026-02

Rubber Boot

Inspect the rubber boots for damage and cracks. If any defect is found, replace them with new ones.



IF34J1420027-01

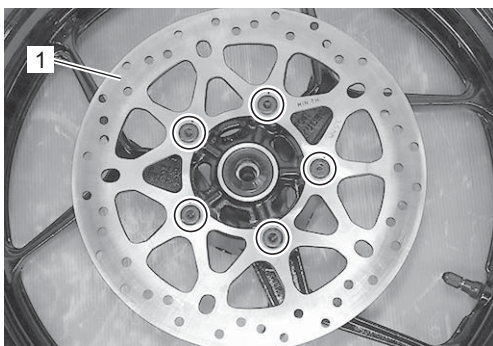
Front Brake Disc Removal and Installation

BENF34J14206007

Refer to "Front Wheel Assembly Removal and Installation" in Section 2D (Page 2D-2).

Removal

Remove the front brake disc (1).



IF34J1420028-01

Installation

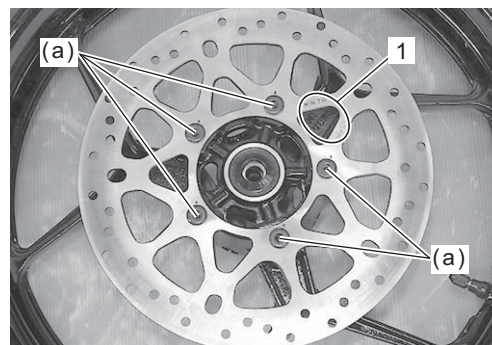
- 1) Make sure that the brake disc is clean and free of any grease.
- 2) Install the front brake disc and tighten the new brake disc bolts to the specified torque.

NOTE

The stamped mark (1) on the brake disc should face the outside.

Tightening torque

Brake disc bolt (a): 23 N·m (2.3 kgf-m, 17.0 lbf-ft)



IF34J1420029-01

Front Brake Disc Inspection

BENF34J14206008

Brake Disc Thickness

Check the brake disc for damage or cracks and measure the thickness using the micrometer.

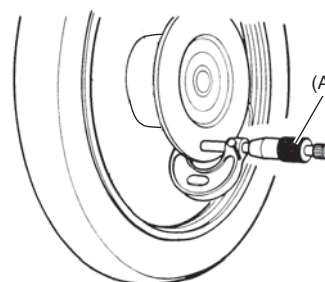
If the thickness is less than the service limit or if defect is found, replace the brake disc.

Front brake disc thickness

Service limit: 3.5 mm (0.14 in)

Special tool

(A): Micrometer



ID26J1420029-01

4B-8 Front Brakes:

Brake Disc Runout

- 1) Dismount the front brake pads.
Refer to "Front Brake Pad Replacement" (Page 4B-2).
- 2) Measure the runout using the dial gauge.
Replace the disc if the runout exceeds the service limit.

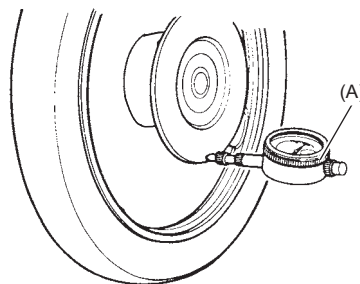
Brake disc runout

Service limit: 0.30 mm (0.012 in)

Special tool

(A): Dial gauge

(B): Dial gauge chuck



ID26J1420030-04

- 3) Remount the front brake pads.
Refer to "Front Brake Pad Replacement" (Page 4B-2).

Specifications

Tightening Torque Specifications

BENF34J14207001

Fastening part	Tightening torque			Note
	N·m	kgf-m	lbf-ft	
Caliper mounting bolt	26	2.7	19.5	☞ (Page 4B-3) / ☞ (Page 4B-3)
Brake hose union bolt	23	2.3	17.0	☞ (Page 4B-3)
Caliper bracket pin	8.5	0.87	6.5	☞ (Page 4B-5)
Brake air bleeder valve	7.5	0.76	5.5	☞ (Page 4B-6)
Brake disc bolt	23	2.3	17.0	☞ (Page 4B-7)

Reference:

For the tightening torques of fasteners not specified in this page, refer to:

"Front Brake Components" (Page 4B-1)

"Fasteners Information" in Section 0C (Page 0C-8)

Special Tools and Equipment

Recommended Service Material

BENF34J14208001

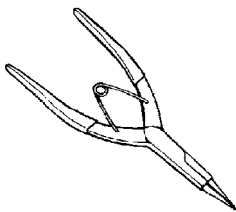
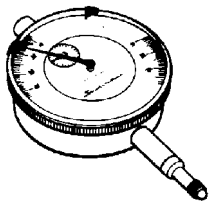
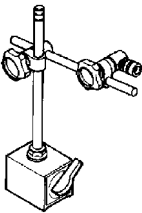
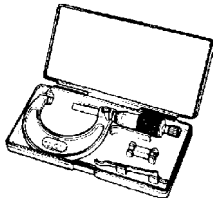
Material	SUZUKI recommended product or Specification		Note
Brake fluid	DOT 3	—	☞ (Page 4B-5) / ☞ (Page 4B-5)
	DOT 4	—	☞ (Page 4B-5) / ☞ (Page 4B-5)
Grease	SUZUKI SILICONE GREASE		☞ (Page 4B-6)
Thread lock cement	LOCTITE® ***	—	☞ (Page 4B-5)

NOTE

Required service materials are also described in:
“Front Brake Components” (Page 4B-1)

Special Tool

BENF34J14208002

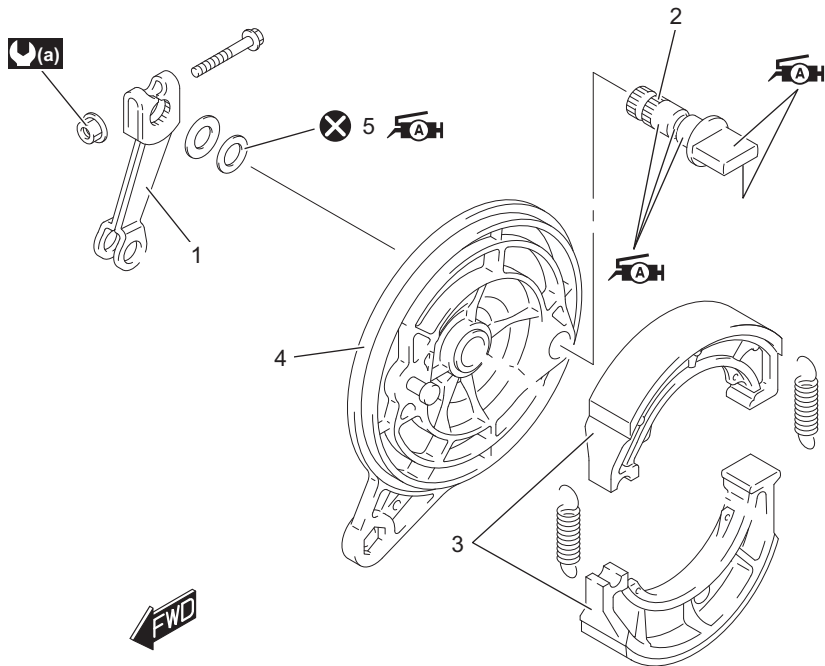
Snap ring pliers (External) ☞ (Page 4B-5) / ☞ (Page 4B-5)		Dial gauge (10 x 0.01 mm) ☞ (Page 4B-8)	
Dial gauge chuck ☞ (Page 4B-8)		Micrometer (0 - 25 mm) ☞ (Page 4B-7)	

Rear Brakes

Repair Instructions

Rear Brake Components

BENF34J14306001



IF34J1430001-02

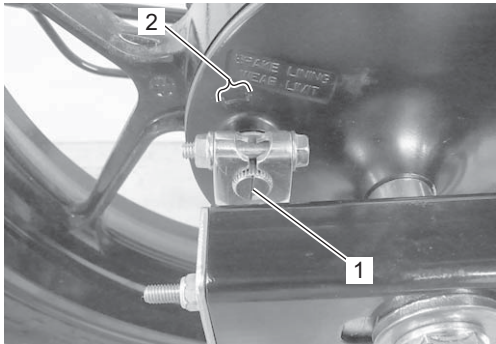
1. Rear brake cam lever	4. Rear brake panel	: Apply grease.
2. Rear brake cam	5. O-ring	: Do not reuse.
3. Rear brake shoe	: 7 N·m (0.71 kgf-m, 5.5 lbf-ft)	

Rear Brake Shoe Wear Inspection

BENF34J14306002

This motorcycle is equipped with the brake shoe wear limit indicator on the brake panel.

- 1) Check that the rear brake system is properly adjusted. Refer to “Brake Pedal Free Travel Inspection and Adjustment” in Section 4A (Page 4A-5).
- 2) While operating the rear brake, check that the slit (1) is within the range (2) embossed on the brake panel. If the slit goes beyond the range, the brake shoe assembly should be replaced with a new set of shoes. (Page 4C-1)



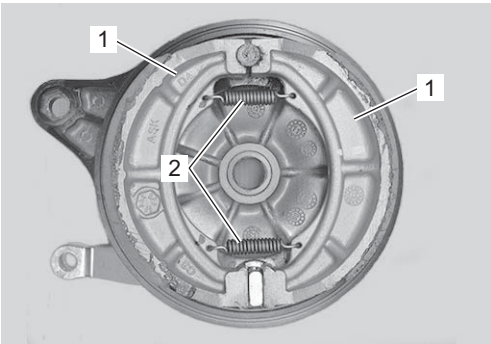
IF34J1430002-01

Rear Brake Shoe Replacement

BENF34J14306003

Refer to “Rear Brake Panel Removal and Installation” (Page 4C-2).

- 1) Remove the brake shoes (1) with springs (2) from the brake panel.



IF34J1430003-01

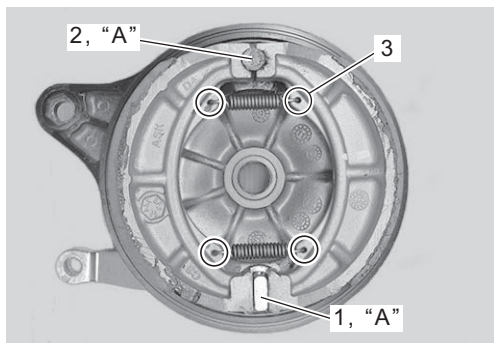
- 2) Clean up the contacting surfaces of the brake shoes and brake panel.
- 3) Apply grease to the brake cam (1) and anchor pin (2) sliding surfaces slightly.

“A”: (SUZUKI SUPER GREASE A)

- 4) Install the new brake shoes with spring hooks (3) facing inside.

NOTE

Do not use tool.



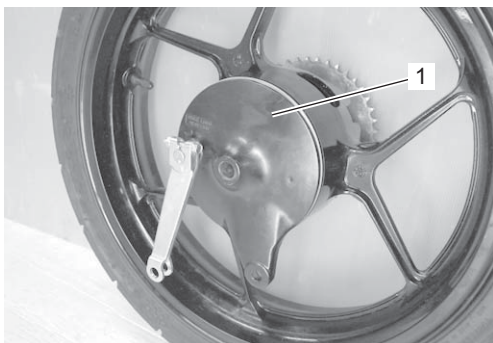
IF34J1430004-01

Rear Brake Panel Removal and Installation

BENF34J14306004

Removal

- 1) Remove the rear wheel assembly. (Page 2D-5)
- 2) Remove the brake panel (1).



IF34J1430005-01

Installation

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

- Make sure that the brake drum is clean and free of any grease.
- Adjust the brake pedal free travel. (Page 4A-5)

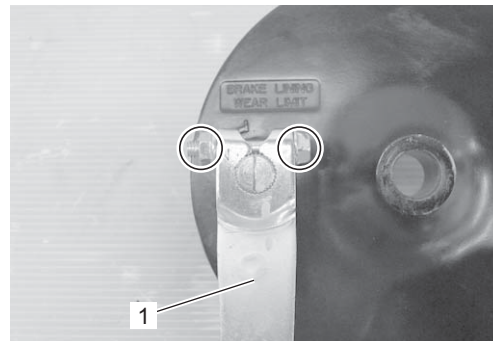
Rear Brake Panel Disassembly and Reassembly

BENF34J14306005

Refer to “Rear Brake Shoe Replacement” (Page 4C-1).

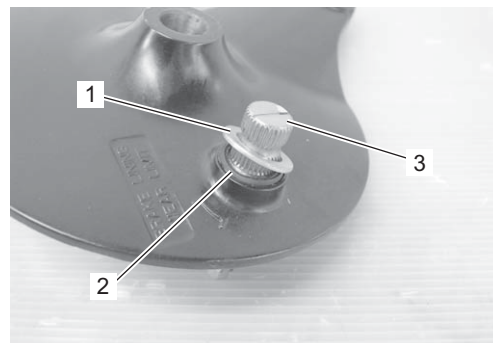
Disassembly

- 1) Remove the brake cam lever bolt and nut.
- 2) Remove the brake cam lever (1).



IF34J1430006-01

- 3) Remove the washer (1), O-ring (2) and brake cam (3).



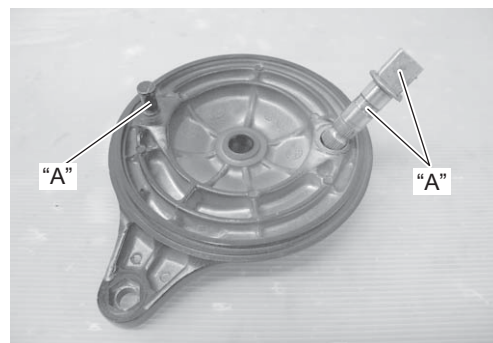
IF34J1430007-01

Reassembly

- 1) Apply grease lightly to the brake cam, cam face and anchor pin.

“A” : (SUZUKI SUPER GREASE A)

- 2) Install the brake cam.



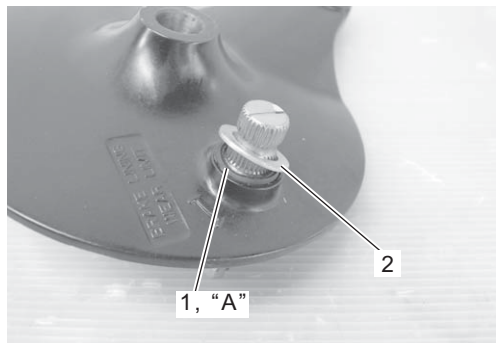
IF34J1430008-01

4C-3 Rear Brakes:

3) Apply grease to the new O-ring (1).

“A”: (SUZUKI SUPER GREASE A)

4) Install the O-ring and washer (2).



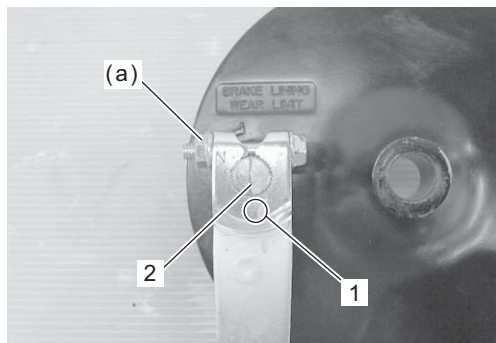
IF34J1430009-01

5) Install the brake cam lever by aligning its punch mark (1) with slit (2) of the brake cam.

6) Tighten the brake cam lever nut to the specified torque.

Tightening torque

Rear brake cam lever nut (a): 7 N·m (0.71 kgf-m, 5.5 lbf-ft)



IF34J1430010-01

Rear Brake Parts Inspection

BENF34J14306006

Refer to “Rear Wheel Assembly Removal and Installation” in Section 2D (Page 2D-5), “Rear Brake Shoe Replacement” (Page 4C-1) and “Rear Brake Panel Disassembly and Reassembly” (Page 4C-2).

Brake Drum

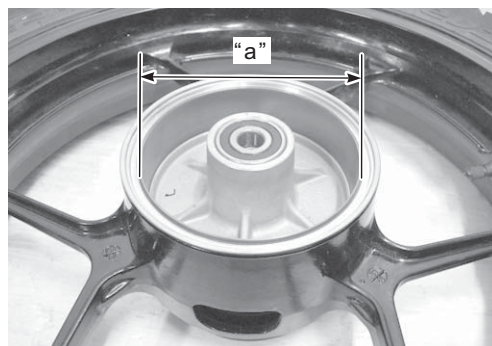
Inspect the brake drum and measure the brake drum I.D. to determine the extent of the wear. If the measurement exceeds the service limit, replace the rear wheel with a new one.

Special tool

Vernier Caliper

Rear brake drum I.D. “a”

Service limit: 130.7 mm (5.15 in)



IF34J1430011-01

Brake Shoe

Inspect the brake shoes for crack or damage. If any defect is found, replace the brake shoes as a set.



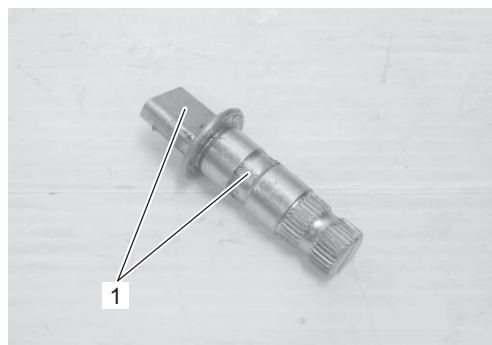
IF34J1430012-01

Brake Cam

Inspect the brake cam for abnormal wear.

Place the brake cam into the brake panel and check for smooth rotation.

Check that the rotating parts (1) are coated with sufficient grease.



IF34J1430013-01

Specifications

Tightening Torque Specifications

BENF34J14307001

Fastening part	Tightening torque			Note
	N·m	kgf·m	lbf·ft	
Rear brake cam lever nut	7	0.71	5.5	☞ (Page 4C-3)

Reference:

For the tightening torques of fasteners not specified in this page, refer to:

“Rear Brake Components” (Page 4C-1)

“Fasteners Information” in Section 0C (Page 0C-8)

Special Tools and Equipment

Recommended Service Material

BENF34J14308001

Material	SUZUKI recommended product or Specification	Note
Grease	SUZUKI SUPER GREASE A	☞ (Page 4C-2) / ☞ (Page 4C-2) / ☞ (Page 4C-3)

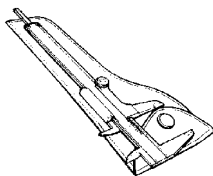
NOTE

Required service materials are also described in:

“Rear Brake Components” (Page 4C-1)

Special Tool

BENF34J14308002

Vernier calipers (200 mm) ☞ (Page 4C-3)		
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Section 5

Transmission / Transaxle

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Precautions

Precautions

Precautions for Transmission / Transaxle

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

BENF34J15000001

Manual Transmission

Diagnostic Information and Procedures

Manual Transmission Symptom Diagnosis

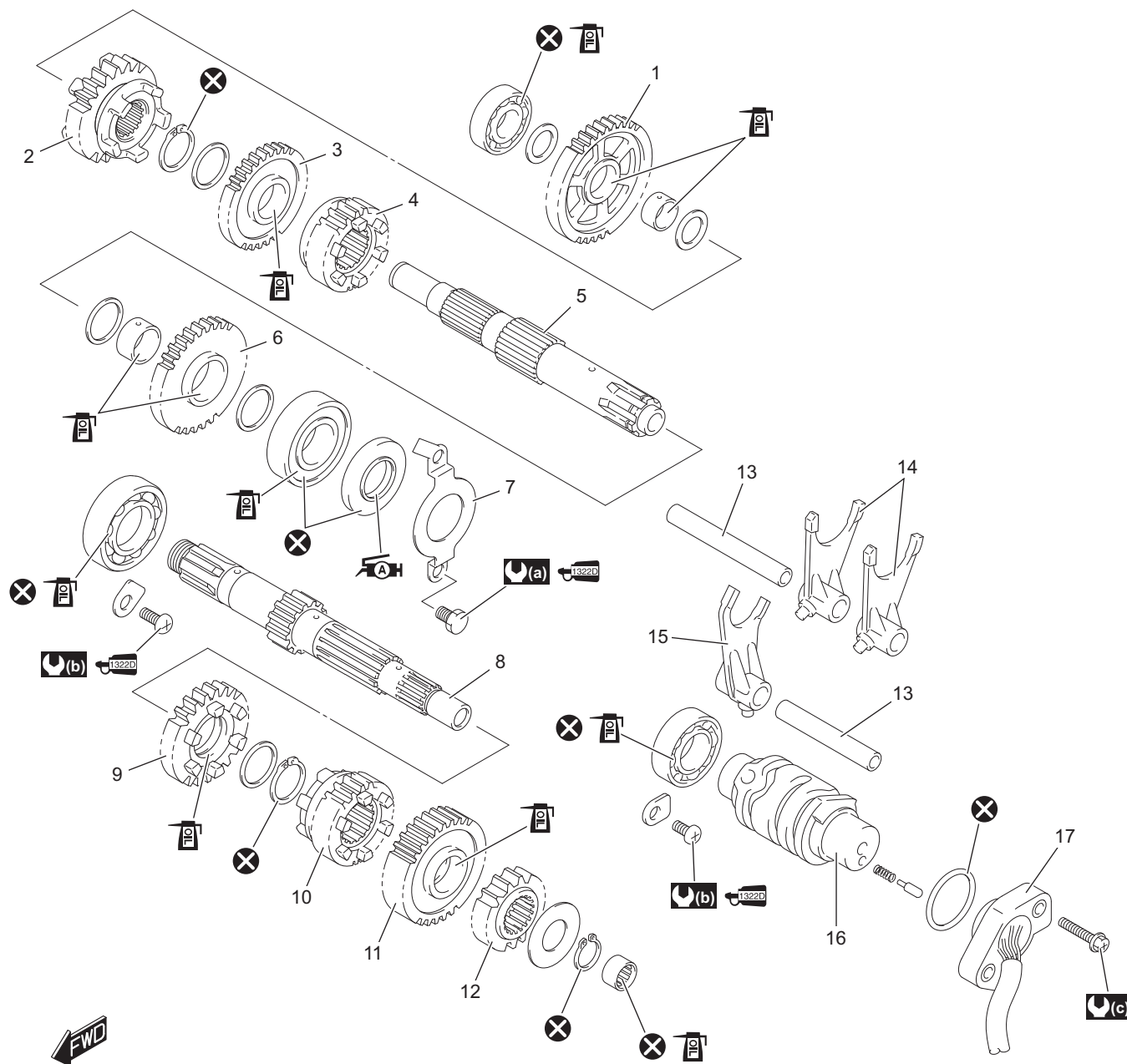
BENF34J15204001

Condition	Possible cause	Correction / Reference Item
Noisy engine (Noise seems to come from the transmission)	Worn or rubbing gear.	Replace. ⌚(Page 5B-4)
	Worn countershaft spline.	Replace countershaft. ⌚(Page 5B-4)
	Worn driveshaft spline.	Replace driveshaft. ⌚(Page 5B-4)
	Worn bearing.	Replace. ⌚(Page 5B-7)
Transmission will not shift	Broken gearshift cam.	Replace. ⌚(Page 5B-3)
	Distorted gearshift fork.	Replace. ⌚(Page 5B-3)
	Worn gearshift pawl.	Replace. ⌚(Page 5B-12)
Transmission will not shift back	Broken gearshift shaft return spring.	Replace. ⌚(Page 5B-12)
	Rubbing or stuck gearshift shaft.	Repair or replace. ⌚(Page 5B-12)
	Worn or distorted gearshift fork.	Replace. ⌚(Page 5B-3)
Transmission jumps out of gear	Worn shifting gears on driveshaft or countershaft.	Replace. ⌚(Page 5B-4)
	Worn or distorted gearshift fork.	Replace. ⌚(Page 5B-3)
	Weakened gearshift cam stopper spring.	Replace. ⌚(Page 5B-12)
	Worn gearshift cam plate.	Replace. ⌚(Page 5B-12)

Repair Instructions

Transmission Components

BENF34J15206001



IF34J1520001-02

1. 1st driven gear	9. 4th drive gear	17. GP switch
2. 4th driven gear	10. 3rd drive gear	: 10 N·m (1.0 kgf-m, 7.5 lbf-ft)
3. 3rd driven gear	11. 5th drive gear	: 8.5 N·m (0.87 kgf-m, 6.5 lbf-ft)
4. 5th driven gear	12. 2nd drive gear	: 4 N·m (0.41 kgf-m, 3.0 lbf-ft)
5. Driveshaft	13. Gearshift fork shaft	: Apply grease.
6. 2nd driven gear	14. Gearshift fork No.1	: Apply engine oil.
7. Oil seal retainer	15. Gearshift fork No.2	: Apply thread lock to the thread part.
8. Countershaft	16. Gearshift cam	: Do not reuse.

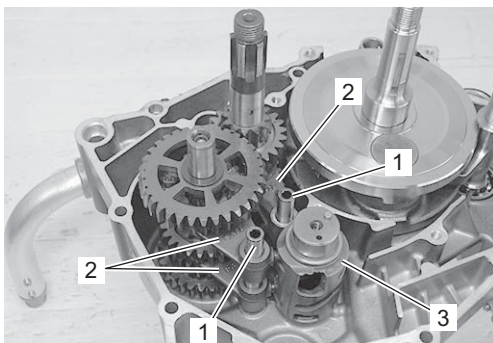
Transmission Removal and Installation

BENF34J15206002

Refer to "Crankcase Assembly Disassembly" in Section 1D (Page 1D-36) and "Crankcase Assembly Reassembly" in Section 1D (Page 1D-37).

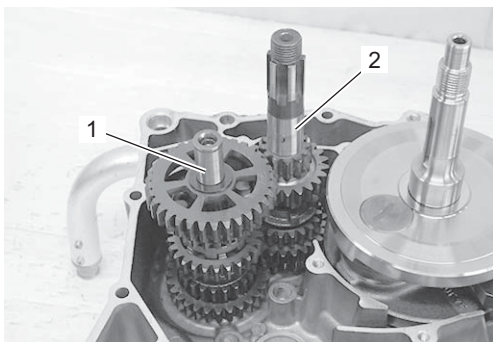
Removal

- 1) Remove the gearshift fork shafts (1), gearshift forks (2) and gearshift cam (3).



IF34J1520029-02

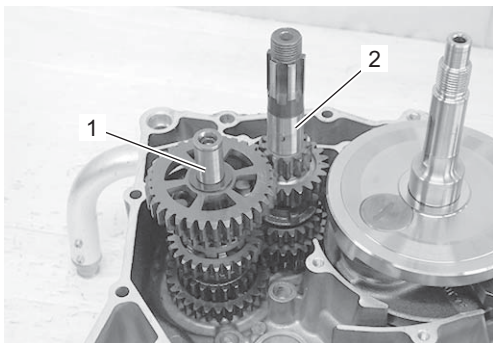
- 2) Remove the driveshaft assembly (1) with the countershaft assembly (2).



IF34J1520030-02

Installation

- 1) Install the driveshaft assembly (1) with the countershaft assembly (2).

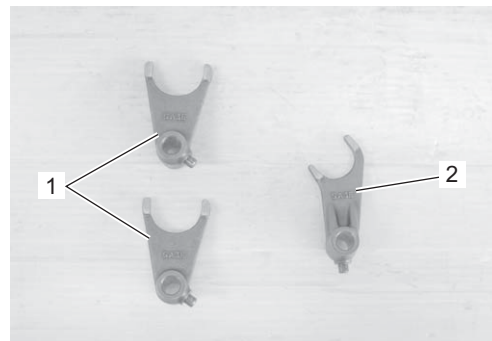


IF34J1520030-02

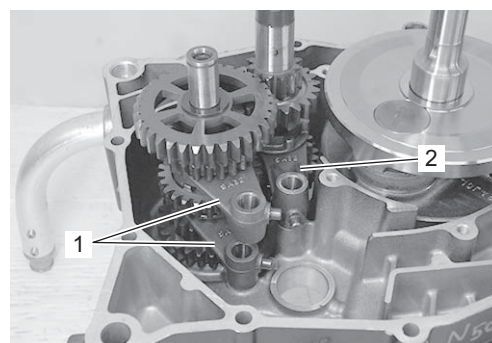
- 2) Install the gearshift forks No. 1 (1) and No. 2 (2).

NOTE

The gearshift forks No. 1 (1) are same parts.



IF34J1520031-01

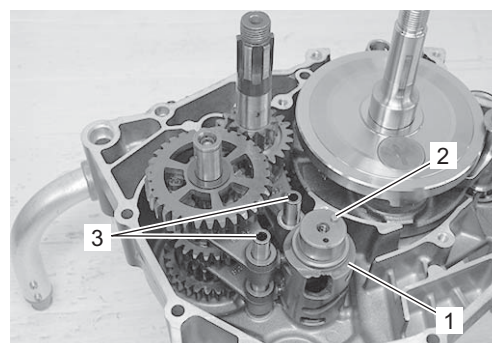


IF34J1520032-02

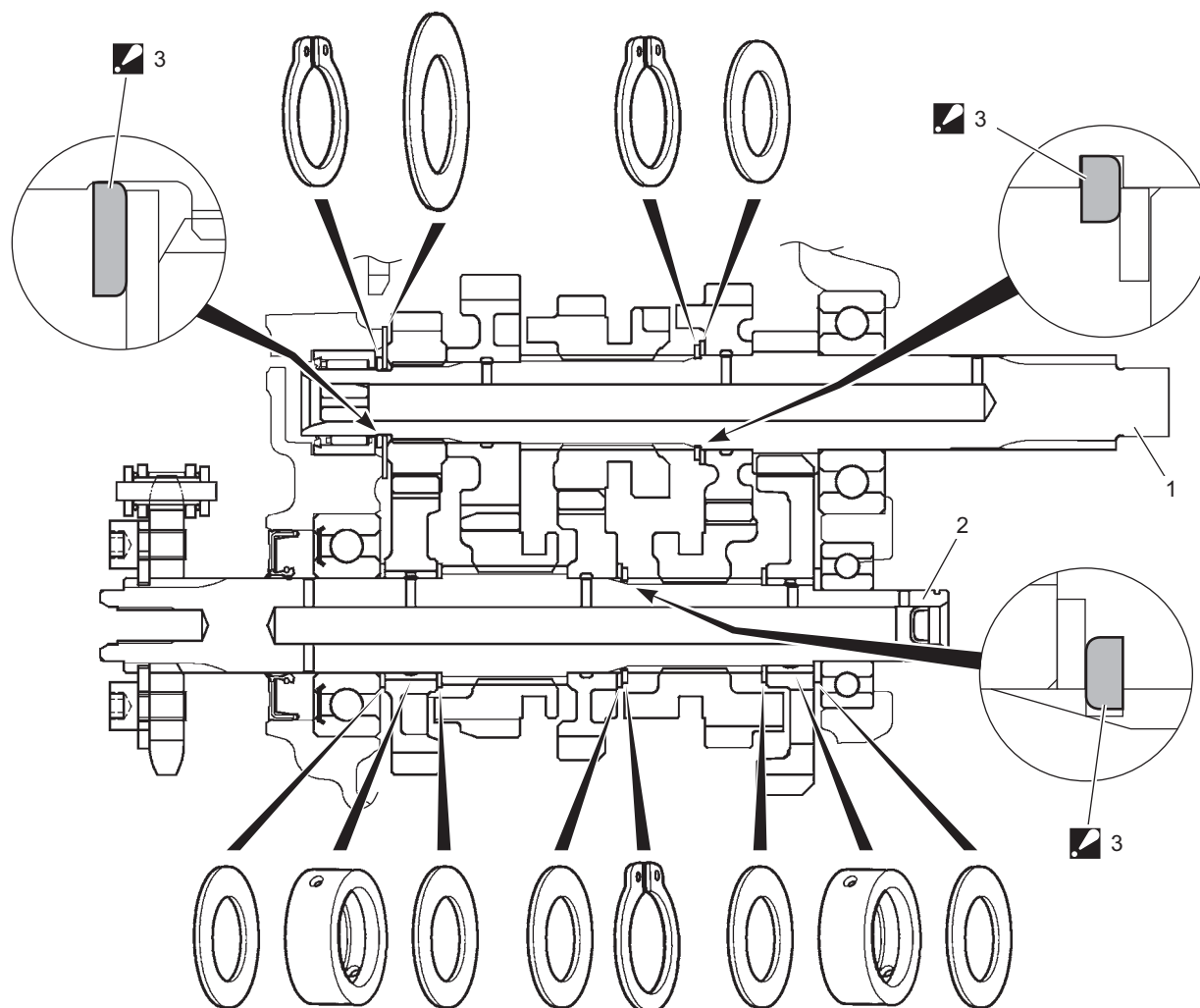
- 3) Install the gearshift cam (1) so that the projection (2) face upward.
- 4) Install the gearshift fork shafts (3).

NOTE

- After the gearshift fork shafts and gearshift forks have been fitted, make sure that the gears engage normally.
- Set the transmission gears to the neutral position.



IF34J1520033-02



IF34J1520002-02

1. Countershaft

2. Driveshaft

3. Snap ring
: Face the sharp edge outside.

Countershaft Assembly / Driveshaft Assembly Disassembly and Reassembly

BENF34J15206004

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

Disassembly

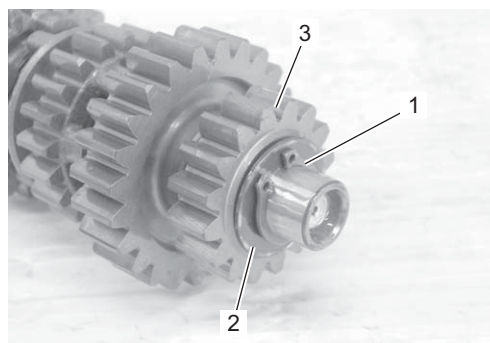
NOTE

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.

Countershaft

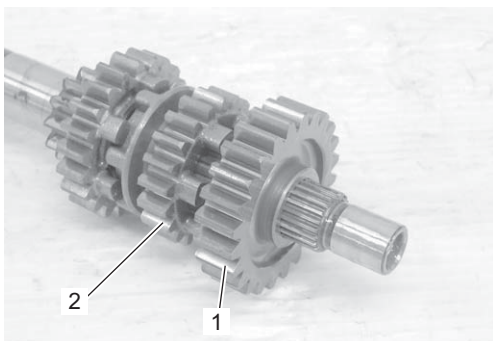
- 1) Remove the snap ring (1), washer (2) and 2nd drive gear (3).

Special tool
Spring Ring Pliers



IF34J1520034-01

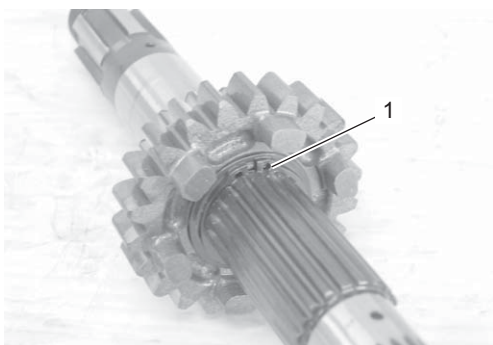
- 2) Remove the 5th drive gear (1) and 3rd drive gear (2).



IF34J1520035-01

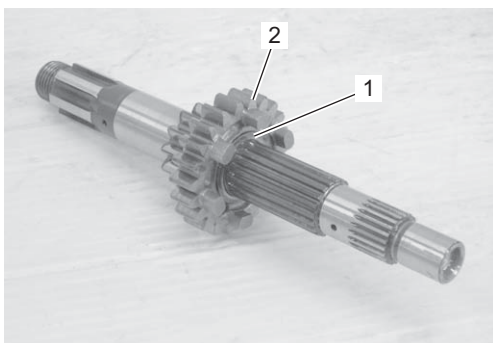
- 3) Remove the snap ring (1).

Special tool
Snap Ring Pliers



IF34J1520036-01

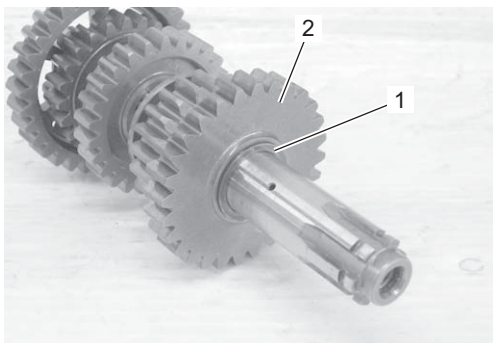
- 4) Remove the washer (1) and 4th drive gear (2).



IF34J1520037-01

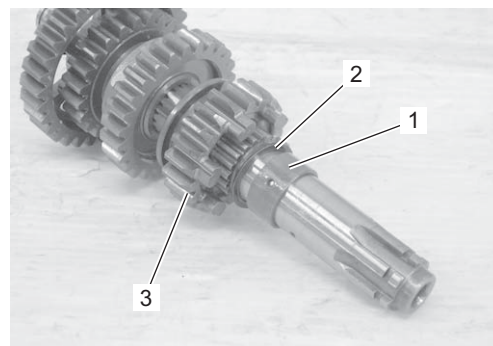
Driveshaft

- 1) Remove the washer (1) and 2nd driven gear (2).



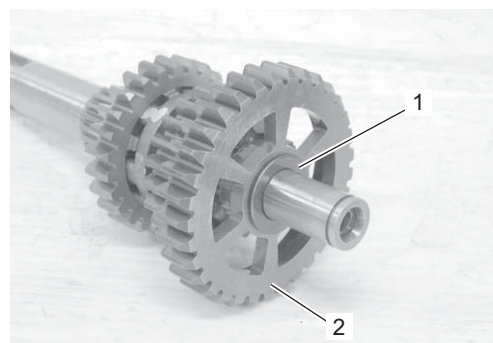
IF34J1520038-01

- 2) Remove the 2nd driven gear bushing (1), washer (2) and 5th driven gear (3).



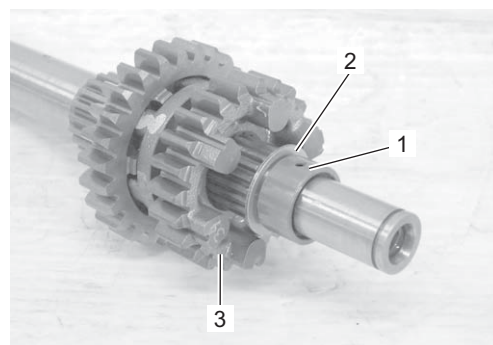
IF34J1520039-01

- 3) Remove the washer (1) and 1st driven gear (2).



IF34J1520040-01

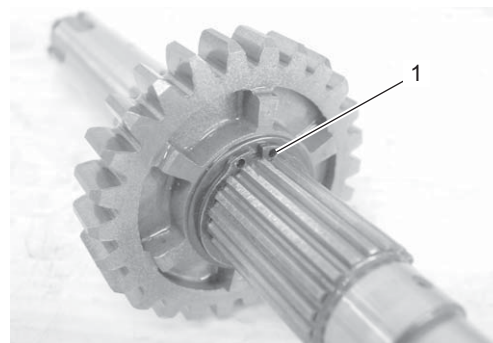
- 4) Remove the 1st driven gear bushing (1), washer (2) and 4th driven gear (3).



IF34J1520041-01

- 5) Remove the snap ring (1).

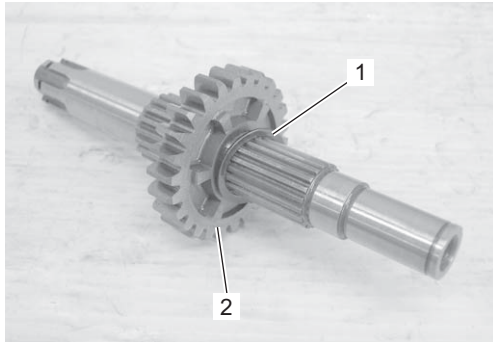
Special tool
Snap Ring Pliers



IF34J1520042-01

5B-6 Manual Transmission:

- 6) Remove the washer (1) and 3rd driven gear (2).



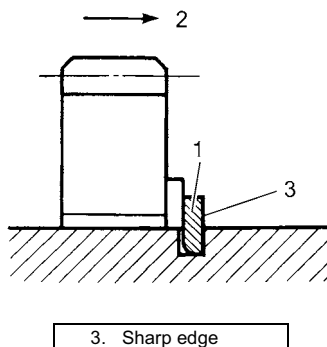
IF34J1520043-01

Reassembly

Reassemble the countershaft and driveshaft in the reverse order of disassembly. Pay attention to the following point:

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-4).
 - 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 a snap rings, make sure that it is completely seated in its groove and securely fitted.
 - Before installing the gears, apply engine oil to each rotating and sliding part.
- When installing a new snap ring (1), pay attention to its direction. Fit it to the side where the thrust (2) is as shown in the illustration.



IE31J1520022-01

Gearshift Fork / Gearshift Cam Inspection

BENF34J15206005

Refer to "Countershaft Assembly / Driveshaft Assembly Disassembly and Reassembly" (Page 5B-4).

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.

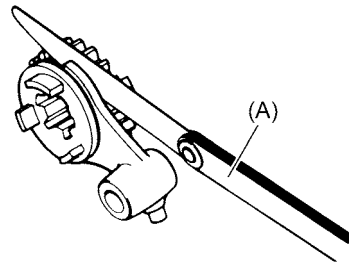
Special tool

(A): Thickness Gauge

Gearshift fork to groove clearance

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

Service limit: 0.5 mm (0.020 in)



IE31J1520026-01

Gearshift Fork Groove Width

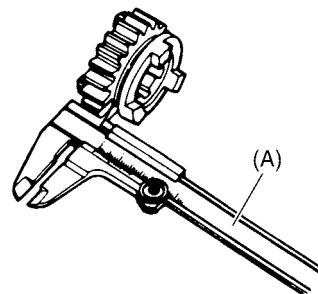
Measure the gearshift fork groove width using the vernier calipers.

Special tool

(A): Vernier Caliper

Gearshift fork groove width

Standard: 5.0 – 5.1 mm (0.197 – 0.201 in)



IE31J1520027-01

Gearshift Fork Thickness

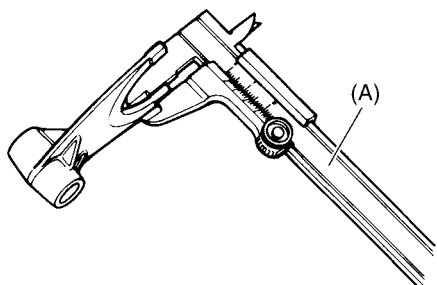
Measure the gearshift fork thickness using the vernier calipers.

Special tool

(A): Vernier Caliper

Gearshift fork thickness

Standard: 4.8 – 4.9 mm (0.189 – 0.193 in)



IE31J1520028-01

Gearshift Cam

Inspect the gearshift cam groove for abnormal wear and damage. If any defects are found, replace the gearshift cam with a new one.



IF34J1520044-01

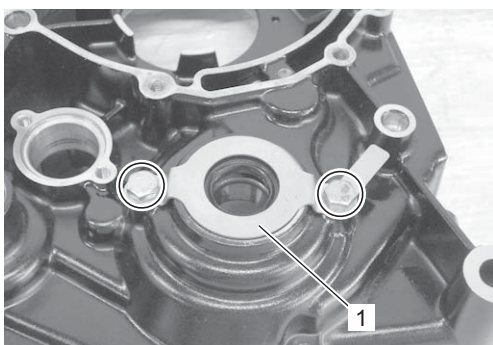
Transmission Bearing / Oil Seal Removal and Installation

BENF34J15206006

Refer to "Crankcase Assembly Disassembly" in Section 1D (Page 1D-36) and "Crankcase Assembly Reassembly" in Section 1D (Page 1D-37).

Removal**Left crankcase**

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

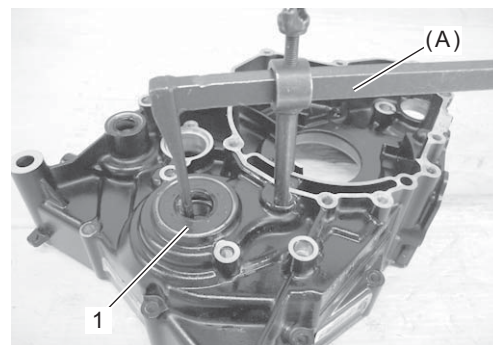


IF34J1520045-01

- 2) Remove the driveshaft oil seal (1) using the special tool.

Special tool

(A): Oil seal remover



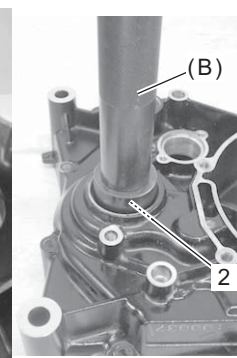
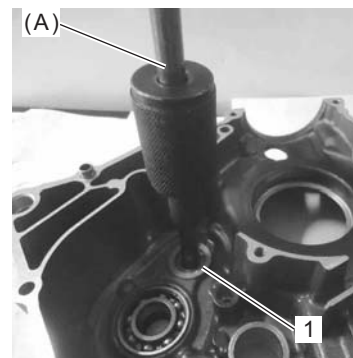
IF34J1520046-01

- 3) Remove the countershaft bearing (1) and driveshaft bearing (2) using the special tools.

Special tool

(A): Bearing Remover Set

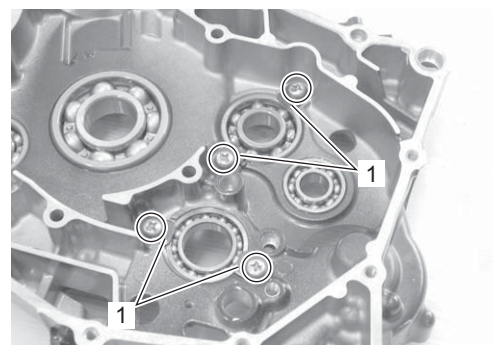
(B): Bearing Installer Set



IF34J1520047-01

Right crankcase

- 1) Remove the bearing retainers (1).

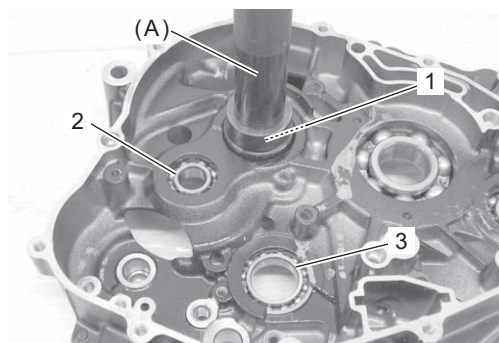


IF34J1520048-02

- 2) Remove the countershaft bearing (1), driveshaft bearing (2) and gearshift cam bearing (3) using the special tool.

Special tool

(A): Bearing installer set



IF34J1520049-01

Installation

Left crankcase

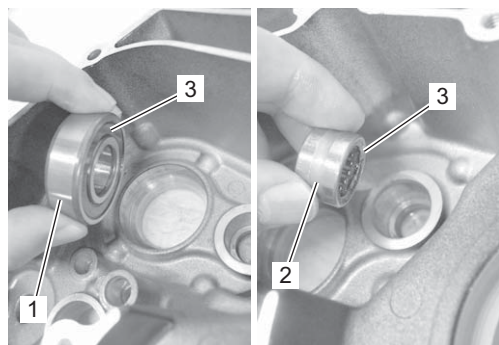
- 1) Install the new driveshaft bearing (1) and new countershaft bearing (2) using the special tool.

NOTE

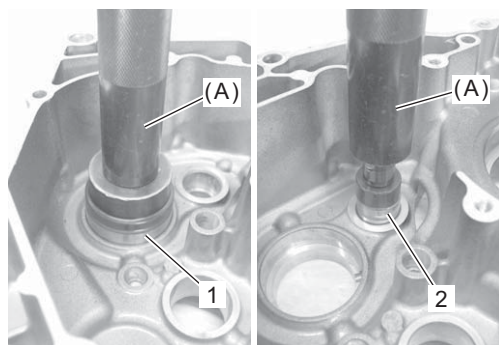
The sealed side (3) of the bearings faces outside.

Special tool

(A): Bearing installer set



IF34J1520050-01

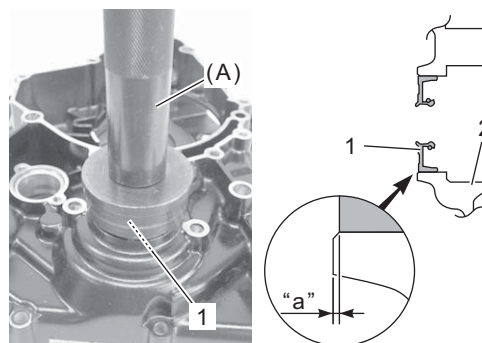


IF34J1520051-01

- 2) Install the new driveshaft oil seal (1) using the special tool.

Special tool

(A): Bearing installer set



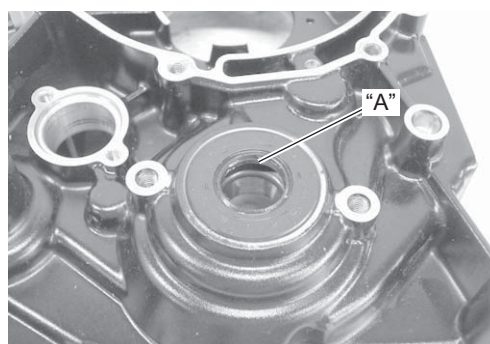
IF34J1520052-01

2. Left crankcase

"a": 0 - 1 mm (0 - 0.04 in)

- 3) Apply grease to the oil seal lip.

"A" : (SUZUKI SUPER GREASE A)



IF34J1520053-01

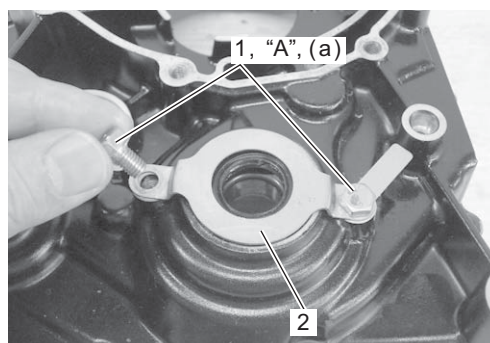
- 4) Apply thread lock to the oil seal retainer bolts (1).

"A": (THREAD LOCK CEMENT 1322D)

- 5) Install the oil seal retainer (2) and tighten its bolts to the specified torque.

Tightening torque

Driveshaft oil seal retainer bolt (a): 10 N·m (1.0 kgf-m, 7.5 lbf-ft)

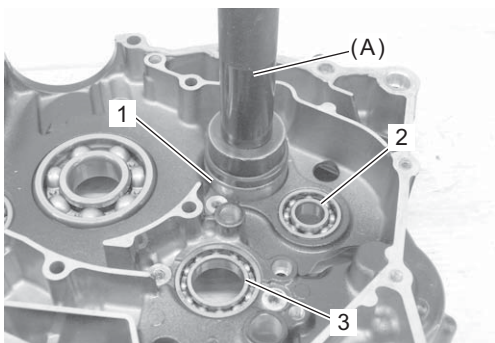


IF34J1520054-01

Right crankcase

- 1) Install the new countershaft bearing (1), new driveshaft bearing (2) and new gearshift cam bearing (3) using the special tool.

Special tool
(A):



IF34J1520055-01

- 2) Apply thread lock to the bearing retainer screws (1).

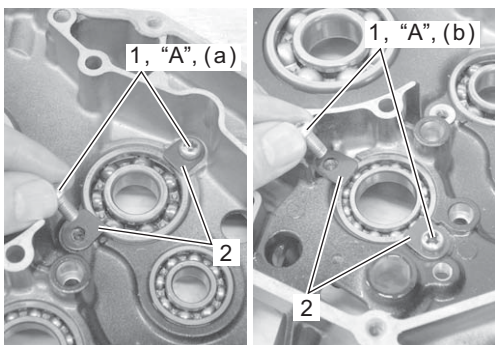
“A”: (THREAD LOCK CEMENT 1322D)

- 3) Install the bearing retainers (2) and tighten its screws to the specified torque.

Tightening torque

Countershaft bearing retainer screw (a): 8.5 N·m (0.87 kgf-m, 6.5 lbf-ft)

Gearshift bearing retainer screw (b): 8.5 N·m (0.87 kgf-m, 6.5 lbf-ft)



IF34J1520056-01

Transmission Bearing / Oil Seal Inspection

BENF34J15206008

Refer to “Crankcase Bearing / Oil Seal Inspection” in Section 1D (Page 1D-41).

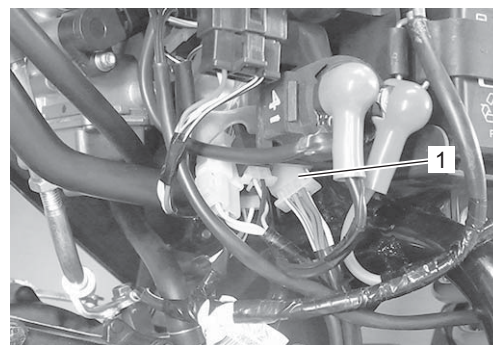
GP Switch Inspection

BENF34J15206009

- 1) Remove the left frame side cover. (Page 9D-12)
- 2) Disconnect the GP switch lead wire coupler (1).

NOTICE

When disconnecting and connecting the neutral switch coupler, make sure to turn “OFF” the ignition switch, or electronic parts may get damaged.



IF34J1520003-03

- 3) Check the continuity between the BI wire and ground with the transmission in “NEUTRAL”. If any defect is found, replace the GP switch with a new one.

Color Position	BI	Ground
Neutral	○	○
Except neutral		

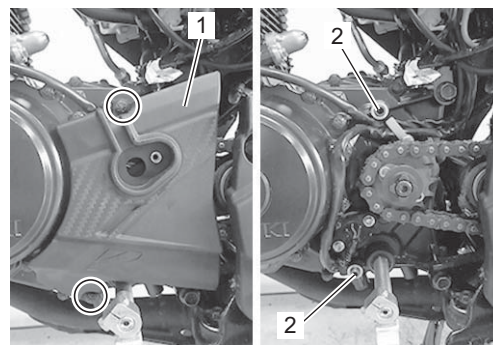
IF34J1520004-02

GP Switch Removal and Installation

BENF34J15206010

Removal

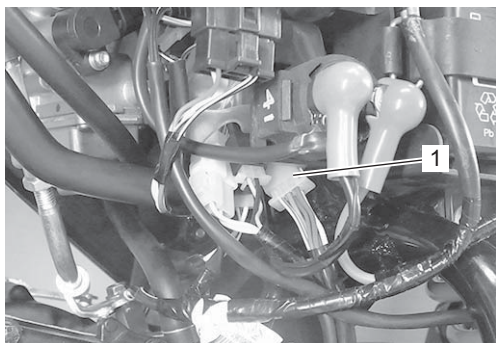
- 1) Turn the ignition switch OFF.
- 2) Remove the left frame side cover: (Page 9D-12)
- 3) Remove the speed sensor from the engine sprocket cover. (Page 1C-4)
- 4) Remove the engine sprocket cover (1) and dowel pins (2).



IF34J1520057-01

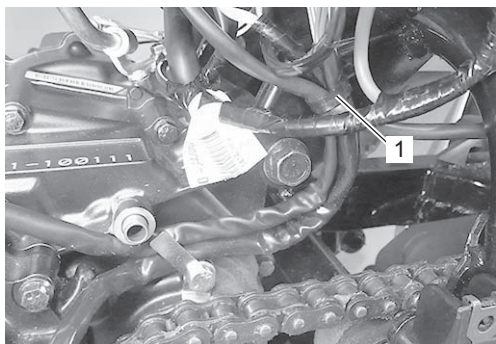
5B-10 Manual Transmission:

- 5) Disconnect the GP switch lead wire coupler (1).



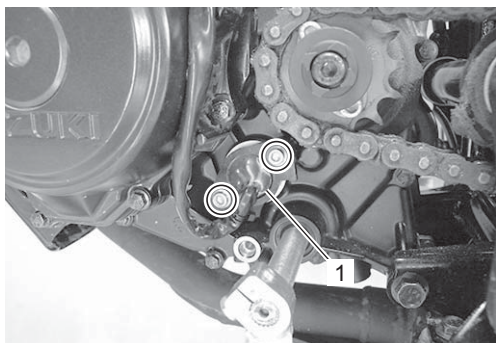
IF34J1520003-03

- 6) Remove the clamp (1).



IF34J1520005-02

- 7) Remove the GP switch (1).

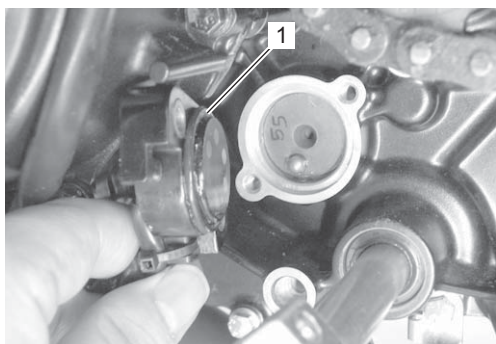


IF34J1520006-02

Installation

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

- Install the new O-ring (1) to the GP switch.

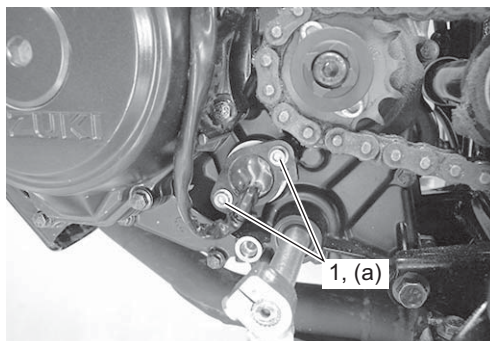


IF34J1520007-01

- Tighten the GP switch mounting bolts (1) to the specified torque.

Tightening torque

GP switch mounting bolt (a): 4 N·m (0.41 kgf-m, 3.0 lbf-ft)



IF34J1520008-02

- Route the GP switch lead wire. Refer to "Wiring Harness Routing Diagram" in Section 9A (Page 9A-5).

Gearshift Lever Removal and Installation

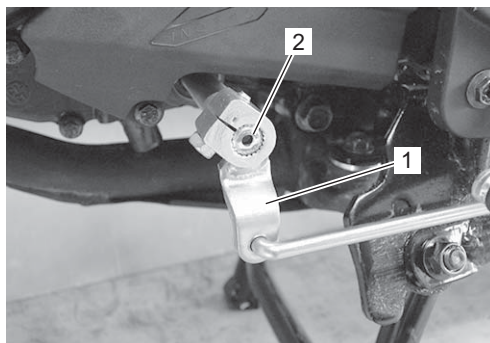
BENF34J15206011

Removal

- 1) Remove the gearshift link arm (1).

NOTE

Mark the position of the gearshift link arm on the gearshift shaft (2) before removing the link arm.



IF34J1520009-02

- 2) Remove the gearshift lever. Refer to "Gearshift Lever Construction" (Page 5B-11).

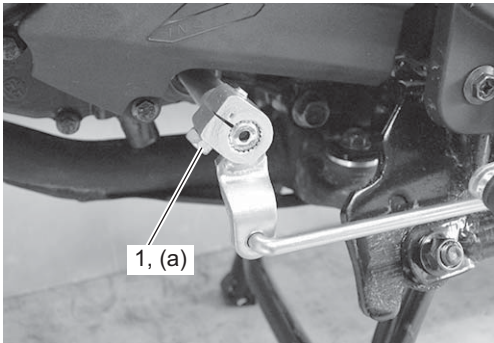
Installation

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

- Install the gearshift link arm so that the gearshift lever height becomes the specified range. (Page 5B-11)
- Tighten the gearshift link arm bolt (1) to the specified torque.

Tightening torque

Gearshift link arm bolt (a): 10 N·m (1.0 kgf-m, 7.5 lbf-ft)



IF34J1520010-02

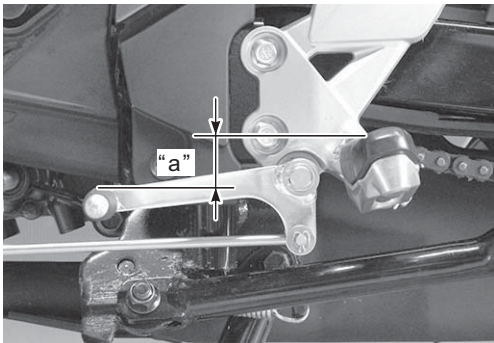
Gearshift Lever Height Inspection

BENF34J15206012

Inspect the gearshift lever height “a” between the pedal top face and footrest.

Gearshift lever height “a”

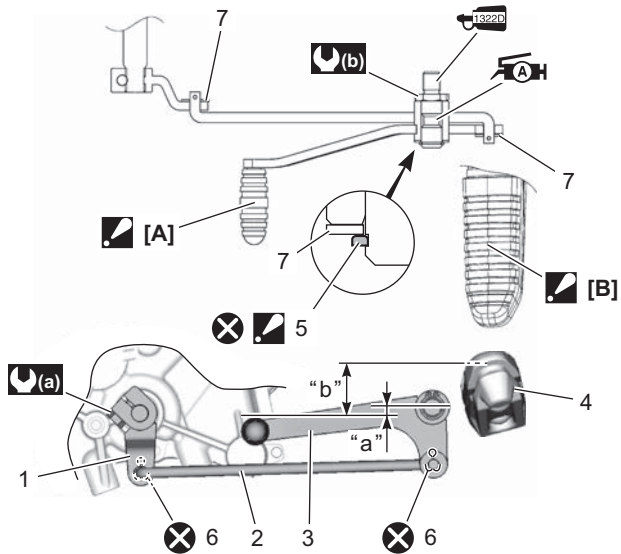
Standard: 23 – 37 mm (0.91 – 1.46 in)



IF34J1520011-02

Gearshift Lever Construction

BENF34J15206013

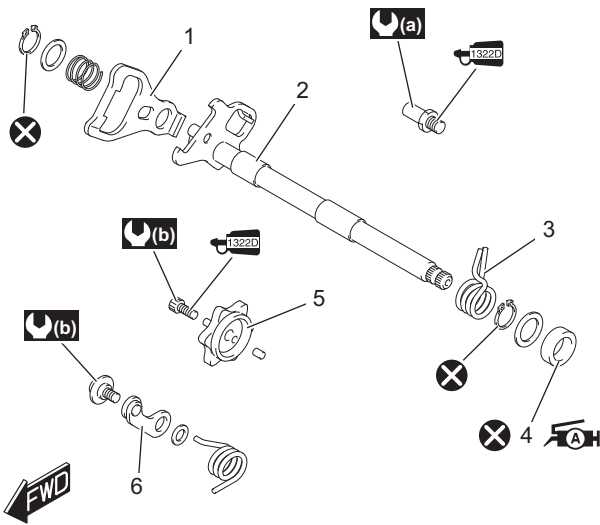


IF34J1520012-05

[A]: Gear shift lever height measuring point	7. Washer
[B]: Footrest upper surface	“a”: 1 – 11 mm (0.04 – 0.43 in)
1. Gearshift link arm	“b”: 23 – 37 mm (0.91 – 1.46 in)
2. Gearshift link rod	(a) : 10 N·m (1.0 kgf-m, 7.5 lbf-ft)
3. Gearshift lever	(b) : 40 N·m (4.1 kgf-m, 29.5 lbf-ft)
4. Footrest	: Apply thread lock to thread part.
5. Snap ring : Face the sharp edge outside.	: Apply grease.
6. Cotter pin	: Do not reuse.

Gearshift Shaft / Gearshift Cam Plate Components

BENF34J15206014



IF34J1520013-03

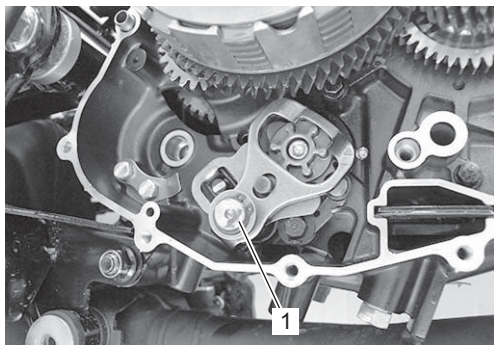
1.	Gearshift cam drive plate
2.	Gearshift shaft
3.	Gearshift shaft return spring
4.	Gearshift shaft oil seal
5.	Gearshift cam plate
6.	Gearshift cam stopper
(a)	: 19 N·m (1.9 kgf-m, 14.0 lbf-ft)
(b)	: 10 N·m (1.0 kgf-m, 7.5 lbf-ft)
Ⓐ	: Apply grease.
1322D	: Apply thread lock to the thread part.
⊗	: Do not reuse.

Gearshift Shaft / Gearshift Cam Plate Removal and Installation

BENF34J15206015

Removal

- Remove the following parts.
 - Gearshift lever: (Page 5B-10)
 - Kick starter shaft assembly: (Page 11-12)
- Remove the gearshift shaft assembly (1).

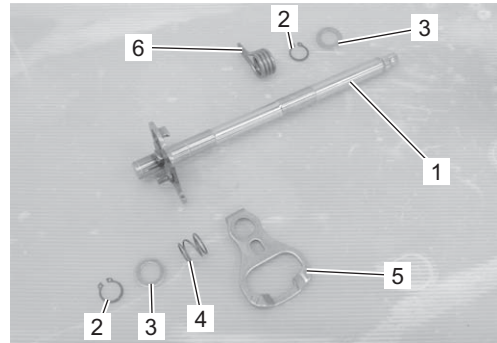


IF34J1520014-02

- Remove the following parts from the gearshift shaft (1).
 - Snap ring (2)
 - Washer (3)
 - Spring (4)

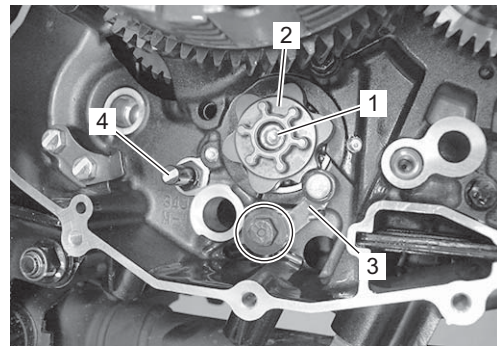
- Gearshift cam drive plate (5)
- Gearshift shaft return spring (6)

Special tool Snap Ring Plier



IF34J1520015-01

- Remove the gearshift cam plate bolt (1) and gearshift cam plate (2).
- Remove the gearshift cam stopper (3).
- Remove the gearshift arm stopper (4).



IF34J1520016-02

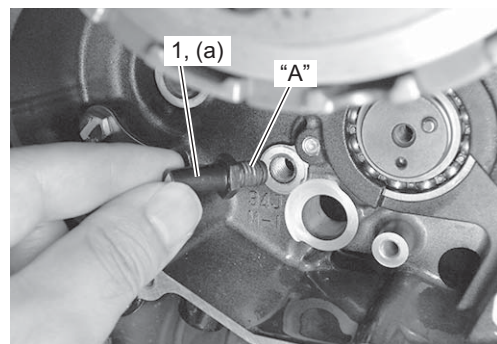
Installation

- Apply a small quantity of thread lock to the gearshift arm stopper (1) and tighten it to the specified torque.

“A”: (THREAD LOCK CEMENT 1322D)

Tightening torque

Gearshift arm stopper (a): 19 N·m (1.9 kgf-m, 14.0 lbf-ft)



IF34J1520017-02

- Install the gearshift cam stopper (1), bolt (2), washer (3) and spring (4).

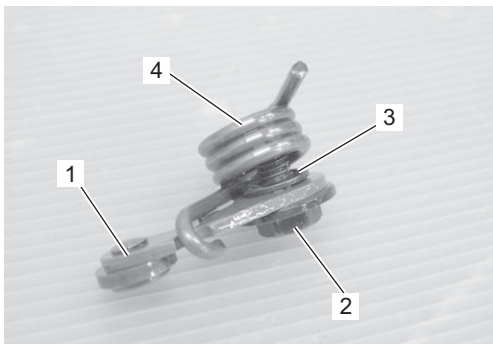
- 3) Tighten the gearshift cam stopper bolt (2) to the specified torque.

NOTE

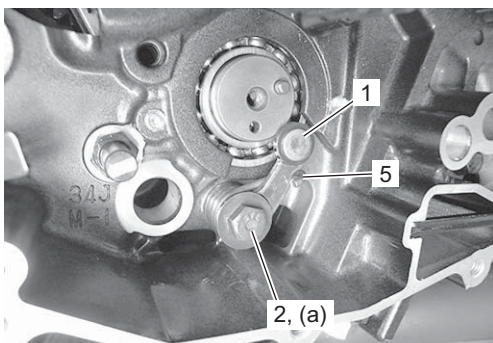
Hook the return spring end (5) to the gearshift cam stopper (1).

Tightening torque

Gearshift cam stopper bolt (a): 10 N·m (1.0 kgf-m, 7.5 lbf-ft)



IF34J1520018-01

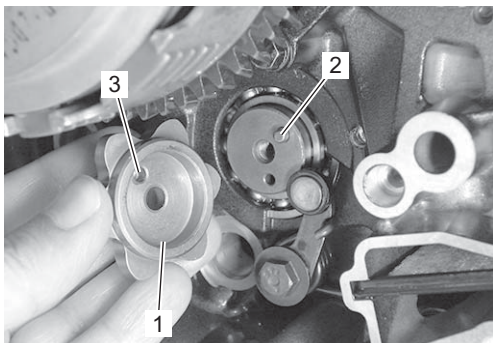


IF34J1520019-02

- 4) Check the gearshift cam stopper moves smoothly.
5) Locate the gearshift cam in the neutral position.
6) Install the gearshift cam plate (1).

NOTE

Align the gearshift cam projection (2) with the gearshift cam plate hole (3).



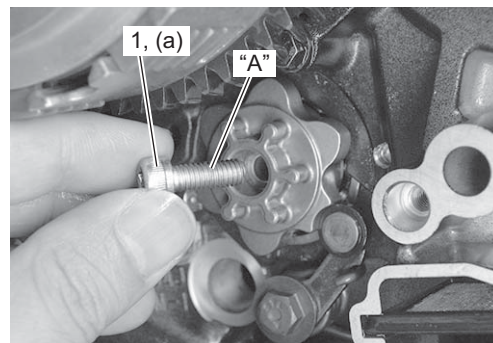
IF34J1520020-02

- 7) Apply a small quantity of thread lock to the gearshift cam plate bolt (1) and tighten it to the specified torque.

“A”: (THREAD LOCK CEMENT 1322D)

Tightening torque

Gearshift cam plate bolt (a): 10 N·m (1.0 kgf-m, 7.5 lbf-ft)

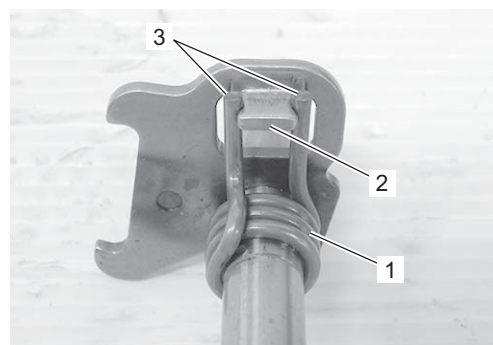


IF34J1520021-02

- 8) Install the gearshift shaft return spring (1).

NOTE

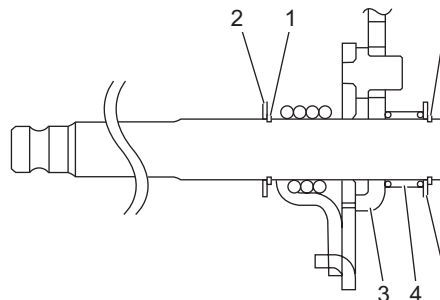
Position the stopper (2) of gearshift arm between the shaft return spring ends (3).



IF34J1520022-02

- 9) Install the following parts.

- New snap ring (1)
- Washer (2)
- Gearshift cam drive plate (3)
- Spring (4)

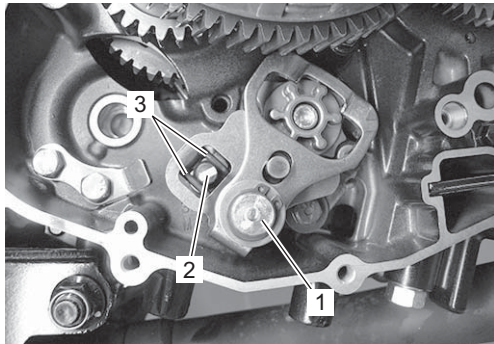


IF34J1520028-01

10) Install the gearshift shaft assembly (1).

NOTE

Pinch the gearshift arm stopper (2) with return spring ends (3).



IF34J1520023-02

11) Install the removed parts.

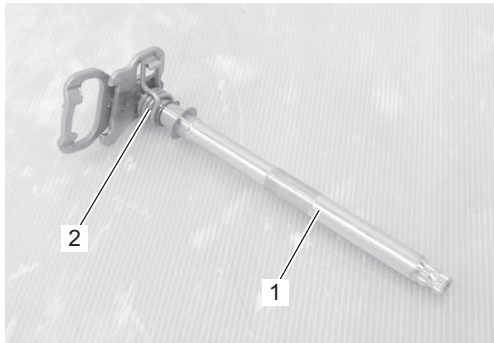
Gearshift Linkage Inspection

BENF34J15206016

Refer to "Gearshift Shaft / Gearshift Cam Plate Removal and Installation" (Page 5B-12).

Gearshift Shaft

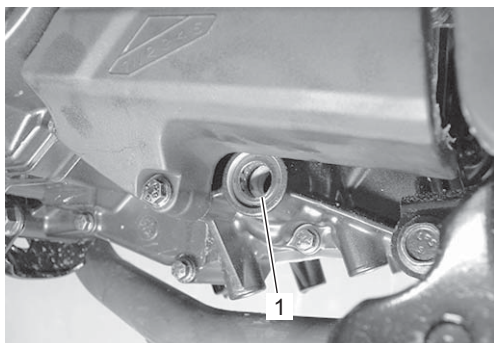
Check the gearshift shaft (1) for bend or wear.
Check the return spring (2) for damage or fatigue.
If any defects are found, replace the defective part(-s).



IF34J1520024-01

Gearshift Shaft Oil Seal

Inspect the gearshift shaft oil seal lip (1) for damage or wear. If any defect is found, replace the oil seal with a new one.



IF34J1520025-02

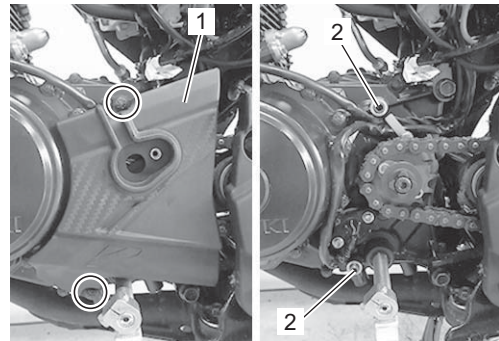
Gearshift Shaft Oil Seal Removal and Installation

BENF34J15206017

Refer to "Gearshift Shaft / Gearshift Cam Plate Removal and Installation" (Page 5B-12).

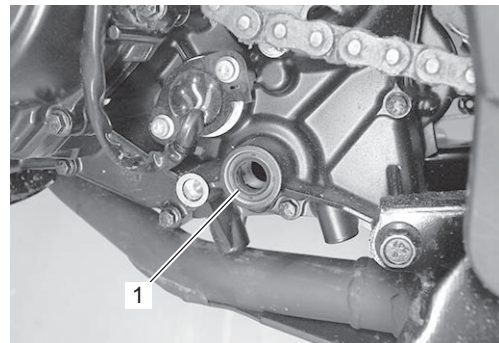
Removal

- 1) Remove the speed sensor from the engine sprocket cover. (Page 1C-4)
- 2) Remove the engine sprocket cover (1) and dowel pins (2).



IF34J1520057-01

- 3) Remove the gearshift shaft oil seal (1).



IF34J1520026-02

Installation

- 1) Install the new oil seal (1) with the special tool.

NOTE

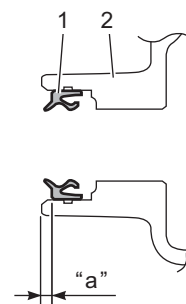
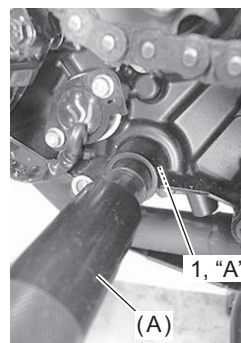
Install the gearshift shaft oil seal to the specified depth from the left crankcase end.

Special tool

(A): Bearing installer set

2) Apply grease to the oil seal lip.

“A”: (SUZUKI SUPER GREASE A)



IF34J1520027-03

2. Left crankcase

“a”: 2 – 3 mm (0.08 – 0.12 in)

3) Install the removed parts.

Specifications

Tightening Torque Specifications

BENF34J15207001

Fastening part	Tightening torque			Note
	N·m	kgf·m	lbf·ft	
Driveshaft oil seal retainer bolt	10	1.0	7.5	☞ (Page 5B-8)
Countershaft bearing retainer screw	8.5	0.87	6.5	☞ (Page 5B-9)
Gearshift bearing retainer screw	8.5	0.87	6.5	☞ (Page 5B-9)
GP switch mounting bolt	4	0.41	3.0	☞ (Page 5B-10)
Gearshift link arm bolt	10	1.0	7.5	☞ (Page 5B-11)
Gearshift arm stopper	19	1.9	14.0	☞ (Page 5B-12)
Gearshift cam stopper bolt	10	1.0	7.5	☞ (Page 5B-13)
Gearshift cam plate bolt	10	1.0	7.5	☞ (Page 5B-13)

Reference:

For the tightening torques of fasteners not specified in this page, refer to:

“Transmission Components” (Page 5B-2)

“Gearshift Lever Construction” (Page 5B-11)

“Gearshift Shaft / Gearshift Cam Plate Components” (Page 5B-12)

“Fasteners Information” in Section 0C (Page 0C-8)

Special Tools and Equipment

Recommended Service Material

BENF34J15208001

Material	SUZUKI recommended product or Specification	Note
Grease	SUZUKI SUPER GREASE A	☞ (Page 5B-8) / ☞ (Page 5B-15)
Thread lock cement	THREAD LOCK CEMENT 1322D	☞ (Page 5B-8) / ☞ (Page 5B-9) / ☞ (Page 5B-12) / ☞ (Page 5B-13)

NOTE

Required service materials are also described in:

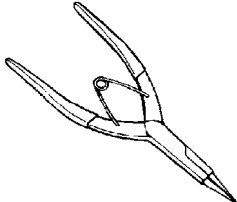
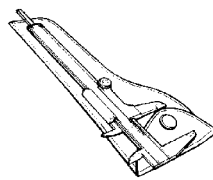
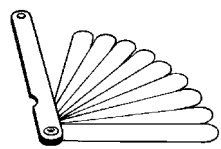
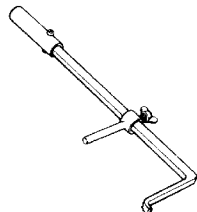
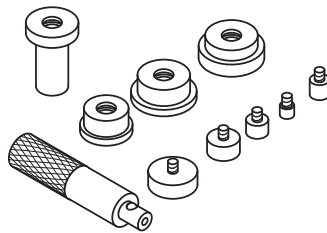
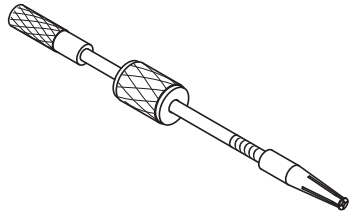
“Transmission Components” (Page 5B-2)

“Gearshift Lever Construction” (Page 5B-11)

“Gearshift Shaft / Gearshift Cam Plate Components” (Page 5B-12)

Special Tool

BENF34J15208002

Snap ring pliers (External) ☞ (Page 5B-4) / ☞ (Page 5B-5) / ☞ (Page 5B-5) / ☞ (Page 5B-12)		Vernier calipers (200 mm) ☞ (Page 5B-6) / ☞ (Page 5B-7)	
Thickness gauge ☞ (Page 5B-6)		Oil seal remover ☞ (Page 5B-7)	
Bearing installer set ☞ (Page 5B-7) / ☞ (Page 5B-8) / ☞ (Page 5B-8) / ☞ (Page 5B-8) / ☞ (Page 5B-9) / ☞ (Page 5B-14)		Bearing remover set ☞ (Page 5B-7)	

Clutch

Precautions

Precautions for Clutch System

BENF34J15300001

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

Diagnostic Information and Procedures

Clutch System Symptom Diagnosis

BENF34J15304001

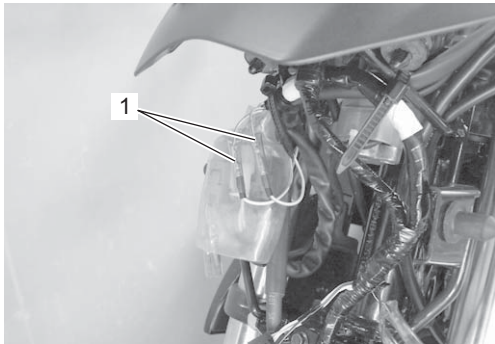
Condition	Possible cause	Correction / Reference Item
Noisy engine (Noise seems to come from the clutch)	Worn countershaft spline.	Replace countershaft. ⚙️ (Page 5B-4)
	Worn clutch sleeve hub spline.	Replace clutch sleeve hub. ⚙️ (Page 5C-6) ⚙️ (Page 5C-7)
	Worn clutch plate teeth.	Replace clutch plate. ⚙️ (Page 5C-6) ⚙️ (Page 5C-7)
	Distorted clutch plates, driven and drive.	Replace. ⚙️ (Page 5C-6) ⚙️ (Page 5C-7)
	Worn clutch release bearing.	Replace. ⚙️ (Page 5C-6) ⚙️ (Page 5C-7)
	Weakened clutch springs.	Replace. ⚙️ (Page 5C-6) ⚙️ (Page 5C-7)
	Weakened clutch dampers.	Replace primary driven gear. ⚙️ (Page 5C-6) ⚙️ (Page 5C-7)
	Worn or rubbing primary gears.	Replace. ⚙️ (Page 5C-6) ⚙️ (Page 5C-7) ⚙️ (Page 5C-12)
Clutch slips	Clutch cable out of adjustment.	Adjust. ⚙️ (Page 5C-2)
	Weakened clutch springs.	Replace. ⚙️ (Page 5C-6) ⚙️ (Page 5C-7)
	Worn or distorted clutch pressure plate.	Replace. ⚙️ (Page 5C-6) ⚙️ (Page 5C-7)
	Distorted clutch plates, driven and drive.	Replace. ⚙️ (Page 5C-6) ⚙️ (Page 5C-7)
Clutch drags	Clutch cable out of adjustment.	Adjust. ⚙️ (Page 5C-2)
	Some clutch springs are weak, while others are not.	Replace. ⚙️ (Page 5C-6) ⚙️ (Page 5C-7)
	Worn or distorted clutch pressure plate.	Replace. ⚙️ (Page 5C-6) ⚙️ (Page 5C-7)
	Distorted clutch plates, driven and drive.	Replace. ⚙️ (Page 5C-6) ⚙️ (Page 5C-7)

Repair Instructions

Clutch Lever Position Switch Inspection



BENF34J15306001

- 1) Disconnect the clutch lever position switch lead wire connectors (1).



IF34J1530001-02

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

Color Position	Terminal (Y/R)	Terminal (Y/G)
OFF		
ON		

IF34J1530002-01

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

Clutch Cable Inspection

BENF34J15306022

Check that clutch lever moves smoothly. If it does not move smoothly, lubricate the clutch cable.

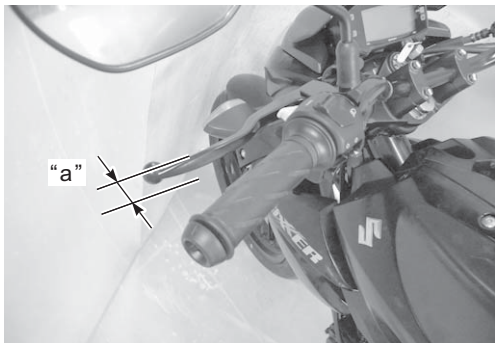
Clutch Cable Play On-Vehicle Inspection and Adjustment

BENF34J15306023

Inspection

Inspect the clutch cable play at the clutch lever end.
Adjust the clutch cable play if necessary.

Clutch cable play “a”
10 – 15 mm (0.4 – 0.6 in)

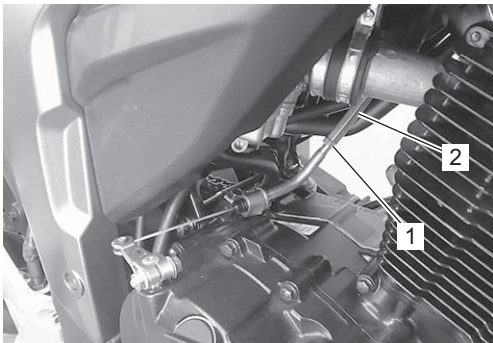


IF34J1530003-01

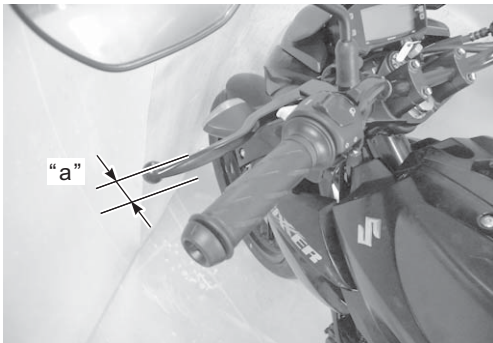
Adjustment

- 1) Loosen the lock-nut (1), and adjust the clutch cable by turning the adjuster (2) to obtain free play at the clutch lever end.

Clutch cable play “a”
10 – 15 mm (0.4 – 0.6 in)



IF34J1530004-02





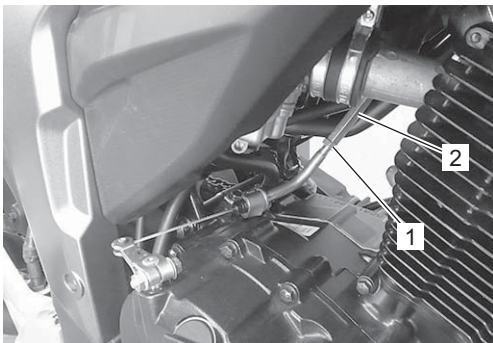
IF34J1530003-01

Clutch Cable Removal and Installation

BENF34J15306024

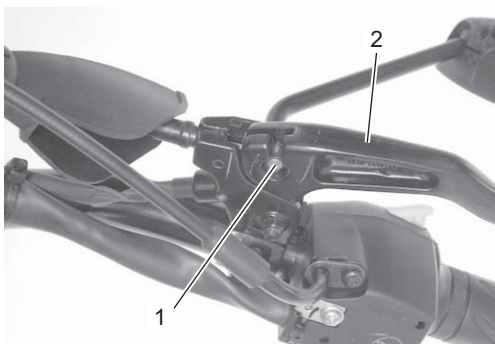
Removal

- 1) Remove the following parts.
- Left frame front cover:  (Page 9D-13)
 - Left frame side cover:  (Page 9D-12)
- 2) Full loosen the lock-nut (1) and adjuster (2).



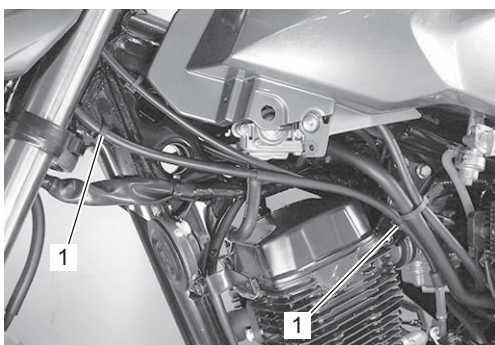
IF34J1530004-02

- 3) Disconnect the clutch cable end (1) from the clutch lever (2).



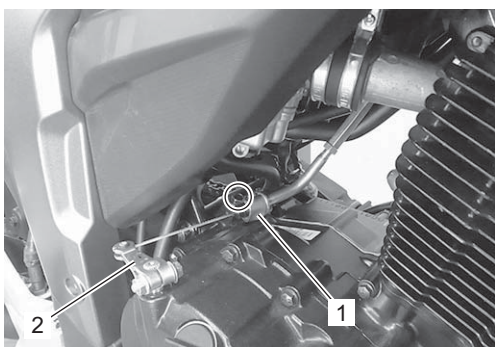
IF34J1530005-02

- 4) Remove the clutch cable clamps (1).



IF34J1530006-03

- 5) Remove the clutch cable stopper (1) and disconnect the clutch cable end from the clutch release arm (2).



IF34J1530007-02

Installation

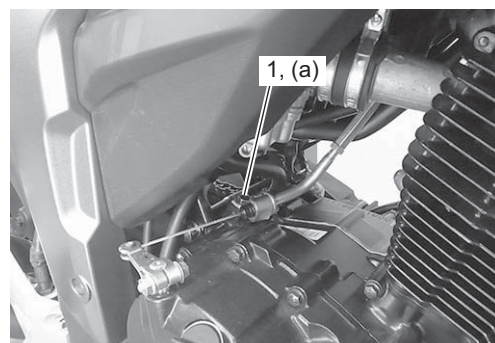
Install the clutch cable in the reverse order of removal. Pay attention to the following points:

- Route the clutch cable properly. Refer to "Throttle Cable Routing Diagram" in Section 1D (Page 1D-2).

- Tighten the clutch cable stopper bolt (1) to the specified torque.

Tightening torque

Clutch cable stopper bolt (a): 10 N·m (1.0 kgf-m, 7.5 lbf-ft)



IF34J1530008-02

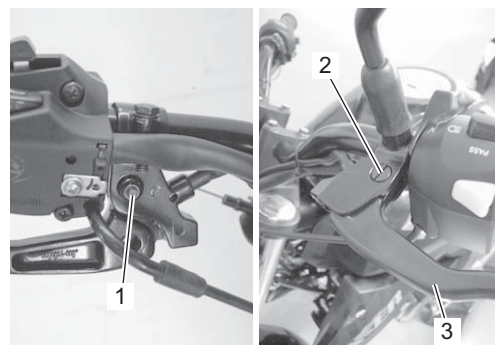
- Adjust the clutch cable play. (Page 5C-2)

Clutch Lever Removal and Installation

BENF34J15306025

Removal

- Disconnect the clutch cable end from clutch lever. Refer to "Clutch Cable Removal and Installation" (Page 5C-2).
- Remove the clutch lever pivot nut (1) and bolt (2), and then remove the clutch lever (3).



IF34J1530009-01

- Remove the clutch lever holder. Refer to "Handlebar Removal and Installation" in Section 6B (Page 6B-3).

5C-4 Clutch:

Installation

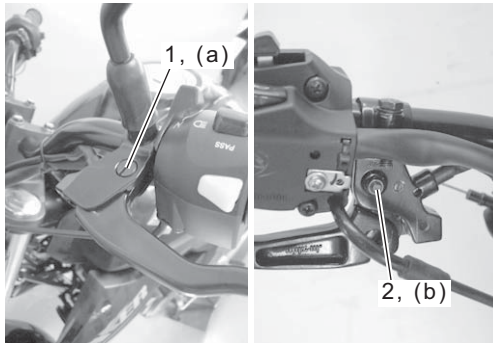
Install the clutch lever in the reverse order of removal. Pay attention to the following points:

- Install the clutch lever holder securely. Refer to "Handlebar Removal and Installation" in Section 6B (Page 6B-3).
- Tighten the clutch lever pivot bolt (1) and new clutch lever pivot nut (2) to the specified torque.

Tightening torque

Clutch lever pivot bolt (a): 1.5 N·m (0.15 kgf-m, 1.5 lbf-ft)

Clutch lever pivot nut (b): 3 N·m (0.30 kgf-m, 2.5 lbf-ft)

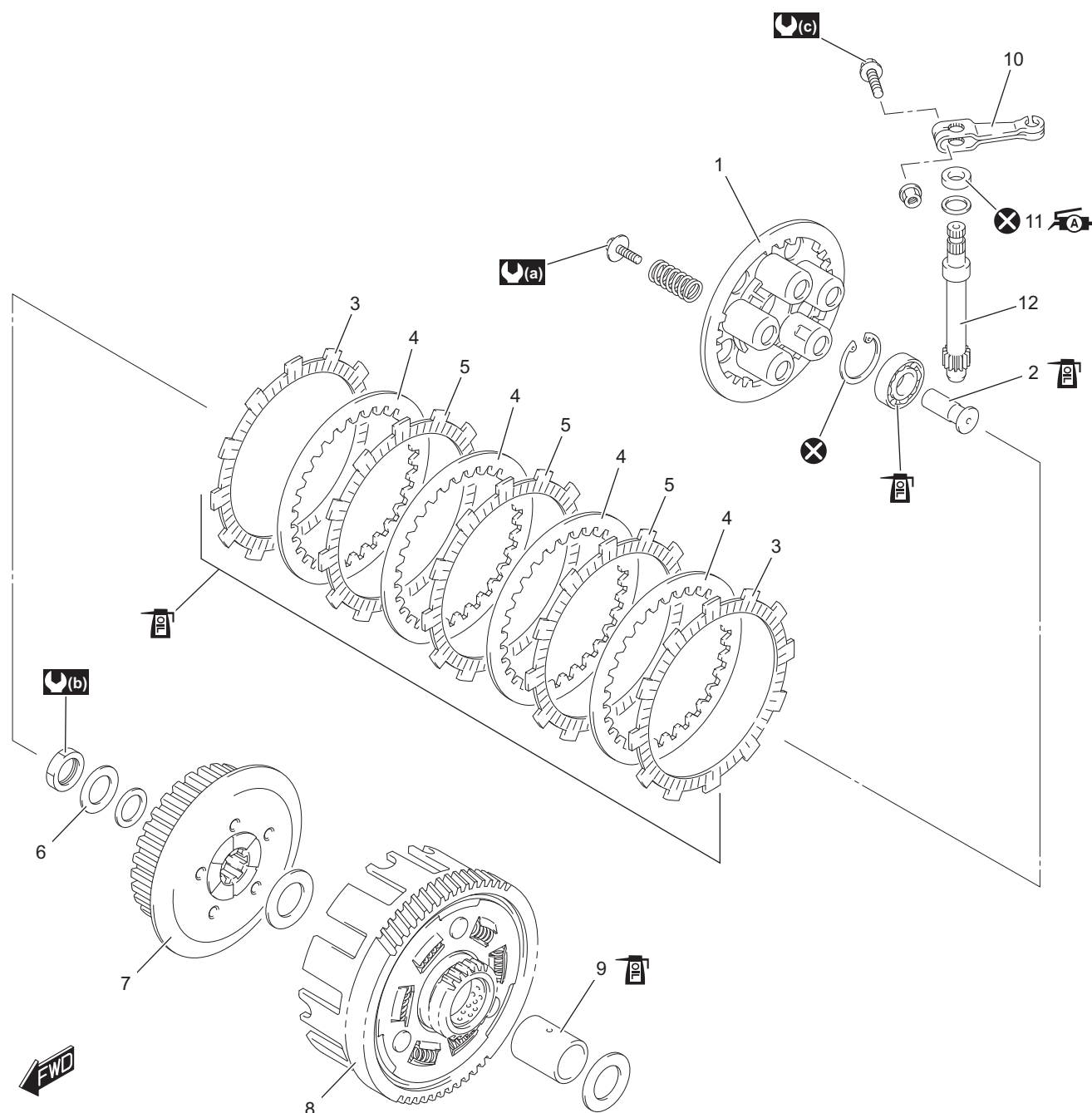


IF34J1530010-01

- Adjust the clutch cable play. 🛠️ (Page 5C-2)

Clutch Components

BENF34J15306015



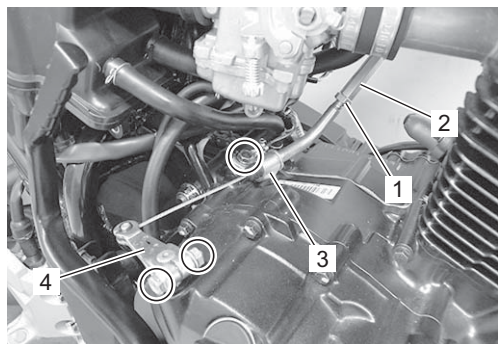
IF34J1530011-02

1. Clutch pressure plate	7. Clutch sleeve hub	(a) : 5 N-m (0.51 kgf-m, 4.0 lbf-ft)
2. Clutch release rack	8. Primary driven gear assembly	(b) : 70 N-m (7.1 kgf-m, 52.0 lbf-ft)
3. Clutch drive plate No.1	9. Spacer	(c) : 10 N-m (1.0 kgf-m, 7.5 lbf-ft)
4. Clutch driven plate	10. Clutch release arm	AH : Apply grease.
5. Clutch drive plate No.2	11. Clutch release camshaft oil seal	P : Apply engine oil.
6. Conical spring washer	12. Clutch release camshaft	X : Do not reuse.

Clutch Removal

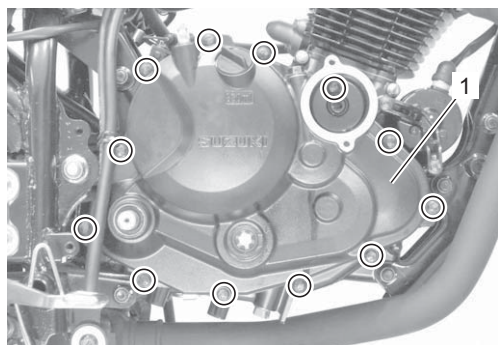
BENF34J15306016

- 1) Drain engine oil. (Page 1E-4)
- 2) Remove the following parts.
 - Right frame lower cover: (Page 9D-12)
 - Oil filter: (Page 1E-5)
 - Kick starter lever: (Page 1I-12)
- 3) Fully loosen the lock-nut (1) and adjuster (2).
- 4) Remove the clutch cable stopper (3) and clutch release arm (4).



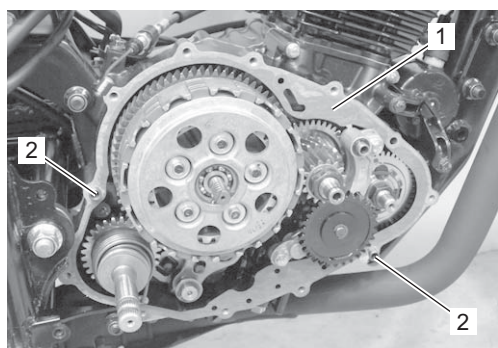
IF34J1530012-03

- 5) Remove the clutch cover (1).



IF34J1530013-02

- 6) Remove the gasket (1) and dowel pins (2).

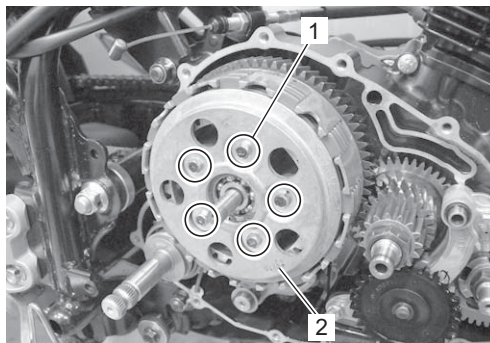


IF34J1530014-01

- 7) Remove the clutch spring set bolts (1), clutch springs and clutch pressure plate (2).

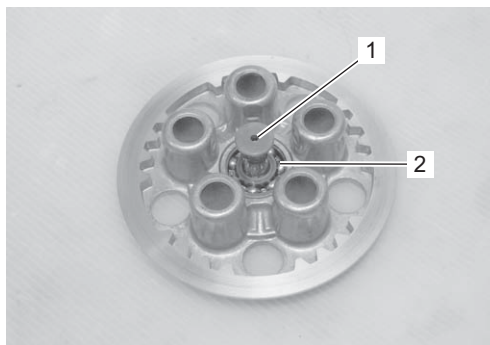
NOTE

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



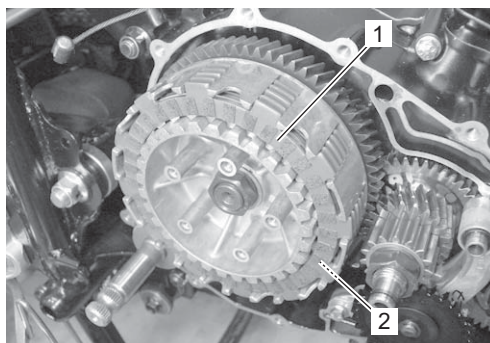
IF34J1530015-01

- 8) Remove the clutch release rack (1) and bearing (2) from the clutch pressure plate.



IF34J1530016-01

- 9) Remove the clutch drive plates (1) and driven plates (2).

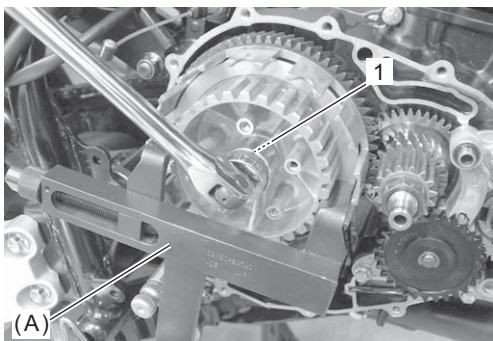


IF34J1530017-01

- 10) Hold the clutch sleeve hub with the special tool and remove the clutch sleeve hub nut (1).

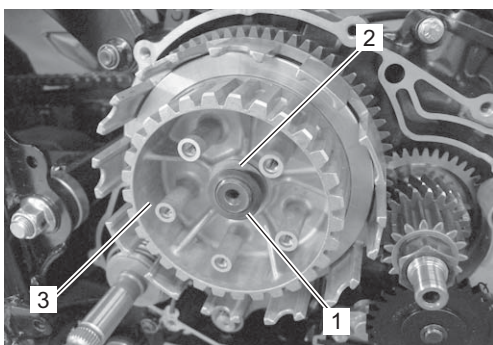
Special tool

(A): Clutch Sleeve Hub Holder



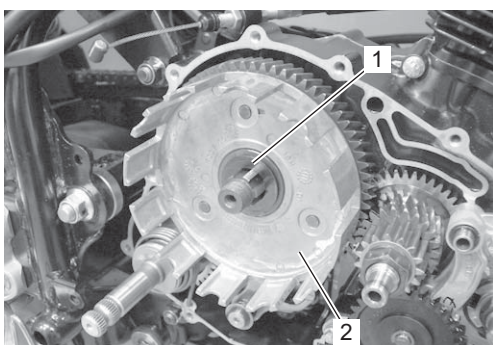
IF34J1530018-01

- 11) Remove the conical spring washer (1), washer (2) and clutch sleeve hub (3).



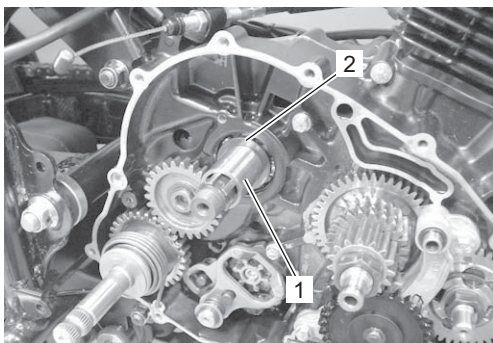
IF34J1530019-01

- 12) Remove the thrust washer (1) and primary driven gear assembly (2).



IF34J1530020-01

- 13) Remove the spacer (1) and thrust washer (2).

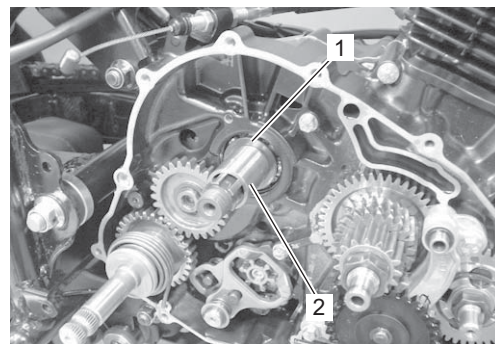


IF34J1530021-01

Clutch Installation

BENF34J15306017

- 1) Install the thrust washer (1).
- 2) Apply engine oil to the spacer (2) and install it.

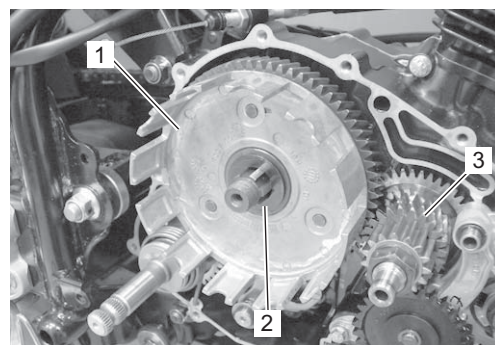


IF34J1530022-01

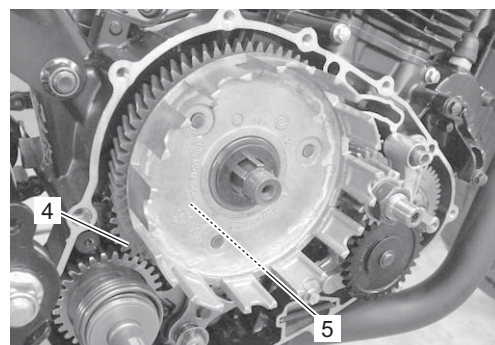
- 3) Install the primary driven gear assembly (1) and thrust washer (2) onto the countershaft.

NOTE

- When engaging the primary drive and driven gears, turn the primary drive scissors gear (3) clockwise.
- Engage the kick starter idle gear (4) and kick starter driven gear (5).



IF34J1530023-01



IF34J1530024-01

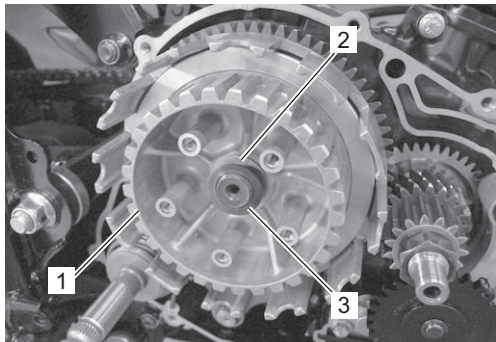
- 4) Install the clutch sleeve hub (1), washer (2) and conical spring washer (3).

NOTE

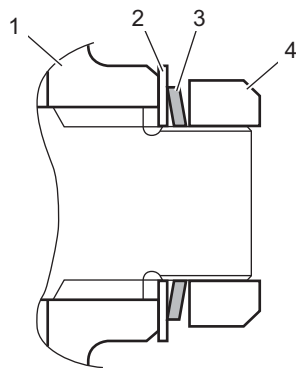
The conical curve side of spring washer (3) faces outside.

5C-8 Clutch:

5) Install the clutch sleeve hub nut (4).



IF34J1530025-01

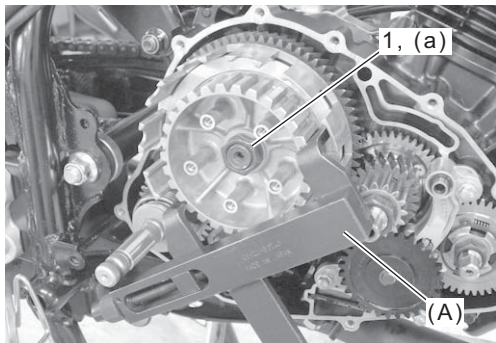


IF34J1530026-01

6) Hold the clutch sleeve hub with the special tool and tighten the clutch sleeve hub nut (1) to the specified torque.

Special tool
(A): Clutch Sleeve Hub Holder

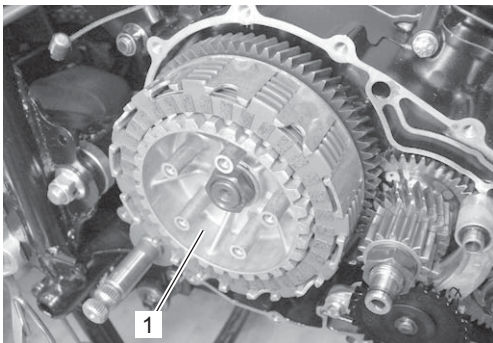
Tightening torque
Clutch sleeve hub nut (a): 70 N·m (7.1 kgf-m, 52.0 lbf-ft)



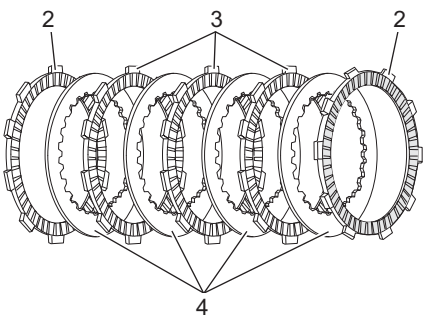
IF34J1530027-01

7) Apply engine oil to the clutch drive plates and driven plates.

8) Insert the clutch drive plates and driven plates one by one into the clutch sleeve hub (1) in the prescribed order.



IF34J1530028-01

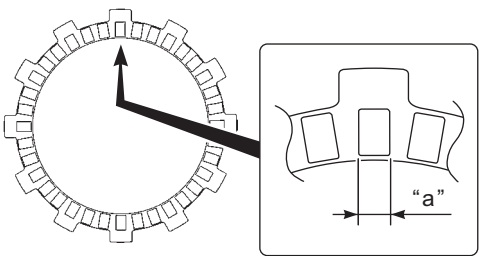


IF34J1530029-01

2. Clutch drive plate No. 1	4. Clutch drive plate
3. Clutch drive plate No. 2	

NOTE

The clutch system is equipped with two kinds of the drive plate (No. 1 and No. 2). They can be distinguished by the facing width “a”.

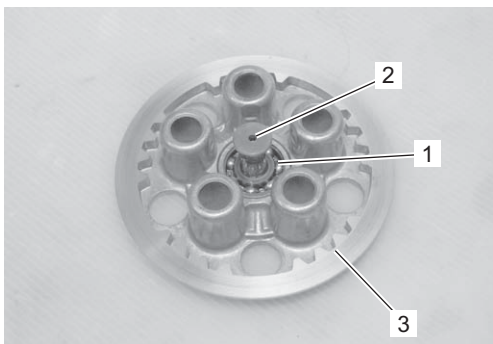


IF34J1530030-01

Drive plate	Facing width “a”
No. 1	5.05 – 5.75 mm (1.99 – 2.26 in)
No. 2	4.35 – 5.05 mm (1.71 – 1.99 in)

9) Apply engine oil to the bearing (1).

- 10) Install the bearing and clutch release rack (2) into the clutch pressure plate (3).



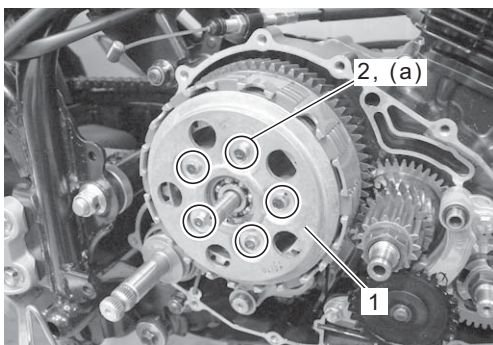
- 11) Install the clutch pressure plate (1), clutch springs and clutch spring set bolts (2).
12) Tighten the clutch spring set bolts to the specified torque.

NOTE

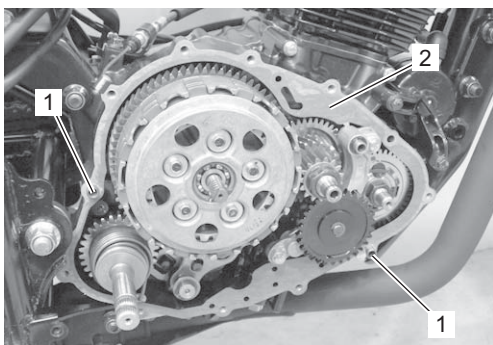
Tighten the clutch spring set bolts little by little and diagonally.

Tightening torque

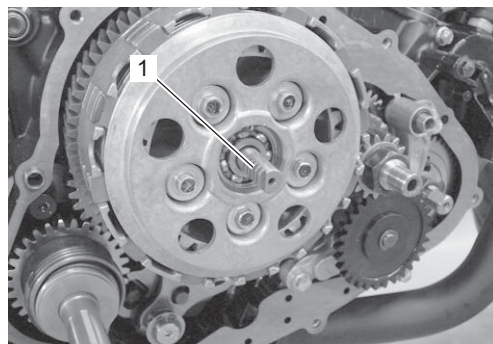
Clutch spring set bolt (a): 5 N·m (0.51 kgf-m, 4.0 lbf-ft)



- 13) Install the dowel pins (1) and the new gasket (2).



- 14) Apply engine oil to the clutch release rack gear (1) and face the gear backward.



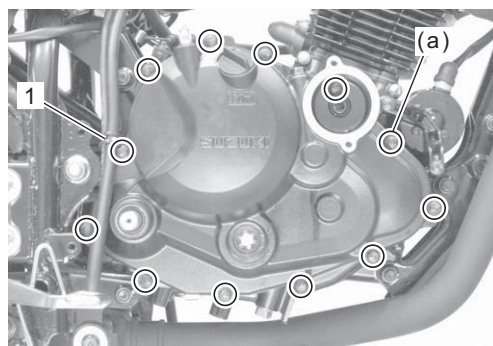
- 15) Install the clutch cover and tighten the bolts to the specified torque.

Tightening torque

Clutch cover bolt (a): 10 N·m (1.0 kgf-m, 7.5 lbf-ft)

NOTE

Fit the clamp (1) to the clutch cover bolt.



- 16) Install the clutch release arm (1).

NOTE

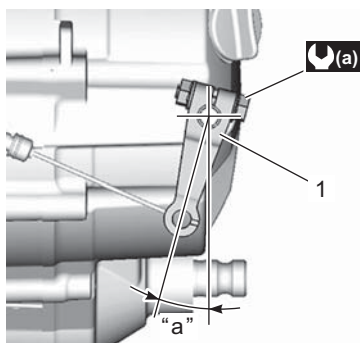
Remove play of the clutch release camshaft turning it clockwise and install the clutch release arm to the release camshaft in the angle as shown.

5C-10 Clutch:

- 17) Tighten the clutch release arm bolt to the specified torque.

Tightening torque

Clutch release arm bolt (a): 10 N·m (1.0 kgf-m, 7.5 lbf-ft)



IF34J1530036-03

"a": 7.5° – 22.5°

- 18) Install the removed parts.

- 19) Inspect the clutch cable play. (Page 5C-2)

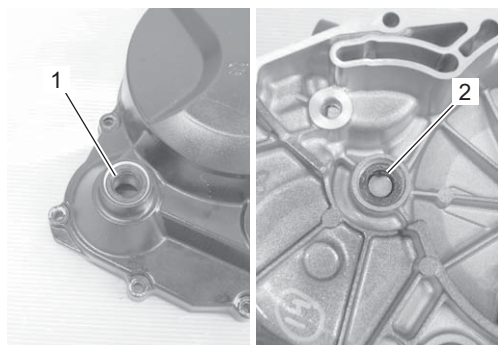
Clutch Cover Disassembly and Reassembly

BENF34J15306026

Refer to "Clutch Removal" (Page 5C-6) and "Clutch Installation" (Page 5C-7).

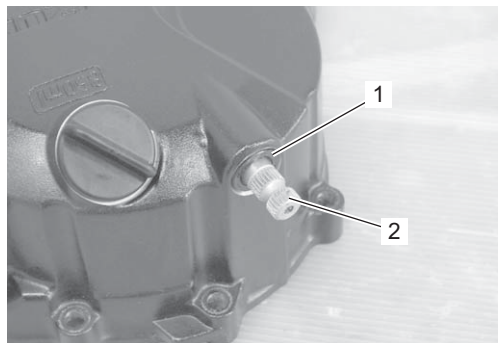
Disassembly

- 1) Remove the kick starter shaft oil seal (1) and crankshaft oil seal (2).



IF34J1530037-01

- 2) Pull out the clutch release camshaft oil seal (1) and washer with the clutch release camshaft (2).



IF34J1530038-01

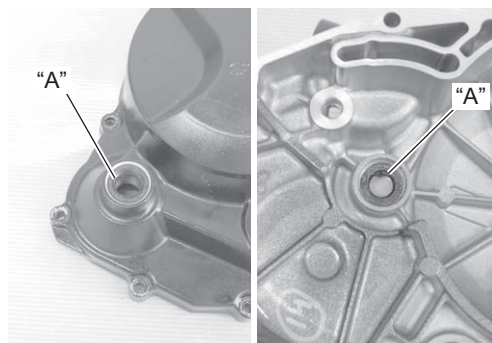
Reassembly

Reassemble the clutch cover component part in the reverse order of disassembly. Pay attention to the following points:

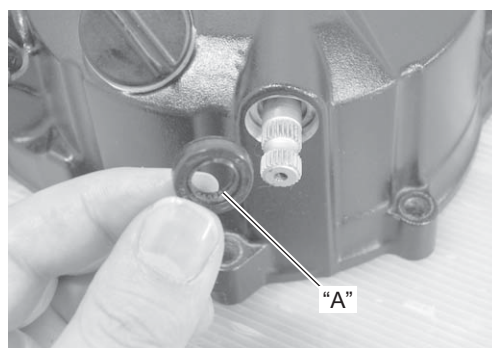
- Apply grease to the lip of the new oil seals.

"A": Grease 99000-25011 (SUZUKI SUPER GREASE A)

- Install the oil seal until it seats in the clutch cover hole.

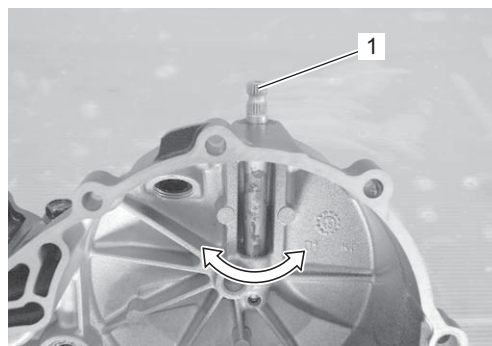


IF34J1530039-01



IF34J1530040-01

- After installing the clutch release camshaft (1), check the clutch release camshaft operation.



IF34J1530041-01

Clutch Parts Inspection

BENF34J15306018

Refer to "Clutch Removal" (Page 5C-6), "Clutch Installation" (Page 5C-7) and "Clutch Cover Disassembly and Reassembly" (Page 5C-10).

Clutch Drive / Driven Plate

NOTE

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

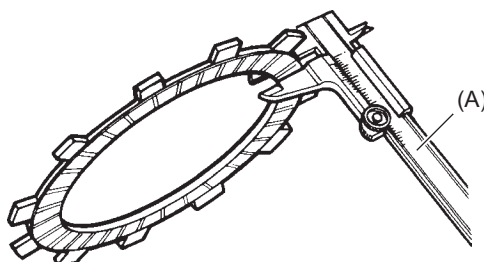
Measure the thickness of drive plates with a vernier calipers. If the drive plate thickness is found to have reached the limit, replace it with a new one.

Special tool

(A): Vernier Caliper

Clutch drive plate thickness

Service limit (No.1 and No.2): 2.6 mm (0.10 in)



IE31J1530086-01

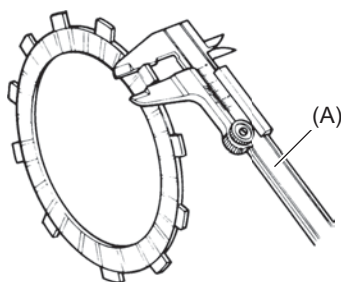
Measure the claw width of drive plates with a vernier calipers. Replace the drive plates found to have worn down to the limit.

Special tool

(A): Vernier Caliper

Clutch drive plate claw width

Service limit (No.1 and No.2): 11.1 mm (0.437 in)



IE31J1530087-01

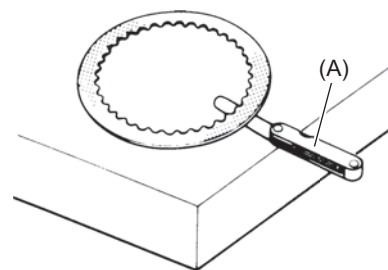
Measure each driven plate for distortion with a thickness gauge and surface plate. Replace driven plates which exceed the limit.

Special tool

(A): Thickness Gauge

Clutch driven plate distortion

Service limit: 0.10 mm (0.004 in)



IE31J1530088-01

Clutch Spring

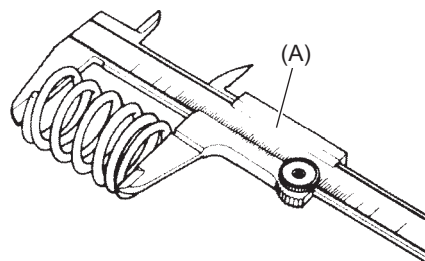
Measure the free length of each coil spring with a vernier calipers, and compare the length with the specified limit. Replace all the springs if any spring is not within the limit.

Special tool

(A): Vernier Caliper

Clutch spring free length

Service limit: 30.9 mm (1.22 in)

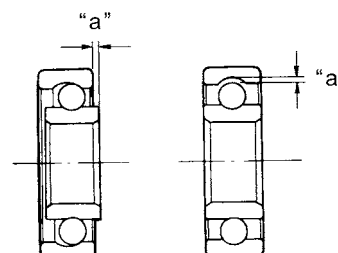


IE31J1530089-01

Clutch Release Bearing

Inspect the play "a" of the clutch release bearing by hand. Rotate the inner race by hand to inspect for abnormal noise and smooth rotation. Replace the bearing if there is anything unusual.

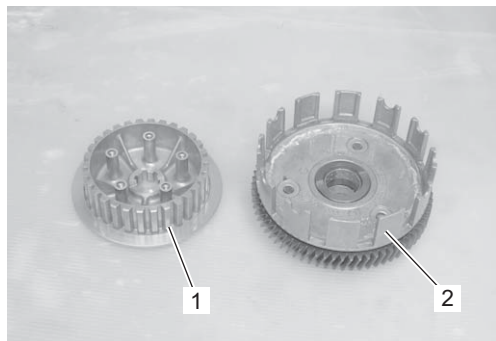
Smooth engagement and disengagement of the clutch depends on the condition of this bearing.



IE31J1140298-01

Clutch Sleeve Hub / Primary Driven Gear Assembly

Inspect the slot of the clutch sleeve hub (1) and primary driven gear assembly (2) for damage or wear caused by the clutch plates. If necessary, replace it with a new one. Inspect the springs of primary driven gear assembly for any damages. If necessary, replace primary driven gear assembly with a new one.



IF34J1530042-01

Clutch Release Camshaft

Inspect the clutch release camshaft for wear or bend. If necessary, replace it with a new one.



IF34J1530043-01

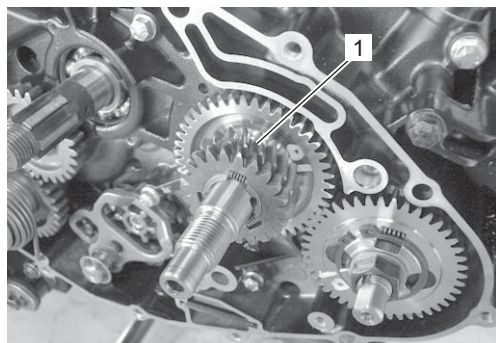
Primary Drive Gear Removal and Installation

BENF34J15306019

Refer to "Clutch Removal" (Page 5C-6) and "Clutch Installation" (Page 5C-7).

Removal

- 1) Remove the oil pump drive gear. Refer to "Oil Pump Removal and Installation" in Section 1E (Page 1E-6).
- 2) Remove the primary drive gear (1).



IF34J1530044-01

Installation

Install the primary drive gear in the reverse order of removal.

Primary Drive Gear Inspection

BENF34J15306020

Refer to "Primary Drive Gear Removal and Installation" (Page 5C-12).

Visually inspect the gear teeth for wear and damage. If they are worn, replace the gear with a new one.



IF34J1530045-01

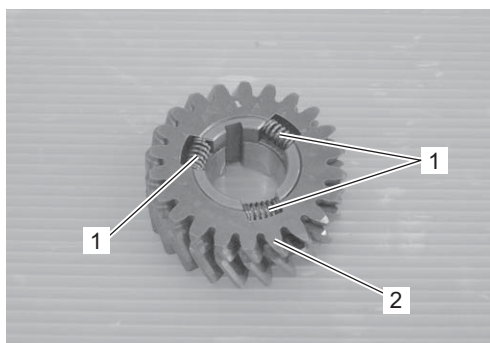
Primary Drive Gear Disassembly and Reassembly

BENF34J15306021

Refer to "Primary Drive Gear Removal and Installation" (Page 5C-12).

Disassembly

Remove the springs (1) and scissors gear (2).

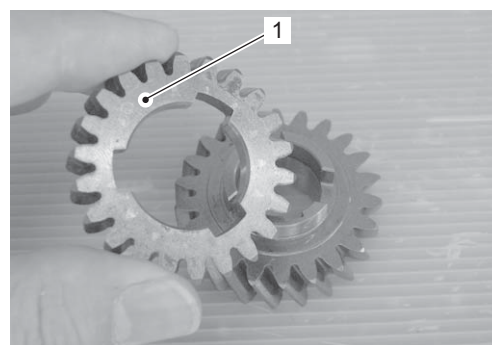


IF34J1530046-02

Reassembly

Reassemble the scissors gear in the reverse order of disassembly. Pay attention to the following point:

- Install the scissors gear facing the mark (1) outward.



IF34J1530047-01

Specifications

Tightening Torque Specifications

BENF34J15307001

Fastening part	Tightening torque			Note
	N·m	kgf·m	lbf·ft	
Clutch cable stopper bolt	10	1.0	7.5	☞ (Page 5C-3)
Clutch lever pivot bolt	1.5	0.15	1.5	☞ (Page 5C-4)
Clutch lever pivot nut	3	0.30	2.5	☞ (Page 5C-4)
Clutch sleeve hub nut	70	7.1	52.0	☞ (Page 5C-8)
Clutch spring set bolt	5	0.51	4.0	☞ (Page 5C-9)
Clutch cover bolt	10	1.0	7.5	☞ (Page 5C-9)
Clutch release arm bolt	10	1.0	7.5	☞ (Page 5C-10)

Reference:

For the tightening torques of fasteners not specified in this page, refer to:

“Clutch Components” (Page 5C-5)

“Fasteners Information” in Section 0C (Page 0C-8)

Special Tools and Equipment

Recommended Service Material

BENF34J15308001

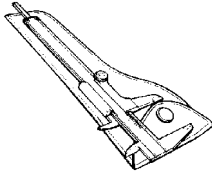
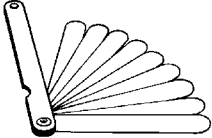
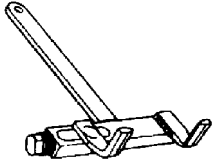
Material	SUZUKI recommended product or Specification	Note
Grease	SUZUKI SUPER GREASE A	(Page 5C-10)

NOTE

Required service materials are also described in:
“Clutch Components” (Page 5C-5)

Special Tool

BENF34J15308002

<p>Vernier calipers (200 mm) (Page 5C-11) / (Page 5C-11) / (Page 5C-11)</p> 	<p>Thickness gauge (Page 5C-11)</p> 
<p>Clutch sleeve hub holder (Page 5C-7) / (Page 5C-8)</p> 	

Section 6

Steering

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Precautions

Precautions

Precautions for Steering

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

BENF34J16000001

Steering General Diagnosis

Diagnostic Information and Procedures

Steering Symptom Diagnosis

BENF34J16104001

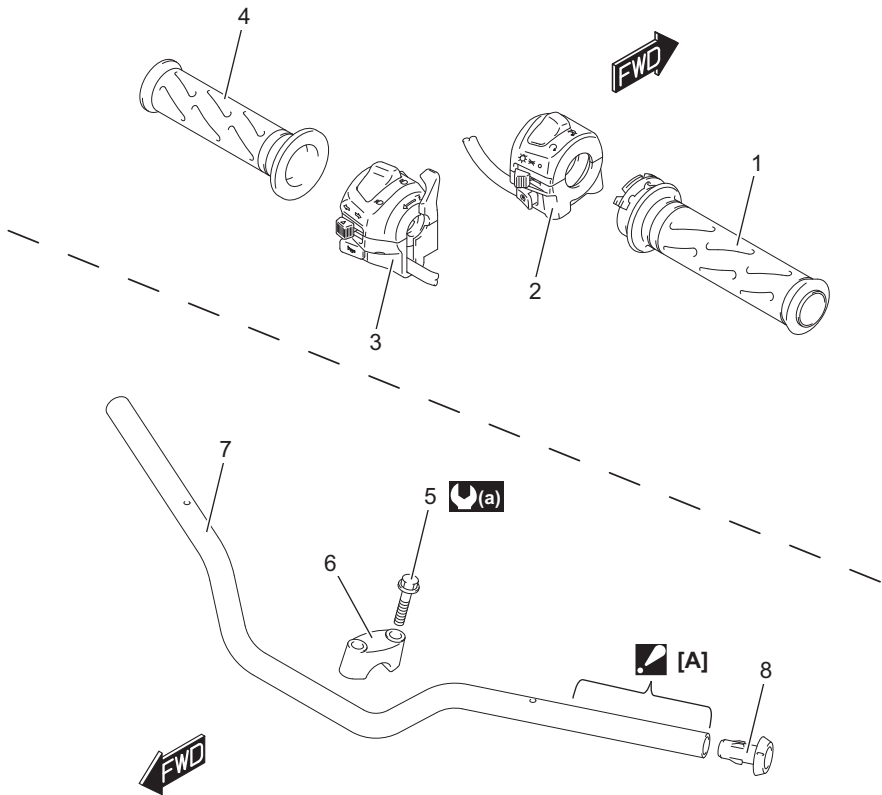
Condition	Possible cause	Correction / Reference Item
Heavy steering	Over tightened steering stem nut.	Adjust. (Page 6B-7)
	Broken steering stem steel ball/race.	Replace. (Page 6B-13)
	Distorted steering stem.	Replace. (Page 6B-9)
	Not enough pressure in tires.	Adjust. (Page 2D-9)
Wobbly handlebar	Loss of balance between right and left front forks.	Replace fork, adjust fork oil level or replace fork spring. (Page 2B-2) (Page 2B-3)
	Distorted front fork.	Repair or replace. (Page 2B-2)
	Distorted front axle or crooked tire.	Replace. (Page 2D-2) (Page 2D-10)
	Loose steering stem nut.	Adjust. (Page 6B-7)
	Worn or incorrect tire.	Replace. (Page 2D-10)
	Incorrect tire pressure.	Adjust. (Page 2D-9)
	Worn steering stem steel ball/race.	Replace. (Page 6B-13)

Steering / Handlebar



Repair Instructions

Handlebar Components

BENF34J16206001

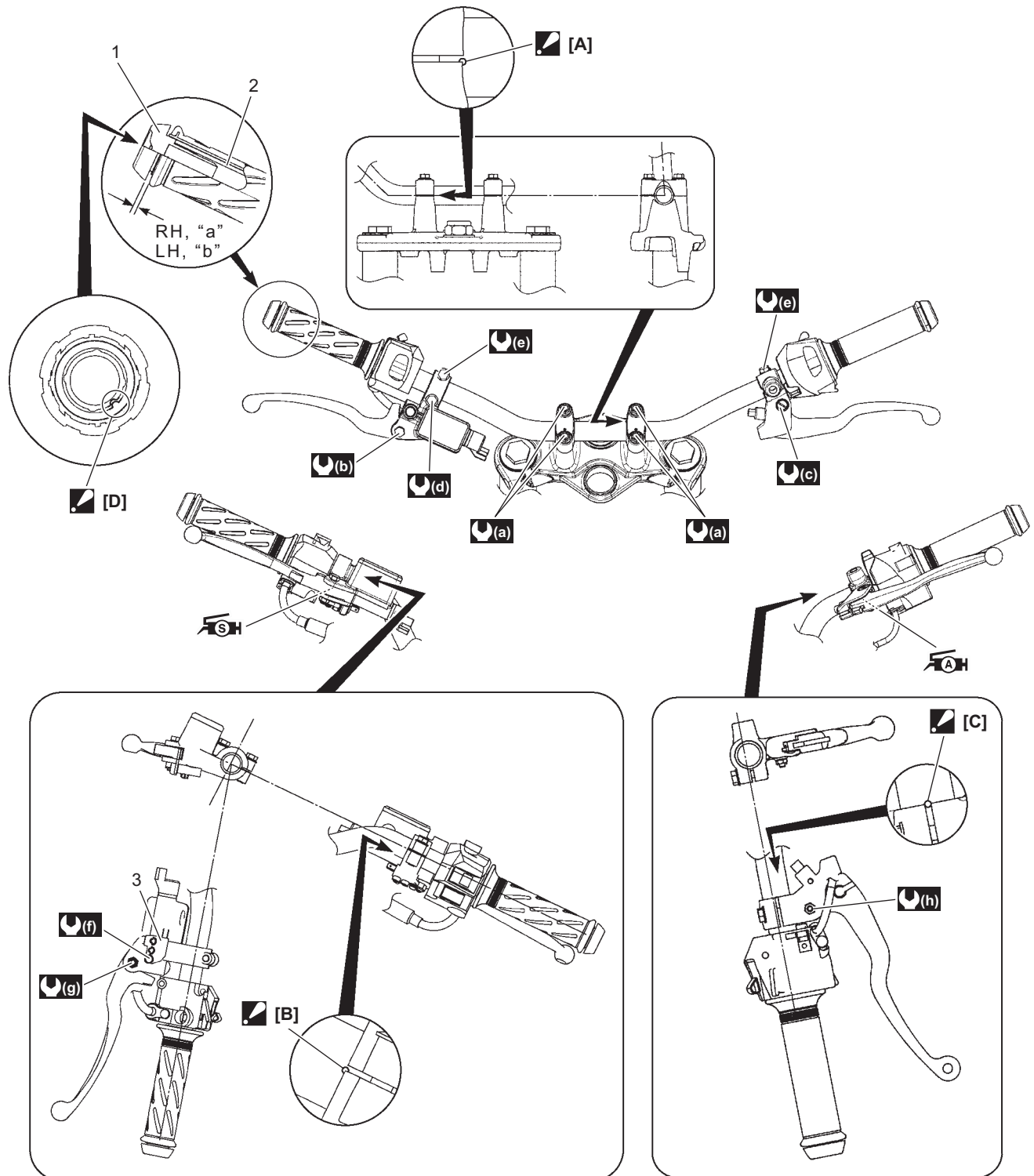


IF34J1620001-04

 [A]: Apply handle grip glue.	3. Left handle switch	6. Handlebar holder	 (a) : 23 N·m (2.3 kgf-m, 17.0 lbf-ft)
1. Throttle grip	4. Left handlebar grip	7. Handlebars	
2. Right handle switch	5. Handlebar clamp bolt	8. Grip end cap	

Handlebar Construction

BENF34J16206002



IF34J1620002-02

6B-3 Steering / Handlebar:

[A]: Align the mating surface of the steering stem upper bracket with the punch mark of handlebars.	"a": 1.1 – 3.1 mm (0.04 – 0.12 in)	(f) : 1.2 N·m (0.12 kgf-m, 1.0 lbf-ft)
[B]: Align the punch mark of the handlebars with the edge of front brake master cylinder holder.	"b": 0 – 2 mm (0 – 0.08 in)	(g) : 6 N·m (0.60 kgf-m, 4.5 lbf-ft)
[C]: Align the mating surface of the clutch lever holder with the punch mark of handlebars.	(a) : 23 N·m (2.3 kgf-m, 17.0 lbf-ft)	(h) : 3 N·m (0.30 kgf-m, 2.5 lbf-ft)
[D]: Align the groove of grip end cap with the seam line of handlebars.	(b) : 1 N·m (0.10 kgf-m, 1.0 lbf-ft)	(AH) : Apply grease to sliding surface.
1. Grip end cap	(c) : 1.5 N·m (0.15 kgf-m, 1.5 lbf-ft)	(SH) : Apply silicone grease to sliding surface.
2. Handlebars	(d) : 12 N·m (1.2 kgf-m, 9.0 lbf-ft)	
3. Front brake light switch	(e) : 10 N·m (1.0 kgf-m, 7.5 lbf-ft)	

Handlebar Removal and Installation

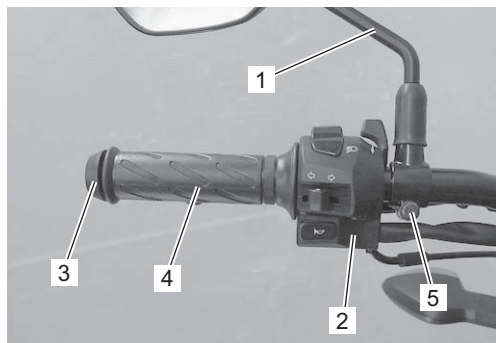
BENF34J16206003

NOTE

Do not turn the front brake master cylinder upside down.

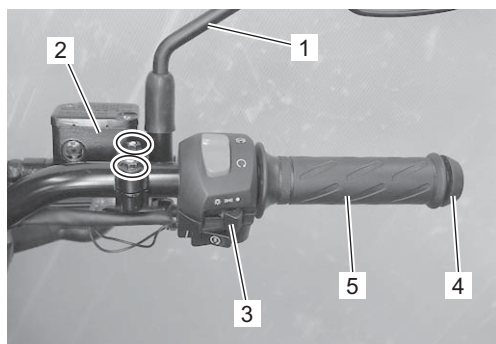
Removal

- 1) Remove the following parts from the left side of the handlebar.
 - a) Rear view mirror (1)
 - b) Left handle switch (2)
 - c) Grip end cap (3)
 - d) Left handlebar grip (4)
- 2) Loosen the clutch lever holder bolt (5).



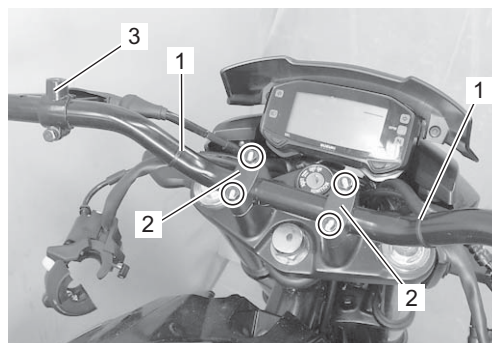
IF34J1620003-01

- 3) Remove the following parts from the right side of the handlebar.
 - a) Rear view mirror (1)
 - b) Front brake master cylinder assembly (2)
 - c) Right handle switch (3)
 - d) Grip end cap (4)
 - e) Throttle grip (5)



IF34J1620004-01

- 4) Remove the clamps (1).
- 5) Remove the handlebar holders (2) and clutch lever assembly (3).

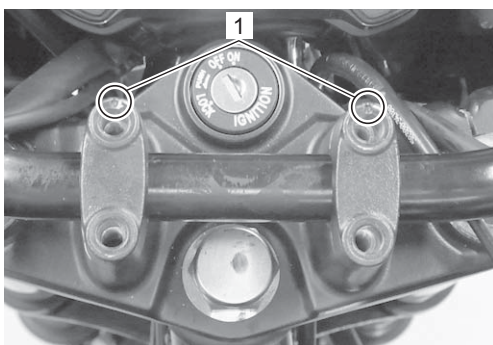


IF34J1620005-01

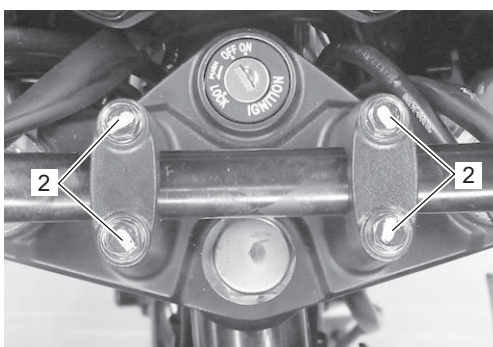
Installation

- 1) Install the clutch lever assembly to the handlebars temporarily.
- 2) Position the handlebars.
- 3) Install the handlebar holders positioning the punch mark (1) frontward.

- 4) Install the handlebar clamp bolts (2).



IF34J1620006-01

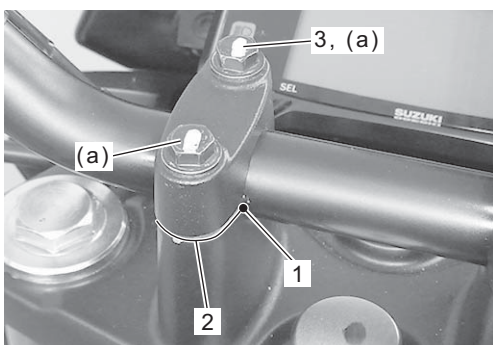


IF34J1620007-01

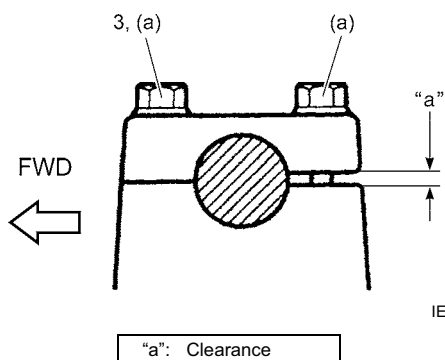
- 5) Set the handlebars so that its punch mark (1) aligns with the mating surface (2) of the steering stem upper bracket and tighten the front side of the handlebar clamp bolts (3) first.

Tightening torque

Handlebar clamp bolt (a): 23 N·m (2.3 kgf-m, 17.0 lbf-ft)



IF34J1620008-02

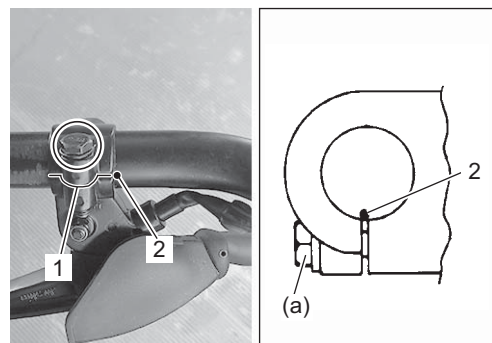


IE31J1620007-01

- 6) Align the mating surface (1) of the clutch lever holder with the punch mark (2) on the handlebars and tighten the holder bolt to the specified torque.

Tightening torque

Clutch lever holder bolt (a): 10 N·m (1.0 kgf-m, 7.5 lbf-ft)

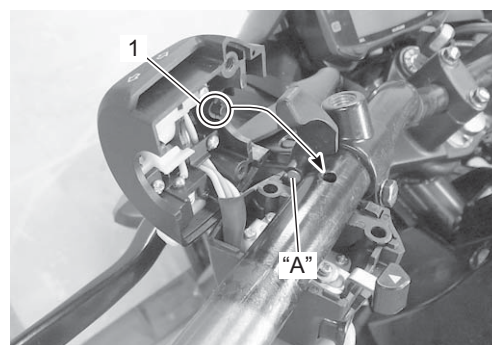


IF34J1620009-03

- 7) Apply grease to the end of the starter cable.

"A" : (SUZUKI SUPER GREASE A)

- 8) Insert the projection (1) of the left handle switch into the hole of the handlebars.

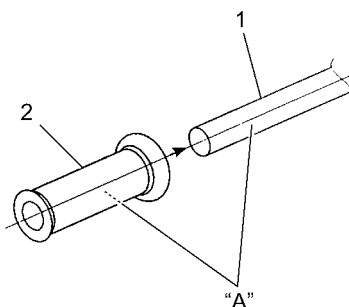


IF34J1620010-01

- 9) Clean, decrease and dry both the left handlebar outer surface (1) on which the grip is being fitted and internal surface of the left handlebar grip (2).

- 10) Apply handle grip glue to both the left handlebar outer surface on which the grip is being fitted and internal surface of the left handlebar grip evenly.

"A": Adhesive (Handle grip glue)



IE31J1620012-01

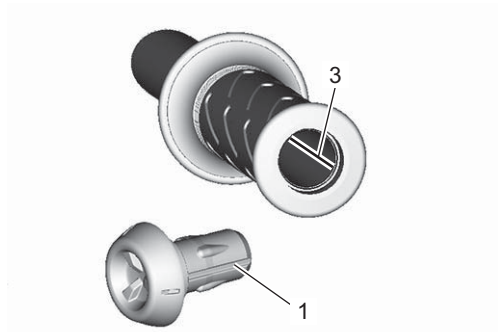
6B-5 Steering / Handlebar:

- 11) Aligning the groove (1) on the left handlebar grip end cap (2) with the seam line (3) in the handlebars, install the end cap to the handlebars as shown.

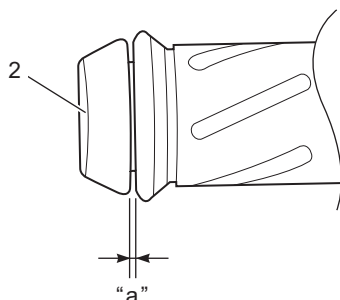
Left handlebar grip end cap installing position

"a":


0 – 2 mm (0 – 0.08 in)



IF34J1620011-01

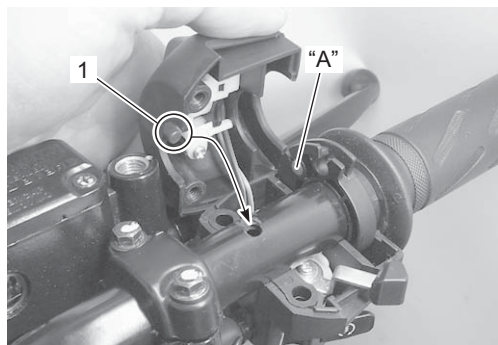


IF34J1620012-01

- 12) Install the left rear view mirror.
13) Install the front brake master cylinder assembly.  (Page 4A-8)
14) Apply grease to the end of the throttle cable.

"A": (SUZUKI SUPER GREASE A)

- 15) Insert the projection (1) of the right handle switch into the hole of the handlebars.



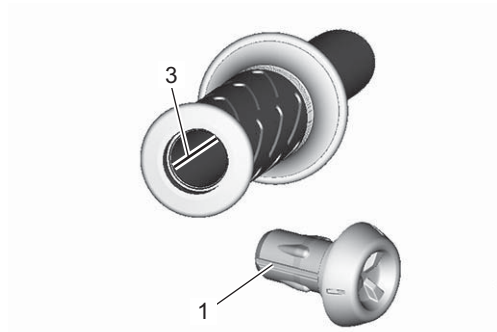
IF34J1620013-02

- 16) Aligning the groove (1) on the right handlebar grip end cap (2) with the seam line (3) in the handlebars, install the end cap to the handlebars as shown.

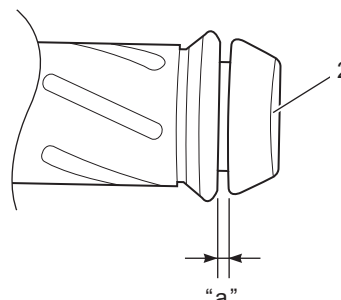
Right handlebar grip end cap installing position

"a":






1.1 – 3.1 mm (0.04 – 0.12 in)



IF34J1620014-01



IF34J1620015-01

- 17) Install the right rear view mirror.
18) Check to make sure that the wire harnesses, cables and hoses are properly routed.
 - Wire harness:  (Page 9A-5)
 - Cable:  (Page 1D-2)
 - Hose:  (Page 4A-2)19) Check the throttle cable for the play and smooth operation.  (Page 1D-8)
20) Check the clutch cable for the play and smooth operation.  (Page 5C-2)

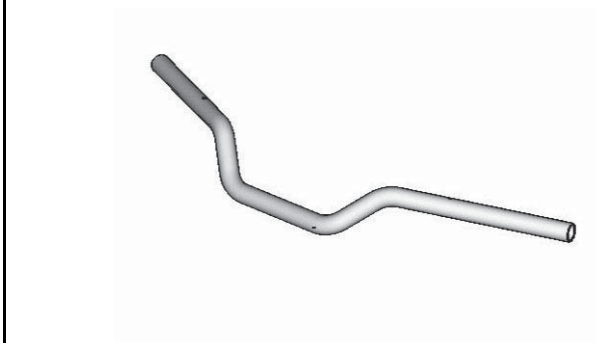
Handlebar Inspection

BENF34J16206004

Refer to "Handlebar Removal and Installation" (Page 6B-3).

Inspect the handlebars for distortion and damage.

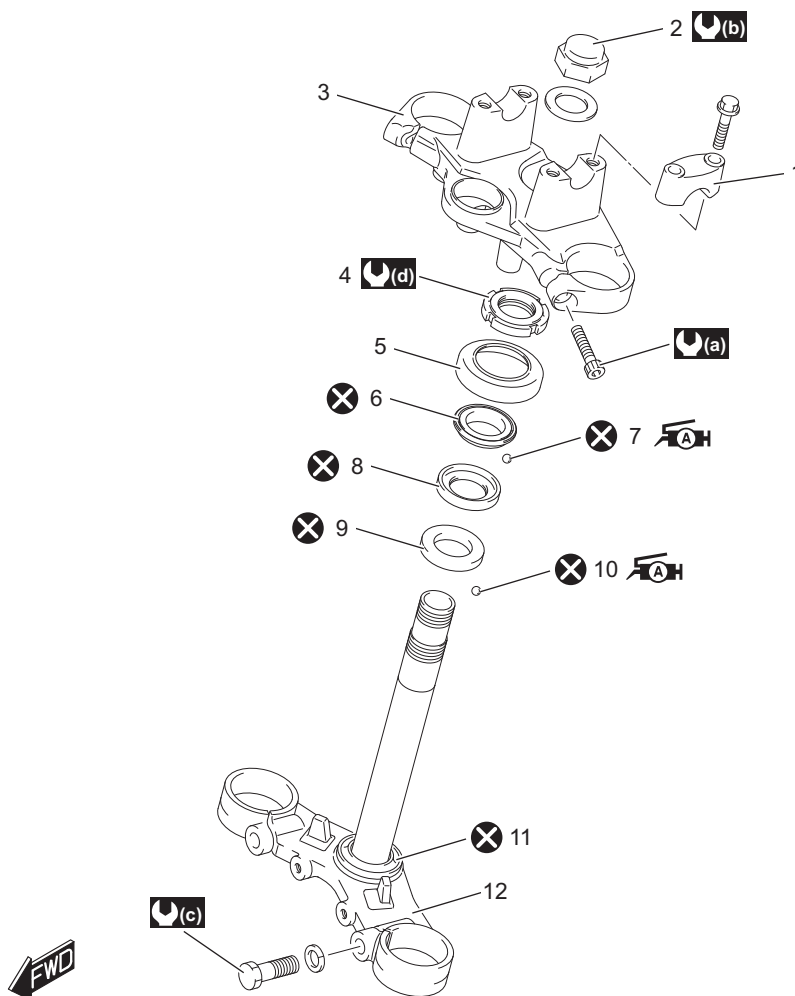
If any defect is found, replace the handlebars with a new one.



IF34J1620016-01

Steering Stem Components

BENF34J16206005



IF34J1620017-02

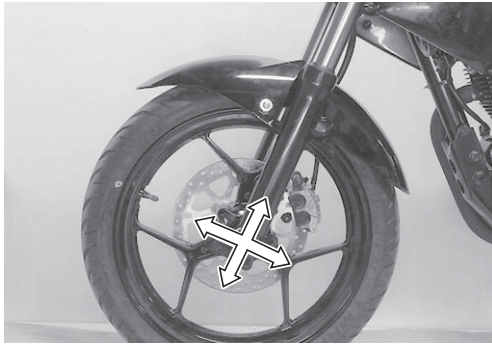
1. Handlebar holder	6. Steering stem upper steel ball outer race	11. Steering stem lower steel ball outer race	⚙️(d): 20 N·m (2.0 kgf-m, 15.0 lbf-ft) → turn counterclockwise 0 – 1/4
2. Steering stem head nut	7. Steering stem upper steel ball	12. Steering stem lower bracket	⚙️AH: Apply grease.
3. Steering stem upper bracket	8. Steering stem upper steel ball inner race	⚙️(a): 23 N·m (2.3 kgf-m, 17.0 lbf-ft)	⊗: Do not reuse.
4. Steering stem nut	9. Steering stem lower steel ball inner race	⚙️(b): 90 N·m (9.2 kgf-m, 66.5 lbf-ft)	
5. Dust cover	10. Steering stem lower steel ball	⚙️(c): 29 N·m (3.0 kgf-m, 21.5 lbf-ft)	

Steering On-Vehicle Inspection

BENF34J16206006

Steering should be adjusted properly for smooth turning of handlebars and safe running. Overtighten steering prevents smooth turning of the handlebars and too loose steering will cause poor stability.

- 1) Check that there is no play in the front fork.
 - 2) Check that there is no play in the steering stem bearings holding the handlebar, moving the motorcycle back-and-forth with the front brake applied. Or, support the motorcycle so that the front wheel is off the ground, grasp the front fork outer tubes near the axle and move the tubes back-and-forth and up-and-down.
- If play is found, readjust the steering. (Page 6B-7)



IF34J1620018-01

Steering Tension Adjustment

BENF34J16206007

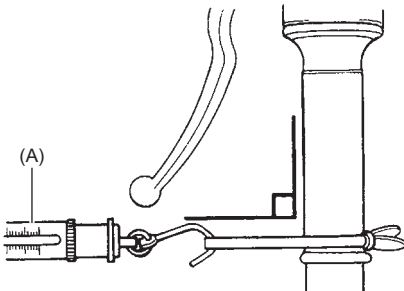
- 1) By supporting the motorcycle with a jack, lift the front wheel until it is off the ground 20 – 30 mm (0.8 – 1.2 in).
- 2) Check to make sure that the cables and wire harnesses are properly routed.
- 3) With the front wheel in the straight ahead state, hitch the spring scale (special tool) on one handlebar grip end as shown in the figure and read the graduation when the handlebars start moving.

Steering tension initial force

2 – 5 N (0.20 – 0.51 kgf, 0.45 – 1.12 lbf)

Special tool

(A): Spring Scale

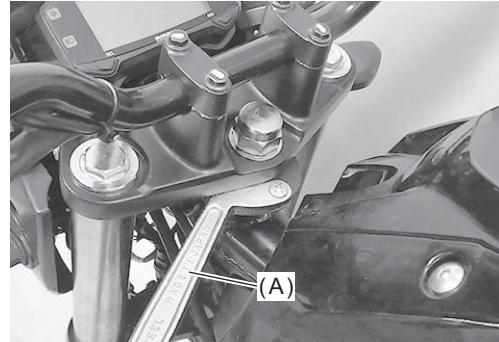


ID26J1620028-01

- 4) Do the same on the other grip end.

- 5) If the initial force reading on the scale when the handlebars start turning is either too heavy or too light, adjust the tension until it satisfies the specification as follows.

- a) First, loosen the front fork upper clamp bolts and steering stem head nut, and then adjust the steering stem nut by loosening or tightening it.



IF34J1620019-01

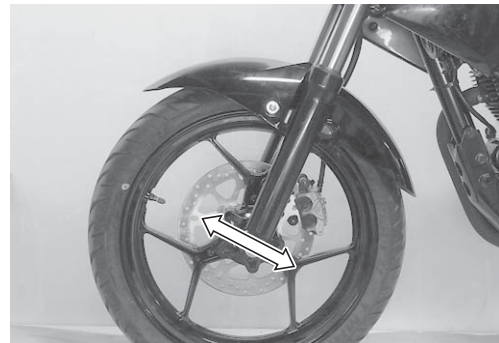
- b) Tighten the steering stem head nut, front fork upper clamp bolts to the specified torque, and recheck the initial force with the spring scale according to the previously described procedure.

Tightening torque

Steering stem head nut: 90 N·m (9.2 kgf-m, 66.5 lbf-ft)

Front fork upper clamp bolt: 23 N·m (2.3 kgf-m, 17.0 lbf-ft)

- c) Make sure that the initial force is within the specified range and the steering is not loose.



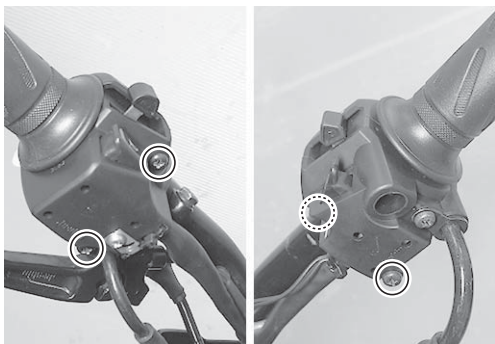
IF34J1620020-01

Steering Stem Upper Bracket Removal and Installation

BENF34J16206008

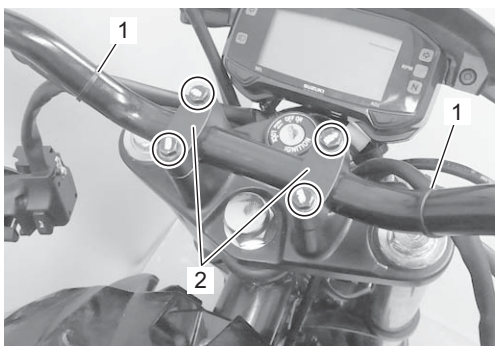
Removal

- 1) Support the motorcycle with the center stand.
- 2) Disconnect the clutch cable from the clutch lever.
Refer to "Clutch Cable Removal and Installation" in Section 5C (Page 5C-2).
- 3) Remove the front brake master cylinder assembly from the right handlebar. (Page 4A-8)
- 4) Remove the left and right handle switches.



IF34J1620021-01

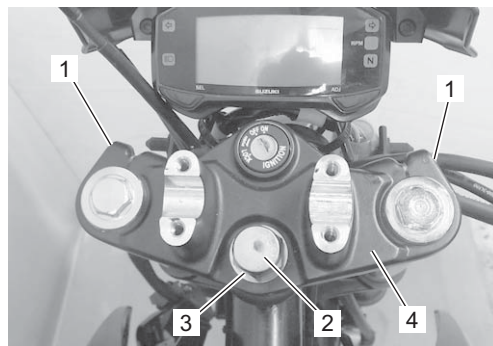
- 5) Remove the headlight assembly. (Page 9B-3)
- 6) Disconnect the ignition switch coupler. Refer to "Ignition Switch Inspection" in Section 1H (Page 1H-6).
- 7) Disconnect the clutch lever position switch lead wire connectors. Refer to "Clutch Lever Position Switch Inspection" in Section 5C (Page 5C-2)
- 8) Remove the clamps (1).
- 9) Remove the handlebar holders (2) and handlebars.



IF34J1620022-01

- 10) Loosen the front fork upper clamp bolts (1).

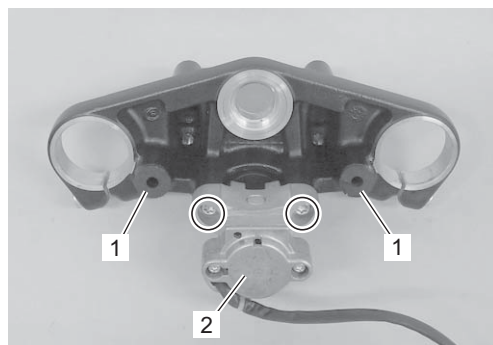
- 11) Remove the steering stem head nut (2), washer (3) and steering stem upper bracket assembly (4).



IF34J1620023-01

- 12) Remove the following parts from the steering stem upper bracket.

- Cushions (1)
- Ignition switch (2): (Page 1H-6)

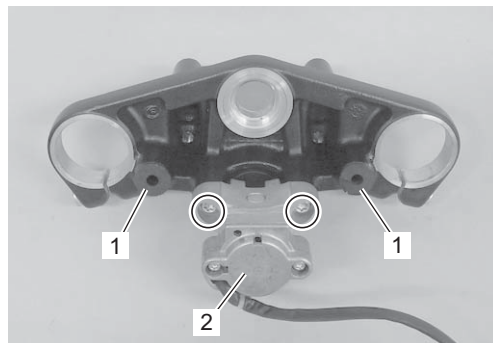


IF34J1620024-01

Installation

- 1) Install the following parts to the steering stem upper bracket.

- Cushions (1)
- Ignition switch (2): (Page 1H-6)



IF34J1620024-01

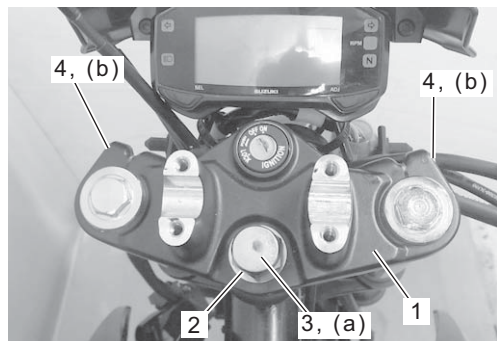
- 2) Install the steering stem upper bracket assembly (1), washer (2) and steering stem head nut (3).

- 3) Tighten the steering stem head nut and front fork upper clamp bolts (4) to the specified torque.

Tightening torque

Steering stem head nut (a): 90 N·m (9.2 kgf-m, 66.5 lbf-ft)

Front fork upper clamp bolt (b): 23 N·m (2.3 kgf-m, 17.0 lbf-ft)



IF34J1620025-01

- 4) Install the handlebars. (Page 6B-3)
- 5) Install the clamps (1).



IF34J1620026-01

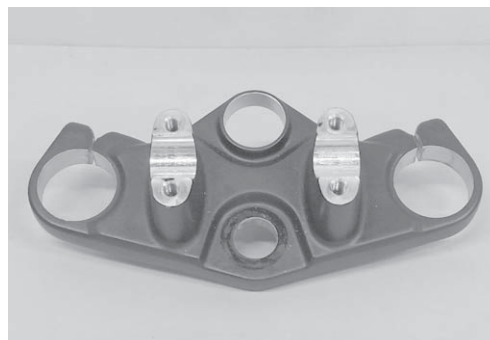
- 6) Connect the clutch lever position switch lead wire connectors. Refer to "Clutch Lever Position Switch Inspection" in Section 5C (Page 5C-2).
- 7) Connect the ignition switch coupler. Refer to "Ignition Switch Inspection" in Section 1H (Page 1H-6).
- 8) Install the headlight assembly. (Page 9B-3)
- 9) Install the left and right handle switches. Refer to "Handlebar Removal and Installation" (Page 6B-3).
- 10) Install the front brake master cylinder assembly to the right handlebar. (Page 4A-8)
- 11) Connect the clutch cable to the clutch lever. Refer to "Clutch Cable Removal and Installation" in Section 5C (Page 5C-2).
- 12) Adjust the clutch cable play. (Page 5C-2)

Steering Stem Upper Bracket Inspection

BENF34J16206009

Refer to "Steering Stem Upper Bracket Removal and Installation" (Page 6B-8).

Inspect the steering stem upper bracket for damage. If any damage is found, replace the steering stem upper bracket with a new one.



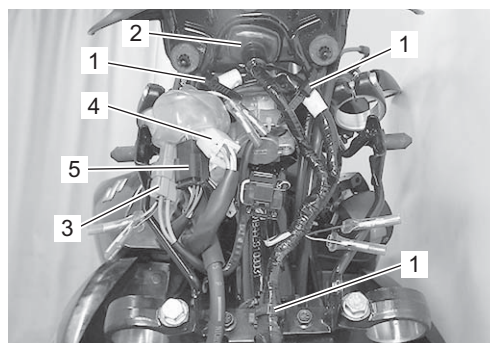
IF34J1620027-01

Steering Stem Removal and Installation

BENF34J16206010

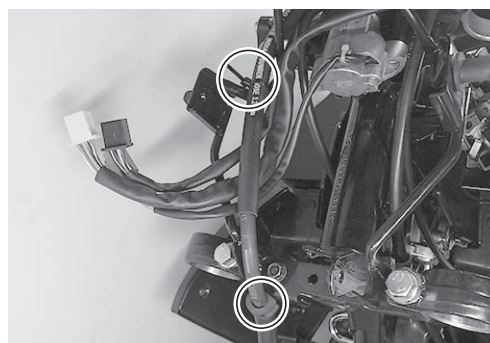
Removal

- 1) Remove the front forks. (Page 2B-2)
- 2) Remove the handlebars. Refer to "Steering Stem Upper Bracket Removal and Installation" (Page 6B-8).
- 3) Remove the clamps (1).
- 4) Disconnect the combination meter (2), ignition switch (3), left handle switch (4) and right handle switch (5) couplers.



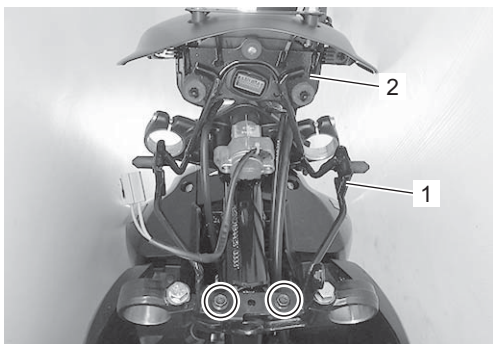
IF34J1620028-01

- 5) Remove the front brake hose clamps.



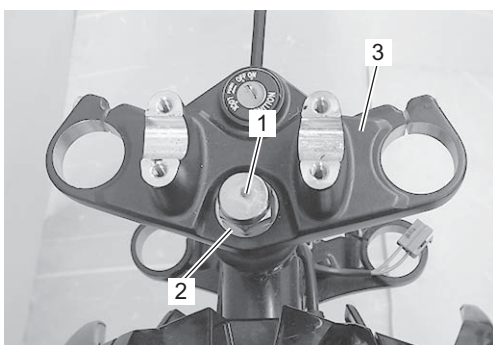
IF34J1620029-01

- 6) Remove the headlight housing brace (1) with the combination meter assembly (2).



IF34J1620030-01

- 7) Remove the steering stem head nut (1) and washer (2), and then remove the steering stem upper bracket assembly (3).



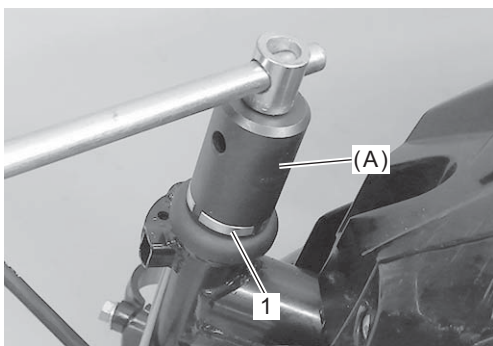
IF34J1620031-01

- 8) While holding the steering stem lower bracket, remove the steering stem nut (1) using the special tool.

Special tool

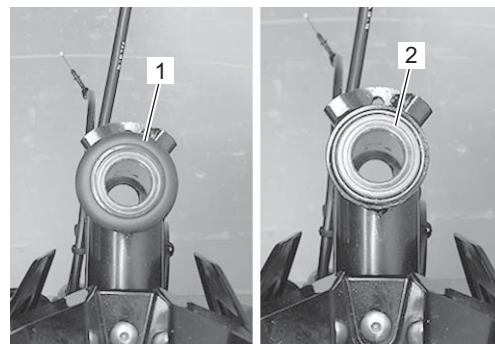
(A): Steering Stem Nut Socket

- 9) Remove the steering stem lower bracket.



IF34J1620032-01

- 10) Remove the dust cover (1) and steering stem upper steel ball outer race (2).

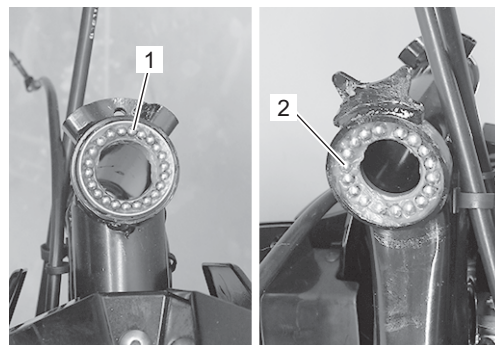


IF34J1620033-01

- 11) Remove the steering stem upper (1) and lower (2) steel balls.

Number of steel ball

Upper	22 pieces
Lower	18 pieces

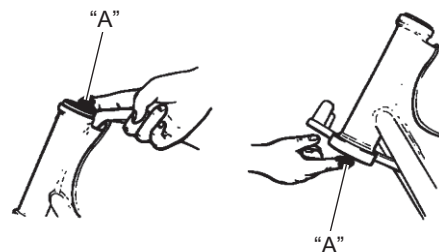


IF34J1620034-01

Installation

- 1) Apply grease to the steering stem upper and lower inner races.

“A” : (SUZUKI SUPER GREASE A)



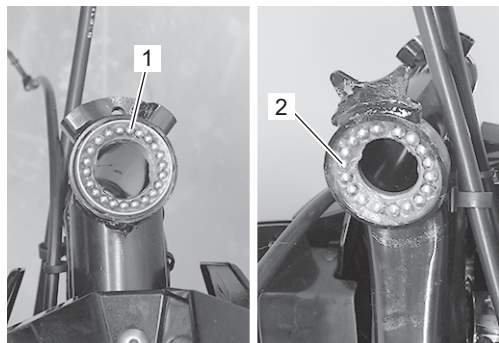
IE29J1620043-01

6B-11 Steering / Handlebar:

- 2) Install the new steering stem upper (1) and lower (2) steel balls.

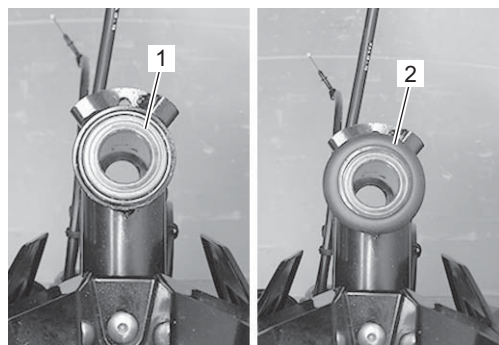
Number of steel ball

Upper	22 pieces
Lower	18 pieces



IF34J1620034-01

- 3) Install the new steering stem upper steel ball outer race (1) and dust cover (2).



IF34J1620035-01

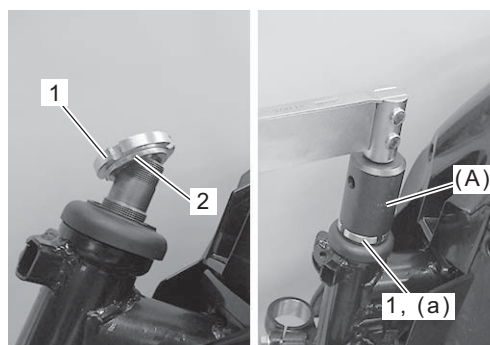
- 4) Set the steering stem lower bracket to the frame.
- 5) Install the steering stem nut (1) with the flange side (2) face down and tighten it to the specified torque (20 N·m (2.0 kgf-m, 15.0 lbf-ft)) using the special tool.
- 6) Turn the steering stem lower bracket to the left and right about five or six times so that the steering stem steel balls seat properly.
- 7) Loosen the steering stem nut 0 – 1/4 turn “a”.

Tightening torque

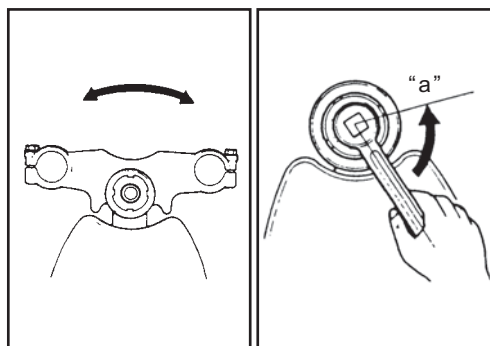
Steering stem nut (a): 20 N·m (2.0 kgf-m, 15.0 lbf-ft) → turn counterclockwise 0 – 1/4

Special tool

(A): Steering Stem Nut Socket



IF34J1620036-01

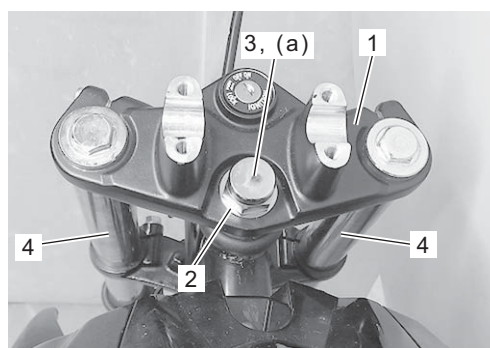


IF34J1620042-01

- 8) In this condition, check that the steering stem lower bracket can turn smoothly without rattle and stiffness. If there is a rattle or heavy movement, readjust the tightness by the steering stem nut.
- 9) Install the steering stem upper bracket (1), washer (2) and steering stem head nut (3) temporarily.
- 10) Install the front forks (4) temporarily.
- 11) Tighten the steering stem head nut to the specified torque.

Tightening torque

Steering stem head nut (a): 90 N·m (9.2 kgf-m, 66.5 lbf-ft)



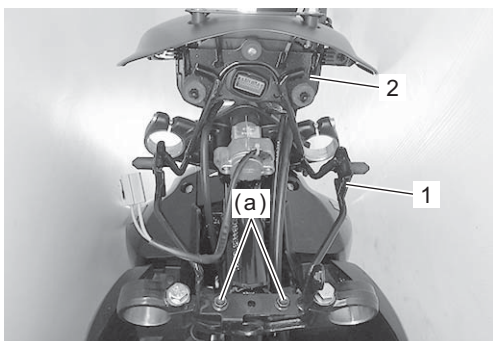
IF34J1620037-01

- 12) Install the front forks in proper position. (Page 2B-2)

- 13) Pass the cables correctly and install the headlight housing brace (1) with the combination meter assembly (2). (Page 1D-2)

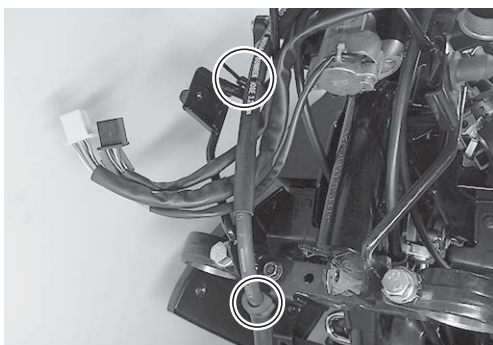
Tightening torque

Headlight housing brace bolt (a): 10 N·m (1.0 kgf-m, 7.5 lbf-ft)



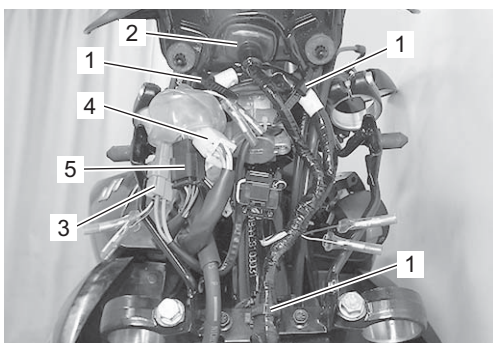
IF34J1620038-01

- 14) Pass the front brake hose correctly and install the brake hose clamps. (Page 4A-2)



IF34J1620029-01

- 15) Pass the wire harness and install the clamps (1). (Page 9A-5)
- 16) Connect the combination meter (2), ignition switch (3), left handle switch (4) and right handle switch (5) couplers.



IF34J1620028-01

- 17) Install the handlebars. Refer to "Steering Stem Upper Bracket Removal and Installation" (Page 6B-8).
- 18) Check the steering tension. (Page 6B-7)

Steering Stem Inspection

BENF34J16206011

Refer to "Steering Stem Removal and Installation" (Page 6B-9).

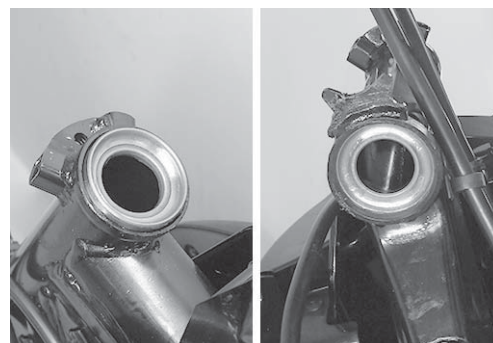
Inspect the removed parts for the following abnormalities:

- Distortion of the steering stem
- Steering stem steel ball wear or damage
- Abnormal bearing noise
- Steering stem steel ball race wear or damage

If any abnormal points are found, replace defective parts with new ones.



IF34J1620039-01



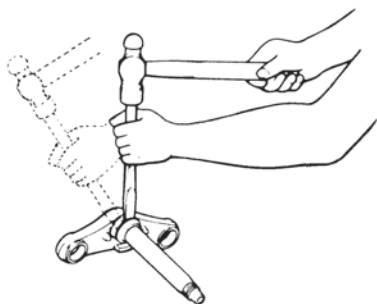
IF34J1620040-01

Steering Stem Bearing Removal and Installation

BENF34J16206012

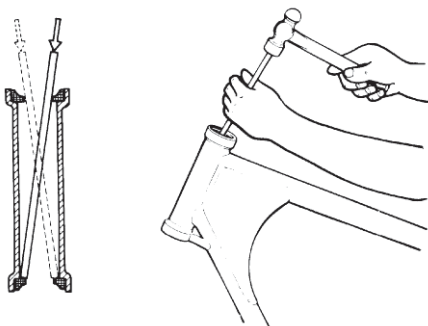
Removal

- 1) Remove the dust cover, steering stem upper steel ball outer race and steering stem upper/lower steel balls. Refer to "Steering Stem Removal and Installation" (Page 6B-9).
- 2) Remove the steering stem lower steel ball outer race using a chisel.



I649G1620033-02

- 3) Drive out the steering stem upper and lower steel ball inner races using a suitable bar.



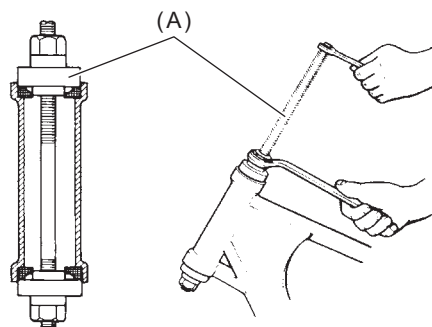
IE29J1620050-01

Installation

- 1) Press in the new steering stem upper and lower steel ball inner races using the special tool.

Special tool

(A): Steering Race Installer

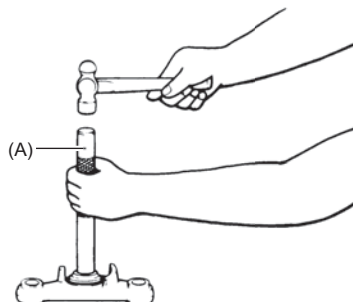


IF34J1620041-01

- 2) Press in the new steering stem lower steel ball outer race using the special tool.

Special tool

(A): Steering Race Installer Lower



IF34J1620043-01

- 3) Apply grease to the steering stem upper/lower steel ball races, install the new steering stem upper/lower steel balls and the steering stem lower bracket to the frame. Refer to "Steering Stem Removal and Installation" (Page 6B-9).

Specifications

Tightening Torque Specifications

BENF34J16207001

Fastening part	Tightening torque			Note
	N·m	kgf·m	lbf·ft	
Handlebar clamp bolt	23	2.3	17.0	☞ (Page 6B-4)
Clutch lever holder bolt	10	1.0	7.5	☞ (Page 6B-4)
Steering stem head nut	90	9.2	66.5	☞ (Page 6B-7) / ☞ (Page 6B-9) / ☞ (Page 6B-11)
Front fork upper clamp bolt	23	2.3	17.0	☞ (Page 6B-7) / ☞ (Page 6B-9)
Steering stem nut	20 N·m (2.0 kgf·m, 15.0 lbf·ft) → turn counterclockwise 0 – 1/4			☞ (Page 6B-11)
Headlight housing brace bolt	10	1.0	7.5	☞ (Page 6B-12)

Reference:

For the tightening torques of fasteners not specified in this page, refer to:

“Handlebar Components” (Page 6B-1)

“Handlebar Construction” (Page 6B-2)

“Steering Stem Components” (Page 6B-6)

“Fasteners Information” in Section 0C (Page 0C-8)

Special Tools and Equipment

Recommended Service Material

BENF34J16208001

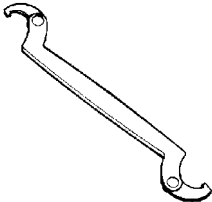
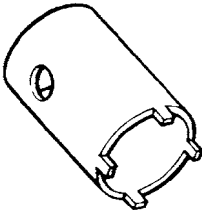

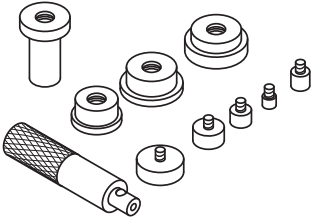
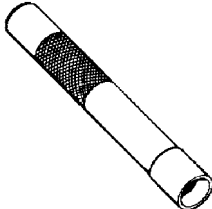
Material	SUZUKI recommended product or Specification	Note
Adhesive	Handle grip glue	☞ (Page 6B-4)
Grease	SUZUKI SUPER GREASE A	☞ (Page 6B-4) / ☞ (Page 6B-5) / ☞ (Page 6B-10)

NOTE

Required service materials are also described in:
“Handlebar Components” (Page 6B-1)
“Handlebar Construction” (Page 6B-2)
“Steering Stem Components” (Page 6B-6)

Special Tool

BENF34J16208002

Adjustable hook wrench ☞ (Page 6B-7) 	Steering stem nut socket ☞ (Page 6B-10) / ☞ (Page 6B-11) 
Spring scale (400 - 1000 g) ☞ (Page 6B-7) 	Bearing installer set ☞ (Page 6B-13) 
Steering race installer lower ☞ (Page 6B-13) 	

Section 9

Body and Accessories

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Precautions

Precautions

Precautions for Electrical System

BENF34J19000001

Refer to “General Precautions” in Section 00 (Page 00-1) and “Precautions for Electrical Circuit Service” in Section 00 (Page 00-2).

Component Location

Electrical Components Location

BENF34J19003001

Refer to “Electrical Components Location” in Section 0A (Page 0A-5).

Wiring Systems

General Description

Abbreviations

BENF34J19101001

Refer to the “Abbreviations” in Section 0A (Page 0A-1) for the general abbreviations.

Wire / Connector Color Symbols

BENF34J19101002

Refer to “Wire Color Symbols” in Section 0A (Page 0A-3).

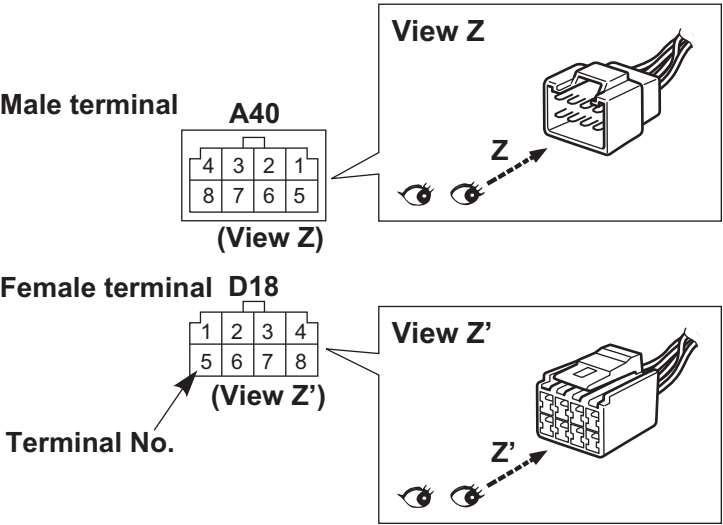
How to Read Terminal Nos.

BENF34J19101003

The connector shape and terminal layout shown in this manual are those when viewed from “Z” in the illustration.

NOTE

- Molded terminal numbers that are different from the above can be found on some connectors in rare cases.
- These molded numbers are not applied in this manual.



IE31J1910901-02

Glossary

BENF34J19101004

English	
ABS CONTROL UNIT	
ABS MOTOR	
ABS VALVE	
AMBIENT AIR TEMP SENSOR	
BATTERY	
CDI UNIT	
CKP SENSOR	
CLUTCH LEVER POSITION SWITCH	
COOLING FAN MOTOR	
DIMMER SWITCH	
ECM	
ECT SENSOR	
ENGINE STOP SWITCH	
EVAP SYSTEM PURGE CONTROL SOLENOID VALVE	
EXCV ACTUATOR	
FAN	
FAN RELAY	
FRONT BRAKE LIGHT SWITCH	
FRONT TURN SIGNAL LIGHT	
FRONT WHEEL SPEED SENSOR	
FUEL	
FUEL INJECTOR	
FUEL LEVEL GAUGE	
FUEL PUMP	
FUEL PUMP RELAY	
FUSE BOX	
GENERATOR	
GP SWITCH	
HANDLE SWITCH	
HAZARD SWITCH	
HEADLIGHT	
HIBEAM INDICATOR LIGHT	
HO2 SENSOR	
HORN	
HORN SWITCH	
IAP SENSOR	
IAT SENSOR	
IF EQUIPPED	
IGNITION	
IGNITION COIL	
IGNITION SWITCH	
IMMOBILIZER ANTENNA	
LICENSE PLATE LIGHT	
LIGHTING SWITCH	
MAIN FUSE	
MODE SWITCH	
OIL PRESSURE SWITCH	
PASSING LIGHT SWITCH	
POSITION LIGHT	
POWER SOURCE	
REAR BRAKE LIGHT SWITCH	
REAR COMBINATION LIGHT	
REAR TURN SIGNAL LIGHT	
REAR WHEEL SPEED SENSOR	
REGULATOR RECTIFIER	
SELECT SWITCH	
SIDE-STAND DIODE	

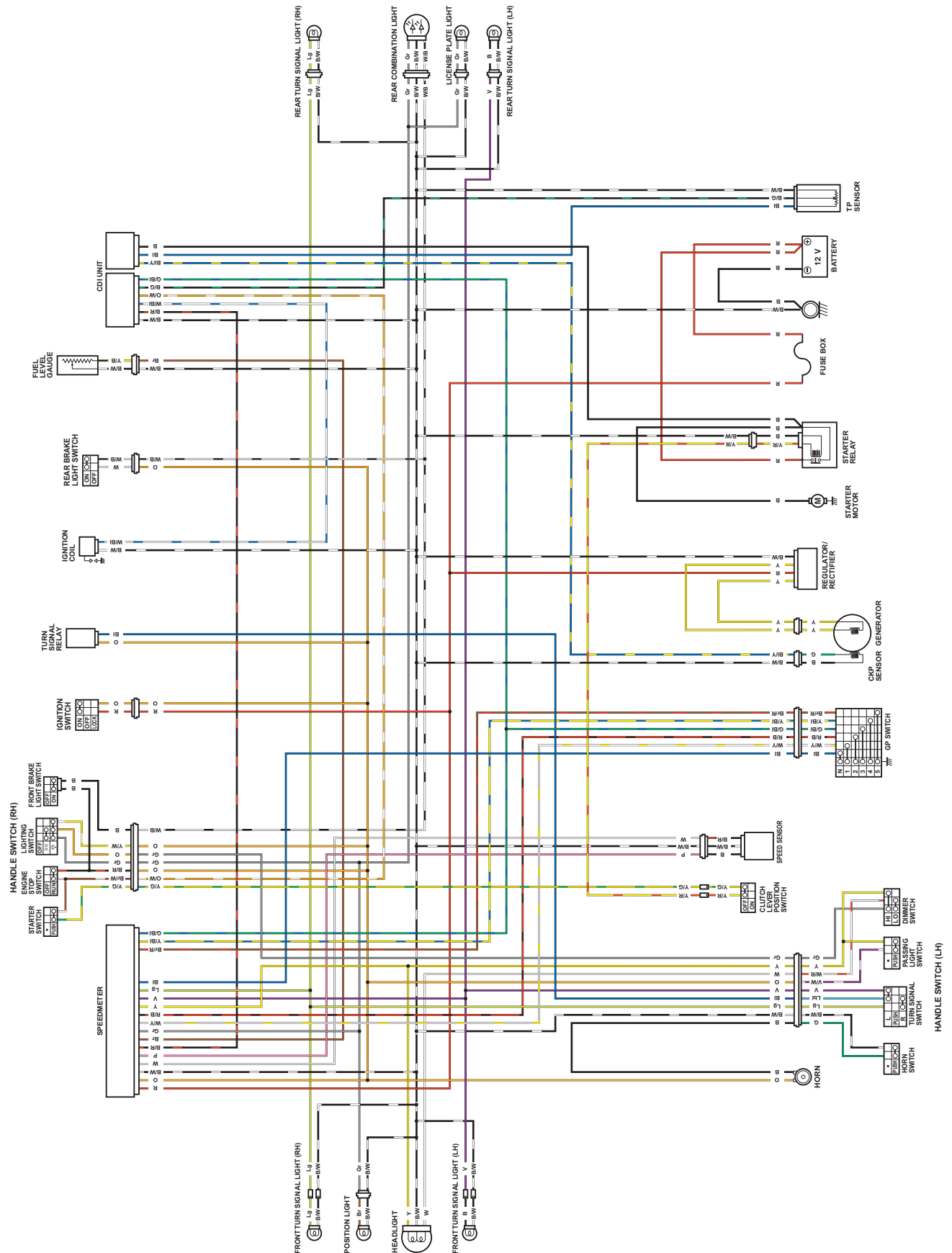
9A-3 Wiring Systems:

English	
SIDE-STAND RELAY	
SIDE-STAND SWITCH	
SIGNAL	
SPEED SENSOR	
SPEEDOMETER	
STARTER SWITCH	
STARTER MOTOR	
STARTER RELAY	
STV ACTUATOR	
TO SENSOR	
TP SENSOR	
TURN SIGNAL RELAY	
TURN SIGNAL SWITCH	

Schematic and Routing Diagram

Wiring Diagram

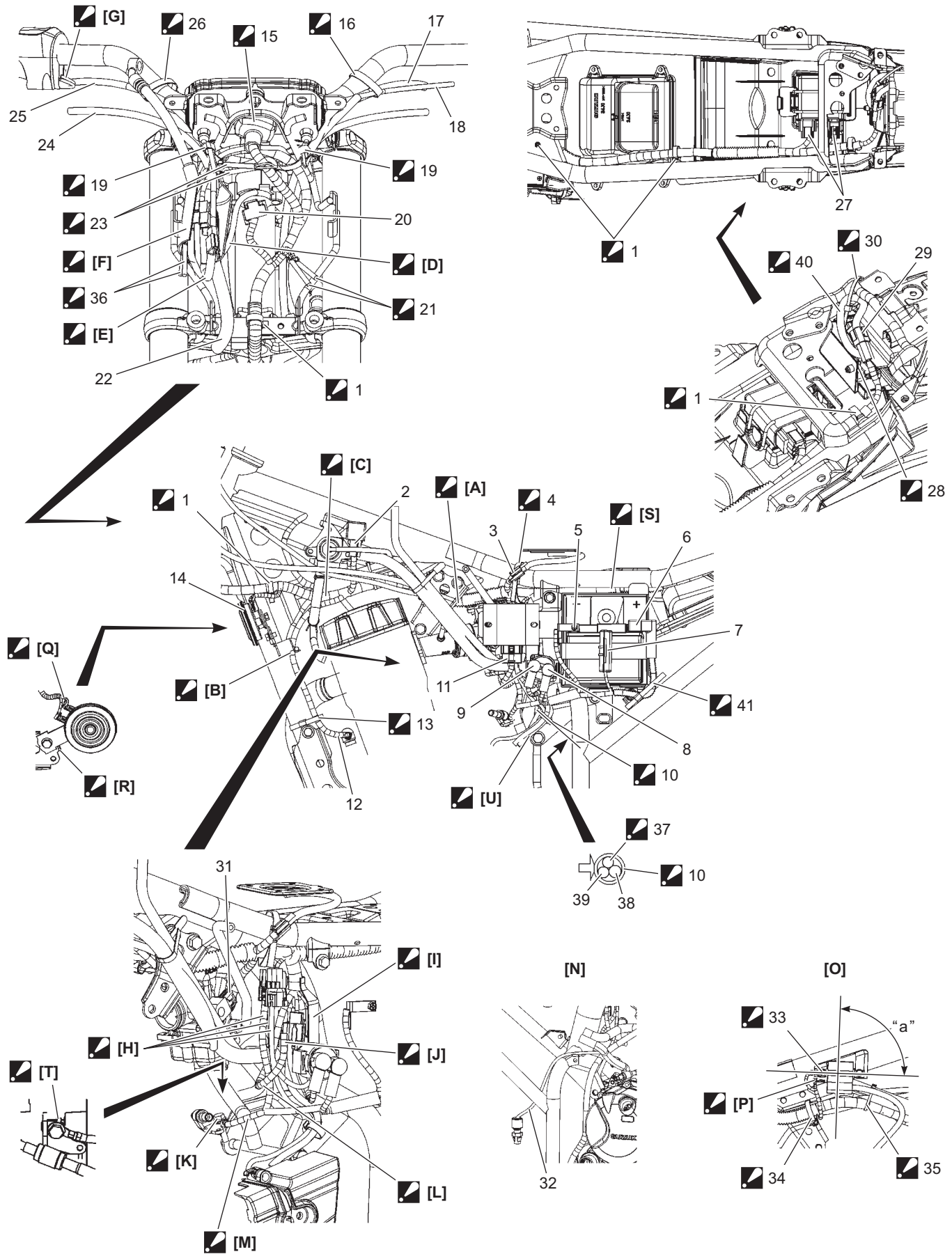
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


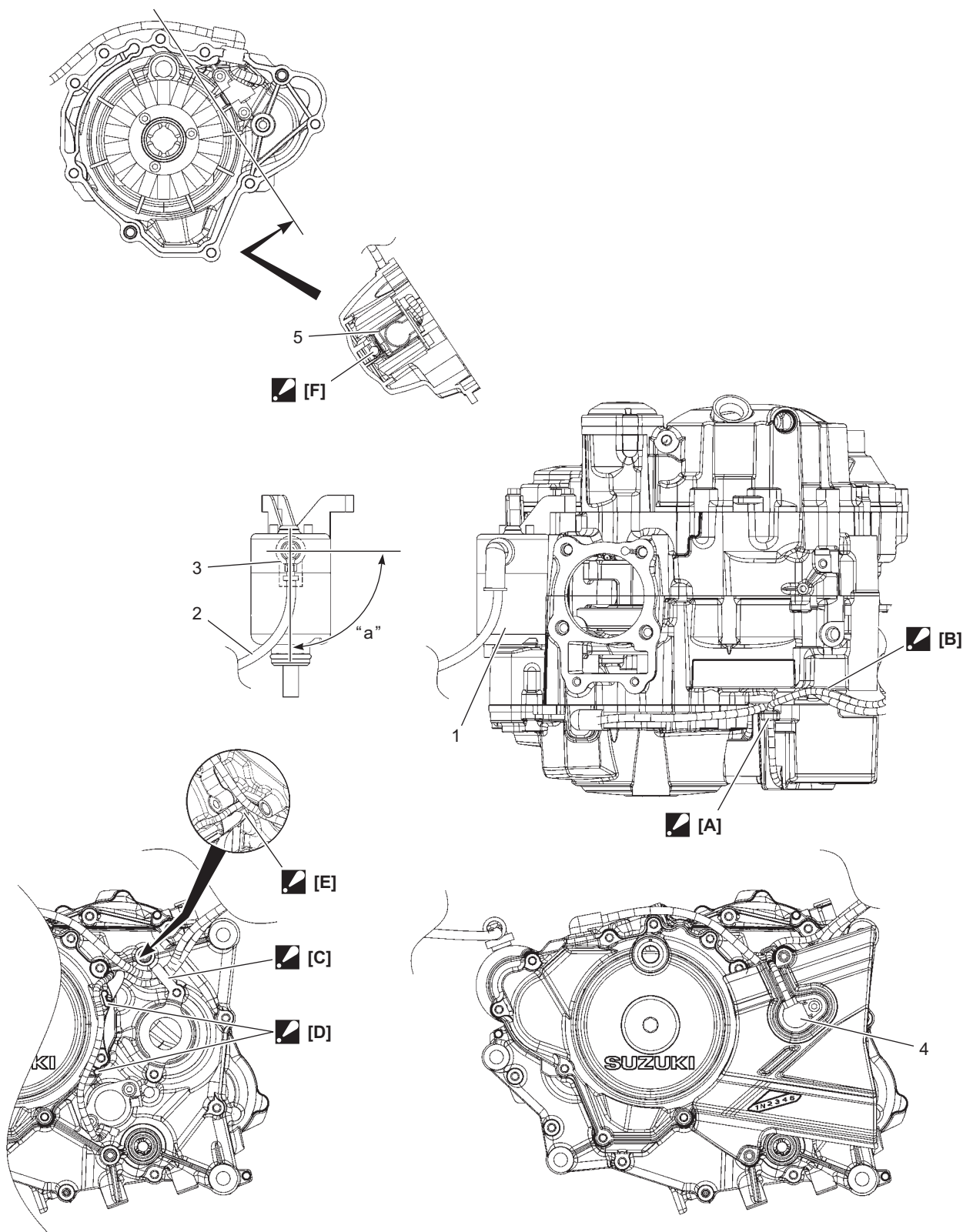
IF34J1910904-05

Wiring Harness Routing Diagram

BENF34J19102002

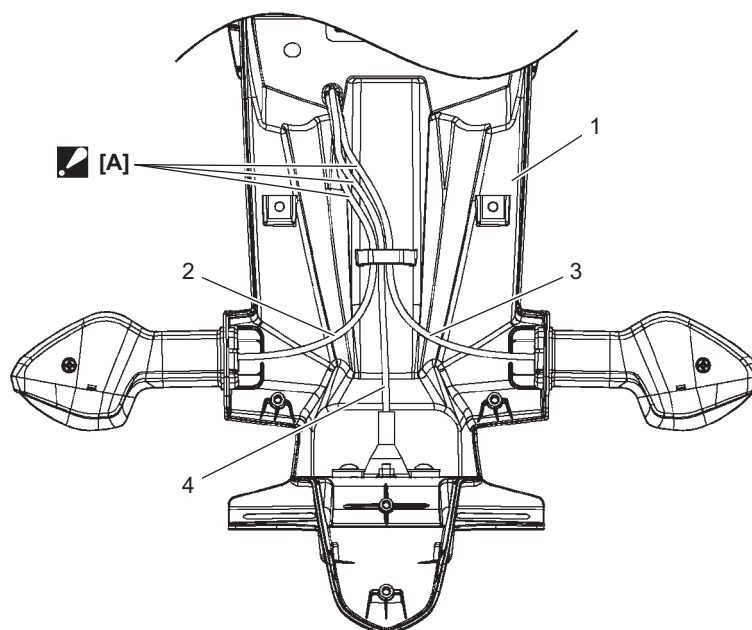


 [A]: Pass the wiring harness on the right side of the engine mounting upper plate.	 1. Clamp : Clamp the wiring harness and insert the clamp end into the hole.	22. Front brake hose
 [B]: Pass the starter motor lead wire to the inside of the frame front cover center bracket.	2. Turn signal relay coupler	 23. Clutch switch lead wire connector : Pass the clutch switch lead wire in front of the combination meter lead wire.
 [C]: Pass the wiring harness on the right side of the PAIR valve hose, and lower side of the center frame.	3. Fuel level gauge lead wire coupler	24. Throttle cable
 [D]: Pass the ignition switch lead wire behind the front brake hose.	 4. Clamp : Clamp the wiring harness.	25. Right handle switch lead wire
 [E]: Pass the left and right handle switch lead wires behind the front brake hose.	5. Battery (–) lead wire	 26. Clamp : Clamp the right handle switch lead wire positioning the clamp head downward. : Cut off the excess tip of the clamp.
 [F]: Cover the ignition switch lead wire coupler, left and right handle switch lead wire couplers, position light lead wire coupler and right front turn signal light lead wire connectors with the boot.	6. Battery (+) lead wire	27. CDI unit coupler
 [G]: Pass both of the front brake switch lead wires in the same place.	7. Main fuse	 28. Clamp : Clamp the left and right rear turn signal light lead wire connectors and license plate light lead wire connectors, and insert the clamp end into the hole. : Cut off the excess tip of the clamp.
 [H]: Pass the battery lead wire, starter relay lead wire and speed sensor lead wire on the left side of the PAIR cleaner hose.	8. Battery (+) lead wire (Red cap)	29. Rear combination light lead wire coupler
 [I]: Cover the CKP sensor lead wire coupler, generator lead wire coupler, rear brake light switch lead wire coupler and GP switch lead wire coupler with the boot.	9. Starter motor lead wire (Gray cap)	 30. Clamp : Clamp the rear combination light lead wire.
 [J]: To regulator/rectifier	 10. Clamp : Clamp the CKP sensor lead wire / generator lead wire, speed sensor lead wire and GP switch lead wire, and insert the clamp end into the hole. : Cut off the excess tip of the clamp.	31. TP sensor coupler
 [K]: Tighten the engine ground lead wire with the clutch cable stopper.	11. Regulator/rectifier coupler	32. Rear brake light switch lead wire
 [L]: Pass the regulator/rectifier wire harness outside of the other wire harnesses.	12. Starter motor lead wire	 33. Ignition coil ground lead wire terminal : Tighten the ignition coil ground lead wire with the ignition coil.
 [M]: Pass the engine ground lead wire on the front side of the PCV hose.	 13. Clamp : Clamp the starter motor lead wire aligning the clamp with the upper end of the engine mounting lower bracket. : Position the clamp head to the left and the excess tip of the clamp to the rear.	 34. Clamp : Clamp the wiring harness and starter cable at the blue tape on the wiring harness positioning the clamp head downward, and insert the clamp into the hole.
[N]: Details: Rear brake light switch	14. Horn	 35. Clamp : Clamp the wiring harness and throttle cable.
[O]: Details: Ignition coil	 15. Combination meter coupler : Fit the coupler boot to the combination meter until it reaches bottom of the meter case.	 36. Right front turn signal light lead wire connector : Pass the right front turn signal light lead wire in front of the headlight housing brace.
 [P]: Connect the ignition coil lead wire connector to the ignition coil primary terminal positioning the wire inward.	 16. Clamp : Clamp the left handle switch lead wire and clutch switch lead wire positioning the clamp head downward. : Cut off the excess tip of the clamp.	 37. CKP sensor lead wire / generator lead wire : Pass the CKP sensor lead wire / generator lead wire above the GP switch lead wire.
 [Q]: Connect the horn lead wire connectors to the horn terminals positioning the wire upward.	17. Left handle switch lead wire	38. GP switch lead wire
 [R]: Fix the horn holding the horn bracket in the position by the stopper.	18. Clutch switch lead wire	39. Speed sensor lead wire
 [S]: Pass the wiring harness above the battery box.	 19. Clamp : Clamp the wiring harness, left handle switch lead wire and clutch switch lead wire at the blue tape on the wiring harness.	 40. Rear combination light lead wire : Pass the rear combination light lead wire under the seat bracket.
 [T]: Fix the engine ground lead wire holding the terminal in the position by the clutch cable stopper.	20. Headlight coupler	 41. Clamp : Clamp the battery lead wire.
 [U]: Pass the CKP sensor lead wire / generator lead wire and GP switch lead wire above the engine mounting rear bolt without slack.	 21. Left front turn signal light lead wire connector : Pass the left front turn signal light lead wire in front of the headlight housing brace.	"a": 80 – 100°




IF34J1910902-02

<p>☑ [A]: Pass the speed sensor lead wire under the hook of the engine sprocket cover.</p>	<p>☑ [E]: Hook the GP switch lead wire on the lug of the generator cover.</p>	<p>3. Starter motor terminal cover</p>
<p>☑ [B]: Do not pinch the lead wires between the crankcase and engine sprocket cover.</p>	<p>☑ [F]: Pass the generator lead wire between the ribs of the generator cover.</p>	<p>4. Speed sensor</p>
<p>☑ [C]: Pass the CKP sensor lead wire, generator lead wire and GP switch lead wire behind the oil seal retainer.</p>	<p>1. Starter motor</p>	<p>5. Lead wire clamp</p>
<p>☑ [D]: Set the GP switch lead wire along the groove of the generator cover.</p>	<p>2. Starter motor lead wire</p>	<p>"a": 75 – 105"</p>



IF34J1910903-02

 [A]: Set the left and right rear turn signal light lead wires and license plate light lead wire without slack.	2. Right rear turn signal light lead wire	4. License plate light lead wire
1. Rear fender	3. Left rear turn signal light lead wire	

Component Location

Electrical Components Location

Refer to "Electrical Components Location" in Section 0A (Page 0A-5).

BENF34J19103001

Lighting Systems

Precautions

Precautions for Lighting Systems

BENF34J19200001

NOTICE

- When you touch the bulb with your bare hands, clean the bulb with a cloth moistened with alcohol or soap water to prevent premature bulb failure.
- Do not use the bulb of a wattage other than specification.

Diagnostic Information and Procedures

Headlight Symptom Diagnosis

BENF34J19204004

Condition	Possible cause	Correction / Reference Item
Low beam does not light up	Circuit fuse blown.	Replace fuse and check short circuit.
	Bulb blown.	Replace bulb. ☞(Page 9B-4)
	Wiring or ground faulty.	Repair wiring. ☞(Page 9A-4)
	Lighting switch faulty.	Check lighting switch. ☞(Page 9B-13)
	Dimmer switch faulty.	Check dimmer switch. ☞(Page 9B-14)
High beam does not light up	Circuit fuse blown.	Replace fuse and check short circuit.
	Bulb blown.	Replace bulb. ☞(Page 9B-4)
	Wiring or ground faulty.	Repair wiring. ☞(Page 9A-4)
	Lighting switch faulty.	Check lighting switch. ☞(Page 9B-13)
	Dimmer switch faulty.	Check dimmer switch. ☞(Page 9B-14)
	Passing switch faulty.	Check passing switch. ☞(Page 9B-13)

Turn Signal Light Symptom Diagnosis

BENF34J19204002

Condition	Possible cause	Correction / Reference Item
Flash rate high or one side only flashes	Bulb blown.	Replace bulb. ☞(Page 9B-11)
	Incorrect bulb.	Replace bulb. ☞(Page 9B-11)
	Turn signal relay faulty.	Check turn signal relay. ☞(Page 9B-12)
	Open circuit or high resistance between turn signal switch and non lighting bulb.	Repair wiring. ☞(Page 9A-4)
Flash rate low	Supply voltage low or high resistance.	Check charging system. ☞(Page 1J-4) Repair wiring. ☞(Page 9A-4)
	Turn signal relay faulty.	Check turn signal relay. ☞(Page 9B-12)

Rear Combination Light Symptom Diagnosis

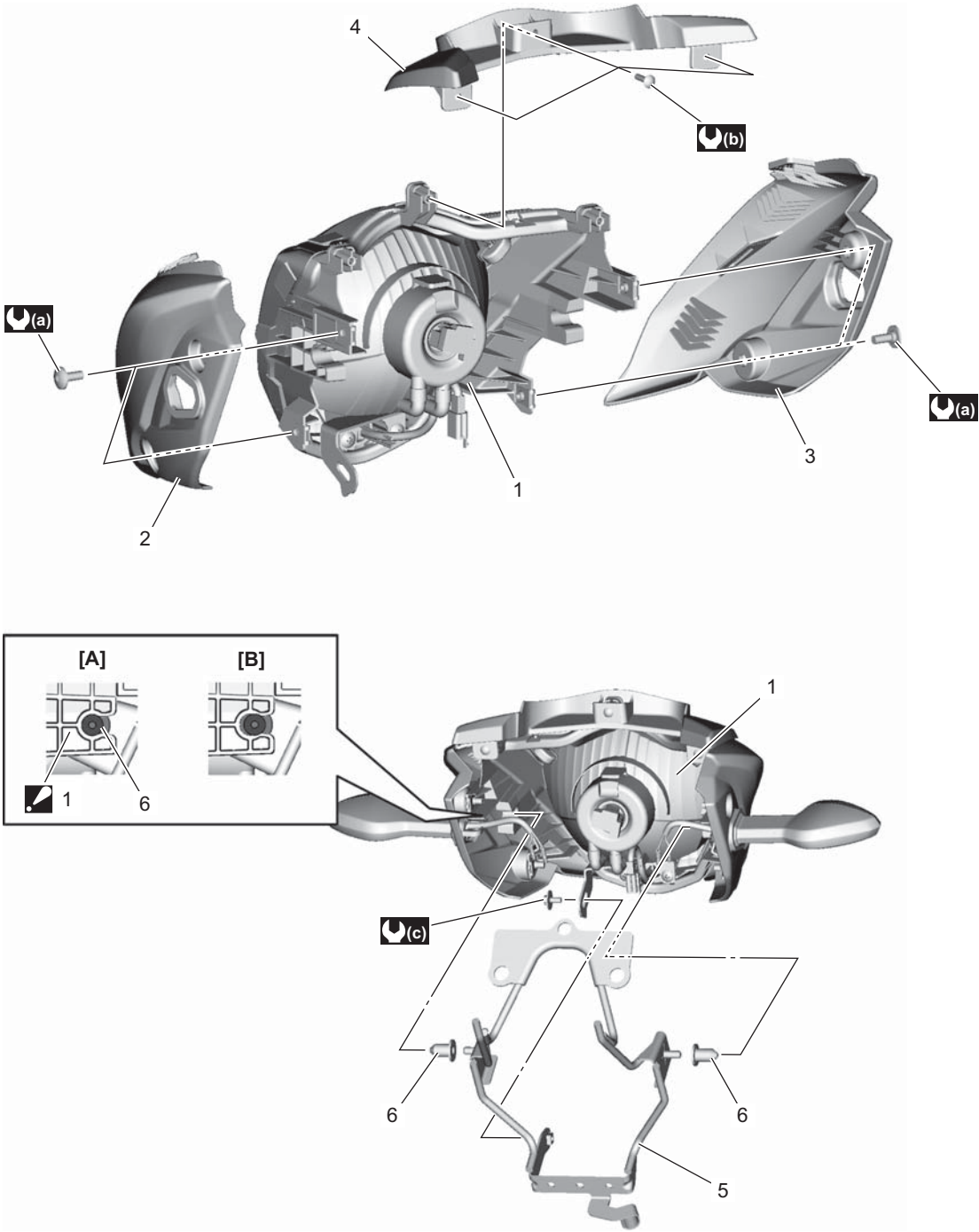
BENF34J19204003

Condition	Possible cause	Correction / Reference Item
All lights do not light up	Wiring or grounding faulty.	Repair wiring. ☞(Page 9A-4)
Some lights do not light up	Bulbs (LED) blown.	Replace rear combination light assembly and check short circuit.
	Wiring or grounding faulty.	Repair wiring. ☞(Page 9A-4)
Brake light do not light up	Front brake light switch faulty.	Check front brake light switch. ☞(Page 4A-3)
	Rear brake light switch faulty.	Check rear brake light switch. ☞(Page 4A-4)
	Wiring or grounding faulty.	Repair wiring. ☞(Page 9A-4)
	Rear combination light bulbs (LED) faulty.	Replace rear combination light assembly.
Brake light stay on	Front brake light switch faulty.	Check front brake light switch. ☞(Page 4A-3)
	Rear brake light switch faulty.	Check rear brake light switch. ☞(Page 4A-4)
	Rear combination light bulb (LED) faulty.	Replace rear combination light assembly.

Repair Instructions

Headlight Construction

BENF34J19206001

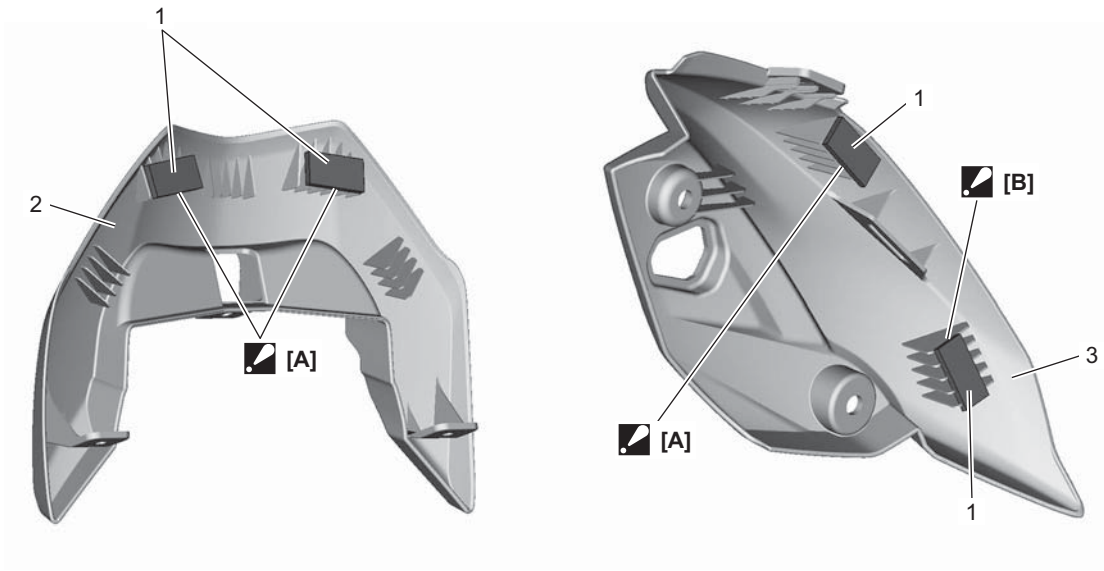


IF34J1920001-03



[A]: Correct	3. Right headlight housing	: 5.5 N-m (0.56 kgf-m, 4.0 lbf-ft)
[B]: Incorrect	4. Upper headlight housing	: 2 N-m (0.20 kgf-m, 1.5 lbf-ft)
1. Headlight : Install the headlight to the headlight cushions correctly.	5. Headlight housing brace	: 2.5 N-m (0.25 kgf-m, 2.0 lbf-ft)
2. Left headlight housing	6. Headlight cushion	

Headlight Housing Cushion Construction

BENF34J19206025

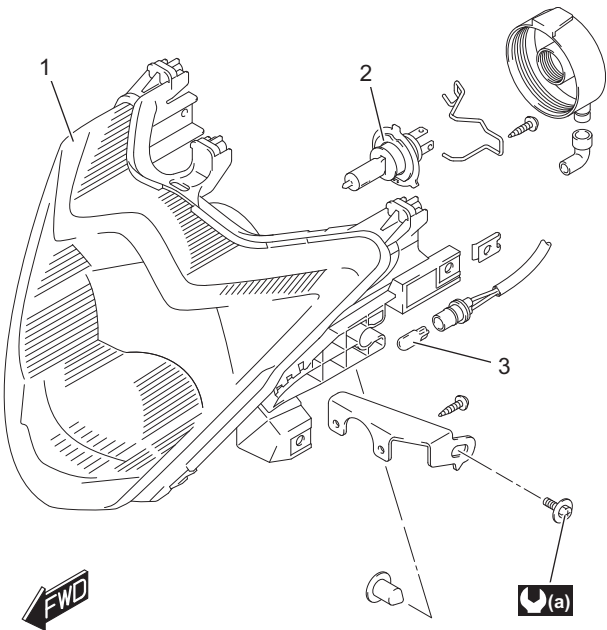


IF34J1920002-01


 [A]: Stick the cushion aligning the end of the cushion with the rib corner of the headlight housing.	2. Upper headlight housing
 [B]: Stick the cushion not to protrude from the rib of the headlight housing.	3. Headlight housing (LH and RH)
1. Headlight housing cushion	

Headlight / Position Light Components

BENF34J19206002




IF34J1920003-02

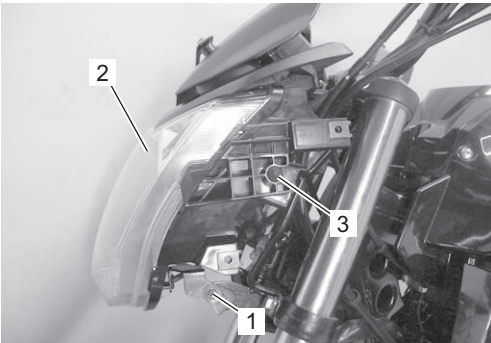
1. Headlight
2. Headlight bulb (12 V 35/35 W, HS1)
3. Position light bulb (12 V, 5 W)
 (a) : 2.5 N-m (0.25 kgf-m, 2.0 lbf-ft)

Headlight Removal and Installation

BENF34J19206003

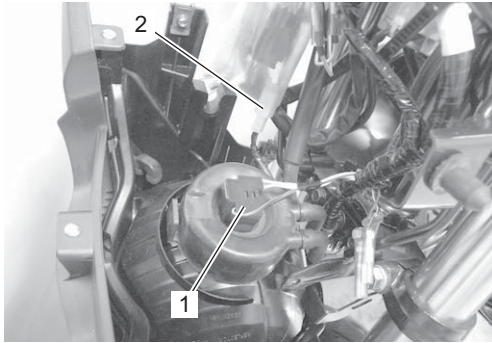
Removal

- 1) Remove the headlight housing, right and left.
 (Page 9B-10)
- 2) Remove the headlight bolt (1), move the headlight assembly (2) frontward and detach it from the headlight cushion (3).



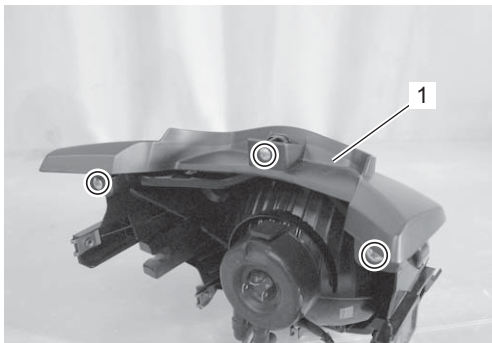
IF34J1920004-01

- 3) Disconnect the headlight coupler (1) and position light coupler (2).



IF34J1920005-01

- 4) Remove the upper headlight housing (1).



IF34J1920006-01

Installation

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

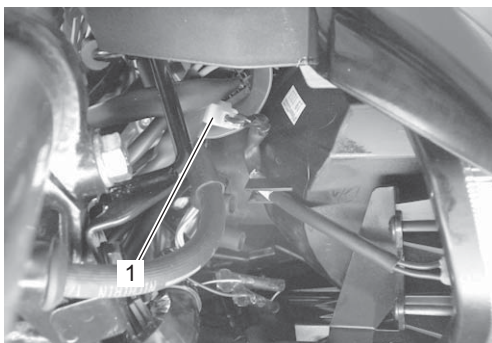
- Install the headlight assembly to the headlight cushions securely. (Page 9B-2)
- After installing, be sure to inspect the headlight beam. (Page 9B-5)

Position Light Removal and Installation

BENF34J19206004

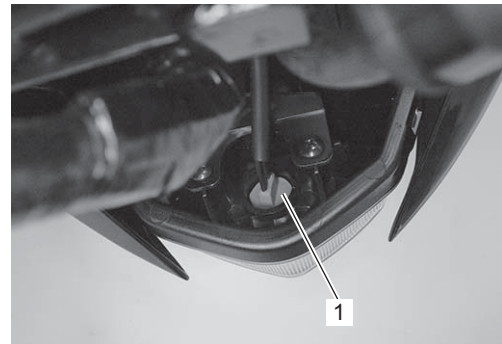
Removal

- 1) Disconnect the position light coupler (1).



IF34J1920007-01

- 2) Pull out the position light (1).



IF34J1920008-01

Installation

Install the position light in the reverse order of removal.

Headlight Bulb / Position Light Bulb Replacement

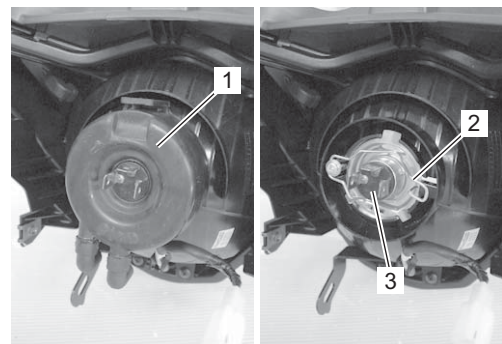
BENF34J19206005

▲ CAUTION

As the headlight bulb operates at a high temperature, handle the bulb after sufficiently cooled.

Headlight Bulb

- 1) Remove the headlight assembly. (Page 9B-3)
- 2) Remove the bulb socket rubber cap (1).
- 3) Unhook the bulb holder spring (2) and remove the headlight bulb (3).



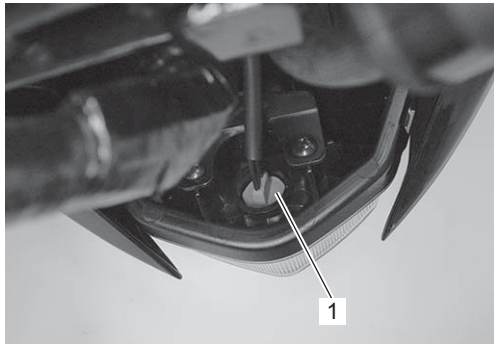
IF34J1920009-01

- 4) After finishing the headlight bulb replacing, install the removed parts.
- 5) After installing the removed parts, be sure to inspect the headlight beam. (Page 9B-5)

9B-5 Lighting Systems:

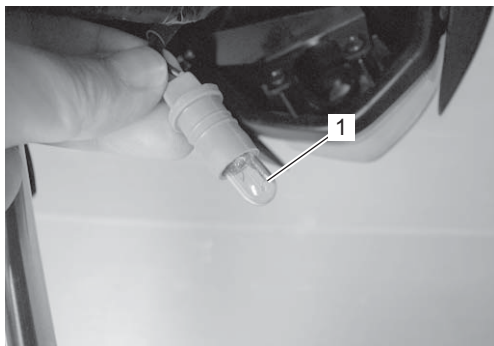
Position Light Bulb

- 1) Pull out the position light socket (1).



IF34J1920008-01

- 2) Replace the position light bulb (1).



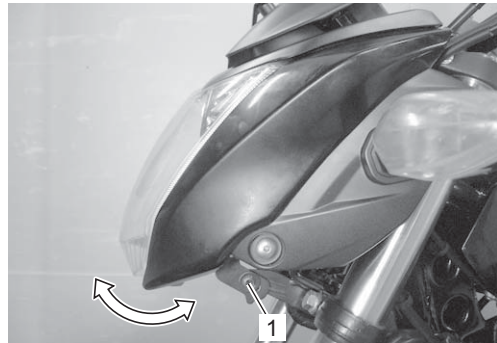
IF34J1920010-01

- 3) Install the position light socket.

Headlight Beam Adjustment

BENF34J19206006

- 1) Loosen the headlight bolt (1).
- 2) Adjust the headlight beam vertically moving the headlight assembly.

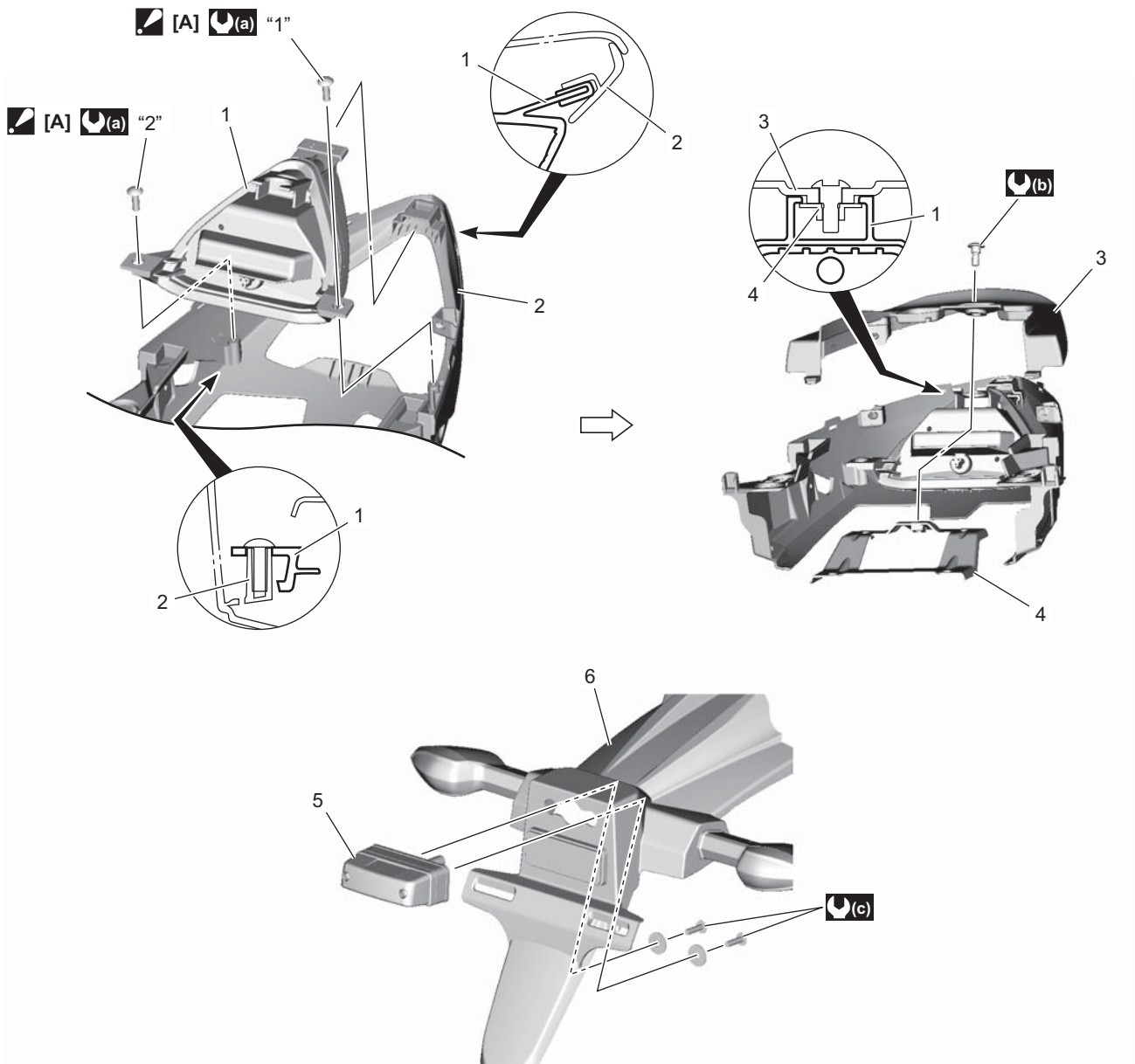


IF34J1920011-02

- 3) Tighten the headlight bolt.

Rear Combination Light / License Plate Light Construction

BENF34J19206007

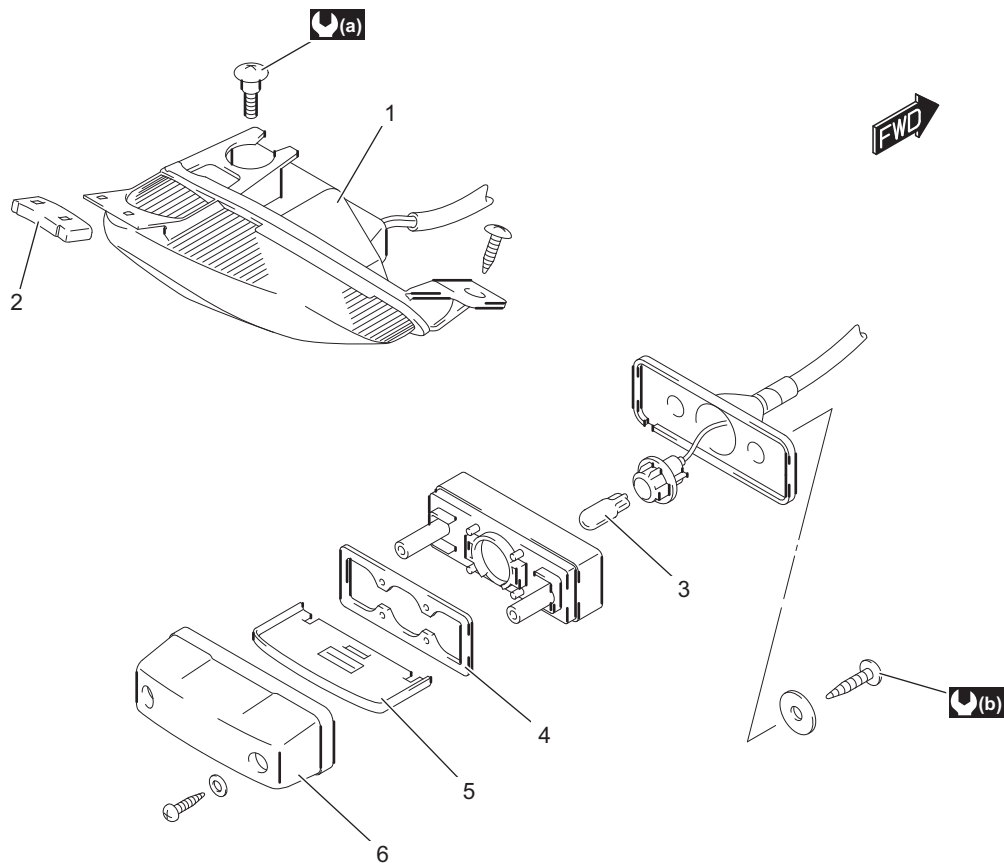


IF34J1920012-03

[A]: Tighten the screws in order of "1" → "2".	4. Frame cover bracket	(b) : 5.5 N·m (0.56 kgf-m, 4.0 lbf-ft)
1. Rear combination light	5. License plate light	(c) : 3 N·m (0.31 kgf-m, 2.5 lbf-ft)
2. Frame center lower cover	6. Rear fender	
3. Frame center cover	(a) : 2 N·m (0.20 kgf-m, 1.5 lbf-ft)	

Rear Combination Light / License Plate Light Components

BENF34J19206008



IF34J1920013-03

1. Rear combination light (LED)	4. Gasket	(a) : 5.5 N-m (0.56 kgf-m, 4.0 lbf-ft)
2. Mounting rubber	5. License plate light lens	(b) : 3 N-m (0.31 kgf-m, 2.5 lbf-ft)
3. License plate light bulb (12 V, 5 W)	6. Cover	

Rear Combination Light Removal and Installation

BENF34J19206009

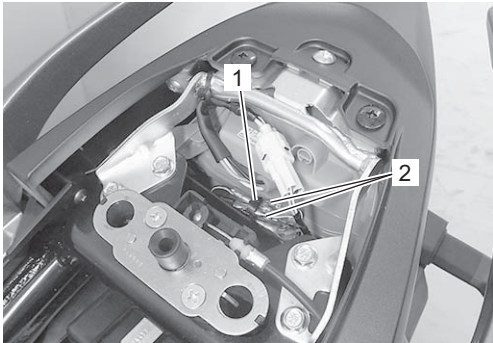
Refer to “Frame Upper Cover / Frame Center Cover / Frame Center Lower Cover Removal and Installation” in Section 9D (Page 9D-14).

Rear Combination Light Bulb Replacement

BENF34J19206010

NOTE

If LED operation is abnormal, replace the rear combination light with a new one.



IF34J1920014-02

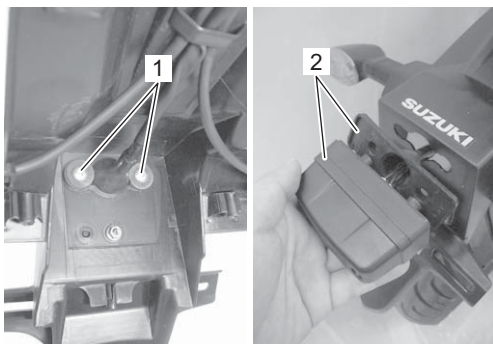
License Plate Light Removal and Installation

BENF34J19206011

Removal

- 1) Remove the following parts.
 - Seat: (Page 9D-11)
 - Rear fender bracket: (Page 9D-15)
- 2) Remove the clamp (1) and disconnect the license plate light lead wire connectors (Black-Black/white and Black-Black) (2).

- 3) Remove the screws (1) and license plate light assembly (2).



IF34J1920015-01

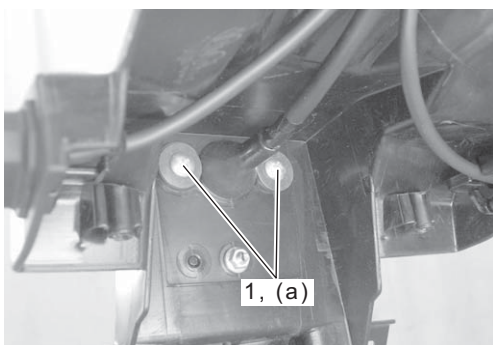
Installation

Install the license plate light in the reverse order of removal. Pay attention to the following points:

- Tighten the license plate light mounting screws (1) to the specified torque.

Tightening torque

License plate light mounting screw (a): 3 N·m (0.31 kgf-m, 2.5 lbf-ft)



IF34J1920016-01

- Check the wiring harness routing. (Page 9A-5)

License Plate Light Bulb Replacement

BENF34J19206012

- 1) Remove the screws (1) and lens (2).



IF34J1920017-01

- 2) Replace the license plate light bulb (1).

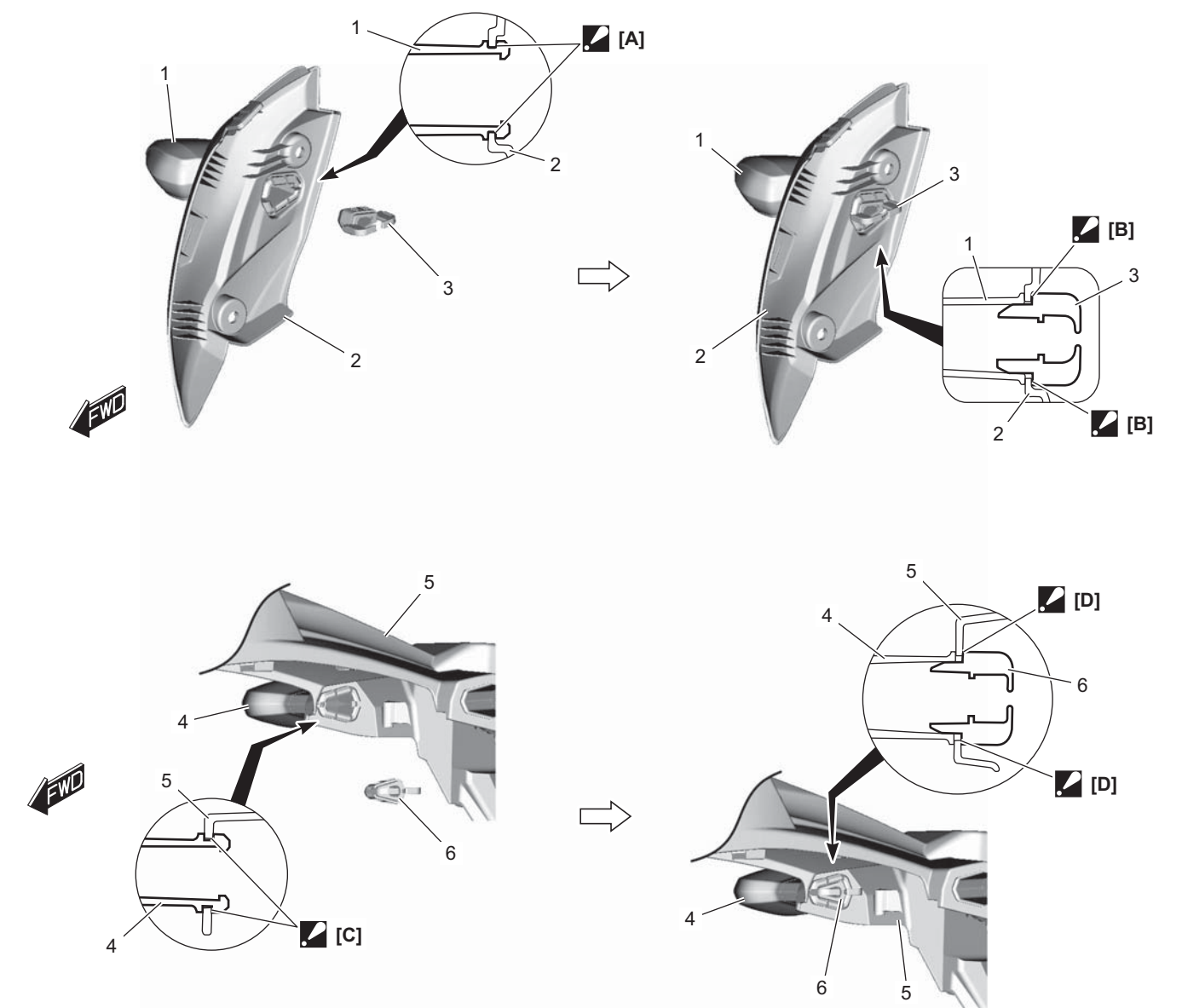


IF34J1920018-01

- 3) Install the removed parts.

Front Turn Signal Light / Rear Turn Signal Light Construction

BENF34J19206013

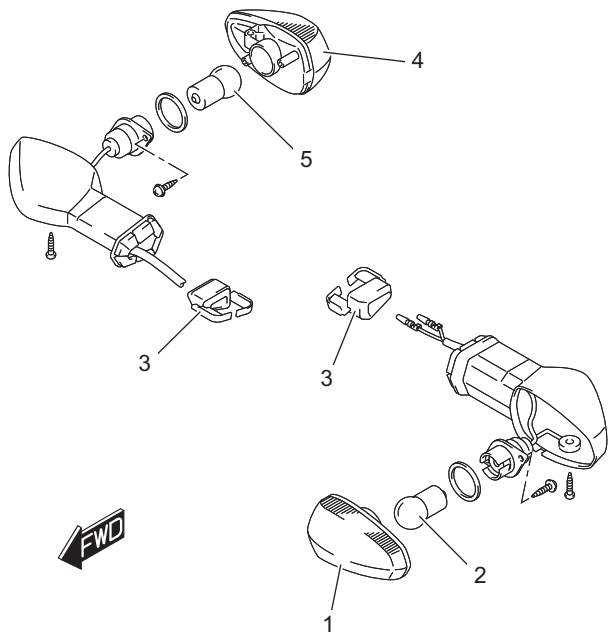


IF34J1920019-02

☑ [A]: Install the front turn signal light to the headlight housing fitting its groove with the hole of the headlight housing.	2. Headlight housing
☑ [B]: Insert the front turn signal light plate to the headlight housing fully until it stops.	3. Front turn signal light plate
☑ [C]: Install the rear turn signal light to the rear fender fitting its groove with the hole of the rear fender.	4. Rear turn signal light
☑ [D]: Insert the rear turn signal light plate to the rear fender fully until it stops.	5. Rear fender
1. Front turn signal light	6. Rear turn signal light plate

Front Turn Signal Light / Rear Turn Signal Light Components

BENF34J19206014



IF34J1920020-02

1. Front turn signal lens
2. Front turn signal light bulb (12 V, 10 W)
3. Plate
4. Rear turn signal lens
5. Rear turn signal light bulb (12 V, 10 W)

Front Turn Signal Light Removal and Installation

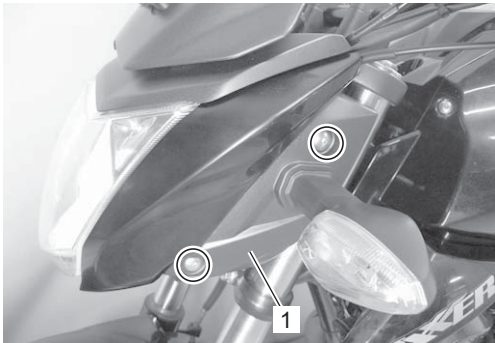
BENF34J19206015

NOTE

The same procedures is applicable to both the right and left lights.

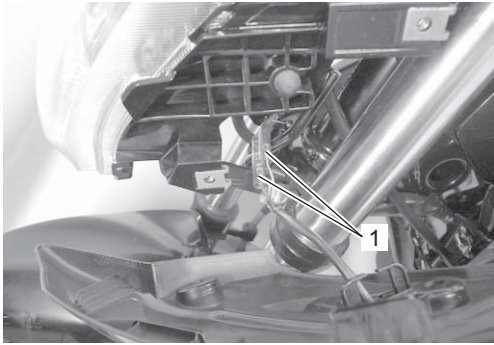
Removal

- 1) Remove the headlight housing (1) with the turn signal light.



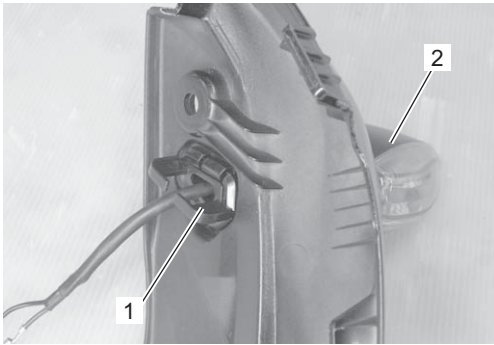
IF34J1920021-01

- 2) Disconnect the front turn signal light lead wire connectors (1).



IF34J1920022-02

- 3) Pull out the plate (1) and front turn signal light (2).



IF34J1920023-01

Installation

Install the front turn signal light in the reverse order of removal.

Rear Turn Signal Light Removal and Installation

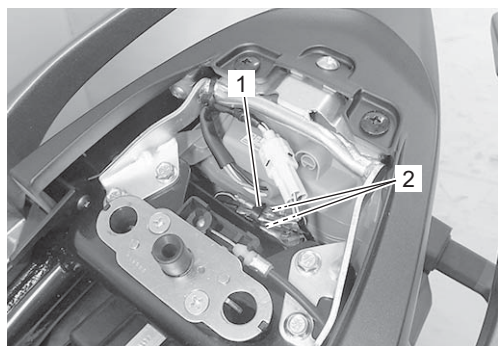
BENF34J19206016

NOTE

The same procedures is applicable to both the right and left lights.

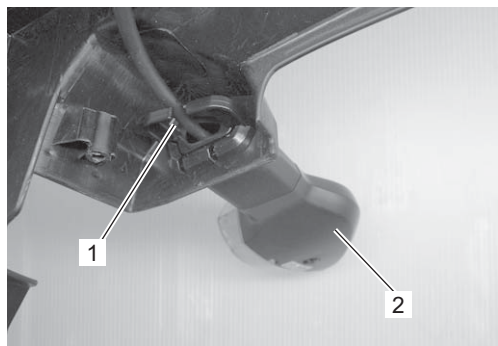
Removal

- 1) Remove the following parts.
 - Seat: ☞ (Page 9D-11)
 - Rear fender bracket: ☞ (Page 9D-15)
- 2) Remove the clamp (1) and disconnect the rear turn signal light lead wire connectors (2).
 - Right side: Light green-Light green and Black/White-Black/White
 - Left side: Violet-Violet and Black/White-Black/White



IF34J1920024-02

- 3) Pull out the plate (1) and remove the rear turn signal light (2).



IF34J1920025-01

Installation

Install the rear turn signal light in the reverse order of removal. Pay attention to the following point:

- Check the wiring harness routing. ☞ (Page 9A-5)

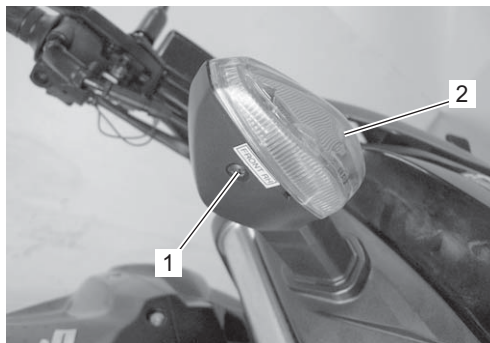
Turn Signal Light Bulb Replacement

BENF34J19206017

NOTE

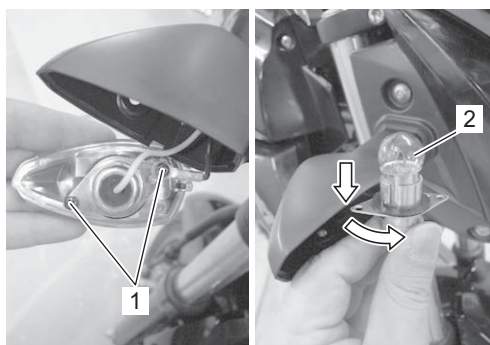
The same procedures is applicable to both right and left, and front and rear lights.

- 1) Remove the screw (1) and lens (2).



IF34J1920026-01

- 2) Remove the screws (1) and replace the bulb (2) with a new one.

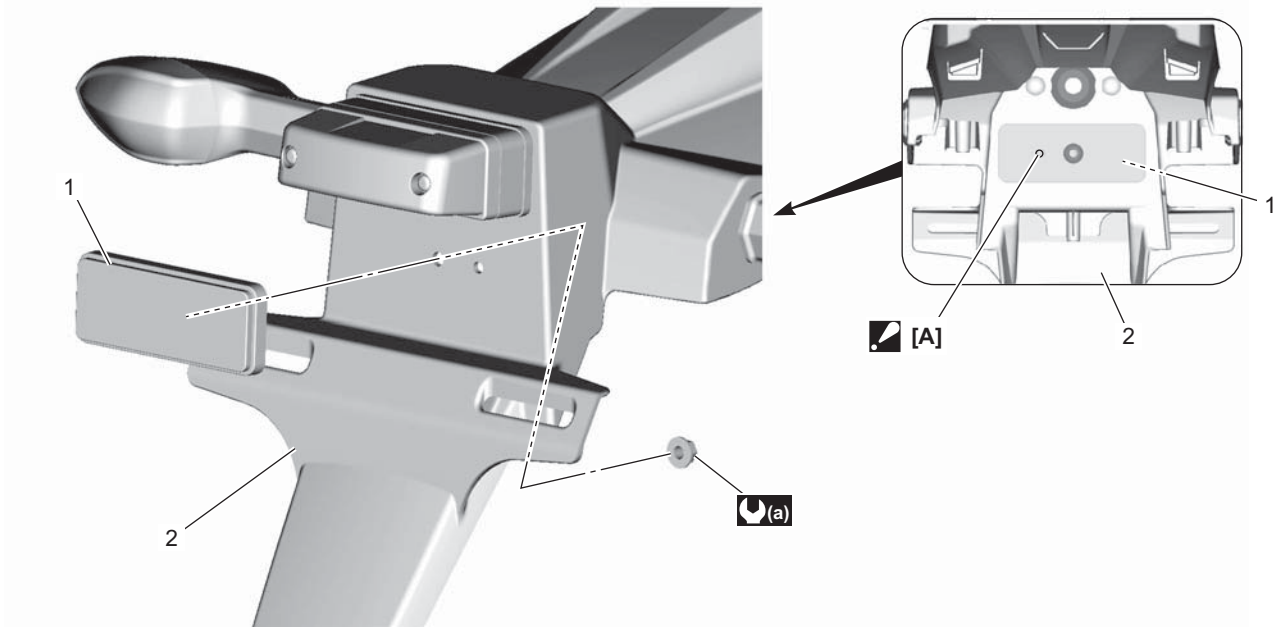


IF34J1920027-01

- 3) Reinstall the removed parts.

Reflex Reflector Construction

BENF34J19206018



IF34J1920028-02

[A]: Fit the projection on the rear reflex reflector into the hole in the rear fender and tighten the nut.	2. Rear fender
1. Rear reflex reflector	(a) : 1.8 N·m (0.18 kgf-m, 1.5 lbf-ft)

Turn Signal Relay Inspection

BENF34J19206019

Refer to “Electrical Components Location” in Section 0A (Page 0A-5).

NOTE

Make sure that the battery is fully charged.

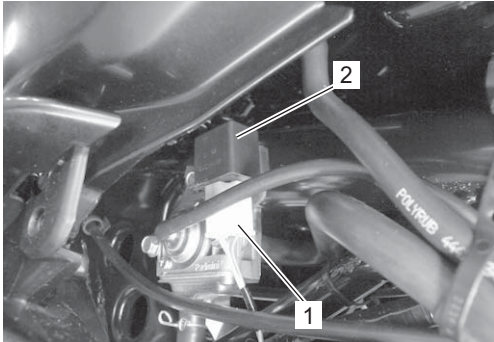
Before removing the turn signal relay, check the operation of the turn signal light.
If the turn signal light does not illuminate, inspect the bulb, turn signal switch and circuit connection.
If the bulb, turn signal switch and circuit connection are OK, the turn signal relay may be faulty; therefore, replace the turn signal relay with a new one. (Page 9B-12)

Turn Signal Relay Removal and Installation

BENF34J19206020

Removal

- 1) Turn the ignition switch OFF.
- 2) Remove the left frame side cover. (Page 9D-12)
- 3) Disconnect the coupler (1) and remove the turn signal relay (2).



IF34J1920029-01

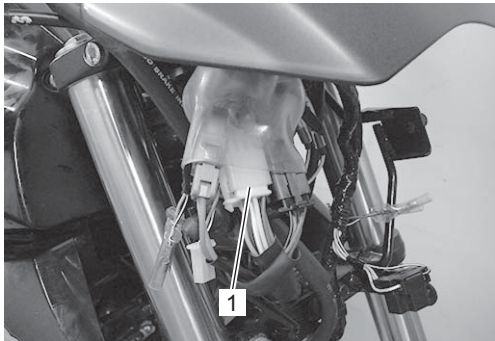
Installation

Install the turn signal relay in the reverse order of removal.

Turn Signal Switch Inspection

BENF34J19206022

- 1) Turn the ignition switch OFF.
- 2) Remove the headlight assembly. (Page 9B-3)
- 3) Disconnect the left handle switch lead wire coupler (1).



IF34J1920030-01

- 4) Inspect the turn signal switch for continuity with a circuit tester.
If any defect is found, replace the left handle switch with a new one. Refer to “Handlebar Removal and Installation” in Section 6B (Page 6B-3).

Color Position	Lg	Lbl	V
L			
PUSH			
R			

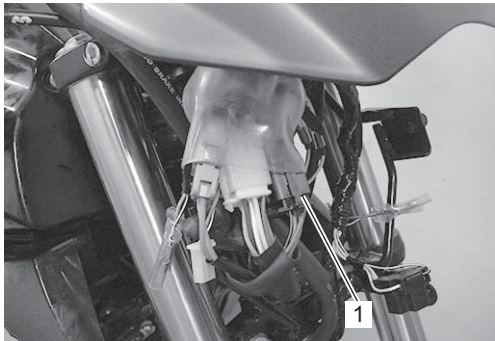
IF34J1920031-01

- 5) After finishing the turn signal switch inspection, reinstall the removed parts.

Lighting Switch Inspection

BENF34J19206026

- 1) Turn the ignition switch OFF.
- 2) Remove the headlight assembly. (Page 9B-3)
- 3) Disconnect the right handle switch lead wire coupler (1).



IF34J1920032-01

- 4) Inspect the lighting switch for continuity with a circuit tester.
If any defect is found, replace the right handle switch with a new one. Refer to “Handlebar Removal and Installation” in Section 6B (Page 6B-3).

Color Position	Gr	Y/W	Br
OFF			
(
ON (

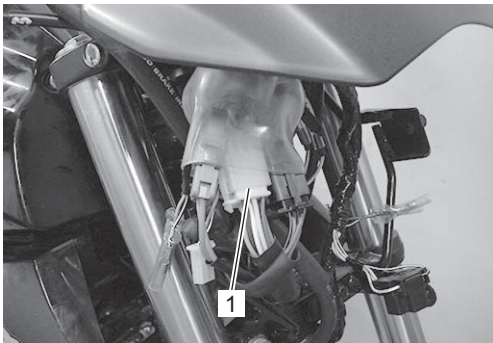
IF34J1920033-02

- 5) After finishing the lighting switch inspection, reinstall the removed parts.

Passing Light Switch Inspection

BENF34J19206023

- 1) Turn the ignition switch OFF.
- 2) Remove the headlight assembly. (Page 9B-3)
- 3) Disconnect the left handle switch lead wire coupler (1).



IF34J1920030-01

- 4) Inspect the passing light switch for continuity with a circuit tester.
If any defect is found, replace the left handle switch with a new one. Refer to “Handlebar Removal and Installation” in Section 6B (Page 6B-3).

Color Position	Y/W	Y
•		
PUSH		

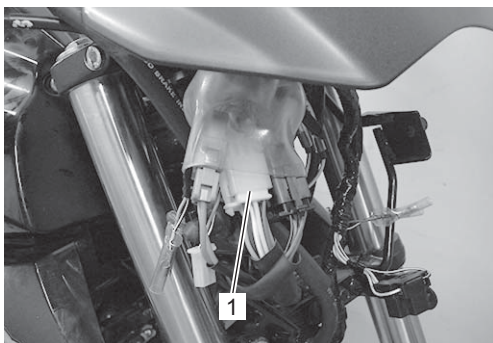
IF34J1920034-01

- 5) After finishing the passing light switch inspection, reinstall the removed parts.

Dimmer Switch Inspection

BENF34J19206024

- 1) Turn the ignition switch OFF.
- 2) Remove the headlight assembly. (Page 9B-3)
- 3) Disconnect the left handle switch lead wire coupler (1).



IF34J1920030-01

- 4) Inspect the dimmer switch for continuity with a circuit tester.

If any defect is found, replace the left handle switch with a new one. Refer to "Handlebar Removal and Installation" in Section 6B (Page 6B-3).

Color Position	Gr	W/R	Y
HI ()			
LO ()			

IF34J1920035-01

- 5) After finishing the dimmer switch inspection, reinstall the removed parts.

Specifications

Tightening Torque Specifications

BENF34J19207001

Fastening part	Tightening torque			Note
	N·m	kgf·m	lbf·ft	
License plate light mounting screw	3	0.31	2.5	(Page 9B-8)

Reference:

For the tightening torques of fasteners not specified in this page, refer to:

"Headlight Construction" (Page 9B-2)

"Headlight / Position Light Components" (Page 9B-3)

"Rear Combination Light / License Plate Light Construction" (Page 9B-6)

"Rear Combination Light / License Plate Light Components" (Page 9B-7)

"Reflex Reflector Construction" (Page 9B-12)

"Fasteners Information" in Section 0C (Page 0C-8)

Combination Meter / Fuel Meter / Horn

General Description

Combination Meter System Description

BENF34J19301001

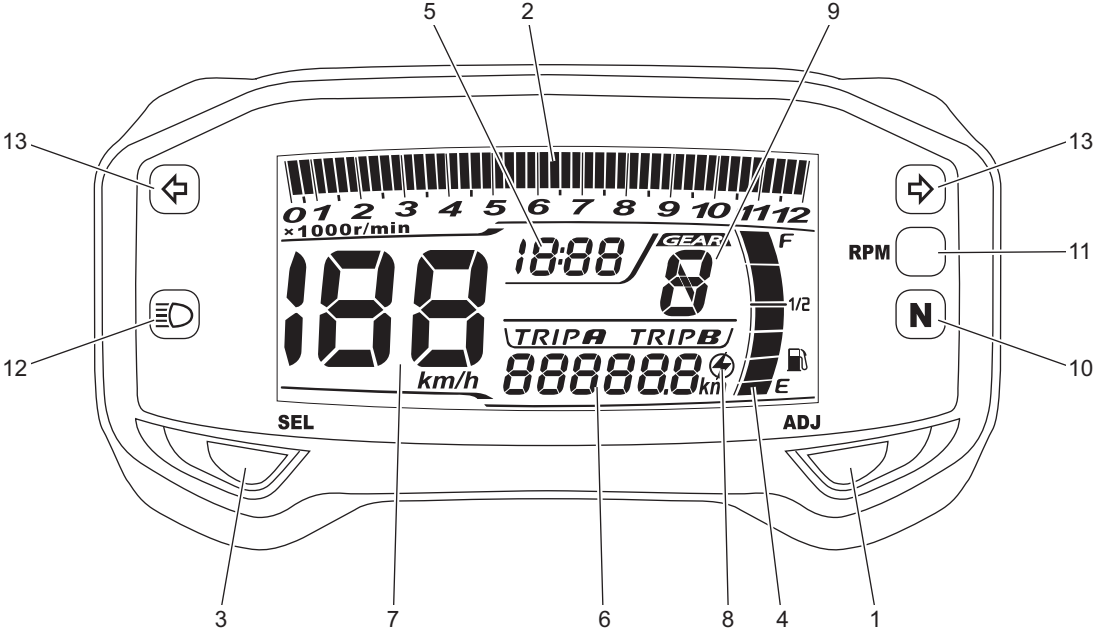
This combination meter mainly consists of the LCD (Liquid Crystal Display) and LED (Light Emitting Diode). The LCDs indicate, Fuel level indicator (4), Clock (5), Odo / Trip A / Trip B (6), Speed (7), Engine rpm indicator (8) and Gear position indicator (9) respectively.

LED (Light Emitting Diode)

LED is used for the illumination light and each indicator light. LED is maintenance free. LED is less power consuming and more resistant to vibration resistance compared to the bulb.

Engine RPM Indicator Light

When the engine speed reaches the specified value, the Engine rpm indicator light (11) lights up or blinks in the light mode or blink mode. At this time, the Engine rpm indicator (8) in LCD comes on. And if Engine rpm indicator light is set in the no light mode, the Engine rpm indicator in LCD does not come on. Lighting up or blinking timing of the Engine rpm indicator light can be set in steps of 500 r/min between 4000 – 9500 r/min. The Engine rpm indicator light is initially set at 7000 r/min.



IF34J1930001-01

1. Adjust switch	10. LED (Neutral indicator light)
2. Tachometer	12. LED (Hi beam indicator light)
3. Select switch	13. LED (Turn signal indicator light)

Diagnostic Information and Procedures

Combination Meter Symptom Diagnosis

BENF34J19304001

1) Check the combination meter power and ground circuit.

Condition	Possible cause	Correction / Reference Item
Speedometer does not operate	Speed sensor	Check speed sensor. (Page 1C-5)
	Speedometer	Check speedometer. (Page 9C-4)
	Speed sensor circuit	Repair circuit. (Page 9A-4)
Fuel level indicator does not operate	Fuel level gauge	Check fuel level gauge. (Page 9C-5)
	Fuel level indicator	Check fuel level indicator. (Page 9C-4)
	Fuel level gauge circuit	Repair circuit. (Page 9A-4)

Horn Symptom Diagnosis

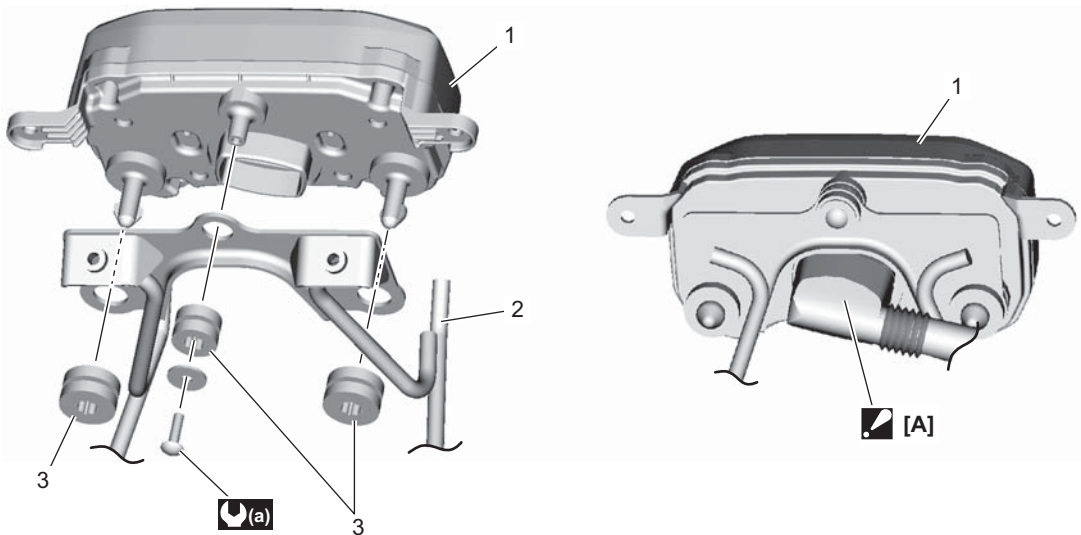
BENF34J19304002

Condition	Possible cause	Correction / Reference Item
Horn does not operate	Horn switch faulty	Check horn switch. (Page 9C-5)
	Wiring or ground faulty	Repair circuit. (Page 9A-4)
	Horn faulty	Check horn. (Page 9C-5)

Repair Instructions

Combination Meter Construction

BENF34J19306001

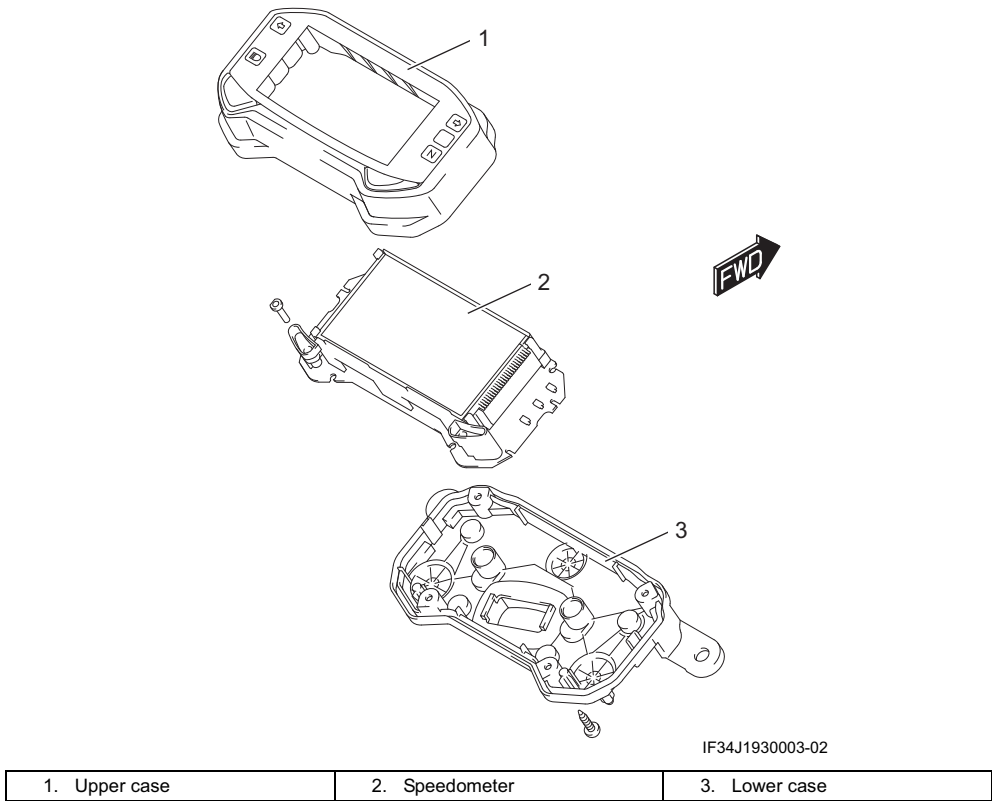


IF34J1930002-02

[A]: Fit the coupler boot to the speedometer until it reaches bottom of the meter case.	2. Headlight housing brace	(a) : 2 N·m (0.20 kgf-m, 1.5 lbf-ft)
1. Combination meter	3. Combination meter cushion	

Combination Meter Components

BENF34J19306002



Combination Meter On-Vehicle Inspection

Check that the LED (Engine rpm indicator light (1)) immediately lights up when the ignition switch is turned to ON.
Check that other LEDs (Neutral indicator light (2), High-beam indicator light (3) and Turn signal indicator lights (4)) light up/go off by operating the gearshift lever, dimmer and turn signal switches.
If abnormal condition is found, replace the combination meter unit with a new one after checking its wire harness/coupler.

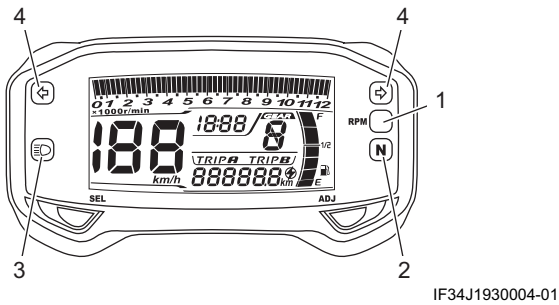
3) Push the adjust switch (2) to change the light mode, blink mode or no light mode. The engine rpm indicator light (3) comes on steady in the light mode and blinks in the blink mode. The engine rpm indicator (4) in LCD comes on when the light mode or blink mode is selected.

Engine rpm indicator light (3) lighting mode	Engine rpm indicator (4)
Light mode	Lighting
Blink mode	Lighting
No light mode	No lighting

4) Push the select switch to fix the selected mode.

NOTE

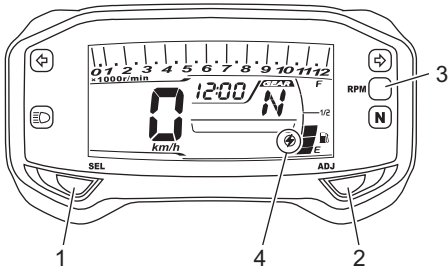
While in the mode selection, if the motorcycle reaches speed of more than 10 km/h or the ignition switch is turned to OFF, the mode selection is cancelled.



Engine RPM Indicator Light Preset

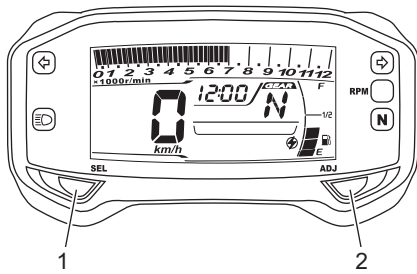
Light / Blink / No Light Mode Selection

- 1) Turn the ignition switch ON.
- 2) Press and hold the select switch (1) for more than 2 seconds to change the mode.



Preset Engine RPM Selection

- 1) Select the light mode or blink mode.
- 2) Push the select switch (1) to select a preset engine rpm mode. Push the adjust switch (2) to change the preset engine rpm from 4000 r/min to 9500 r/min in steps of 500 r/min.
- 3) Push the select switch to fix the selected setting. The engine rpm indicator system holds the selected settings when the ignition switch is turned OFF. The system settings have remained when the ignition switch is turned ON again.



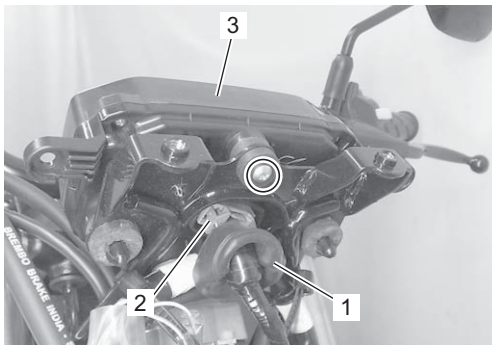
IF34J1930006-02

Combination Meter Removal and Installation

BENF34J19306004

Removal

- 1) Remove the meter cover. (Page 9D-17)
- 2) Remove the headlight assembly. (Page 9B-3)
- 3) Remove the coupler boot (1) and disconnect the combination meter coupler (2).
- 4) Remove the combination meter (3).



IF34J1930007-01

Installation

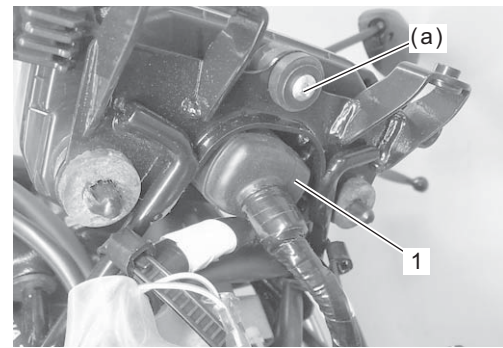
Install the combination meter in the reverse order of removal. Pay attention to the following points:

- Tighten the screw to the specified torque.

Tightening torque

Combination meter mounting screw (a): 2 N·m (0.20 kgf-m, 1.5 lbf-ft)

- Install the coupler boot (1) securely.



IF34J1930008-01

Combination Meter Disassembly and Reassembly

BENF34J19306005

Disassemble/reassemble the combination meter referring to the combination meter components. (Page 9C-3)

Speedometer On-Vehicle Inspection

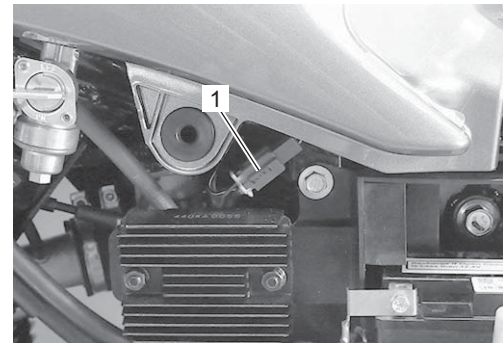
BENF34J19306006

If the speedometer, odometer or tripmeter does not function properly, inspect the speed sensor and coupler connections. If the speed sensor and coupler connections are OK, replace the combination meter unit with a new one. (Page 9C-4)

Fuel Level Indicator Inspection

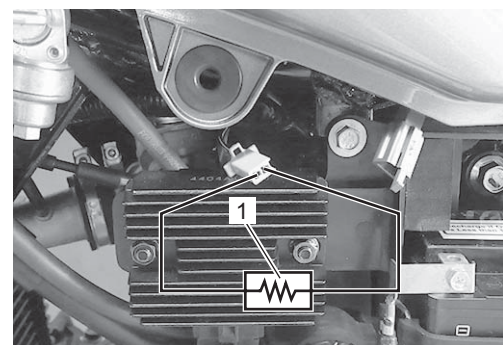
BENF34J19306010

- 1) Remove the left frame side cover. (Page 9D-12)
- 2) Disconnect the fuel level gauge coupler (1).



IF34J1930009-02

- 3) Connect a variable resistor (1) between the Br and B/W lead wires from the wire harness side.



IF34J1930010-02

- 4) Turn the ignition switch ON.

5) Check the display of fuel level indicator (LCD) referring to the following table.
If any defect is found, replace the combination meter with a new one. (Page 9C-4)

NOTE

It takes approx. 40 seconds that the fuel level indicator indicates the detected fuel level.

Resistance	Fuel level indicator
178.9 – 201.1 Ω	
138.1 – 154.9 Ω	
114.2 – 128.4 Ω	
90.5 – 102.3 Ω	
69.2 – 78.8 Ω	
17.7 – 22.9 Ω	

IF34J1930011-02

Fuel Level Gauge Inspection

BENF34J19306011

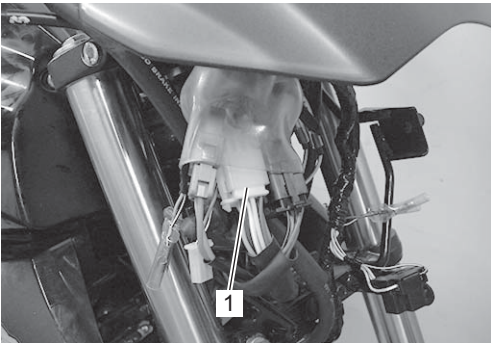
Refer to “Fuel Level Gauge Inspection” in Section 1G (Page 1G-7).

Horn Inspection

BENF34J19306017

Horn Switch Inspection

- 1) Remove the headlight assembly. (Page 9B-3)
- 2) Disconnect the left handle switch lead wire coupler (1).



IF34J1930012-01

- 3) Inspect the horn switch for continuity with a circuit tester.
If any defect is found, replace the left handle switch with a new one.

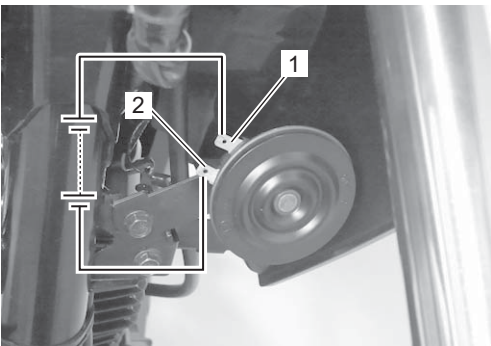
Color	B/O	B/W
Position		
•		
PUSH		

IF34J1930013-02

- 4) After finishing the horn switch inspection, reinstall the removed parts.

Horn Inspection

- 1) Disconnect the horn couplers. Refer to “Horn Removal and Installation” (Page 9C-6).
- 2) Connect a 12 V battery to terminal (1) and terminal (2). If the sound is not heard from the horn, replace the horn with a new one.



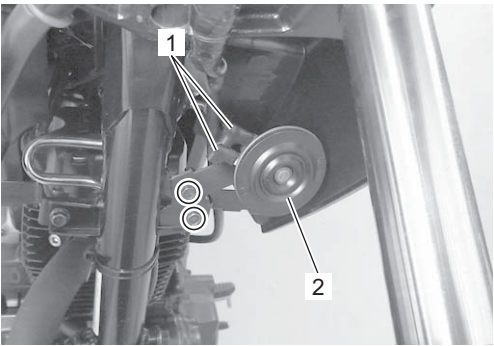
IF34J1930014-01

Horn Removal and Installation

BENF34J19306018

Removal

- 1) Disconnect the horn couplers (1).
- 2) Remove the horn (2).



IF34J1930015-02

Installation

Install the horn in the reverse order of removal.

Specifications

Tightening Torque Specifications

BENF34J19307001

Fastening part	Tightening torque			Note
	N·m	kgf·m	lbf·ft	
Combination meter mounting screw	2	0.20	1.5	☞ (Page 9C-4)

Reference:

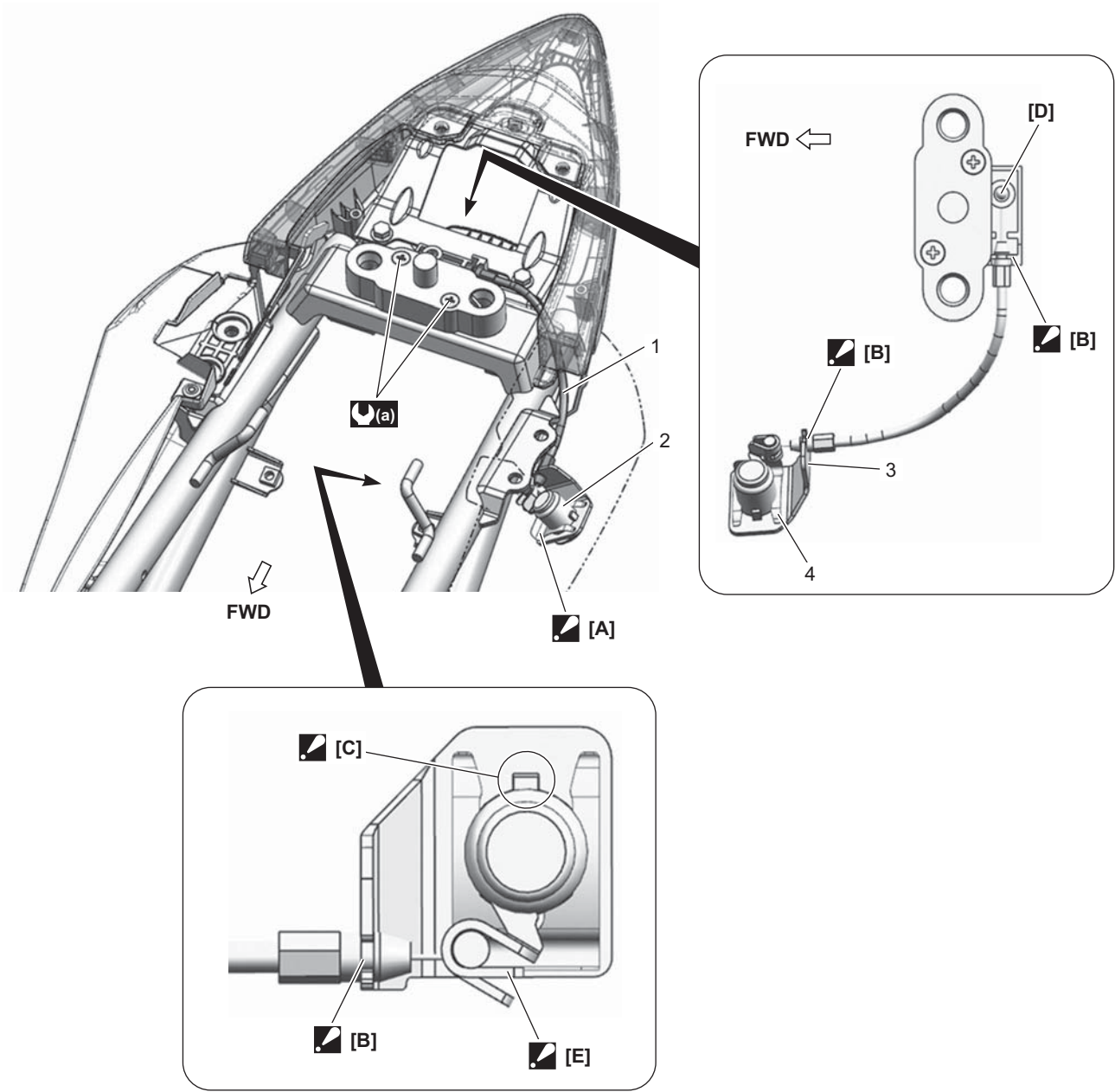
For the tightening torques of fasteners not specified in this page, refer to:
“Combination Meter Construction” (Page 9C-2)
“Fasteners Information” in Section 0C (Page 0C-8)

Exterior Parts

Schematic and Routing Diagram

Seat Lock Cable Routing Diagram

BENF34J19402001



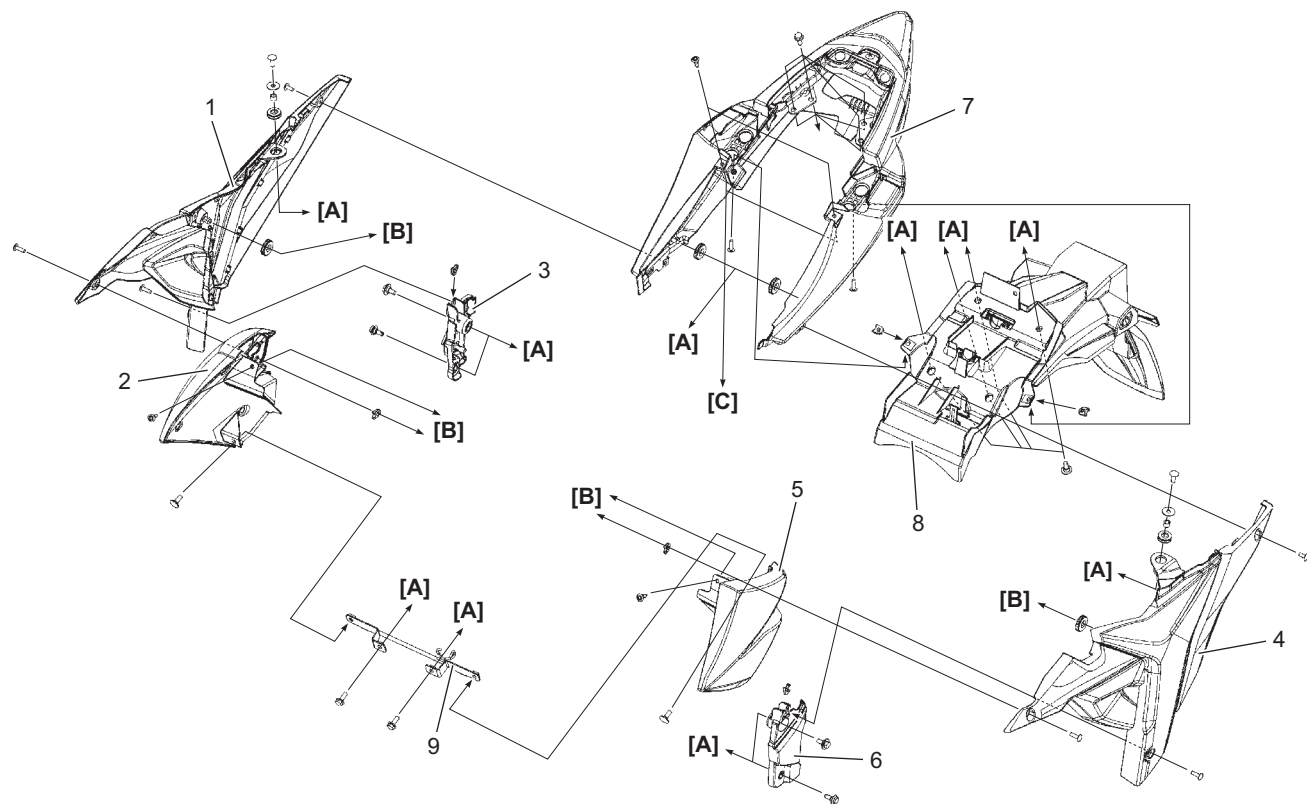
IF34J1940001-01

[A]: Install the seat lock assembly plate behind of the seat lock cable guide.	[E]: After connecting the seat lock cable end, bend one side of the lever.	4. Seat lock cable guide
[B]: Set the seat lock cable firmly.	1. Seat lock cable	(a) : 4.5 N·m (0.46 kgf-m, 3.5 lbf-ft)
[C]: Align the rib of seat lock assembly and groove of each part.	2. Seat lock assembly	
[D]: Spherical cable end	3. Seat lock assembly plate	

Repair Instructions

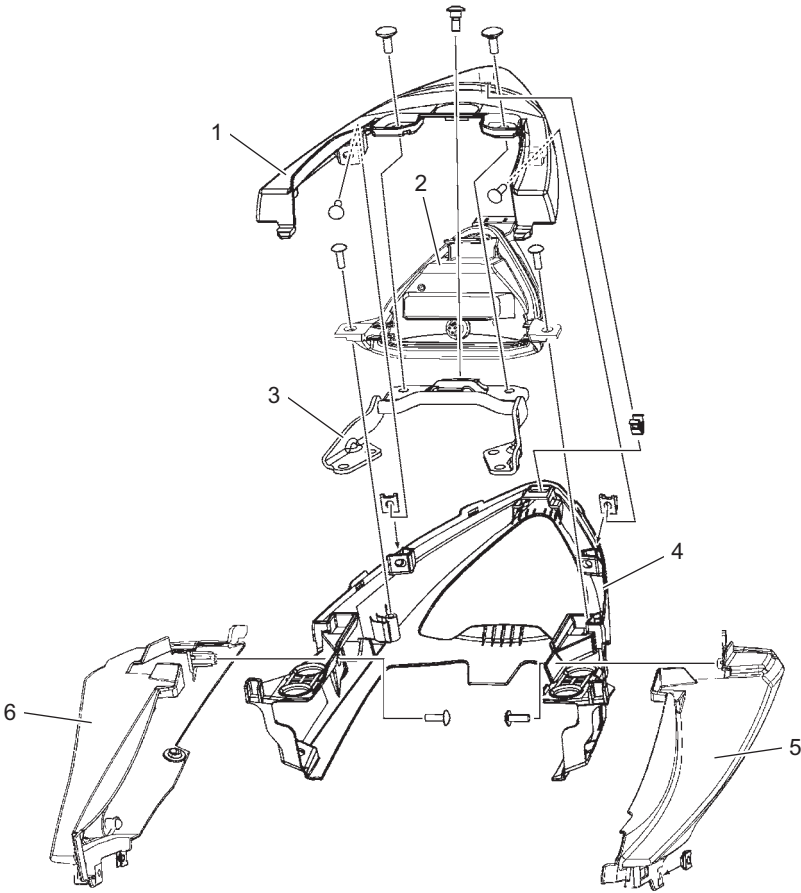
Frame Cover Construction

BENF34J19406002



IF34J1940002-01

[A]: To frame	2. Frame front cover (RH)	6. Frame lower cover (LH)
[B]: To fuel tank cover	3. Frame lower cover (RH)	7. Frame upper cover/frame center cover/frame center lower cover
[C]: To pillion rider handle	4. Frame side cover (LH)	8. Rear fender extension/rear fender
1. Frame side cover (RH)	5. Frame front cover (LH)	9. Frame front cover center bracket

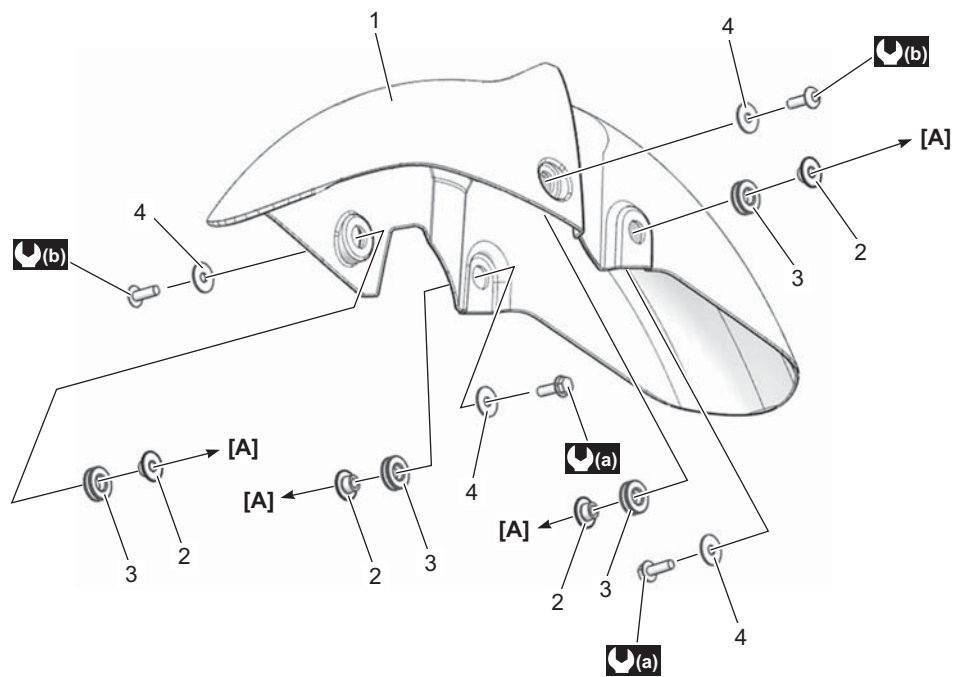


IF34J1940003-01

1. Frame center cover	3. Frame cover bracket	5. Frame upper cover (LH)
2. Rear combination light	4. Frame center lower cover	6. Frame upper cover (RH)

Front Fender Construction

BENF34J19406026

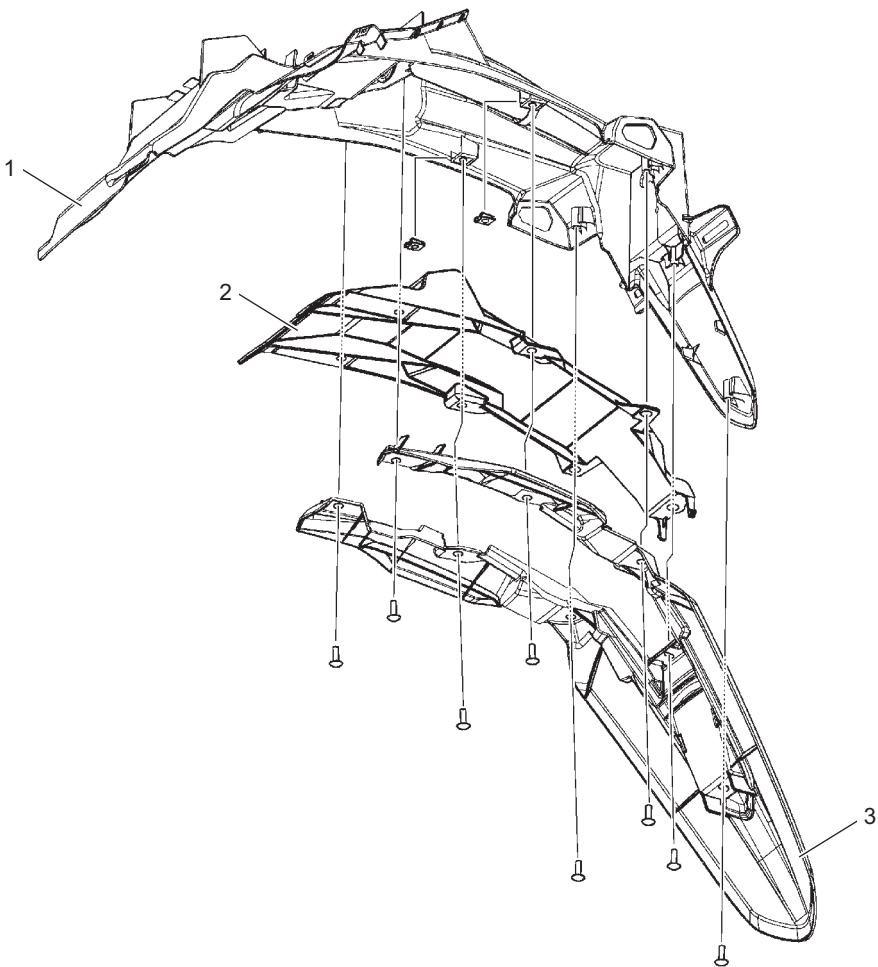


IF34J1940004-02

[A]: To front fork	3. Cushion	: 8.4 N·m (0.86 kgf-m, 6.5 lbf-ft)
1. Front fender	4. Washer	
2. Spacer	: 10 N·m (1.0 kgf-m, 7.5 lbf-ft)	

Rear Fender Construction

BENF34J19406003

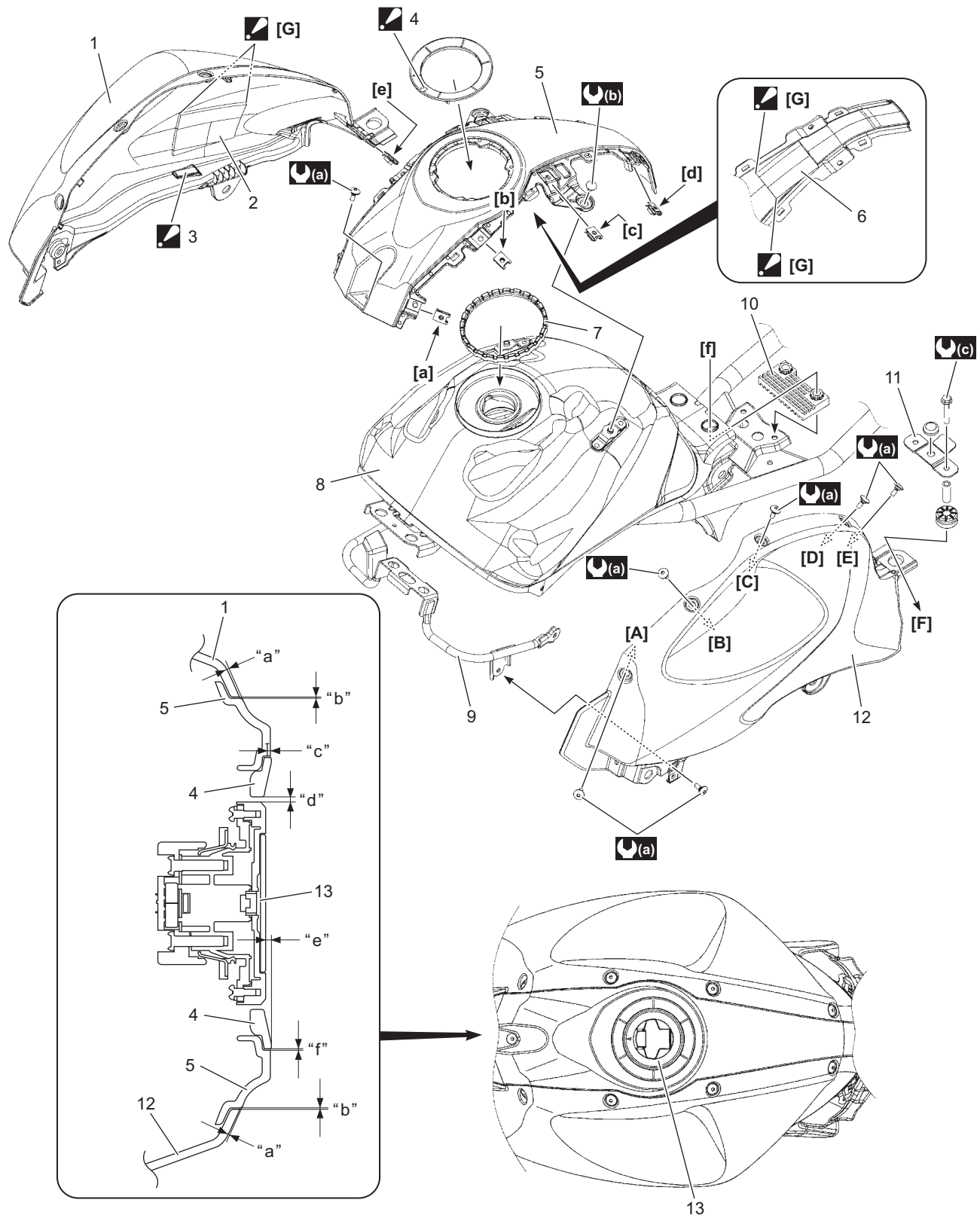


IF34J1940005-01







1. Rear fender	2. Rear fender bracket	3. Rear fender extension
----------------	------------------------	--------------------------

Fuel Tank Cover Construction

BENF34J19406004

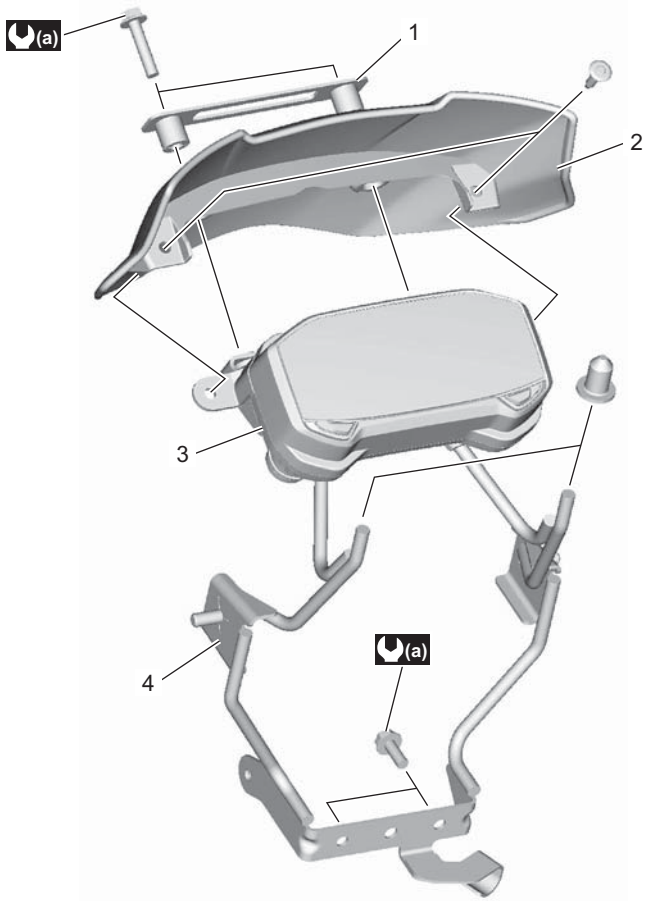


9D-7 Exterior Parts:


[A]: To [a]	 4. Fuel tank cap cover : Face the arrow mark forward.	"a": 0 – 1.0 mm (0 – 0.04 in)
[B]: To [b]	5. Fuel tank center cover	"b": 0 – 0.8 mm (0 – 0.03 in)
[C]: To [c]	6. Fuel tank cover center cushion	"c": –0.5 – 0 mm (–0.02 – 0 in)
[D]: To [d]	7. Fuel tank cover rubber	"d": 1.4 – 2.6 mm (0.06 – 0.10 in)
[E]: To [e]	8. Fuel tank assembly	"e": 1.2 – 2.7 mm (0.05 – 0.11 in)
[F]: To [f]	9. Fuel tank front brace	"f": 0.2 – 0.8 mm (0.01 – 0.03 in)
 [G]: Stick the cushion aligning with the emboss line.	10. Fuel tank rear lower cushion	 (a) : 3 N·m (0.31 kgf-m, 2.5 lbf-ft)
1. Fuel tank side cover (RH)	11. Seat front bracket	 (b) : 5.5 N·m (0.56 kgf-m, 4.0 lbf-ft)
2. Fuel tank cover cushion	12. Fuel tank side cover (LH)	 (c) : 10 N·m (1.0 kgf-m, 7.5 lbf-ft)
 3. Fuel tank side cushion : Stick the cushion aligning with the emboss line.	13. Fuel tank cap	

Meter Cover Construction

BENF34J19406005

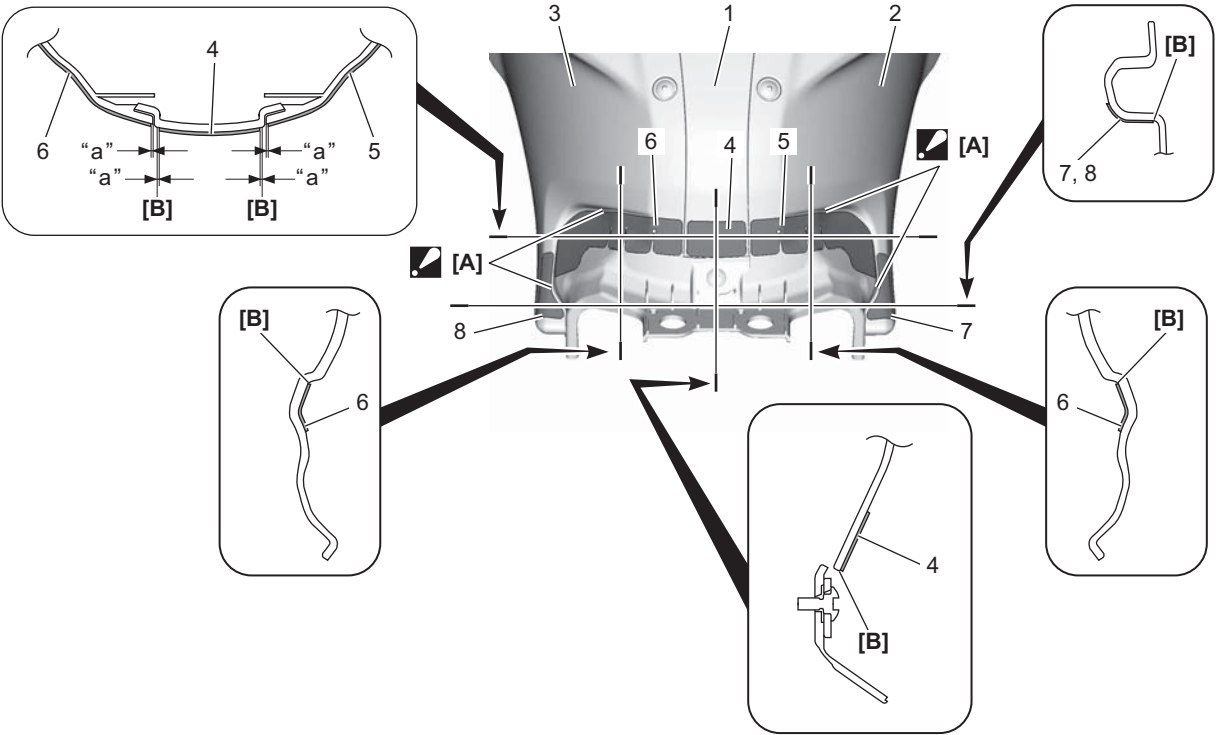


IF34J1940007-02


1. Front license plate	3. Combination meter	 (a) : 10 N·m (1.0 kgf-m, 7.5 lbf-ft)
2. Meter cover	4. Headlight housing brace	

Fuel Tank Cover Protector Construction

BENF34J19406007

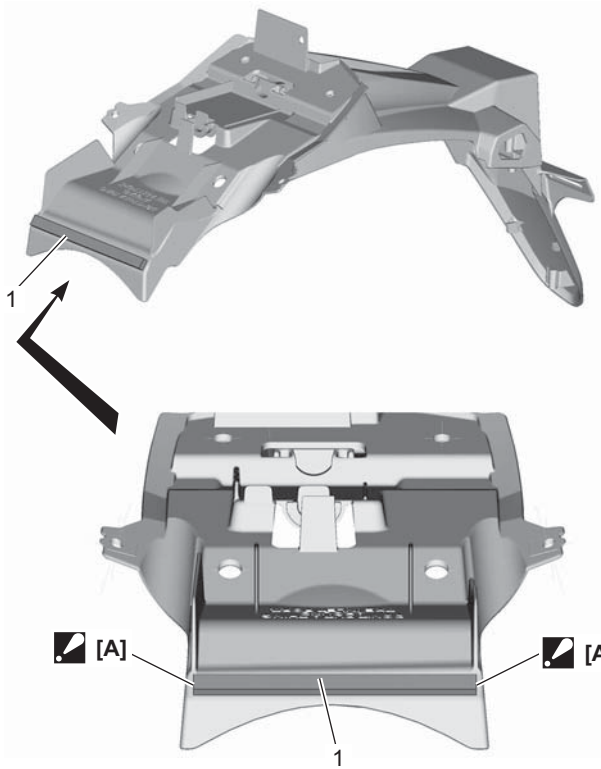


IF34J1940008-01

 [A]: Stick the protector aligning the curved surface end with the protector end.	3. Fuel tank side cover (LH)	7. Fuel tank side cover No.2 protector (RH)
[B]: Curved surface end	4. Fuel tank center cover protector	8. Fuel tank side cover No.2 protector (LH)
1. Fuel tank center cover	5. Fuel tank side cover No.1 protector (RH)	"a": 1.0 mm (0.04 in)
2. Fuel tank side cover (RH)	6. Fuel tank side cover No.1 protector (LH)	

Rear Fender Cushion Construction

BENF34J19406008

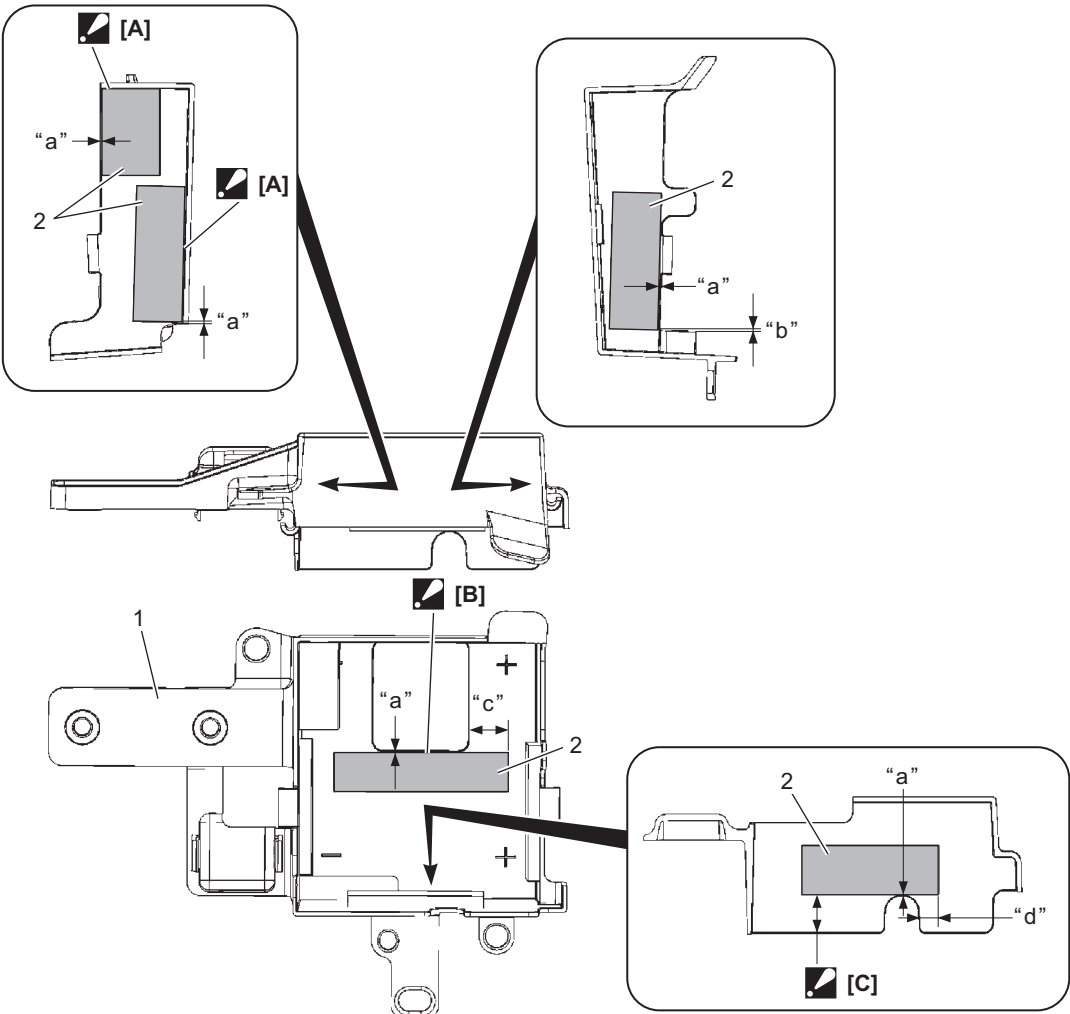


IF34J1940009-01

 [A]: Stick the cushion aligning with the emboss line.	1. Rear fender cushion
--	------------------------

Battery Holder Protector Construction

BENF34J19406009



IF34J1940010-01

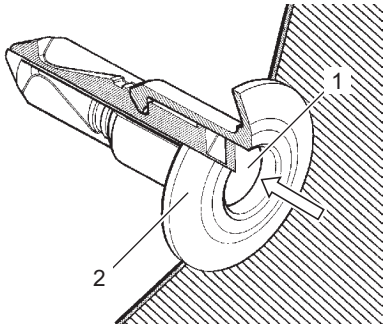
[A]: Align the edge of the protector with the edge of the battery holder.	1. Battery holder	"b": -5 – 5 mm (-0.2 – 0.2 in)
[B]: Stick the protector not to protrude beyond the hole of the battery holder.	2. Battery holder protector	"c": 15 – 25 mm (0.6 – 1.0 in)
[C]: Stick the protector parallel to the battery holder.	"a": 0 – 5 mm (0 – 0.2 in)	"d": 5 – 15 mm (0.2 – 0.6 in)

Fastener Removal and Installation

BENF34J19406011

Removal

- 1) Depress the head of fastener center piece (1).
- 2) Pull out the fastener (2).



ID26J1940192-01

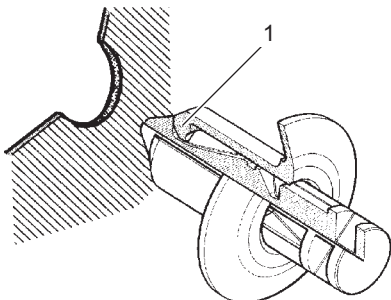
Installation

- 1) Let the center piece stick out toward the head so that the claws (1) closes.

- 2) Insert the fastener into the installation hole.

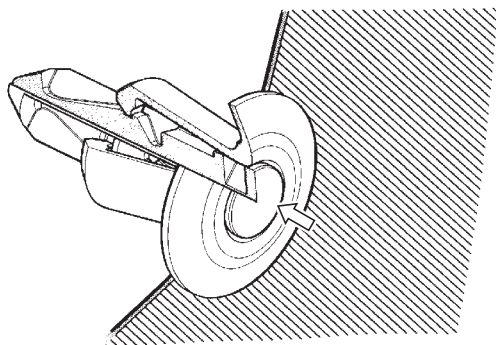
NOTE

To prevent the pawl (1) from damage, insert the fastener all the way into the installation hole.



ID26J1940160-01

- 3) Push in the head of center piece until it becomes flush with the fastener outside face.



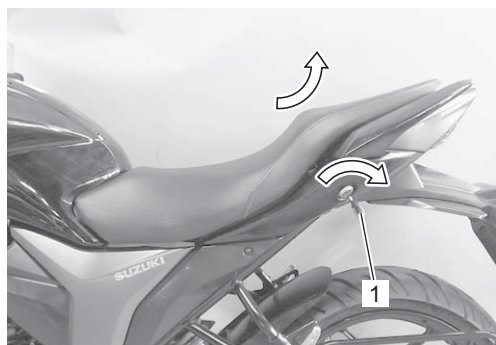
I649G1940007-02

Seat Removal and Installation

BENF34J19406012

Removal

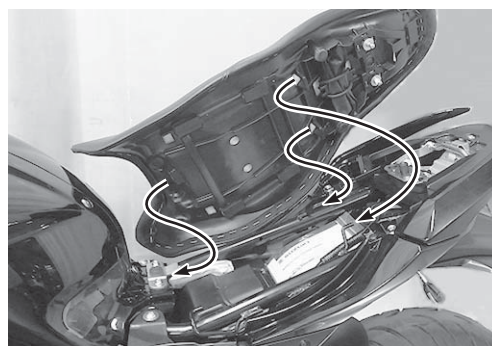
- 1) Unlock the seat with the ignition key (1).
- 2) Remove the seat.



IF34J1940011-01

Installation

Slide the seat hooks into the seat hook retainers and push down firmly until the seat snaps into the locked position.



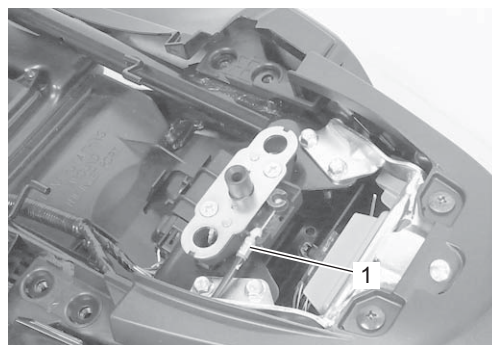
IF34J1940012-01

Seat Lock Cable / Seat Lock Assembly Removal and Installation

BENF34J19406013

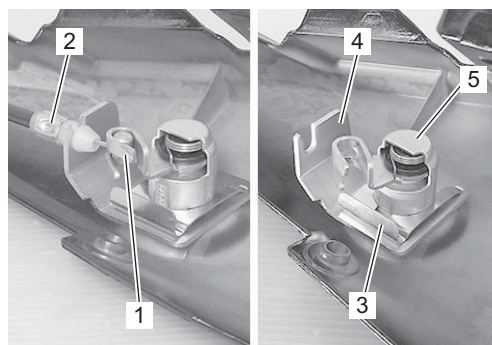
Removal

- 1) Remove the seat. (Page 9D-11)
- 2) Remove the right and left pillion rider handles. (Page 9D-13)
- 3) Disconnect the seat lock cable (1).



IF34J1940013-01

- 4) Remove the left frame upper cover. Refer to "Frame Upper Cover / Frame Center Cover / Frame Center Lower Cover Removal and Installation" (Page 9D-14).
- 5) Open the lever (1) of the seat lock assembly and disconnect the seat lock cable (2).
- 6) Remove the seat lock assembly plate (3), seat lock cable guide (4) and seat lock assembly (5).

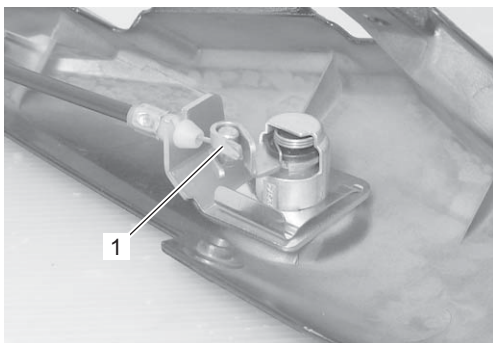


IF34J1940014-01

Installation

Install the seat lock cable and seat lock assembly in the reverse order of removal. Pay attention to the following point:

- After connecting the seat lock cable end, bend one side of the lever (1).



IF34J1940015-01

Frame Side Cover Removal and Installation

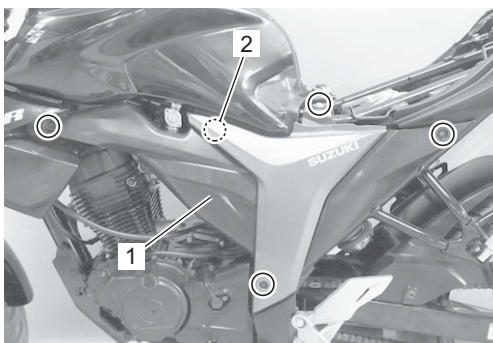
BENF34J19406014

NOTE

The same procedures are applicable to both the right and left covers.

Removal

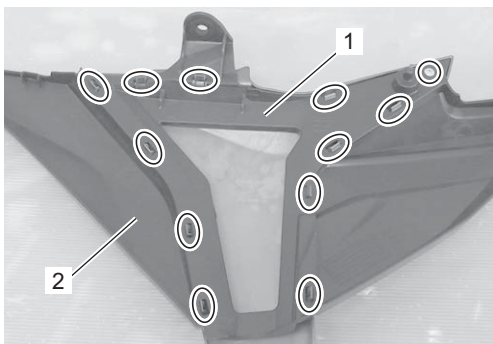
- 1) Remove the seat. (Page 9D-11)
- 2) Remove the frame side cover (1).



IF34J1940016-01

2. Hooked point

- 3) Remove the frame cover No. 2 (1) from the frame side cover (2).



IF34J1940017-02

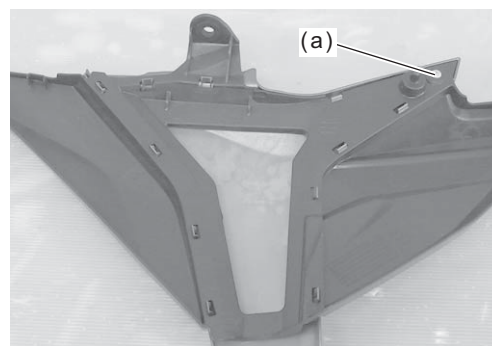
Installation

Install the frame side cover in the reverse order of removal. Pay attention to the following point:

- Tighten the frame cover No. 2 screw to the specified torque.

Tightening torque

Frame cover No. 2 screw (a): 2 N·m (0.20 kgf-m, 1.5 lbf-ft)



IF34J1940018-01

Frame Lower Cover Removal and Installation

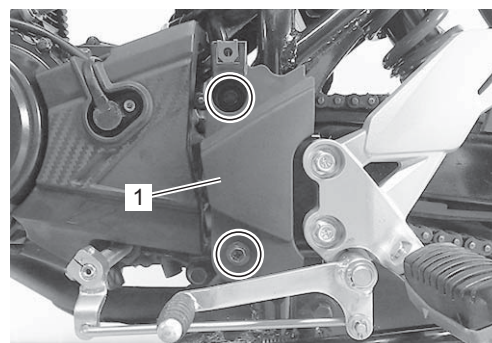
BENF34J19406015

NOTE

The same procedures are applicable to both the right and left covers.

Removal

- 1) Remove the seat. (Page 9D-11)
- 2) Remove the frame side cover. (Page 9D-12)
- 3) Remove the frame lower cover (1).



IF34J1940019-02

Installation

Install the frame lower cover in the reverse order of removal.

Frame Front Cover Removal and Installation

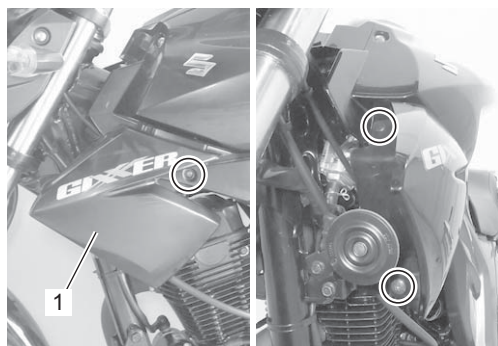
BENF34J19406016

NOTE

The same procedures are applicable to both the right and left covers.

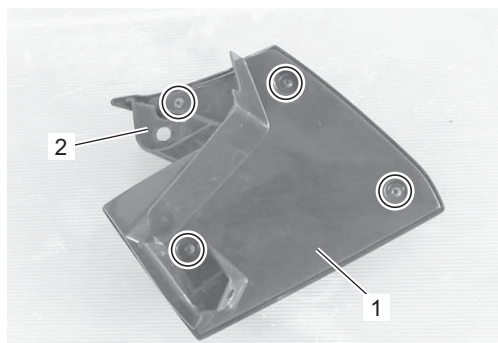
Removal

- 1) Remove the frame front cover (1).



IF34J1940020-01

- 2) Remove the frame front inner cover (1) from the frame front cover (2).



IF34J1940021-01

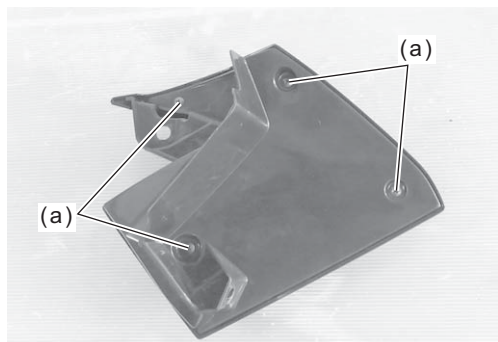
Installation

Install the frame front cover in the reverse order of removal. Pay attention to the following point:

- Tighten the frame front inner cover screws to the specified torque.

Tightening torque

Frame front inner cover screw (a): 2 N·m (0.20 kgf-m, 1.5 lbf-ft)



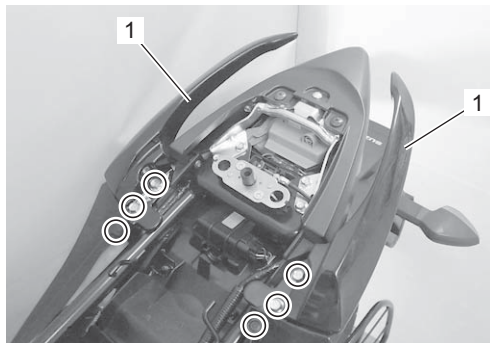
IF34J1940022-01

Pillion Rider Handle Removal and Installation

BENF34J19406017

Removal

- 1) Remove the seat. (Page 9D-11)
- 2) Remove the right and left pillion rider handles (1).



IF34J1940023-01

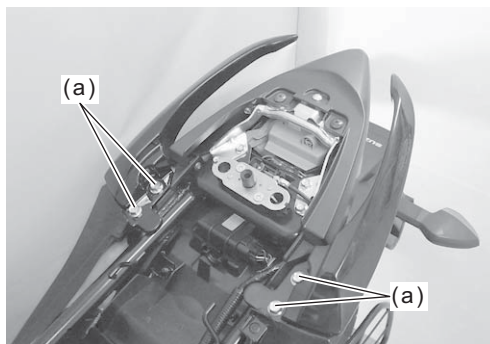
Installation

Install the pillion rider handles in the reverse order of removal. Pay attention to the following point:

- Tighten the pillion rider handle mounting bolts to the specified torque.

Tightening torque

Pillion Rider handle mounting bolt (a): 21 N·m (2.1 kgf-m, 15.5 lbf-ft)



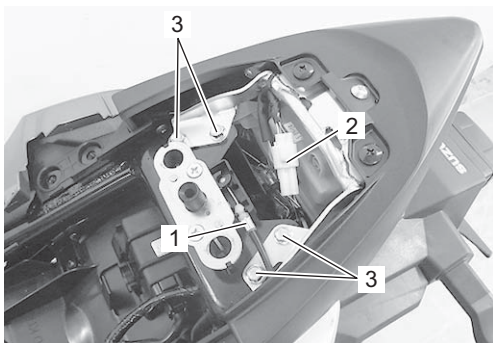
IF34J1940024-02

Frame Upper Cover / Frame Center Cover / Frame Center Lower Cover Removal and Installation

BENF34J19406018

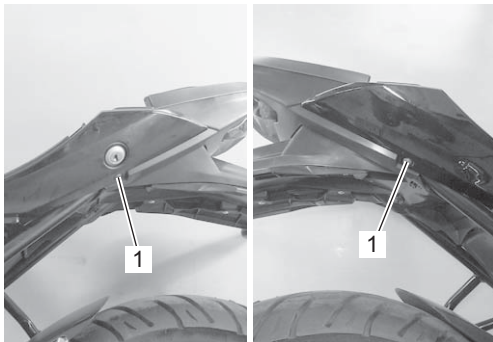
Removal

- 1) Remove the seat. (Page 9D-11)
- 2) Remove the right and left frame side covers. (Page 9D-12)
- 3) Remove the right and left pillion rider handles. (Page 9D-13)
- 4) Disconnect the seat lock cable (1) and rear combination light lead wire coupler (2).
- 5) Remove the bolts (3).



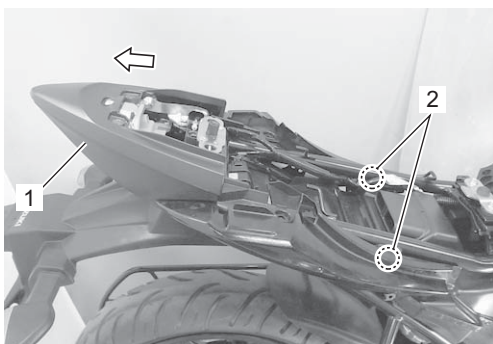
IF34J1940025-02

- 6) Remove the screws (1).



IF34J1940026-01

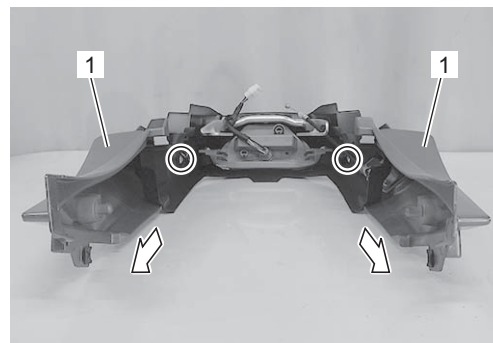
- 7) Remove the frame upper cover/frame center cover/frame center lower cover (1) to backward.



IF34J1940027-01

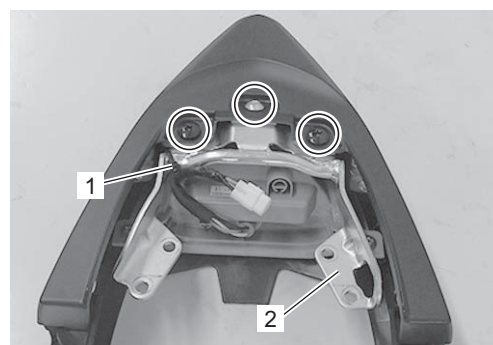
2. Hooked point

- 8) Remove the right and left frame upper covers (1).



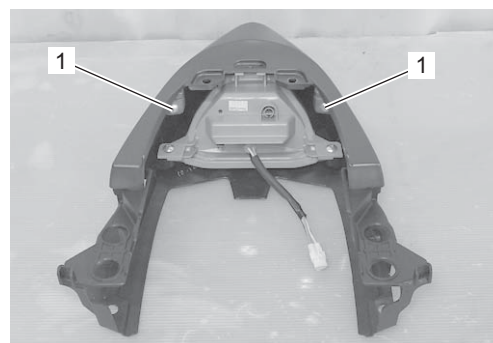
IF34J1940029-02

- 9) Remove the seat lock assembly from the left frame upper cover. (Page 9D-11)
- 10) Remove the clamp (1) and frame cover bracket (2).



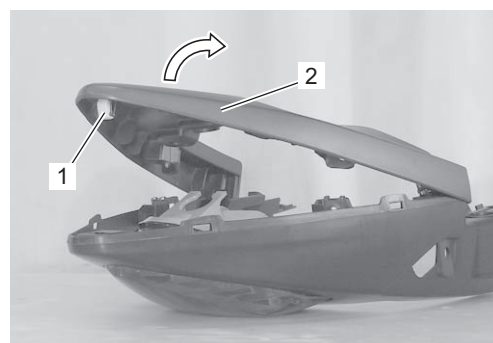
IF34J1940030-02

- 11) Remove the screws (1).



IF34J1940031-01

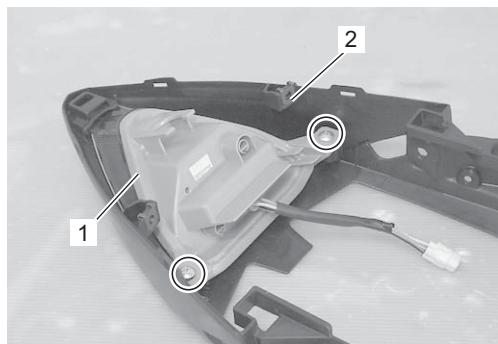
- 12) Release the hook (1) and remove the frame center cover (2).



IF34J1940032-01

9D-15 Exterior Parts:

- 13) Remove the rear combination light (1) from the frame center lower cover (2).

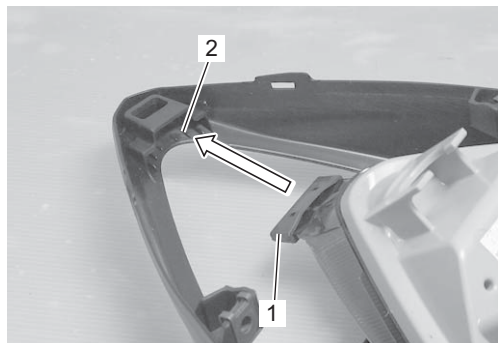


IF34J1940033-01

Installation

Install the frame upper cover/frame center cover/frame center lower cover in the reverse order of removal. Pay attention to the following points:

- Insert the rib (1) of the rear combination light to the socket (2) of the frame center lower cover securely.

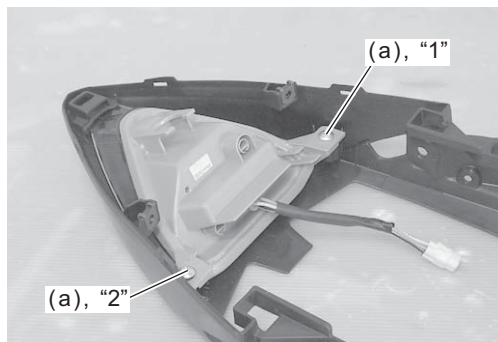


IF34J1940034-01

- Tighten the rear combination light mounting screws to the specified torque in order of "1" → "2".

Tightening torque

Rear combination light mounting screw (a): 2 N·m (0.20 kgf-m, 1.5 lbf-ft)



IF34J1940035-01

Rear Fender Extension / Rear Fender Removal and Installation

BENF34J19406019

Removal

- 1) Remove the seat. (Page 9D-11)

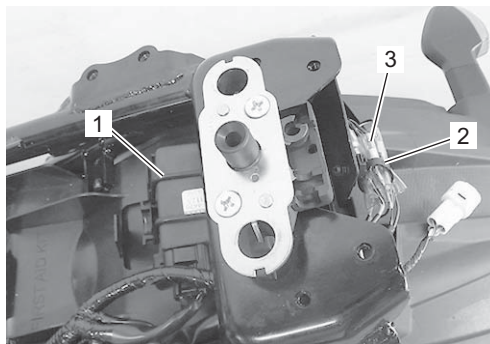
- 2) Remove the right and left frame side covers. (Page 9D-12)

- 3) Remove the right and left pillion rider handles. (Page 9D-13)

- 4) Remove the frame upper cover/frame center cover/frame center lower cover. (Page 9D-14)

- 5) Unhook the CDI unit band (1).

- 6) Remove the clamp (2) and disconnect the rear turn signal light/license plate light connectors (3).



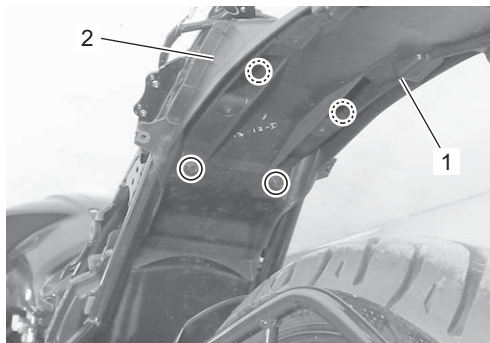
IF34J1940036-02

- 7) Remove the rear fender extension (1).



IF34J1940037-01

- 8) Remove the rear fender bracket (1) and rear fender (2).



IF34J1940038-01

- 9) Remove the following parts from the rear fender.

- Rear turn signal lights: (Page 9B-11)
- License plate light: (Page 9B-7)
- Rear reflex reflector: (Page 9B-12)

Installation

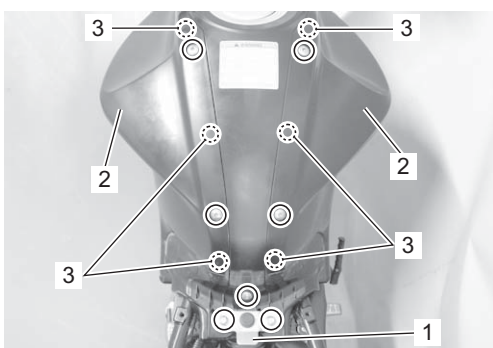
Install the rear fender in the reverse order of removal.

Fuel Tank Cover Removal and Installation

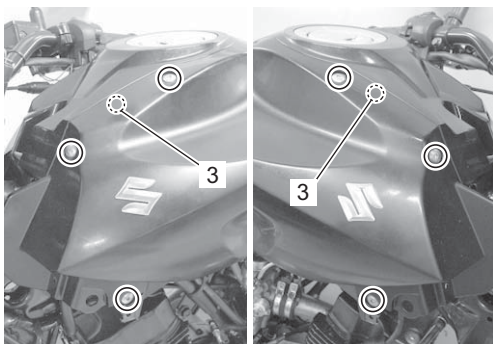
BENF34J19406020

Removal

- 1) Remove the following parts.
 - Seat: (Page 9D-11)
 - Frame side covers: (Page 9D-12)
 - Frame front covers: (Page 9D-13)
- 2) Remove the seat front bracket (1), right and left fuel tank side covers (2).



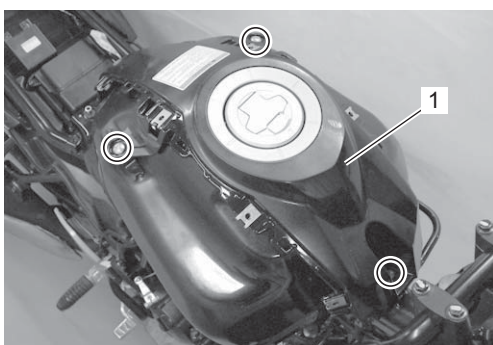
IF34J1940039-02



IF34J1940040-02

3. Hooked point

- 3) Remove the fuel tank center cover (1).



IF34J1940041-01

Installation

Install the fuel tank cover in the reverse order of removal. Pay attention to the following point:

- Tighten each of the bolt and screws to the specified torque.

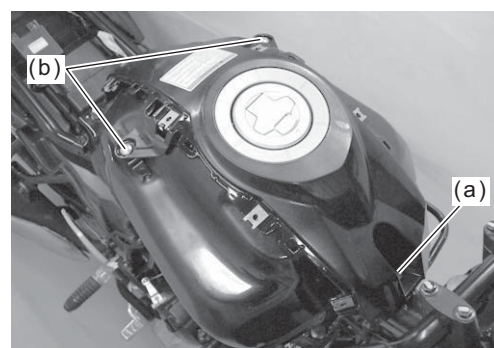
Tightening torque

Fuel tank center cover bolt (a): 3 N·m (0.31 kgf-m, 2.5 lbf-ft)

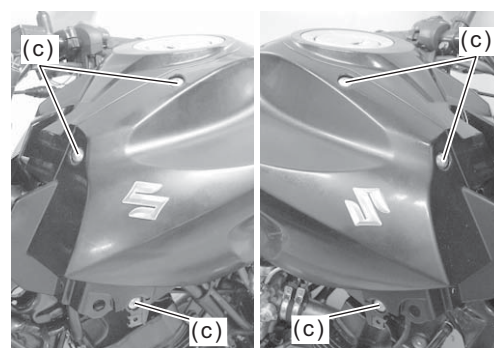
Fuel tank center cover screw (b): 5.5 N·m (0.56 kgf-m, 4.0 lbf-ft)

Fuel tank side cover bolt (c): 3 N·m (0.31 kgf-m, 2.5 lbf-ft)

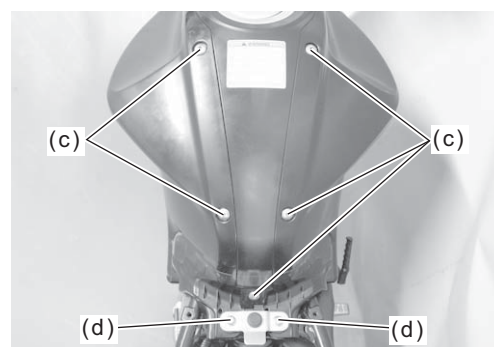
Seat front bracket bolt (d): 10 N·m (1.0 kgf-m, 7.5 lbf-ft)



IF34J1940042-01



IF34J1940043-01



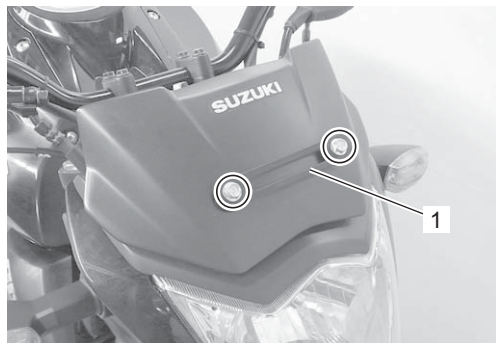
IF34J1940044-01

Meter Cover Removal and Installation

BENF34J19406021

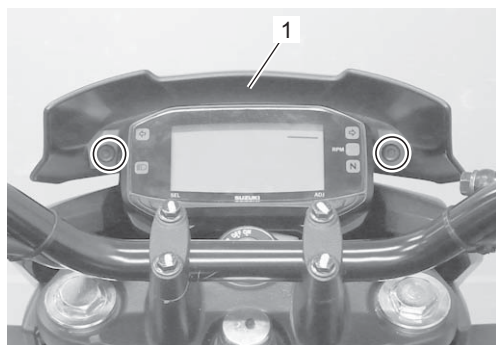
Removal

- 1) Remove the front license plate (1).



IF34J1940045-01

- 2) Remove the meter cover (1).



IF34J1940046-01

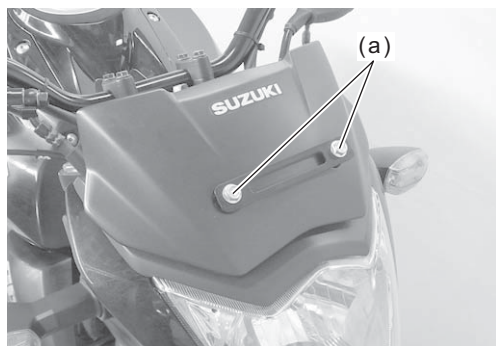
Installation

Install the meter cover in the reverse order of removal. Pay attention to the following point:

- Tighten the front license plate bolts to the specified torque.

Tightening torque

Front license plate bolt (a): 10 N·m (1.0 kgf-m, 7.5 lbf-ft)



IF34J1940047-02

Battery Holder Removal and Installation

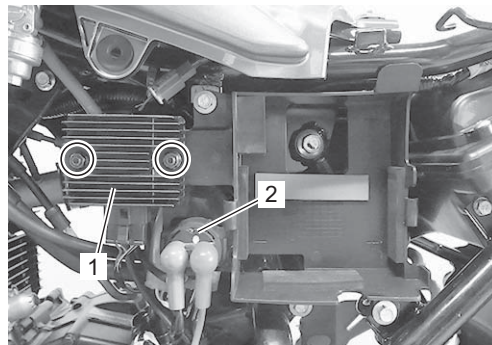
BENF34J19406025

Removal

- 1) Remove the seat. (Page 9D-11)
- 2) Remove the left frame side cover. (Page 9D-12)
- 3) Remove the battery. (Page 1J-10)

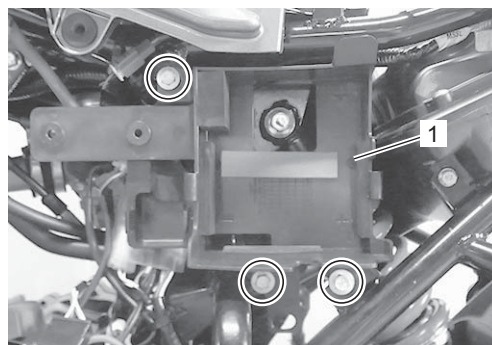
- 4) Remove the regulator/rectifier (1).

- 5) Remove the starter relay (2).



IF34J1940048-02

- 6) Remove the battery holder (1).



IF34J1940049-02

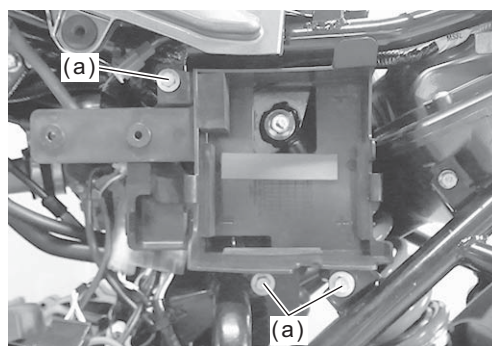
Installation

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

- Tighten the battery holder mounting bolts to the specified torque.

Tightening torque

Battery holder mounting bolt (a): 10 N·m (1.0 kgf-m, 7.5 lbf-ft)



IF34J1940050-02

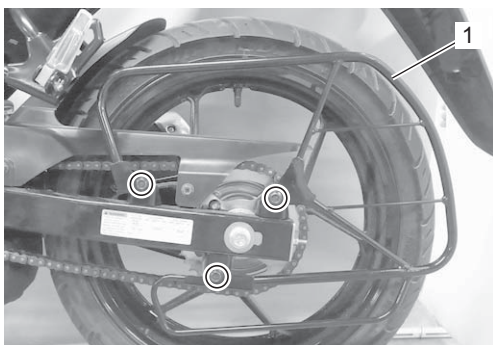
- Tighten the regulator/rectifier mounting nuts to the specified torque. Refer to "Regulator / Rectifier Removal and Installation" in Section 1J (Page 1J-8).

Rear Side Guard Removal and Installation

BENF34J19406027

Removal

Remove the rear side guard (1).



IF34J1940051-01

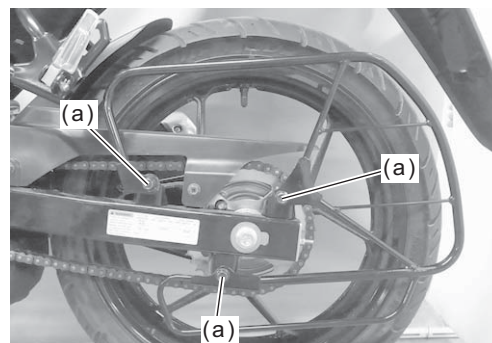
Installation

Install the rear side guard in the reverse order of removal. Pay attention to the following point:

- Tighten the rear side guard mounting bolts to the specified torque.

Tightening torque

Rear side guard mounting bolt (a): 23 N·m (2.3 kgf-m, 17.0 lbf-ft)



IF34J1940052-01

Specifications**Tightening Torque Specifications**

BENF34J19407001

Fastening part	Tightening torque			Note
	N·m	kgf-m	lbf-ft	
Frame cover No. 2 screw	2	0.20	1.5	☞ (Page 9D-12)
Frame front inner cover screw	2	0.20	1.5	☞ (Page 9D-13)
Pillion Rider handle mounting bolt	21	2.1	15.5	☞ (Page 9D-13)
Rear combination light mounting screw	2	0.20	1.5	☞ (Page 9D-15)
Fuel tank center cover bolt	3	0.31	2.5	☞ (Page 9D-16)
Fuel tank center cover screw	5.5	0.56	4.0	☞ (Page 9D-16)
Fuel tank side cover bolt	3	0.31	2.5	☞ (Page 9D-16)
Seat front bracket bolt	10	1.0	7.5	☞ (Page 9D-16)
Front license plate bolt	10	1.0	7.5	☞ (Page 9D-17)
Battery holder mounting bolt	10	1.0	7.5	☞ (Page 9D-17)
Rear side guard mounting bolt	23	2.3	17.0	☞ (Page 9D-18)

Reference:

For the tightening torques of fasteners not specified in this page, refer to:

“Seat Lock Cable Routing Diagram” (Page 9D-1)

“Front Fender Construction” (Page 9D-4)

“Fuel Tank Cover Construction” (Page 9D-6)

“Meter Cover Construction” (Page 9D-7)

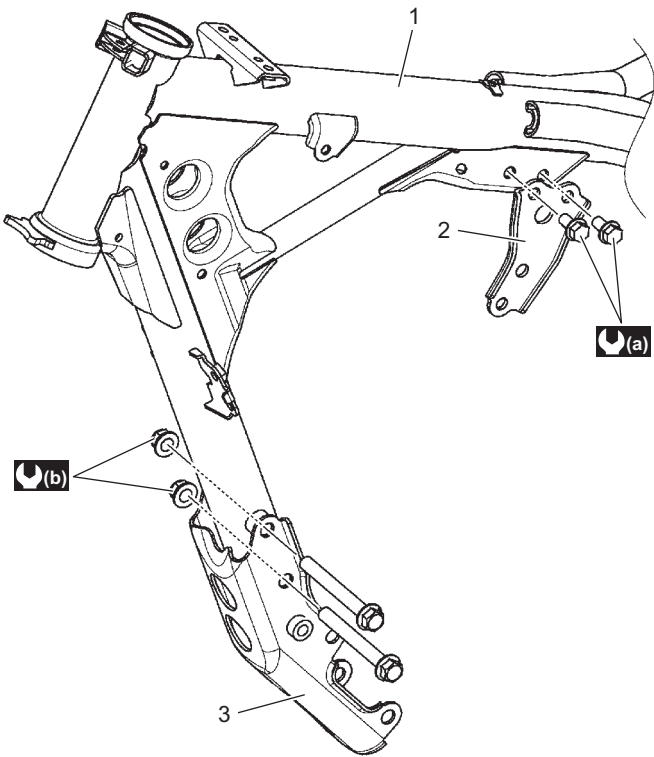
“Fasteners Information” in Section 0C (Page 0C-8)

Body Structure

Repair Instructions

Frame Construction

BENF34J19506001

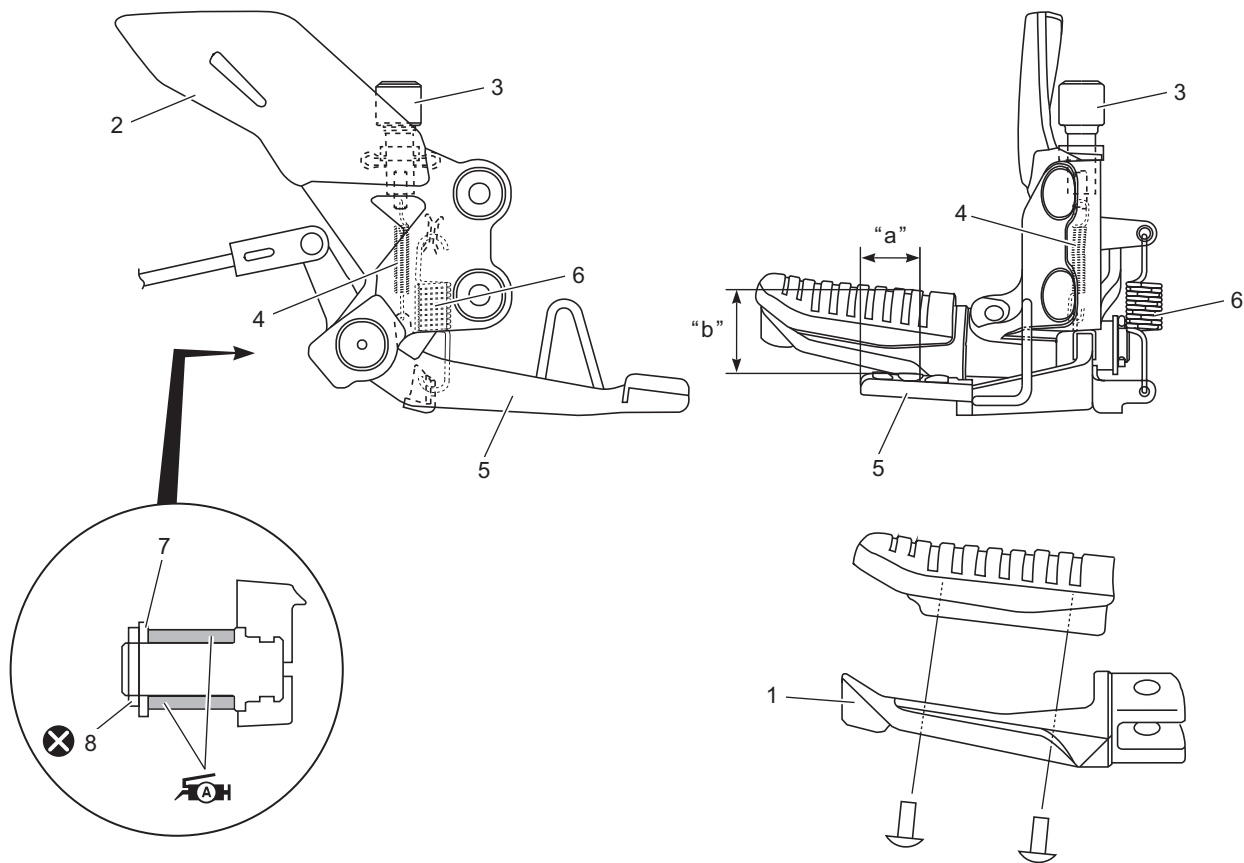


IF34J1950001-01

1. Frame	3. Engine mounting lower bracket	(b) : 65 N·m (6.6 kgf-m, 48.0 lbf-ft)
2. Engine mounting upper plate	(a) : 23 N·m (2.3 kgf-m, 17.0 lbf-ft)	

Front Footrest Construction

BENF34J19506003



IF34J1950002-02

1. Front footrest bar	4. Rear brake light switch spring	7. Brake pedal washer	"b": 32 – 42 mm (1.3 – 1.7 in)
2. Front footrest bracket	5. Brake pedal	8. Brake pedal cotter pin	: Apply grease to sliding surface.
3. Rear brake light switch	6. Brake pedal spring	"a": 25 mm (1.0 in)	: Do not reuse.

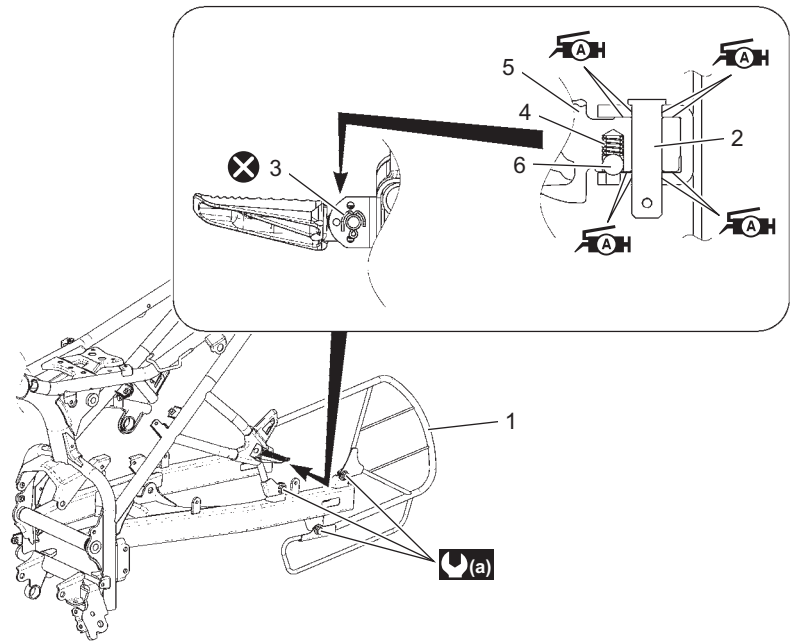
Front Footrest Removal and Installation

Refer to "Front Footrest Construction" (Page 9E-2).

BENF34J19506004

Pillion Footrest Construction

BENF34J19506005



IF34J1950003-02

1. Rear side guard	4. Pillion footrest spring	(a) : 23 N·m (2.3 kgf-m, 17.0 lbf-ft)
2. Pillion footrest pin	5. Pillion footrest bar	AH : Apply grease to sliding surface.
3. Pillion footrest cotter pin	6. Pillion footrest ball	X : Do not reuse.

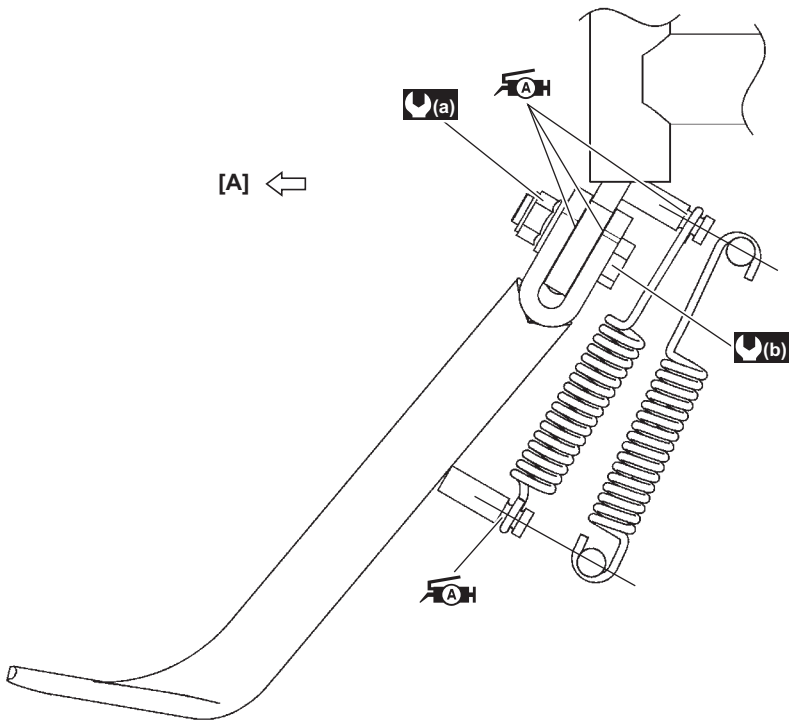
Pillion Footrest Removal and Installation

Refer to “Pillion Footrest Construction” (Page 9E-3).

BENF34J19506006

Side-stand Construction

BENF34J19506007



IF34J1950004-02

[A]: Outside	(b) : 10 N·m (1.0 kgf-m, 7.5 lbf-ft)
(a) : 40 N·m (4.1 kgf-m, 29.5 lbf-ft)	AH : Apply grease to sliding surface.

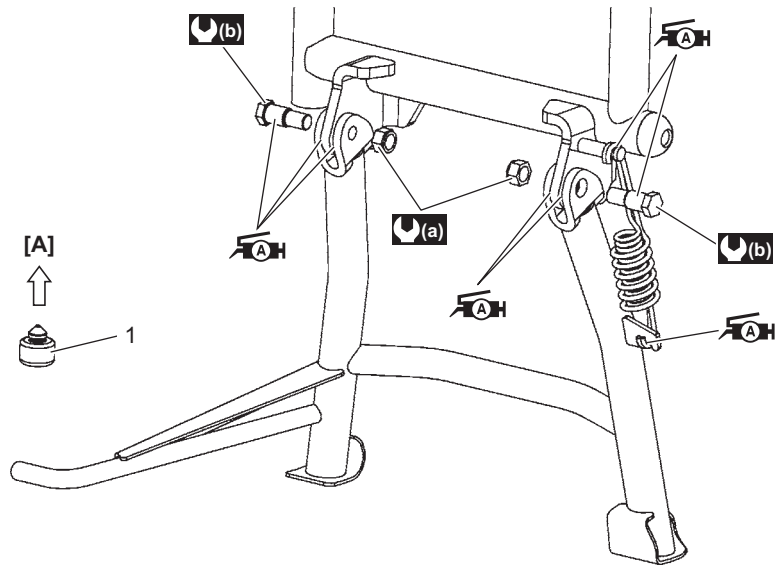
Side-stand Removal and Installation

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Refer to “Side-stand Construction” (Page 9E-3).

Center Stand Construction

BENF34J19506009



IF34J1950005-01

[A]: To muffler	(b) : 10 N·m (1.0 kgf·m, 7.5 lbf·ft)
1. Center stand stopper	(a) : Apply grease to sliding surface.
(a) : 40 N·m (4.1 kgf·m, 29.5 lbf·ft)	

Center Stand Removal and Installation

BENF34J19506010

Refer to “Center Stand Construction” (Page 9E-4).

NOTE

Support the motorcycle securely with a jack.

Specifications

Tightening Torque Specifications

BENF34J19507001

Reference:

For the tightening torques of fasteners not specified in this page, refer to:
“Frame Construction” (Page 9E-1)
“Front Footrest Construction” (Page 9E-2)
“Pillion Footrest Construction” (Page 9E-3)
“Side-stand Construction” (Page 9E-3)
“Center Stand Construction” (Page 9E-4)
“Fasteners Information” in Section 0C (Page 0C-8)

Special Tools and Equipment

Recommended Service Material

BENF34J19508001

NOTE

Required service materials are also described in:
“Front Footrest Construction” (Page 9E-2)
“Pillion Footrest Construction” (Page 9E-3)
“Side-stand Construction” (Page 9E-3)
“Center Stand Construction” (Page 9E-4)
