

Section 6

Steering

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Precautions

Precautions

Precautions for Steering

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

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Steering General Diagnosis

Diagnostic Information and Procedures

Steering Symptom Diagnosis

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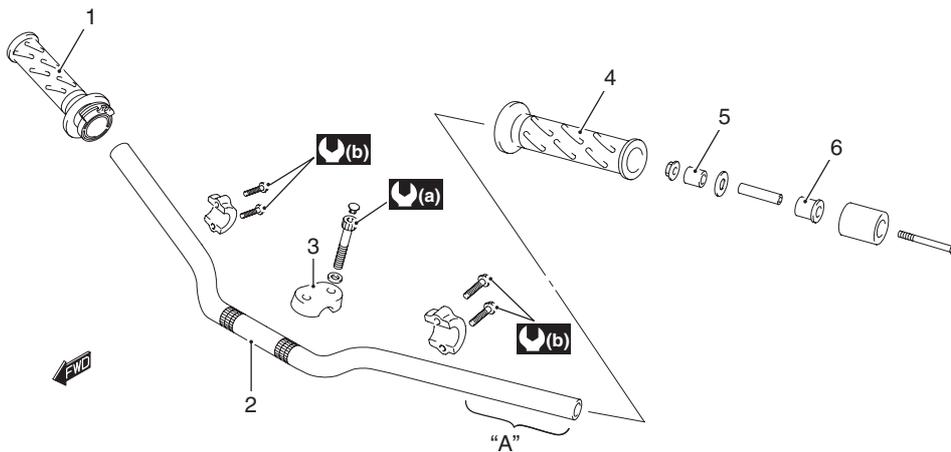
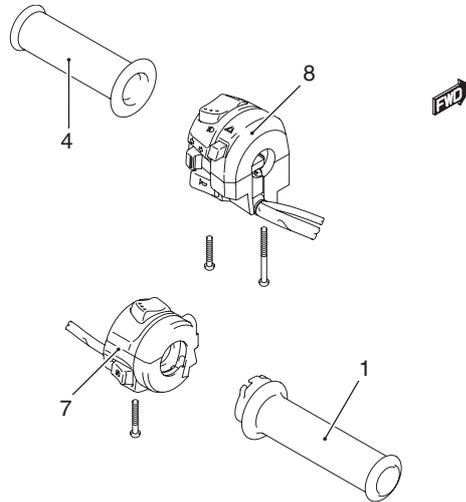
Condition	Possible cause	Correction / Reference Item
Heavy Steering	Over tightened steering stem nut.	<i>Adjust.</i>
	Broken bearing in steering stem.	<i>Replace.</i>
	Distorted steering stem.	<i>Replace.</i>
	Not enough pressure in tires.	<i>Adjust.</i>
Wobbly Handlebars	Loss of balance between right and left front forks.	<i>Replace fork or adjust fork oil level or replace spring.</i>
	Distorted front fork.	<i>Repair or replace.</i>
	Distorted front axle or crooked tire.	<i>Replace.</i>
	Loose steering stem nut.	<i>Adjust.</i>
	Worn or incorrect tire or wrong tire pressure.	<i>Adjust or replace.</i>
	Worn bearing/race in steering stem.	<i>Replace.</i>

Steering / Handlebar

Repair Instructions

Handlebar Components

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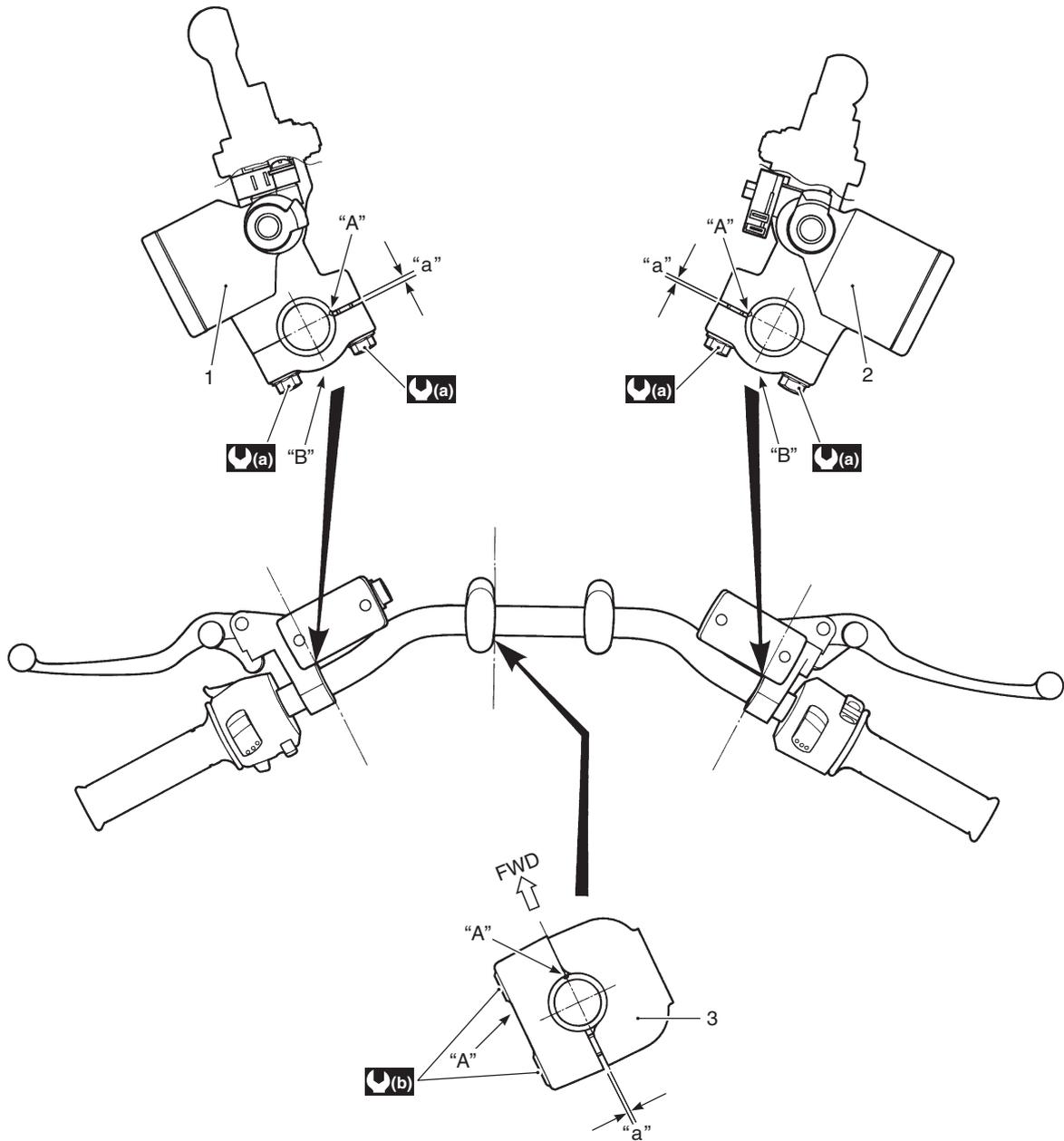


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1. Throttle grip	5. Handle expander	"A": Apply handle grip bond.
2. Handlebars	6. Handle balancer expander	(a) : 23 N·m (2.3 kgf·m, 16.5 lb-ft)
3. Handlebar holder (Upper)	7. Right handlebar switch box	(b) : 10 N·m (1.0 kgf·m, 7.0 lb-ft)
4. Grip rubber	8. Left handlebar switch box	

Handlebar Construction

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1. Clutch master cylinder	"A": Punch mark	(a) : 10 N-m (1.0 kgf-m, 7.0 lb-ft)
2. Front brake master cylinder	"B": UP mark	(b) : 23 N-m (2.3 kgf-m, 16.5 lb-ft)
3. Handlebar holder	"a": Clearance	

6B-3 Steering / Handlebar:

Handlebar Removal and Installation

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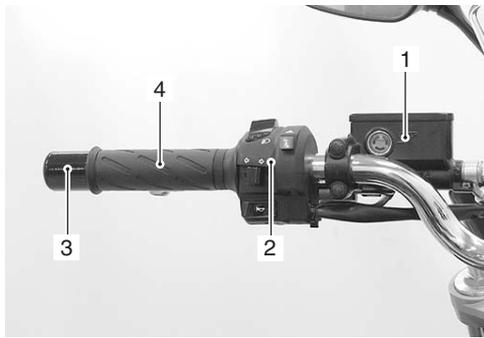
Removal

- 1) Remove the following parts from the left handlebar.
 - a) Rear view mirror (GSF1250/A)
 - b) Clutch master cylinder/clutch lever (1)

⚠ CAUTION

Do not turn the clutch master cylinder upside down.

- c) Left handlebar switch box (2)
- d) Handlebar balancer (3)
- e) Grip rubber (4)



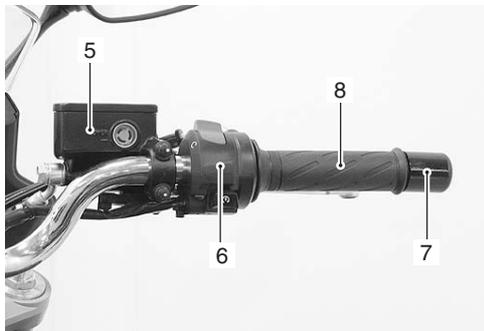
I718H1620001-03

- 2) Remove the following parts from the right handlebar.
 - a) Rear view mirror (GSF1250/A)
 - b) Front brake master cylinder/Front brake lever (5)

⚠ CAUTION

Do not turn the front brake master cylinder upside down.

- c) Right handlebar switch box (6)
- d) Handlebar balancer (7)
- e) Throttle grip (8)



I718H1620002-03

- 3) Remove the caps and handlebar holder bolts.

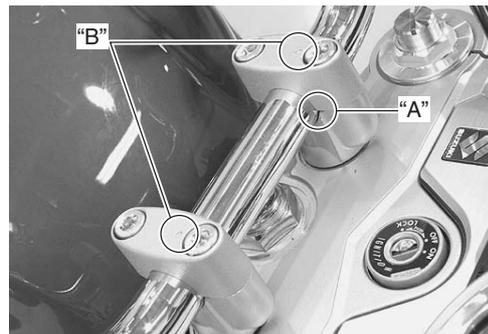


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Installation

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

- Set the handlebars so that its punch mark "A" aligns with the mating surface of the left handlebar holder. Refer to "Handlebar Construction (Page 6B-2)".
- Set the handlebar holders with their punch marks "B" forward.



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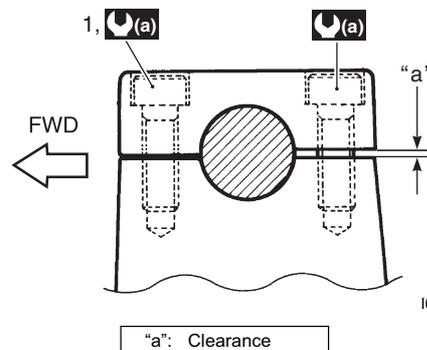
- Tighten the handlebar holder bolts.

NOTE

First tighten the handlebar holder bolts (1) (front ones) to the specified torque.

Tightening torque

Handlebar holder bolt (a): 23 N·m (2.3 kgf·m, 16.5 lb-ft)

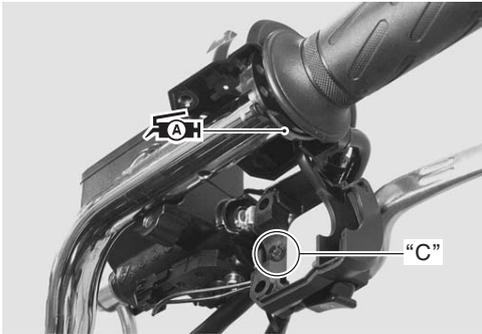


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- Apply SUZUKI SUPER GREASE to the end of the throttle cables and cable pulley.

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

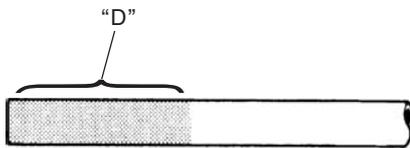
- Insert the projection “C” of the right handlebar switch box into the hole of the handlebars.



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- Install the front brake master cylinder. Refer to “Front Brake Master Cylinder Assembly Removal and Installation in Section 4A (Page 4A-14)”.
- Apply a handle grip bond “D” onto the left handlebar before installing the handlebar grip.

 **Handle grip bond (Handle Grip Bond (commercially available))**



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- Insert the projection “E” of the left handlebar switch box into the hole of the handlebars.



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- Install the clutch master cylinder. Refer to “Clutch Master Cylinder Assembly Removal and Installation in Section 5C (Page 5C-7)”.
- After installing the steering, the following adjustments are required before driving.
 - Cable routing (Refer to “Throttle Cable Routing Diagram in Section 1D (Page 1D-2)”.)
 - Throttle cable play (Refer to “Throttle Cable Play Inspection and Adjustment in Section 0B (Page 0B-12)”.)

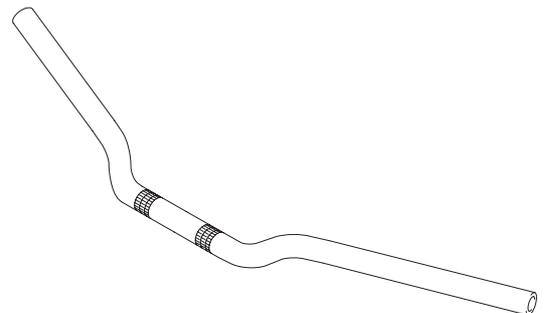
Handlebars Inspection

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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.

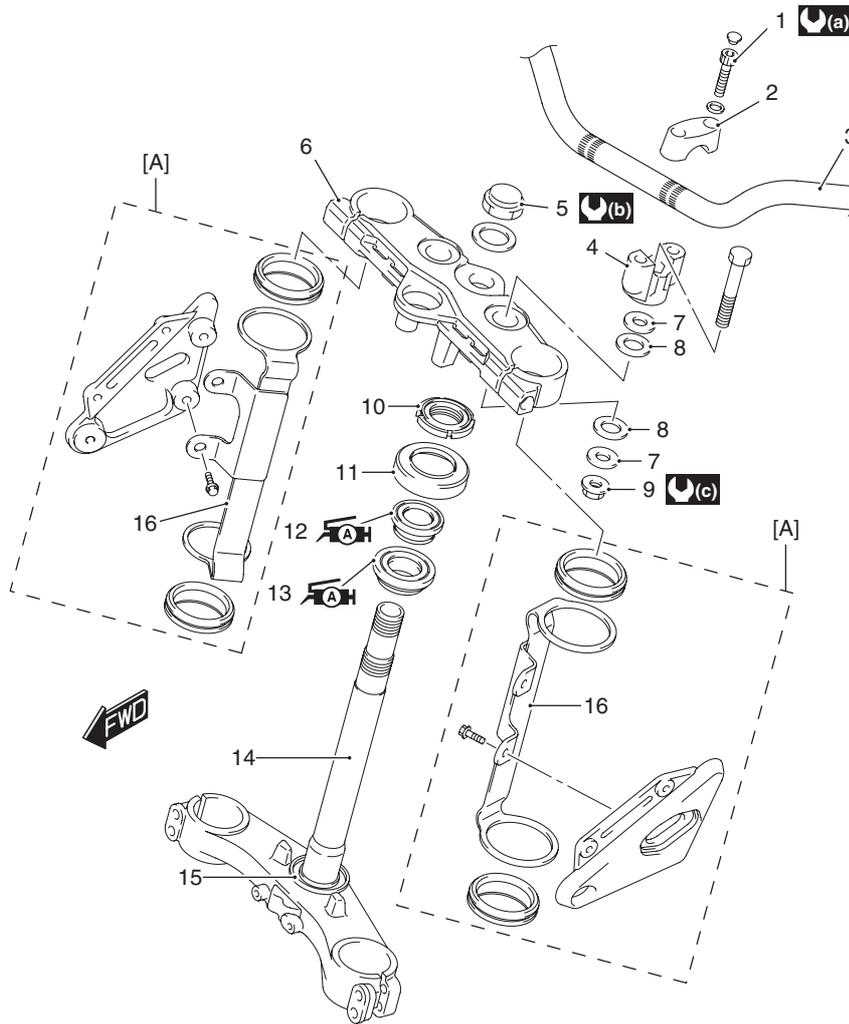


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6B-5 Steering / Handlebar:

Steering Components

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1. Handlebar holder bolt	8. Rubber seat	15. Lower seal
2. Handlebar holder (Upper)	9. Handlebar holder set nut	16. Headlight housing bracket
3. Handlebars	10. Steering stem nut	[A]: For GSF1250/A
4. Handlebar holder (Lower)	11. Dust seal	(a) : 23 N-m (2.3 kgf-m, 16.5 lb-ft)
5. Steering stem head nut	12. Steering stem upper bearing	(b) : 65 N-m (6.5 kgf-m, 47.0 lb-ft)
6. Steering stem upper bracket	13. Steering stem lower bearing	(c) : 45 N-m (4.5 kgf-m, 32.5 lb-ft)
7. Washer	14. Steering stem lower bracket	AH : Apply grease to bearing.

Steering Removal and Installation

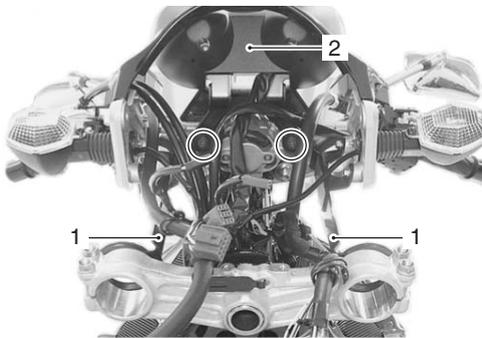
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Removal

GSF1250/A

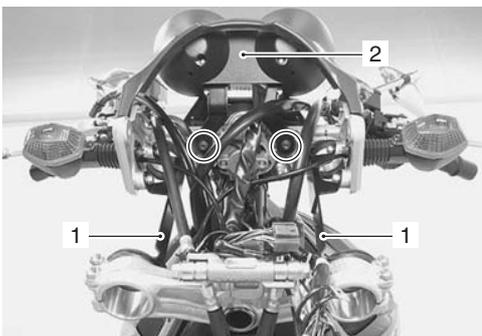
- 1) Support the motorcycle with a jack or a wooden block.
- 2) Remove the front wheel assembly. Refer to "Front Wheel Assembly Removal and Installation in Section 2D (Page 2D-6)".
- 3) Remove the front forks. Refer to "Front Fork Removal and Installation in Section 2B (Page 2B-2)".
- 4) Remove the headlight. Refer to "Headlight Removal and Installation in Section 9B (Page 9B-2)".
- 5) Remove the headlight housing brackets (1).
- 6) Remove the combination meter unit (2).

GSF1250



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GSF1250A



I718H1620022-04

- 7) Dismount the handlebars and steering upper bracket. Refer to "Ignition Switch Removal and Installation in Section 1H (Page 1H-9)".

NOTE

If necessary, remove the ignition switch from the upper bracket. Refer to "Ignition Switch Removal and Installation in Section 1H (Page 1H-9)".

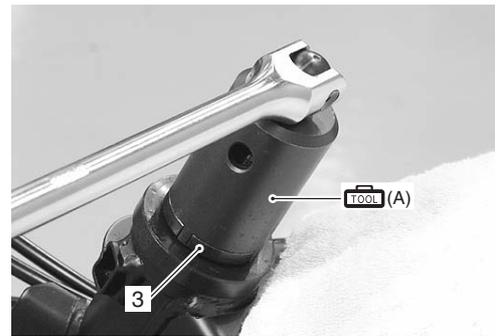
- 8) Remove the steering stem nut (3) using the special tool.

NOTE

When loosening the stem nuts, hold the steering stem lower bracket to prevent it from falling.

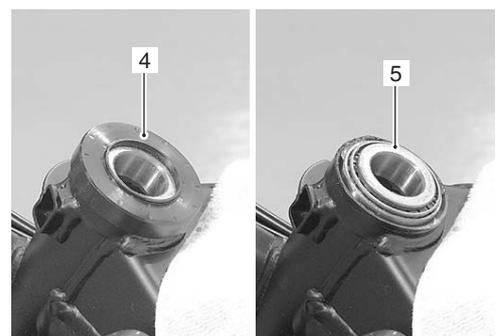
Special tool

TOOL (A): 09940-14911 (Steering stem nut wrench)



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- 9) Remove the steering stem lower bracket.
- 10) Remove the dust seal (4) and steering stem upper bearing (5).

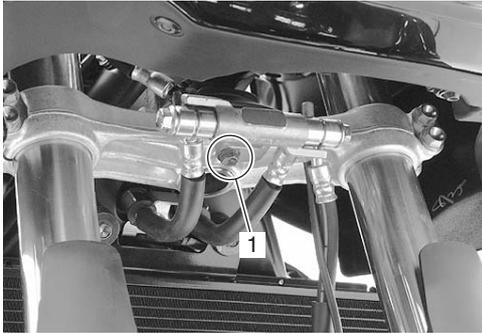


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6B-7 Steering / Handlebar:

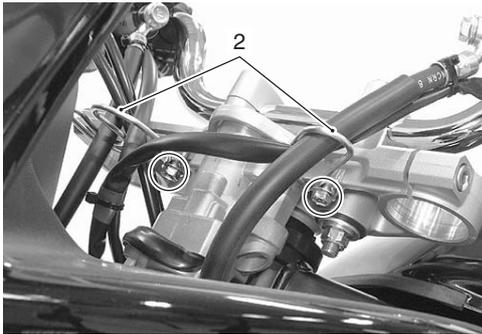
GSF1250S/SA

- 1) Support the motorcycle with a jack or a wooden block.
- 2) Remove the front wheel assembly. Refer to “Front Wheel Assembly Removal and Installation in Section 2D (Page 2D-6)”.
- 3) Remove the brake hose clamp bolt (GSF1250S) or brake hose joint bolt (1) (GSF1250SA).



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- 4) Remove the front forks. Refer to “Front Fork Removal and Installation in Section 2B (Page 2B-2)”.
- 5) Remove the cable guides (2).



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- 6) Dismount the handlebars and steering upper bracket. Refer to “Ignition Switch Removal and Installation in Section 1H (Page 1H-9)”.

NOTE

If necessary, remove the ignition switch from the upper bracket. Refer to “Ignition Switch Removal and Installation in Section 1H (Page 1H-9)”.

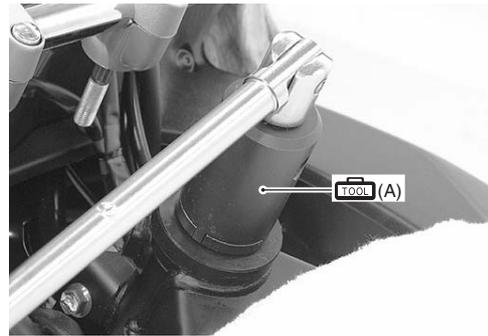
- 7) Remove the steering stem nut using the special tool.

NOTE

When loosening the stem nuts, hold the steering stem lower bracket to prevent it from falling.

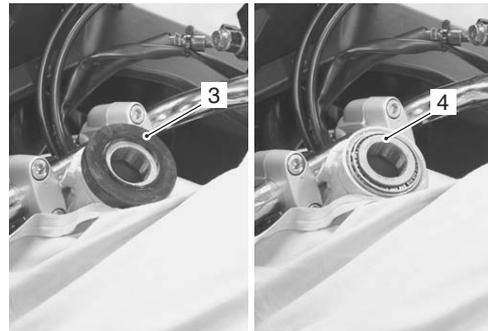
Special tool

 (A): 09940-14911 (Steering stem nut wrench)



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- 8) Remove the steering stem lower bracket.
- 9) Remove the dust seal (3) and steering stem upper bearing (4).



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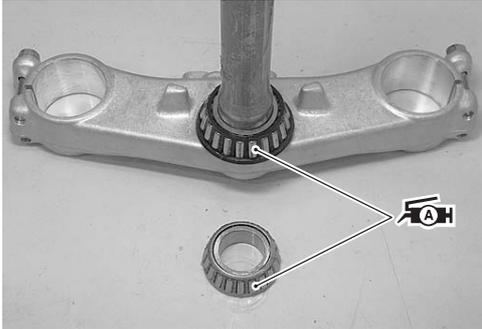
Installation

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

Bearing

- Apply SUZUKI SUPER GREASE to the bearings, races and dust seals before remounting the steering stem.

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



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Steering stem nut

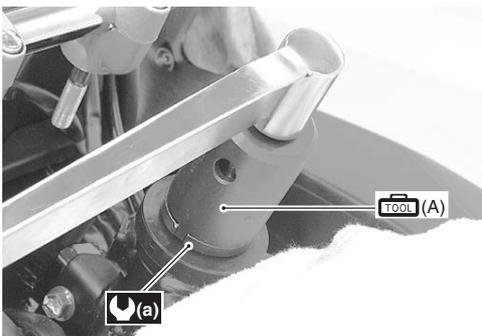
- Tighten the steering stem nut to the specified torque using the special tool.

Special tool

 **(A): 09940-14911 (Steering stem nut wrench)**

Tightening torque

Steering stem nut (a): 45 N·m (4.5 kgf-m, 32.5 lb-ft) then turn back 1/2 – 1/4.

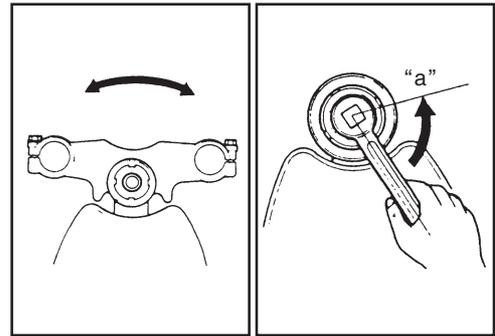


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- Turn the steering stem lower bracket about five or six times to the left and right so that the angular ball bearings seat properly.
- Loosen the steering stem nut 1/4 – 1/2 turn "a".

NOTE

This adjustment will vary from motorcycle to motorcycle.



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Steering stem upper bracket

Install the front forks and steering stem upper bracket in the following steps:

- Temporarily install the upper bracket, washer and steering stem head nut (1).
- Set the headlight housing brackets. (GSF1250/A)
- Temporarily install the front forks.
- Tighten the steering stem head nut (1).

Tightening torque

Steering stem head nut (a): 65 N·m (6.5 kgf-m, 47.0 lb-ft)



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- Tighten the front fork upper and lower clamp bolts. Refer to "Front Fork Removal and Installation in Section 2B (Page 2B-2)".

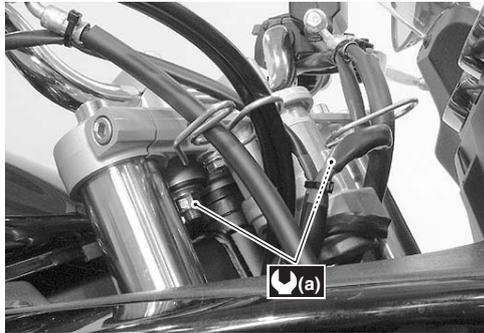
6B-9 Steering / Handlebar:

Handlebars

- Tighten the handlebar holder set nuts to the specified torque.

Tightening torque

Handlebar holder set nut (a): 45 N·m (4.5 kgf·m, 32.5 lb-ft)



I718H1620035-04

Inspection after installation

- Check the steering tension. Refer to “Steering Tension Adjustment (Page 6B-10)”.

Steering Related Parts Inspection

B718H16206011

Refer to “Steering Removal and Installation (Page 6B-6)”.

Inspect the removed parts for the following abnormalities.

- Distortion of the steering stem
- Bearing wear or damage
- Abnormal bearing noise
- Race wear or damage
- Bearing lower seal damage
- Rubber seat and damper bushing wear or damage

If any abnormal points are found, replace defective parts with new ones.



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Steering System Inspection

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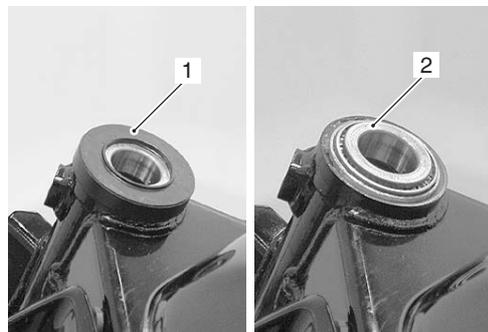
Refer to “Steering System Inspection in Section 0B (Page 0B-20)”.

Steering Stem Bearing Removal and Installation

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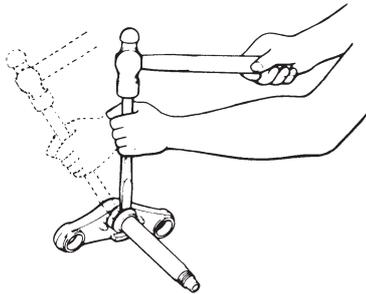
Removal

- 1) Remove the steering stem lower bracket. Refer to “Steering Removal and Installation (Page 6B-6)”.
- 2) Remove the dust seal (1) and steering stem upper bearing (2).



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- 3) Remove the steering stem lower bearing and inner race using a chisel.



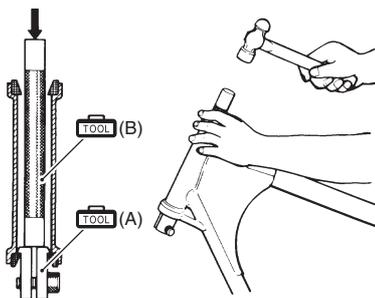
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- 4) Remove the steering stem upper and lower bearing races using the special tools.

Special tool

TOOL (A): 09941-54911 (Bearing outer race remover)

TOOL (B): 09941-74911 (Steering bearing installer)



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Installation

Install the steering stem bearings in the reverse order of removal. Pay attention to the following points:

⚠ CAUTION

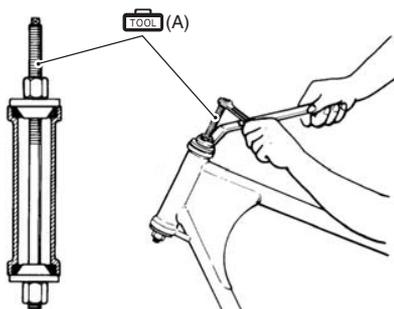
The removed bearings and races should be replaced with new ones.

Outer race

- Press in the upper and lower outer races using the special tool.

Special tool

TOOL (A): 09941-34513 (Steering race installer)



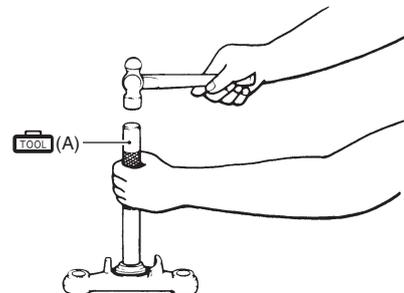
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Inner race

- Press in the lower inner race and bearing using the special tool.

Special tool

TOOL (A): 09941-74911 (Steering bearing installer)



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- Install the steering. Refer to “Steering Removal and Installation (Page 6B-6)”.

Steering Tension Adjustment

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Check the steering movement in the following procedures:

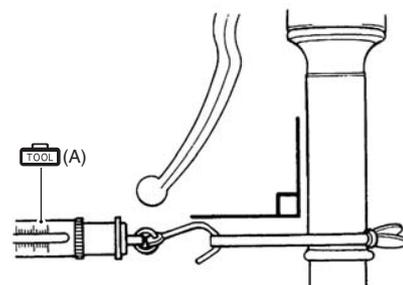
- 1) By supporting the motorcycle with a jack, lift the front wheel unit is off the floor 20 – 30 mm (0.8 – 1.2 in).
- 2) Check to make sure that the cables and wire harnesses are properly routed.
- 3) With the front wheel in the straight ahead state, hitch the spring scale (special tool) on one handlebar grip end as shown in the figure and read the graduation when the handlebar starts moving.

Initial force

200 – 500 grams

Special tool

TOOL (A): 09940-92720 (Spring scale)



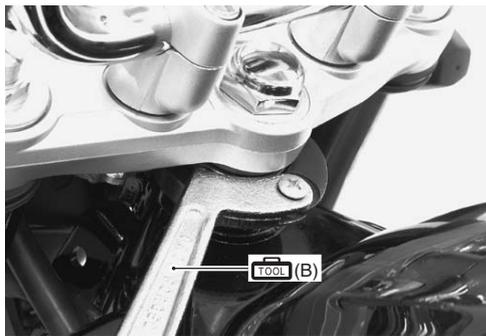
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6B-11 Steering / Handlebar:

- 4) Do the same on the other grip end.
- 5) If the initial force read on the scale when the handlebar starts turning is either too heavy or too light, adjust it till it satisfies the specification.
 - a) First, loosen the front fork upper and lower clamp bolts, steering stem head nut and steering stem nut, and then adjust the steering stem nut by loosening or tightening it.

Special tool

 (B): 09910-60611 (Universal clamp wrench)



I718H1620043-02

- b) Tighten the steering stem nut, stem head nut and front fork upper and lower clamp bolts to the specified torque and recheck the initial force with the spring scale according to the previously described procedure.
- c) If the initial force is found within the specified range, adjustment has been completed.

NOTE

Hold the front fork legs, move them back and forth and make sure that the steering is not loose.

Specifications

Tightening Torque Specifications

B718H16207001

Fastening part	Tightening torque			Note
	N·m	kgf·m	lb·ft	
Handlebar holder bolt	23	2.3	16.5	☞ (Page 6B-3)
Steering stem nut	45	4.5	32.5	then turn back 1/2 – 1/4. ☞ (Page 6B-8)
Steering stem head nut	65	6.5	47.0	☞ (Page 6B-8)
Handlebar holder set nut	45	4.5	32.5	☞ (Page 6B-9)

NOTE

The specified tightening torque is also described in the following.

“Handlebar Components (Page 6B-1)”

“Handlebar Construction (Page 6B-2)”

“Steering Components (Page 6B-5)”

Reference:

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

Special Tools and Equipment

Recommended Service Material

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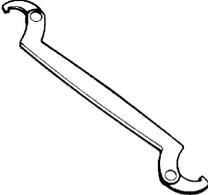
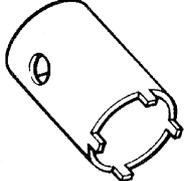
Material	SUZUKI recommended product or Specification		Note
Grease	SUZUKI SUPER GREASE A or equivalent	P/No.: 99000-25010	☞ (Page 6B-4) / ☞ (Page 6B-8)
Handle grip bond	Handle Grip Bond (commercially available)	—	☞ (Page 6B-4)

NOTE

Required service material is also described in the following.
 “Steering Components (Page 6B-5)”

Special Tool

B718H16208002

09910-60611 Universal clamp wrench ☞ (Page 6B-11)		09940-14911 Steering stem nut wrench ☞ (Page 6B-6) / ☞ (Page 6B-7) / ☞ (Page 6B-8)	
09940-92720 Spring scale ☞ (Page 6B-10)		09941-34513 Steering race installer ☞ (Page 6B-10)	
09941-54911 Bearing outer race remover ☞ (Page 6B-10)		09941-74911 Steering bearing installer ☞ (Page 6B-10) / ☞ (Page 6B-10)	

