Quick Reference Guide

This quick reference guide will assist you in locating a desired topic or procedure.

- Bend the pages back to match the black tab of the desired chapter number with the black tab on the edge at each table of contents page.
- Refer to the sectional table of contents for the exact pages to locate the specific topic required.

Model Identification

ZX636–B1 (Ninja ZX-6R) Left Side View:

ZX636–B1 (Ninja ZX-6R) Right Side View:

Technical Information – Air Inlet System

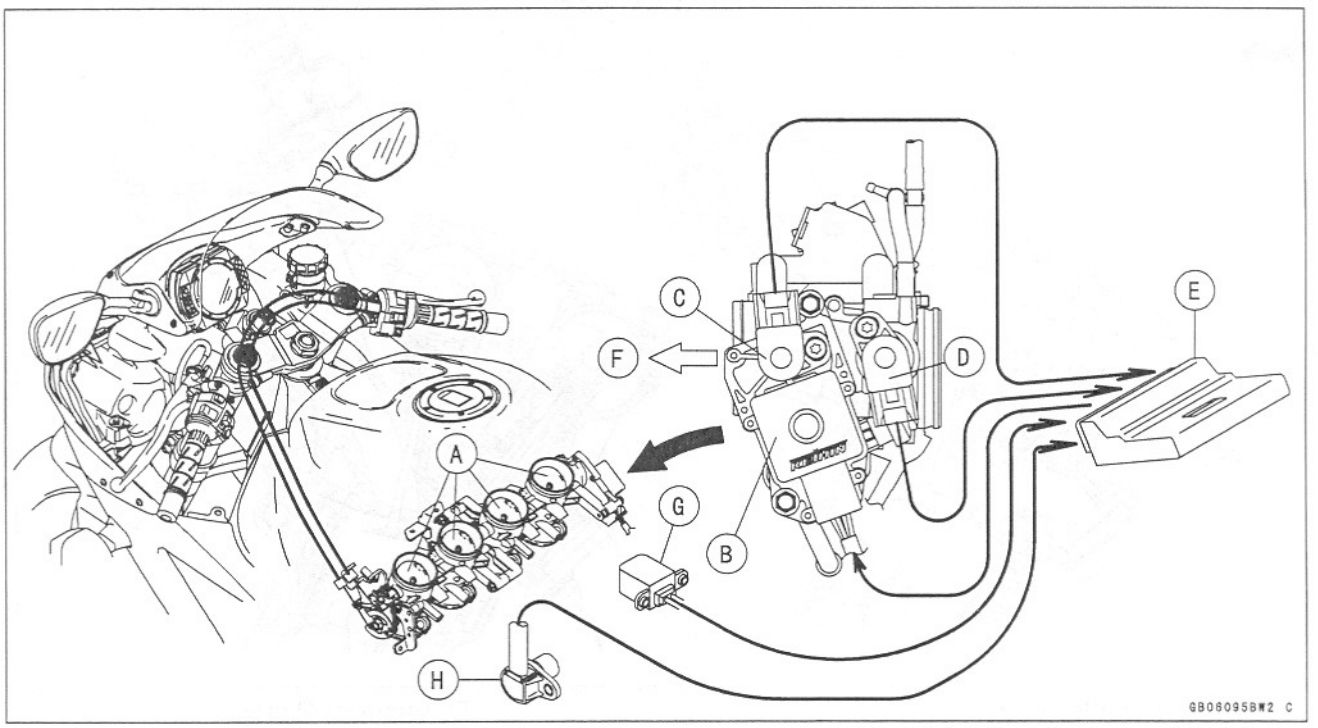
Operation

The subthrottle control system consists of the subthrottle valve, subthrottle valve actuator with a stepping motor built in it, ECU, and subthrottle sensor. The subthrottle valve is built in the each throttle body.

The subthrottle control system operates on the signal supplied from the ECU. The open/close operation of the subthrottle valve is performed by the subthrottle actuator which is controlled by the ECU to change the current direction into the motor of the subthrottle valve actuator.

The subthrottle sensor detects the subthrottle valve actuator movement by measuring voltage and the ECU determines the subthrottle valve angle based on the operation map.

When turning the ignition switch ON, every time the ECU automatically drives the subthrottle valve from fully closed position to fully opened position. The ECU memorizes these positions and turns back the subthrottle valve to the original point to confirm the subthrottle valve idling voltage.



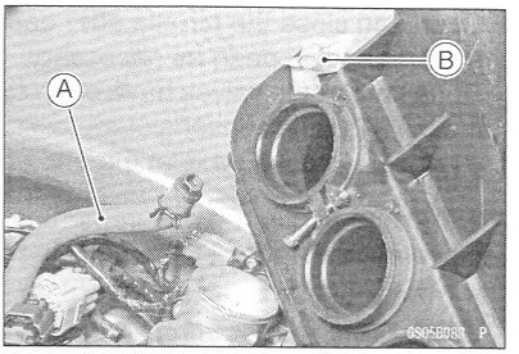
A. Subthrottle Valves
B. Subthrottle Valve Actuator
C. Subthrottle Sensor
D. Main Throttle Sensor
E. ECU (Electric Control Unit)
F. Air Cleaner Side
G. Crankshaft Sensor
H. Speed Sensor

Torque and Locking Agent

Fastener	Torque			Remarks
	N·m	kgf·m	ft·lb	
Coolant By-pass Fitting	8.8	0.90	78 in·lb	L
Water Hose Fitting Bolts	12	1.2	106 in·lb	
Radiator Mounting Bolts	6.9	0.70	61 in·lb	
Radiator Bracket Mounting Bolts	6.9	0.70	61 in·lb	
Coolant Reserve Tank Mounting Screws	6.9	0.70	61 in·lb	
Oil Cooler Bolt	78	8.0	58	
Water Passage Plugs	20	2.0	14	
Engine Top End:				
Spark Plugs	13	1.3	113 in·lb	
Air Suction Valve Cover Bolts	12	1.2	104 in·lb	L
Cylinder Head Cover Bolts	9.8	1.0	87 in·lb	
Camshaft Chain Tensioner Mounting Bolts	9.8	1.0	87 in·lb	
Camshaft Cap Bolts	12	1.2	104 in·lb	
Cylinder Head Bolts: φ9	40	4.1	30	S, O (Washer)
φ6	12	1.2	104 in·lb	S
Cylinder Head Jacket Plug (Left)	20	2.0	14.5	L
Cylinder Head Jacket Plug (Upper)	20	2.0	14.5	L
Front Camshaft Chain Guide Bolt (Upper)	25	2.5	18	
Throttle Valve Holder Bolts	12	1.2	104 in·lb	
Exhaust Pipe Clamp Bolts	17	1.7	12	
Coolant By-pass Fitting	8.8	0.90	78 in·lb	L
Water Temperature Sensor	25	2.5	18	SS
Camshaft Position Sensor Bolt	12	1.2	104 in·lb	
Camshaft Sprocket Bolts	15	1.5	11	L
Front Camshaft Chain Guide Bolt (Lower)	12	1.2	104 in·lb	
Rear Camshaft Chain Guide Bolt	25	2.5	18	
Camshaft Chain Tensioner Cap Bolt	29	3.0	21	
Water Jacket Drain Bolt	8.8	0.90	78 in·lb	
Exhaust Pipe Manifold Nut	17	1.7	12	
Muffler Body Bolt	30	3.0	22	
Clutch:				
Clutch Cover Bolts	12	1.2	104 in·lb	L(2, Front)
Clutch Spring Bolts	8.8	0.90	78 in·lb	
Clutch Hub Nut	130	13.5	98	R
Clutch Lever Holder Bolts	7.8	0.80	69 in·lb	
Clutch Sub Hub Bolts	25	2.5	18	L
Engine Lubrication System:				
Oil Filler Plug	1.5 or Hand-Tight	0.15 or Hand-Tight	13 in·lb or Hand-Tight	
Engine Drain Plug	29	3.0	22	
Oil Filter (Cartridge type)	31	3.2	23	R, O
Oil Cooler Bolt	78	8.0	58	R
Oil Pan Bolts	9.8	1.0	87 in·lb	

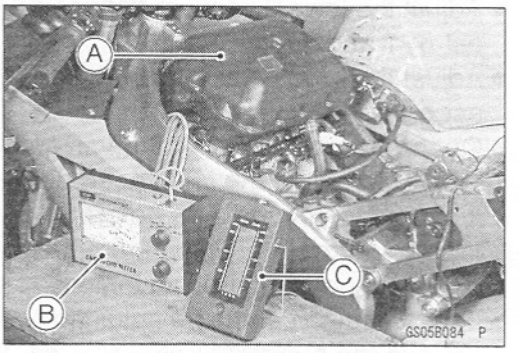
Maintenance Procedure

- Plug:
  Vacuum Switch Valve Hose [A] and its Air Cleaner Housing
  Hole [B]
  Removed Vacuum Hoses



- Install the air cleaner housing [A].
- Start the engine and warm it up thoroughly.
- Check the idle speed.

★If the idle speed is out of the specified range, adjust it.
[B] Tachometer



CAUTION

Do not measure the idle speed by the tachometer of the meter unit.

- While idling the engine, inspect the engine vacuum, using the vacuum gauge [C].

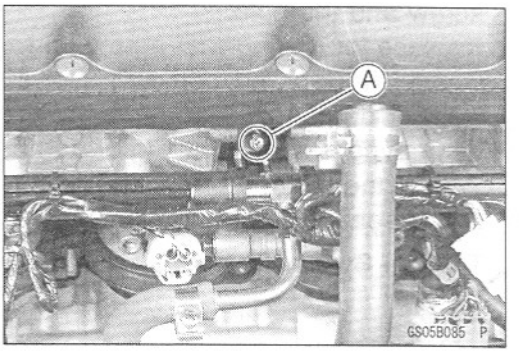
Engine Vacuum
Standard:

ZX636B : 24 ± 1.3 kPa (180 ± 10 mmHg)
ZX600K : 22 ± 1.3 kPa (165 ± 10 mmHg)
at Idle Speed 1 300 ± 50 r/min (rpm)

★If any one vacuum measurement is not within specifications, first synchronize the #1 and #2 throttle valves to #3 and #4 throttle valves by using the center adjusting screw [A].

Example:

#1: 170 mmHg
#2: 200 mmHg
#3: 165 mmHg
#4: 190 mmHg



- With the engine at the correct idle speed, equalize the highest vacuum of 1 and 2 (example 200 mmHg) to the highest vacuum of 3 and 4 (example 190 mmHg) by turning the center adjusting screw [A].

NOTE

o *After adjustment, the final vacuum measurement between the highest throttle valves may not be 200 mmHg (in this example). The goal is to have the highest two vacuums between the left (1 and 2) and right (3 and 4) banks be the same and be within the service limits.*

Maintenance Procedure

VALVE CLEARANCE ADJUSTMENT CHART INLET VALVE

	PRESENT SHIM (← Example)																				
PART No. (92180 -)	1014	1016	1018	1020	1022	1024	1026	1028	1030	1032	1034	1036	1038	1040	1042	1044	1046	1048	1050	1052	1054
MARK	50	55	60	65	70	75	80	85	90	95	00	05	10	15	20	25	30	35	40	45	50
THICKNESS (mm)	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50

VALVE CLEARANCE MEASUREMENT (↳ Example)																					
0.00 ~ 0.05			2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40
0.06 ~ 0.10		2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45
0.11 ~ 0.19	SPECIFIED CLEARANCE/NO CHANGE REQUIRED																				
0.20 ~ 0.24	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50	
0.25 ~ 0.29	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50		
0.30 ~ 0.34	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50			
0.35 ~ 0.39	2.70	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50				
0.40 ~ 0.44	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50					
0.45 ~ 0.49	2.80	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50						
0.50 ~ 0.54	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50							
0.55 ~ 0.59	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50								
0.60 ~ 0.64	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50									
0.65 ~ 0.69	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50										
0.70 ~ 0.74	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50											
0.75 ~ 0.79	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50												
0.80 ~ 0.84	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50													
0.85 ~ 0.89	3.20	3.25	3.30	3.35	3.40	3.45	3.50														
0.90 ~ 0.94	3.25	3.30	3.35	3.40	3.45	3.50															
0.95 ~ 0.99	3.30	3.35	3.40	3.45	3.50																
1.00 ~ 1.04	3.35	3.40	3.45	3.50																	
1.05 ~ 1.09	3.40	3.45	3.50																		
1.10 ~ 1.14	3.45	3.50																			
1.15 ~ 1.19	3.50																				

INSTALL THE SHIM OF THIS THICKNESS (mm)

1. Measure the clearance (when engine is cold).
2. Check present shim size.
3. Match clearance in vertical column with present shim size in horizontal column.
4. Install the shim specified where the lines intersect. This shim will give the proper clearance.

   Example: Present shim is **3.05 mm**
   Measured clearance is **0.35 mm**
   Replace **3.05 mm** shim with **3.25 mm** shim.

5. Remeasure the valve clearance and readjust if necessary.

Maintenance Procedure

Brake Master Cylinder Cup and Dust Seal Replacement

Master Cylinder Inspection (Visual Inspection)

- Remove the master cylinders (see Brakes chapter).
- Disassemble the front and rear master cylinders.
- Check that there are no scratches, rust or pitting on the inner wall [A] of each master cylinder and on the outside of each piston [B].

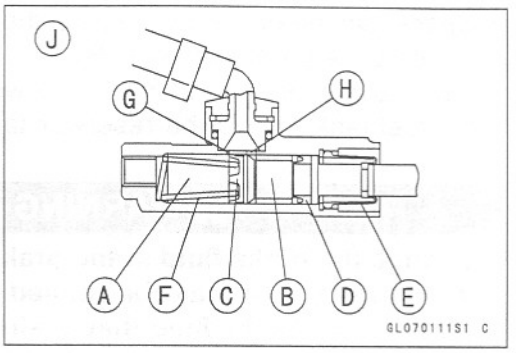
★If a master cylinder or piston shows any damage, replace them.

- Inspect the primary cup [C] and secondary cup [D].

★If a cup is worn, damaged softened (rotted), or swollen, the piston assembly should be replaced to renew the cups.

★If fluid leakage is noted at the brake lever, the piston assembly should be replaced to renew the cups.

Front Master Cylinder [J]



- Check the dust covers [E] for damage.

★If they are damaged, replace them.

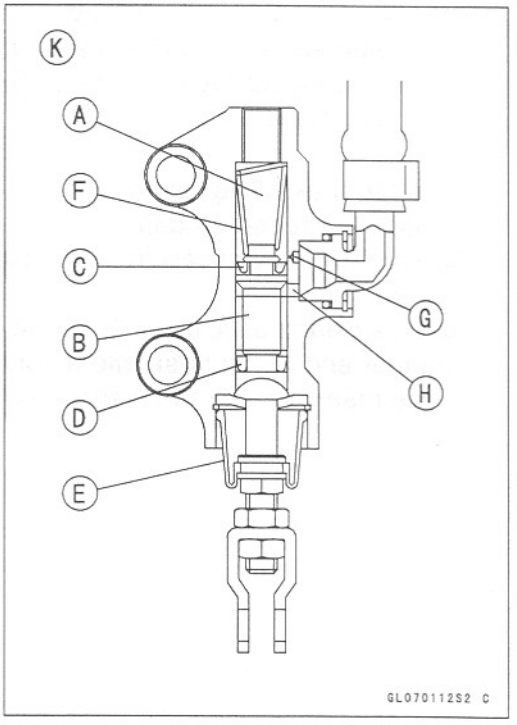
- Check the piston return spring [F] for any damage.

★If the springs are damaged, replace them.

- Check that relief port [G] and supply port [H] are not plugged.

★If the relief port becomes plugged, the brake pads will drag on the disc. Blow the ports clean with compressed air.

Rear Maser Cylinder [K]



Brake Fluid Check

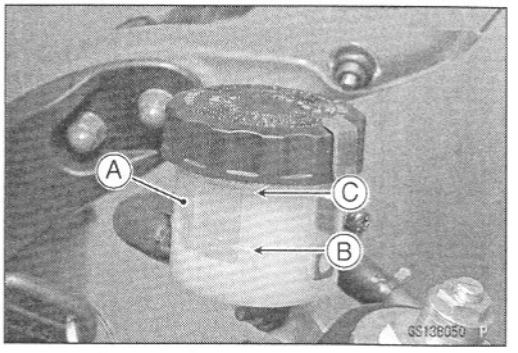
Brake Fluid Level Inspection

- Check that the brake fluid level in the front brake reservoir [A] is above the lower level line [B].

NOTE

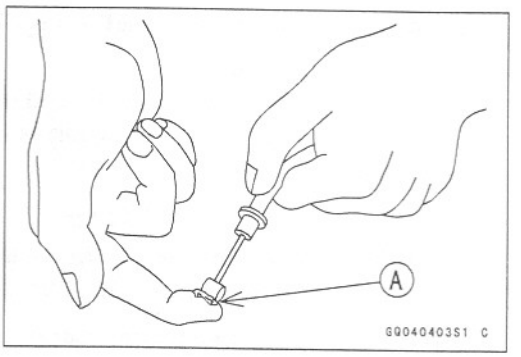
○ *Hold the reservoir horizontal by turning the handlebar when checking brake fluid level.*

★If the fluid level is lower than the lower level line, fill the reservoir to the upper level line [C].



Maintenance Procedure

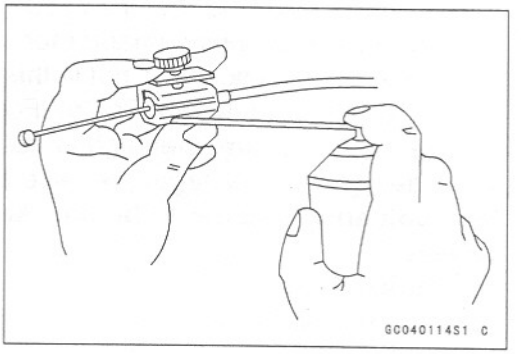
Points: Lubricate with Grease.
Clutch Inner Cable Upper and Lower Ends [A]
Throttle Inner Cable Upper and Lower Ends
Choke Inner Cable Upper and Lower Ends



Cables: Lubricate with Rust Inhibiter
Choke Cable
Throttle Cables
Clutch Cable

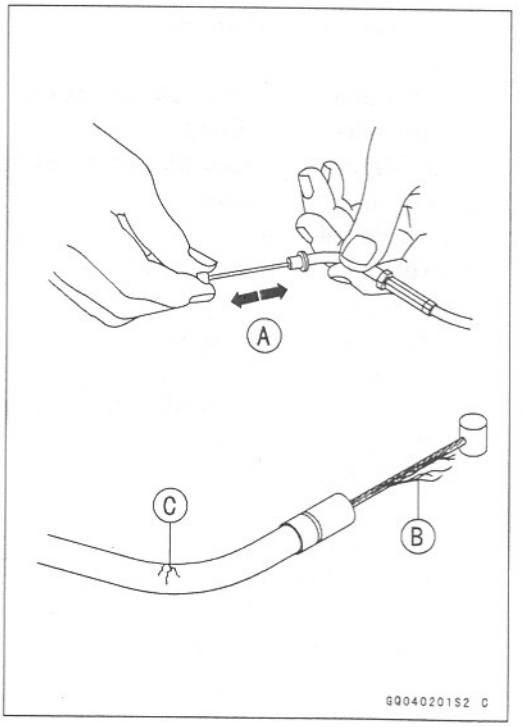
- Lubricate the cables by seeping the oil between the cable and housing.

o The cable may be lubricated by using a commercially available pressure cable lubricator with an aerosol cable lubricant.



- With the cable disconnected at both ends, the inner cable should move freely [A] within the cable housing.

★If cable movement is not free after lubricating, if the cable is frayed [B], or if the cable housing is kinked [C], replace the cable.



Exploded View

No.	Fastener	Torque			Remarks
		N·m	kgf·m	ft·lb	
1	Fuel pump bolts	9.8	1.0	87 in·lb	

2. Fuel Pump
3. Canister
4. Separator
5. Red
6. Blue
7. Green
8. White

L: Apply a non-permanent locking agent.
R: Replacement Parts

CAL: California model

DFI System

Terminal Names

1. Power Supply to Sensors
2. Main Throttle Sensor Output Signal
3. Subthrottle Sensor Output Signal
4. Atmospheric Pressure Sensor Output Signal
5. Water Temperature Sensor Output Signal
6. Unused
7. Ignition Switch Output Signal
8. Unused
9. Camshaft Position Sensor (+) Output Signal
10. Unused
11. Crankshaft Sensor (+) Output Signal
12. Unused
13. Power Supply to ECU (from ECU Mine Relay)
14. Ground to Sensors
15. Unused
16. Vehicle-down Sensor Output Signal
17. Inlet Air Pressure Sensor Output Signal
18. Inlet Air Temperature Sensor Output Signal
19. Unused
20. Speed Sensor Output Signal
21. Unused
22. Camshaft Position Sensor (–) Output Signal
23. Unused
24. Crankshaft Sensor (–) Output Signal
25. Unused
26. Ground to ECU
27. Engine Stop Switch Output Signal
28. Starter Lockout Switch Output Signal
29. Starter Button Output Signal
30. Fuel Pump Relay Output Signal
31. Subthrottle Valve Actuator Output Signal 1
32. Subthrottle Valve Actuator Output Signal 2
33. Unused
34. Tachometer Output Signal
35. Injector #2 Output Signal
36. Injector #1 Output Signal
37. Stick Coil #3 Output Signal
38. Stick Coil #2 Output Signal
39. Stick Coil #1 Output Signal
40. Input Signal for Engine Stop
41. Self- diagnosis Terminal
42. Unused (Mode Switch)
43. Power Supply to ECU (from Battery)
44. Subthrottle Valve Actuator Output Signal 3
45. Subthrottle Valve Actuator Output Signal 4
46. External Diagnosis System Signal
47. FI Indicator LED Light
48. Injector #4 Output Signal
49. Injector #3 Output Signal
50. Ground for Fuel System
51. Ground for Ignition System
52. Stick Coil #4 Output Signal

Troubleshooting the DFI System

Sample Diagnosis Sheet

Rider name:	**Registration No. (license plate No.):**	**Year of initial registration:**
Model:	**Engine No.:**	**Frame No.:**
Date problem occured:		**Mileage:**
Environment when problem occurred.		
Weather	☐ fine, ☐ cloudy, ☐ rain, ☐ snow, ☐ always, ☐ other:	
Temperature	☐ hot, ☐ warm, ☐ cold, ☐ very cold, ☐ always	
Problem frequency	☐ chronic, ☐ often, ☐ once	
Road	☐ street, ☐ highway, ☐ mountain road (☐ uphill, ☐ downhill), ☐ bumpy, ☐ pebble	
Altitude	☐ normal, ☐ high (about 1000 m or more)	
Motorcycle conditions when problem occurred.		
FI indicator LED light	☐ light up immediately after ignition SW ON, and goes off after 1 ~ 2 seconds (normal).	
	☐ lights blinks immediately after ignition SW ON, and stays on (DFI problem)	
	☐ lights up immediately after ignition SW ON, but goes off after about 10 seconds (DFI problem).	
	☐ unlights (LED light, ECU or its wiring fault).	
	☐ sometimes lights up (probably wiring fault).	
Starting difficulty	☐ starter motor not rotating.	
	☐ starter motor rotating but engine doesn't turn over.	
	☐ starter motor and engine don't turn over.	
	☐ no fuel flow (☐ no fuel in tank, ☐ no fuel pump sound).	
	☐ engine flooded (do not crank engine with throttle opened, which promotes engine flooding).	
	☐ no spark.	
	☐ choke lever is not pulled fully when using the lever (pull it fully when using).	
	☐ other:	
Engine stalls	☐ right after starting.	
	☐ when opening throttle grip.	
	☐ when closing throttle grip.	
	☐ when moving off.	
	☐ when stopping the motorcycle.	
	☐ when cruising.	
	☐ other:	

ECU

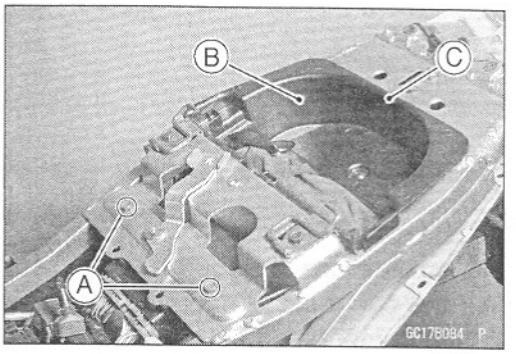
CAUTION

Never drop the ECU, especially on a hard surface. Such a shock to the ECU can damage it.

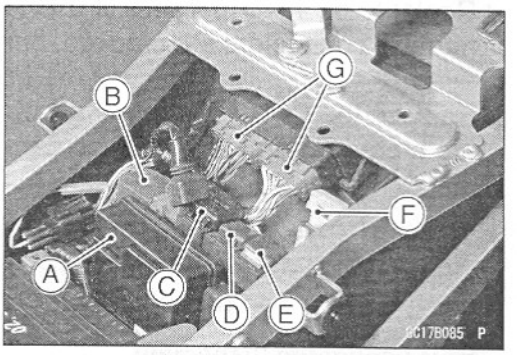
ECU Removal

- Remove:
  Seats (see Frame chapter)
  Seat Cover (see Frame chapter)
  Battery Leads
  Bolts [A]
  Storage Compartments [B]

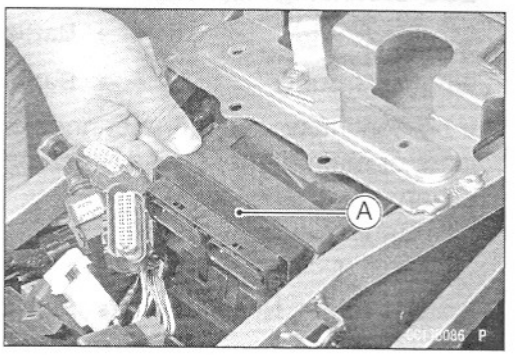
○ Lift up the rear part [C] of the storage compartments and then pull it rearward.



- Remove the following parts from the bracket.
  Junction Box [A]
  Starter Relay [B]
  Turn Signal Relay [C]
  Fuel Pump Relay [D]
  ECU Main Relay [E]
  Fuse Case [F]
- Disconnect the ECU lead connectors [G].



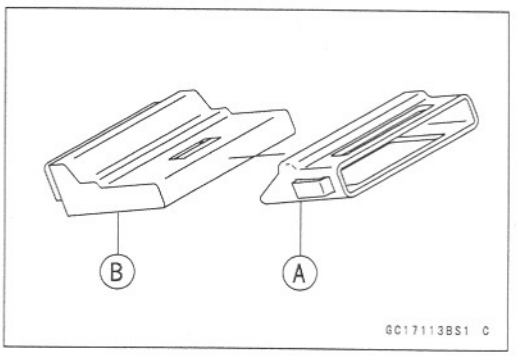
- Remove:
  ECU [A]



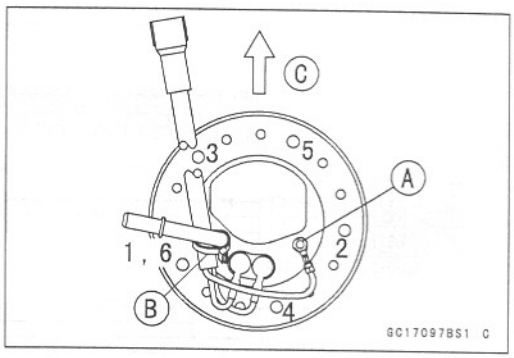
ECU Installation

- Connect the ECU connectors.

★ If the rubber protector [A] is removed, install it.
ECU [B]



Fuel Pump



- Check that the fuel pump terminal [A] and band [B] are in place.
  [C] Front
- Apply a non-permanent locking agent to the threads of the fuel pump bolts.
- Tighten the fuel pump bolts to a snug fit following the tightening sequence shown.
- Following the tightening sequence, tighten the pump bolts to the specified torque.

Torque - Fuel Pump Bolts: 9.8 N·m (1.0 kgf·m, 87 in·lb)

- Tighten the pump bolts again to check the tightness in the order shown.

Operation Inspection

NOTE

○ *Be sure the battery is fully charged.*

- Turn the ignition switch ON and make sure that the fuel pump operates (make light sounds) for 3 seconds, and then stops.
- Turn the ignition switch OFF.

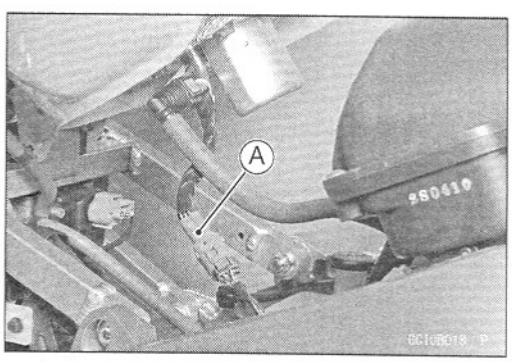
★If the pump does not work as described above, inspect the operating voltage.

Operating Voltage Inspection

NOTE

○ *Be sure the battery is fully charged.*

- Turn the ignition switch OFF.
- Remove the fuel tank bolts and lift up the fuel tank.



- Connect the hand tester (25 V DC) to the connector [A], with needle adapter set.

Special Tools - Hand Tester: 57001-1394
Needle Adapter Set: 57001–1457

○ Measure the operating voltage with the engine stopped, and with the connector joined.
- Turn the ignition switch ON.

○ The tester needle should indicate battery voltage for 3 seconds, and then 0 V.

Pump Operating Voltage at Pump Connections to Pump Connectors

Tester (+) → Y/R Lead

Tester (–) → BK/W Lead

Operating Voltage at Pump Connector

Standard: Battery Voltage (12.5 V or more) for 3 seconds, and then 0 V.

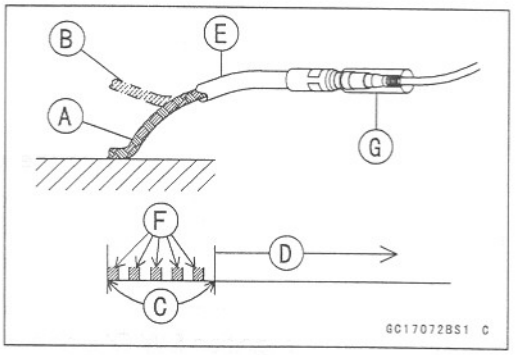
★If the reading stays on battery voltage, and never shows 0 V. Check the ECU and fuel pump relay.

★If the voltage is in specification, but the pump doesn't work, replace the pump.

★If there is still no battery voltage, check the pump relay (see this chapter).

Self-Diagnosis

- To enter the self-diagnosis dealer mode 2 repeat opening [B] and grounding [A] the lead more than five times [F] within 2 seconds [C] after the lead is first grounded, and then keep it grounded continuously [D] for more than 2 seconds.



○ Count the blinks of the LED light to read the service code. Keep the auxiliary lead ground until you finish reading the service code.

NOTE

○ *If the self-diagnosis mode is in dealer mode 1 then you need to enter the dealer mode 2, turn off the ignition switch once.*

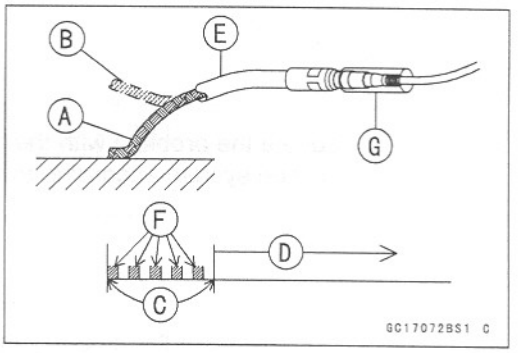
Service Code Clearing Procedures

- Enter the self-diagnosis dealer mode 2 (see Self- diagnosis Procedures).

NOTE

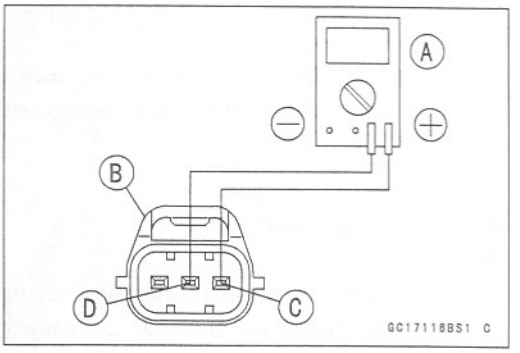
○ *Make sure to keep the grounding until the following opening and grounding starts.*

- Pull the clutch lever in more than 5 seconds, and then release it.
- Repeat opening [B] and grounding [A] the lead (self-diagnosis terminal) more than five times [F] within 2 seconds [C] after the lead is grounded, and then keep it grounded continuously [D] for more than 2 seconds.



Main Throttle Sensor (Service Code 11)

Resistance Inspection



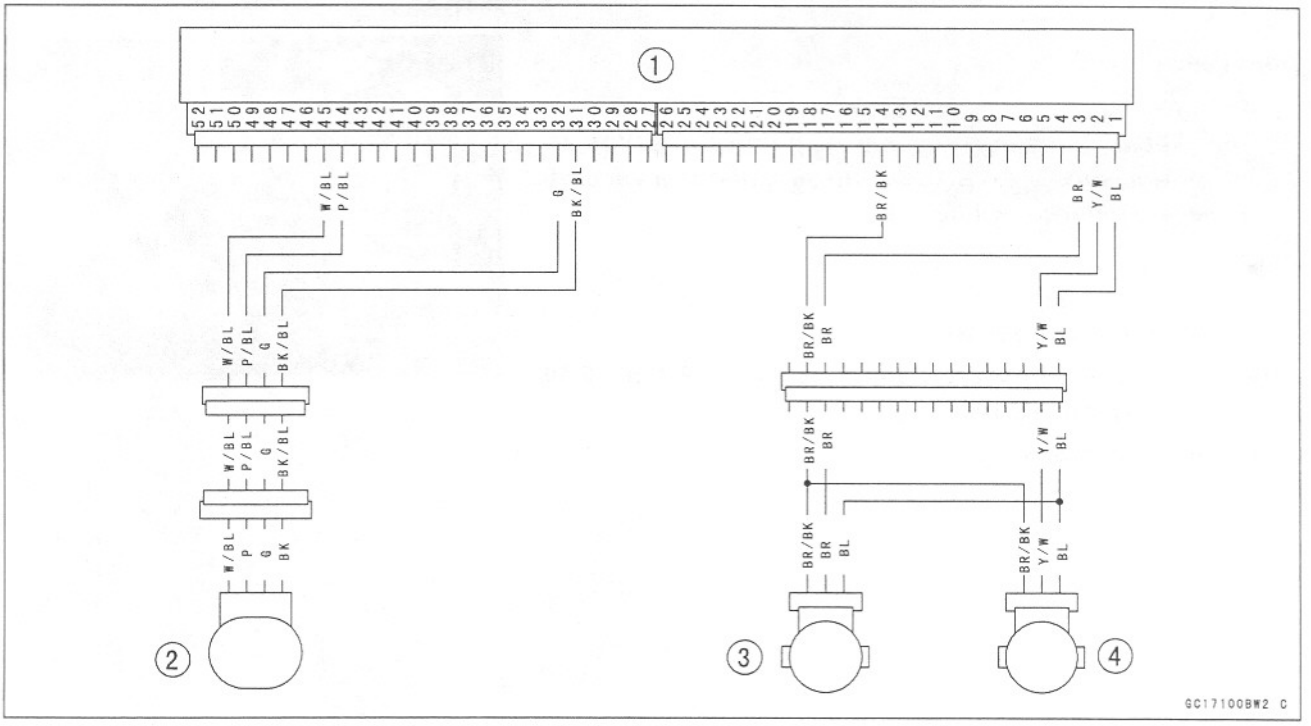
- Turn the ignition switch OFF.
- Disconnect the main throttle sensor connector.
- Connect a digital meter [A] to the main throttle sensor connector [B].
- Measure the main throttle sensor resistance.

Main Throttle Sensor Resistance

Connections:	**BL lead [C] ←→ BR/BK lead [D]**
Standard:	**4 ~ 6 kΩ**

★If the reading is out of the range, replace the throttle body assy.

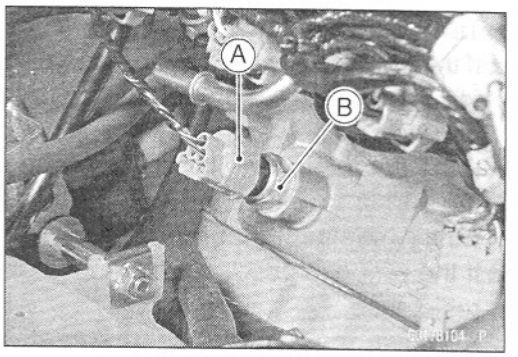
★If the reading is within the range, but the problem still exists, replace the ECU (see this chapter).



1. ECU
2. Subthrottle Valve Actuator
3. Subthrottle Sensor
4. Main Throttle Sensor

Water Temperature Sensor (Service Code 14)

Removal/Installation



CAUTION

Never drop the sensor, especially on a hard surface. Such a shock to the sensor can damage it.

- Disconnect the sensor connector [A], and unscrew the water temperature sensor [B].

Silicone Sealant (Kawasaki Bond: 56019-120)
- Threads of Water Temperature Sensor

Torque - Water Temperature Sensor: 25 N·m (2.5 kgf·m, 18 ft·lb)

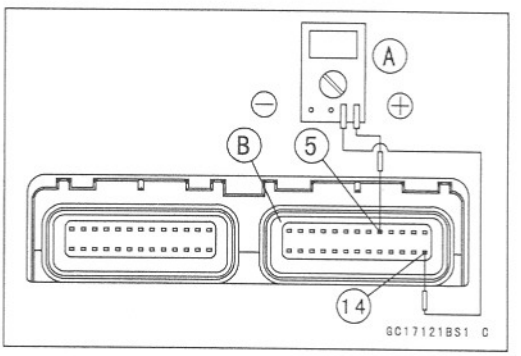
- Fill the engine with coolant and bleed the air from the cooling system (see Coolant Filling in the Cooling System chapter).

Output Voltage Inspection

NOTE

○ *Be sure the battery is fully charged.*

- Remove the ECU (see this chapter). Do not disconnect the connectors.



- Connect a digital voltmeter [A] to the ECU connector [B], with the needle adapter set.

Special Tool - Needle Adapter Set: 57001–1457

Water Temperature Sensor Output Voltage
Connections to ECU
Meter (+) → O lead (terminal 5)
Meter (–) → BR/BK lead (terminal 14)

- Measure the sensor output voltage with the engine stopped and the connector joined.
- Turn the ignition switch ON.

Output Voltage at ECU
Standard: about 3 ~ 6 V at 20°C (68°F)

NOTE

○ *The output voltage changes according to the coolant temperature in the engine.*

Speed Sensor (Service Code 24, 25)

Speed Sensor Removal/Installation

- See the Switches and Sensors section in teh Electrical System chapter.

Speed Sensor Inspection

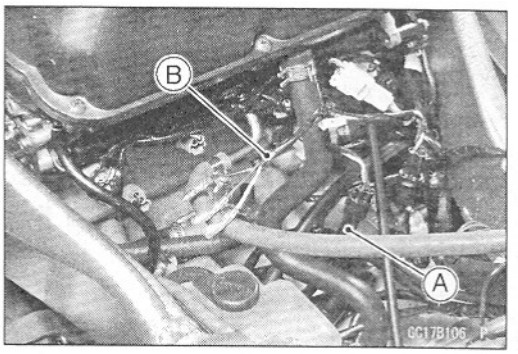
- See the Switches and Sensors section in teh Electrical System chapter.

Input Voltage Inspection

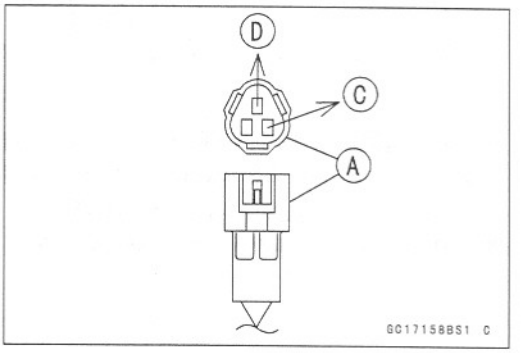
NOTE

○ *Be sure the battery is fully charged.*

- Turn the ignition switch OFF.
- Remove the fuel tank (see Fuel Tank Removal).
- Disconnect the speed sensor connector [A] and connect the harness adapter [B] between the harness connector and speed sensor connector.
- Connect a digital meter to the harness adapter leads.



Special Tool - Throttle Sensor Setting Adapter: 57001-1400



Speed Sensor Input Voltage
Connector to Sensor
Meter (+) → P lead [C]
Meter (–) → BK lead [D]

- Measure the sensor input voltage with the engine stopped, and with the connector joined.
- Turn the ignition switch ON.

Input Voltage at Sensor
Standard: About 9 ~ 11 V DC at Ignition SW ON

★If the reading is out of the range, check the wiring (see wiring diagram in this section), and meter (see Electrical System chapter).
★If the reading is good, check the output voltage.

- Turn the ignition switch OFF.

Output Voltage Inspection

- Before this inspection, inspect the input voltage (see Input Voltage Inspection).

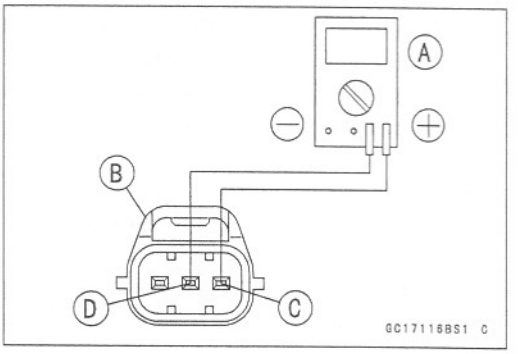
NOTE

○ *Be sure the battery is fully charged.*

- Turn the ignition switch OFF.

Subthrottle Sensor (Service Code 32)

Resistance Inspection



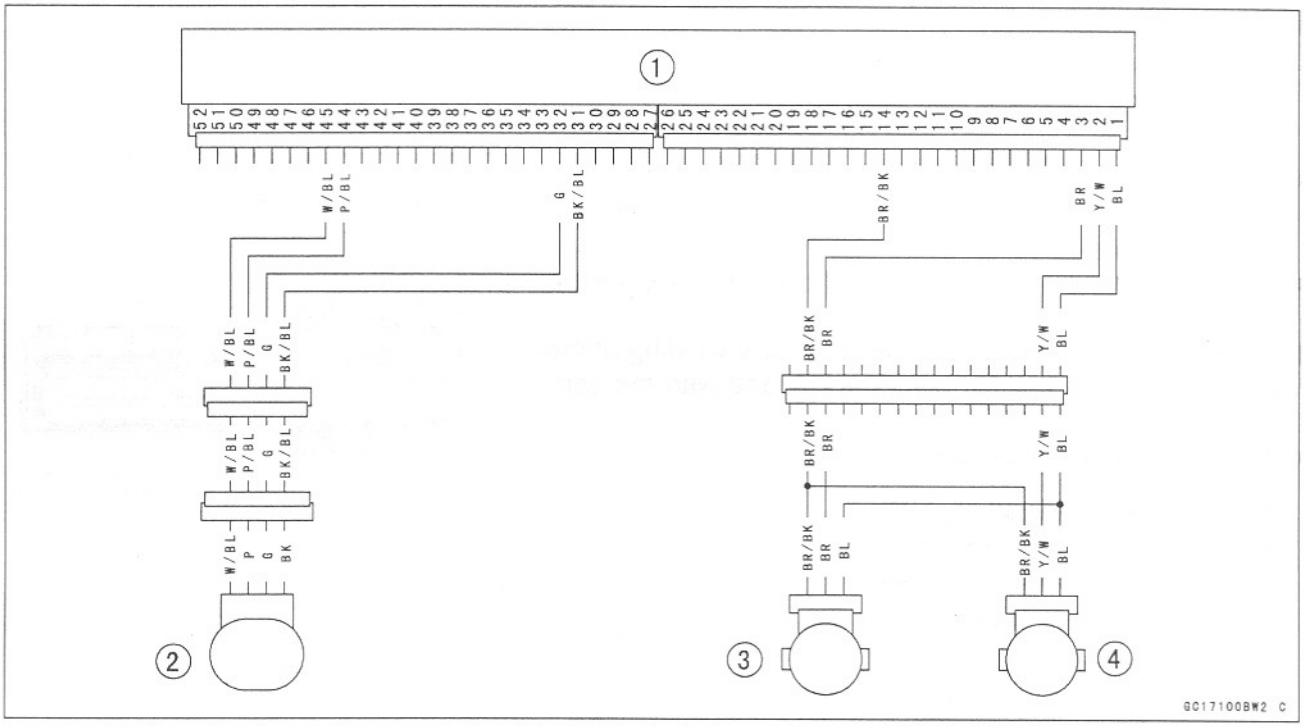
- Turn the ignition switch OFF.
- Disconnect the subthrottle sensor connector.
- Connect a digital meter [A] to the subthrottle sensor connector [B].
- Measure the main throttle sensor resistance.

Throttle Sensor Resistance

Connections:	**BL lead [C] ⟷ BR/BK lead [D]**
Standard:	**4 ~ 6 kΩ**

★If the reading is out of the range, replace the throttle body assy.

★If the reading is within the range, but the problem still exists, replace the ECU (see this chapter).



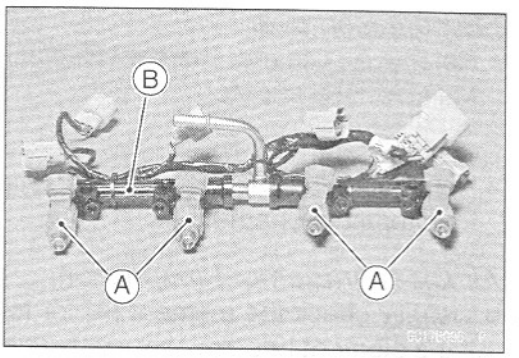
1. ECU
2. Subthrottle Valve Actuator
3. Subthrottle Sensor
4. Main Throttle Sensor

Throttle Body Assy

- Pull out the injectors [A] from the delivery pipe [B].

NOTE

o *Do not damage the part of insert of the injectors when they are pulled out from the delivery pipe.*

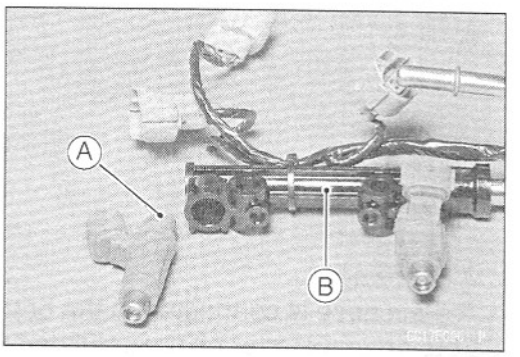


Throttle Body Assy Assembly

- Before assembling, blow away dirt or dust from the throttle body and delivery pipe by applying compressed air.
- Apply daphne oil or engine oil to the new O-rings [A] of each injector, insert them to the delivery pipe [B] and confirm whether the injectors turn smoothly or not.

NOTE

o *Replace the O-ring of injectors and the dust seals of delivery pipe to new one.*



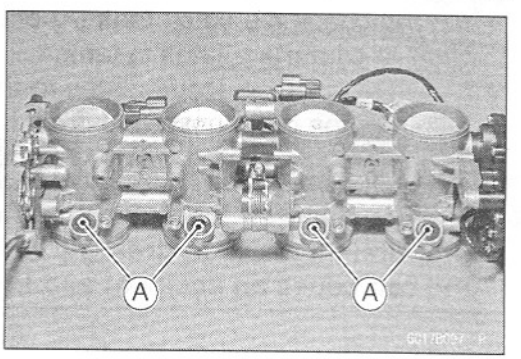
- Apply daphne oil or engine oil to the new dust seals [A], insert the injectors installed to the delivery pipe to the throttle body.

NOTE

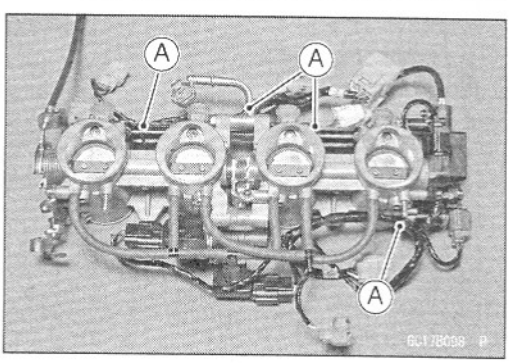
o *Replace the dust seals of the throttle body to new one.*

- Install the delivery pipe assy to the throttle body.

Torque - Fuel Delivery Pipe Mounting Screws: 3.4 N·m (0.35 kgf·m, 30 in·lb)



- Install the injector connectors to each injector, and bind the connector lead with clamps [A].
- Insert the each hoses to the throttle body fittings.
- Install the throttle body assy (see Throttle Body Assy Installation).



Exploded View

No.	Fastener	Torque			Remarks
		N·m	kgf·m	ft·lb	
1	Water hose clamp screws	2.0	0.20	17 in·lb	
2	Coolant drain plug (water pump)	8.8	0.90	78 in·lb	
3	Coolant drain plug (cylinder)	8.8	0.90	78 in·lb	
4	Radiator fan switch	18	1.8	13	
5	Water temperature sensor	25	2.5	18	SS
6	Water pump impeller bolt	9.8	1.0	87 in·lb	
7	Water pump cover bolts	12	1.2	104 in·lb	L
8	Thermostat housing cover bolts	5.9	0.60	52 in·lb	
9	Coolant by-pass fitting	8.8	0.90	78 in·lb	L
10	Water hose fitting bolts	12	1.2	106 in·lb	
11	Radiator mounting bolts	6.9	0.70	61 in·lb	
12	Radiator bracket mounting bolts	6.9	0.70	61 in·lb	
13	Coolant reserve tank mounting screws	6.9	0.70	61 in·lb	
14	Oil cooler bolt	78	8.0	58	
15	Water passage plugs	20	2.0	14	

L: Apply a non-permanent locking agent.
EO: Apply engine oil.
SS: Apply silicone sealant (Kawasaki Bond: 56019–120).

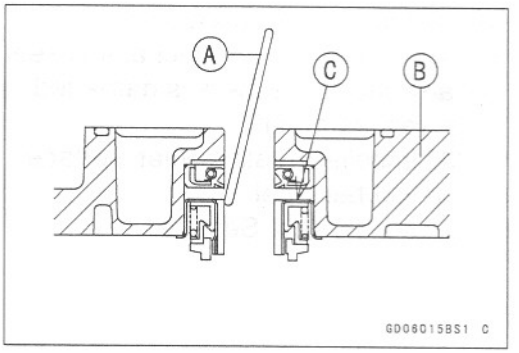
Water Pump

Water Pump Housing Disassembly

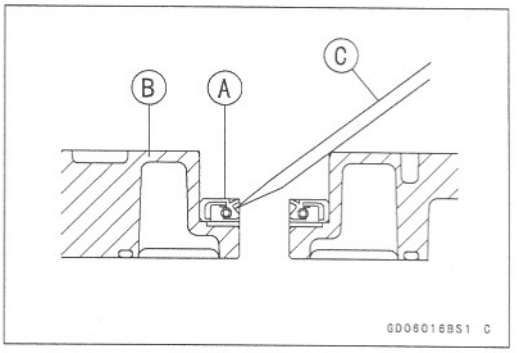
CAUTION

Do not damage the hole wall of the water pump housing.

- Insert a bar [A] into the pump housing [B], and hammer evenly around the circumference of the mechanical seal bottom [C].



- Take the oil seal [A] out of the housing [B] with a hook [C].



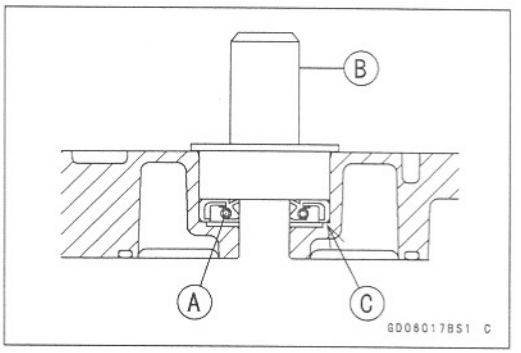
Water Pump Housing Assembly

CAUTION

Do not reuse the mechanical seal and oil seal.

- Apply high temperature grease to the oil seal lips [A].
- Press the new oil seal into the housing with a bearing driver [B] until it stops at the bottom surface [C] of the housing.

Special Tool - Bearing Driver Set: 57001-1129

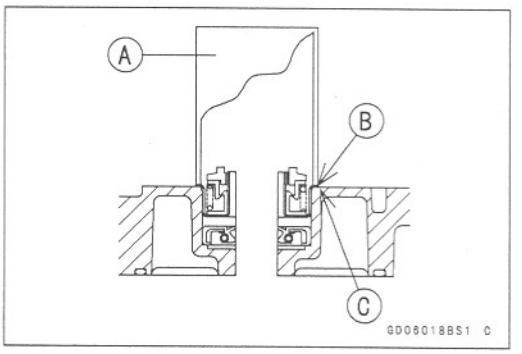


CAUTION

Be careful not to damage the sealing surface of the mechanical seal.

- Press the new mechanical seal into the housing with stem bearing driver [A] until its flange [B] touches the surface [C] of the housing.

Special Tool - Bearing Driver: 57001–382



Engine Top End

TABLE OF CONTENTS

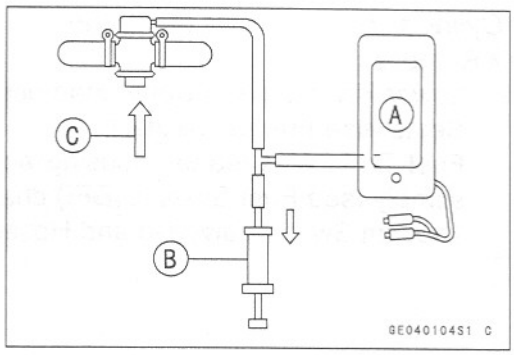
Clean Air System

Vacuum Switch Valve Test

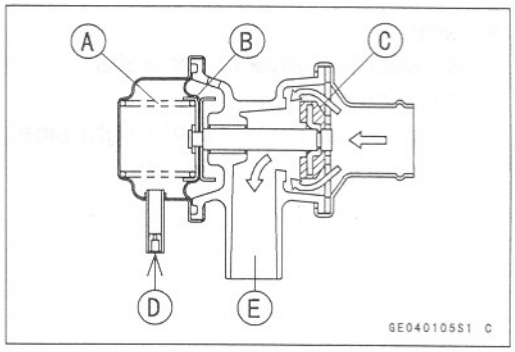
- Remove:
  Fuel Tank, Air Cleaner Housing (see Fuel System (DFI) chapter)
  Vacuum Switch Valve
- Connect a vacuum gauge [A] and syringe [B] or fork oil level gauge to the vacuum hoses as shown.

Special Tool - Fork Oil Level Gauge: 57001-1290

Air Flow [C]



- Gradually raise the vacuum (lower the pressure) applied to the vacuum switch valve, and check the valve operation. When the vacuum is low, the vacuum switch valve should permit air to flow. When the vacuum raises to valve closing pressure, it should stop air flow.
  Spring [A]
  Diaphragm [B]
  Valve [C]
  Low Vacuum [D]
  Secondary Air Flow [E]

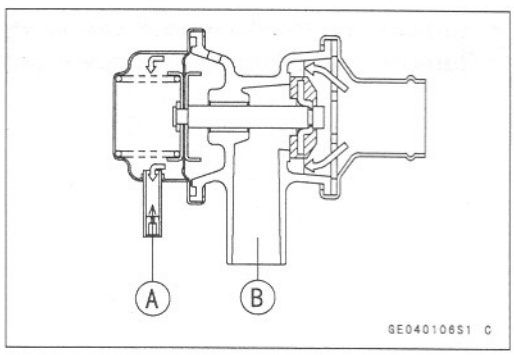


★If the vacuum switch valve does not operate as described, replace it with a new one.

NOTE

○ *To check air flow through the vacuum switch valve, just blow through the air cleaner hose.*

Vacuum Switch Valve Closing Pressure (Open → Close)
Standard: 41 ~ 49 kPa (310 ~ 370 mmHg)



High Vacuum [A]
Secondary air cannot flow [B]

Clean Air System Hose Inspection

- Be certain that all the hoses are routed without being flattened or kinked, and are connected correctly to the air cleaner housing, vacuum switch valve, #2 and #3 throttle body and air suction valve covers.

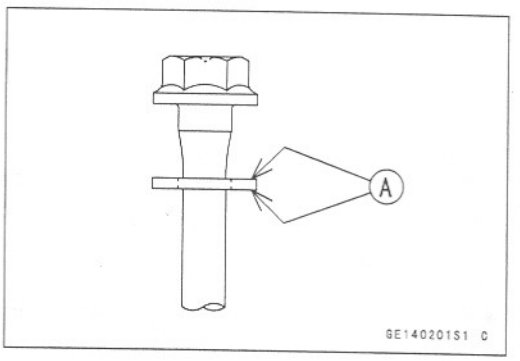
★If they are not, correct them. Replace them if they are damaged.

Cylinder Head

Cylinder Head Installation

NOTE

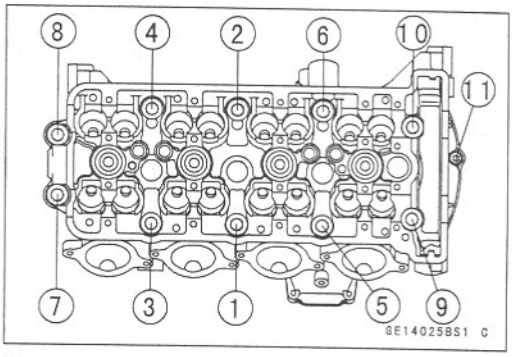
o *The camshaft cap is machined with the cylinder head, so if a new cylinder head is installed, use the cap that is supplied with the new head.*



- Install a new cylinder head gasket and knock pins.
- Apply molybdenum disulfide oil to both sides [A] of the cylinder head bolt washers.

- Tighten the 9 mm cylinder head bolts following the tightening sequence [1 ~ 10].

Torque - First: Cylinder Head Bolts (9 mm): 20 N·m (2.0 kgf·m, 14.5 ft·lb)
Final: Used Bolts: 40 N·m (4.1 kgf·m, 30 ft·lb)



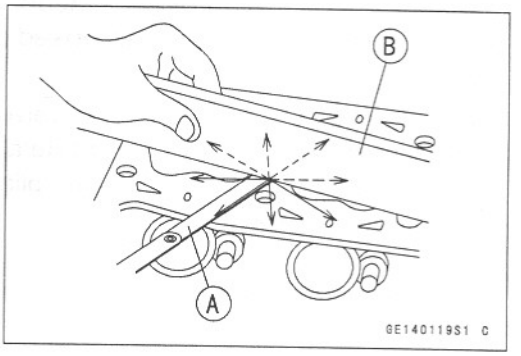
- Tighten the 6 mm cylinder head bolts [11].

Torque - Cylinder Head Bolts (6 mm): 12 N·m (1.2 kgf·m, 104 in·lb)

- Install the camshaft position sensor (see Electrical System chapter).

Cylinder Head Warp

- Lay a straightedge across the lower surface of the cylinder head at several positions.
- Use a thickness gauge [A] to measure the space between the straightedge [B] and the head.



Cylinder Head Warp
Standard: - - -
Service Limit: 0.05 mm (0.002 in.)

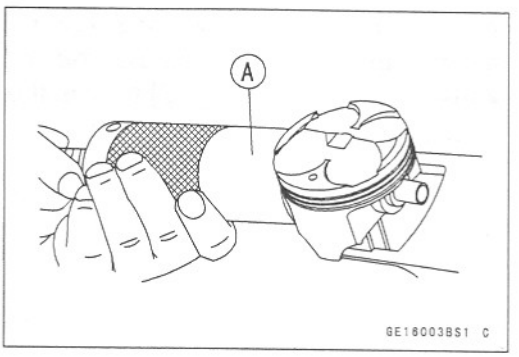
★If the cylinder head is warped more than the service limit, replace it.

★If the cylinder head is warped less than the service limit, repair the head by rubbing the lower surface on emery paper secured to a surface plate (first No. 200, then No. 400).

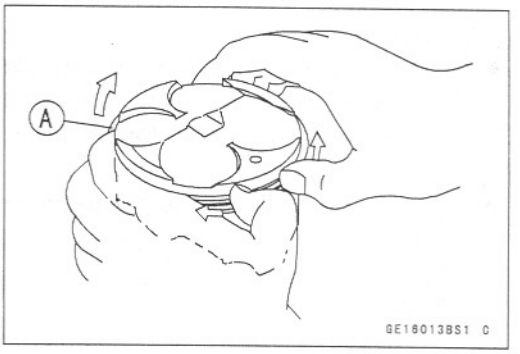
Cylinder, Pistons

- Remove the piston pins.

Special Tool - Piston Pin Puller Assembly: 57001-910 [A]



- Carefully spread the ring opening with your thumbs and then push up on the opposite side of the ring [A] to remove it.
- Remove the 3-piece oil ring with your thumbs in the same manner.



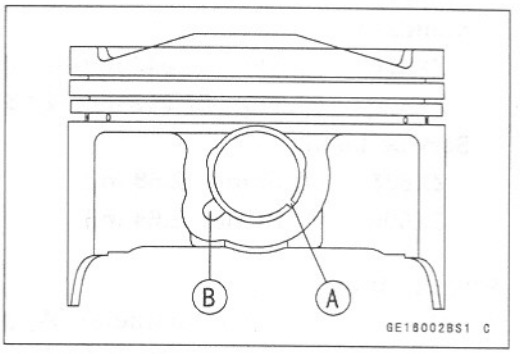
Piston Installation

NOTE

o *If a new piston is used, use new piston ring.*

- Install the piston with its marking hollow facing forward.
- Fit a new piston pin snap ring into the side of the piston so that the ring opening [A] does not coincide with the slit [B] of the piston pin hole.

o When installing the piston pin snap ring, compress it only enough to install it and no more.



CAUTION

Do not reuse snap rings, as removal weakens and deforms them.
They could fall out and score the cylinder wall.

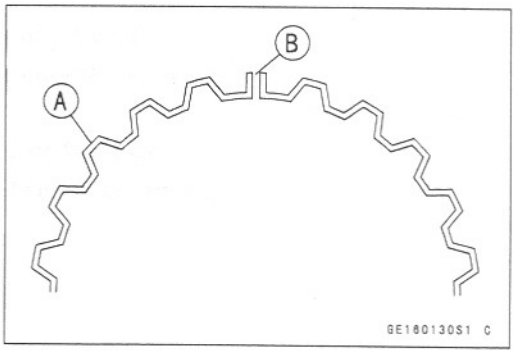
- Install the oil ring expander [A] in the bottom piston ring groove so the ends [B] butt together.
- Install the oil ring steel rails, one above the expander and one below it.

o Spread the rail with your thumbs, but only enough to fit the rail over the piston.

o Release the rail into the bottom piston ring groove.

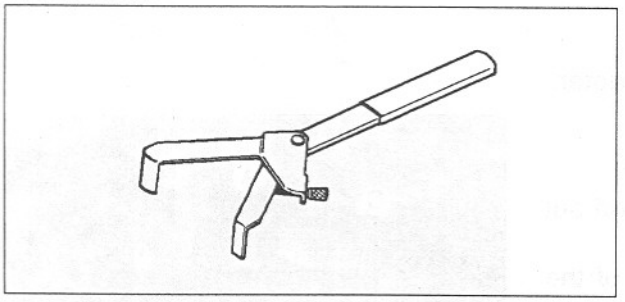
NOTE

o *The oil ring rails have no "top" or "bottom".*

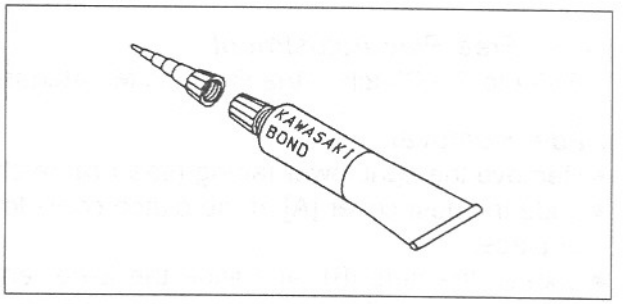


Special Tool and Sealant

Clutch Holder :
57001–1243



Kawasaki Bond (Silicone Sealant) :
56019–120



Clutch

Clutch Plate Assembly Adjustment

- Inspect the clutch plate assembly length, and then replace the steel plate(s) which brings the length within the specified range.

○ Remove:
Spring Bolts
Spring Holders
Springs
Spring Plate

○ Replace the following steel plate(s).

Part No.	Thickness
13089-1126	1.4 mm (0.055 in.)
13089-013	1.6 mm (0.063 in.) (STD)
13089-1073	2.0 mm (0.008 in.)

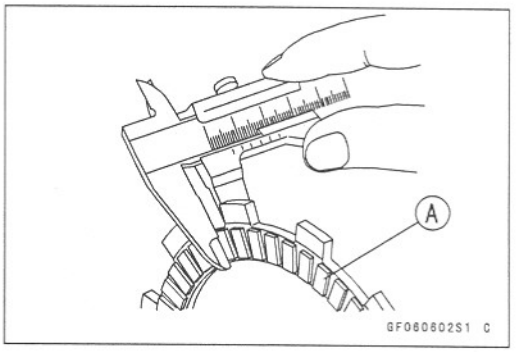
NOTE

○ *Do not use the steel plate of 1.4 mm (0.055 in.) and 2.0 mm (0.008 in.) thickness at the same time.*

- Install the removed parts, and inspect the clutch plate assembly length.

Torque - Clutch Spring Bolts: 8.8 N·m (0.90 kgf·m, 78 in·lb)

Clutch Plate, Wear, Damage Inspection



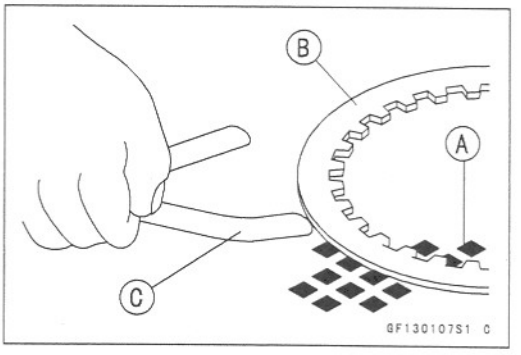
- Visually inspect the friction and steel plates for signs of seizure, overheating (discoloration), or uneven wear.
- Measure the thickness of each friction plate [A] at several points.

★If any plates show signs of damage, or if they have worn past the service limit, replace them with new ones.

Friction Plate Thickness

Standard:	**2.72 ~ 2.88 mm (0.107 ~ 0.113 in.)**
Service Limit:	**2.2 mm (0.087 in.)**

Clutch Plate Warp Inspection



- Place each friction plate or steel plate on a surface plate and measure the gap between the surface plate [A] and each friction plate or steel plate [B] with a thickness gauge [C]. The gap is the amount of friction or steel plate warp.

★If any plate is warped over the service limit, replace it with a new one.

Friction and Steel Plate Warp

Standard:	**0.2 mm (0.008 in.) or less**
Service Limit:	**0.3 mm (0.012 in.)**

Oil Pressure Relief Valve

Oil Pressure Relief Valve Removal

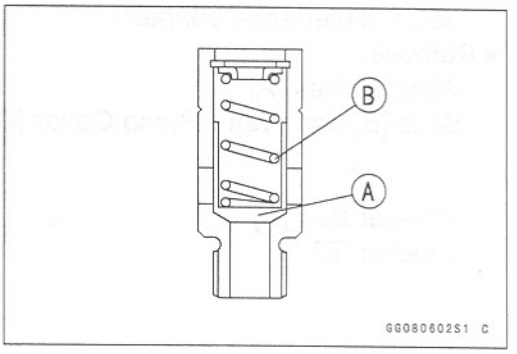
- See Oil Pan Removal.

Oil Pressure Relief Valve Installation

- See Oil Pan Installation.

Oil Pressure Relief Valve Inspection

- Check to see if the valve [A] slides smoothly when pushing it in with a wooden or other soft rod, and see if it comes back to its seat by spring [B] pressure.



NOTE

○ *Inspect the valve in its assembled state. Disassembly and assembly may change the valve performance.*

★If any rough spots are found during above inspection, wash the valve clean with a high-flash point solvent and blow out any foreign particles that may be in the valve with compressed air.

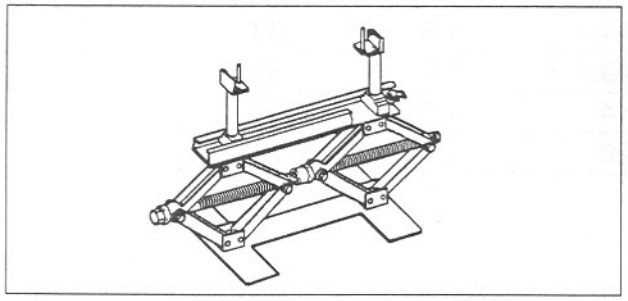
⚠ WARNING

Clean the relief valve in a well-ventilated area, and take care that there is no spark or flame anywhere near the working area. Because of the danger of highly flammable liquids, do not use gasoline or low -flash point solvent.

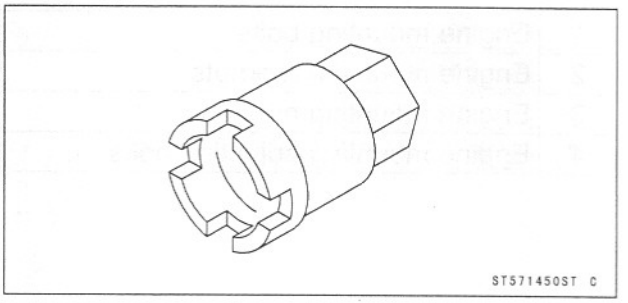
★If cleaning does not solve the problem, replace the relief valve as an assembly. The relief valve is precision made with no allowance for replacement of individual parts.

Special Tools

Jack:
57001–1238



Engine Mount Nut Wrench :
57001–1450



Exploded View

No.	Fastener	Torque			Remarks
		N·m	kgf·m	ft·lb	
1	Shift drum cam holder bolt	12	1.2	104 in·lb	L
2	Neutral switch	15	1.5	11	
3	Gear positioning lever bolt	9.8	1.0	87 in·lb	
4	Shift shaft return spring pin	28	2.9	21	L

G: Apply grease.
L: Apply a non-permanent locking agent.
EO: Apply engine oil.
R: Replacement Parts

Crankshaft and Connecting Rods

(1) Bolt Length Measurement Method

- Be sure to clean the bolts, nuts, and connecting rods thoroughly with high-flash point solvent, because the new connecting rods, bolts, and nuts are treated with an anti -rust solution.

⚠ WARNING

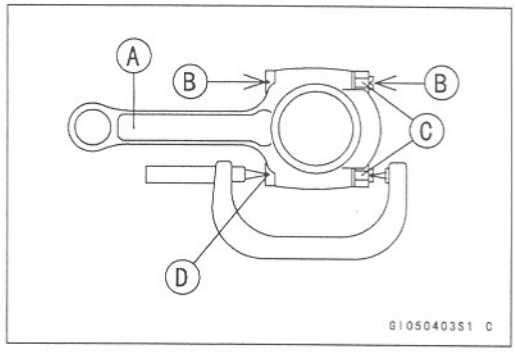
Clean the bolts, nuts, and connecting rods in a well -ventilated area, and take care that there is no spark or flame anywhere near the working area. This includes any appliance with a pilot light. Because of the danger of highly flammable liquids, do not use gasoline or low-flash point solvents to clean them.

CAUTION

Immediately dry the bolts and nuts with compressed air after cleaning.
Clean and dry the bolts and nuts completely.

- Install new bolts in reused connecting rods.
- Dent both bolt head and bolt tip with a punch as shown.
- Before tightening, use a point micrometer to measure the length of new connecting rod bolts and record the values to find the bolt stretch.

Connecting Rod [A]
Dent here with a punch [B]
Nuts [C]
Fit micrometer pins into dents [D]



- Tighten the big end nuts until the bolt elongation reaches the specified length.
- Check the length of the connecting rod bolts.

★If the stretch is more than the usable range, the bolt has stretched too much. An overlongated bolt may break in use.

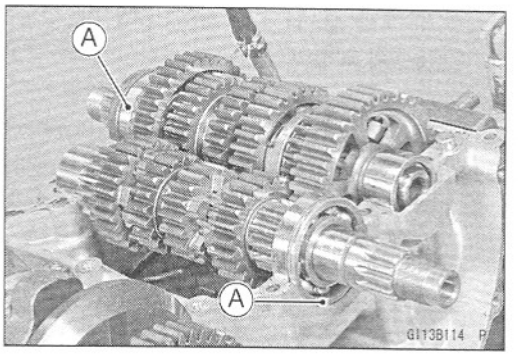
Bolt Length after tightening	–	Bolt Length before tightening	=	Stretch

Usable Range of Connecting Rod Bolt Stretch –
0.18 ~ 0.28 mm (0.007 ~ 0.011 in.)

Transmission

- Install the drive shaft and output shaft into the upper crankcase half.
- Apply engine oil to the sliding surfaces of the gears and bearings.

○ The bearing set pins and rings must match properly with the holes or grooves in the bearing outer races. When they are properly matched, there is no clearance between the crankcase and the bearing outer races [A].



Transmission Shaft Disassembly

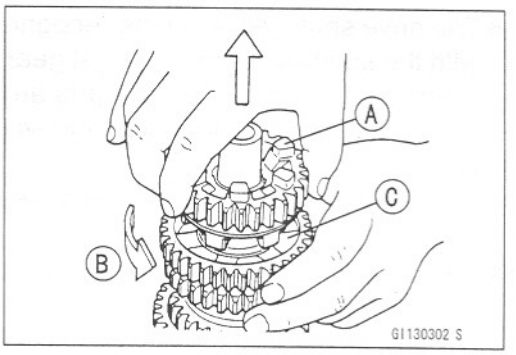
- Remove the transmission shafts (see Transmission Shaft Removal).
- Remove the circlips, and disassemble the transmission shafts.

Special Tool - Outside Circlip Pliers: 57001-144

- The 5th gear [A] on the output shaft has three steel balls assembled into it for the positive neutral finder mechanism. Remove the 5th gear.

○ Set the output shaft in a vertical position holding the 3rd gear [B].

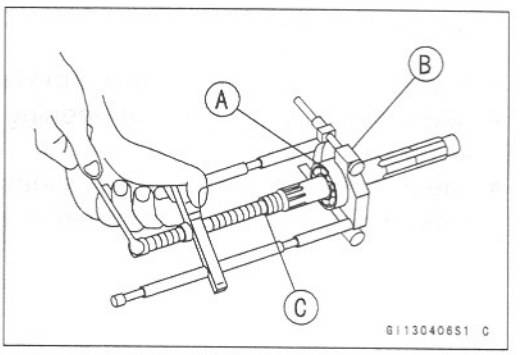
○ Spin the 5th gear quickly [C] and pull it off upward.



- Remove the ball bearing [A] and/or collar from each shafts.

Special Tools - Bearing Puller: 57001-135 [B]
Bearing Puller Adapter: 57001-317 [C]

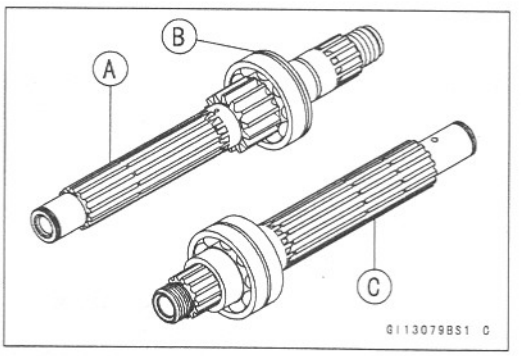
- Discard the bearing.



Transmission Shaft Assembly

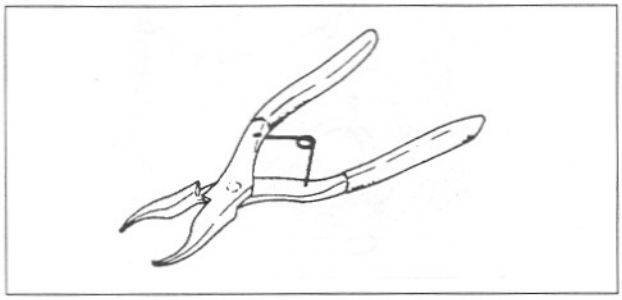
- Apply engine oil to the ball bearing and shaft.
- Install the ball bearing on the drive shaft [A] with the groove [B] toward the clutch side using the steering stem bearing driver.
- Install the ball bearing and collar on the output shaft [C] using the steering stem bearing driver.

Special Tool - Steering Stem Bearing Driver: 57001–382

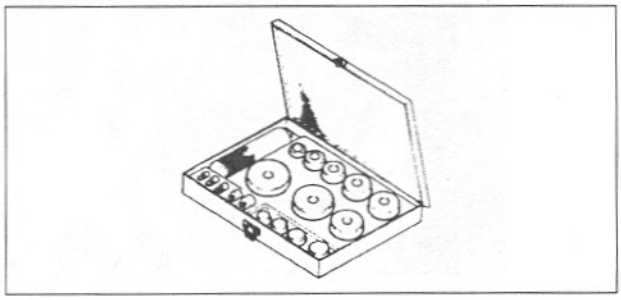


Specia Tools

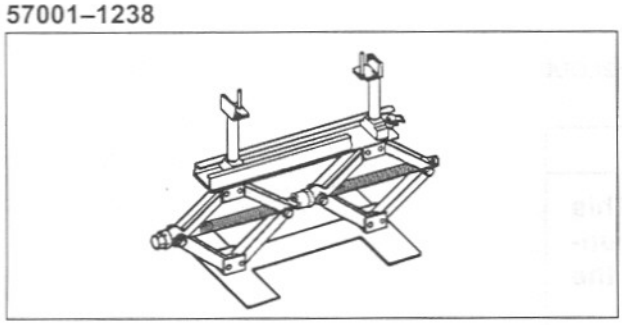
Inside Circlip Pliers :
57001–143



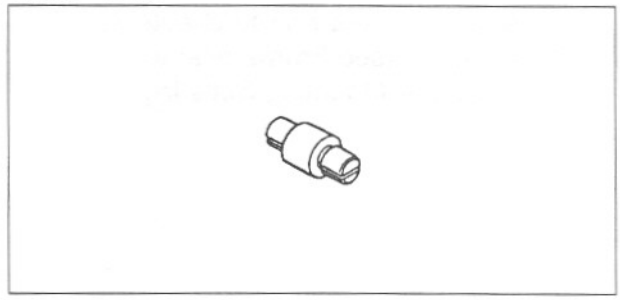
Bearing Driver Set :
57001–1129



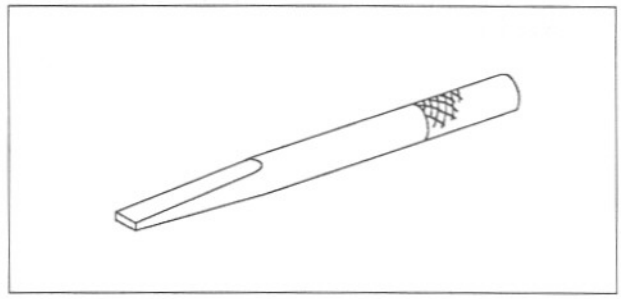
Jack :
57001–1238



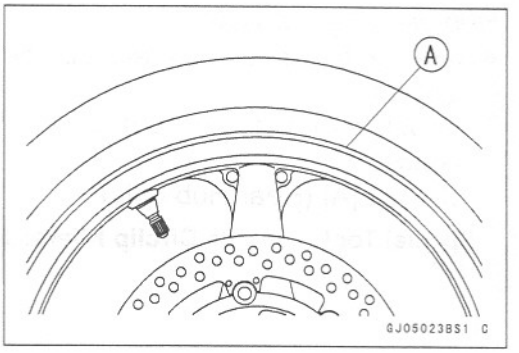
Bearing Remover Head, ϕ25 x ϕ28 :
57001–1346



Bearing Remover Shaft, ϕ13 :
57001–1377



Tires



- Check to see that the rim lines [A] on both sides of the tire sidewalls are parallel with the rim flanges.

★If the rim flanges and tire sidewall rim lines are not parallel, remove the valve core.

- Lubricate the rim flanges and tire beads.
- Install the valve core and inflate the tire again.
- After the tire beads seat in the rim flanges, check for air leakage.

○ Inflate the tire slightly above standard inflation.
○ Use a soap and water solution or submerge the tire, and check for bubbles that would indicate leakage.

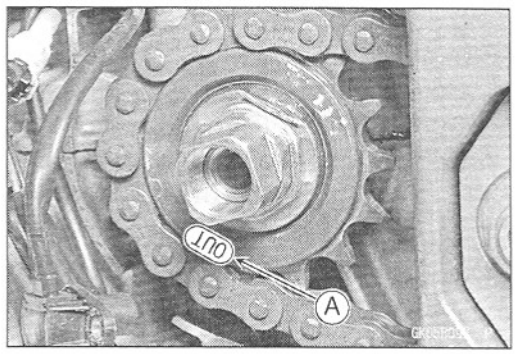
- Adjust the air pressure to the specified pressure (see Tire Inspection).
- Install the air valve cap.
- Install the brake disc(s) so that the marked side faces out (see Brakes chapter).
- Adjust the wheel balance (see Balance Adjustment).

Tire Repair

Currently two types of repair for tubeless tires have come into wide use. One type is called a temporary (external) repair which can be carried out without removing the tire from the rim, and the other type is called permanent (internal) repair which requires tire removal. It is generally understood that higher running durability is obtained by permanent (internal) repairs than by temporary (external) ones. Also, permanent (internal) repairs have the advantage of permitting a thorough examination for secondary damage not visible from external inspection of the tire. For these reasons, Kawasaki does not recommend temporary (external) repair. Only appropriate permanent (internal) repairs are recommended. Repair methods may vary slightly from make to make. Follow the repair methods indicated by the manufacturer of the repair tools and materials so that safe results can be obtained.

Sprocket, Coupling

Engine Sprocket Installation



- Replace the sprocket washer and axle cotter pin.
- Install the engine sprocket onto the shaft so that the mark side [A] faces outwards.
- Apply molybdenum disulfide oil to the threads of the output shaft and the seating surface of the engine sprocket nut.
- After torquing the engine sprocket nut, bend the one side of the washer over the nut.

NOTE

o *Tighten the nut while applying the rear brake.*

Torque - Engine Sprocket Nut : 125 N·m (13.0 kgf·m, 92 ft·lb)

- Adjust the drive chain slack after installing the sprocket (see Final Drive in the Periodic Maintenance chapter).
- Install the engine sprocket cover, and tighten the bolts.

Torque - Engine Sprocket Cover Bolts: 6.9 N·m (0.70 kgf·m, 61 in·lb)

- Apply a non-permanent locking agent to the threads of the speed sensor bolt, and tighten it.

Torque - Speed Sensor Bolt: 3.9 N·m (0.40 kgf·m, 35 in·lb)

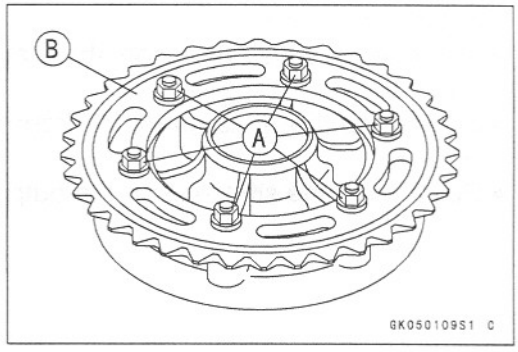
- Bend the end of axle cotter pin surely after tightening the axle nut.

Rear Sprocket Removal

- Remove the rear wheel (see Wheels/Tires chapter).

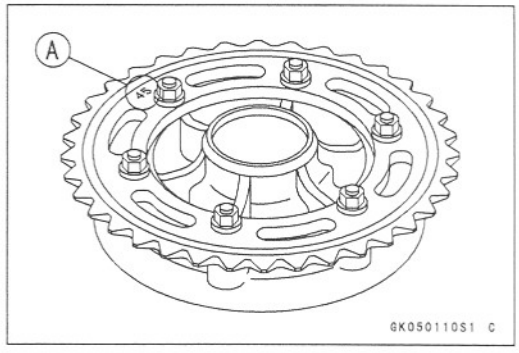
CAUTION

Do not lay the wheel on the ground with the disc facing down. This can damage or warp the disc. Place blocks under the wheel so that the disc does not touch the ground.



- Remove the rear sprocket nuts [A].
- Remove the rear sprocket [B].

Rear Sprocket Installation



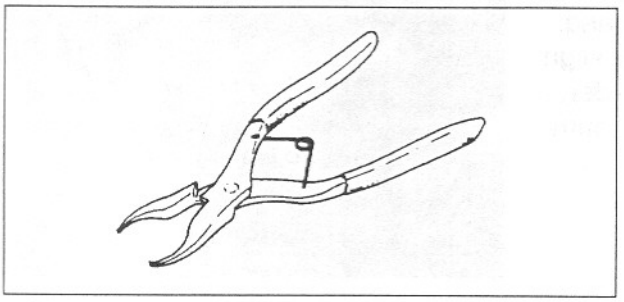
- Install the sprocket facing the tooth number marking [A] outward.
- Tighten the rear sprocket nuts.

Torque - Rear Sprocket Nut : 59 N·m (6.0 kgf·m, 43 ft·lb)

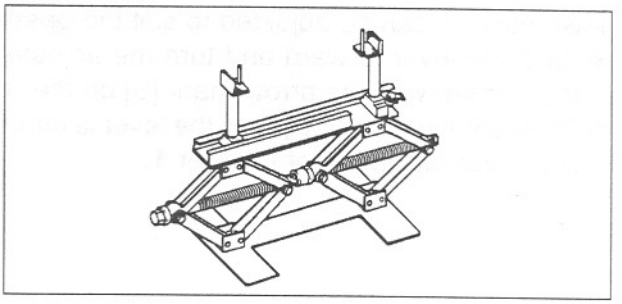
- Install the rear wheel (see Wheels/Tires chapter).

Special Tools

Inside Circlip Pliers :
57001–143



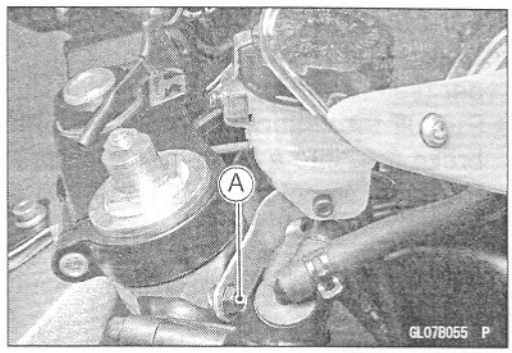
Jack :
57001–1238



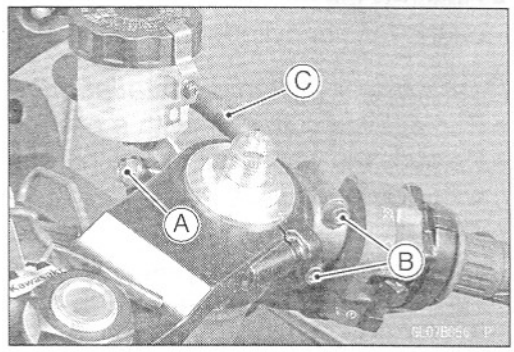
Master Cylinder

Front Master Cylinder Removal

- Loosen the reservoir bracket bolts [A].



- Disconnect the front brake light switch connectors.
- Remove the banjo bolt [A] to disconnect the brake hose from the master cylinder (see Brake Hose Removal/Installation).
- Unscrew the clamp bolts [B], and take off the master cylinder [C] as an assembly with the reservoir, brake lever, and brake switch installed.

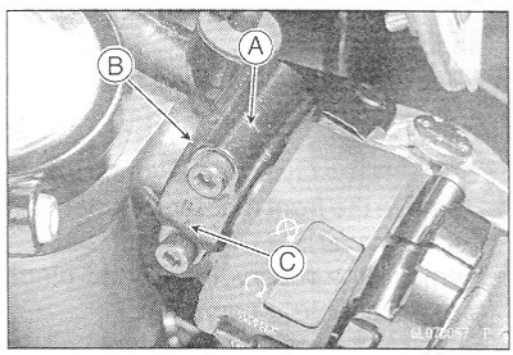


CAUTION
Immediately wash away any brake fluid that spills.

Front Master Cylinder Installation

- Set the front master cylinder to match its mating surface [A] to the punch mark [B] of the handlebar.
- The master cylinder clamp must be installed with the arrow mark [C] upward.
- Tighten the upper clamp bolt first, and then the lower clamp bolt. There will be a gap at the lower part of the clamp after tightening.

Torque - Front Master Cylinder Clamp Bolts: 8.8 N·m (0.90 kgf·m, 78 in·lb)



- Replace the washers that are on each side of the hose fitting with new ones.
- Tighten:

Torque - Brake Hose Banjo Bolt: 25 N·m (2.5 kgf·m, 18 ft·lb)

- Bleed the brake line (see Brakes in the Periodic Maintenance chapter).
- Check the brake for good braking power, no brake drag, and no fluid leakage.

Exploded View

No.	Fastener	Torque			Remarks
		N·m	kgf·m	ft·lb	
1	Rear shock absorber bracket nut	59	6.0	43	
2	Rear shock absorber Nuts (upper and lower)	34	3.5	25	
3	Tie-Rod Nuts	59	6.0	43	
4	Uni-Trak rocker arm nut	34	3.5	25	
5	Swingarm pivot shaft nut	108	11	81	
6	Swingarm pivot shaft ZX636	20	2.0	14	
	ZX600	25	2.5	18	
7	Swingarm pivot shaft locknut	98	10	72	

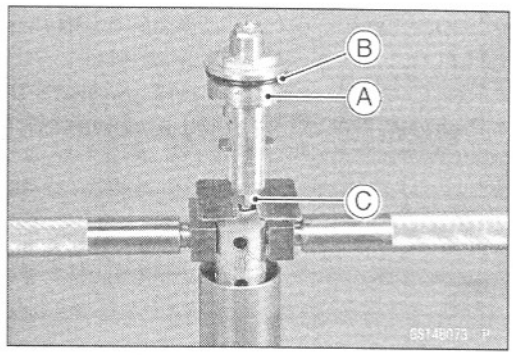
No.	Parts	Parts No.	Remarks
8	Spacer set (Option)	92026–1586	T1.0/T2.0/T3.2/T4.5
9	Swingarm bracket (ZX600 Only)		
	STD (LH)	92152–1482	Swingarm pivot height no changes.
	(RH)	92152–1483	
	OPTION (LH)	92152–0042	Swingarm pivot height changes plus or minus 1 mm (0.039 in.).
	(RH)	92152–0043	
	(LH)	92152–0044	Swingarm pivot height changes plus or minus 2 mm (0.079 in.).
	(RH)	92152–0045	

G: Apply or add grease.
R: Replacement Parts

Front Fork

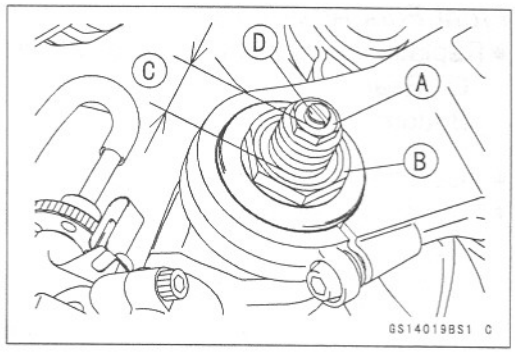
- Remove the piston rod puller.
- Screw in the top plug [A] stopped onto the piston rod.
- Check the O-ring [B] on the top plug and replace it with a new one if damaged.
- Holding the top plug with a wrench, tighten the piston rod nut [C] against the top plug.

Torque - Piston Rod Nut: 15 N·m (1.5 kgf·m, 11 ft·lb)



- While holding up the fork spring compressor, pull out the fork spring stopper.
- Remove the fork spring compressor.

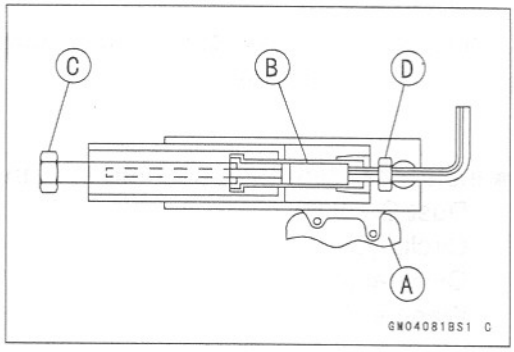
- Raise the outer tube and screw the top plug into it and install it to the steering stem.
- Screw in the spring preload adjuster [A] of the top plug so that the distance between the adjuster top and the top plug surface [B] is 14 mm (0.55 in) [C].
- Turn in the rebound damping adjuster [D] until the fully tightened position and turn backward the 8th click.
- Install the front fork (see Front Fork Installation).



Front Fork Disassembly

- Remove the front fork (see Front Fork Removal).
- Drain the fork oil (see Front Fork Oil Change).
- Hold the front fork in a vise [A].
- Stop the cylinder [B] from turning by using the fork cylinder holder [C].

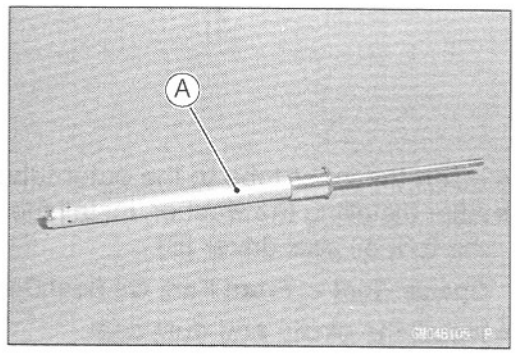
Special Tool - Fork Cylinder Holder: 57001-1537



- Unscrew the allen bolt [D], then take the bolt and gasket out of the bottom of the inner tube.

- Take the cylinder unit [A].

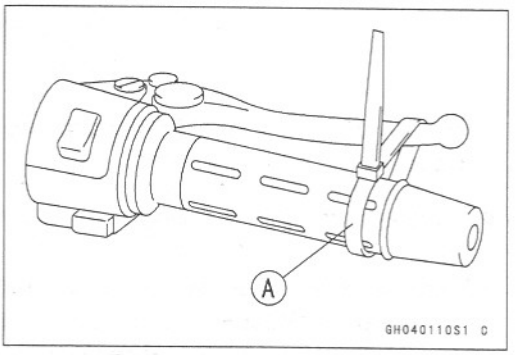
○ Do not disassemble the cylinder unit.



Tie-Rod, Rocker Arm

Tie-Rod Removal

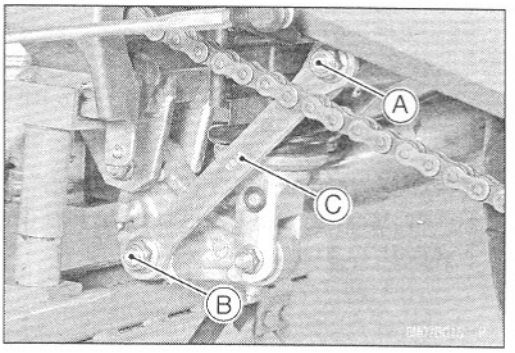
- Remove the lower fairings (see Frame chapter).
- Squeeze the brake lever slowly and hold it with a band [A].



- Using the jack, raise the rear wheel off the ground.

Special Tool - Jack: 57001–1238

- Remove:
  Upper Tie-Rod Bolt and Nut [A]
  Lower Tie-Rod Bolt and Nut [B]
  Tie-Rods [C]



Tie-Rod Installation

- Apply grease to the inside of the needle bearings and grease seals.
- Install the tie-rods so that the chamfered side faces the bolts and nuts.
- Tighten:

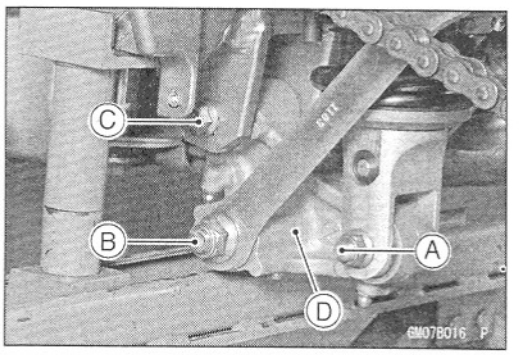
Torque - Tie-Rod Nuts: 59 N·m (6.0 kgf·m, 43 ft·lb)

Rocker Arm Removal

- Remove the lower fairings (see Frame chapter)
- Squeeze the brake lever slowly and hold it with a band.
- Using the jack, raise the rear wheel off the ground.

Special Tool - Jack: 57001–1238

- Remove:
  Lower Rear Shock Absorber Bolt and Nut [A]
  Lower Tie-Rod Bolt and Nut [B]
  Rocker Arm Bolt and Nut [C]
  Rocker Arm [D]



Rocker Arm Installation

- Apply grease to the inside of the needle bearings grease seals, and add grease to the grease nipple.
- Tighten:

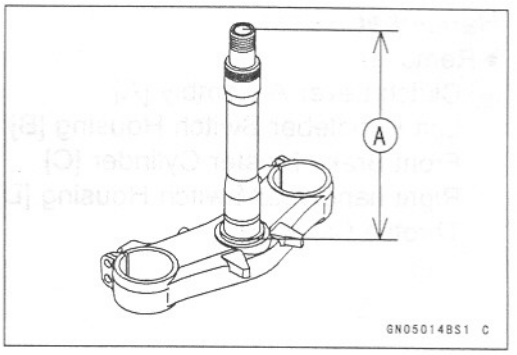
Torque - Rocker Arm Nut: 34 N·m (3.5 kgf·m, 25 ft·lb)
Tie-Rod Nut: 59 N·m (6.0 kgf·m, 43 ft·lb)
Rear Shock Absorber Nut: 34 N·m (3.5 kgf·m, 25 ft·lb)

Steering Stem

Steering Stem Warp

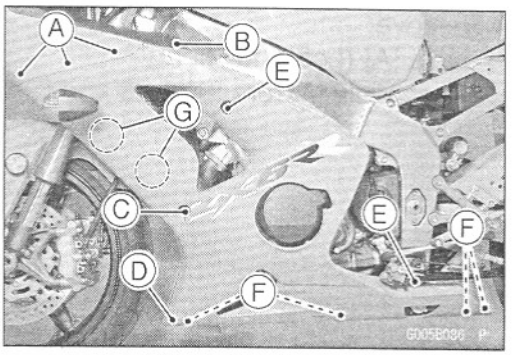
- Whenever the steering stem is removed, or if the steering can not be adjusted for smooth action, check the steering stem for straightness.

★If the steering stem [A] is bent, replace the steering stem.



Fairings

Lower Fairing Removal

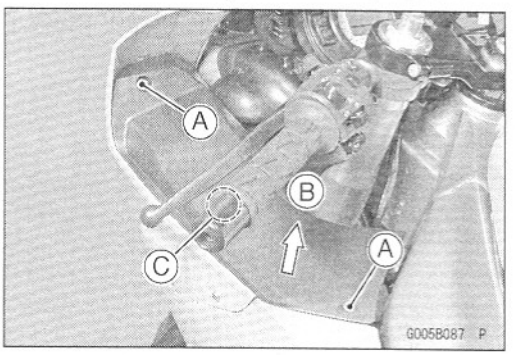


- Remove:
  Allen Bolts [A] [B] [C] [D] [E]
  Rivet Screws [F]
- Pull the lower front part of the lower fairing outward to clear the stoppers [G].
- Remove the lower fairing.
- Remove the other side lower fairing in the same manner.

NOTE

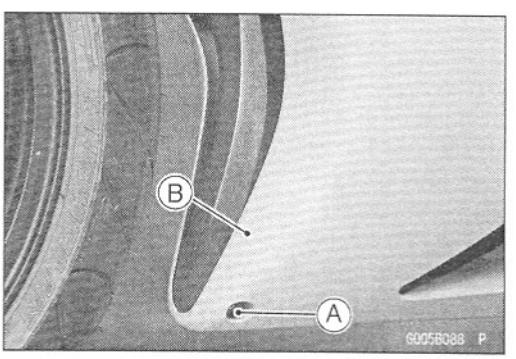
○ *When removing the left and right lower fairings at the same time, do not remove the screws [D] (both sides) and bottom of stoppers [G].*

Inner (Upper) Fairing Removal



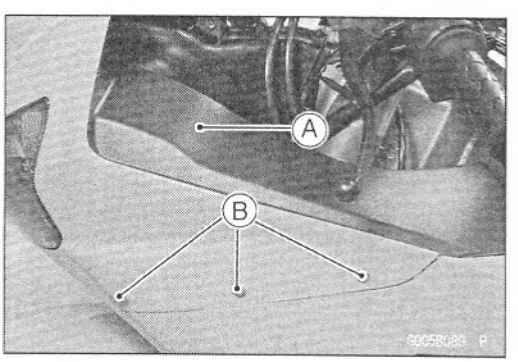
- Remove the allen bolts [A].
- Pull the inner (upper) fairing upward [B] to clear the stoppers [C].

Inner (Lower) Fairing Removal



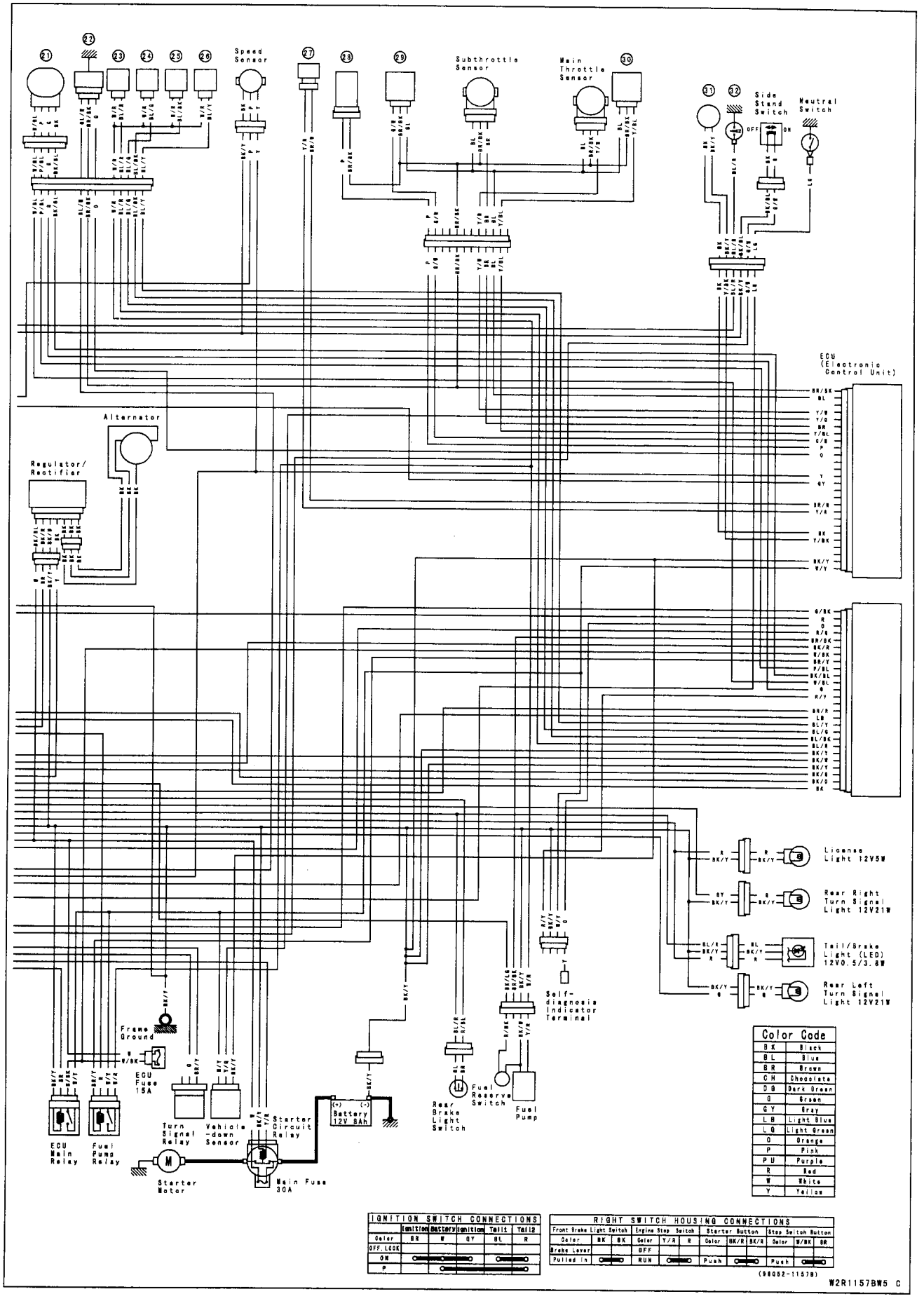
- Remove:
  Lower Fairing (Left or Right)
  Other Side Inner Fairing Bolt [A]
  Inner (Lower) Fairing [B]

Upper Fairing Removal



- Remove:
  Inner (Upper) Fairings [A]
  Allen Bolts [B] (Left and Right)

Wiring Diagram (Australia)



Battery

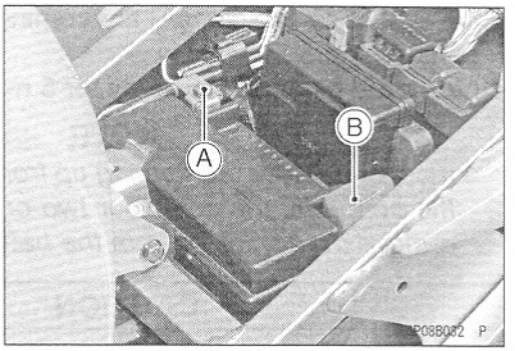
Battery Removal

- Remove the seats (see Frame chapter).
- Disconnect the negative (–) lead [A] and then positive (+) lead [B].

CAUTION

Be sure to disconnect the negative (–) lead first.

- Remove the battery.

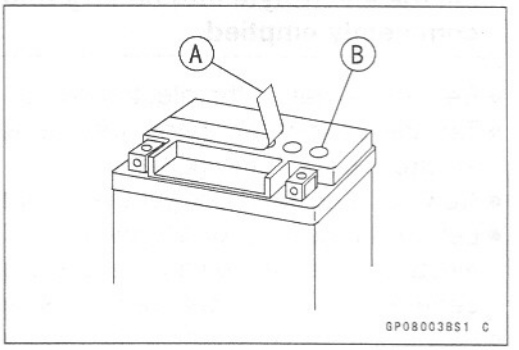


Electrolyte Filling

CAUTION

Do not remove the aluminum seal sheet [A] sealing the filler ports [B] until just before use.
Be sure to use the dedicated electrolyte container for correct electrolyte volume.

- Check to see that there is no peeling, tears or holes in the seal sheet on the top of the battery.
- Place the battery on a level surface.
- Remove the seal sheet.



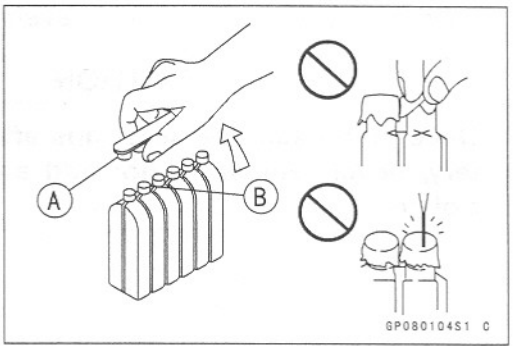
NOTE

o *A battery whose seal sheet has any peeling, tears, or holes, requires a refreshing charge (initial charge).*

- Take the electrolyte container out of the vinyl bag.
- Detach the seal caps [A] from the container.

NOTE

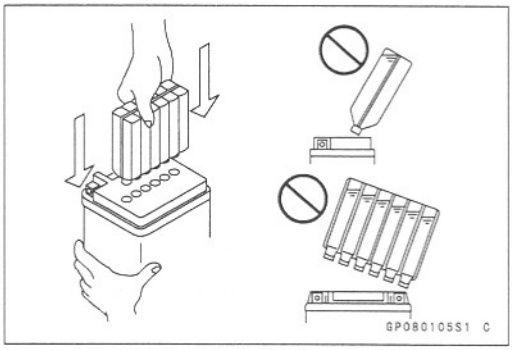
o *Do not discard the seal caps because it is used as the battery plugs later.*
o *Do not peel back or pierce the seals [B] on the container.*



- Place the electrolyte container upside down aligning six seals with the six battery filler ports.
- Push the container down strongly enough to break the seals. Now the electrolyte should start to flow into the battery.

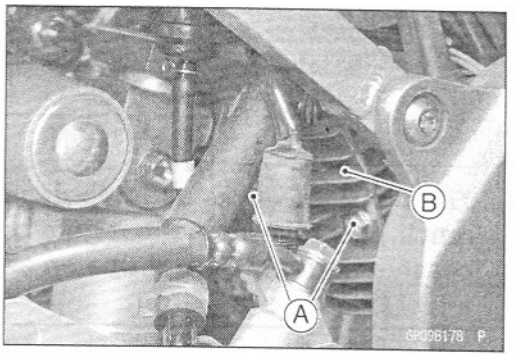
NOTE

o *Do not tilt the container as the electrolyte flow may be interrupted.*



Charging System

Bolts [A]
Regulator/Rectifier [B]



Rectifier Circuit Check:

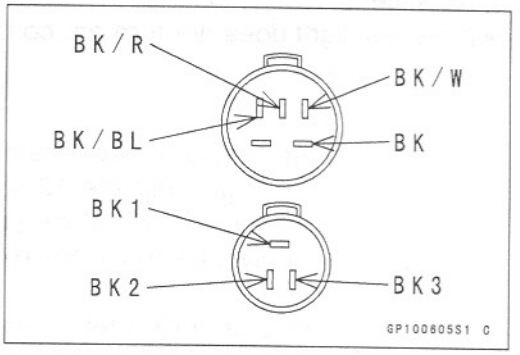
- Check the rectifier resistance as follows.
- Disconnect the regulator/rectifier connector.
- Connect the hand tester (special tool) to the regulator/rectifier as shown in the table, and check the resistance in both directions of each diode in the rectifier following the table.

★The resistance should be low in one direction and more than ten times as much in the other direction. If any two leads are low or high in both directions, the rectifier is defective and the regulator/rectifier must be replaced.

NOTE

○ *The actual meter reading varies with the meter used and the individual rectifier, but, generally speaking the lower reading should be from zero to one half the scale.*

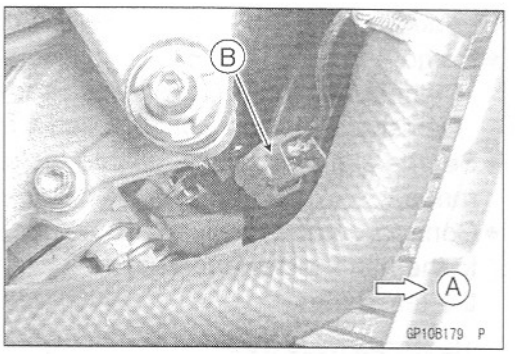
No.	Connections		Reading	Tester Range
	Tester (+)	Tester (-)		
1	BK1	BK/BL	∞	x 10Ω or x 100Ω
2	BK2			
3	BK3			
4	BK1	BK/W	1/2 scale or less	
5	BK2			
6	BK3			
7	BK/BL	BK1		
8		BK2		
9		BK3		
10	BK/W	BK1	∞	
11		BK2		
12		BK3		



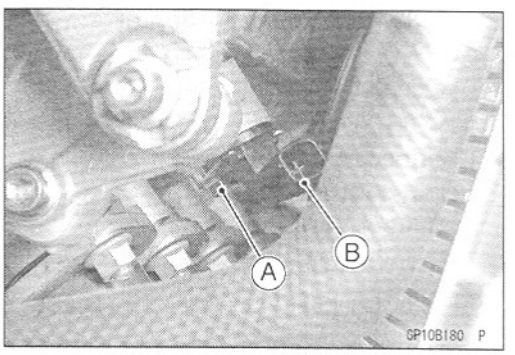
Ignition System

Camshaft Position Sensor Removal

- Remove the lower fairings (see Frame chapter).
- Lift the left side of the baffle plate and take out the camshaft position sensor lead connector.
- Remove the left under side radiator bolt.
- Move the bottom of the radiator toward the front [A], and disconnect the camshaft position sensor lead connector [B].



- Remove:
  Camshaft Position Sensor Bolt [A]
  Camshaft Position Sensor [B]



Camshaft Position Sensor Installation

- Apply grease or engine oil to the O-ring on the camshaft position sensor.

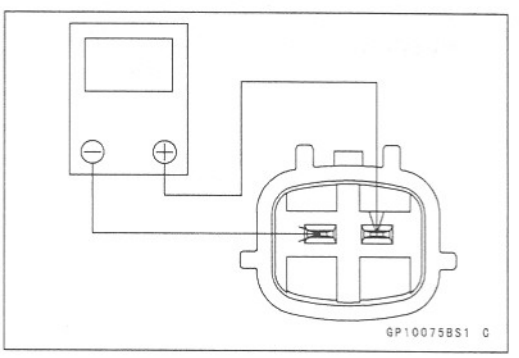
Tighten:

Torque - Camshaft Position Sensor Bolt: 12 N·m (1.2 kgf·m, 106 in·lb)

Camshaft Position Sensor Inspection

- Remove:
  Right Lower Fairing (see Frame chapter)
  Camshaft Position Sensor Lead Connector (disconnect)
- Set the hand tester to the × 10 Ω range and connect it to the terminals.

Special Tool - Hand Tester: 57001-1394



★If there is more resistance than the specified value, the sensor coil has an open lead and must be replaced. Much less than this resistance means the sensor coil is shorted, and must be replaced.

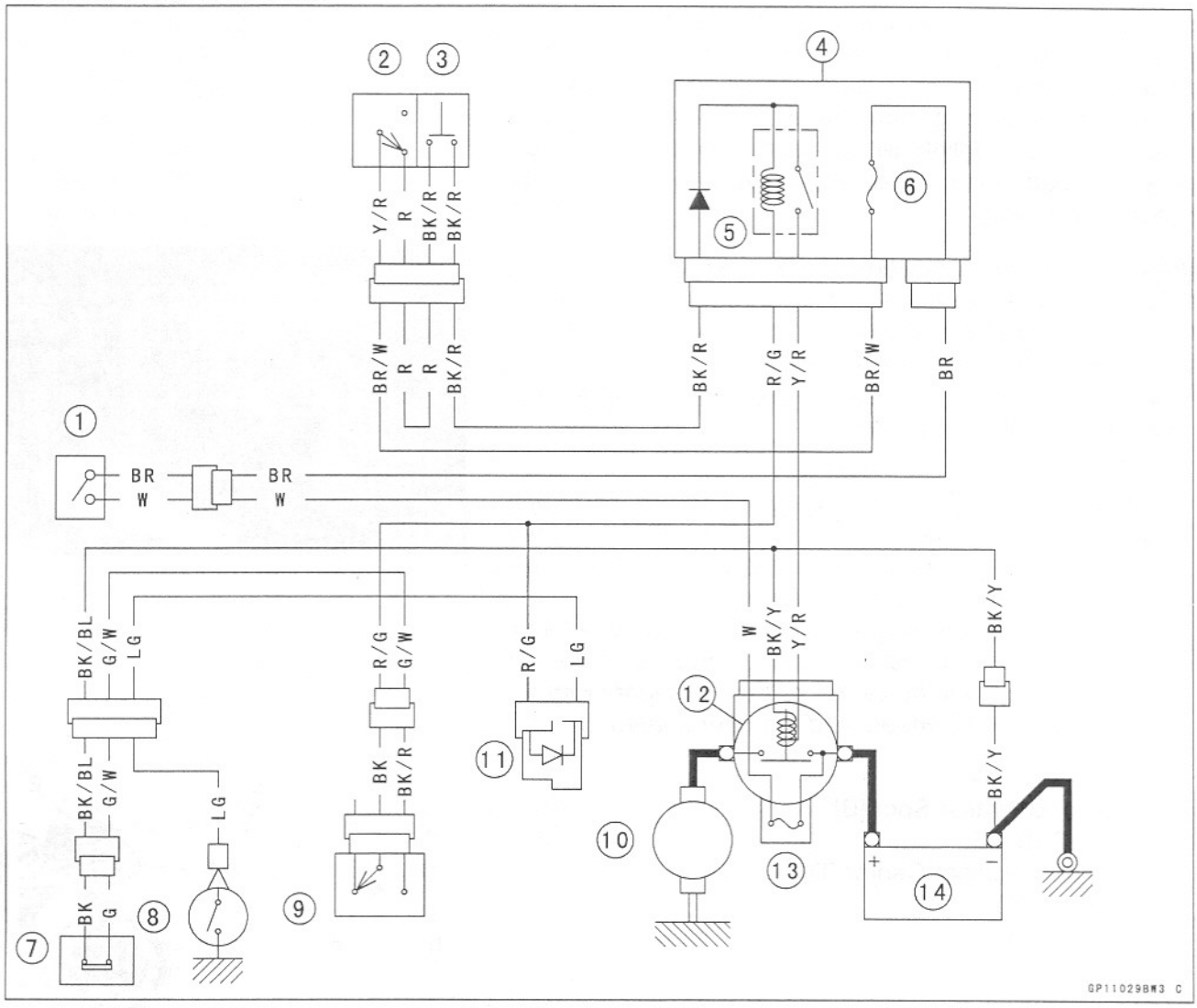
Camshaft Position Sensor Resistance: 490 ~ 590 Ω

- Using the highest resistance range of the tester, measure the resistance between the camshaft position sensor leads and chassis ground.

★Any tester reading less than infinity (∞) indicates a short, necessitating replacement of the camshaft position sensor.

Electric Starter System

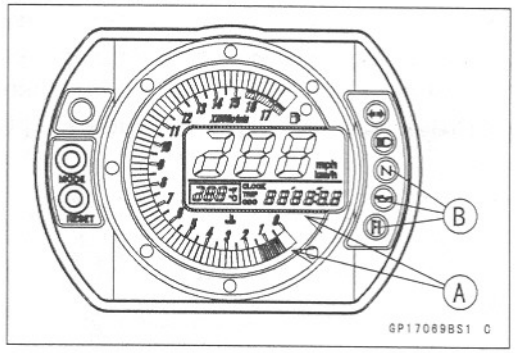
Electric Starter Circuit



1. Ignition Switch
2. Engine Stop Switch
3. Starter Button
4. Junction Box
5. Starter Circuit Relay
6. Ignition Fuse 10A
7. Side Stand Switch
8. Neutral Switch
9. Starter Lockout Switch
10. Starter Motor
11. Diode
12. Starter Relay
13. Main Fuse 30 A
14. Battery

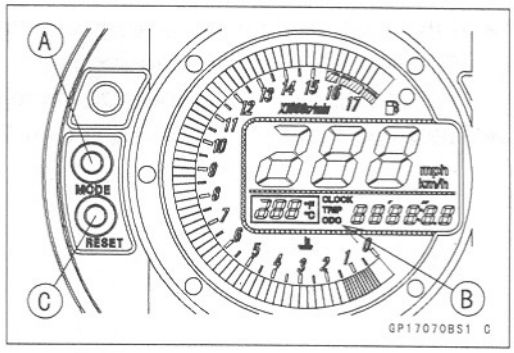
Meter, Gauge, Indicator Unit

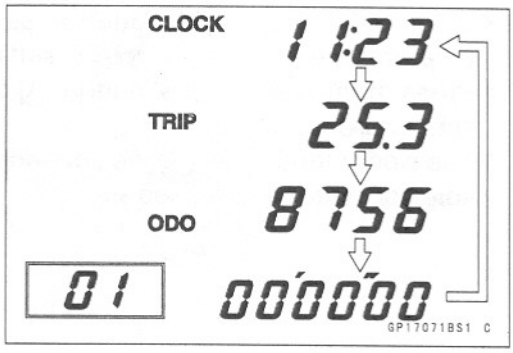
○ The tachometer LCD segments momentarily to it last readings two times and segment movement is reversal.
○ When the terminals are connected, all the LCD segments [A] and LED warning light [B] appear for three seconds.
★ If the LCD segments and LED warning light will not appear, replace the meter assembly.
● Disconnect the terminal [1].
○ All the LCD segments and LED warning light disappear.
★ If the segments do not disappear, replace the meter assembly.



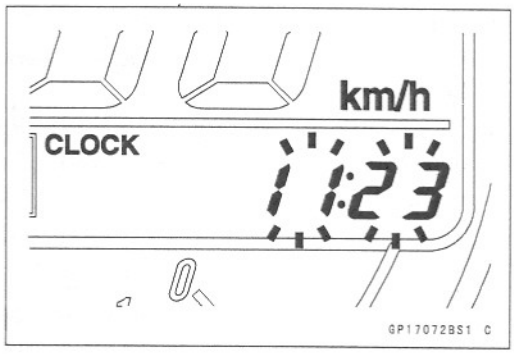
MODE AND RESET BUTTON Operation Check:

● Connect the 12 V battery and terminals in the same manner as specified in the "Liquid Crystal Display (LCD) Segments Check".
● Check that the display [B] change to the ODO, TRIP, and CLOCK and STOP WATCH displays each time the mode selector button [A] is pressed.
★ If the display function does not work, replace the meter assembly.





● Indicate the clock mode.
● Check that when the RESET button in CLOCK mode is pushed for more than two seconds, the meter display turns to the clock set mode.
○ Both the hour and minute display start flashing.



Switches and Sensors

Water Temperature Sensor Inspection

- Remove the water temperature sensor (see Fuel System (DFI) chapter).
- Suspend the sensor [A] in a container of coolant so that the temperature-sensing projection [E] and threaded portion [E] are submerged.
- Suspend an accurate thermometer [B] in the coolant.

NOTE

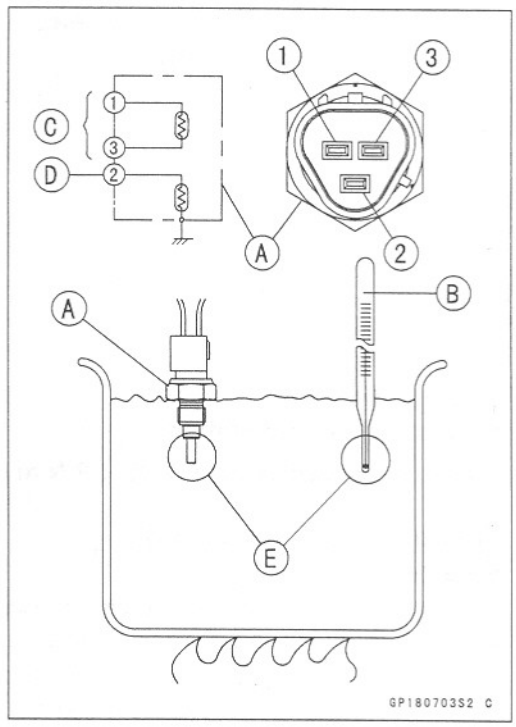
o *The sensor and thermometer must not touch the container side or bottom.*

- Place the container over a source of heat and gradually raise the temperature of the coolant while stirring the coolant gently.
- Using the hand tester, measure the internal resistance of the sensor.

o The sensor sends electric signals to the ECU (Electronic Control Unit) and coolant temperature gauge in the meter unit.

o Measure the resistance across the terminals and the body (for the gauge) at the temperatures shown in the table.

★If the hand tester does not show the specified values, replace the sensor.



Water Temperature Sensor

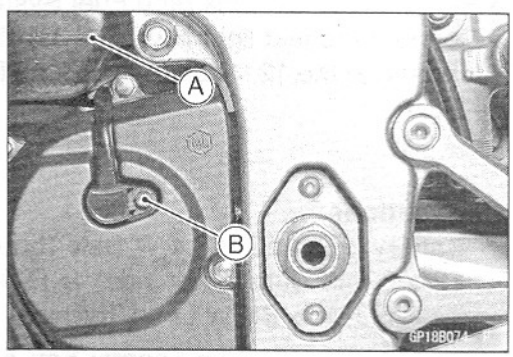
Resistance for ECU [C]	
Temperature	Resistance (kΩ) (Terminal [1] - [3])
20°C (68°F)	$2.46^{+0.115}_{-0.143}$
80°C (176°F)	0.32 ± 0.011
110°C (230°F)	0.1426 ± 0.0041

Resistance for Water Temperature Gauge [D]	
Temperature	Resistance (Ω) (Terminal [2] - Body)
50°C (122°F)	210 ± 40
120°C (248°F)	21.2 ± 1.5

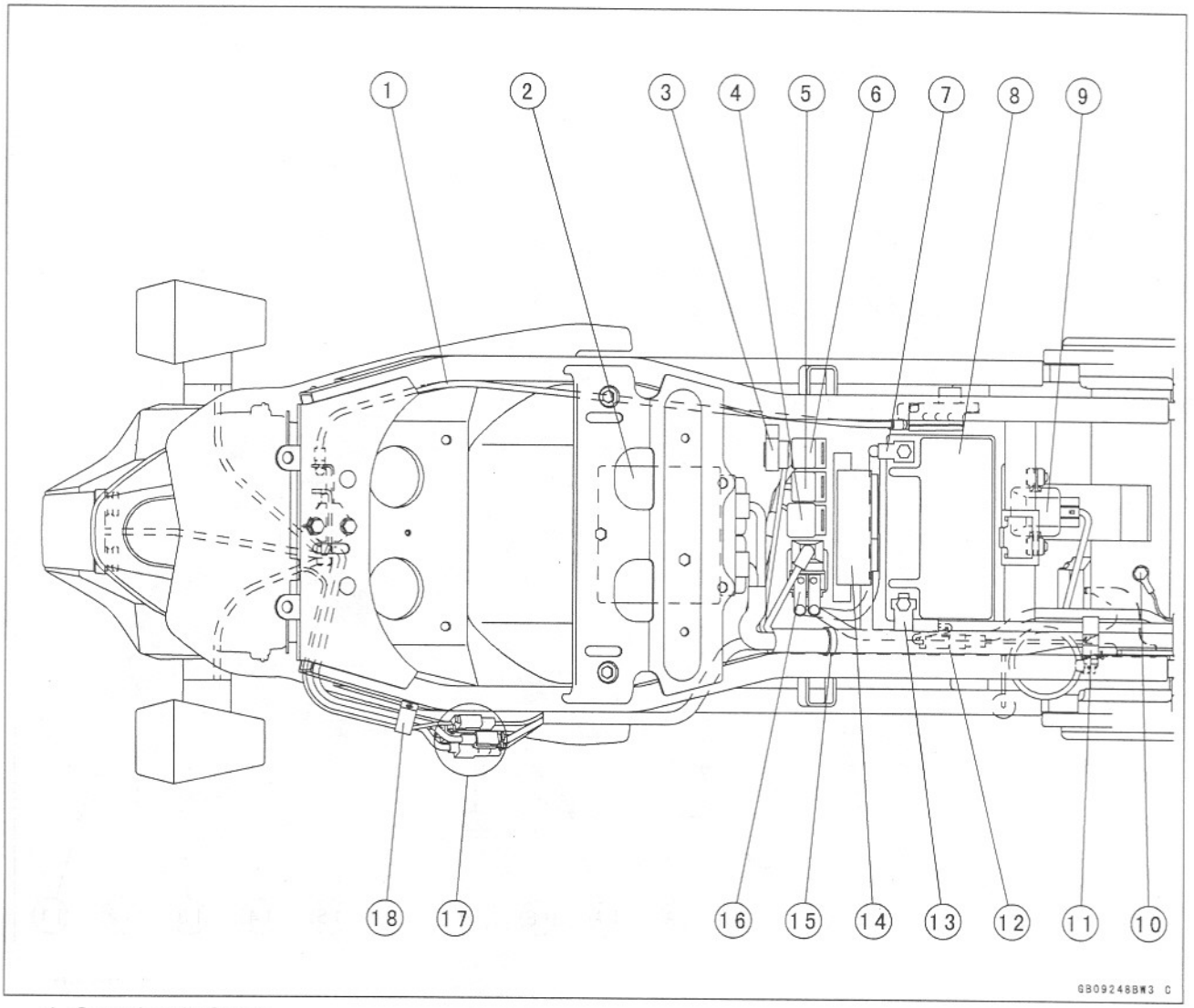
Speed Sensor Removal

- Remove:

Fuel Tank (see Fuel system (DFI) chapter)
Reserve Tank [A]
Speed Sensor Bolt [B]



Cable, Wire, and Hose Routing



1. Seat Lock Cable
2. ECU (Electrical Control Unit)
3. ECU Fuse15A
4. Turn Signal Relay
5. Fuel Pump Relay
6. ECU Main Relay
7. Battery (+) Lead
8. Battery
9. Vehicle-down Sensor
10. Frame Ground
11. Clamp
12. Self-diagnosis Terminal
13. Battery (-) Lead
14. Junction Box
15. Clamp
16. Starter Relay and Main Fuse30A
17. Turn Signal Light Lead Connector(Left and Right), License Light Lead Connector and Tail/Brake Light(LED) Lead Connector
18. Clamp