

TABLE OF CONTENTS

Precautions.....	00-i
Precautions	00-1
General Information	0-i
General Information	0A-1
Maintenance and Lubrication	0B-1
Service Data.....	0C-1
Engine	1-i
Precautions	1-1
Engine General Information and Diagnosis	1A-1
Emission Control Devices	1B-1
Engine Electrical Devices.....	1C-1
Engine Mechanical.....	1D-1
Engine Lubrication System	1E-1
Engine Cooling System.....	1F-1
Fuel System	1G-1
Ignition System.....	1H-1
Starting System.....	1I-1
Charging System.....	1J-1
Exhaust System	1K-1
Suspension.....	2-i
Precautions	2-1
Suspension General Diagnosis.....	2A-1
Front Suspension.....	2B-1
Rear Suspension.....	2C-1
Wheels and Tires	2D-1
Driveline / Axle	3-i
Precautions	3-1
Drive Chain / Drive Train / Drive Shaft.....	3A-1
Brakes	4-i
Precautions	4-1
Brake Control System and Diagnosis	4A-1
Front Brakes.....	4B-1
Rear Brakes	4C-1
ABS.....	4E-1
Transmission / Transaxle	5-i
Precautions	5-1
Manual Transmission.....	5B-1
Clutch	5C-1
Steering.....	6-i
Precautions	6-1
Steering General Diagnosis	6A-1
Steering / Handlebar	6B-1
Body and Accessories.....	9-i
Precautions	9-1
Wiring Systems	9A-1
Lighting Systems.....	9B-1
Combination Meter / Fuel Meter / Horn.....	9C-1
Exterior Parts	9D-1
Body Structure	9E-1

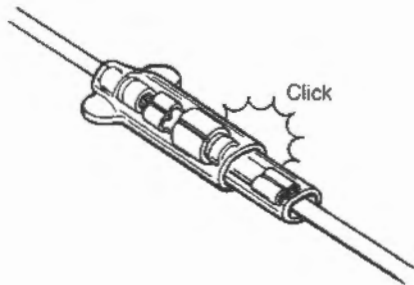
Precautions for Electrical Circuit Service

BENJ18K6000002

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

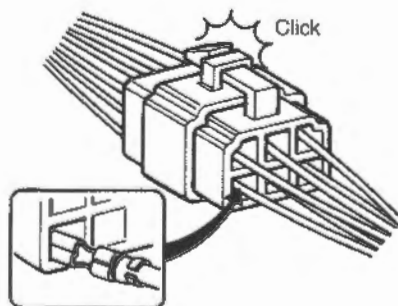
Electrical Parts**Connector / Coupler**

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



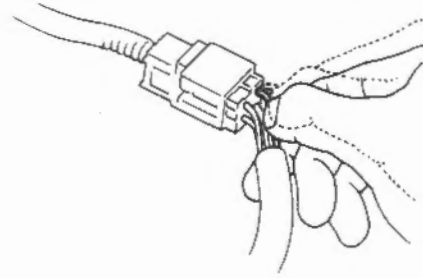
I310G1000001-01

- 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.



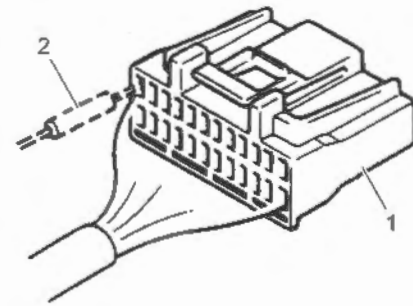
I310G1000002-01

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



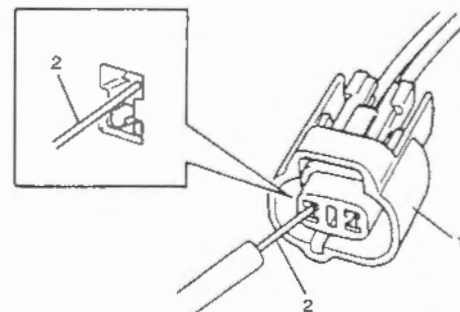
I310G1000003-02

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



IF04K1000002-02

- 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.

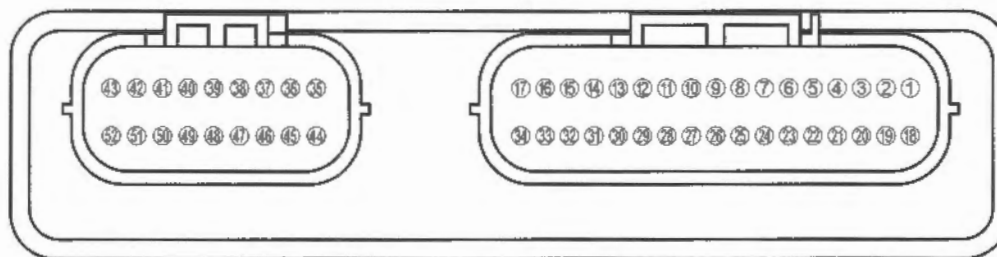


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- Avoid applying grease or other similar material to connector/coupler terminals to prevent electric trouble.

[A]: To mode select coupler (6P)	10. Front wheel speed sensor	26. Fuel pump
[B]: With ABS	11. ABS control unit	27. Side-stand relay
[C]: Without ABS	12. Speed sensor	28. Side-stand switch
[D]: To [a]	13. Fuel injector #1	29. Neutral indicator light
[E]: To [b]	14. Fuel injector #2	30. Starter relay
[F]: For U.K., E.U. and Australia	15. Ignition coil #1	31. Starter motor
[G]: Except for U.K., E.U. and Australia	16. Ignition coil #2	32. Starter switch
1. CKP sensor	17. EVAP system purge control solenoid valve (If equipped)	33. Clutch lever position switch
2. TP sensor	18. PAIR control solenoid valve (If equipped)	34. Engine stop switch
3. STP sensor	19. GP switch	35. Ignition switch
4. IAP sensor #1	20. STV actuator	36. Fan fuse (15 A)
5. IAP sensor #2	21. Combination meter	37. Fuel fuse (10 A)
6. ECT sensor	22. ECM	38. Ignition fuse (15 A)
7. IAT sensor	23. Cooling fan relay	39. Signal fuse (15 A)
8. TO sensor	24. Cooling fan motor	40. Main fuse (30 A)
9. HO2 sensor	25. Fuel pump relay	41. Battery

Terminal Arrangement of ECM Connector "T"



1940H1110005-04

TERMINAL NO.	CIRCUIT	TERMINAL NO.	CIRCUIT
T1	GP switch signal	T27	CKP sensor signal (CKP+)
T2	IAT sensor signal	T28	—
T3	IAP sensor #1 signal	T29	Mode select switch
T4	STP sensor signal	T30	—
T5	Power source for sensors	T31	Serial data for combination meter
T6	Serial data for self-diagnosis	T32	HO2 sensor signal
T7	Clutch lever position switch	T33	—
T8	CKP sensor signal (CKP-)	T34	—
T9	Power source for battery monitor	T35	STVA signal (STVA, 1B)
T10	Power source for back-up	T36	STVA signal (STVA, 2B)
T11	Power source	T37	HO2 sensor heater
T12	Sensor ground (E2)	T38	—
T13	ECM ground (E1)	T39	EVAP system purge control solenoid valve (If equipped)
T14	—	T40	Tachometer
T15	—	T41	General power ground (E01)
T16	—	T42	Fuel injector #2
T17	—	T43	Ignition coil #2
T18	Ignition switch signal	T44	STVA signal (STVA, 1A)
T19	ECT sensor signal	T45	STVA signal (STVA, 2A)
T20	TO sensor signal	T46	Fuel pump relay
T21	TP sensor signal	T47	Starter motor relay
T22	IAP sensor #2 signal	T48	PAIR control solenoid valve (If equipped)
T23	Front wheel speed sensor signal (With ABS) / Speed sensor signal (Without ABS)	T49	Speed sensor output signal
T24	Cooling fan relay	T50	General power ground (E02)
T25	Starter switch	T51	Fuel injector #1
T26	Neutral signal	T52	Ignition coil #1

Troubleshooting

Step 1

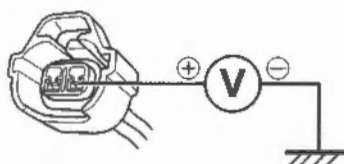
Fuel injector power supply voltage check

- 1) Turn the ignition switch OFF.
- 2) Disconnect the fuel injector #1 coupler. Refer to "Fuel Injector On-Vehicle Inspection" in Section 1G (Page 1G-16).
- 3) Check for proper terminal connection to the fuel injector #1 coupler.
- 4) If connections are OK, turn the ignition switch ON.
- 5) Measure the voltage between Y/R wire and ground.

NOTE

Fuel injector power supply voltage can be detected only for 3 seconds after ignition switch is turned ON.

Fuel injector #1 power supply voltage [Standard]: Battery voltage



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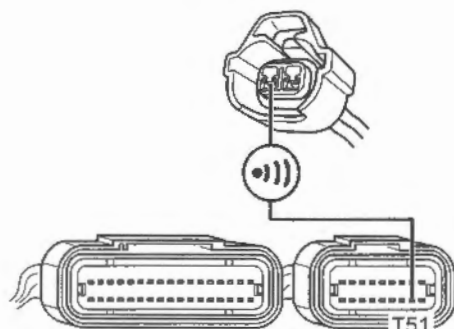
Is check result OK?

- Yes Go to Step 2.
- No Repair or replace the Y/R wire.

Step 2

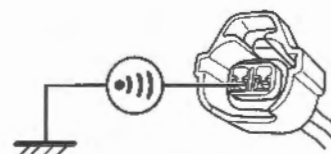
Fuel injector drive circuit check

- 1) Turn the ignition switch OFF.
- 2) Disconnect the ECM couplers. (Page 1C-4)
- 3) Check for proper terminal connection to the ECM couplers.
- 4) If connections are OK, check the following points.
 - Resistance
 - Gr/W wire: less than 1 Ω



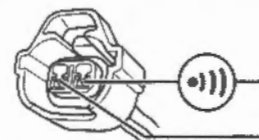
IH18K1110023-01

- Between Gr/W wire and ground: infinity



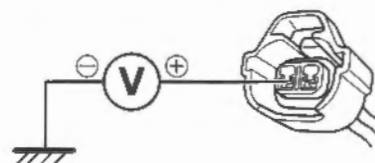
IF04K1110025-01

- Between Gr/W wire terminal and Y/R wire terminal at fuel injector #1 coupler: infinity



IF04K1110026-01

- Voltage
 - Turn the ignition switch ON.
 - Gr/W wire: approx. 0 V



IF04K1110027-01

Is check result OK?

- Yes Go to Step 3.
- No Repair or replace the Gr/W wire.

Step 3

Fuel injector resistance check

- 1) Turn the ignition switch OFF.
- 2) Measure the fuel injector resistance. (Page 1G-13)

Is check result OK?

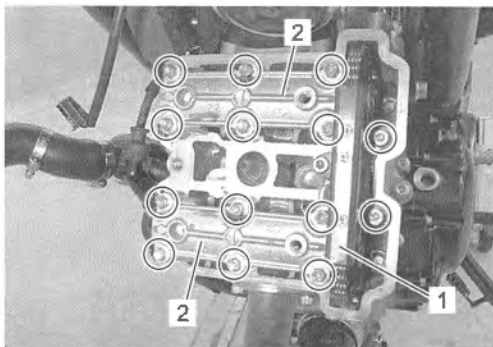
- Yes Replace the ECM with a known good one, and inspect it again. (Page 1C-4)
- No Replace the fuel injector #1 with a new one. (Page 1G-16)

1D-20 Engine Mechanical:

- 7) Remove the cam chain guide No. 2 (1).
- 8) Remove the camshaft journal holders (2).

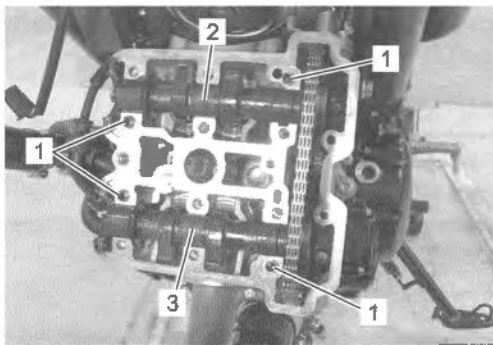
NOTICE

Be sure to loosen the camshaft journal holder bolts evenly by shifting the wrench diagonally.



IH18K1140063-01

- 9) Remove the dowel pins (1).
- 10) Remove the intake camshaft (2) and exhaust camshaft (3).



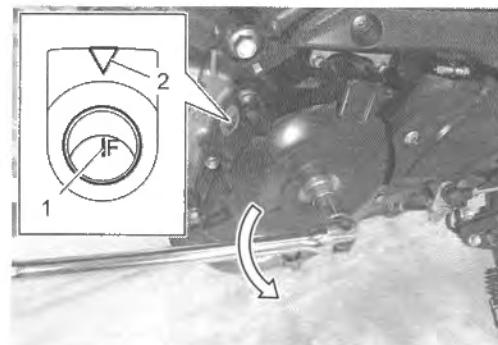
IH18K1140064-01

Rear Cam Chain Tension Adjuster / Rear Camshaft

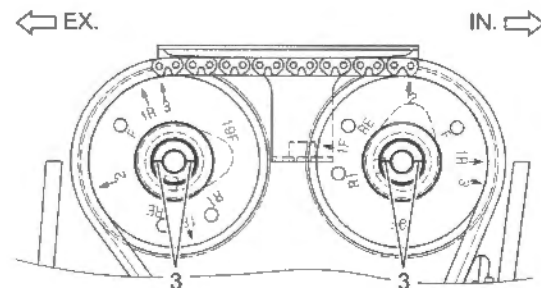
- 1) Remove the fuel tank. (Page 1G-9)
- 2) Rotate the crankshaft 360 degrees (1 turn) counterclockwise and align the [F] line (1) on the generator rotor with the index mark (2) on the generator cover.

NOTE

At the above condition, the rear cylinder is at ATDC 90° on expansion stroke and also the engraved lines (3) on the camshafts are parallel with the mating surface of the rear cylinder head.



IH18K1140060-02



IH18K1140319-01

- 3) Remove the rear brake reservoir tank mounting bolt (1).



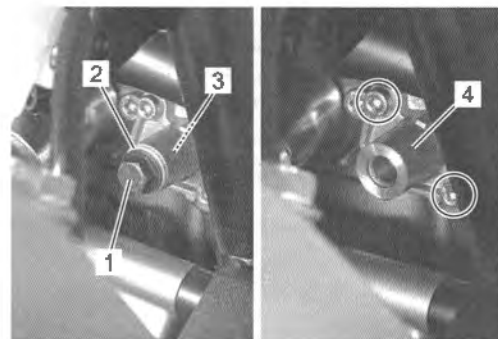
IH18K1140067-01

- 4) Remove the cam chain tension adjuster cap bolt (1), washer (2) and spring (3).

▲ CAUTION

The cam chain tension adjuster cap bolt (1) is spring loaded. Be careful when removing it.

- 5) Remove the rear cam chain tension adjuster (4) and gasket.



IH18K1140068-02

Special Tools and Equipment

Recommended Service Material

BENJ18K61408001

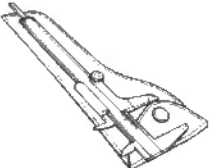
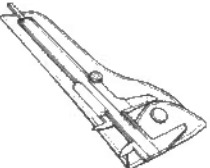


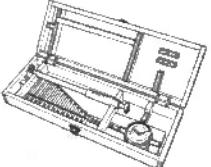



Material	SUZUKI recommended product or Specification		Note
Assembly lubrication	Molybdenum oil solution	—	☞(Page 1D-45) / ☞(Page 1D-50) / ☞(Page 1D-57) / ☞(Page 1D-74)
Grease	SUZUKI SUPER GREASE A	P/No.: 99000-25011	☞(Page 1D-16) / ☞(Page 1D-66)
Sealant	SUZUKI BOND 1215	P/No.: 99000-31110	☞(Page 1D-44) / ☞(Page 1D-65)
	SUZUKI BOND 1207B	P/No.: 99000-31140	☞(Page 1D-18)
Thread lock cement	THREAD LOCK CEMENT 1322D	P/No.: 99000-32150	☞(Page 1D-40)

NOTE

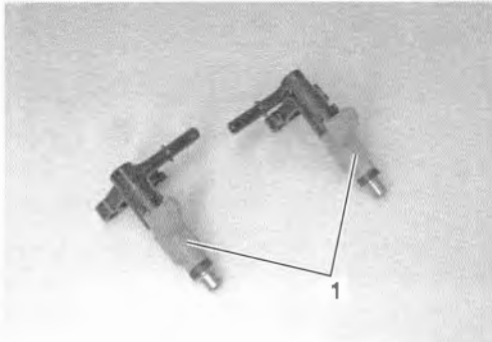
Required service material(s) is also described in:
 “Throttle Body Components” (Page 1D-9)
 “Engine Assembly Installation” (Page 1D-40)

Special Tool

BENJ18K61408002

09900-20101 Vernier calipers (150 mm) ☞(Page 1D-51) / ☞(Page 1D-59) / ☞(Page 1D-75) 	09900-20102 Vernier calipers (200 mm) ☞(Page 1D-53) 
09900-20202 Micrometer (25 - 50 mm) ☞(Page 1D-30) / ☞(Page 1D-76) / ☞(Page 1D-77) 	09900-20204 Micrometer (75 - 100 mm) ☞(Page 1D-58) 
09900-20530 Cylinder gauge set ☞(Page 1D-48) 	09900-20602 Dial gauge (1 x 0.001 mm) ☞(Page 1D-31) / ☞(Page 1D-60) / ☞(Page 1D-74) 
09900-20607 Dial gauge (10 x 0.01 mm) ☞(Page 1D-31) / ☞(Page 1D-51) / ☞(Page 1D-51) / ☞(Page 1D-52) 	09900-20701 Dial gauge chuck ☞(Page 1D-31) / ☞(Page 1D-51) / ☞(Page 1D-51) / ☞(Page 1D-52) 

- 5) Remove the fuel injectors (1) from the fuel delivery pipes.

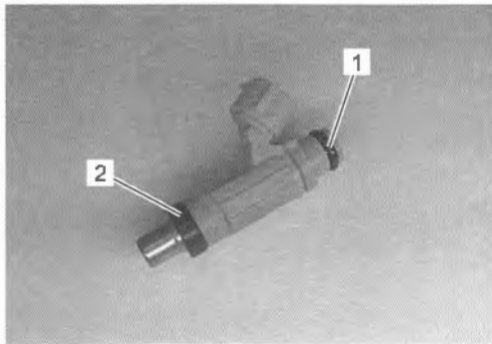


IH18K1170045-01

Installation

Install the fuel injector and fuel delivery pipe in the reverse order of removal. Pay attention to the following points:

- Apply a thin coat of engine oil to the new O-ring (1) and new cushion seal (2).

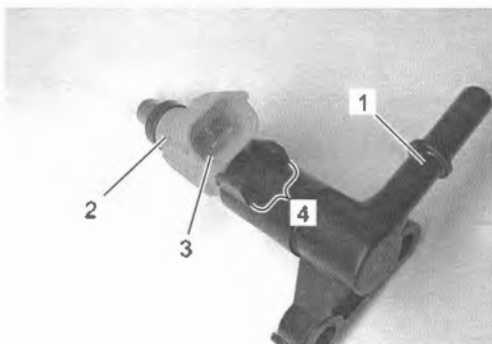


IH18K1170046-01

- Wipe off the surface on the fuel delivery pipe (1) where the fuel injector (2) will be seated with a clean rag.
- Align the coupler (3) of fuel injector with boss (4) of the fuel delivery pipe, install each fuel injector by pushing it straight to the fuel delivery pipe.

NOTICE

Never turn the fuel injector while pushing it.



IH18K1170047-01

- Install the fuel delivery pipe (1) to the throttle body.

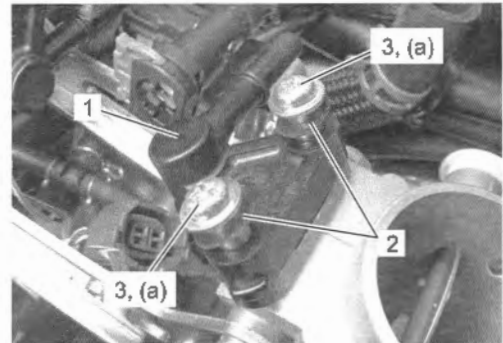
NOTICE

Never turn the fuel injectors while installing it.

- Install the rubber washers (2).
- Tighten the fuel delivery pipe mounting screws (3) to the specified torque.

Tightening torque

Fuel delivery pipe mounting screw (a): 3.5 N-m (0.36 kgf-m, 2.60 lbf-ft)



IH18K1170048-01

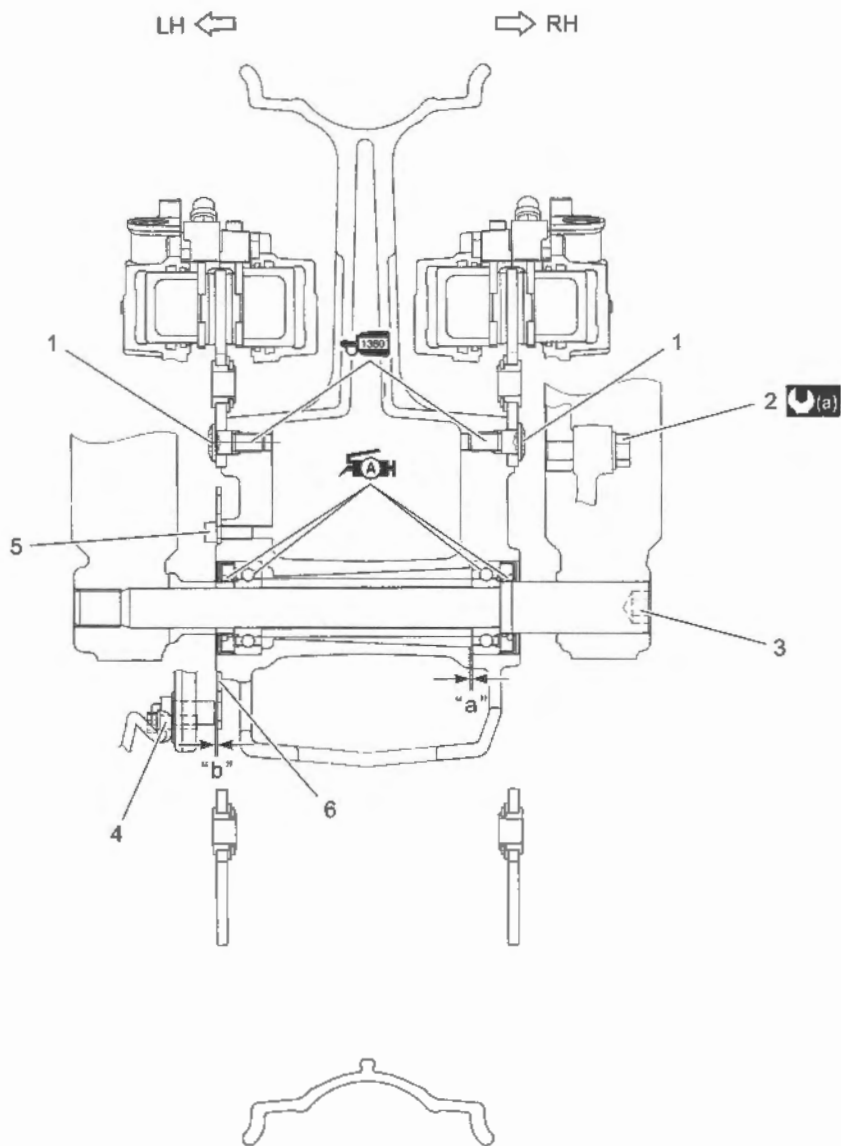
- Connect the fuel injector couplers to the fuel injector. Make sure that each coupler is installed in the correct position. The color on each lead wire refer to the appropriate fuel injector.



IH18K1170049-02

Coupler	Wire color
Front injector #1 (1)	Y/R and Gr/W
Rear injector #2 (2)	Y/R and Gr/B

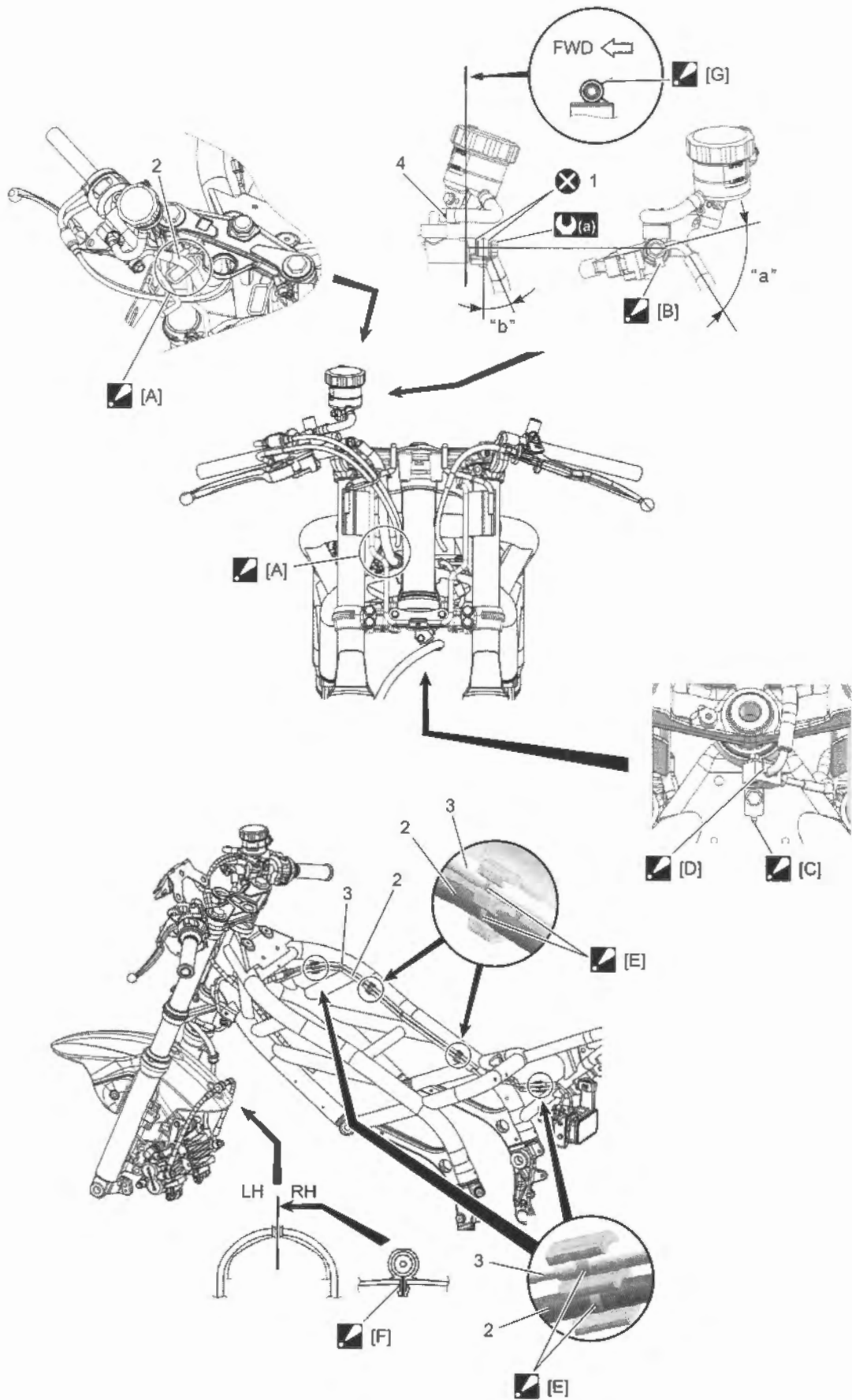
L9 -



IJ18K5240001-04

1. Front brake disc bolt	5. Front wheel speed sensor rotor bolt	: 26 N·m (2.7 kgf-m, 19.5 lbf-ft)
2. Front brake caliper mounting bolt	6. Front wheel speed sensor rotor	: Apply grease.
3. Front axle	"a": Clearance	: Apply thread lock to the thread part.
4. Front wheel speed sensor	"b": 0.45 - 1.53 mm (0.0178 - 0.0602 in)	

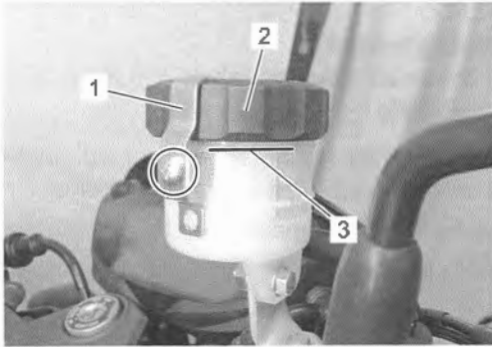
SV650XA
L8



Front Brake (SV650XA)

- 1) Place the motorcycle on a level surface and keep the handlebars straight.
- 2) Remove the reservoir tank cap plate (1).
- 3) Remove the reservoir cap (2) and diaphragm.
- 4) Fill the reservoir tank with new brake fluid to the upper line (3) of the reservoir tank. Place the reservoir cap to prevent dirt from entering.

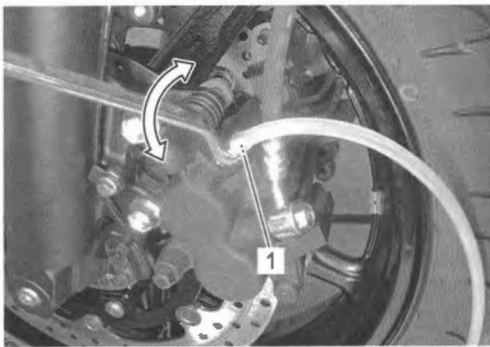
Brake fluid (DOT 4)



IJ18K1410010-01

- 5) Attach a clear hose to the left side front brake caliper air bleeder valve (1), and insert the free end of the hose into a receptacle.
- 6) 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.

L8 model

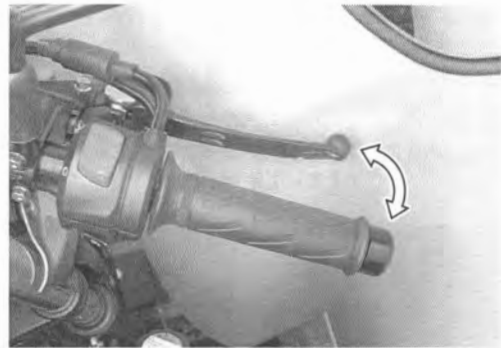


IJ18K1410011-01

L9 – model



IJ18K5410012-02



IJ18K1410012-01

- 7) Tighten the air bleeder valve and release the brake lever slowly.
- 8) Repeat the steps 6) and 7) until the fluid is flowing out without bubbles.

NOTE

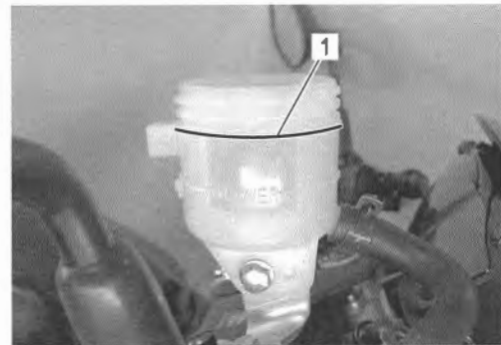
While bleeding the brake system, replenish the reservoir tank with the brake fluid as necessary to keep the fluid above the lower level.

- 9) Tighten the air bleeder valve to the specified torque.

Tightening torque

Front brake air bleeder valve: 7.5 N·m (0.76 kgf·m, 5.55 lbf·ft)

- 10) Bleed air from the right brake caliper side in the same manner as the left brake caliper side.
- 11) Fill the reservoir tank with new brake fluid to the upper line (1).



IJ18K1410013-01

- 12) Install the diaphragm, reservoir cap (1) and reservoir tank cap plate (2).



IJ18K1410014-01

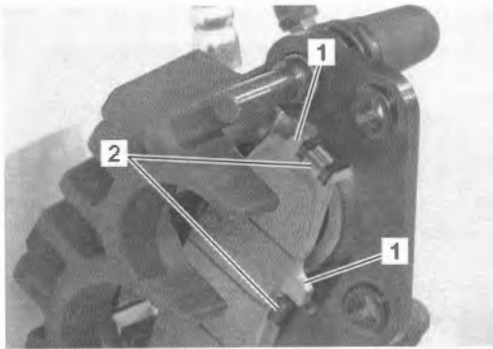
4B-4 Front Brakes:

- 4) Clean up the caliper especially around the caliper pistons.
- 5) Install the new brake pads in the following procedures.

NOTE

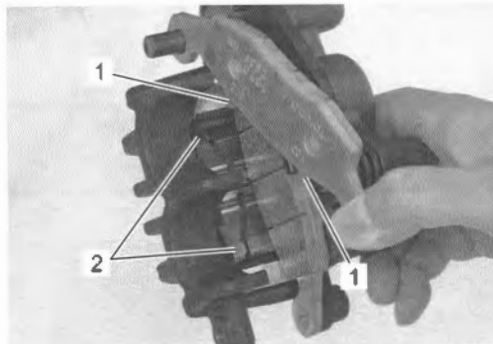
- Replace the brake pads as a set.
- Pushing back the caliper pistons into the caliper will facilitate installation of the brake pads. At the time, observe the reservoir level not to exceed the upper level.

- a) Install the outer pad with the detentes (1) of pad fitted to the detentes (2) on the caliper holder.



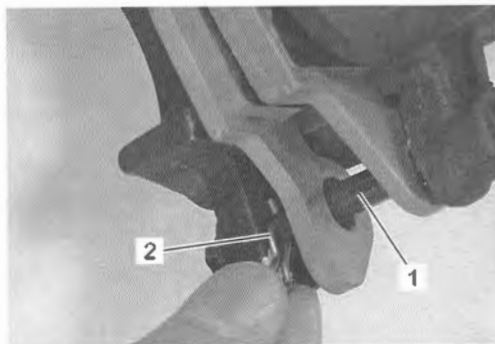
IH18K1420004-01

- b) Install the inner pad by aligning the projection (1) of the inner pad with plate (2) of the pad spring.



IH18K1420005-01

- c) Install the pad mounting pin (1).
- d) Install the new clip (2) securely.

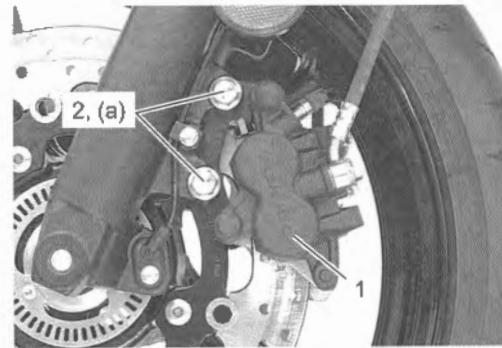


IH18K1420006-01

- 6) Install the brake caliper (1).
- 7) Tighten the brake caliper mounting bolts (2) to the specified torque.

Tightening torque

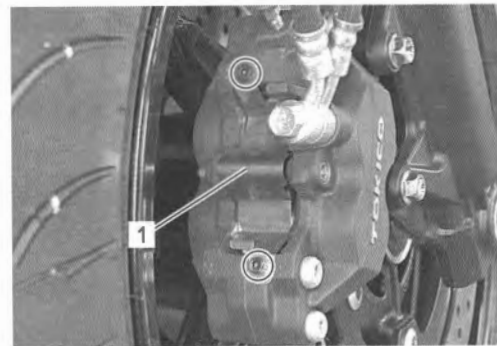
Front brake caliper mounting bolt (a): 39 N·m (4.0 kgf-m, 29.0 lbf-ft) (L7 - L8)



IH18K1420007-01

L9 -

- 1) Remove the caliper housing dust cover (1).

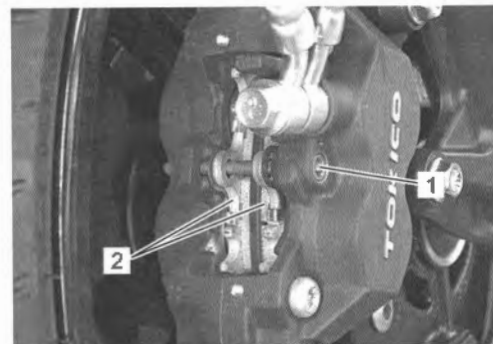


IJ18K5420004-01

- 2) Remove the pad set pin (1) and brake pads (2).

NOTE

Do not operate the brake lever while removing the brake pads.



IH18K5420005-01

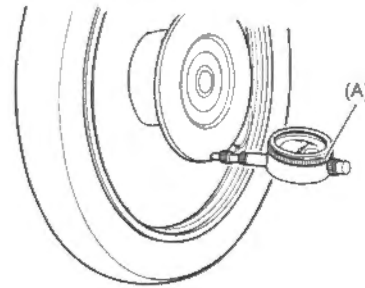
4C-8 Rear Brakes:

Brake Disc Runout

- 1) Dismount the rear brake pads.
Refer to "Rear Brake Pad Replacement" (Page 4C-2).
- 2) Measure the runout using the dial gauge.
Replace the disc if the runout exceeds the service limit.

Rear brake disc runout
[Limit]: 0.3 mm (0.012 in)

Special tool
(A): 09900-20607
09900-20701



ID26J1430037-04

- 3) Remount the rear brake pads.
Refer to "Rear Brake Pad Replacement" (Page 4C-2).

Specifications

Tightening Torque Specifications

BENJ18K64307001

Fastening part	Tightening torque			Note
	N-m	kgf-m	lbf-ft	
Rear brake caliper mounting bolt	22	2.2	16.5	☞(Page 4C-3)
Rear brake pad mounting pin	18	1.8	13.5	☞(Page 4C-3)
Rear brake pad pin plug	2.5	0.25	1.85	☞(Page 4C-3)
Brake hose union bolt	23	2.3	17.0	☞(Page 4C-4)
Rear brake air bleeder valve	6.0	0.61	4.45	☞(Page 4C-5)
Rear brake caliper sliding pin	27	2.8	20.0	☞(Page 4C-5)
Rear brake disc bolt	23	2.3	17.0	☞(Page 4C-7)

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-11)

Special Tools and Equipment

Recommended Service Material

BENJ18K64308001

Material	SUZUKI recommended product or Specification		Note
Brake fluid	DOT 4	—	☞(Page 4C-5) / ☞(Page 4C-5)
Grease	SUZUKI SILICONE GREASE	P/No.: 99000-25100	☞(Page 4C-3) / ☞(Page 4C-6)
Thread lock cement	THREAD LOCK CEMENT 1360	P/No.: 99000-32130	☞(Page 4C-7)

NOTE

Required service material(s) is also described in:
"Rear Brake Components" (Page 4C-1)

Customer Complaint Analysis

Record details of the problem (failure, complaint) and how it occurred as described by the customer.

For this purpose, use of such a questionnaire form as shown in the following table will facilitate collecting the information to the point required for the proper analysis and diagnosis.

EXAMPLE: CUSTOMER PROBLEM INSPECTION FORM

User name:	Model:	VIN:	Date of issue:
Date Reg.	Date of problem:	Mileage:	

PROBLEM SYMPTOMS

ABS operation	Past malfunctions and repairs
ABS does not work	
ABS works so often with	
Too long stopping distance	
Other	

CONDITION WHEN MALFUNCTION OCCURRED

ABS indicator light	Riding conditions
Does not light up	While stopping
Lights up	Over 10 km/h (6 mile/h)
Goes off after running over 10 km/h (6 mile/h): Yes / No	When turning
Flashes	Others
Tires	Brake operating conditions
Abnormal air pressure	Usual braking
Less thread depth	Quick/hard braking
No specified tires installed	
	Interface
Road surface	Too big pulsations at brake lever and pedal
Paved road: Dry / Wet / Others	Too large brake lever and pedal strokes
	Others
Unpaved road: Gravel / Muddy / Uneven / Others	Others
	Abnormal noise from the ABS control unit/HU
	Skid noise from the calipers
	Vibration at the brake lever and pedal

NOTE:**NOTE**

This form is a standard sample. The form should be modified according to conditions and characteristic of each market.

Installation

Install the front wheel speed sensor in the reverse order of removal. Pay attention to the following point:

- After installing the front wheel speed sensor, check the clearance between the front wheel speed sensor and sensor rotor. Refer to "Wheel Speed Sensor and Sensor Rotor Inspection" (Page 4E-44).

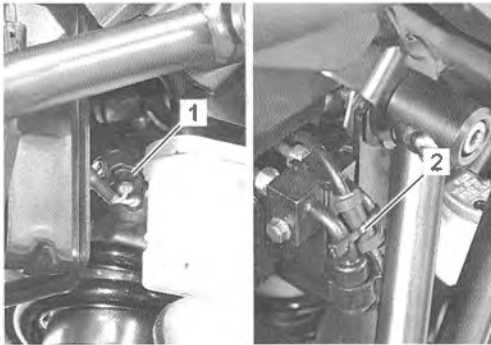
Rear Wheel Speed Sensor Removal and Installation

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Refer to "Rear Wheel Speed Sensor Routing Diagram" (Page 4E-13).

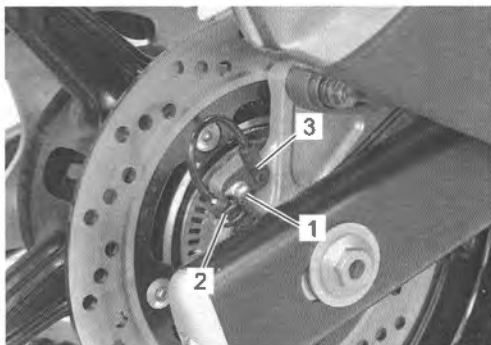
Removal

- 1) Turn the ignition switch OFF.
- 2) Disconnect the rear wheel speed sensor lead wire coupler (1) and clamp (2).



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- 3) Remove the rear wheel speed sensor mounting bolt (1) and disconnect the clamp (2).
- 4) Remove the rear wheel speed sensor (3).



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Installation

Install the rear wheel speed sensor in the reverse order of removal. Pay attention to the following point:

- After installing the rear wheel speed sensor, check the clearance between the rear wheel speed sensor and sensor rotor. Refer to "Wheel Speed Sensor and Sensor Rotor Inspection" (Page 4E-44).

Front Wheel Speed Sensor Rotor Removal and Installation

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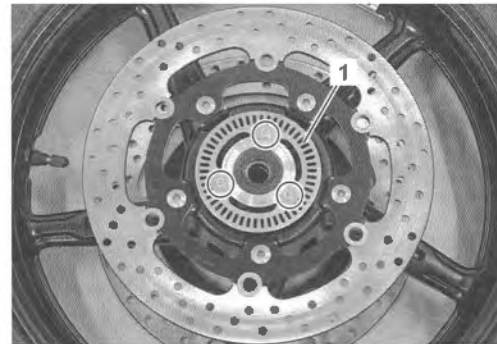
NOTICE

- Do not hit the front wheel speed sensor rotor when dismantling the front wheel.
- When replacing the tire, make sure not to damage the sensor rotor.

Removal

Refer to "Front Wheel Assembly Removal and Installation" in Section 2D (Page 2D-5).

Remove the front wheel speed sensor rotor (1).



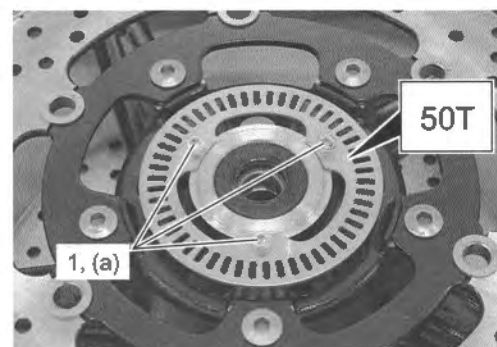
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Installation

- 1) Install the wheel speed sensor rotor as the letters "50T" face outside.
- 2) Tighten the front wheel speed sensor rotor bolts (1) to the specified torque.

Tightening torque

Front wheel speed sensor rotor bolt (a): 6.5 N·m (0.66 kgf-m, 4.80 lbf-ft)



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- 3) Install the front wheel assembly. (Page 2D-5)
- 4) Check the clearance between the front wheel speed sensor and sensor rotor. Refer to "Wheel Speed Sensor and Sensor Rotor Inspection" (Page 4E-44).

Wiring Systems

General Description

Abbreviations

Refer to the "Abbreviations" in Section 0A (Page 0A-1) for the general abbreviations.

BENJ18K69101001

Wire / Connector Color Symbols

Refer to "Wire Color Symbols" in Section 0A (Page 0A-4).

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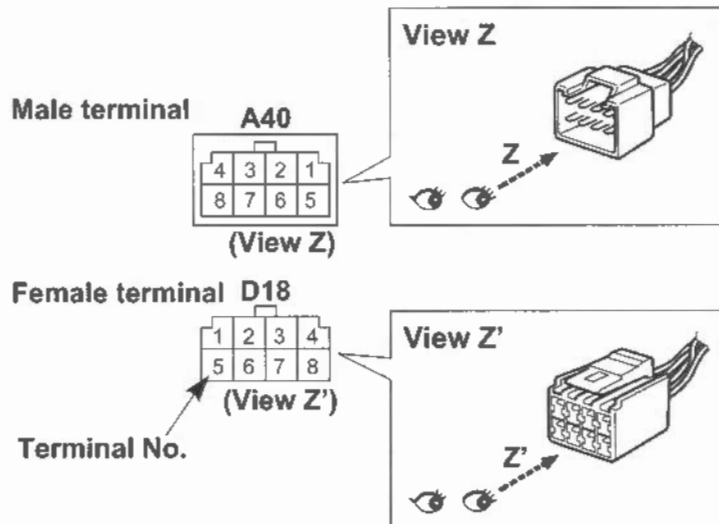
How to Read Terminal Nos.

The connector shape and terminal layout shown in this manual are those when viewed from "Z" in the illustration.

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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.



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