Self-Diagnosis System

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Specifications

Item	Standard
Digital Fuel Injection System	
Throttle Position Sensor:	
Input Voltage	DC 4.75 ~ 5.25 V
Output Voltage (1)	DC 1.6 ~ 2.2 V at full throttle opening (for reference)
Output Voltage (2)	DC 2.8 ~ 3.4 V at full throttle opening (for reference)
Intake Air Pressure Sensor/Atmospheric Pressure Sensor:	
Input Voltage	DC 4.75 ~ 5.25 V
Output Voltage	DC 1.43 ~ 1.55 V at standard atmospheric pressure (101.32 kPa, 76 cmHg)
Intake Air Temperature Sensor:	
Output Voltage	About DC 2.50 ~ 3.00 V @20°C (68°F)
Resistance	5.4 ~ 6.6 kΩ @0°C (32°F) 0.29 ~ 0.39 kΩ @80°C (176°F)
Water Temperature Sensor:	
Output Voltage	About DC 2.80 ~ 2.97 V @20°C (68°F)
Accelerator Position Sensor:	
Input Voltage	DC 4.75 ~ 5.25 V
Output Voltage (1)	DC 0.50 ~ 0.90 V at ordinary throttle position
Output Voltage (2)	DC 0.35 ~ 1.00 V at ordinary throttle position
Resistance	4.5 ~ 6.5 kΩ
Gear Position Sensor:	
Input Voltage	DC 4.75 ~ 5.25 V
Output Voltage	In the text
Vehicle-down Sensor:	
Input Voltage	DC 4.75 ~ 5.25 V
Output Voltage	With sensor tilted 60 ~ 70° or more right or left: DC 0.65 ~ 1.35 V With sensor arrow mark pointed up: DC 3.55 ~ 4.45 V
Oxygen Sensor:	
Output Voltage (Rich)	DC 0.8 V or more
Output Voltage (Lean)	DC 0.24 V or less
Heater Resistance	13 ~ 17 Ω @20°C (68°F)
Exhaust Butterfly Valve Actuator Sensor:	
Input Voltage	DC 4.75 ~ 5.25 V
Output Voltage	DC 3.46 ~ 3.76 V at pulley original position
Resistance	4 ~ 6 kΩ
Immobilizer Antenna (Equipped Models):	
Resistance	About 3.0 ~ 4.6 Ω
CAN Communication Line Resistance	123 ~ 125 Ω at ECU connector

Specifications

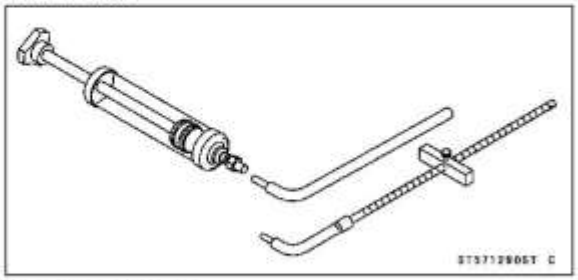
Item	Standard
Purge Valve (Other than US and CA Models):	
Resistance	22 ~ 26 Ω @20°C (68°F)
Quick Shifter Sensor:	
Input Voltage	DC 4.75 ~ 5.25 V
Output Voltage	DC 0.35 ~ 4.65 V
Resistance	209 ~ 231 kΩ
Primary Fuel Injectors:	
Nozzle Type	Fine atomizing type with 12 holes
Resistance	About 11.5 ~ 12.5 Ω @20°C (68°F)
Secondary Fuel Injectors:	
Nozzle Type	Fine atomizing type with 10 holes
Resistance	About 11.5 ~ 12.5 Ω @20°C (68°F)
ETV Actuator:	
Input Voltage	About DC 1 ~ 2 V or –1 ~ –2 V
Exhaust Butterfly Valve Actuator:	
Resistance	5 ~ 200 Ω (for reference)
Knock Sensor:	
Resistance	504 ~ 616 kΩ
Purge Valve (for Supercharger):	
Resistance	22 ~ 26 kΩ @20°C (68°F)
Air Intake Chamber Pressure Sensor:	
Input Voltage	DC 4.75 ~ 5.25 V
Output Voltage	DC 1.43 ~ 1.55 V at standard atmospheric pressure (101.32 kPa, 76 cmHg)
IMU:	
Input Voltage	Battery Voltage
KECS	
Front Fork Stroke Sensor:	
Resistance	10 ~ 30 Ω
Front Fork Solenoid Coil:	
Resistance	2 ~ 6 Ω
Rear Shock Absorber Stroke Sensor:	
Resistance	10 ~ 30 Ω
Rear Shock Absorber Solenoid Coil:	
Resistance	2 ~ 6 Ω
Rear Shock Absorber Spring Preload Actuator:	
Resistance	0.5 ~ 5 Ω

Specifications

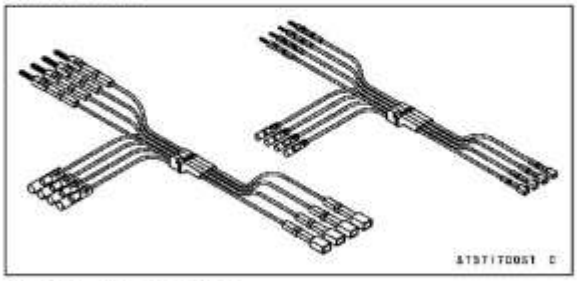
Item	Standard
Rear Shock Absorber Spring Preload Position Sensor:	
Output Voltage	DC 0.20 ~ 4.65 V
Resistance	3.5 ~ 6.5 kΩ
ABS	
ABS Hydraulic Unit:	
Make	BOSCH
Wheel Rotation Sensor Air Gap:	
Front	About 1.3 mm (0.05 in.)
Rear	1.0 ~ 2.0 mm (0.04 ~ 0.08 in.)
CAN Communication Line Resistance	30 ~ 70 Ω
CAN Communication Line/Ground Resistance	4 ~ 30 kΩ

Special Tools

Fork Oil Level Gauge:
57001-1290



Measuring Adapter:
57001-1700



Vacuum Gauge:
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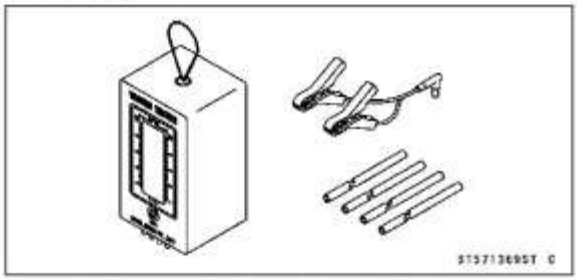
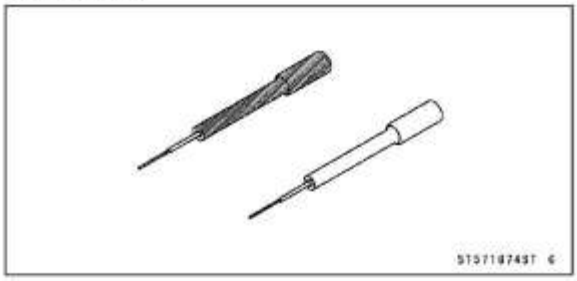
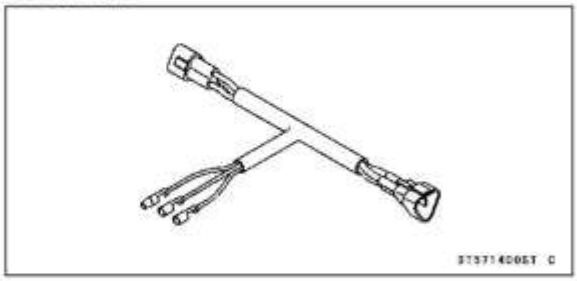


Needle Adapter Set:
57001-1874



Throttle Sensor Setting Adapter #1:
57001-1400



Self-Diagnosis

Self-Diagnosis Outline

The self-diagnosis system is monitoring the following mechanism.

DFI System and Ignition System
KTRC
KEBC
KQS
KLCM
Power Mode
KIBS and ABS
IMU
KECS
Cornering Light
Immobilizer System (Equipped Models)

The self-diagnosis system has two modes and can be switched to another mode by operating the upper button and reset buttons on the left switch housing.

User Mode

The ECU notifies the rider of troubles by lighting or blinking the appropriate indicators when following system parts are faulty, and initiates fail-safe function. In case of serious troubles, ECU stops the injection and ignition operation.

Self-Diagnosis

System	Indicator
DFI and Ignition	
KTRC	
KEBC	
KQS	
KLCM	
Power Mode	
KIBS	
ABS	
IMU	
KECS	
Cornering Light	
Immobilizer	

Dealer Mode

The LCD displays the service code(s) to show the problem(s) which the above system has at the moment of diagnosis.

Self-Diagnosis Procedures

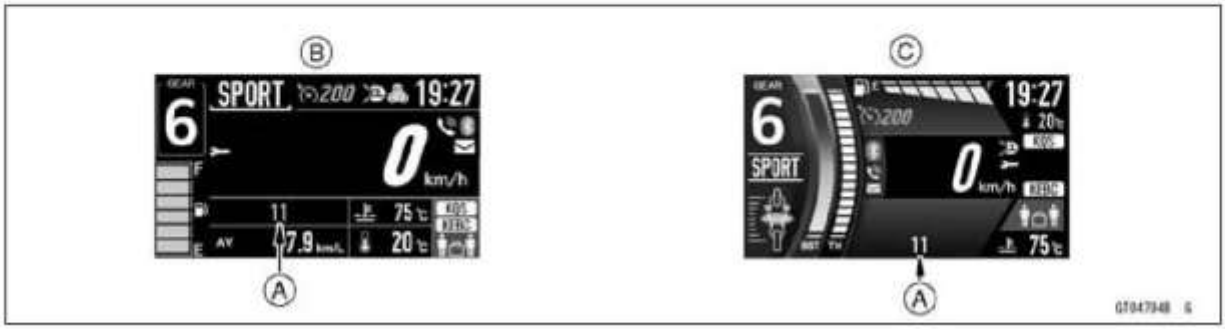
NOTE

○*Use a fully charged battery when conducting self-diagnosis. Otherwise, the indicator light (LED) and indicator do not light or blink.*

- Turn the ignition switch on and start the engine.
- Push the upper mode button [A] to display the odometer.
- Push and hold the upper mode button and reset button [B].

Self-Diagnosis

- The service code [A] is displayed on the LCD.
  Display Layout (Typel1) [B]
  Display Layout (Type 2/3/4)[C]



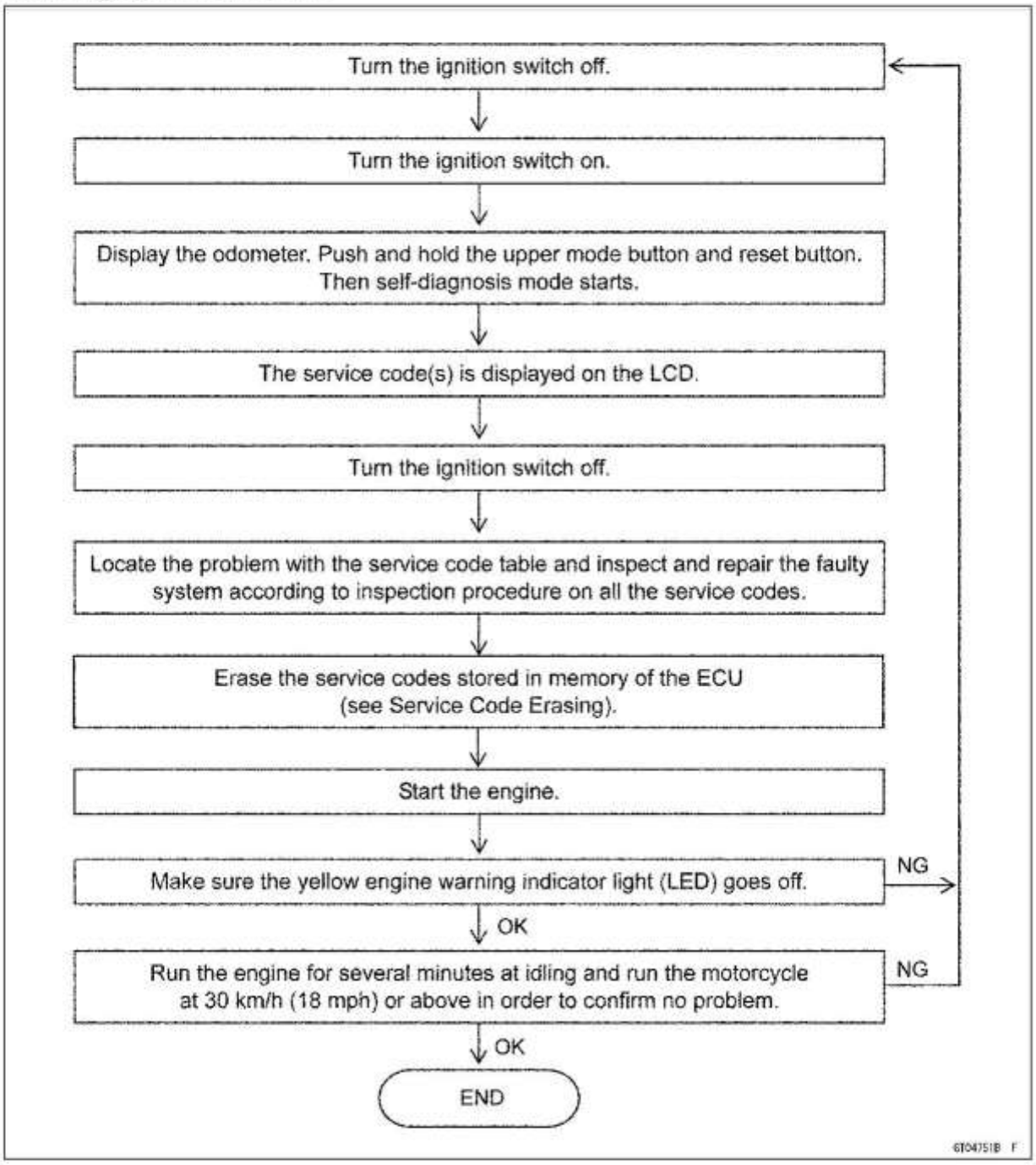
- Any of the following procedures ends self-diagnosis.

○When the service code is displayed on the LCD, push and hold the upper mode button and reset button.

○When the ignition switch is turned off.

Self-Diagnosis

Self-Diagnosis Flow Chart



Self-Diagnosis

Service Code Reading

○The service code(s) is displayed on the LCD by the two or three numbers or letters.

NOTE

○*The service code of the ABS adds "B" at the left side of the code.*

○*The service code of the IMU and cornering light adds "E" at the left side of the code.*

○For DFI system and immobilizer system (equipped models), when there are two or more problems, all the service codes can be stored and the display will begin starting from the lowest number service code in the numerical order.

○For ABS, the service codes display at random.

○Then after completing all codes, the display is repeated until the ignition switch is turned off or push and hold the upper button and reset button.

○For example, if three problems occurred in the order of 46, 11, 31, the service codes are displayed (each two seconds) from the lowest number in the order listed as shown below.

(11 → 31 → 46) → (11 → 31 → 46) → · · · (repeated)

○Pushing the upper button while displaying the service codes, the LCD displays the next service code.

Service Code Erasing

● The service codes stored in memory of the ECU can be erased using Kawasaki Diagnostic System.

NOTE

○*When erasing the stored service code memory, the accelerator position and throttle position initial data of the throttle body are erased. Therefore, you must register the initial data to the ECU. Wait the 10 seconds at the idle speed and the coolant temperature 40°C (104°F) or more to register the initial data of the sensor position to the ECU.*

★If the Kawasaki Diagnostic System is not available, do the following procedures.

1. Turn on the ignition switch and start the engine.
2. Keep the idling speed more than 30 seconds.
3. Run the vehicle more than 5 minutes at a speed of 40 km/h (25 mph) or more.
   Be sure to keep the engine running during procedures 2 and 3 for more than 10 minutes in total.
4. Turn the ignition switch off.
5. Repeat the above procedures 3 times.
6. Start the engine and check that the yellow engine warning indicator light (LED) goes off.

Service Code Table

○The service codes of the immobilizer system appear to system equipped models.

Service Codes	DTC (Diagnostic Trouble Code)	System	Problems
11	P0120	ETV	Throttle position sensor malfunction, wiring open or short, plausibility error
	P0121		
	P0122		
	P0220		
	P0223		

Self-Diagnosis

Service Codes	DTC (Diagnostic Trouble Code)	System	Problems
12	P0105	FI	Intake air pressure sensor malfunction, wiring open or short
	P0107		
13	P0110	FI	Intake air temperature sensor malfunction, wiring open or short
	P0112		
14	P0115	FI	Water temperature sensor malfunction, wiring open or short
	P0117		
15	P2226	FI	Atmospheric pressure sensor malfunction, wiring open or short
	P2228		
18	P2120	ETV	Accelerator position sensor malfunction, wiring open or short, plausibility error
	P2121		
	P2123		
	P2125		
	P2128		
1B	–	ABS	ABS hydraulic unit communication error
21	P0335	FI	Crankshaft sensor malfunction, wiring open or short
23	P0340	FI	Camshaft sensor malfunction, wiring open or short
24	P2158	FI	Rear wheel rotation sensor signal abnormal (sensor or rotor missing, too large clearance, rotor tooth worn or missing, wiring open)
25	P0914	FI	Gear position sensor malfunction, wiring open or short
	P0917		
27	P0500	FI	Front wheel rotation sensor signal abnormal (sensor or rotor missing, too large clearance, rotor tooth worn or missing, wiring open)
31	C0064	FI	Vehicle-down sensor malfunction, wiring open or short
33	P0130	FI	Oxygen sensor inactivation, wiring open or short
	P0132		
34	P048B	FI	Exhaust butterfly valve actuator sensor malfunction, wiring open or short
	P048E		
35	P1507	Immobilizer	Immobilizer amplifier malfunction (Equipped Models)
36	P1508	Immobilizer	Blank key detection (Equipped Models)
39	U0001	FI	ECU communication error
3A	P0443	FI	Purge valve malfunction, wiring open or short (Equipped Models)
3E	P0826	FI	Quick shifter sensor malfunction, wiring open or short
41	P0201	FI	Primary fuel injector #1 malfunction, wiring open or short
42	P0202	FI	Primary fuel injector #2 malfunction, wiring open or short
43	P0203	FI	Primary fuel injector #3 malfunction, wiring open or short
44	P0204	FI	Primary fuel injector #4 malfunction, wiring open or short
46	P0627	FI	Fuel pump relay malfunction, relay is stuck
49	P2119	ETV	Return spring malfunction
4A	P0205	FI	Secondary fuel injector #1 malfunction, wiring open or short
4B	P0206	FI	Secondary fuel injector #2 malfunction, wiring open or short

Self-Diagnosis

Service Codes	DTC (Diagnostic Trouble Code)	System	Problems
4C	P0207	FI	Secondary fuel injector #3 malfunction, wiring open or short
4D	P0208	FI	Secondary fuel injector #4 malfunction, wiring open or short
51	P0351	FI	Stick coil #1 malfunction, wiring open or short
52	P0352	FI	Stick coil #2 malfunction, wiring open or short
53	P0353	FI	Stick coil #3 malfunction, wiring open or short
54	P0354	FI	Stick coil #4 malfunction, wiring open or short
56	P0480	FI	Radiator fan relay malfunction, wiring open or short
58	P2100	ETV	ETV actuator malfunction, wiring open or short, plausibility error
63	P0475	FI	Exhaust butterfly valve actuator malfunction, wiring open or short
64	P0410	FI	Air switching valve malfunction, wiring open or short
67	P0030	FI	Oxygen sensor heater malfunction, wiring open or short
69	P0325	FI	Knock sensor malfunction, wiring open or short
6A	P0045	FI	Purge valve (for supercharger) malfunction, wiring open or short
7B	P2336	FI	Engine knocking warning. Excessive knocking is continuously detected.
7E	P0235	FI	Air intake chamber pressure sensor malfunction, wiring open or short
	P0237		
94	P0170	FI	Fuel supply system trouble
97	P0562	ETV	Battery monitor voltage is low
98	P0607	ETV	ECU/ETV circuit malfunction, wiring open or short
B13	–	ABS	Rear intake solenoid valve trouble (open, temperature abnormal)
B14	–	ABS	Rear outlet solenoid valve trouble (open, temperature abnormal)
B17	–	ABS	Front intake solenoid valve trouble (open, temperature abnormal)
B18	–	ABS	Front outlet solenoid valve trouble (open, temperature abnormal)
B19	–	ABS	ABS solenoid valve relay trouble (wiring shorted or open, stuck relay (ON or OFF) or dropout)
B25	–	ABS	Front, rear wheel rotation difference abnormal (substandard tire, sensor rotor teeth number wrong)
B35	–	ABS	ABS motor relay trouble (wiring shorted or open, stuck relay (ON or OFF))
B42	–	ABS	Front wheel rotation sensor signal abnormal (sensor or rotor missing, too large clearance, rotor tooth worn or missing)
B43	–	ABS	Front wheel rotation sensor wiring (wiring shorted or open, connector bad connection)
B44	–	ABS	Rear wheel rotation sensor signal abnormal (sensor or rotor missing, too large clearance, rotor tooth worn or missing)
B45	–	ABS	Rear wheel rotation sensor wiring (wiring shorted or open, connector bad connection)

Self-Diagnosis

Service Codes	DTC (Diagnostic Trouble Code)	System	Problems
B52	–	ABS	Power supply voltage abnormal (low-voltage)
B53	–	ABS	Power supply voltage abnormal (over-voltage)
B55	–	ABS	ECU trouble (ECU operation abnormal)
B57	–	ABS	CAN communication (transmission)/CAN bus monitor malfunction
B58	–	ABS	CAN communication (reception) monitor malfunction
B62	–	ABS	ABS hydraulic unit - FI ECU communication error
B63	–	ABS	ABS hydraulic unit - IMU communication error
B83	–	ABS	Output fluid pressure sensor (front brake) trouble (voltage abnormal, wiring shorted or open)
B84	–	ABS	Output fluid pressure sensor (front brake) trouble (offset abnormal)
B89	–	ABS	Fluid pressure sensor supply voltage abnormal
B94	–	ABS	IMU malfunction
E8E	–	FI	IMU malfunction
E8F	–	FI	IMU communication error or wiring open
E3D	C2020	KECS	Rear shock absorber solenoid coil malfunction
	C2023		Rear shock absorber spring preload actuator malfunction
	C2030		Rear shock absorber stroke sensor malfunction
	C2033		Rear shock absorber spring preload position sensor malfunction
E8A	C2021	KECS	Front fork solenoid coil malfunction
E8B	C2032	KECS	Front fork stroke sensor malfunction
E8C	C2010	KECS	KECS ECU malfunction (wiring shorted or open, stuck relay)
	C2029		
E8D	C2080	KECS	CAN communication/CAN bus monitor malfunction, wheel rotation sensor signal abnormal or front brake fluid pressure sensor trouble
	C2081		
	C2082		
	C2083		
	C2084		
	C2090		
	C2092		
EEB	C2000	KECS	Power supply voltage abnormal
	C2001		
EC	–	KECS	KECS ECU communication error
EED	C2091	KECS	IMU malfunction
EEF	C2002	KECS	Solenoid coil voltage abnormal (low-voltage)
EFA	–	Cornering Light	Cornering light ECU malfunction
EFB	–	Cornering Light	Right cornering light malfunction
EFC	–	Cornering Light	Left cornering light malfunction

Self-Diagnosis

Service Codes	DTC (Diagnostic Trouble Code)	System	Problems
EFD	–	Cornering Light	Cornering light ECU communication error
EFE	–	Cornering Light	Front wheel rotation sensor, rear wheel rotation sensor, IMU mulfunction and/or IMU communication error
EFF	–	Cornering Light	IMU mulfunction and/or IMU communication error

Some DFI error has an effect on the Power Mode, KTRC, KEBC, KLCM, KQS, KECS, Cruise Control System function.

Notes:

○The ECU may be involved in these problems. If all the parts and circuits checked out good, be sure to check the ECU for ground and power supply. If the ground and power supply are checked good, replace the ECU.

○When no service code is displayed, the electrical parts of the DFI system has no fault, and the mechanical parts of the DFI system and the engine are suspect.

○DTC (Diagnostic Trouble Code) is displayed on the Kawasaki Diagnostic System and the Generic Scan Tool (GST).

Backups

○The ECU takes the following measures to prevent engine damage when the DFI, ignition, ETV, KECS, cornering light or immobilizer system parts have troubles.

Service Codes	Parts or Function	Output Signal Usable Range or Criteria	Backups by ECU
11	Throttle Position Sensor	Output Voltage (full throttle opening) (1) 1.6 ~ 2.2 V (2) 2.8 ~ 3.4 V	If one of the throttle position sensor 1 or 2 fails (the signal is out of usable range, wiring short or open), the ECU uses the other sensor as throttle position input and set Limp Home Mode 1 (*1-1). If both throttle position sensor 1 and 2 fail, the ECU stops current to the throttle actuator and set Limp Home Mode 3 (*1-3). No matter which failure situation is, following three methods are set when failure occurs; 1. The ECU sets the DFI in the D-J method (*2). Only when both throttle position sensor 1 and 2 fail, the ECU sets the DFI in the D-J method. 2. ECU uses the learned middle position value of the throttle position sensor 1 as a throttle sensor output. 3. Air switching valve solenoid will be on. In addition to these backup, all auxiliary controls (Power Mode, KTRC, KEBC, KQS, KLCM, Cruise Control System) will stop.

Self-Diagnosis

Service Codes	Parts or Function	Output Signal Usable Range or Criteria	Backups by ECU
12	Intake Air Pressure Sensor	Intake Air Pressure (Absolute) Pv = 102 ~ 2453 mmHg	If the intake air pressure sensor system fails (the signal is out of the usable range, wiring short or open), three method will be used. 1. The ECU sets the DFI in the α-N method (*3). 2. The ECU sets MP at 760 mmHg. 3. Air switching valve solenoid will be on. In addition to these backup, all auxiliary controls (Power Mode, KTRC, KEBC, KQS, KLCM, Cruise Control System) will stop.
13	Intake Air Temperature Sensor	Intake Air Temperature Ta = – 30 ~ + 140 °C	If the intake air temperature sensor system fails (the signal is out of the usable range, wiring short or open), the ECU sets Ta at 60°C. When this error happens, the ECU sets the purge valve (for supercharger) OFF.
14	Water Temperature Sensor	Water Temperature Tw = – 30 ~ + 120°C	If the water temperature sensor system fails (the signal is out of the usable range, wiring short or open), the ECU sets Tw at 80°C and the radiator fan operates. When this error happens, the ECU sets the purge valve (for supercharger) OFF and stops the cruise control system.
15	Atmospheric Pressure Sensor	Atmospheric Pressure (Absolute) Pa = 150 ~ 2556 mmHg	If the atmospheric pressure sensor system fails (the signal is out of the usable range, wiring short or open), the ECU sets Pa at 760 mmHg (the standard atmospheric pressure). When this error happens, the ECU stops the cruise control system.
18	Accelerator Position Sensor	Output Voltage at Idle (1) 0.50 ~ 0.90 V (2) 0.35 ~ 1.00 V	If accelerator position sensor 1 or 2 fails (the signal is out of usable range, wiring short or open), the ECU sets Limp Home Mode 1 (*1-1). If both accelerator position sensor 1 and 2 fail (the signal is out of usable range, wiring short or open), the ECU sets Limp Home Mode 2 (*1-2). When this error happens, the ECU stops all auxiliary controls (Power Mode, KTRC, KEBC, KQS, KLCM, Cruise Control System).
1B	ABS Hydraulic Unit Communication Line	If a trouble occurred between the ABS hydraulic unit and meter unit, this service code is displayed by the diagnosis of the meter unit.	–

Self-Diagnosis

Service Codes	Parts or Function	Output Signal Usable Range or Criteria	Backups by ECU
21	Crankshaft Sensor	Crankshaft sensor must send 22 signals to the ECU at the 1 cranking.	If the crankshaft sensor fails, the engine stops by itself. When this error happens, the ECU stops all auxiliary controls (Power Mode, KTRC, KEBC, KQS, KLCM, Cruise Control System).
23	Camshaft Position Sensor	Camshaft position sensor must send 1 signal to the ECU at the 2 crankings.	If the camshaft position sensor system fails (the signal is missing, wiring short or open), the ECU continues to ignite cylinders in the same sequence following the last good signal. However, it can not be restarted after the engine was stopped once. When this error happens, the ECU stops all auxiliary controls (Power Mode, KTRC, KEBC, KQS, KLCM, Cruise Control System).
24	Rear Wheel Rotation Sensor	Rear wheel rotation sensor must send 50 signals to the ECU at the 1 rotation of the wheel.	If the rear wheel rotation sensor system fails (the signal is missing, wiring open), the ECU stops the KTRC and regards gear position sensor output as internal gear position value. When this error happens, the ECU stops all auxiliary controls (Power Mode, KTRC, KEBC, KQS, KLCM, Cruise Control System).
25	Gear Position Sensor	Output Voltage 0.2 ~ 4.8 V	If the gear position sensor system fails (no signal, wiring short or open), the ECU set the internal gear position value for the top (6th). When this error happens, the ECU stops all auxiliary controls (Power Mode, KTRC, KEBC, KQS, KLCM, Cruise Control System).
27	Front Wheel Rotation Sensor	Front wheel rotation sensor must send 48 signals to the ECU at the 1 rotation of the wheel.	If the front wheel rotation sensor system fails (the signal is missing, wiring open), the ECU stops the KTRC. When this error happens, the ECU stops all auxiliary controls (Power Mode, KTRC, KEBC, KQS, KLCM).
31	Vehicle-down Sensor	Output Voltage 0.2 ~ 4.8 V	If the vehicle-down sensor system has failures (the output voltage is out of the usable range, wiring short or open), the ECU shuts off the fuel pump relay.
33	Oxygen Sensor	Output Voltage 0.2 ~ 2.5 V	If the oxygen sensor has failures (no signal, wiring short or open) on the terminals, the ECU stops the current to the heater, and it stops the feedback control with the oxygen sensor.
34	Exhaust Butterfly Valve Actuator Sensor	Output Voltage 0.2 ~ 4.8 V	If the exhaust butterfly valve sensor system fails (the output voltage is out of the usable range, wiring short or open), the ECU locks the exhaust butterfly valve at full open position near, and it stops the current to the exhaust butterfly valve actuator. When this error happens, the ECU stops the cruise control system.

Self-Diagnosis

Service Codes	Parts or Function	Output Signal Usable Range or Criteria	Backups by ECU
35	Immobilizer Amplifier (Equipped Models)	–	If the immobilizer system fails (no signal, wiring short or open), the vehicle does not start, and does not run.
36	Ignition Key	The ignition key must use register key.	If the blank key or broken key is used, the vehicle does not start the engine.
39	ECU Communication Line	The ECU sends the data to the meter unit through the CAN communication line.	–
3A	Purge Valve (Equipped Models)	The purge valve controls the flow of the purge air for the canister and shutting the solenoid valve.	If the purge valve fails (the ECU recognize the purge valve ON without the activation signal from the ECU), the ECU sets the duty rate for the purge valve 0% and sets internal control to Actuator Malfunction Backup Mode (*4).
3E	Quick Shifter Sensor	Output Voltage 0.2 ~ 4.8 V	If the quick shifter sensor fails (wiring short or open, signal chattering), the ECU stops KQS.
41	Primary Fuel Injector #1*	The injector must send signals continuously to the ECU.	When this error happens, the ECU stops all auxiliary controls (Power Mode, KTRC, KEBC, KQS, KLCM, Cruise Control System).
42	Primary Fuel Injector #2*	The injector must send signals continuously to the ECU.	When this error happens, the ECU stops all auxiliary controls (Power Mode, KTRC, KEBC, KQS, KLCM, Cruise Control System).
43	Primary Fuel Injector #3*	The injector must send signals continuously to the ECU.	When this error happens, the ECU stops all auxiliary controls (Power Mode, KTRC, KEBC, KQS, KLCM, Cruise Control System).
44	Primary Fuel Injector #4*	The injector must send signals continuously to the ECU.	When this error happens, the ECU stops all auxiliary controls (Power Mode, KTRC, KEBC, KQS, KLCM, Cruise Control System).
46	Fuel Pump Relay	(1) When the relay ON condition, battery monitor voltage 5 V or more. (2) When the relay OFF condition, battery monitor voltage less than 5 V.	When this error happens, the ECU stops all auxiliary controls (Power Mode, KTRC, KEBC, KQS, KLCM).
49	Return Spring	TPS Output Voltage (default position of the throttle valve by learning function) 4 V or more	When this error happens, the ECU stops all auxiliary controls (Power Mode, KTRC, KEBC, KQS, KLCM, Cruise Control System).

Self-Diagnosis

Service Codes	Parts or Function	Output Signal Usable Range or Criteria	Backups by ECU
4A	Secondary Fuel Injector #1*	The injector must send signals continuously to the ECU.	When this error happens, the ECU also stops auxiliary controls (Power Mode, KTRC, KEBC, KLCM, Cruise Control System).
4B	Secondary Fuel Injector #2*	The injector must send signals continuously to the ECU.	When this error happens, the ECU also stops auxiliary controls (Power Mode, KTRC, KEBC, KLCM, Cruise Control System).
4C	Secondary Fuel Injector #3*	The injector must send signals continuously to the ECU.	When this error happens, the ECU also stops auxiliary controls (Power Mode, KTRC, KEBC, KLCM, Cruise Control System).
4D	Secondary Fuel Injector #4*	The injector must send signals continuously to the ECU.	When this error happens, the ECU also stops auxiliary controls (Power Mode, KTRC, KEBC, KLCM, Cruise Control System).
51	Stick Coil #1*	The ECU sends signals (output voltage) continuously to the stick coil.	If the stick coil #1 primary winding has failures (no signal, wiring short or open), the ECU shuts off the injector #1 to stop fuel to the cylinder #1, though the engine keeps running. When this error happens, the ECU stops all auxiliary controls (Power Mode, KTRC, KEBC, KQS, KLCM, Cruise Control System).
52	Stick Coil #2*	The ECU sends signals (output voltage) continuously to the stick coil.	If the stick coil #2 primary winding has failures (no signal, wiring short or open), the ECU shuts off the injector #2 to stop fuel to the cylinder #2, though the engine keeps running. When this error happens, the ECU stops all auxiliary controls (Power Mode, KTRC, KEBC, KQS, KLCM, Cruise Control System).
53	Stick Coil #3*	The ECU sends signals (output voltage) continuously to the stick coil.	If the stick coil #3 primary winding has failures (no signal, wiring short or open), the ECU shuts off the injector #3 to stop fuel to the cylinder #3, though the engine keeps running. When this error happens, the ECU stops all auxiliary controls (Power Mode, KTRC, KEBC, KQS, KLCM, Cruise Control System).
54	Stick Coil #4*	The ECU sends signals (output voltage) continuously to the stick coil.	If the stick coil #4 primary winding has failures (no signal, wiring short or open), the ECU shuts off the injector #4 to stop fuel to the cylinder #4, though the engine keeps running. When this error happens, the ECU stops all auxiliary controls (Power Mode, KTRC, KEBC, KQS, KLCM, Cruise Control System).
56	Radiator Fan Relay	When the radiator fan relay is OFF, the relay is opened.	–

Self-Diagnosis

Service Codes	Parts or Function	Output Signal Usable Range or Criteria	Backups by ECU
58	ETV Actuator	The actuator operates open and close of the throttle valve by the pulse signal from the ECU.	If the ETV actuator fails (the signal is out to the usable range, wiring short or open), the ECU stops the current to the actuator, and sets to the Limp Home Mode (*1). When this error happens, the ECU stops all auxiliary controls (Power Mode, KTRC, KEBC, KQS, KLCM, Cruise Control System).
63	Exhaust Butterfly Valve Actuator	The actuator operates open and close of the exhaust butterfly valve by the pulse signal from the ECU.	If the exhaust butterfly valve actuator fails (the signal is out to the usable range, wiring short or open), the ECU stops the current to the actuator.
64	Air Switching Valve	The air switching valve controls the flow of the secondary air by opening and shutting the solenoid valve.	If the air switching valve fails, the ECU stops the feedback mode of the oxygen sensor.
67	Oxygen Sensor Heater	The oxygen sensor heater raises temperature of the sensor for its earlier activation.	If the oxygen sensor heater fails (wiring short or open), the ECU stops the current to the heater, and it stops the feedback mode of the oxygen sensor.
69	Knock Sensor	The knock sensor send signals (output voltage) continuously to the ECU.	If the knock sensor fails, the ECU sets the knock control ignition timing advance at 0 [CA]. When this error happens, the ECU stops the cruise control system.
6A	Purge Valve (for Supercharger)	The purge valve (for supercharger) controls the flow of the vacuum air for the blow-off valve and shutting the solenoid valve.	If the purge valve (for supercharger) fails (the ECU recognize the purge valve (for supercharger) ON without activation signal from the ECU), the ECU sets the purge valve (for supercharger) OFF and internal control to Actuator Malfunction Backup Mode (*4). When this error happens, the ECU stops the cruise control system.
7B	Engine Knocking Warning	Excessive knocking is continuously detected.	The ECU limits the opening angle of the ETV within a partial range. When this error happens, the ECU stops the cruise control system.
7E	Air Intake Chamber Pressure Sensor	Air Intake Pressure (Absolute) Pv = 102 ~ 2453 mmHg	If the air intake chamber pressure sensor system fails (the signal is out of the usable range, wiring short or open), the ECU sets Pv at 760 mmHg. When this error happens, the ECU stops all auxiliary controls (Power Mode, KTRC, KEBC, KQS, KLCM), and it sets the purge valve (for supercharger) OFF.
94	Fuel Supply System	Fuel correction value exceeds a threshold.	–

Self-Diagnosis

Service Codes	Parts or Function	Output Signal Usable Range or Criteria	Backups by ECU
97	Battery	The ECU monitors the battery voltage when the fuel pump operates. Detection Voltage: less than 6.3 V	If the ECU senses a battery failure (e.g. low battery voltage), the ECU sets to the Limp Home Mode (*1). When this error happens, the ECU stops all auxiliary controls (Power Mode, KTRC, KEBC, KQS, KLCM, Cruise Control System).
98	ETV Control Circuit	–	If the ETV control circuit fails (circuit voltage low or high), the ECU sets to the Limp Home Mode 3 (*1-3). When ETV control circuit failure is "ROM check error" or "ASIC error," the ECU continues self-reset and does not start. When this error happens, the ECU stops all auxiliary controls (Power Mode, KTRC, KEBC, KQS, KLCM, Cruise Control System).
E8E	IMU	The IMU sends the data to the ECU and ABS hydraulic unit through the CAN communication line.	If the IMU fails, the ECU stops the KLCM and the wheelie control. The KTRC performance is deteriorated.
E8F	IMU Communication Line	The IMU sends the data to the ECU and ABS hydraulic unit through the CAN communication line.	If the IMU fails, the ECU stops the KLCM and the wheelie control. The KTRC performance is deteriorated.
E3D	• Rear Shock Absorber Solenoid Coil • Rear Shock Absorber Spring Preload Actuator • Rear Shock Absorber Stroke Sensor • Rear Shock Absorber Spring Preload Position Sensor	• Rear Shock Absorber Solenoid Coil 2 ~ 6 Ω • Rear Shock Absorber Spring Preload Actuator 0.5 ~ 5 Ω • Rear Shock Absorber Stroke Sensor 10 ~ 30 Ω • Rear Shock Absorber Spring Preload Position Sensor 3.5 ~ 6.5 kΩ	If the KECS ECU senses these failures, the ECU stops the control of all shock absorber solenoid coils and rear shock absorber spring preload actuator.
E8A	Front Fork Solenoid Coil	Front Fork Solenoid Coil 2 ~ 6 Ω	If the KECS ECU senses this failure, the ECU stops the control of all shock absorber solenoid coils and rear shock absorber spring preload actuator.
E8B	Front Fork Stroke Sensor	Front Fork Stroke Sensor 10 ~ 30 Ω	If the KECS ECU senses this failure, the ECU stops the control of all shock absorber solenoid coils and rear shock absorber spring preload actuator.
E8C	KECS ECU	–	If the KECS ECU fails, all of the KECS functions are stop.

Self-Diagnosis

Service Codes	Parts or Function	Output Signal Usable Range or Criteria	Backups by ECU
E8D	• CAN Communication/CAN Bus Monitor • Front/Rear Wheel Rotation Sensor • Front Brake Fluid Pressure Sensor	The KECS ECU sends and reception the data to the FI ECU, IMU and meter unit through the CAN communication line.	If the KECS ECU senses these failures, the ECU sets the solenoid coil control maps to high vehicle speed setting and stops rear shock absorber spring preload actuator.
EEB	KECS ECU Power Supply Circuit	• Ignition Voltage 7.6 ~ 20.4 V • Battery Voltage 6.5 ~ 16.9 V	If the KECS ECU senses battery voltage failure, the ECU stops the control of all shock absorber solenoid coils and rear shock absorber spring preload actuator.
EC	KECS ECU Communication Line	The KECS ECU sends the data to the meter through the CAN communication line.	–
EED	IMU	Ignition Voltage 8.5 V or more	If the KECS ECU senses IMU failure, the ECU sets the solenoid coil control maps to high vehicle speed setting and stops rear shock absorber spring preload actuator.
EEF	Solenoid Coil Power Supply Circuit	Solenoid Coil Voltage 10.3 V or more	If the KECS ECU senses this failures, the ECU stops the control of all shock absorber solenoid coils and rear shock absorber spring preload actuator. After voltage recovery, return to normal control.
EFA	Cornering Light ECU	–	When this error happens, the cornering lights go off.
EFB	Right Cornering Light	The cornering light ECU sends the data to the right cornering light.	When this error happens, the cornering lights go off.
EFC	Left Cornering Light	The cornering light ECU sends the data to the left cornering light.	When this error happens, the cornering lights go off.
EFD	Cornering Light ECU Communication Line	The cornering light ECU sends the data to the meter unit through the CAN communication line.	–

Self-Diagnosis

Service Codes	Parts or Function	Output Signal Usable Range or Criteria	Backups by ECU
EFE	•Front/Rear Wheel Rotaiton Sensor •IMU	The ECU sends the data to the cornering light ECU through the CAN communication line.	When this error happens, the cornering lights go off.
EFF	IMU	The ABS hydraulic unit sends the data to the cornering light ECU through the CAN communication line.	When this error happens, the cornering lights go off.

Note:

(*1): Limp Home Mode: when parts related the ETV malfunctioned, backup methods are used in ECU control.

(*1-1) Limp Home Mode 1: Mode to press a rider for repair. Limit engine power to lower than that of when normal.

(*1-2) Limp Home Mode 2: Mode to restrict riding. The ECU does not accept throttle operation signals and considers the throttle is fully closed.

(*1-3) Limp Home Mode 3: Mode to evacuate to a repair shop. The ECU stops controlling the ETV and manages engine output by controlling fuel injection and ignition timing. Engine power is limited to lower than that of when normal.

(*2): D-J Method: When the engine load is light like at idling or low speed, the ECU determines the injection quantity by calculating from the throttle vacuum (intake air pressure sensor output voltage) and engine speed (crankshaft sensor output voltage). This method is called D-J method.

(*3): α-N Method: As the engine speed increases, and the engine load turns middle to heavy, the ECU determines the injection quantity by calculating from the throttle opening (throttle position sensor output voltage) and the engine speed. This method is called α-N method.

(*4): Actuator Malfunction Backup Mode: When certain parts (the parts indicated in the table above) malfunctioned, the ECU set the special failsafe control; fuel cut, fuel quantity correction, ignition cut, ignition timing correction electric throttle valve specification correction.

*: This depends on the number of stopped cylinders.

NOTE

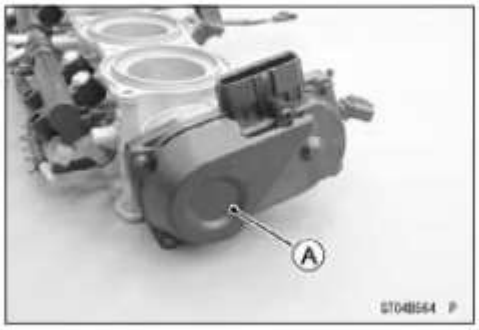
○*When inspecting the ECU connector, refer to the terminal numbers of the ECU connectors in the DFI System section in the Fuel System (DFI) chapter.*

Throttle Position Sensor (Service Code 11) (DTC P0120, P0121, P0122, P0220, P0223)

Throttle Position Sensor Removal

NOTICE

Do not remove the throttle position sensor in the gear case [A] since it has been adjusted and set with precision at the factory. Never drop the throttle body assy especially on a hard surface. Such a shock to the throttle sensor can damage it.

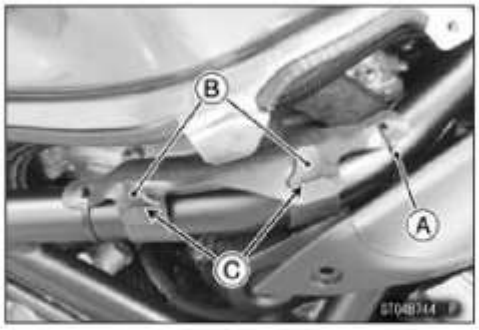


Throttle Position Sensor Input Voltage Inspection

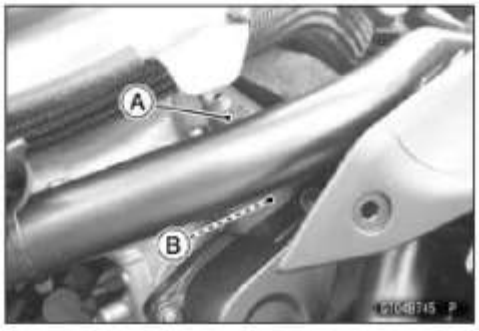
NOTE

○*Be sure the battery is fully charged.*

- Turn the ignition switch off.
- Remove:
  Right Fuel Tank Cover (see Fuel Tank Cover Removal(15-26))



- Cut the band [A].
- Clear the hooks [B] from the slits [C] of the damper.

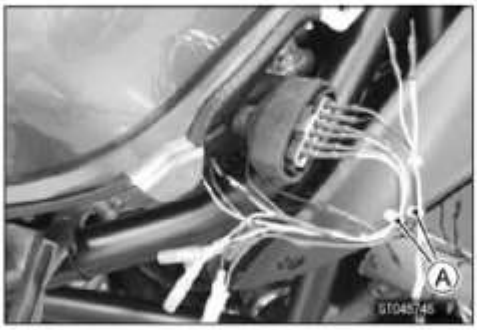


- Slide the dust cover [A].
- Disconnect:
  Throttle Position Sensor Connector [B]

Throttle Position Sensor (Service Code 11) (DTC P0120, P0121, P0122, P0220, P0223)

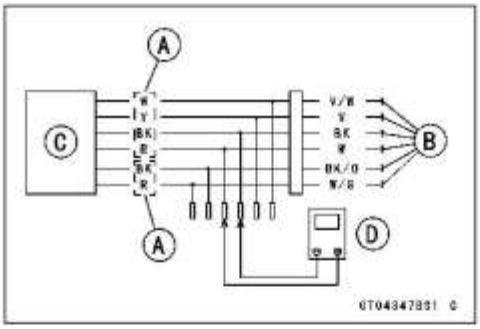
- Connect the measuring adapters [A] to the throttle position sensor connectors as shown.
  Main Harness [B]
  Throttle Position Sensor [C]

Special Tool - Measuring Adapter: 57001-1700



- Connect a digital meter [D] to the measuring adapter leads.

Throttle Position Sensor Input Voltage
Connections to Adapters:
Digital Meter (+) → R (sensor W) lead
Digital Meter (–) → BK (sensor BK) lead



- Measure the input voltage with the engine stopped and with the connector joined.
- Turn the ignition switch on.

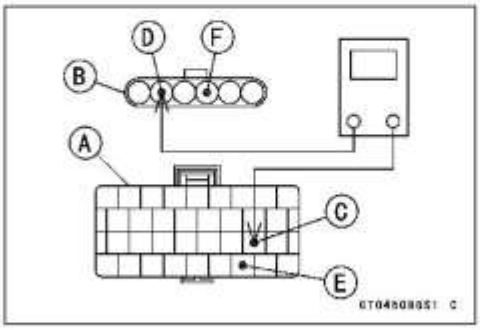
Input Voltage
Standard: DC 4.75 ~ 5.25 V

- Turn the ignition switch off.

★If the reading is within the standard, check the output voltage (see Throttle Position Sensor Output Voltage Inspection(17-29)).

★If the reading is out of the standard, remove the ECU and check the wiring for continuity between main harness connectors.

○Disconnect the ECU and sensor connectors.



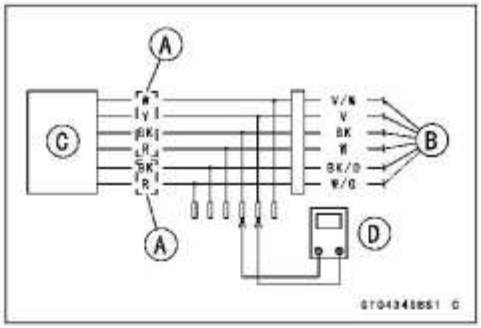
Wiring Continuity Inspection
ECU Connector [A] ⟷
Throttle Position Sensor Connector [B]
ECU Terminal 71 [C] ⟷ Sensor Terminal [D]
ECU Terminal 80 [E] ⟷ Sensor Terminal [F]

★If the wiring is good, check the ECU for its ground and power supply (see ECU Power Supply Inspection(3-40)).

★If the ground and power supply are good, replace the ECU.

Throttle Position Sensor (Service Code 11) (DTC P0120, P0121, P0122, P0220, P0223)

Throttle Position Sensor Output Voltage Inspection



- Measure the output voltage at the throttle position sensor in the same way as input voltage inspection, note the following.

○Disconnect the throttle position sensor connector and connect the measuring adapters [A] between these connectors.
Main Harness [B]
Throttle Position Sensor [C]
Digital Meter [D]

Special Tool - Measuring Adapter: 57001-1700

Throttle Position Sensor Output Voltage
Connections to Adapters:
(1) Digital Meter (+) → Y (sensor V) lead
Digital Meter (–) → BK (sensor BK) lead
(2) Digital Meter (+) → W (sensor V/W) lead
Digital Meter (–) → BK (sensor BK) lead

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

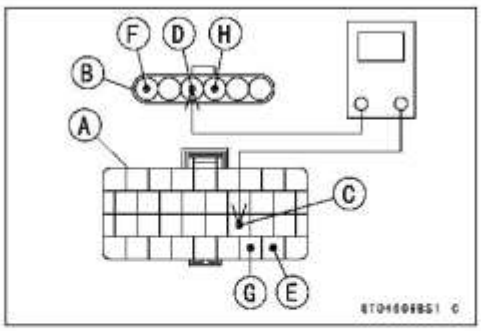
Output Voltage
Standard: (1) DC 1.6 ~ 2.2 V at full throttle opening (for reference)
(2) DC 2.8 ~ 3.4 V at full throttle opening (for reference)

NOTE

○*Open the throttle, confirm the output voltage will be raise.*
○*When the throttle is ordinary position, the standard value is not determined because there is some uncertain elements, e.g. water temperature, throttle valve initial opening, etc.*

- Turn the ignition switch off.

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



★If the reading is within the standard, remove the ECU and check the wiring for continuity between main harness connectors.

○Disconnect the ECU and sensor connectors.

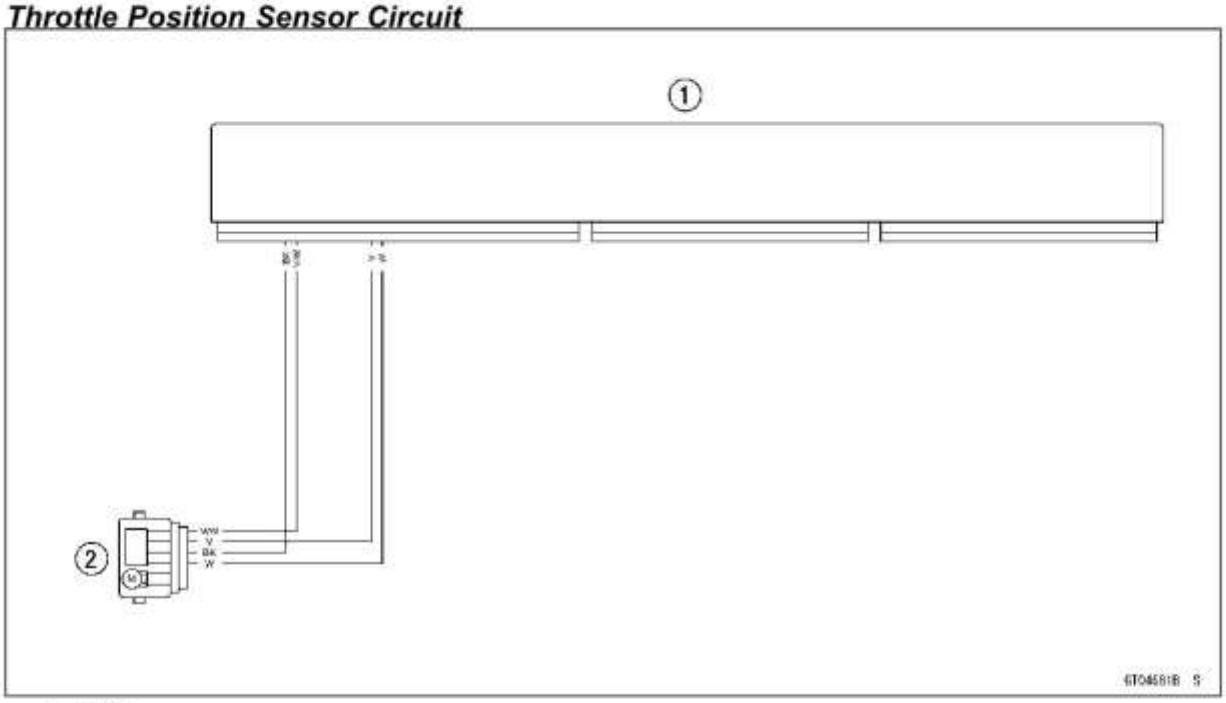
Wiring Continuity Inspection
ECU Connector [A] ⟷
Throttle Position Sensor Connector [B]
ECU Terminal 72 [C] ⟷ Sensor Terminal [D]
ECU Terminal 79 [E] ⟷ Sensor Terminal [F]
ECU Terminal 80 [G] ⟷ Sensor Terminal [H]

★If the wiring is good, check the ECU for its ground and power supply (see ECU Power Supply Inspection(3-40)).

★If the ground and power supply are good, replace the ECU.

Throttle Position Sensor (Service Code 11) (DTC P0120, P0121, P0122, P0220, P0223)

Throttle Position Sensor Circuit



1. ECU
2. Throttle Position Sensor/ETV Actuator

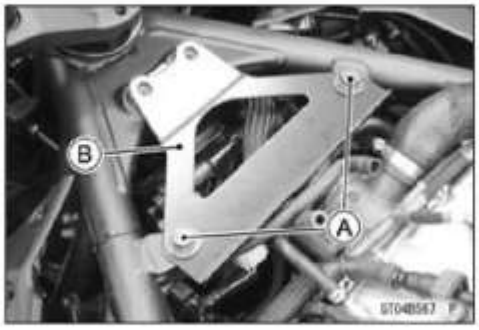
Intake Air Pressure Sensor (Service Code 12) (DTC P0105, P0107)

Intake Air Pressure Sensor Removal

NOTICE

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

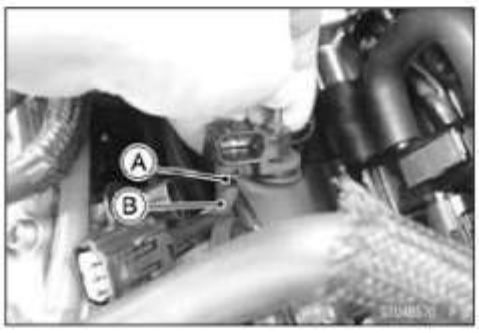
- Remove:
  Fuel Tank (see Fuel Tank Removal(3-75))
  Fuel Tank Bracket Bolts [A]
  Fuel Tank Bracket [B]



- For other than US and CA models, remove the canister bracket (see Evaporative Emission Control System Inspection (Other than US and CA Models)(2-25)).
- For US and CA models, disconnect the air switching valve hose [A].

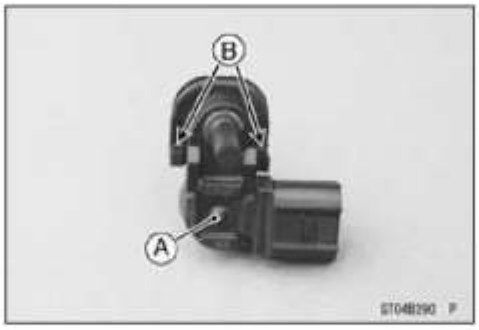
- Disconnect:
  Intake Air Pressure Sensor Connector [A]
- Remove the intake air pressure sensor from the bracket.

- Slide the clamp [A].
- Disconnect the vacuum hose [B].
- Remove the rubber damper from the intake air pressure sensor.



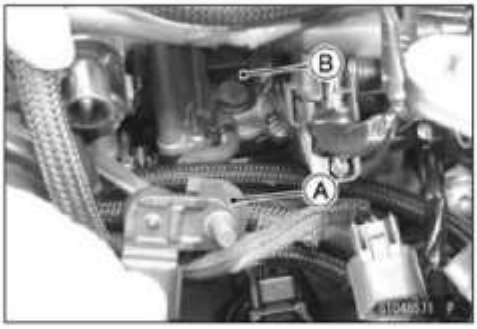
Intake Air Pressure Sensor Installation

- Installation is the reverse of removal.
- Position the intake air pressure sensor [A] between the projections [B] on the rubber damper.



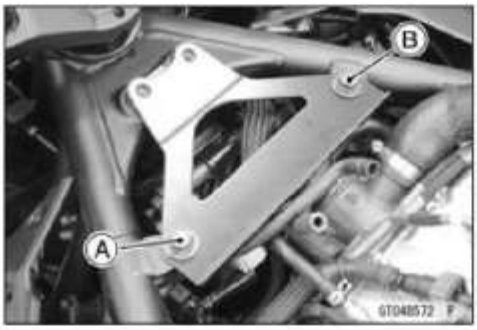
Intake Air Pressure Sensor (Service Code 12) (DTC P0105, P0107)

- Install the rubber damper [A] on the bracket [B].



- Tighten the left fuel tank bracket bolt [A] first, and then tighten the right fuel tank bracket bolt [B].

Torque - Fuel Tank Bracket Bolts: 25 N·m (2.5 kgf·m, 18 ft·lb)



Intake Air Pressure Sensor Input Voltage Inspection

NOTE

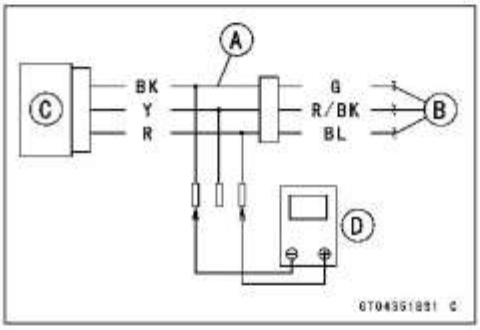
○*Be sure the battery is fully charged.*

- Turn the ignition switch off.
- Remove the intake air pressure sensor from the bracket (see Intake Air Pressure Sensor Removal(17-31)).
- Connect the measuring adapter [A] to the intake air pressure sensor connectors as shown.
  Subharness [B]
  Intake Air Pressure Sensor [C]

Special Tool - Measuring Adapter: 57001-1700

- Connect a digital meter [D] to the measuring adapter leads.

Intake Air Pressure Sensor Input Voltage
Connections to Adapter:
Digital Meter (+) → R (sensor BL) lead
Digital Meter (–) → BK (sensor G) lead



- Measure the input voltage with the engine stopped and with the connector joined.
- Turn the ignition switch on.

Input Voltage
Standard: DC 4.75 ~ 5.25 V

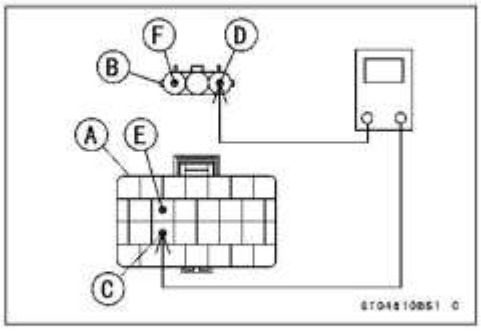
- Turn the ignition switch off.

★If the reading is within the standard, check the output voltage (see Intake Air Pressure Sensor Output Voltage Inspection(17-33)).

Intake Air Pressure Sensor (Service Code 12) (DTC P0105, P0107)

★If the reading is out of the standard, remove the ECU and check the wiring for continuity between harness connectors.

○Disconnect the ECU and sensor connectors.



Wiring Continuity Inspection
ECU Connector [A] ←→
Intake Air Pressure Sensor Connector [B]
ECU Terminal 44 [C] ←→ Sensor Terminal [D]
ECU Terminal 38 [E] ←→ Sensor Terminal [F]

★If the wiring is good, check the ECU for its ground and power supply (see ECU Power Supply Inspection(3-40)).

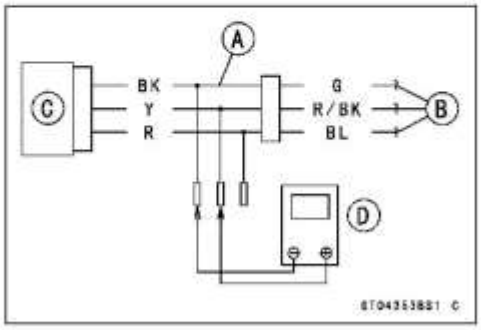
★If the ground and power supply are good, replace the ECU.

Intake Air Pressure Sensor Output Voltage Inspection

● Measure the output voltage at the intake air pressure sensor in the same way as input voltage inspection, note the following.

○Connect the measuring adapter [A] to the intake air pressure sensor connectors as shown.
Subharness [B]
Intake Air Pressure Sensor [C]
Digital Meter [D]

Special Tool - Measuring Adapter: 57001-1700



Intake Air Pressure Sensor Output Voltage
Connections to Adapter:
Digital Meter (+) → Y (sensor R/BK) lead
Digital Meter (–) → BK (sensor G) lead

● Measure the output voltage with the engine stopped and with the connector joined.

● Turn the ignition switch on.

Output Voltage
Usable Range: **DC 1.43 ~ 1.55 V at standard atmospheric pressure (101.32 kPa, 76 cmHg)**

NOTE

○*The output voltage changes according to local atmospheric pressure.*

● Turn the ignition switch off.

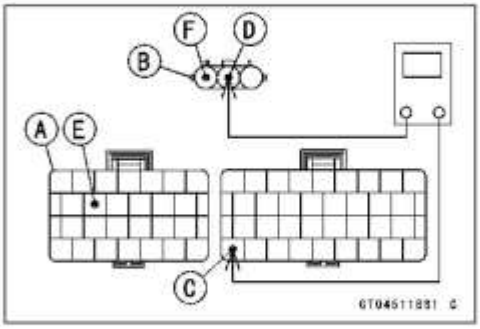
★If the reading is out of the usable range, replace the sensor.

Intake Air Pressure Sensor (Service Code 12) (DTC P0105, P0107)

★If the reading is within the usable range, remove the ECU and check the wiring for continuity between harness connectors.

○Disconnect the ECU and sensor connectors.

Wiring Continuity Inspection
ECU Connector [A] ⟷
Intake Air Pressure Sensor Connector [B]
ECU Terminal 86 [C] ⟷ Sensor Terminal [D]
ECU Terminal 38 [E] ⟷ Sensor Terminal [F]

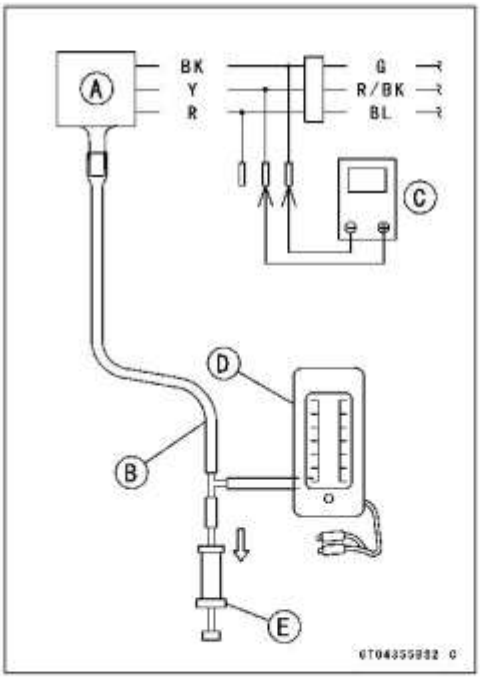


★If the wiring is good, check the sensor for various vacuum.

- Remove the intake air pressure sensor [A] and disconnect the vacuum hose from the sensor.
- Connect an auxiliary hose [B] to the intake air pressure sensor.
- Temporarily install the intake air pressure sensor to the motorcycle.

○Connect a digital meter [C], vacuum gauge [D], the fork oil level gauge [E] and the measuring adapter to the intake air pressure sensor.

Special Tools - Fork Oil Level Gauge: 57001-1290
Vacuum Gauge: 57001-1369
Measuring Adapter: 57001-1700



Intake Air Pressure Sensor Output Voltage
Connections to Adapter:
Digital Meter (+) → Y (sensor R/BK) lead
Digital Meter (–) → BK (sensor G) lead

○Turn the ignition switch on.

○Measure the intake air pressure sensor output voltage from various vacuum readings, while pulling the handle of the fork oil level gauge.

○Check the intake air pressure sensor output voltage, using the following formula and chart.

Suppose:
Pg: Vacuum Pressure (Gauge) of Throttle Body
Pl: Local Atmospheric Pressure (Absolute) measured by a barometer
Pv: Vacuum Pressure (Absolute) of Throttle Body
Vv: Sensor Output Voltage (V)

Intake Air Pressure Sensor (Service Code 12) (DTC P0105, P0107)

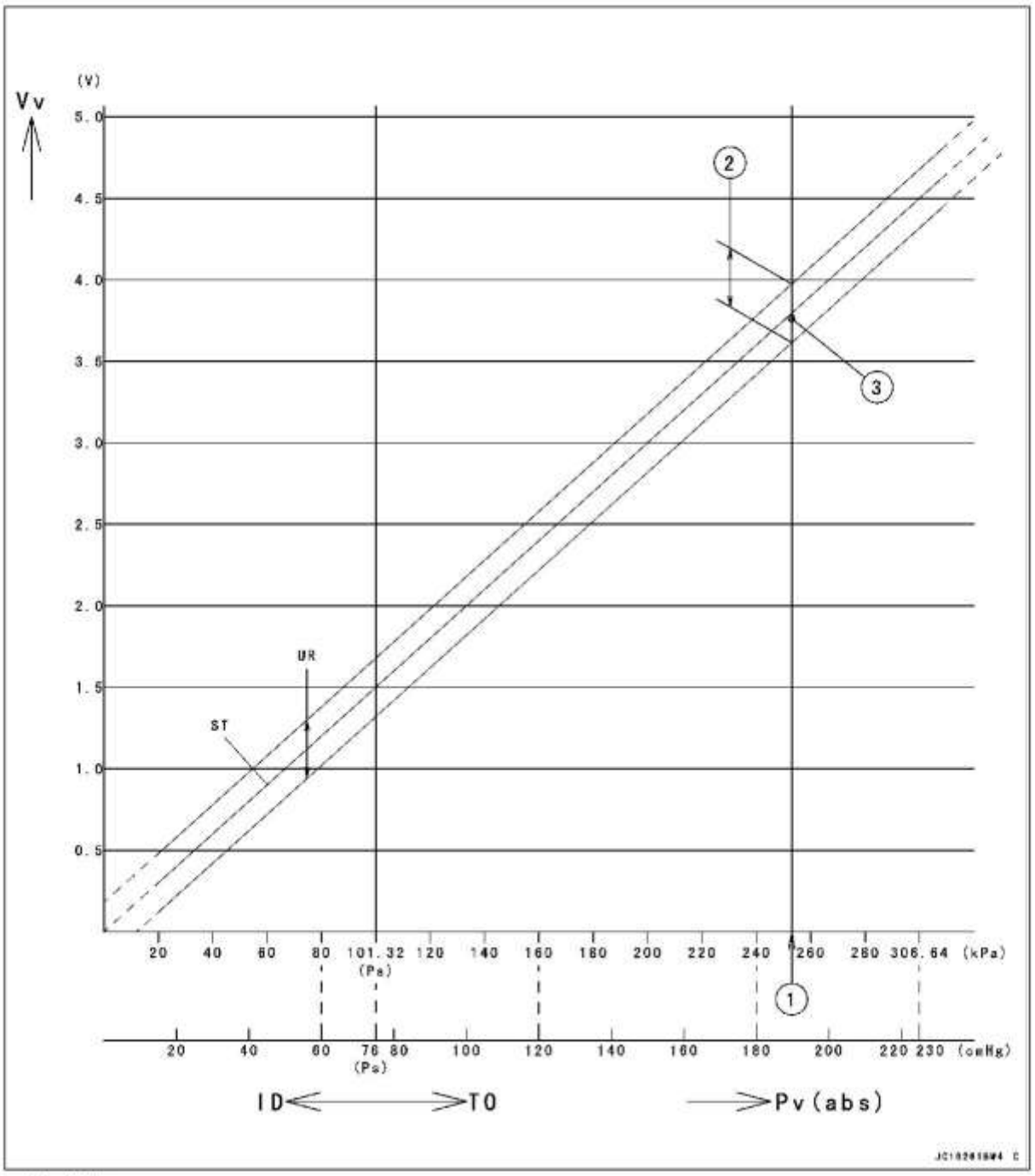
then
Pv = Pl + Pg

For example, suppose the following data is obtained:
Pg = 151.95 kPa (Vacuum Gauge Reading)
Pl = 101.32 kPa (Barometer Reading)
Vv = 3.8 V (Digital Meter Reading)

then
Pv = 101.32 + 151.95 = 253.27 kPa (Absolute)

Plot this Pv (253.27 kPa) at a point [1] on the chart and draw a vertical line through the point. Then, you can get the usable range [2] of the sensor output voltage.
Usable range = 3.6 ~ 4.0 V
Plot Vv (3.8 V) on the vertical line. → Point [3].
Results: In the chart, Vv is within the usable range and the sensor is normal.
★If the reading is out of the usable range, replace the sensor.
★If the reading is within the usable range, check the ECU for its ground and power supply (see ECU Power Supply Inspection(3-40)).
★If the ground and power supply are good, replace the ECU.

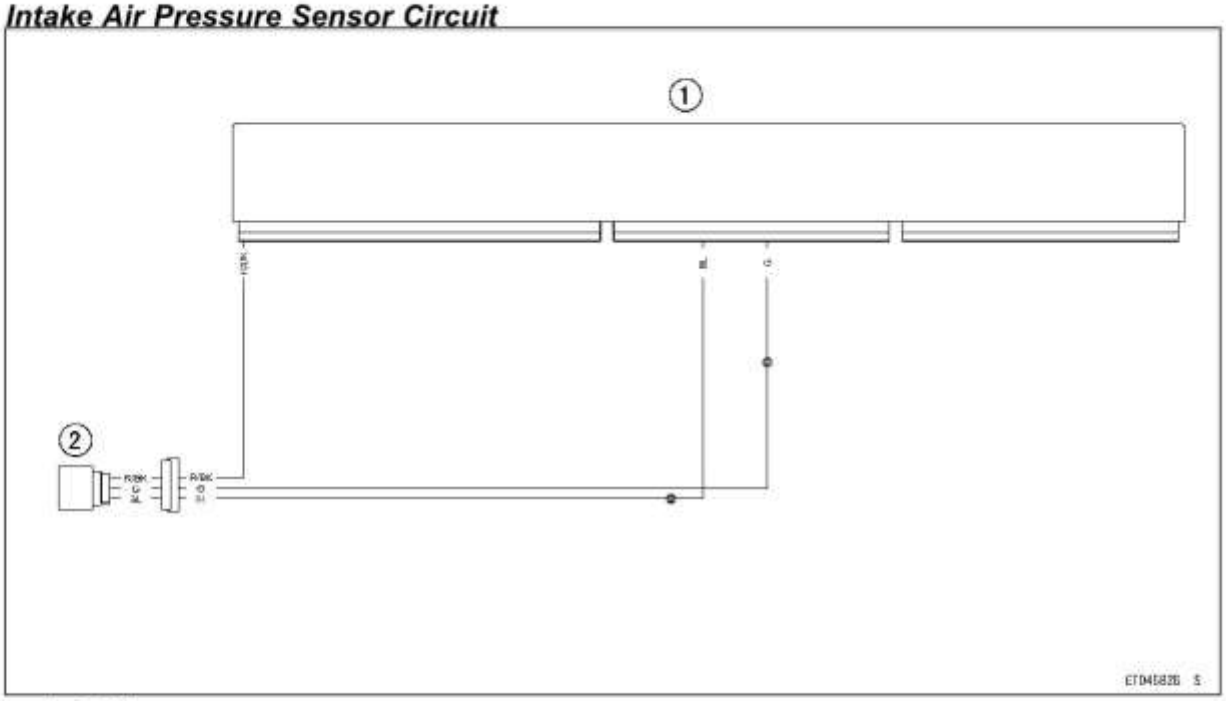
Intake Air Pressure Sensor (Service Code 12) (DTC P0105, P0107)



ID: Idling
Ps: Standard Atmospheric Pressure (Absolute)
Pv: Throttle Vacuum Pressure (Absolute)
ST: Standard of Sensor Output Voltage (V)
TO: Throttle Full Open
UR: Usable Range of Sensor Output Voltage (V)
Vv: Intake Air Pressure Sensor Output Voltage (V) (Digital Meter Reading)

Intake Air Pressure Sensor (Service Code 12) (DTC P0105, P0107)

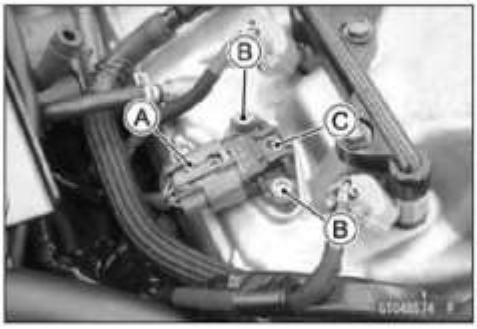
Intake Air Pressure Sensor Circuit



1. ECU
2. Intake Air Pressure Sensor

Intake Air Temperature Sensor (Service Code 13) (DTC P0110, P0112)

Air Intake Chamber Pressure/Temperature Sensor Removal

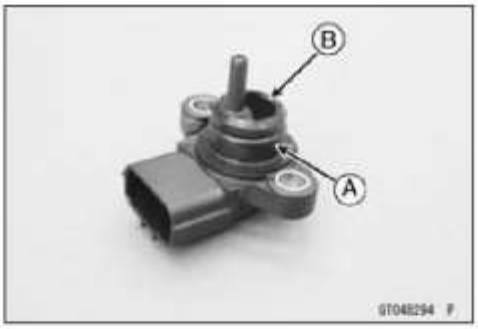


NOTICE

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

- Remove the fuel tank (see Fuel Tank Removal(3-75)).
- Disconnect the air intake chamber pressure/temperature sensor connector [A].
- Remove:
  Air Intake Chamber Pressure/Temperature Sensor Bolts [B]
  Air Intake Chamber Pressure/Temperature Sensor [C]

Air Intake Chamber Pressure/Temperature Sensor Installation



- Be sure to install the O-ring [A].
- Apply engine oil to the O-ring.

NOTE

○*Do not apply engine oil into the hole [B] that senses the pressure.*

- Install the air intake chamber pressure/temperature sensor to the air intake chamber.

○When installing the sensor which is fastened by bolts, tighten the bolts after placing the sensor on the bottom surface completely.

- Tighten:

Torque - Air Intake Chamber Pressure/Temperature Sensor Bolts: 5.0 N·m (0.51 kgf·m, 44 in·lb)

- Connect the air intake chamber pressure/temperature sensor connector.
- Install the fuel tank (see Fuel Tank Installation(3-77)).

Intake Air Temperature Sensor (Service Code 13) (DTC P0110, P0112)

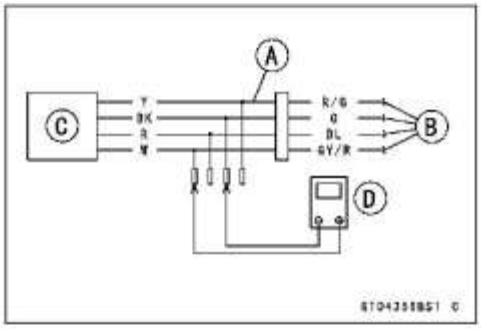
Intake Air Temperature Sensor Output Voltage Inspection

NOTE

○*Be sure the battery is fully charged.*

- Turn the ignition switch off.
- Remove the fuel tank (see Fuel Tank Removal(3-75)).
- Disconnect the air intake chamber pressure/temperature sensor connector and connect the measuring adapter [A] between these connectors as shown.
  Main Harness [B]
  Air Intake Chamber Pressure/Temperature Sensor [C]

Special Tool - Measuring Adapter: 57001-1700



- Connect a digital meter [D] to the measuring adapter leads.

Intake Air Temperature Sensor Output Voltage
Connections to Adapter:
Digital Meter (+) → W (sensor GY/R) lead
Digital Meter (–) → BK (sensor G) lead

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

Output Voltage
Standard: About DC 2.50 ~ 3.00 V @20°C (68°F)

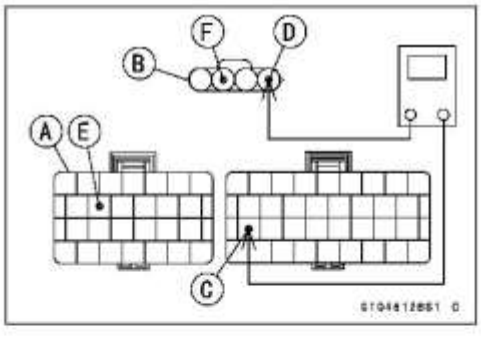
NOTE

○*The output voltage changes according to the intake air temperature.*

- Turn the ignition switch off.

★If the reading is within the standard, check the ECU for its ground and power supply (see ECU Power Supply Inspection(3-40)).

★If the ground and power supply are good, replace the ECU.



★If the reading is out of the standard, remove the ECU and check the wiring for continuity between main harness connectors.

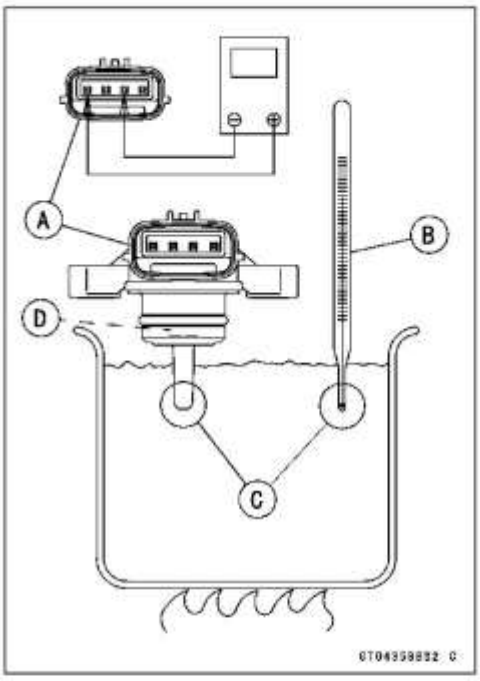
○Disconnect the ECU and sensor connectors.

Wiring Continuity Inspection
ECU Connector [A] ←→
Air Intake Chamber Pressure/Temperature Sensor Connector [B]
ECU Terminal 77 [C] ←→ Sensor Terminal [D]
ECU Terminal 38 [E] ←→ Sensor Terminal [F]

★If the wiring is good, check the intake air temperature sensor resistance (see Intake Air Temperature Sensor Resistance Inspection(17-40)).

Intake Air Temperature Sensor (Service Code 13) (DTC P0110, P0112)

Intake Air Temperature Sensor Resistance Inspection



- Remove the air intake chamber pressure/temperature sensor (see Air Intake Chamber Pressure/Temperature Sensor Removal(17-38)).
- Suspend the sensor [A] in a container of water so that the heat-sensitive portion is submerged.
- Suspend a thermometer [B] with the heat-sensitive portion [C] located in almost the same depth with the sensor.

NOTE

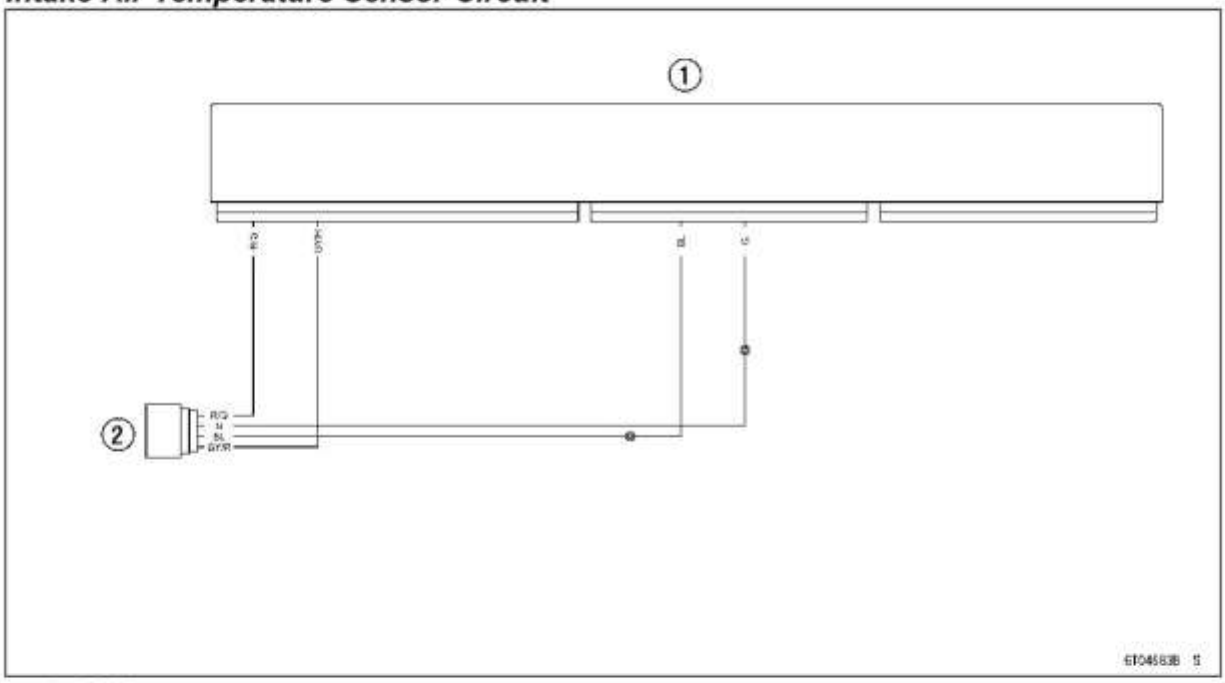
○Do not submerge the hole [D] that senses the pressure.
○The sensor and thermometer must not touch the container side or bottom.

- Place the container over a source of heat and gradually raise the temperature of the water while stirring the water gently for even temperature.
- Using a digital meter, measure the internal resistance of the sensor across the terminals at the temperatures shown in the following.

Intake Air Temperature Sensor Resistance
Standard: 5.4 ~ 6.6 kΩ @0°C (32°F)
0.29 ~ 0.39 kΩ @80°C (176°F)

★If the reading is out of the standard, replace the sensor.
★If the reading is within the standard, but the problem still exists, replace the ECU.

Intake Air Temperature Sensor Circuit



1. ECU
2. Air Intake Chamber Pressure/Temperature Sensor

Water Temperature Sensor (Service Code 14) (DTC P0115, P0117)

Water Temperature Sensor Removal/Installation

NOTICE

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

- Drain the coolant (see Coolant Change(2-28)).
- Remove:
  Throttle Body Assy (see Throttle Body Assy Removal(3-59))
- Remove:
  Water Temperature Sensor [A] with O-ring
- Replace the O-ring with a new one.
- Tighten:

Torque - Water Temperature Sensor: 12 N·m (1.2 kgf·m, 106 in·lb)

- Fill the engine with coolant and bleed the air from the cooling system (see Coolant Change(2-28)).

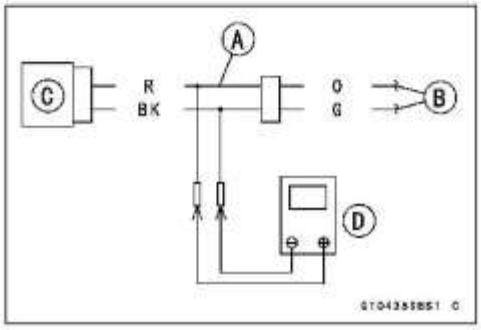
Water Temperature Sensor Output Voltage Inspection

NOTE

○*Be sure the battery is fully charged.*

- Turn the ignition switch off.
- Remove:
  Throttle Body Assy (see Throttle Body Assy Removal(3-59))
- Connect the measuring adapter [A] to the water temperature sensor connectors as shown.
  Subharness [B]
  Water Temperature Sensor [C]

Special Tool - Measuring Adapter: 57001-1700



- Connect a digital meter [D] to the measuring adapter leads.

Water Temperature Sensor Output Voltage
Connections to Adapter:
Digital Meter (+) → R (sensor O) lead
Digital Meter (–) → BK (sensor G) lead

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

Output Voltage
Standard: About DC 2.80 ~ 2.97 V @20°C (68°F)

NOTE

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

- Turn the ignition switch off.

★If the reading is within the standard, check the ECU for its ground and power supply (see ECU Power Supply Inspection(3-40)).

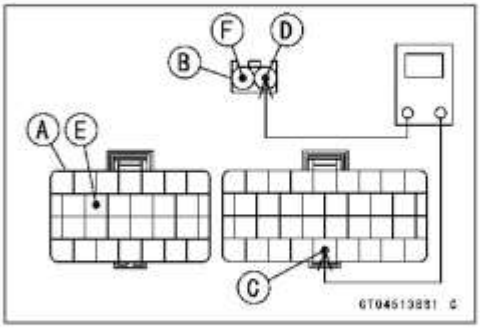
★If the ground and power supply are good, replace the ECU.

Water Temperature Sensor (Service Code 14) (DTC P0115, P0117)

★If the reading is out of the standard, remove the ECU and check the wiring for continuity between harness connectors.

○Disconnect the ECU and sensor connectors.

Wiring Continuity Inspection
ECU Connector [A] ⟷
Water Temperature Sensor Connector [B]
ECU Terminal 82 [C] ⟷ Sensor Terminal [D]
ECU Terminal 38 [E] ⟷ Sensor Terminal [F]



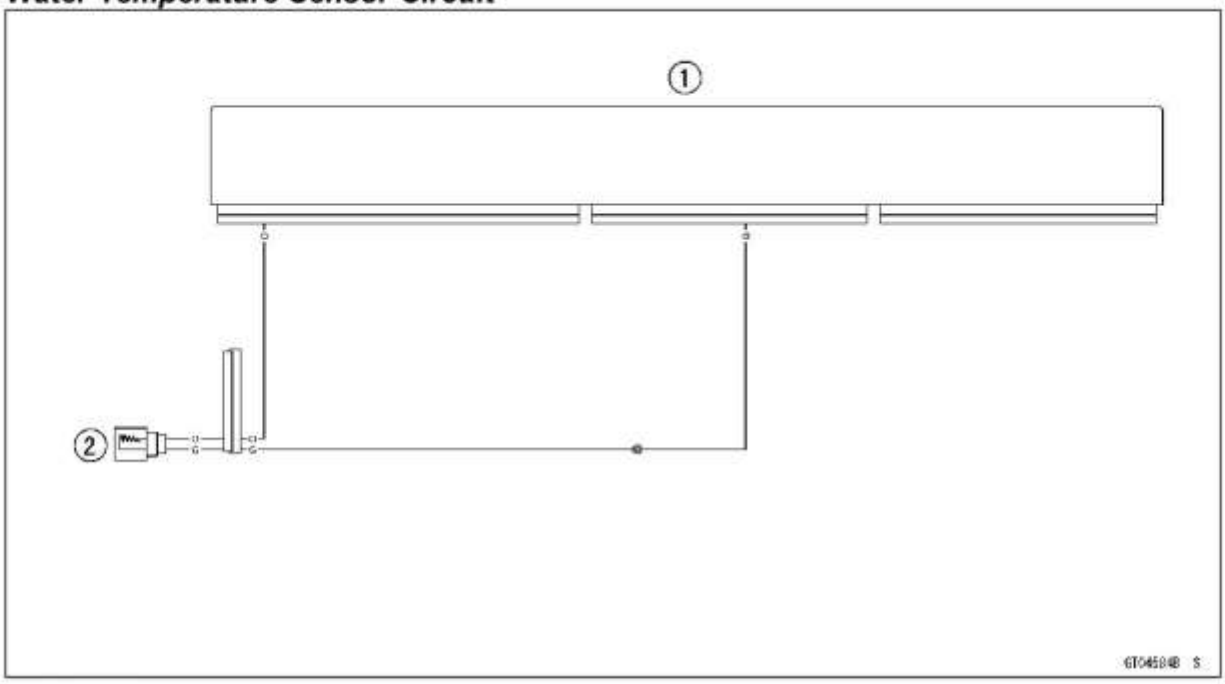
★If the wiring is good, check the water temperature sensor resistance (see Water Temperature Sensor Resistance Inspection(17-42)).

Water Temperature Sensor Resistance Inspection

● Refer to the Water Temperature Sensor Inspection (see Water Temperature Sensor Inspection(16-119)).

★If the reading is within the standard, but the problem still exists, replace the ECU.

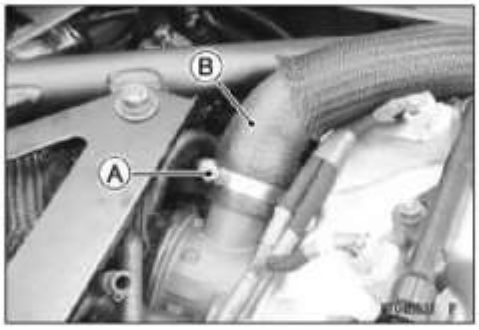
Water Temperature Sensor Circuit



1. ECU
2. Water Temperature Sensor

Atmospheric Pressure Sensor (Service Code 15) (DTC P2226, P2228)

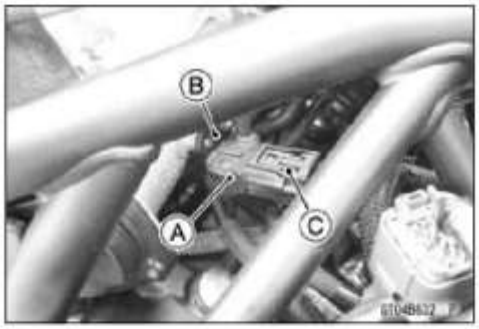
Atmospheric Pressure Sensor Removal



NOTICE

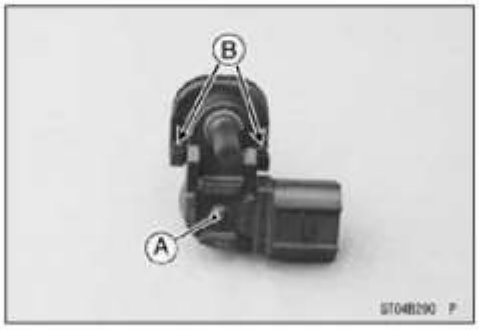
Never drop the atmospheric pressure sensor especially on a hard surface. Such a shock to the sensor can damage it.

- Remove:
  Fuel Tank (see Fuel Tank Removal(3-75))
  Right Upper Inner Fairing (see Upper Inner Fairing Removal(15-18))
- Loosen the clamp screw [A] and disconnect the blow-off valve hose [B].

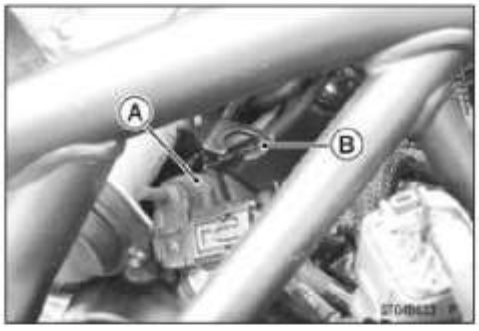


- Remove the atmospheric pressure sensor [A] from the bracket [B].
- Disconnect:
  Atmospheric Pressure Sensor Connector [C]
- Remove the rubber damper from the atmospheric pressure sensor.

Atmospheric Pressure Sensor Installation



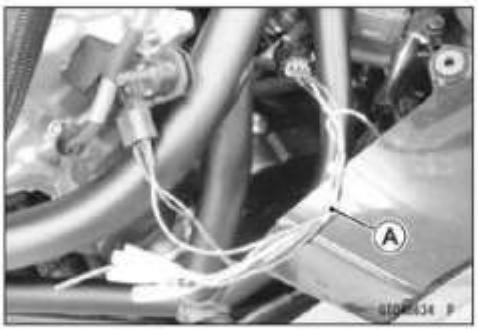
- Position the atmospheric pressure sensor [A] between the projections [B] on the rubber damper.



- Connect the atmospheric pressure sensor connector.
- Install the rubber damper [A] on the bracket [B].
- Install the removed parts.

Atmospheric Pressure Sensor (Service Code 15) (DTC P2226, P2228)

Atmospheric Pressure Sensor Input Voltage Inspection



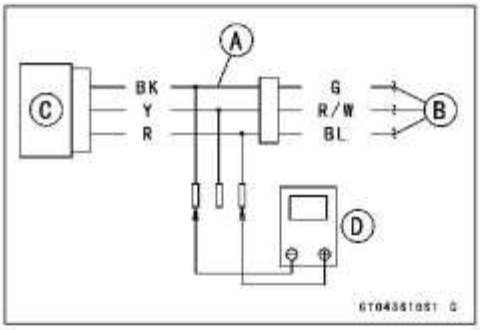
NOTE

○*Be sure the battery is fully charged.*

- Turn the ignition switch off.
- Remove the atmospheric pressure sensor from the bracket (see Atmospheric Pressure Sensor Removal(17-43)).
- Disconnect the atmospheric pressure sensor connector and connect the measuring adapter [A] between these connectors.
  Subharness [B]
  Atmospheric Pressure Sensor [C]

Special Tool - Measuring Adapter: 57001-1700

- Connect a digital meter [D] to the measuring adapter leads.



Atmospheric Pressure Sensor Input Voltage
Connections to Adapter:
Digital Meter (+) → R (sensor BL) lead
Digital Meter (–) → BK (sensor G) lead

- Measure the input voltage with the engine stopped and with the connector joined.
- Turn the ignition switch on.

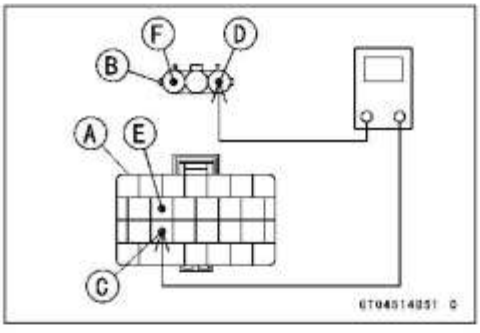
Input Voltage
Standard: DC 4.75 ~ 5.25 V

- Turn the ignition switch off.

★If the reading is within the standard, check the output voltage (see Atmospheric Pressure Sensor Output Voltage Inspection(17-45)).

★If the reading is out of the standard, remove the ECU and check the wiring for continuity between harness connectors.

○Disconnect the ECU and sensor connectors.



Wiring Continuity Inspection
ECU Connector [A] ⟷
Atmospheric Pressure Sensor Connector [B]
ECU Terminal 44 [C] ⟷ Sensor Terminal [D]
ECU Terminal 38 [E] ⟷ Sensor Terminal [F]

★If the wiring is good, check the ECU for its ground and power supply (see ECU Power Supply Inspection(3-40)).

★If the ground and power supply are good, replace the ECU.

Atmospheric Pressure Sensor (Service Code 15) (DTC P2226, P2228)

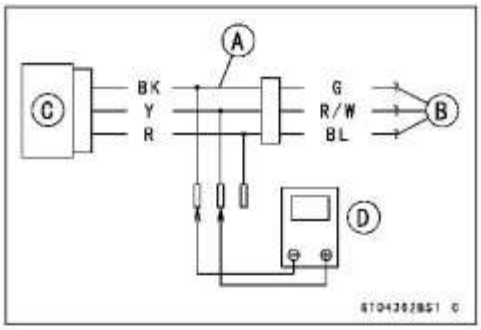
Atmospheric Pressure Sensor Output Voltage Inspection

- Measure the output voltage at the atmospheric pressure sensor in the same way as input voltage inspection, note the following.

○Disconnect the atmospheric pressure sensor connector and connect the measuring adapter [A] between these connectors.

Subharness [B]
Atmospheric Pressure Sensor [C]
Digital Meter [D]

Special Tool - Measuring Adapter: 57001-1700



Atmospheric Pressure Sensor Output Voltage
Connections to Adapter:
Digital Meter (+) → Y (sensor R/W) lead
Digital Meter (–) → BK (sensor G) lead

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

Output Voltage
Usable Range: DC 1.43 ~ 1.55 V at standard atmospheric pressure (101.32 kPa, 76 cmHg)

NOTE

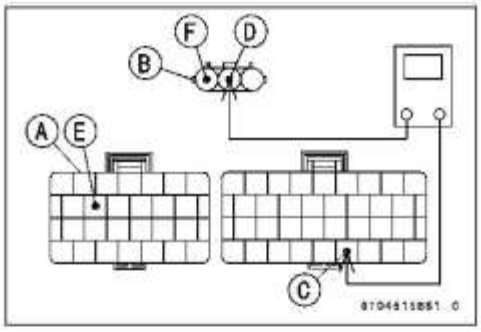
○*The output voltage changes according to the local atmospheric pressure.*

- Turn the ignition switch off.

★If the reading is out of the usable range, replace the sensor.

★If the reading is within the usable range, remove the ECU and check the wiring for continuity between harness connectors.

○Disconnect the ECU and sensor connectors.



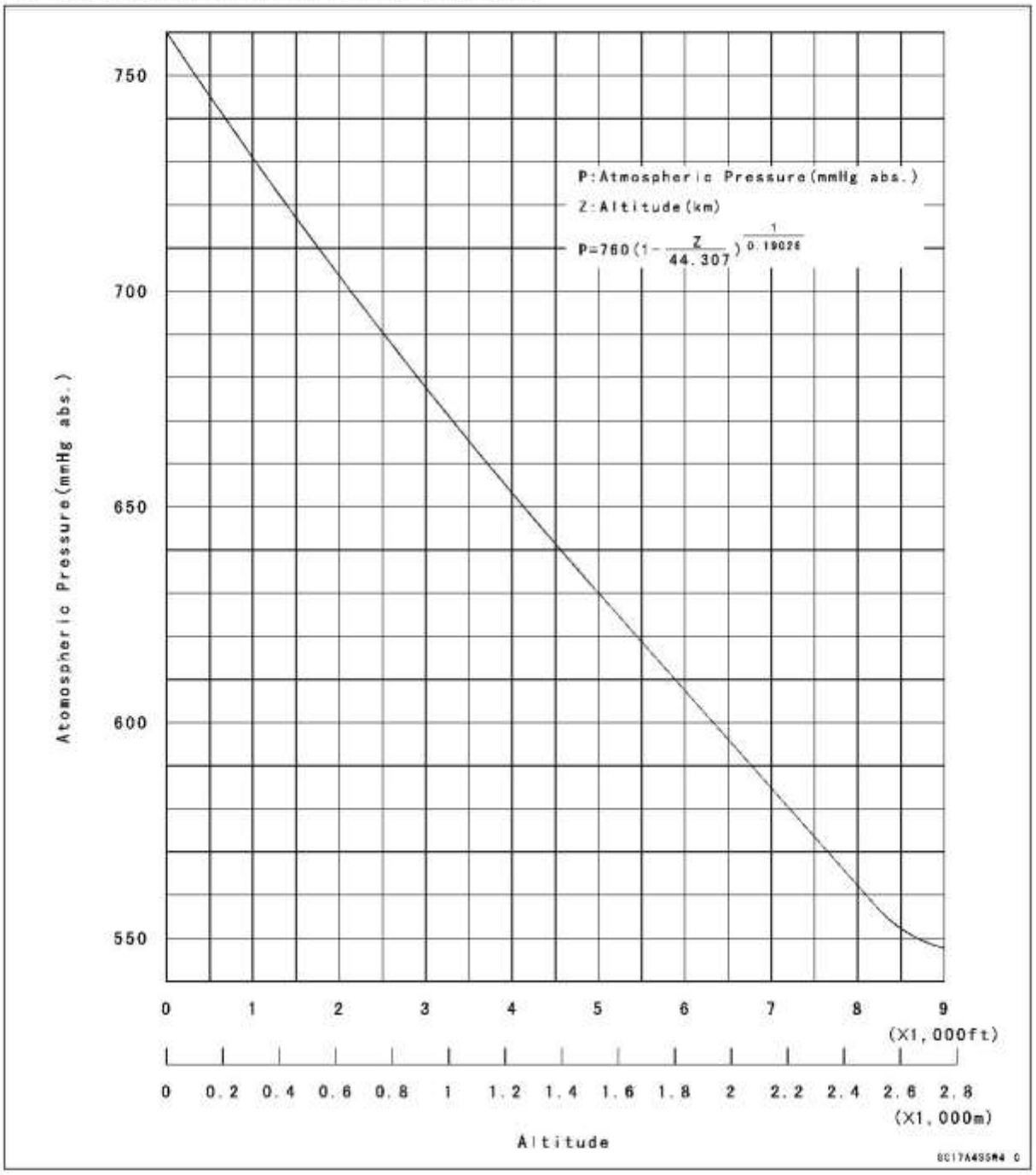
Wiring Continuity Inspection
ECU Connector [A] ⟷
Atmospheric Pressure Sensor Connector [B]
ECU Terminal 81 [C] ⟷ Sensor Terminal [D]
ECU Terminal 38 [E] ⟷ Sensor Terminal [F]

Atmospheric Pressure Sensor (Service Code 15) (DTC P2226, P2228)

★If the wiring is good, check the sensor.
○Determine the local altitude (elevation).
★If you know the local altitude, use the chart in this section.
★If you know the local atmospheric pressure using a barometer, substitute the atmospheric pressure for Pv (vacuum pressure) in the intake air pressure sensor chart (see Intake Air Pressure Sensor Output Voltage Inspection(17-33)).
○Get the usable range of the atmospheric pressure sensor output voltage in the same way as output voltage inspection of the intake air pressure sensor and check if Va (output voltage) is within the usable range or not.
★If the reading is out of the usable range, replace the sensor.
★If the reading is within the usable range, check the ECU for its ground and power supply (see ECU Power Supply Inspection(3-40)).
★If the ground and power supply are good, replace the ECU.

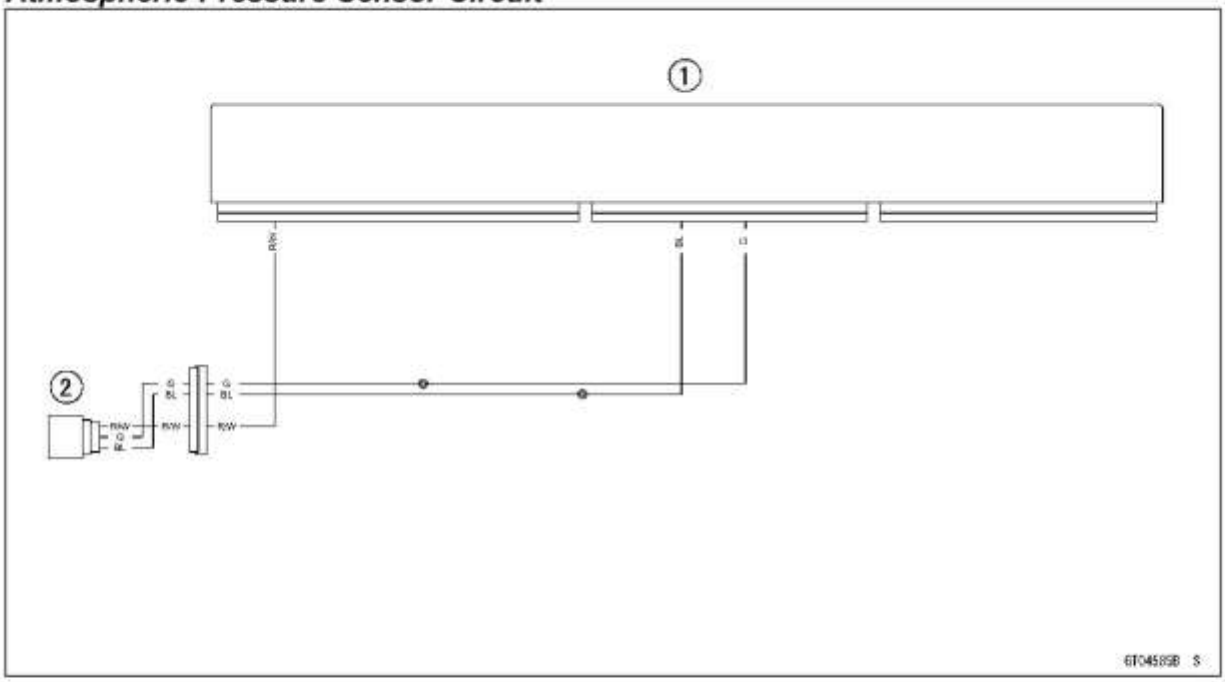
Atmospheric Pressure Sensor (Service Code 15) (DTC P2226, P2228)

Atmospheric Pressure/Altitude Relationship



Atmospheric Pressure Sensor (Service Code 15) (DTC P2226, P2228)

Atmospheric Pressure Sensor Circuit



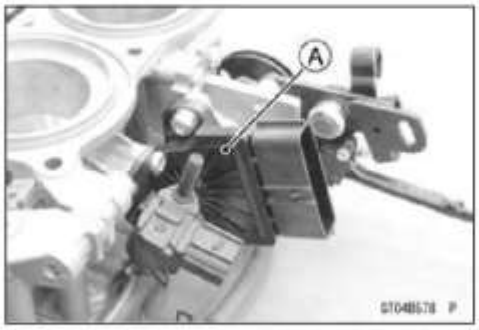
1. ECU
2. Atmospheric Pressure Sensor

Accelerator Position Sensor (Service Code 18) (DTC P2120, P2121, P2123, P2125, P2128)

Accelerator Position Sensor Removal

NOTICE

Do not remove the accelerator position sensor [A] since it has been adjusted and set with precision at the factory. Never drop the throttle body assy especially on a hard surface. Such a shock to the accelerator position sensor can damage it.

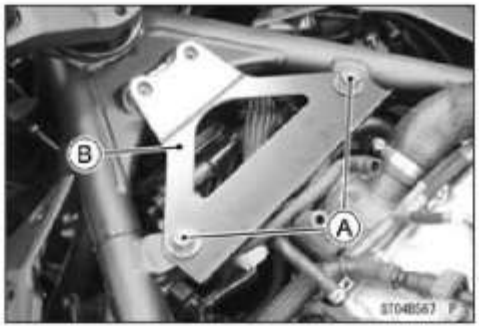


Accelerator Position Sensor Input Voltage Inspection

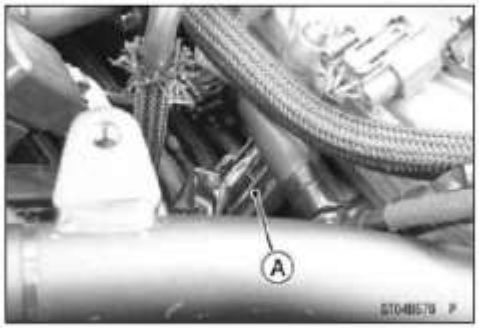
NOTE

○*Be sure the battery is fully charged.*

- Turn the ignition switch off.
- Remove:
  Fuel Tank (see Fuel Tank Removal(3-75))
  Fuel Tank Bracket Bolts [A]
  Fuel Tank Bracket [B]



- Disconnect:
  Accelerator Position Sensor Connector [A]

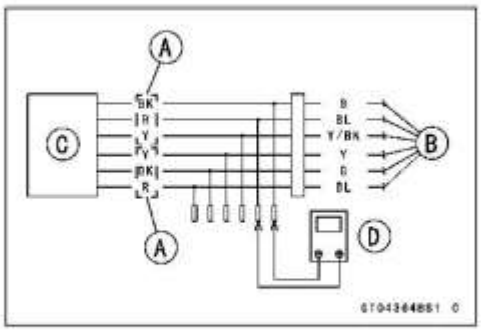


- Connect the measuring adapters [A] to the accelerator position sensor connectors as shown.
  Main Harness [B]
  Accelerator Position Sensor [C]

  Special Tool - Measuring Adapter: 57001-1700

- Connect a digital meter [D] to the measuring adapter leads.

  Accelerator Position Sensor Input Voltage
  Connections to Adapters:
  (1) Digital Meter (+) → R (sensor BL) lead
  Digital Meter (–) → BK (sensor G) lead
  (2) Digital Meter (+) → R (sensor BL) lead
  Digital Meter (+) → BK (sensor G) lead



- Measure the input voltage with the engine stopped and with the connector joined.
- Turn the ignition switch on.

  Input Voltage
  Standard: DC 4.75 ~ 5.25 V

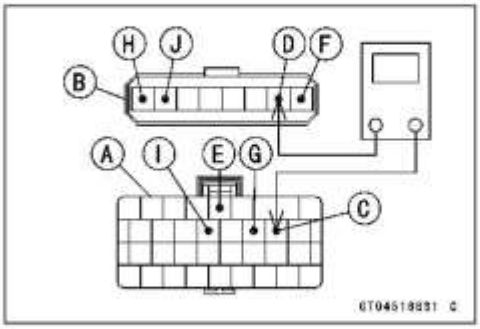
- Turn the ignition switch off.

★If the reading is within the standard, check the output voltage (see Accelerator Position Sensor Output Voltage Inspection(17-50)).

Accelerator Position Sensor (Service Code 18) (DTC P2120, P2121, P2123, P2125, P2128)

★If the reading is out of the standard, remove the ECU and check the wiring for continuity between main harness connectors.

○Disconnect the ECU and sensor connectors.



Wiring Continuity Inspection
ECU Connector [A] ⟷
Accelerator Position Sensor Connector [B]
(1) ECU Terminal 63 [C] ⟷ Sensor Terminal [D]
ECU Terminal 57 [E] ⟷ Sensor Terminal [F]
(2) ECU Terminal 64 [G] ⟷ Sensor Terminal [H]
ECU Terminal 66 [I] ⟷ Sensor Terminal [J]

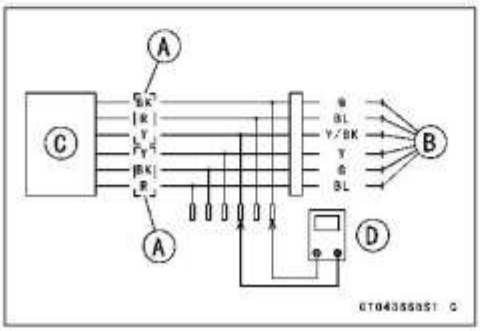
★If the wiring is good, check the ECU for its ground and power supply (see ECU Power Supply Inspection(3-40)).

★If the ground and power supply are good, replace the ECU.

Accelerator Position Sensor Output Voltage Inspection

● Measure the output voltage at the accelerator position sensor in the same way as input voltage inspection, note the following.

○Disconnect the accelerator position sensor connector and connect the measuring adapters [A] between these connectors.
Main Harness [B]
Accelerator Position Sensor [C]
Digital Meter [D]



Special Tool - Measuring Adapter: 57001-1700

Accelerator Position Sensor Output Voltage
Connections to Adapters:
(1) Digital Meter (+) → Y (sensor Y/BK) lead
Digital Meter (–) → BK (sensor G) lead
(2) Digital Meter (+) → Y (sensor Y) lead
Digital Meter (–) → BK (sensor G) lead

● Measure the output voltage with the engine stopped and with the connector joined.

● Turn the ignition switch on.

Output Voltage
Standard: (1) DC 0.50 ~ 0.90 V at ordinary throttle position
(2) DC 0.35 ~ 1.00 V at ordinary throttle position

NOTE

○*Open the throttle, confirm the output voltage will be raise.*

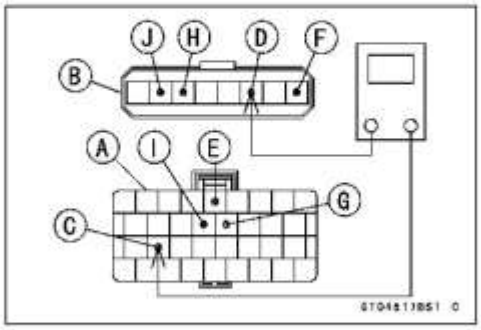
● Turn the ignition switch off.

★If the reading is out of the standard, check the accelerator position sensor resistance (see Accelerator Position Sensor Resistance Inspection(17-51)).

Accelerator Position Sensor (Service Code 18) (DTC P2120, P2121, P2123, P2125, P2128)

★If the reading is within the standard, remove the ECU and check the wiring for continuity between main harness connectors.

○Disconnect the ECU and sensor connectors.



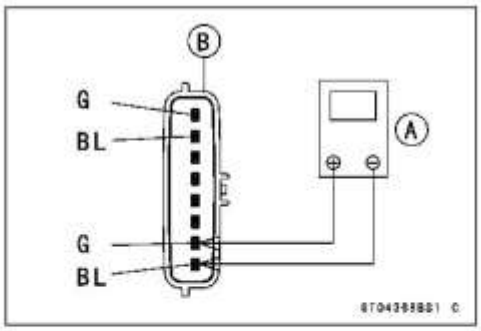
Wiring Continuity Inspection
ECU Connector [A] ⟷
Accelerator Position Sensor Connector [B]
(1) ECU Terminal 76 [C] ⟷ Sensor Terminal [D]
ECU Terminal 57 [E] ⟷ Sensor Terminal [F]
(2) ECU Terminal 65 [G] ⟷ Sensor Terminal [H]
ECU Terminal 66 [I] ⟷ Sensor Terminal [J]

★If the wiring is good, check the ECU for its ground and power supply (see ECU Power Supply Inspection(3-40)).

★If the ground and power supply are good, replace the ECU.

Accelerator Position Sensor Resistance Inspection

- Turn the ignition switch off.
- Disconnect:
  Accelerator Position Sensor Connector (see Accelerator Position Sensor Input Voltage Inspection(17-49))
- Connect a digital meter [A] to the terminals of the accelerator position sensor connector [B].



Accelerator Position Sensor Input Voltage
Connection:
(1) BL lead terminal ⟷ G lead terminal
(2) BL lead terminal ⟷ G lead terminal

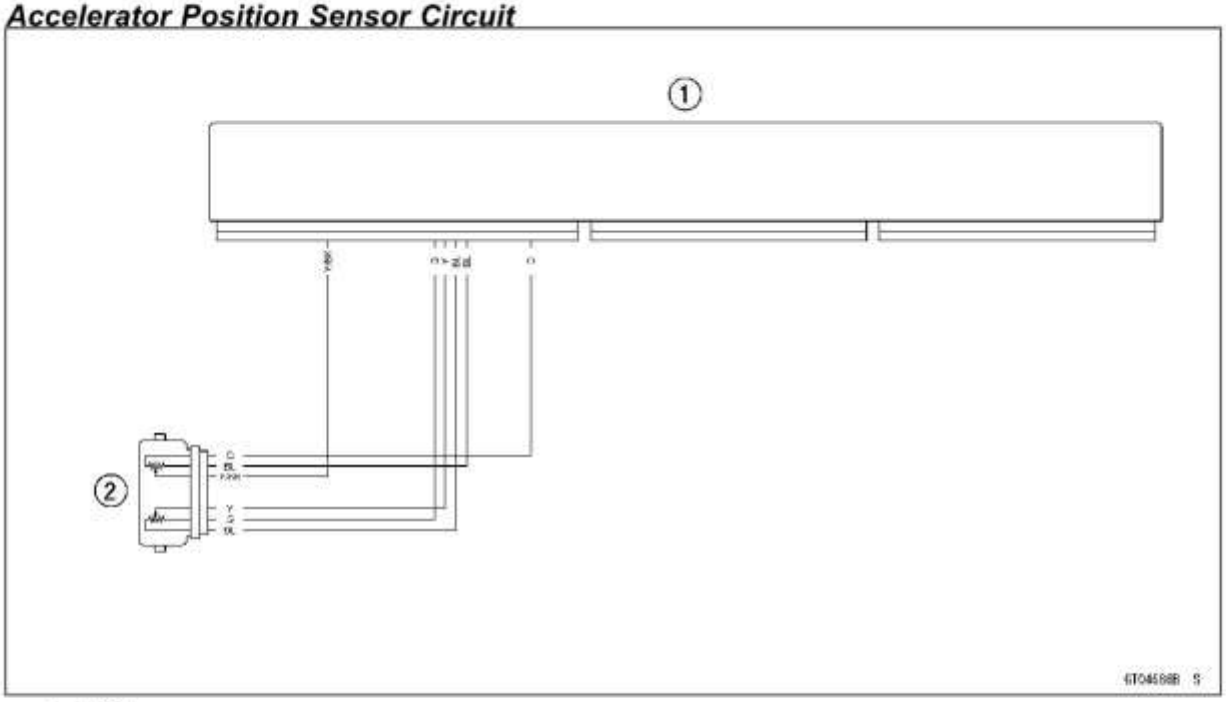
- Measure the accelerator position sensor resistance.

Accelerator Position Sensor Resistance
Standard: 4.5 ~ 6.5 kΩ

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

Accelerator Position Sensor (Service Code 18) (DTC P2120, P2121, P2123, P2125, P2128)

Accelerator Position Sensor Circuit

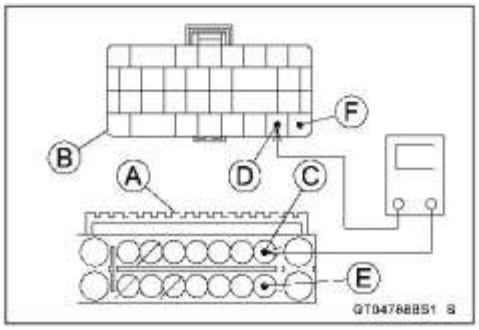


1. ECU
2. Accelerator Position Sensor

ABS Hydraulic Unit Communication Error (Service Code 1B)

ABS Hydraulic Unit Communication Line Inspection

○When the data (for status of ABS hydraulic unit) is not sent from the ABS hydraulic unit to the meter unit and ECU, the service code 1B is displayed.
○The data is sent through the CAN communication line.
○The service code 1B is detected with the meter unit.

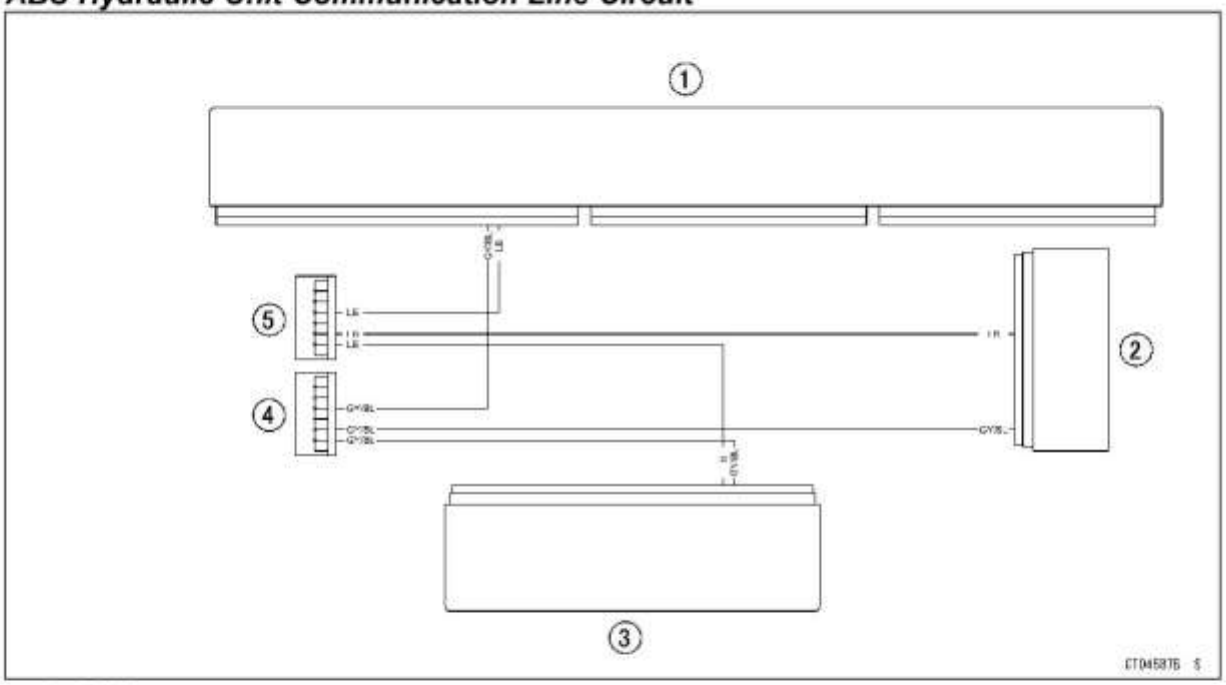


- Check the wiring for continuity between main harness connectors.
- Disconnect:
  ABS Hydraulic Unit Connector (see ABS Hydraulic Unit Removal(12-47))
  Meter Unit Connector (see Meter Unit Removal(16-76))

Wiring Continuity Inspection
ABS Hydraulic Unit Connector [A] ⟷
Meter Unit Connector [B]
ABS Hydraulic Unit Terminal 2 [C] ⟷ Meter Unit Terminal [D]
ABS Hydraulic Unit Terminal 11 [E] ⟷ Meter Unit Terminal [F]

★If the wiring is good, replace the ABS hydraulic unit.

ABS Hydraulic Unit Communication Line Circuit



1. ECU
2. ABS Hydraulic Unit
3. Meter Unit
4. Joint Connector (CAN High)
5. Joint Connector (CAN Low)

Crankshaft Sensor (Service Code 21) (DTC P0335)

When the engine stops, the crankshaft sensor generates no signals.

Crankshaft Sensor Removal/Installation

- Refer to the Crankshaft Sensor Removal/Installation (see Crankshaft Sensor Removal(16-39)) (see Crankshaft Sensor Installation(16-39)).

Crankshaft Sensor Resistance Inspection

- Refer to the Crankshaft Sensor Inspection (see Crankshaft Sensor Inspection(16-40)).

★If the reading is within the standard, check the peak voltage (see Crankshaft Sensor Peak Voltage Inspection(17-54)).

Crankshaft Sensor Peak Voltage Inspection

- Refer to the Crankshaft Sensor Peak Voltage Inspection (see Crankshaft Sensor Peak Voltage Inspection(17-54)).

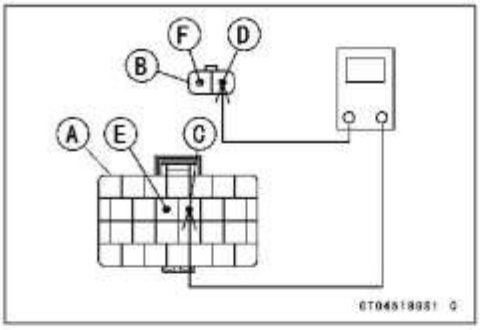
★If the reading is within the standard, remove the ECU and check the wiring for continuity between harness connectors.

○Disconnect the ECU and sensor connectors.

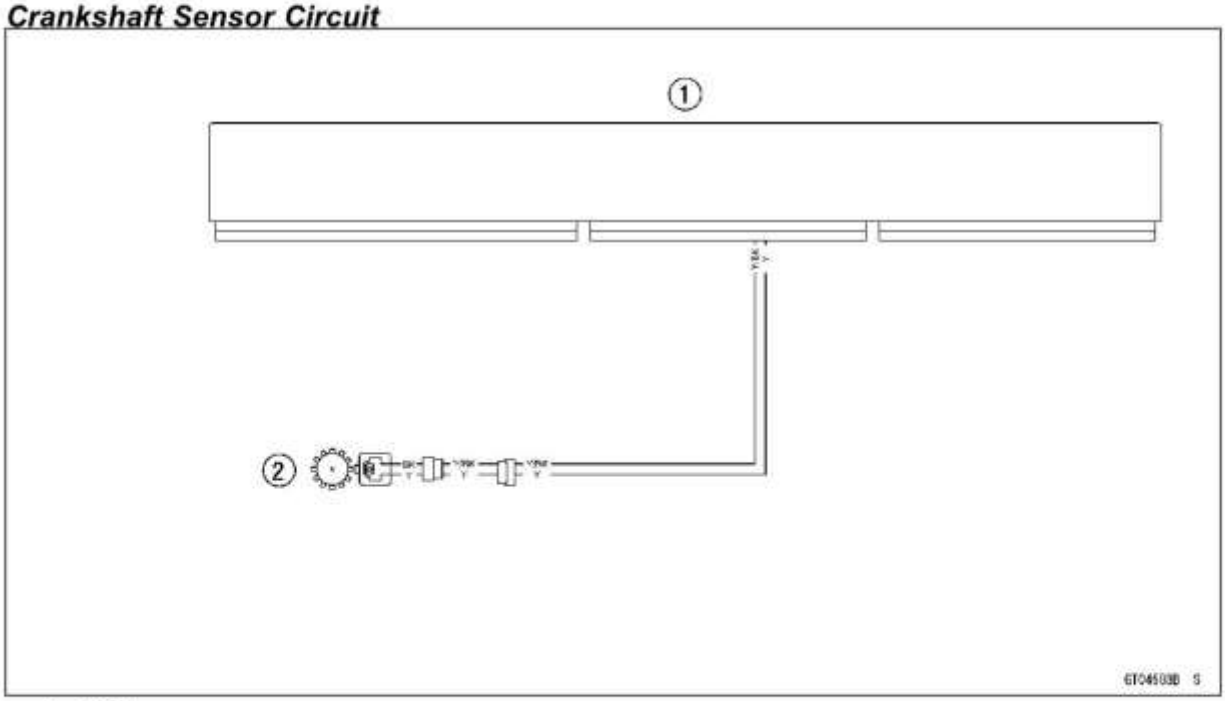
Wiring Continuity Inspection
ECU Connector [A] ⟷
Crankshaft Sensor Connector [B]
ECU Terminal 36 [C] ⟷ Sensor Terminal [D]
ECU Terminal 37 [E] ⟷ Sensor Terminal [F]

★If the wiring is good, check the ECU for its ground and power supply (see ECU Power Supply Inspection(3-40)).

★If the ground and power supply are good, replace the ECU.



Crankshaft Sensor Circuit



1. ECU
2. Crankshaft Sensor

Camshaft Position Sensor (Service Code 23) (DTC P0340)

The camshaft position sensor detects the position of the camshaft, and distinguishes the cylinder.

When the engine stops, the camshaft position sensor generates no signals.

Camshaft Position Sensor Removal/Installation

- Refer to the Camshaft Position Sensor Removal/Installation (see Camshaft Position Sensor Removal(16-41)) (see Camshaft Position Sensor Installation(16-42)).

Camshaft Position Sensor Resistance Inspection

- Refer to the Camshaft Position Sensor Inspection (see Camshaft Position Sensor Inspection(16-42)).

★If the reading is within the standard, check the peak voltage (see Camshaft Position Sensor Peak Voltage Inspection(17-55)).

Camshaft Position Sensor Peak Voltage Inspection

- Refer to the Camshaft Position Sensor Peak Voltage Inspection (see Camshaft Position Sensor Peak Voltage Inspection(17-55)).

★If the reading is within the standard, remove the ECU and check the wiring for continuity between main harness connectors.

○Disconnect the ECU and sensor connectors.

Wiring Continuity Inspection

ECU Connector [A] ⟷

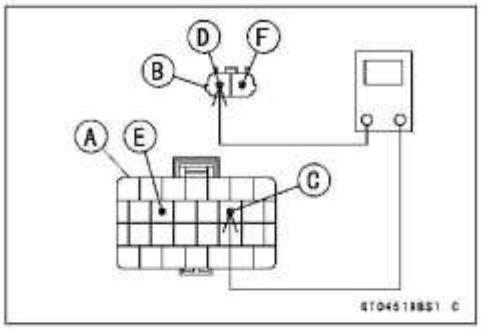
Camshaft Position Sensor Connector [B]

ECU Terminal 35 [C] ⟷ Sensor Terminal [D]

ECU Terminal 38 [E] ⟷ Sensor Terminal [F]

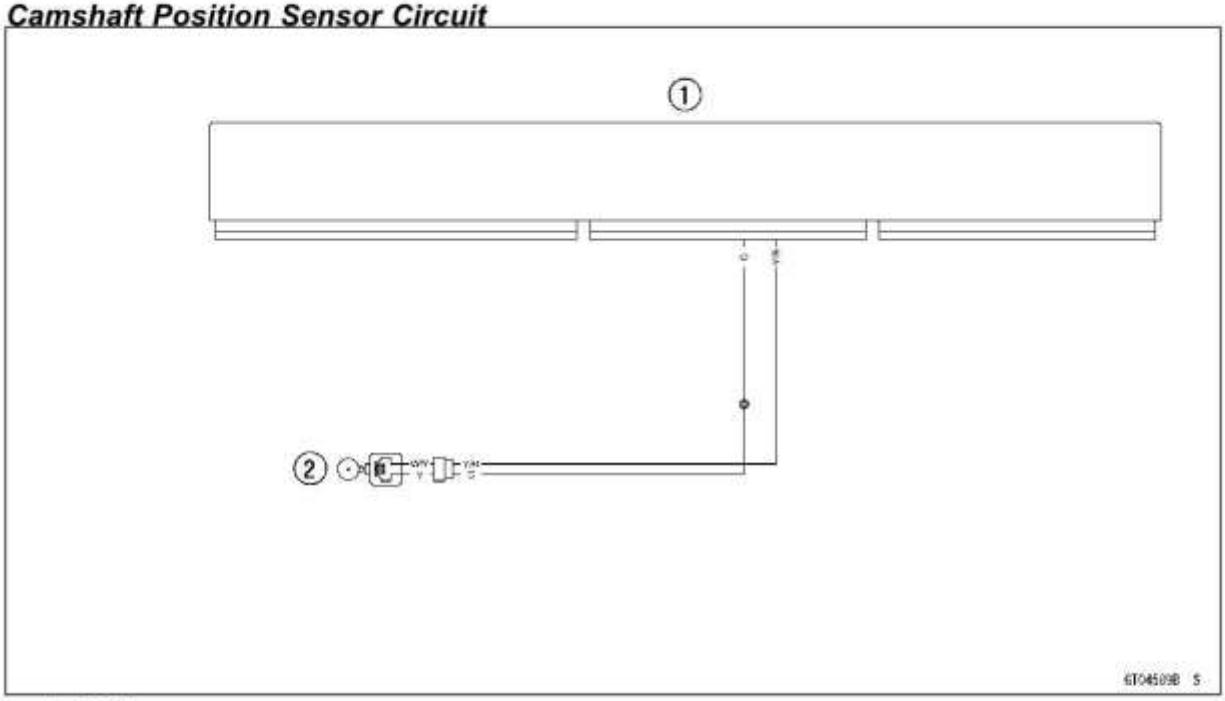
★If the wiring is good, check the ECU for its ground and power supply (see ECU Power Supply Inspection(3-40)).

★If the ground and power supply are good, replace the ECU.



Camshaft Position Sensor (Service Code 23) (DTC P0340)

Camshaft Position Sensor Circuit



1. ECU
2. Camshaft Position Sensor

Rear Wheel Rotation Sensor Signal (Service Code 24) (DTC P2158)

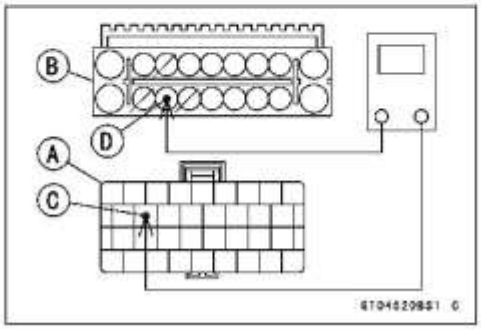
Rear Wheel Rotation Sensor Signal Inspection

○The rear wheel rotation sensor sends the signal to the ECU through the ABS hydraulic unit.
○The ECU uses the rear wheel rotation sensor signal for motorcycle speed.
○The service code 24 is detected with the ECU.
● Inspect the wheel rotation sensor air gap (see Wheel Rotation Sensor Air Gap Inspection(12-53)).
● Inspect the wheel rotation sensor rotor (see Wheel Rotation Sensor Rotor Inspection(12-54)).
● When the service code 24 and following service codes (for ABS) are displayed at the same time, inspect the rear wheel rotation sensor.
Service Code B44 (see Rear Wheel Rotation Sensor Signal Abnormal (Service Code B44)(17-150))
Service Code B45 (see Rear Wheel Rotation Sensor Wiring Inspection (Service Code B45)(17-151))

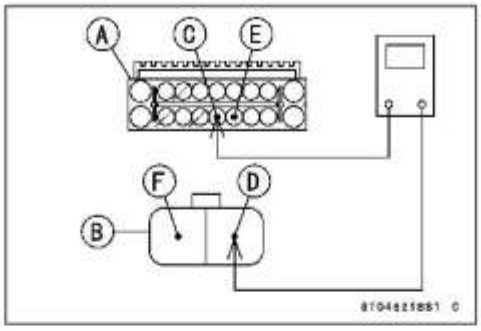
● When only service code 24 is displayed, do the following inspection procedures.
● Disconnect:
ECU Connectors (see ECU Removal(3-39))
Rear Wheel Rotation Sensor Lead Connector (see Rear Wheel Rotation Sensor Removal(12-51))
ABS Hydraulic Unit Connector (see ABS Hydraulic Unit Removal(12-47))

● Check the wiring for continuity between harness connectors.

Wiring Continuity Inspection
ECU Connector [A] ← →
ABS Hydraulic Unit Connector [B]
ECU Terminal 68 [C] ← → ABS Hydraulic Unit Terminal 16 [D]



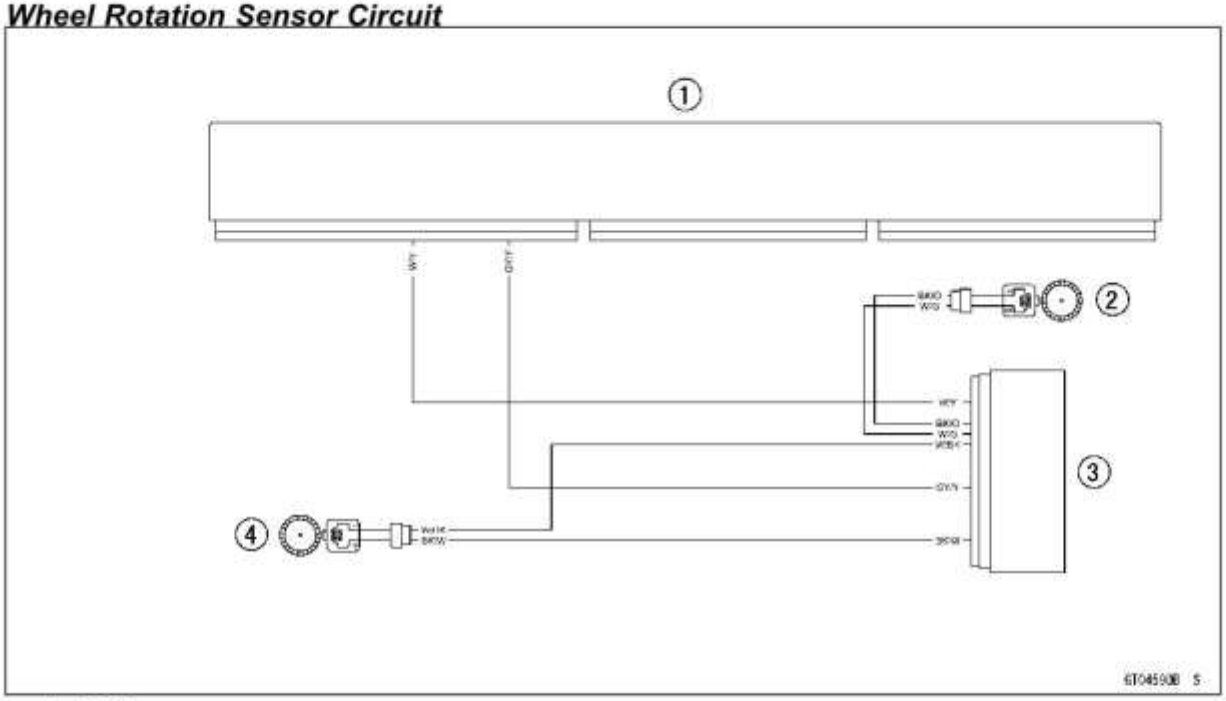
Wiring Continuity Inspection
ABS Hydraulic Unit Connector [A] ← →
Rear Wheel Rotation Sensor Connector [B]
ABS Hydraulic Unit Terminal 14 [C] ← → Sensor Terminal [D]
ABS Hydraulic Unit Terminal 13 [E] ← → Sensor Terminal [F]



★If the wiring is good, check the ECU for its ground and power supply (see ECU Power Supply Inspection(3-40)).
★If the ground and power supply are good, replace the ECU.

Rear Wheel Rotation Sensor Signal (Service Code 24) (DTC P2158)

Wheel Rotation Sensor Circuit



1. ECU
2. Rear Wheel Rotation Sensor
3. ABS Hydraulic Unit
4. Front Wheel Rotation Sensor

Gear Position Sensor (Service Code 25) (DTC P0914, P0917)

Gear Position Sensor Removal/Installation

- Refer to the Gear Position Sensor Removal/Installation (see Gear Position Sensor Removal(16-122)) (see Gear Position Sensor Installation(16-123)).

Gear Position Sensor Input Voltage Inspection

NOTE

○*Be sure the battery is fully charged.*

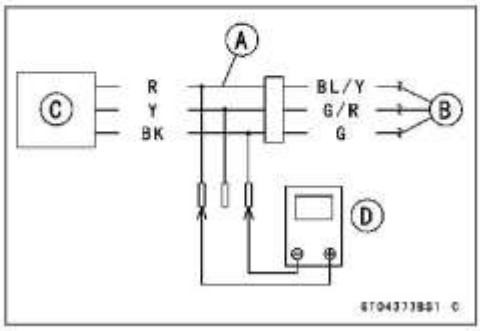
- Turn the ignition switch off.
- Remove:
  Left Lower Fairing (see Lower Fairing Removal(15-14))
- Turn the ignition switch off.
- Disconnect:
  Gear Position Sensor Connector [A]

- Connect the measuring adapter [A] to the gear position sensor connectors as shown.
  Main Harness [B]
  Gear Position Sensor [C]

Special Tool - Measuring Adapter: 57001-1700

- Connect a digital meter [D] to the measuring adapter leads.

Gear Position Sensor Input Voltage
Connections to Adapter:
Digital Meter (+) → R (sensor BL/Y) lead
Digital Meter (–) → BK (sensor G) lead



- Measure the input voltage with the engine stopped and with the connector joined.
- Turn the ignition switch on.

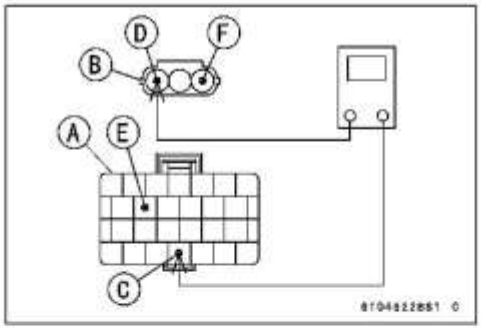
Input Voltage
Standard: DC 4.75 ~ 5.25 V

- Turn the ignition switch off.

★If the reading is within the standard, check the output voltage (see Gear Position Sensor Output Voltage Inspection(17-60)).

★If the reading is out of the standard, remove the ECU and check the wiring for continuity between main harness connectors.

○Disconnect the ECU and sensor connectors.



Wiring Continuity Inspection
ECU Connector [A] ← →
Gear Position Sensor Connector [B]
ECU Terminal 49 [C] ←→ Sensor Terminal [D]
ECU Terminal 38 [E] ←→ Sensor Terminal [F]

★If the wiring is good, check the ECU for its ground and power supply (see ECU Power Supply Inspection(3-40)).

★If the ground and power supply are good, replace the ECU.

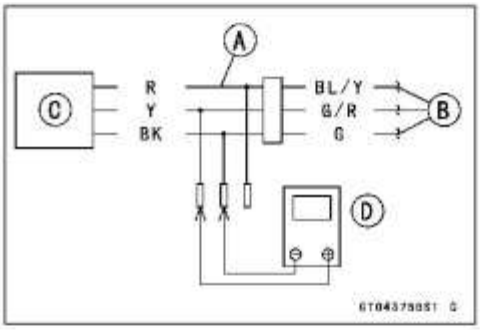
Gear Position Sensor (Service Code 25) (DTC P0914, P0917)

Gear Position Sensor Output Voltage Inspection

- Remove the gear position sensor (see Gear Position Sensor Removal(16-122)).
- Measure the output voltage at the gear position sensor in the same way as input voltage inspection, note the following.

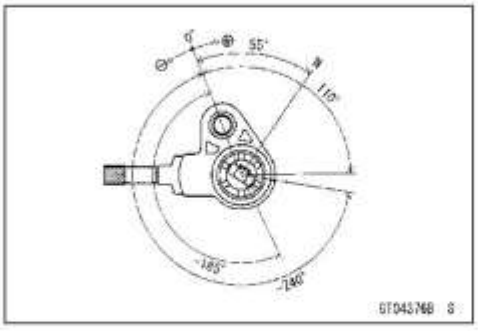
○Connect the measuring adapter [A] between these connectors.
Main Harness [B]
Gear Position Sensor [C]
Digital Meter [D]

Special Tool - Measuring Adapter: 57001-1700



Gear Position Sensor Output Voltage
Connections to Adapter:
Digital Meter (+) → Y (sensor G/R) lead
Digital Meter (–) → BK (sensor G) lead

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



Output Voltage

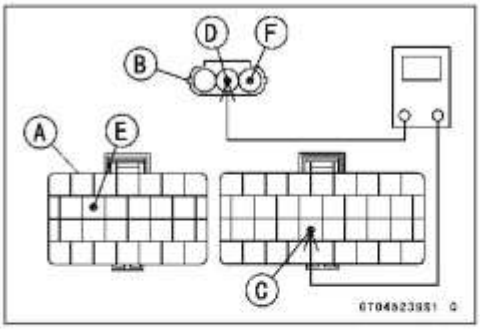
Angle	Output Voltage (V)
–240°	0.40 ~ 0.60
–185°	1.03 ~ 1.23
+55°	3.82 ~ 3.92
+110°	4.40 ~ 4.60

NOTE

○*Rotate the gear position sensor, confirm the output voltage will be raise or lower.*

- Turn the ignition switch off.

★If the reading is out of the standard, replace the gear position sensor.



★If the reading is within the standard, remove the ECU and check the wiring for continuity between main harness connectors.

○Disconnect the ECU and sensor connectors.

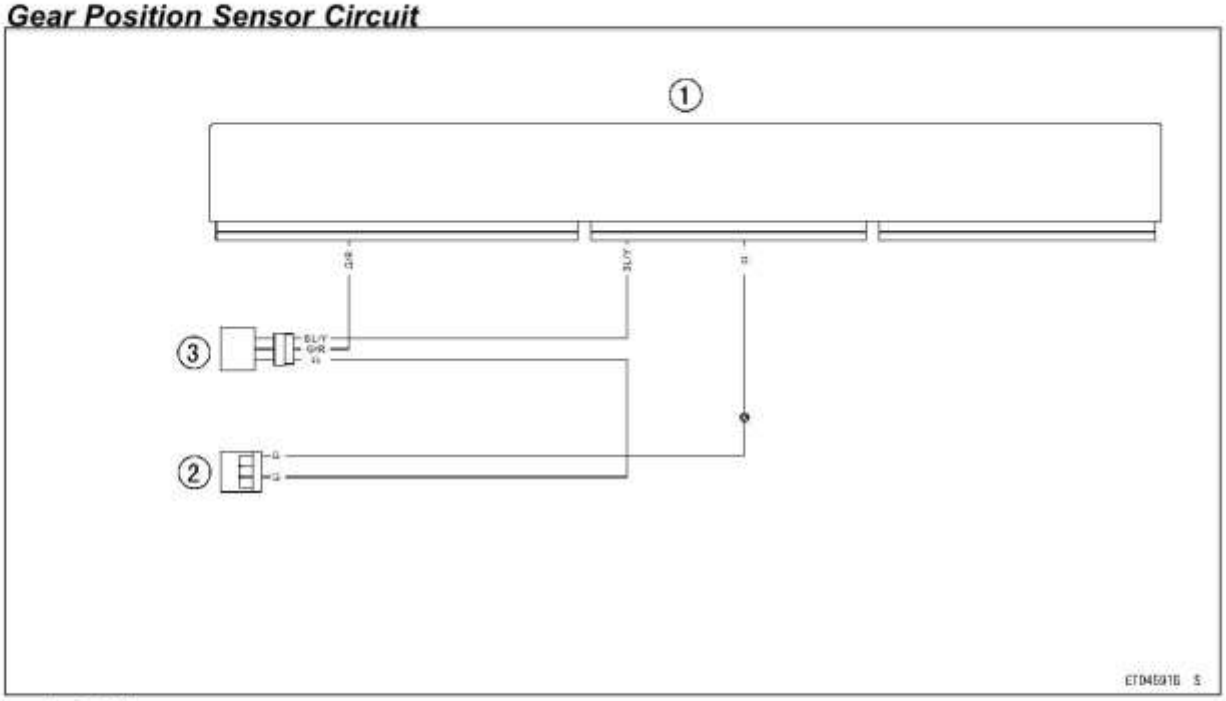
Wiring Continuity Inspection
ECU Connector [A] ← →
Gear Position Sensor Connector [B]
ECU Terminal 74 [C] ←→ Sensor Terminal [D]
ECU Terminal 38 [E] ←→ Sensor Terminal [F]

★If the wiring is good, check the ECU for its ground and power supply (see ECU Power Supply Inspection(3-40)).

★If the ground and power supply are good, replace the ECU.

Gear Position Sensor (Service Code 25) (DTC P0914, P0917)

Gear Position Sensor Circuit



1. ECU
2. Joint Connector (2)
3. Gear Position Sensor

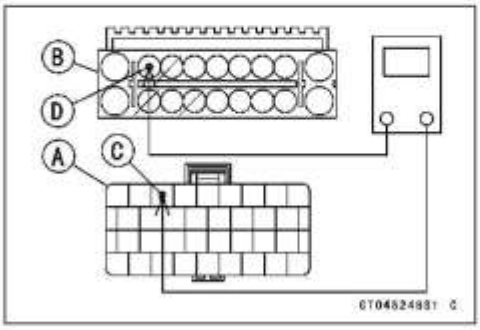
Front Wheel Rotation Sensor Signal (Service Code 27) (DTC P0500)

Front Wheel Rotation Sensor Signal Inspection

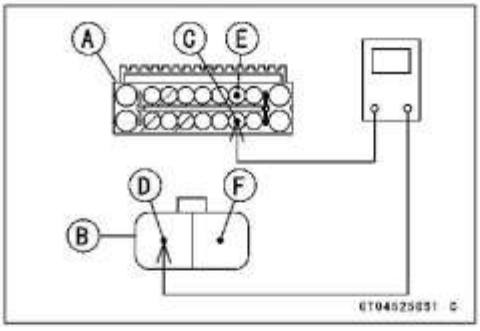
○The front wheel rotation sensor sends the signal to the ECU through the ABS hydraulic unit.
○The service code 27 is detected with the ECU.

- Inspect the wheel rotation sensor air gap (see Wheel Rotation Sensor Air Gap Inspection(12-53)).
- Inspect the wheel rotation sensor rotor (see Wheel Rotation Sensor Rotor Inspection(12-54)).
- When the service code 27 and following service codes (for ABS) are displayed at the same time, inspect the front wheel rotation sensor.
  Service Code B42 (see Front Wheel Rotation Sensor Signal Abnormal (Service Code B42)(17-149))
  Service Code B43 (see Front Wheel Rotation Sensor Wiring Inspection (Service Code B43)(17-150))
- When only service code 27 is displayed, do the following inspection procedures.
- Disconnect:
  ECU Connectors (see ECU Removal(3-39))
  Front Wheel Rotation Sensor Lead Connector (see Front Wheel Rotation Sensor Removal(12-50))
  ABS Hydraulic Unit Connector (see ABS Hydraulic Unit Removal(12-47))
- Check the wiring for continuity between harness connectors.

Wiring Continuity Inspection
ECU Connector [A] ← →
ABS Hydraulic Unit Connector [B]
ECU Terminal 59 [C] ← → ABS Hydraulic Unit Terminal 8 [D]



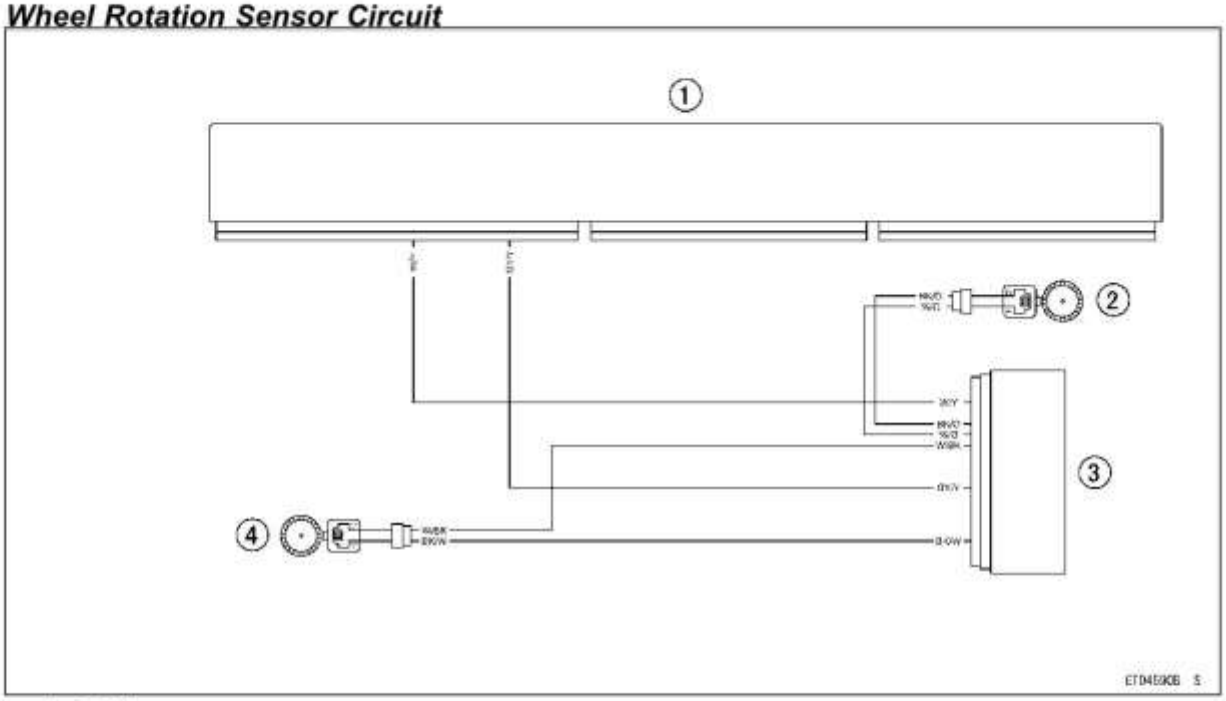
Wiring Continuity Inspection
ABS Hydraulic Unit Connector [A] ← →
Front Wheel Rotation Sensor Connector [B]
ABS Hydraulic Unit Terminal 12 [C] ← → Sensor Terminal [D]
ABS Hydraulic Unit Terminal 3 [E] ← → Sensor Terminal [F]



★If the wiring is good, check the ECU for its ground and power supply (see ECU Power Supply Inspection(3-40)).
★If the ground and power supply are good, replace the ECU.

Front Wheel Rotation Sensor Signal (Service Code 27) (DTC P0500)

Wheel Rotation Sensor Circuit



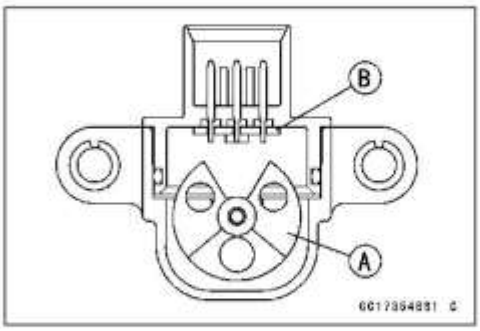
1. ECU
2. Rear Wheel Rotation Sensor
3. ABS Hydraulic Unit
4. Front Wheel Rotation Sensor

Vehicle-down Sensor (Service Code 31) (DTC C0064)

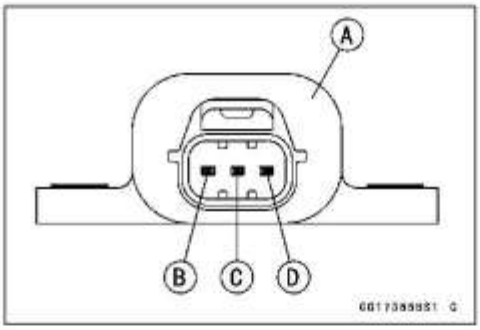
This sensor has a weight [A] with two magnets inside, and sends a signal to the ECU. But when the motorcycle banks 60 ~ 70° or more to either side (in fact falls down), the weight turns and the signal changes. The ECU senses this change, and stops the fuel pump relay.

Hall IC [B]

When the motorcycle is down, the ignition switch is left on. If the engine start/stop switch is slid, the electric starter turns but the engine does not start. To start the engine again, raise the motorcycle, turn the ignition switch off, and then turn it on.



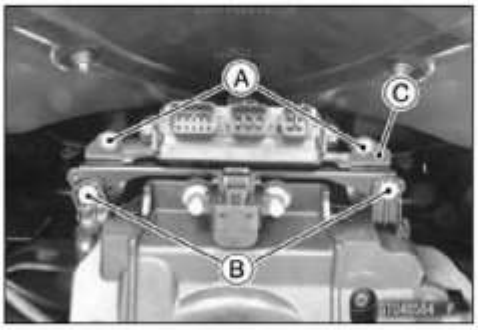
Vehicle-down Sensor [A]
Ground Terminal [B]: G
Output Terminal [C]: Y/G
Power Source Terminal [D]: BL



Vehicle-down Sensor Removal

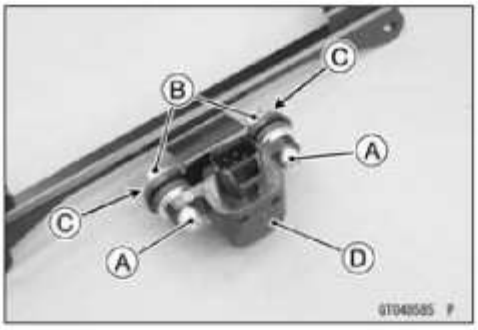
NOTICE

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



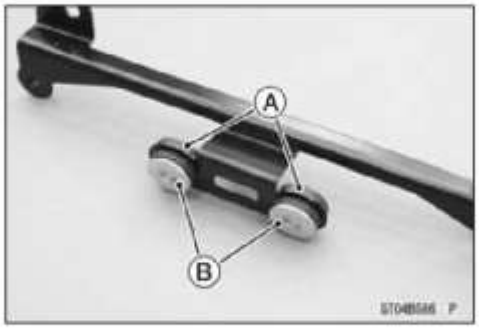
- Remove:
  Upper Fairing (see Upper Fairing Removal(15-18))
  Screws [A]
  Bolts [B]
  Bracket [C]

- Remove:
  Vehicle-down Sensor Mounting Bolts [A], Nuts [B] and Washers [C]
  Vehicle-down Sensor [D]

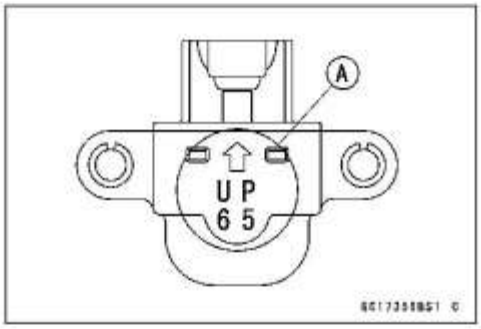


Vehicle-down Sensor (Service Code 31) (DTC C0064)

Vehicle-down Sensor Installation



- Installation is the reverse of removal.
- Be sure to install the rubber dampers [A] and collars [B] on the bracket.
- The UP mark [A] of the sensor should face upward.



⚠ WARNING

Incorrect installation of the vehicle-down sensor could cause sudden loss of engine power. The rider could lose balance during certain riding situations for an accident resulting in injury or death. Ensure that the vehicle-down sensor is held in place by the sensor bracket.

- Tighten:

Torque - Vehicle-down Sensor Mounting Bolts: 6.0 N·m (0.61 kgf·m, 53 in·lb)

- Install the removed parts.

Vehicle-down Sensor Input Voltage Inspection

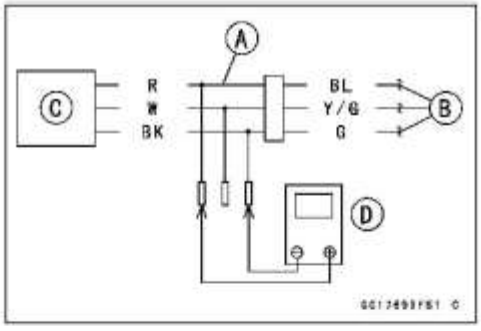
NOTE

○*Be sure the battery is fully charged.*

- Turn the ignition switch off.
- Remove the vehicle-down sensor (see Vehicle-down Sensor Removal(17-64)).
- Connect the measuring adapter [A] to the vehicle-down sensor connectors as shown.
  Main Harness [B]
  Vehicle-down Sensor [C]

Special Tool - Measuring Adapter: 57001-1700

- Temporarily connect the relay box connectors.
- Connect a digital meter [D] to the measuring adapter leads.



Vehicle-down Sensor Input Voltage
Connections to Adapter:
Digital Meter (+) → R (sensor BL) lead
Digital Meter (–) → BK (sensor G) lead

- Measure the input voltage with the engine stopped and with the connector joined.
- Turn the ignition switch on.

Input Voltage
Standard: DC 4.75 ~ 5.25 V

- Turn the ignition switch off.

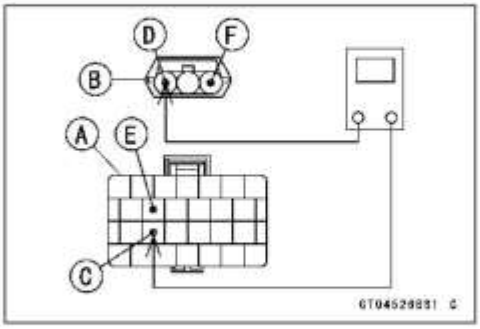
★If the reading is within the standard, check the output voltage (see Vehicle-down Sensor Output Voltage Inspection(17-66)).

Vehicle-down Sensor (Service Code 31) (DTC C0064)

★If the reading is out of the standard, remove the ECU and check the wiring for continuity between main harness connectors.

○Disconnect the ECU and sensor connectors.

Wiring Continuity Inspection
ECU Connector [A] ⟷
Vehicle-down Sensor Connector [B]
ECU Terminal 44 [C] ⟷ Sensor Terminal [D]
ECU Terminal 38 [E] ⟷ Sensor Terminal [F]



★If the wiring is good, check the ECU for its ground and power supply (see ECU Power Supply Inspection(3-40)).

★If the ground and power supply are good, replace the ECU.

Vehicle-down Sensor Output Voltage Inspection

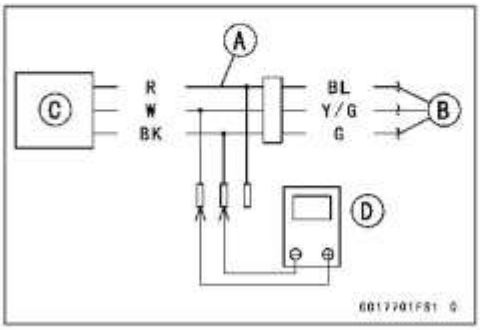
● Measure the output voltage at the vehicle-down sensor in the same way as input voltage inspection, note the following.

○Connect the measuring adapter [A] to the vehicle-down sensor connectors as shown.
Main Harness [B]
Vehicle-down Sensor [C]

Special Tool - Measuring Adapter: 57001-1700

● Connect a digital meter [D] to the measuring adapter leads.

Vehicle-down Sensor Output Voltage
Connections to Adapter:
Digital Meter (+) → W (sensor Y/G) lead
Digital Meter (–) → BK (sensor G) lead



Vehicle-down Sensor (Service Code 31) (DTC C0064)

- Hold the sensor vertically.
- Measure the output voltage with the engine stopped and with the connector joined.
- Turn the ignition switch on.
- Tilt the sensor 60 ~ 70° or more [A] right or left, then hold the sensor almost vertical with the arrow mark pointed up [B], and measure the output voltage.

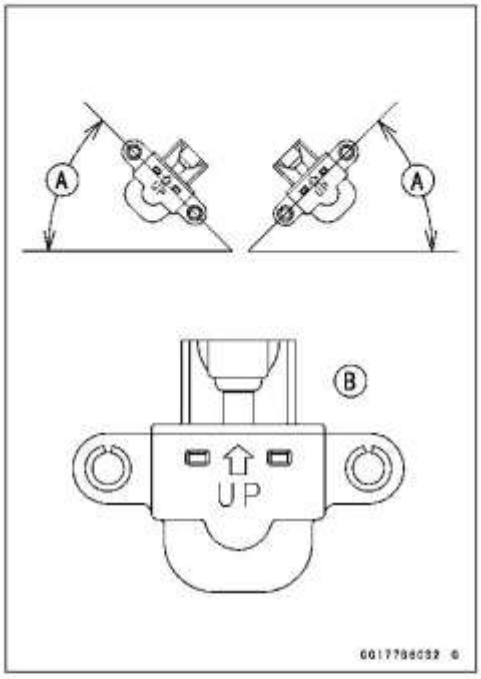
Output Voltage

Standard: With sensor tilted 60 ~ 70° or more right or left: DC 0.65 ~ 1.35 V

With sensor arrow mark pointed up: DC 3.55 ~ 4.45 V

- Turn the ignition switch off.

★If the reading is out of the standard, replace the sensor.



★If the reading is within the standard, remove the ECU and check the wiring for continuity between main harness connectors.

○Disconnect the ECU and sensor connectors.

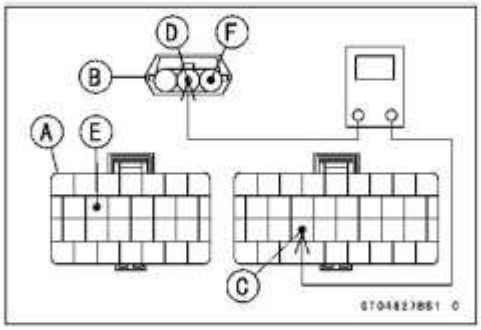
Wiring Continuity Inspection

ECU Connector [A] ⟷

Vehicle-down Sensor Connector [B]

ECU Terminal 75 [C] ⟷ Sensor Terminal [D]

ECU Terminal 38 [E] ⟷ Sensor Terminal [F]

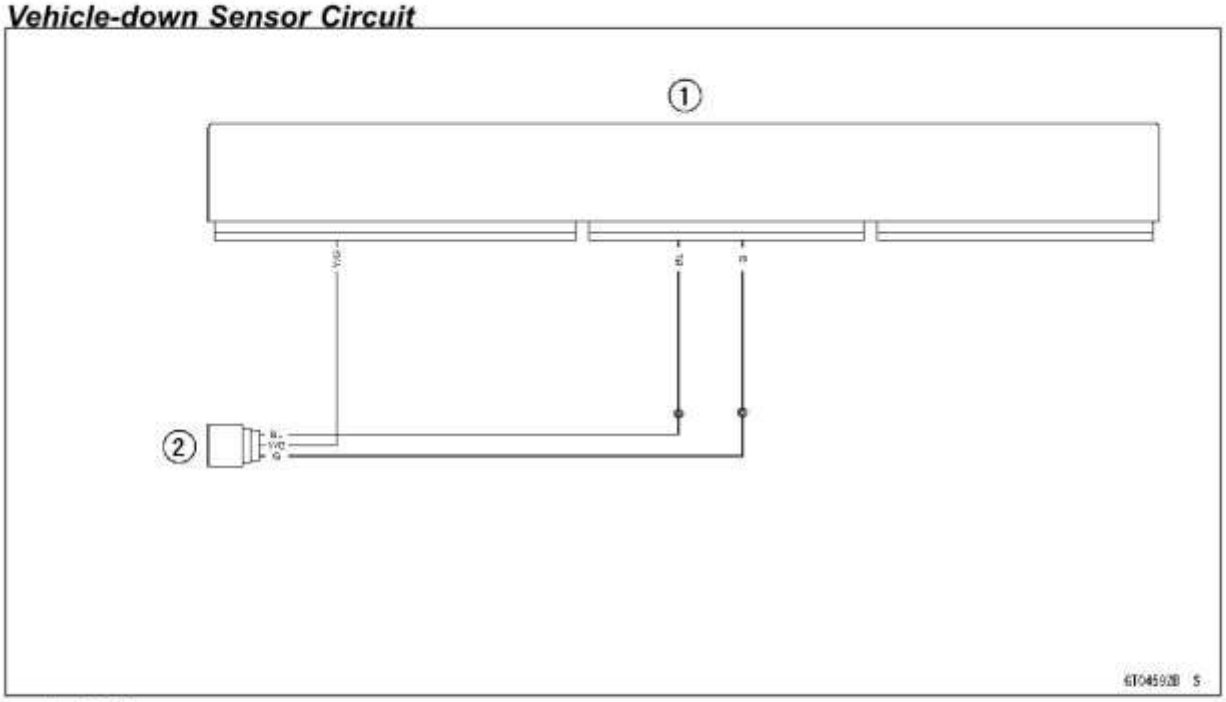


★If the wiring is good, check the ECU for its ground and power supply (see ECU Power Supply Inspection(3-40)).

★If the ground and power supply are good, replace the ECU.

Vehicle-down Sensor (Service Code 31) (DTC C0064)

Vehicle-down Sensor Circuit



1. ECU
2. Vehicle-down Sensor

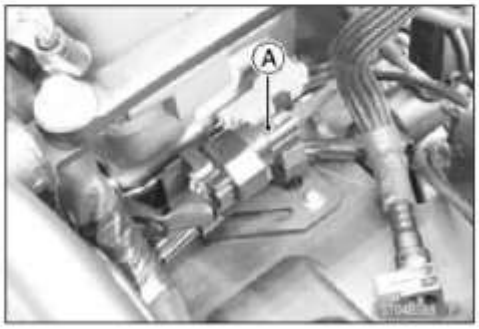
Oxygen Sensor - not activated (Service Code 33) (DTC P0130, P0132)

Oxygen Sensor Removal/Installation

- Refer to the Oxygen Sensor Removal/Installation (see Oxygen Sensor Removal(16-119)) (see Oxygen Sensor Installation(16-120)).

Oxygen Sensor Inspection

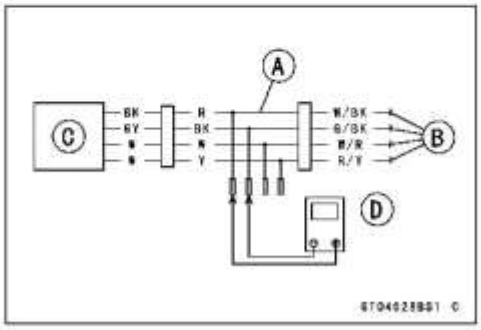
- Remove:
  Fuel Tank (see Fuel Tank Removal(3-75))
- Disconnect:
  Oxygen Sensor Lead Connector [A]



- Connect the measuring adapter [A] between the main harness connector and oxygen sensor lead connector.
  Main Harness [B]
  Oxygen Sensor [C]

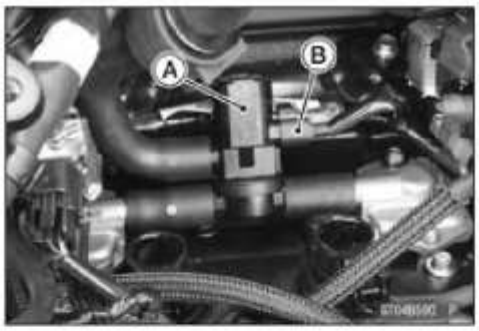
  Special Tool - Measuring Adapter: 57001-1700
- Connect a digital meter [D] to the measuring adapter leads.

  Oxygen Sensor Output Voltage
  Connections to Adapter:
  Digital Meter (+) → R (sensor BK) lead
  Digital Meter (–) → BK (sensor GY) lead



- Remove the air switching valve [A] (see Air Switching Valve Removal(5-12)).

○Do not disconnect the air switching valve connector [B].



Oxygen Sensor - not activated (Service Code 33) (DTC P0130, P0132)

- Install the suitable plugs [A] on the fitting of the air suction valve covers, and shut off the secondary air.
- Install the fuel tank temporarily (see Fuel Tank Installation(3-77)).

- Warm up the engine thoroughly until the radiator fan starts.
- Measure the output voltage with the connector joined.
  Measuring Adapter [A]

Output Voltage (with Plugs, Rich)
Standard: DC 0.8 V or more

- Turn the ignition switch off.
- Remove the fuel tank (see Fuel Tank Removal(3-75)).
- Remove the plugs from the fittings [A].

⚠ WARNING

The engine gets extremely hot during normal operation and can cause serious burns. Never touch a hot engine.

- Install the fuel tank temporarily (see Fuel Tank Installation(3-77)).
- Start the engine, and let it idle.
- Measure the output voltage with the connector joined.

Output Voltage (without Plugs, Lean)
Standard: DC 0.24 V or less

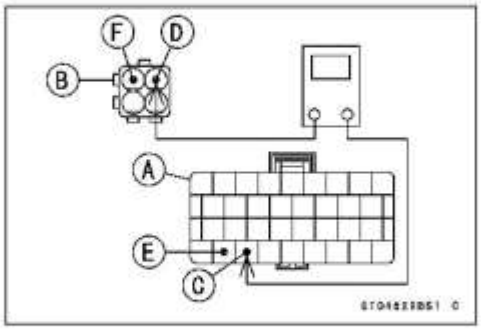
- Turn the ignition switch off.

Oxygen Sensor - not activated (Service Code 33) (DTC P0130, P0132)

★If the reading is out of the standard (with plugs: DC 0.8 V or more, without plugs: DC 0.24 V or less), remove the ECU and check the wiring for continuity between main harness connectors.

○Disconnect the ECU and sensor connectors.

Wiring Continuity Inspection
ECU Connectors [A] ⟷
Oxygen Sensor Connector [B]
ECU Terminal 84 [C] ⟷ Sensor Terminal [D]
ECU Terminal 85 [E] ⟷ Sensor Terminal [F]

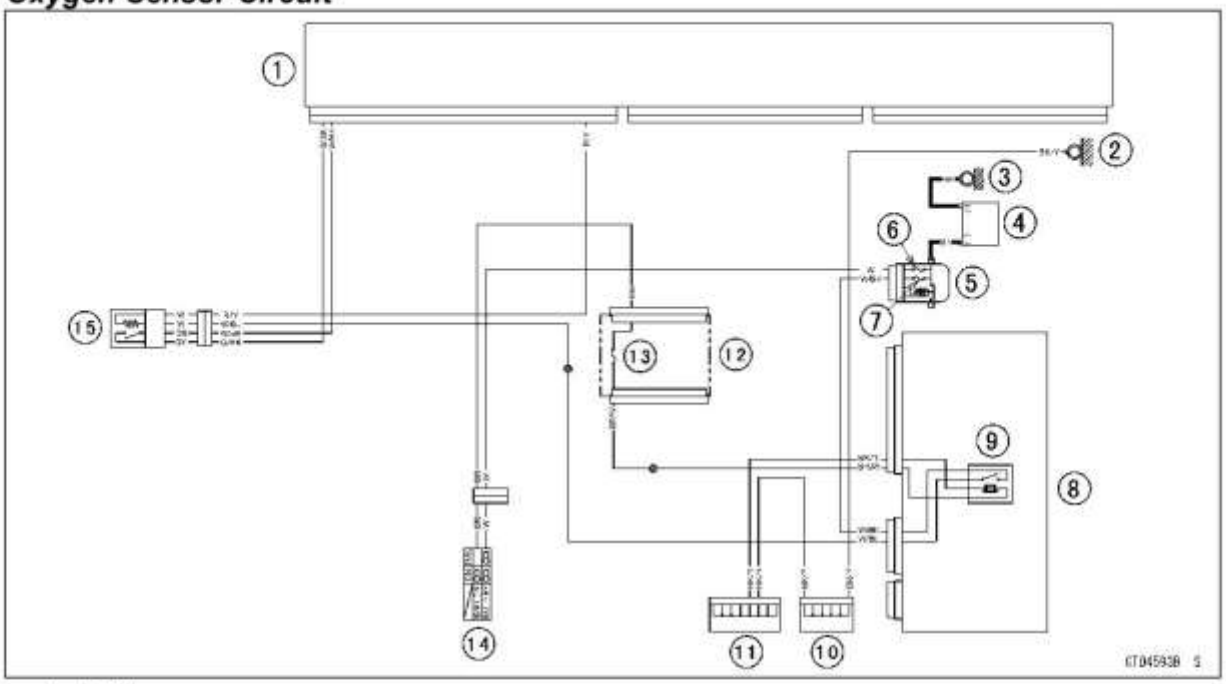


★If the wiring is good, replace the sensor.

★If the reading is within the standard (with plugs: DC 0.8 V or more, without plugs: DC 0.24 V or less), check the ECU for its ground and power supply (see ECU Power Supply Inspection(3-40)).

★If the ground and power supply are good, replace the ECU.

Oxygen Sensor Circuit



1. ECU
2. Frame Ground (2)
3. Engine Ground
4. Battery
5. Starter Relay
6. Main Fuse 30 A
7. ECU Fuse 15 A
8. Relay Box
9. ECU Main Relay
10. Joint Connector (7)
11. Joint Connector (8)
12. Fuse Box (1)
13. Ignition Fuse 15 A
14. Ignition Switch
15. Oxygen Sensor

Exhaust Butterfly Valve Actuator Sensor (Service Code 34) (DTC P048B, P048E)

Exhaust Butterfly Valve Actuator Sensor Removal/Installation

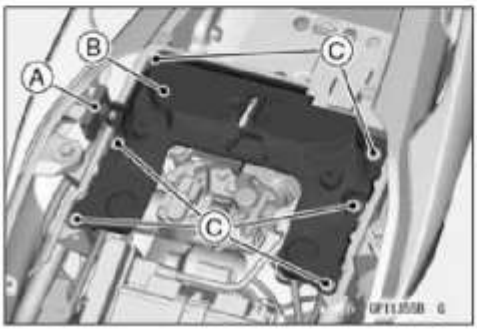
The exhaust butterfly valve actuator sensor is built in the exhaust butterfly valve actuator. So, the sensor itself can not be removed. Remove the exhaust butterfly valve actuator (see Exhaust Butterfly Valve Actuator Removal(5-44)).

Exhaust Butterfly Valve Actuator Sensor Input Voltage Inspection

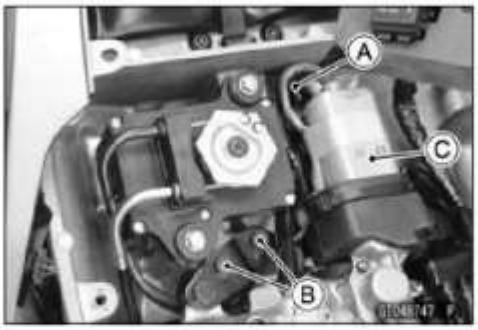
NOTE

○*Be sure the battery is fully charged.*

- Turn the ignition switch off.
- Remove:
  Seat Sub Covers (see Seat Cover Removal(15-27))
- Free the fuse box [A] from the seat lock bracket [B].
- Remove:
  Bolts [C]
  Seat Lock Bracket



- Open the clamp [A].
- Remove:
  Rear Shock Absorber Spring Preload Actuator Bolts [B]
  Rear Shock Absorber Spring Preload Actuator/Position Sensor [C]



- Disconnect the exhaust butterfly valve actuator sensor lead connector (3 pins connector) and connect the setting adapter [A] between these connectors.

Special Tool - Throttle Sensor Setting Adapter #1: 57001 -1400

- Connect a digital meter to the setting adapter leads.

Exhaust Butterfly Valve Actuator Sensor Input Voltage Connections to Adapter:

Digital Meter (+) → Y/W (actuator W) lead

Digital Meter (–) → BK/BL (actuator BK) lead

- Measure the input voltage with the engine stopped and with the connector joined.
- Turn the ignition switch on.

Input Voltage
Standard: DC 4.75 ~ 5.25 V

- Turn the ignition switch off.

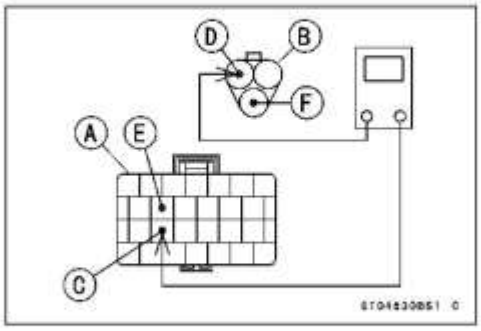
★If the reading is within the standard, check the output voltage (see Exhaust Butterfly Valve Actuator Sensor Output Voltage Inspection(17-73)).

Exhaust Butterfly Valve Actuator Sensor (Service Code 34) (DTC P048B, P048E)

★If the reading is out of the standard, remove the ECU and check the wiring for continuity between main harness connectors.

○Disconnect the ECU and sensor connectors.

Wiring Continuity Inspection
ECU Connector [A] ←→
Exhaust Butterfly Valve Actuator Sensor Connector [B]
ECU Terminal 44 [C] ←→ Sensor Terminal [D]
ECU Terminal 38 [E] ←→ Sensor Terminal [F]



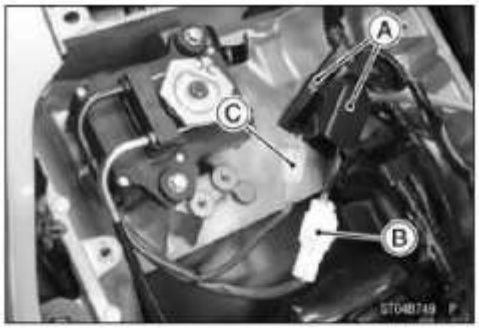
★If the wiring is good, check the ECU for its ground and power supply (see ECU Power Supply Inspection(3-40)).

★If the ground and power supply are good, replace the ECU.

Exhaust Butterfly Valve Actuator Sensor Output Voltage Inspection

NOTE

○*Before this inspection, confirm the pulley is original position (see Exhaust Butterfly Valve Cable Installation(5-42)).*



- Slide the dust covers [A].
- Disconnect:
  3 Pins Connector [B]
  2 Pins Connector [C]

- Connect the setting adapter [A] between the 3 pins connectors.

Special Tool - Throttle Sensor Setting Adapter #1: 57001-1400

- Connect a digital meter to the setting adapter leads.

Exhaust Butterfly Valve Actuator Sensor Output Voltage Connections to Adapter:
Digital Meter (+) → BL (actuator Y) lead
Digital Meter (–) → BK/BL (actuator BK) lead

- Measure the output voltage at the 3 pins connector of the exhaust butterfly valve actuator when the pulley is original position.
- Turn the ignition switch on.

Output Voltage
Standard: DC 3.46 ~ 3.76 V at pulley original position

- Turn the ignition switch off.

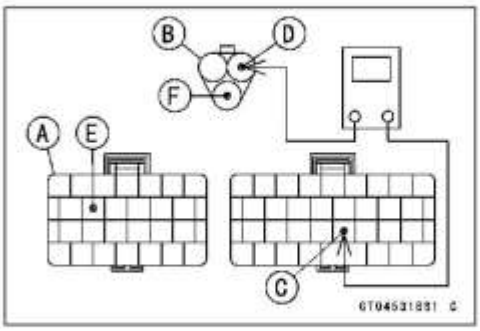
★If the reading is out of the standard, check the exhaust butterfly valve actuator sensor resistance (see Exhaust Butterfly Valve Actuator Sensor Resistance Inspection(17-74)).

Exhaust Butterfly Valve Actuator Sensor (Service Code 34) (DTC P048B, P048E)

★If the reading is within the standard, remove the ECU and check the wiring for continuity between main harness connectors.

○Disconnect the ECU and sensor connectors.

Wiring Continuity Inspection
ECU Connector [A] ⟷
Exhaust Butterfly Valve Actuator Sensor Connector [B]
ECU Terminal 73 [C] ⟷ Sensor Terminal [D]
ECU Terminal 38 [E] ⟷ Sensor Terminal [F]



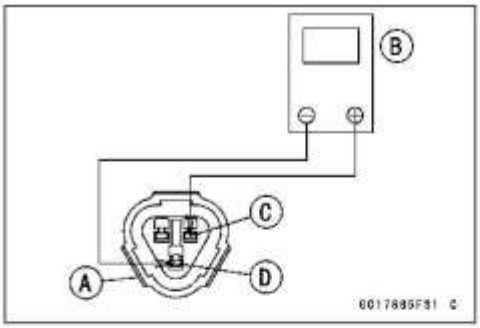
★If the wiring is good, check the ECU for its ground and power supply (see ECU Power Supply Inspection(3-40)).

★If the ground and power supply are good, replace the ECU.

Exhaust Butterfly Valve Actuator Sensor Resistance Inspection

- Turn the ignition switch off.
- Disconnect the exhaust butterfly valve actuator sensor connector (3 pins connector) [A] (see Exhaust Butterfly Valve Actuator Sensor Input Voltage Inspection(17-72)).
- Connect a digital meter [B] to the exhaust butterfly valve actuator sensor connector.
- Measure the exhaust butterfly valve actuator sensor resistance.

Exhaust Butterfly Valve Actuator Sensor Resistance
Connections: W lead [C] ⟷ BK lead [D]
Standard: 4 ~ 6 kΩ

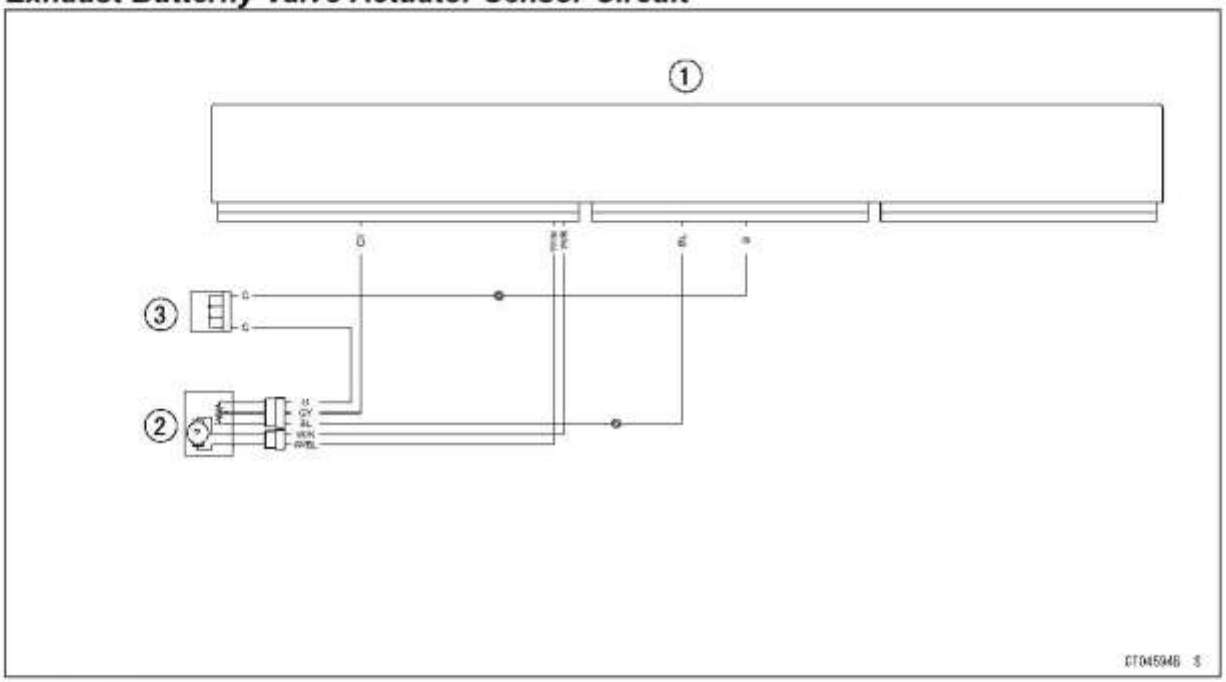


★If the reading is out of the standard, replace the exhaust butterfly valve actuator.

★If the reading within the standard, but the problem still exists, replace the ECU.

Exhaust Butterfly Valve Actuator Sensor (Service Code 34) (DTC P048B, P048E)

Exhaust Butterfly Valve Actuator Sensor Circuit



1. ECU
2. Exhaust Butterfly Valve Actuator
3. Joint Connector (2)

Immobilizer Amplifier (Service Code 35, Equipped Models)

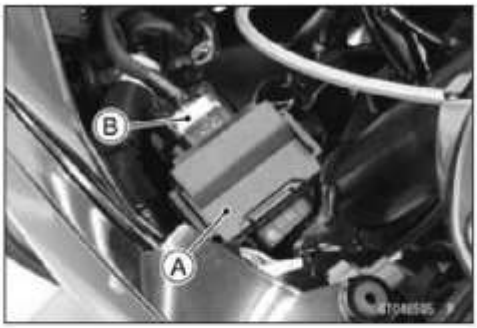
Antenna Resistance Inspection

- Turn the ignition switch off.
- Remove:
  Upper Fairing (see Upper Fairing Removal(15-18))
- Disconnect the antenna lead connector [A].
- Measure the antenna resistance.

Antenna Resistance
Connections: BK lead ←→ BK/W lead
Standard: About 3.0 ~ 4.6 Ω

★If the reading is out of the standard, replace the ignition switch (see Immobilizer System Parts Replacement(16-113)).
★If the reading is within the standard, check the wiring to the amplifier (see Immobilizer System Circuit(17-77)).
★If the wiring is good, check the input voltage of the amplifier (see Amplifier Input Voltage Inspection(17-76)).

Amplifier Input Voltage Inspection



NOTE

○*Be sure the battery is fully charged.*

- Turn the ignition switch off.
- Remove:
  Left Upper Inner Fairing (see Upper Inner Fairing Removal(15-18))
- Remove the immobilizer amplifier [A] from the bracket.

○Do not disconnect the immobilizer amplifier connector [B].

- Connect a digital meter to the amplifier connector with needle adapter set.

Special Tool - Needle Adapter Set: 57001-1874

Amplifier Input Voltage
Connections to Amplifier Connector:
Digital Meter (+) → BR/W lead
Digital Meter (–) → BK/Y lead

- Measure the input voltage with the engine stopped and with the connector joined.
- Turn the ignition switch on.

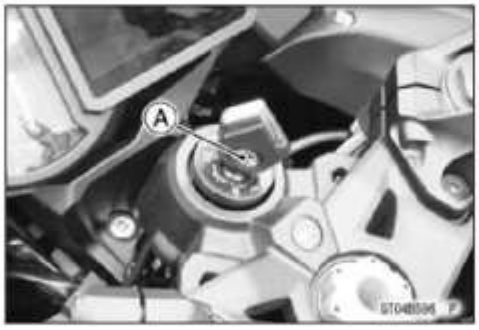
Input Voltage
Standard: Battery Voltage

- Turn the ignition switch off.

★If the reading is out of the standard, check the wiring (see Immobilizer System Circuit(17-77)).
★If the reading is within the standard, check the wiring to ECU (see Immobilizer System Circuit(17-77)).
★If the wiring is good, replace the immobilizer amplifier (see Immobilizer System Parts Replacement(16-113)).

Blank Key Detection (Service Code 36, Equipped Models)

- This code appears in the following conditions.
  - ○The transponder [A] in the ignition key is malfunction.
  - ○When the spare key of unregistration is used.
  - ○When the ignition key is registered in the registered ECU.
- Therefore, the service code 36 will disappear when the above issue is solved.

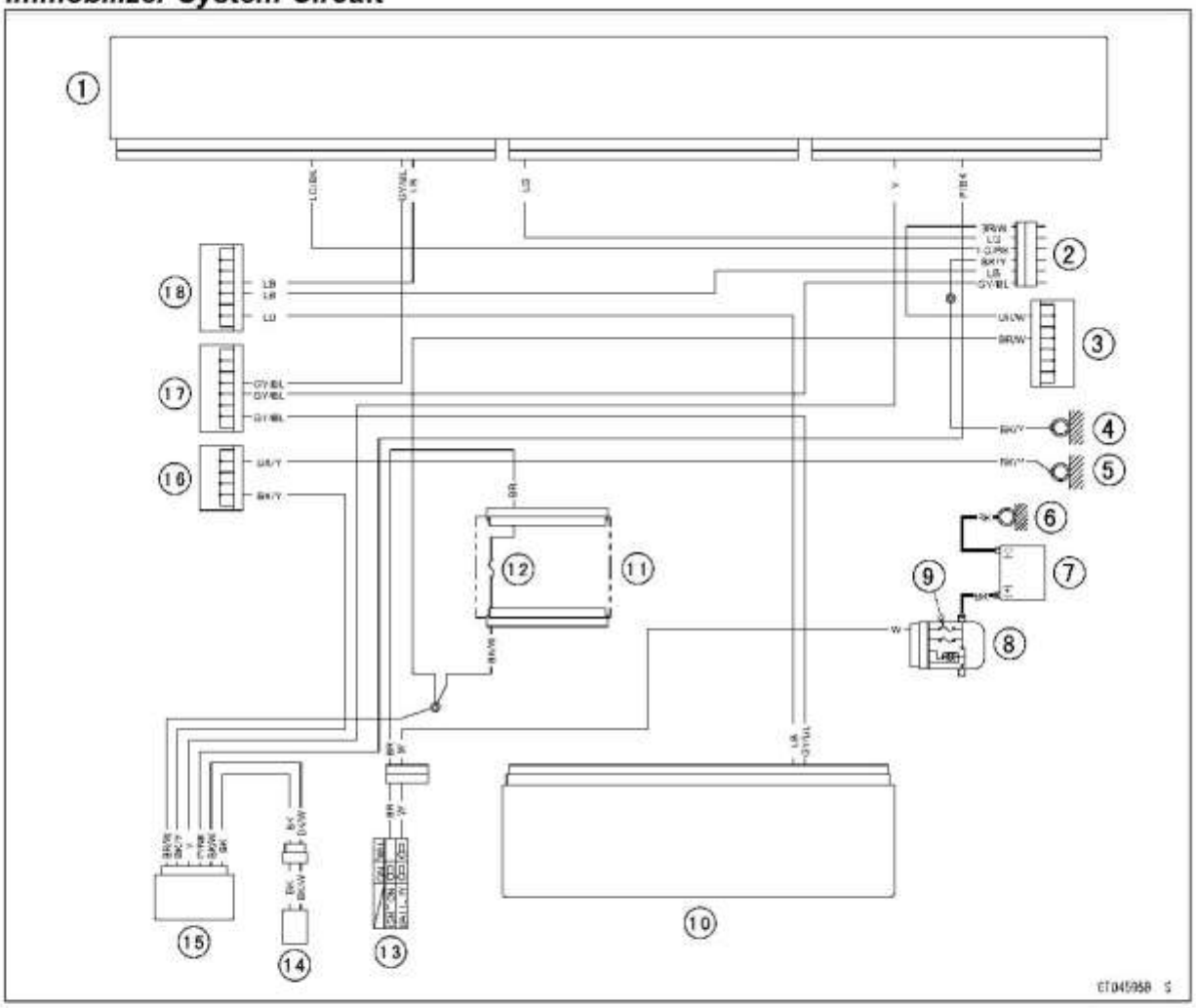


Ignition Key Inspection

- Register the ignition key correctly (see Key Registration(16-95)).

★If the service code 36 appears again, the transponder in the key is malfunction, replace it.

Immobilizer System Circuit



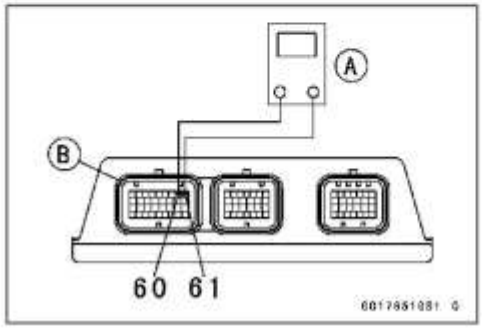
1. ECU
2. Immobilizer/Kawasaki Diagnostic System Connector
3. Joint Connector (3)
4. Frame Ground (4)
5. Frame Ground (1)
6. Engine Ground
7. Battery
8. Starter Relay
9. Main Fuse 30 A
10. Meter Unit
11. Fuse Box (1)
12. Ignition Fuse 15 A
13. Ignition Switch
14. Immobilizer Antenna
15. Immobilizer Amplifier
16. Joint Connector (1)
17. Joint Connector (CAN High)
18. Joint Connector (CAN Low)

ECU Communication Error (Service Code 39) (DTC U0001)

ECU Communication Line Inspection

○When the data is not sent from the ECU to the meter unit, the service code 39 is displayed.
○The data is sent through the CAN communication line.
○The service code 39 is detected with the meter unit.

- Remove the ECU, and inspect the CAN communication line resistance.
- Connect a digital meter [A] to the ECU connector [B].
- Measure the resistance of the CAN communication line resistor.

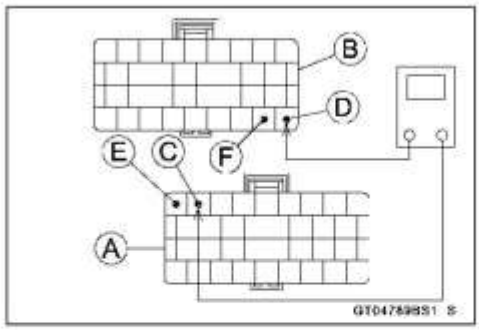


CAN Communication Line Resistance (at ECU Connector)
Connections: Terminal 60 ⟷Terminal 61
Standard: 123 ~ 125 Ω

★If the reading is out of the standard, replace the ECU.
★If the reading is within the standard, resistor of the ECU for CAN communication line is normal. Check the wiring according following procedure.

- Remove the ECU and meter unit, and check the wiring for continuity between main harness connectors.

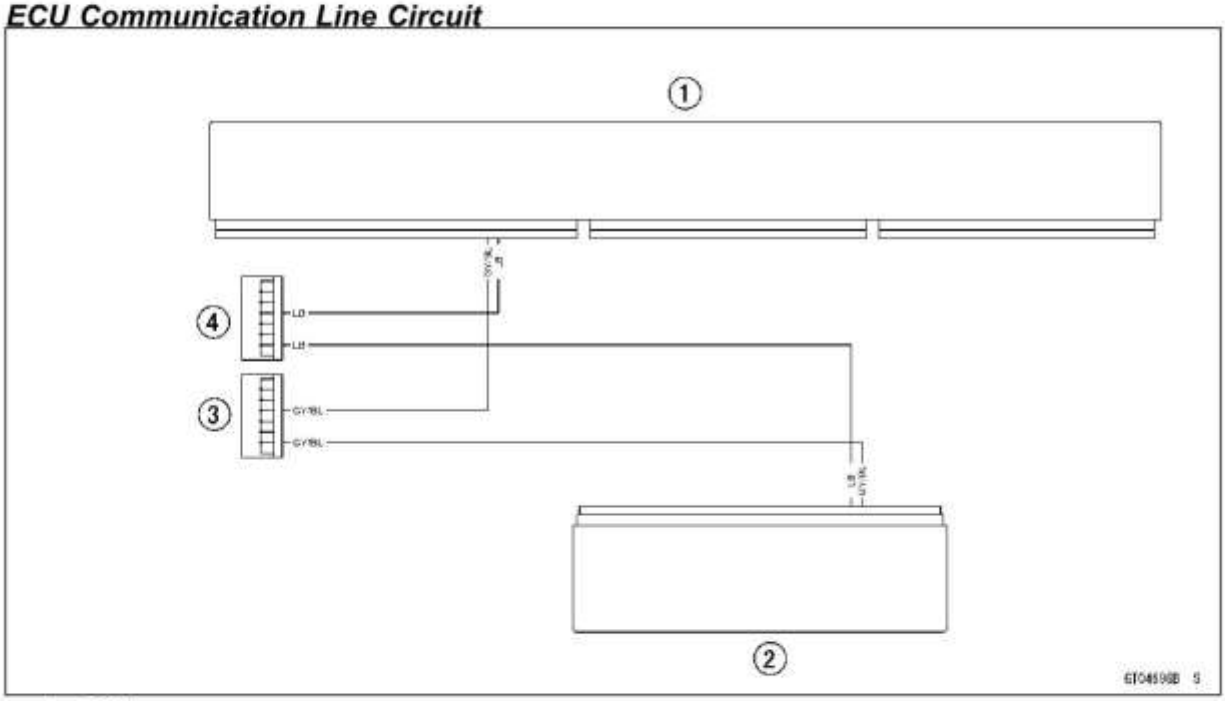
○Disconnect the ECU and meter unit connectors.



Wiring Continuity Inspection
ECU Connector [A] ⟷ Meter Unit Connector [B]
ECU Terminal 60 [C] ⟷ Meter Unit Terminal [D]
ECU Terminal 61 [E] ⟷ Meter Unit Terminal [F]

★If the wiring is good, check the meter unit (see Meter Unit Inspection(16-83)).
★If the meter unit is normal, replace the ECU.

ECU Communication Line Circuit

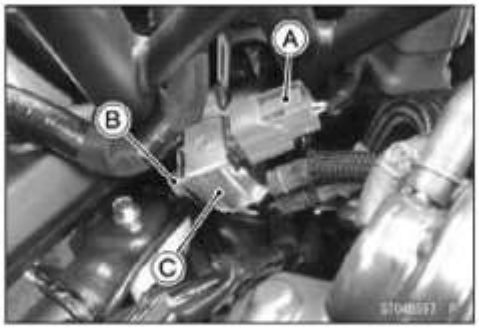


1. ECU
2. Meter Unit
3. Joint Connector (CAN High)
4. Joint Connector (CAN Low)

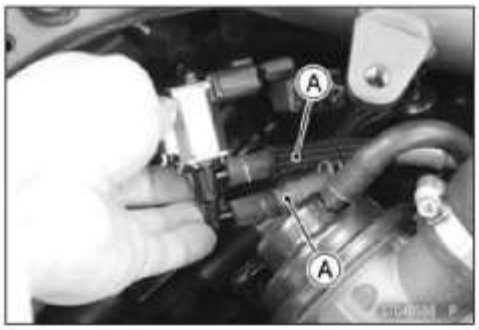
Purge Valve (Service Code 3A, Other than US and CA Models) (DTC P0443)

Purge Valve Removal

- Remove:
  Canister Bracket (see Evaporative Emission Control System Inspection (Other than US and CA Models)(2-25))
- Disconnect:
  Purge Valve Connector [A]
- Remove the purge valve nut [B].
- Remove the purge valve [C] from the bracket.



- Slide the clamps, and disconnect the hoses [A].



Purge Valve Installation

- Installation is the reverse of removal.
- Run the hoses correctly (see Cable, Wire, and Hose Routing section (18-2)).
- Tighten:

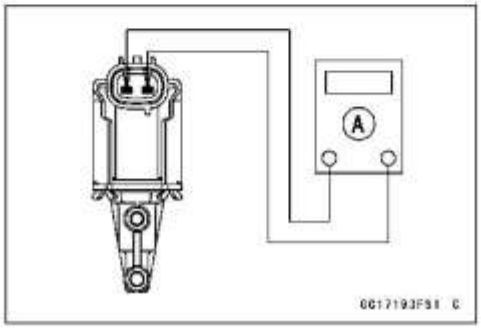
Torque - Purge Valve Nut: 7.0 N·m (0.71 kgf·m, 62 in·lb)

Purge Valve Inspection

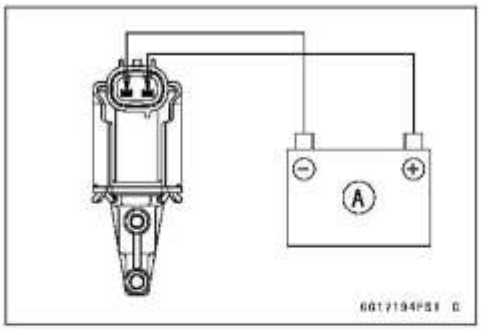
- Remove the purge valve (see Purge Valve Removal(17-79)).
- Connect a digital meter [A] to the purge valve terminals as shown.

Purge Valve Resistance
Standard: 22 ~ 26 Ω @20°C (68°F)

★If the resistance reading is out of the specified value, replace it with a new one.

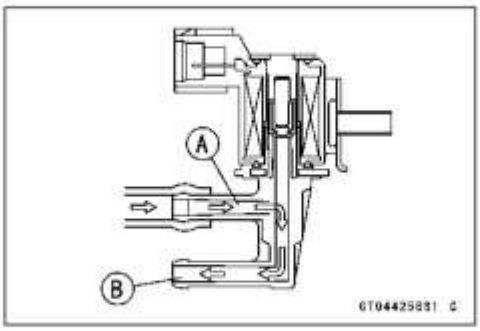


- Connect the 12 V battery [A] to the purge valve terminals as shown.



Purge Valve (Service Code 3A, Other than US and CA Models) (DTC P0443)

- Blow the air to the intake air duct [A], and make sure that the air flows from the outlet air duct [B].



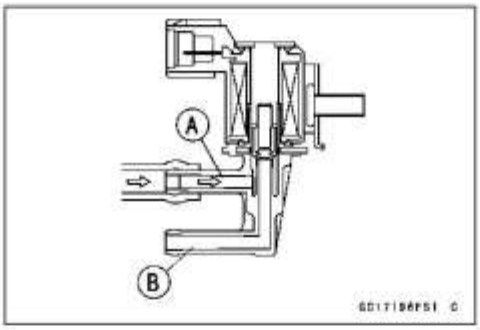
- Disconnect the 12 V battery.
- Blow the air to the intake air duct [A] again, and make sure that the air does not flow from the outlet air duct [B].

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

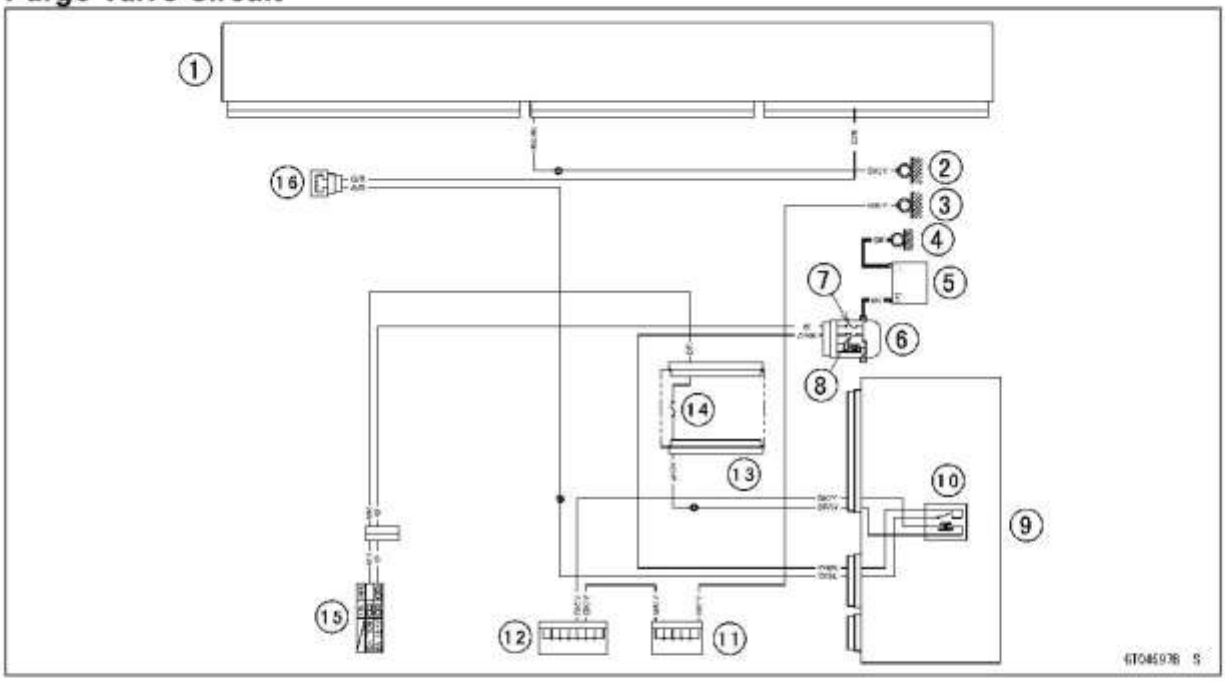
★If the purge valve is good, check the wiring for continuity (see Purge Valve Circuit(17-80)).

★If the wiring is good, check the ECU for its ground and power supply (see ECU Power Supply Inspection(3-40)).

★If the ground and power supply are good, replace the ECU.



Purge Valve Circuit



1. ECU
2. Frame Ground (4)
3. Frame Ground (2)
4. Engine Ground
5. Battery
6. Starter Relay
7. Main Fuse 30 A
8. ECU Fuse 15 A
9. Relay Box
10. ECU Main Relay
11. Joint Connector (7)
12. Joint Connector (8)
13. Fuse Box (1)
14. Ignition Fuse 15 A
15. Ignition Switch
16. Purge Valve

Quick Shifter Sensor (Service Code 3E) (DTC P0826)

Quick Shifter Sensor Removal/Installation

- Refer to the Shift Pedal Removal/Installation (see Shift Pedal Removal(9-48)) (see Shift Pedal Installation(9-49)).

Quick Shifter Sensor Input Voltage Inspection

NOTE

○*Be sure the battery is fully charged.*

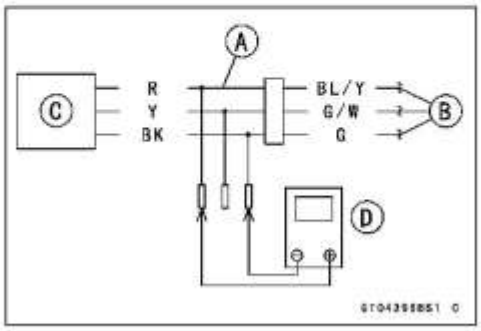
- Turn the ignition switch off.
- Remove:
  Left Lower Fairing (see Lower Fairing Removal(15-14))
- Disconnect:
  Quick Shifter Sensor Lead Connector [A]

- Connect the measuring adapter [A] to the quick shifter sensor connectors as shown.
  Main Harness [B]
  Quick Shifter Sensor [C]

Special Tool - Measuring Adapter: 57001-1700

- Connect a digital meter [D] to the measuring adapter leads.

Quick Shifter Sensor Input Voltage
Connections to Adapter:
Digital Meter (+) → R (sensor BL/Y) lead
Digital Meter (–) → BK (sensor G) lead



- Measure the input voltage with the engine stopped and with the connector joined.
- Turn the ignition switch on.

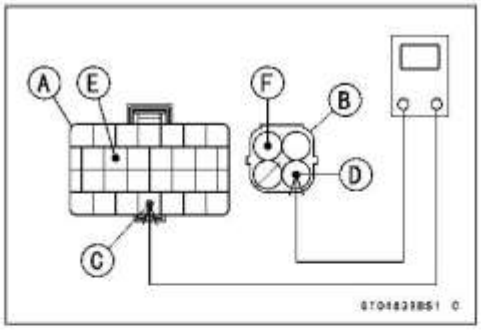
Input Voltage
Standard: DC 4.75 ~ 5.25 V

- Turn the ignition switch off.

★If the reading is within standard, check the output voltage (see Quick Shifter Sensor Output Voltage Inspection(17-82)).

★If the reading is out of the standard, remove the ECU and check the wiring for continuity between main harness connectors.

○Disconnect the ECU and sensor connectors.



Wiring Continuity Inspection
ECU Connector [A] ⟷
Quick Shifter Sensor Connector [B]
ECU Terminal 49 [C] ⟷ Sensor Terminal [D]
ECU Terminal 38 [E] ⟷ Sensor Terminal [F]

★If the wiring is good, check the ECU for its ground and power supply (see ECU Power Supply Inspection(3-40)).

★If the ground and power supply are good, replace the ECU.

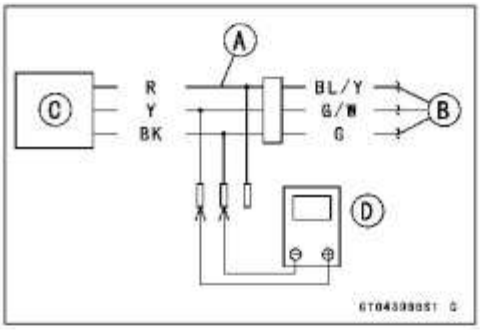
Quick Shifter Sensor (Service Code 3E) (DTC P0826)

Quick Shifter Sensor Output Voltage Inspection

- Measure the output voltage at the quick shifter sensor in the same way as input voltage inspection, note the following.

○Disconnect the quick shifter sensor lead connector and connect the measuring adapter [A] between these connectors.
Main Harness [B]
Quick Shifter Sensor [C]
Digital Meter [D]

Special Tool - Measuring Adapter: 57001-1700



Quick Shifter Sensor Output Voltage
Connections to Adapter:
Digital Meter (+) → Y (sensor G/W) lead
Digital Meter (–) → BK (sensor G) lead

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

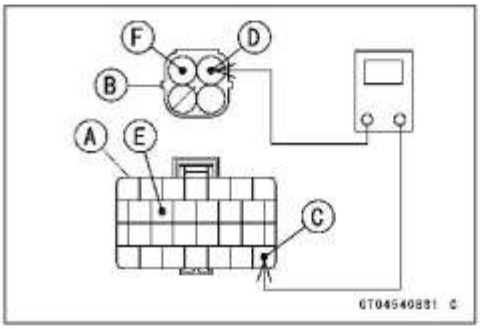
Output Voltage
Standard: DC 0.35 ~ 4.65 V

NOTE

○*By shifting up (down) the gear, confirm the output voltage will be raise (drop).*

- Turn the ignition switch off.

★If the reading is out of the standard, check the quick shifter sensor resistance (see Quick Shifter Sensor Resistance Inspection(17-83)).



★If the reading is within the standard, remove the ECU and check the wiring for continuity between main harness connectors.

○Disconnect the ECU and sensor connectors.

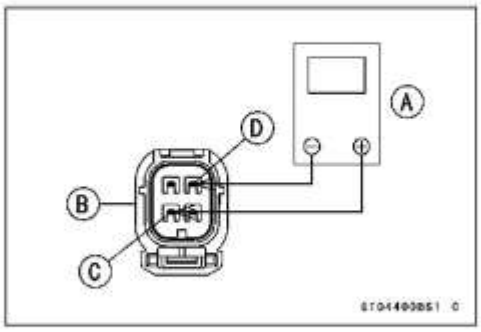
Wiring Continuity Inspection
ECU Connector [A] ⟷
Quick Shifter Sensor Connector [B]
ECU Terminal 46 [C] ⟷ Sensor Terminal [D]
ECU Terminal 38 [E] ⟷ Sensor Terminal [F]

★If the wiring is good, check the ECU for its ground and power supply (see ECU Power Supply Inspection(3-40)).

★If the ground and power supply are good, replace the ECU.

Quick Shifter Sensor (Service Code 3E) (DTC P0826)

Quick Shifter Sensor Resistance Inspection

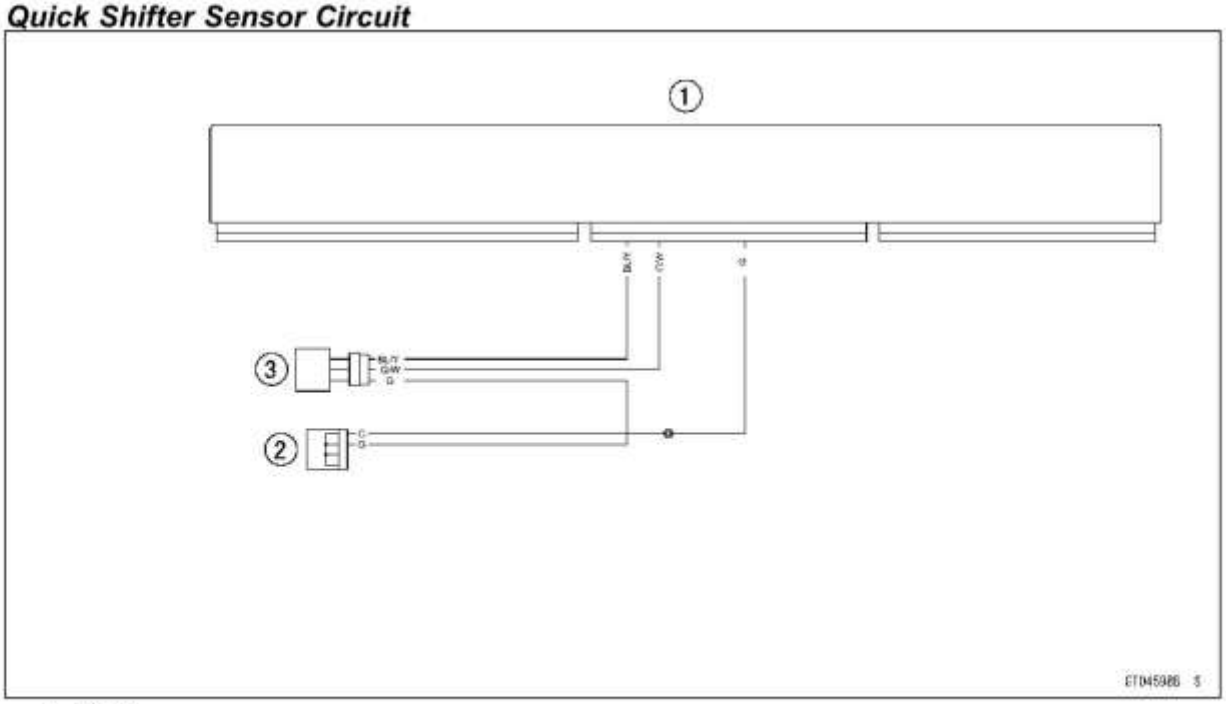


- Disconnect the quick shifter sensor lead connector.
- Connect a digital meter [A] to the quick shifter sensor lead connector [B].
- Measure the quick shifter sensor resistance.

Quick Shifter Sensor Resistance
Connections: BL lead [C] ⟷ BK lead [D]
Standard: 209 ~ 231 kΩ

★If the reading is out of the standard, replace the sensor.
★If the reading is within the standard, but the problem still exists, replace the ECU.

Quick Shifter Sensor Circuit



1. ECU
2. Joint Connector (2)
3. Quick Shifter Sensor

Primary Fuel Injectors #1, #2, #3, #4 (Service Code 41, 42, 43, 44) (DTC P0201, P0202, P0203, P0204)

Primary Fuel Injector #1: Service Code 41 (DTC P0201)
Primary Fuel Injector #2: Service Code 42 (DTC P0202)
Primary Fuel Injector #3: Service Code 43 (DTC P0203)
Primary Fuel Injector #4: Service Code 44 (DTC P0204)

Primary Fuel Injector Removal/Installation

- Refer to the Throttle Body Assy Disassembly/Assembly (see Throttle Body Assy Disassembly(3-62)) (see Throttle Body Assy Assembly(3-63)).

Primary Fuel Injector Audible Inspection

NOTE

○*Be sure the battery is fully charged.*

- Start the engine, and let it idle.
- Apply the flat tip screwdriver [A] to the primary fuel injector [B]. Put the grip end onto your ear, and listen whether the primary fuel injector is clicking or not.

○A sound scope can also be used.

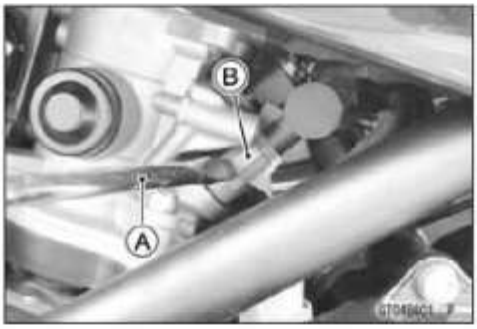
○The click interval becomes shorter as the engine speed rises.

- Do the same for the other primary fuel injectors.

★If all the primary fuel injectors click at a regular intervals, the fuel injectors are normal.

- Turn the ignition switch off.

★If any primary fuel injector does not click, check the primary fuel injector resistance (see Primary Fuel Injector Resistance Inspection(17-84)).



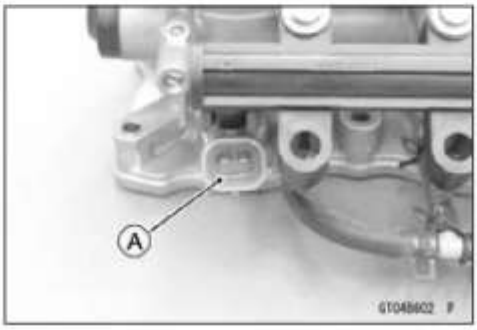
Primary Fuel Injector Resistance Inspection

- Remove:
  Throttle Body Assy (see Throttle Body Assy Removal(3-59))
- Connect a digital meter to the terminals in each primary fuel injector [A].
- Measure the primary fuel injector resistance.

Primary Fuel Injector Resistance
Standard: About 11.5 ~ 12.5 Ω @20°C (68°F)

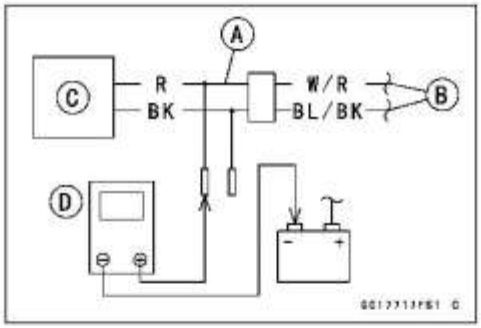
★If the reading is out of the standard, replace the primary fuel injector.

★If the reading is within the standard, check the power source voltage (see Primary Fuel Injector Power Source Voltage Inspection(17-85)).



Primary Fuel Injectors #1, #2, #3, #4 (Service Code 41, 42, 43, 44) (DTC P0201, P0202, P0203, P0204)

Primary Fuel Injector Power Source Voltage Inspection



NOTE

○*Be sure the battery is fully charged.*

- Turn the ignition switch off.
- Remove:
  Throttle Body Assy (see Throttle Body Assy Removal(3-59))
- Connect the measuring adapter [A] to the primary fuel injector connectors as shown.
  Subharness [B]
  Primary Fuel Injector #1 [C]

Special Tool - Measuring Adapter: 57001-1700

- Connect a digital meter [D] to the measuring adapter leads.

Primary Fuel Injector Power Source Voltage
Connections to Adapter:
For Primary Fuel Injector #1, #2, #3, #4
Digital Meter (+) → R (injector W/R) lead
Digital Meter (–) → Battery (–) Terminal

- Measure the power source voltage with the engine stopped and with the connector jointed.
- Slide the engine start/stop switch to run position.
- Turn the ignition switch on.

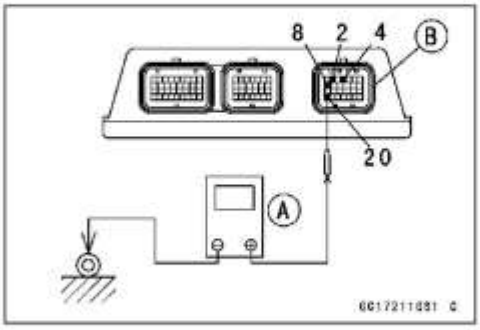
Power Source Voltage
Standard: Battery Voltage for 3 seconds, and then 0 V

- Turn the ignition switch off.

★If the reading stays on battery voltage and never shows 0 V, check the fuel pump relay (see Relay Circuit Inspection(16-126)).
★If the fuel pump relay is normal, check the ECU for its ground and power supply (see ECU Power Supply Inspection(3-40)).
★If the ground and power supply are good, replace the ECU.
★If there is still no battery voltage, check the fuel pump relay (see Relay Circuit Inspection(16-126)).
★If the fuel pump relay is normal, check the power source wiring (see Fuel Injector Circuit(17-89)).
★If the wiring is good, check the ECU for its ground and power supply (see ECU Power Supply Inspection(3-40)).
★If the ground and power supply are good, replace the ECU.
★If the reading is in specification, check the output voltage (see Primary Fuel Injector Output Voltage Inspection(17-86)).

Primary Fuel Injectors #1, #2, #3, #4 (Service Code 41, 42, 43, 44) (DTC P0201, P0202, P0203, P0204)

Primary Fuel Injector Output Voltage Inspection



NOTE

○*Be sure the battery is fully charged.*

- Turn the ignition switch off.
- Remove:
  ECU (see ECU Removal(3-39))

○Do not disconnect the ECU connectors.

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

Special Tool - Needle Adapter Set: 57001-1874

Primary Fuel Injector Output Voltage
Connections to ECU Connector:

For Primary Fuel Injector #1

Digital Meter (+) → BL/BK lead (terminal 20)

Digital Meter (–) → Frame Ground Terminal

For Primary Fuel Injector #2

Digital Meter (+) → BL/R lead (terminal 8)

Digital Meter (–) → Frame Ground Terminal

For Primary Fuel Injector #3

Digital Meter (+) → BL/O lead (terminal 2)

Digital Meter (–) → Frame Ground Terminal

For Primary Fuel Injector #4

Digital Meter (+) → BL/G lead (terminal 4)

Digital Meter (–) → Frame Ground Terminal

- Measure the output voltage with the engine stopped and with the connector joined.
- Slide the engine start/stop switch to run position.
- Turn the ignition switch on.

Output Voltage
Standard: Battery Voltage for 3 seconds, and then 0 V

- Turn the ignition switch off.

★If the reading is in specification, check the ECU for its ground and power supply (see ECU Power Supply Inspection(3-40)).

★If the ground and power supply are good, replace the ECU.

Primary Fuel Injectors #1, #2, #3, #4 (Service Code 41, 42, 43, 44) (DTC P0201, P0202, P0203, P0204)

★If the reading is out of the specification, remove the ECU and check the wiring for continuity between harness connectors.

○Disconnect the ECU and injector connectors.

Wiring Continuity Inspection

ECU Connector [A] ⟷ Primary Fuel Injector Connector [B]

For Primary Fuel Injector #1

ECU Terminal 20 [C] ⟷ Fuel Injector #1 Terminal [D]

For Primary Fuel Injector #2

ECU Terminal 8 [E] ⟷ Fuel Injector #2 Terminal [D]

For Primary Fuel Injector #3

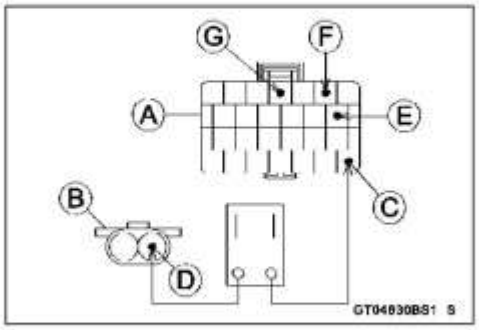
ECU Terminal 2 [F] ⟷ Fuel Injector #3 Terminal [D]

For Primary Fuel Injector #4

ECU Terminal 4 [G] ⟷ Fuel Injector #4 Terminal [D]

★If the wiring is good, check the ECU for its ground and power supply (see ECU Power Supply Inspection(3-40)).

★If the ground and power supply are good, replace the ECU.



Primary Fuel Injectors #1, #2, #3, #4 (Service Code 41, 42, 43, 44) (DTC P0201, P0202, P0203, P0204)

Primary Fuel Injector Fuel Line Inspection

- Remove:
  Fuel Tank (see Fuel Tank Removal(3-75))
  Air Intake Chamber (see Air Intake Chamber Removal(3-53))
- Disconnect:
  Primary and Secondary Fuel Hoses (see Fuel Hose Replacement(2-23))

○Be sure to place a piece of cloth around the fuel outlet pipe of the fuel pump and the delivery pipe of the throttle body assy.

⚠ WARNING

Fuel is flammable and explosive under certain conditions and can cause severe burns. Be prepared for fuel spillage; any spilled fuel must be completely wiped up immediately. When the fuel hose is disconnected, fuel spills out from the hose and the pipe because of residual pressure. Cover the hose connection with a piece of clean cloth to prevent fuel spillage.

- Check the fuel injector fuel line for leakage as follows.

○Connect a commercially available vacuum/pressure pump [A] to the nipple of the delivery pipe [B] with the fuel hose [C] (both ends with the clamps [D]) as shown.
Rear View [E]

○Connect the fuel hose [F] (both ends with the clamps [G]) between the delivery pipes [H] of the throttle body assy and nozzle assy [I] as shown.

○Apply soap and water solution to the areas [J] as shown.

○Watching the pressure gauge, squeeze the pump lever, and build up the pressure until the pressure reaches the maximum pressure.

Fuel Injector Fuel Line Maximum Pressure
Standard: 294 kPa (3.0 kgf/cm², 43 psi)

NOTICE

During pressure testing, do not exceed the maximum pressure for which the system is designed.

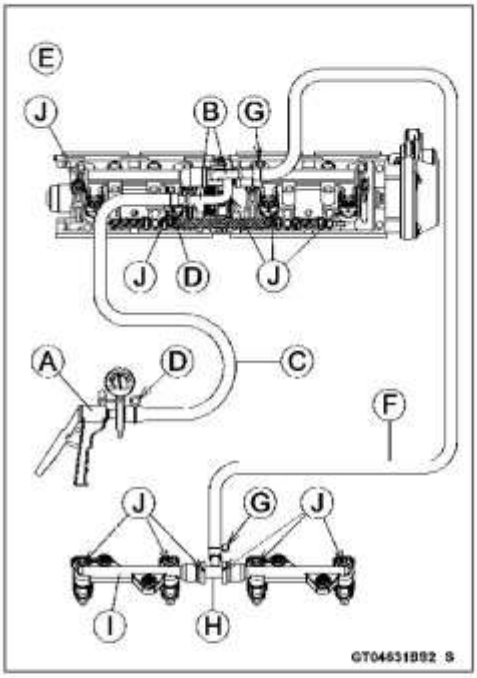
○Watch the gauge for at least 6 seconds.

★If the pressure holds steady, the fuel line is good.

★If the pressure drops at once or if bubbles are found in the area, the fuel line is leaking. Replace the delivery pipe assy, injectors and related parts.

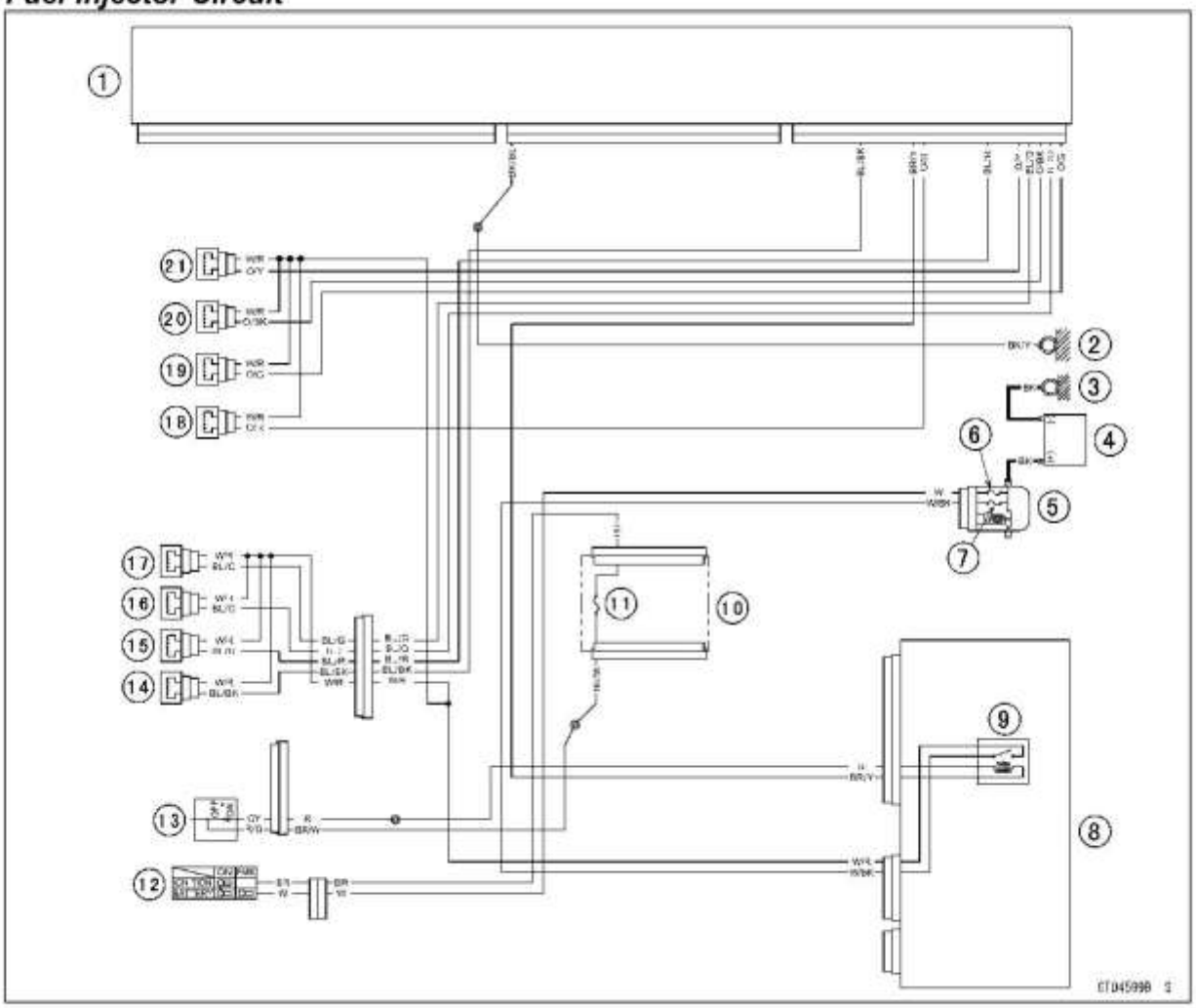
○Repeat the leak test, and check the fuel line for no leakage.

- Install the removed parts.
- Start the engine and check for fuel leakage.



Primary Fuel Injectors #1, #2, #3, #4 (Service Code 41, 42, 43, 44) (DTC P0201, P0202, P0203, P0204)

Fuel Injector Circuit



1. ECU
2. Frame Ground (4)
3. Engine Ground
4. Battery
5. Starter Relay
6. Main Fuse 30 A
7. ECU Fuse 15 A
8. Relay Box
9. Fuel Pump Relay
10. Fuse Box (1)
11. Ignition Fuse 15 A
12. Ignition Switch
13. Engine Start/Stop Switch (Engine Stop)
14. Primary Fuel Injector #1
15. Primary Fuel Injector #2
16. Primary Fuel Injector #3
17. Primary Fuel Injector #4
18. Secondary Fuel Injector #1
19. Secondary Fuel Injector #2
20. Secondary Fuel Injector #3
21. Secondary Fuel Injector #4

Fuel Pump Relay (Service Code 46) (DTC P0627)

Fuel Pump Relay Removal/Installation

○The fuel pump relay is built in the relay box [A].

- Refer to the Relay Box Removal (see Relay Box Removal(16-126)).

Fuel Pump Relay Inspection

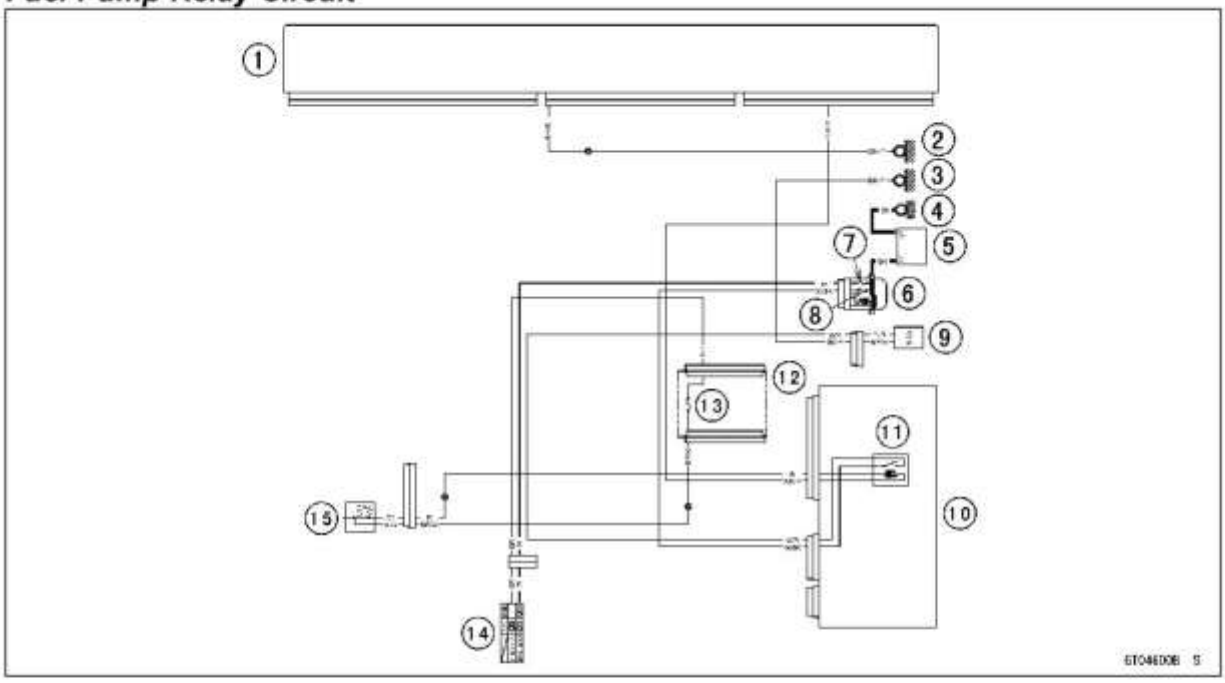
- Refer to the Relay Circuit Inspection (see Relay Circuit Inspection(16-126)).

★If the fuel pump relay is normal, check the wiring to the fuel pump relay (see Fuel Pump Relay Circuit(17-90)).

★If the wiring is good, check the ECU for its ground and power supply (see ECU Power Supply Inspection(3-40)).

★If the ground and power supply are good, replace the ECU.

Fuel Pump Relay Circuit

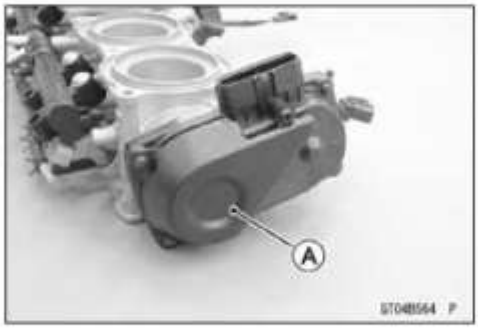


1. ECU
2. Frame Ground (4)
3. Frame Ground (3)
4. Engine Ground
5. Battery
6. Starter Relay
7. Main Fuse 30 A
8. ECU Fuse 15 A
9. Fuel Pump
10. Relay Box
11. Fuel Pump Relay
12. Fuse Box (1)
13. Ignition Fuse 15 A
14. Ignition Switch
15. Engine Start/Stop Switch (Engine Stop)

Return Spring (Service Code 49) (DTC P2119)

Return Spring Removal

NOTICE
Do not remove return spring in the gear case [A] since it has been set with precision at the factory.



Return Spring Inspection

- Turn the ignition switch off.
- Remove
  Air Intake Chamber (see Air Intake Chamber Removal(3-53))
- Check that the throttle valves [A] move lightly by pushing finger without the spring force.

★If the throttle valves move lightly, the return spring is broken, replace the throttle body assy.

★If the throttle valves move hardly and return them by the return spring, check the output voltage of the throttle position sensor (see Throttle Position Sensor Output Voltage Inspection(17-29)).

★If the output voltage is good, replace the ECU.

Secondary Fuel Injectors #1, #2, #3, #4 (Service Code 4A, 4B, 4C, 4D) (DTC P0205, P0206, P0207, P0208)

Secondary Fuel Injector #1: Service Code 4A (DTC P0205)
Secondary Fuel Injector #2: Service Code 4B (DTC P0206)
Secondary Fuel Injector #3: Service Code 4C (DTC P0207)
Secondary Fuel Injector #4: Service Code 4D (DTC P0208)

Secondary Fuel Injector Removal/Installation

- Refer to the Nozzle Assy Disassembly/Assembly (see Nozzle Assy Disassembly(3-64)) (see Nozzle Assy Assembly(3-65)).

Secondary Fuel Injector Resistance Inspection

- Remove:
  Fuel Tank (see Fuel Tank Removal(3-75))
- Disconnect:
  Secondary Fuel Injector Connector [A]

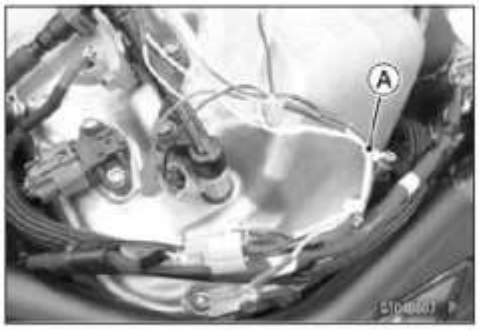
- Connect a digital meter to the terminals in each secondary fuel injector [A].
- Measure the secondary fuel injector resistance.

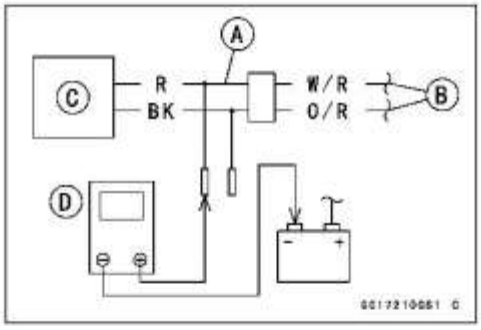
Secondary Fuel Injector Resistance
Standard: About 11.5 ~ 12.5 Ω @20°C (68°F)

★If the reading is out of the standard, replace the secondary fuel injector.
★If the reading is within the standard, check the power source voltage (see Secondary Fuel Injector Power Source Voltage Inspection(17-93)).

Secondary Fuel Injectors #1, #2, #3, #4 (Service Code 4A, 4B, 4C, 4D) (DTC P0205, P0206, P0207, P0208)

Secondary Fuel Injector Power Source Voltage Inspection





NOTE

○*Be sure the battery is fully charged.*

- Turn the ignition switch off.
- Remove:
  Fuel Tank (see Fuel Tank Removal(3-75))
- Disconnect the secondary fuel injector connector and connect the measuring adapter [A] between these connectors as shown.
  Main Harness [B]
  Secondary Fuel Injector #1 [C]

Special Tool - Measuring Adapter: 57001-1700

- Connect a digital meter [D] to the measuring adapter leads.

Secondary Fuel Injector Power Source Voltage
Connections to Adapter:
For Secondary Fuel Injector #1, #2, #3, #4
Digital Meter (+) → R (injector W/R) lead
Digital Meter (–) → Battery (–) Terminal

- Measure the power source voltage with the engine stopped and with the connector jointed.
- Slide the engine start/stop switch to run position.
- Turn the ignition switch on.

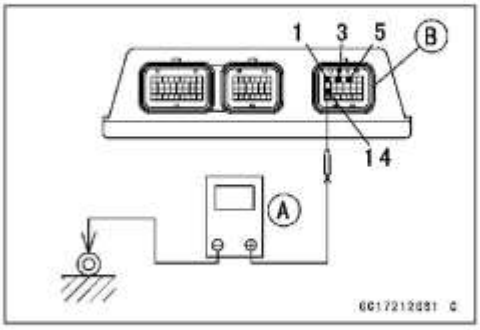
Power Source Voltage
Standard: Battery Voltage for 3 seconds, and then 0 V

- Turn the ignition switch off.

★If the reading stays on battery voltage and never shows 0 V, check the fuel pump relay (see Relay Circuit Inspection(16-126)).
★If the fuel pump relay is normal, check the ECU for its ground and power supply (see ECU Power Supply Inspection(3-40)).
★If the ground and power supply are good, replace the ECU.
★If there is still no battery voltage, check the fuel pump relay (see Relay Circuit Inspection(16-126)).
★If the fuel pump relay is normal, check the power source wiring (see Fuel Injector Circuit(17-96)).
★If the wiring is good, check the ECU for its ground and power supply (see ECU Power Supply Inspection(3-40)).
★If the ground and power supply are good, replace the ECU.
★If the reading is in specification, check the output voltage (see Secondary Fuel Injector Output Voltage Inspection(17-94)).

Secondary Fuel Injectors #1, #2, #3, #4 (Service Code 4A, 4B, 4C, 4D) (DTC P0205, P0206, P0207, P0208)

Secondary Fuel Injector Output Voltage Inspection



NOTE

○*Be sure the battery is fully charged.*

- Turn the ignition switch off.
- Remove:

  ECU (see ECU Removal(3-39))

○Do not disconnect the ECU connectors.

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

Special Tool - Needle Adapter Set: 57001-1874

Secondary Fuel Injector Output Voltage
Connections to ECU Connector:

For Secondary Fuel Injector #1

Digital Meter (+) → O/R lead (terminal 14)

Digital Meter (–) → Frame Ground Terminal

For Secondary Fuel Injector #2

Digital Meter (+) → O/G lead (terminal 1)

Digital Meter (–) → Frame Ground Terminal

For Secondary Fuel Injector #3

Digital Meter (+) → O/BK lead (terminal 3)

Digital Meter (–) → Frame Ground Terminal

For Secondary Fuel Injector #4

Digital Meter (+) → O/Y lead (terminal 5)

Digital Meter (–) → Frame Ground Terminal

- Measure the output voltage with the engine stopped and with the connector joined.
- Slide the engine start/stop switch to run position.
- Turn the ignition switch on.

Output Voltage
Standard: Battery Voltage for 3 seconds, and then 0 V

- Turn the ignition switch off.

★If the reading is in specification, check the ECU for its ground and power supply (see ECU Power Supply Inspection(3-40)).

★If the ground and power supply are good, replace the ECU.

Secondary Fuel Injectors #1, #2, #3, #4 (Service Code 4A, 4B, 4C, 4D) (DTC P0205, P0206, P0207, P0208)

★If the reading is out of the specification, remove the ECU and check the wiring for continuity between main harness connectors.

○Disconnect the ECU and injector connectors.

Wiring Continuity Inspection

ECU Connector [A] ⟷ Secondary Fuel Injector Connector [B]

For Secondary Fuel Injector #1

ECU Terminal 14 [C] ⟷ Fuel Injector #1 Terminal [D]

For Secondary Fuel Injector #2

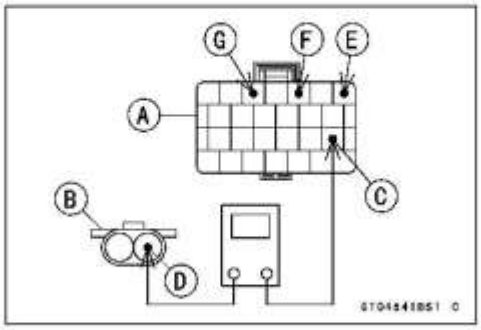
ECU Terminal 1 [E] ⟷ Fuel Injector #2 Terminal [D]

For Secondary Fuel Injector #3

ECU Terminal 3 [F] ⟷ Fuel Injector #3 Terminal [D]

For Secondary Fuel Injector #4

ECU Terminal 5 [G] ⟷ Fuel Injector #4 Terminal [D]



★If the wiring is good, check the ECU for its ground and power supply (see ECU Power Supply Inspection(3-40)).

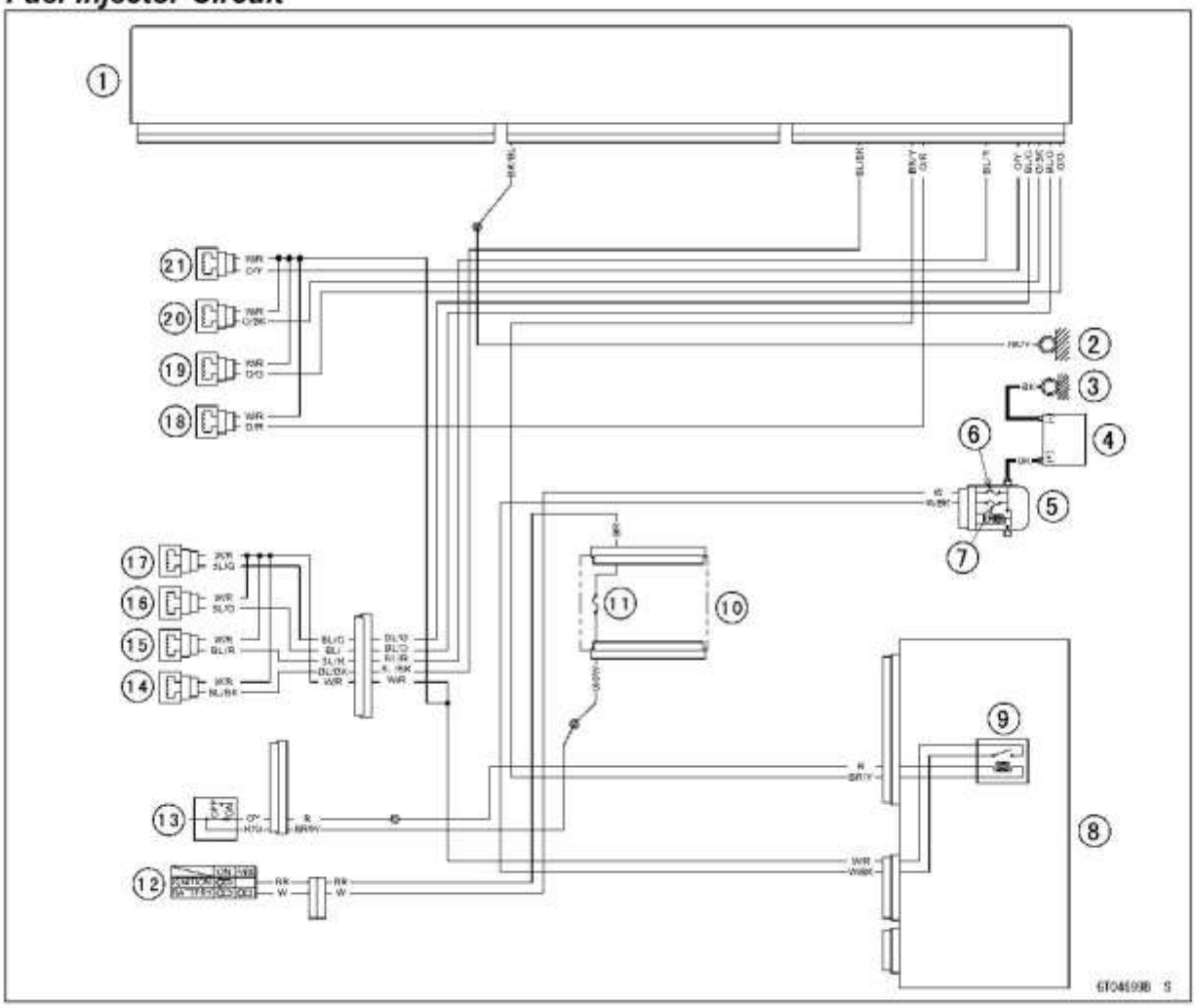
★If the ground and power supply are good, replace the ECU.

Secondary Fuel Injector Fuel Line Inspection

● Refer to the Primary Fuel Injector Fuel Line Inspection (see Primary Fuel Injector Fuel Line Inspection(17-88)).

Secondary Fuel Injectors #1, #2, #3, #4 (Service Code 4A, 4B, 4C, 4D) (DTC P0205, P0206, P0207, P0208)

Fuel Injector Circuit



1. ECU
2. Frame Ground (4)
3. Engine Ground
4. Battery
5. Starter Relay
6. Main Fuse 30 A
7. ECU Fuse 15 A
8. Relay Box
9. Fuel Pump Relay
10. Fuse Box (1)
11. Ignition Fuse 15 A
12. Ignition Switch
13. Engine Start/Stop Switch (Engine Stop)
14. Primary Fuel Injector #1
15. Primary Fuel Injector #2
16. Primary Fuel Injector #3
17. Primary Fuel Injector #4
18. Secondary Fuel Injector #1
19. Secondary Fuel Injector #2
20. Secondary Fuel Injector #3
21. Secondary Fuel Injector #4

Stick Coils #1, #2, #3, #4 (Service Code 51, 52, 53, 54) (DTC P0351, P0352, P0353, P0354)

Stick Coil #1: Service Code 51 (DTC P0351)
Stick Coil #2: Service Code 52 (DTC P0352)
Stick Coil #3: Service Code 53 (DTC P0353)
Stick Coil #4: Service Code 54 (DTC P0354)

Stick Coil Removal/Installation

- Refer to the Stick Coil Removal/Installation (see Stick Coil Removal(16-44)) (see Stick Coil Installation(16-44)).

Stick Coil Primary Winding Resistance Inspection

- Refer to the Stick Coil Inspection (see Stick Coil Inspection(16-44)).

★If the reading is within the standard, check the input voltage (see Stick Coil Input Voltage Inspection(17-97)).

Stick Coil Input Voltage Inspection

NOTE

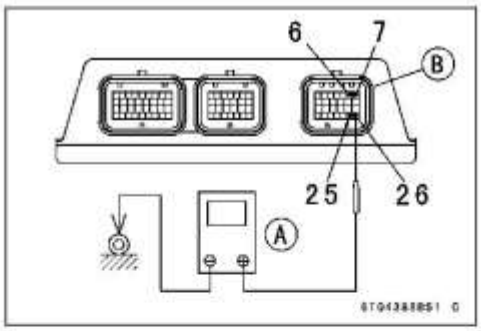
○*Be sure the battery is fully charged.*

- Turn the ignition switch off.
- Remove:
  ECU (see ECU Removal(3-39))

○Do not disconnect the ECU connectors.

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

Special Tool - Needle Adapter Set: 57001-1874



Stick Coil Input Voltage
Connections to ECU Connector:
For Stick Coil #1
Digital Meter (+) → BK lead (terminal 7)
Digital Meter (–) → Frame Ground Terminal
For Stick Coil #2
Digital Meter (+) → BK/R lead (terminal 6)
Digital Meter (–) → Frame Ground Terminal
For Stick Coil #3
Digital Meter (+) → BK/O lead (terminal 25)
Digital Meter (–) → Frame Ground Terminal
For Stick Coil #4
Digital Meter (+) → BK/W lead (terminal 26)
Digital Meter (–) → Frame Ground Terminal

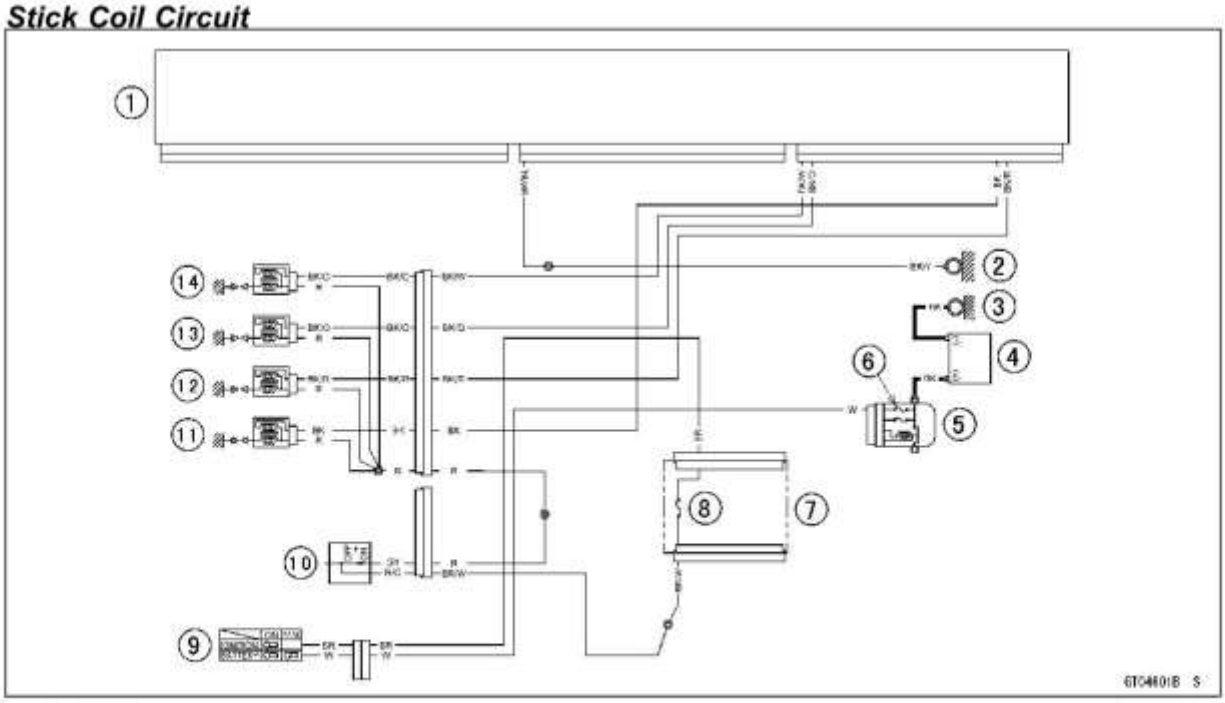
- Measure the input voltage to each primary winding of the stick coils with the engine stopped and with the connectors joined.
- Slide the engine start/stop switch to run position.
- Turn the ignition switch on.

Input Voltage
Standard: Battery Voltage

Stick Coils #1, #2, #3, #4 (Service Code 51, 52, 53, 54) (DTC P0351, P0352, P0353, P0354)

- Turn the ignition switch off.
- ★If the input voltage is out of the standard, check the wiring for continuity (see Stick Coil Circuit(17-98)).
- ★If the wiring is good, check the ECU for its ground and power supply (see ECU Power Supply Inspection(3-40)).
- ★If the ground and power supply are good, replace the ECU.
- ★If the input voltage is within the standard, check the ECU for its ground and power supply (see ECU Power Supply Inspection(3-40)).
- ★If the ground and power supply are good, replace the ECU.

Stick Coil Circuit



1. ECU
2. Frame Ground (4)
3. Engine Ground
4. Battery
5. Starter Relay
6. Main Fuse 30 A
7. Fuse Box (1)
8. Ignition Fuse 15 A
9. Ignition Switch
10. Engine Start/Stop Switch (Engine Stop)
11. Stick Coil #1
12. Stick Coil #2
13. Stick Coil #3
14. Stick Coil #4

Radiator Fan Relay (Service Code 56) (DTC P0480)

Radiator Fan Relay Removal/Installation

○The radiator fan relay is built in the relay box [A].

● Refer to the Relay Box Removal (see Relay Box Removal(16-126)).

Radiator Fan Relay Inspection

● Refer to the Relay Circuit Inspection (see Relay Circuit Inspection(16-126)).

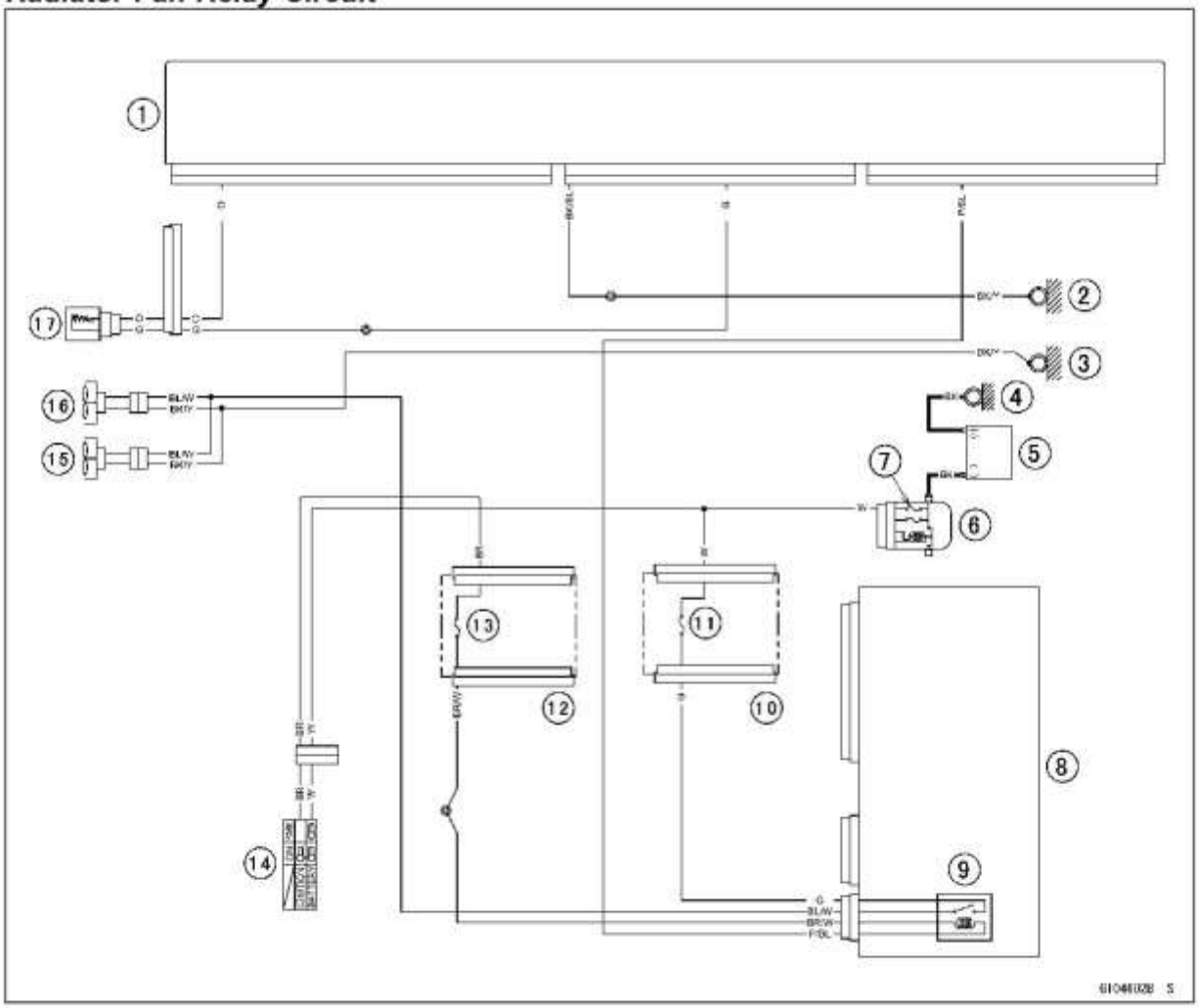
★If the radiator fan relay is normal, check the wiring for continuity (see Radiator Fan Relay Circuit(17-100)).

★If the wiring is good, check the ECU for its ground and power supply (see ECU Power Supply Inspection(3-40)).

★If the ground and power supply are good, replace the ECU.

Radiator Fan Relay (Service Code 56) (DTC P0480)

Radiator Fan Relay Circuit

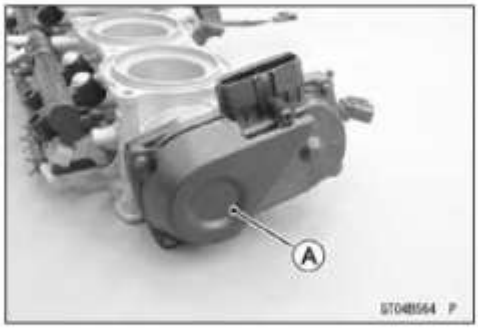


1. ECU
2. Frame Ground (4)
3. Frame Ground (3)
4. Engine Ground
5. Battery
6. Starter Relay
7. Main Fuse 30 A
8. Relay Box
9. Radiator Fan Relay
10. Fuse Box (2)
11. Fan Fuse 15 A
12. Fuse Box (1)
13. Ignition Fuse 15 A
14. Ignition Switch
15. Fan Motor (2)
16. Fan Motor (1)
17. Water Temperature Sensor

ETV Actuator (Service Code 58) (DTC P2100)

ETV Actuator Removal

NOTICE
Do not remove ETV actuator in the gear case [A] since it has been set with precision at the factory.



ETV Actuator Input Voltage Inspection

NOTE

○*Be sure the battery is fully charged.*

- Turn the ignition switch off.
- Remove:
  ECU (see ECU Removal(3-39))

○Do not disconnect the ECU connectors.

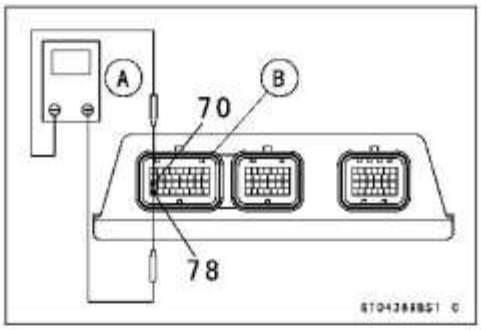
- Connect the digital meter [A] to the connector [B] with the needle adapter set.

Special Tool - Needle Adapter Set: 57001-1874

ETV Actuator Input Voltage
Connection:

Digital Meter (+) → W/G lead (terminal 78)

Digital Meter (–) → BK/O lead (terminal 70)



- Measure the input voltage with the engine stopped with the connector joined.
- Turn the ignition switch on.

Input Voltage	
Standard:	**About DC 1 ~ 2 V or –1 ~ –2 V**

- Turn the ignition switch off.

★If the reading is out of the standard, check the following items.
  ETV Actuator Relay (see ETV Actuator Relay Inspection(17-101))
  Wiring (see ETV Actuator Circuit(17-102))

★If the above items are good, replace the throttle body assy and/or the ECU.

ETV Actuator Relay Inspection

- Remove:
  Right Upper Inner Fairing (see Upper Inner Fairing Removal(15-18))
  ETV Actuator Relay [A]

ETV Actuator (Service Code 58) (DTC P2100)

- Connect a tester [A] and a 12 V battery [B] to the relay [C] as shown.

★If the relay does not work as specified, the relay is defective. Replace the relay.

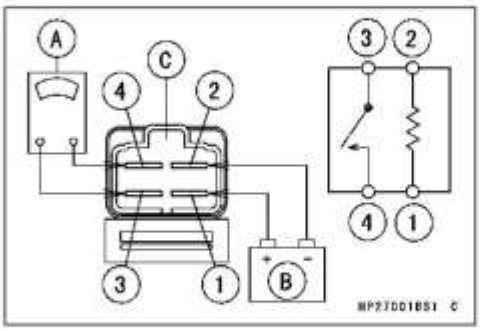
Testing Relay

Criteria: When battery is connected ⇒ 0 Ω

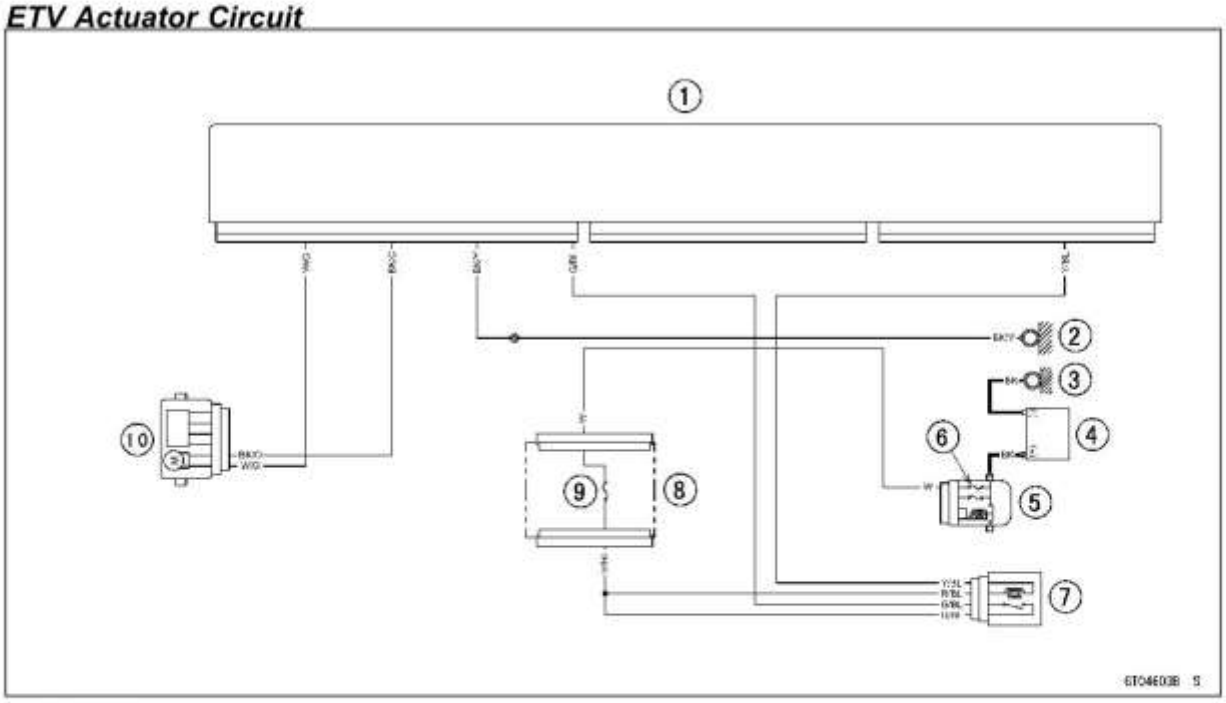
When battery is disconnected ⇒ ∞Ω

Relay Coil Terminals: [1] and [2]

Relay Switch Terminals: [3] and [4]



ETV Actuator Circuit



1. ECU
2. Frame Ground (4)
3. Engine Ground
4. Battery
5. Starter Relay
6. Main Fuse 30 A
7. ETV Actuator Relay
8. Fuse Box (2)
9. ETV Actuator Relay Fuse 10 A
10. Throttle Position Sensor/ETV Actuator

Exhaust Butterfly Valve Actuator (Service Code 63) (DTC P0475)

Exhaust Butterfly Valve Actuator Removal

- Refer to the Exhaust Butterfly Valve Actuator Removal (see Exhaust Butterfly Valve Actuator Removal(5-44)).

Exhaust Butterfly Valve Actuator Installation

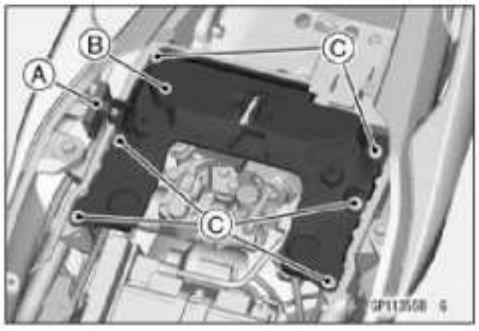
- Refer to the Exhaust Butterfly Valve Actuator Installation (see Exhaust Butterfly Valve Actuator Installation(5-45)).

Exhaust Butterfly Valve Actuator Inspection

NOTE

○*Be sure the battery is fully charged.*

- Remove:
  Seat Sub Covers (see Seat Cover Removal(15-27))
- Free the fuse box [A] from the seat lock bracket [B].
- Remove:
  Bolts [C]
  Seat Lock Bracket



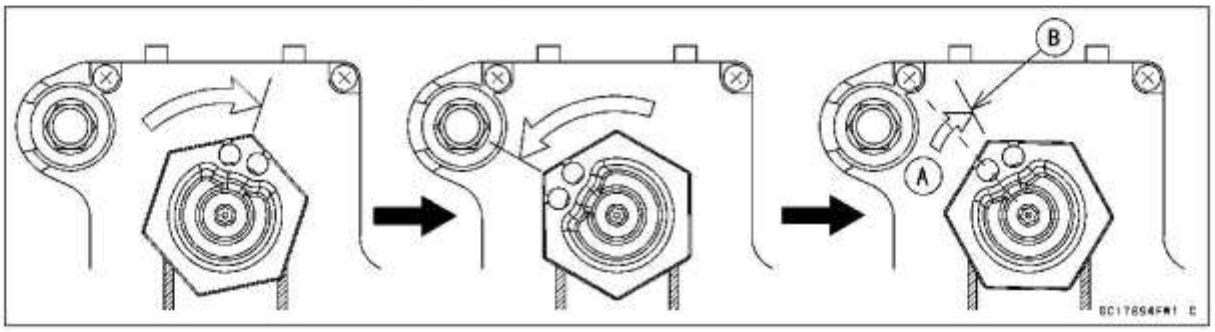
- Turn the ignition switch on.
- Make sure that the pulley turns clockwise, then counterclockwise and then returns slightly clockwise [A] as shown.

NOTE

○*The stop position [B] of the pulley is changed by the cables tension and the closed position of the exhaust butterfly valve.*

- Turn the ignition switch off.

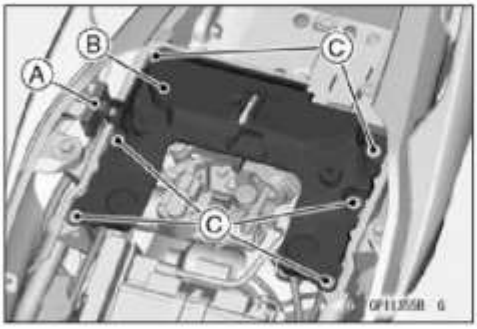
★If the pulley does not operate, check the exhaust butterfly valve actuator resistance (see Exhaust Butterfly Valve Actuator Resistance Inspection(17-104)).



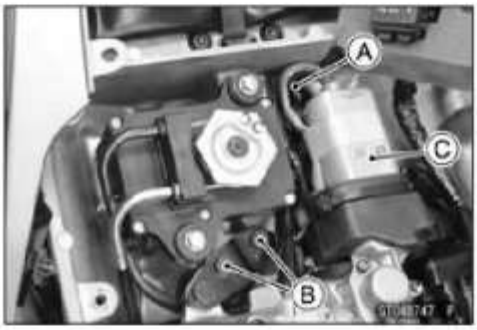
Exhaust Butterfly Valve Actuator (Service Code 63) (DTC P0475)

Exhaust Butterfly Valve Actuator Resistance Inspection

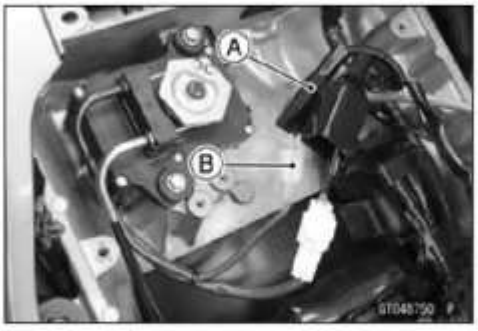
- Turn the ignition switch off.
- Remove:
  Seat Sub Covers (see Seat Cover Removal(15-27))
- Free the fuse box [A] from the seat lock bracket [B].
- Remove:
  Bolts [C]
  Seat Lock Bracket



- Open the clamp [A].
- Remove:
  Rear Shock Absorber Spring Preload Actuator Bolts [B]
  Rear Shock Absorber Spring Preload Actuator/Position Sensor [C]



- Slide the dust cover [A].
- Disconnect the exhaust butterfly valve actuator lead connector (2 pins connector) [B].
- Connect a tester to the exhaust butterfly valve actuator connector.
- Measure the exhaust butterfly valve actuator resistance.

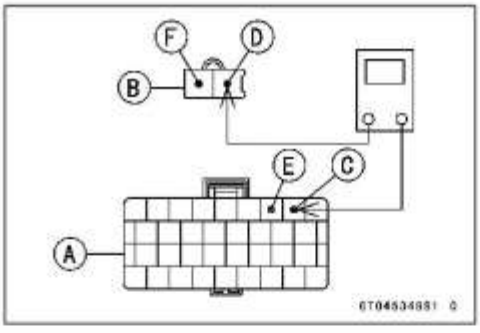


Exhaust Butterfly Valve Actuator Resistance
Connections: P lead ⟷ GY lead
Standard: 5 ~ 200 Ω (for reference)

★If the reading is 0 or infinity (∞) Ω, replace the exhaust butterfly valve actuator.

★If the reading is in specification, remove the ECU and check the wiring for continuity between main harness connectors.

○Disconnect the ECU and actuator connectors.



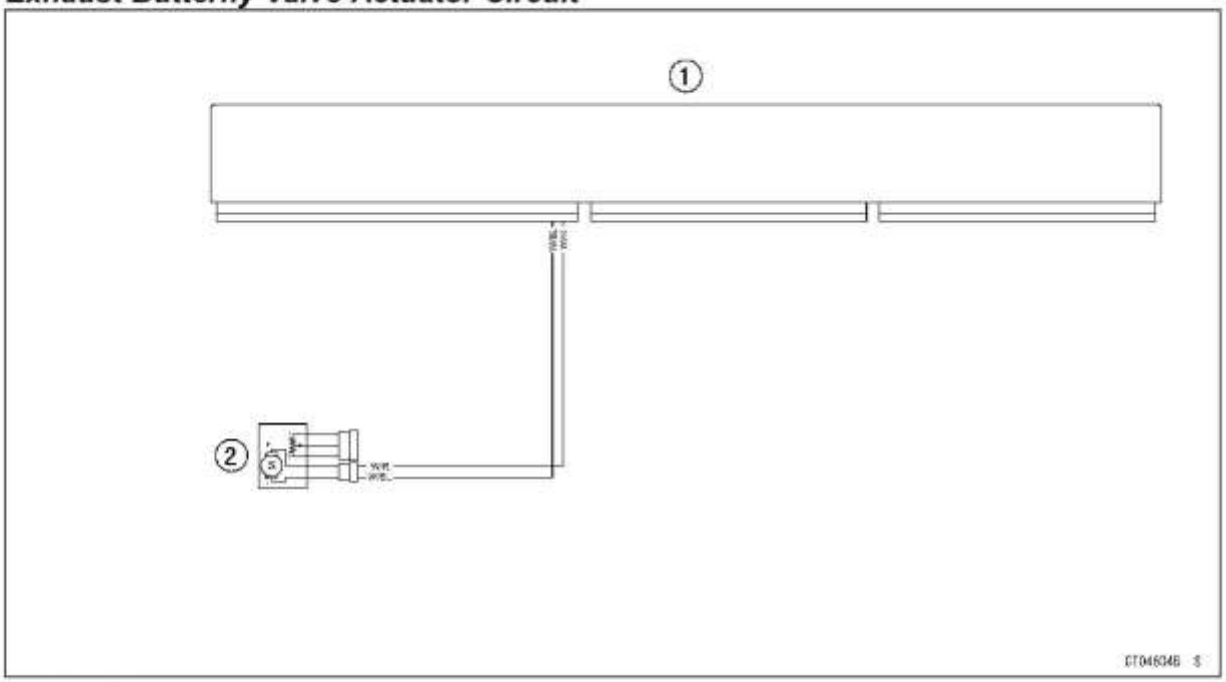
Wiring Continuity Inspection
ECU Connector [A] ⟷
Exhaust Butterfly Valve Actuator Connector [B]
ECU Terminal 54 [C] ⟷ Actuator Terminal [D]
ECU Terminal 55 [E] ⟷ Actuator Terminal [F]

★If the wiring is good, check the ECU for its ground and power supply (see ECU Power Supply Inspection(3-40)).

★If the ground and power supply are good, replace the ECU.

Exhaust Butterfly Valve Actuator (Service Code 63) (DTC P0475)

Exhaust Butterfly Valve Actuator Circuit



1. ECU
2. Exhaust Butterfly Valve Actuator

Air Switching Valve (Service Code 64) (DTC P0410)

Air Switching Valve Removal/Installation

- Refer to the Air Switching Valve Removal/Installation (see Air Switching Valve Removal(5-12)) (see Air Switching Valve Installation(5-13)).

Air Switching Valve Inspection

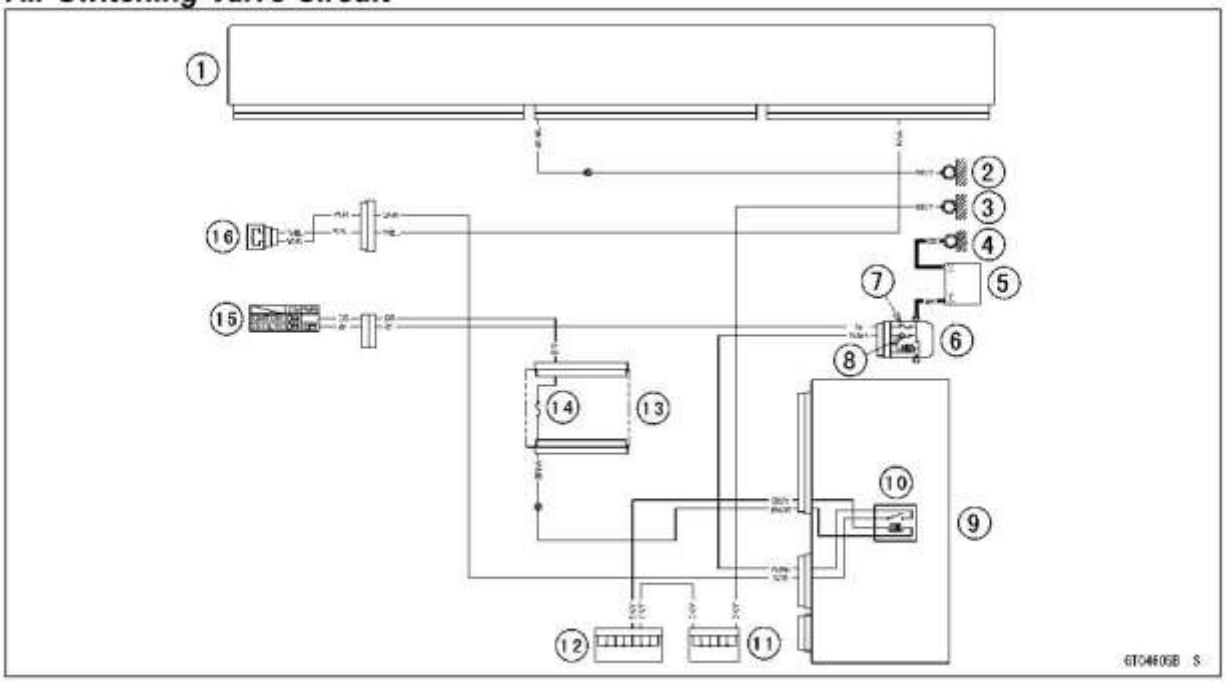
- Refer to the Air Switching Valve Unit Test (see Air Switching Valve Unit Test(16-64)).

★If the air switching valve is normal, check the wiring for continuity (see Air Switching Valve Circuit(17-106)).

★If the wiring is good, check the ECU for its ground and power supply (see ECU Power Supply Inspection(3-40)).

★If the ground and power supply are good, replace the ECU.

Air Switching Valve Circuit



1. ECU
2. Frame Ground (4)
3. Frame Ground (2)
4. Engine Ground
5. Battery
6. Starter Relay
7. Main Fuse 30 A
8. ECU Fuse 15 A
9. Relay Box
10. ECU Main Relay
11. Joint Connector (7)
12. Joint Connector (8)
13. Fuse Box (1)
14. Ignition Fuse 15 A
15. Ignition Switch
16. Air Switching Valve

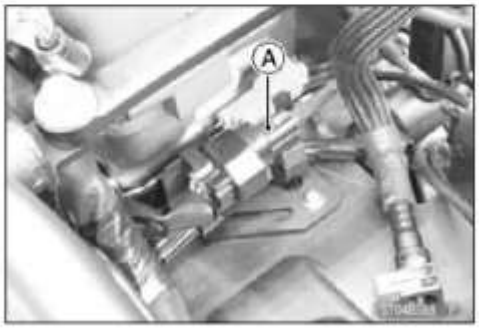
Oxygen Sensor Heater (Service Code 67) (DTC P0030)

Oxygen Sensor Heater Removal/Installation

The oxygen sensor heater is built in the oxygen sensor. So, the heater itself can not be removed. Remove the oxygen sensor (see Oxygen Sensor Removal(16-119)).

Oxygen Sensor Heater Resistance Inspection

- Remove:
  Fuel Tank (see Fuel Tank Removal(3-75))
- Disconnect:
  Oxygen Sensor Lead Connector [A]



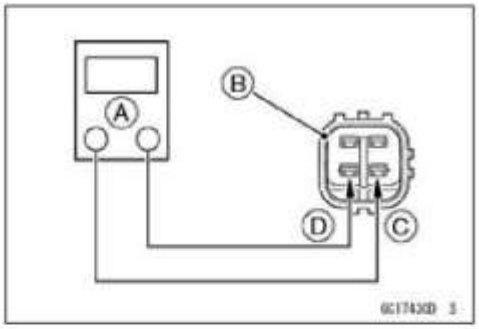
- Connect a digital meter [A] to the oxygen sensor lead connector [B].
- Measure the oxygen sensor heater resistance.

Oxygen Sensor Heaters Resistance

Connections:	**W lead [C] ⟷ W lead [D]**
Standard:	**13 ~ 17 Ω @20° C (68°F)**

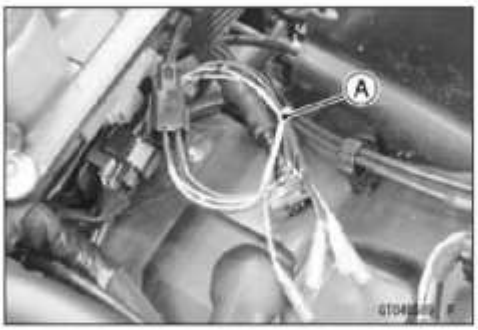
★If the reading is out of the standard, replace the sensor.

★If the reading is within the standard, check the power source voltage (see Oxygen Sensor Heater Power Source Voltage Inspection(17-108)).



Oxygen Sensor Heater (Service Code 67) (DTC P0030)

Oxygen Sensor Heater Power Source Voltage Inspection

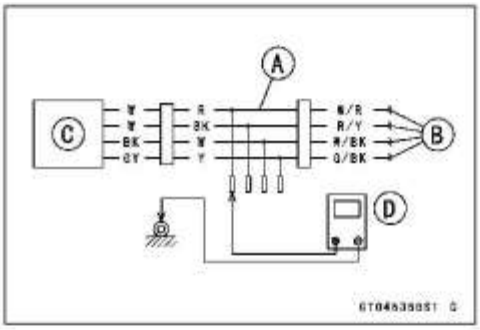


NOTE

○*Be sure the battery is fully charged.*

- Turn the ignition switch off.
- Remove:
  Fuel Tank (see Fuel Tank Removal(3-75))
- Disconnect the oxygen sensor lead connector and connect the measuring adapter [A] between these connectors.
  Main Harness [B]
  Oxygen Sensor [C]

Special Tool - Measuring Adapter: 57001-1700



- Connect a digital meter [D] to the measuring adapter lead.

Oxygen Sensor Power Source Voltage
Connections to Adapter:
Digital Meter (+) → R (main harness W/R) lead
Digital Meter (–) → Frame Ground Terminal

- Measure the power source voltage with the engine stopped and with the connector joined.
- Turn the ignition switch on.

Power Source Voltage
Standard: Battery Voltage

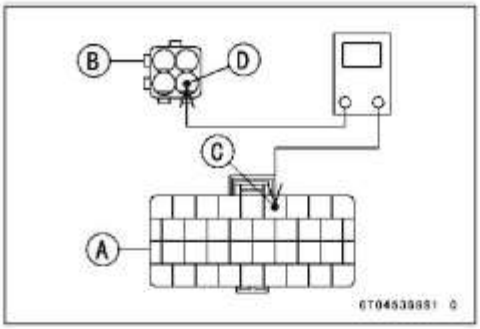
- Turn the ignition switch off.

★If the reading is in specification, but the problem still exists, replace the ECU.

★If the reading is out of the standard, check the following.
ECU Fuse 15 A (see Fuse Inspection(16-131))
Power Source Wiring (see Oxygen Sensor Circuit(17-109))

★If the fuse and wiring are good, remove the ECU and check the wiring for continuity between main harness connectors.

○Disconnect the ECU and sensor connectors.



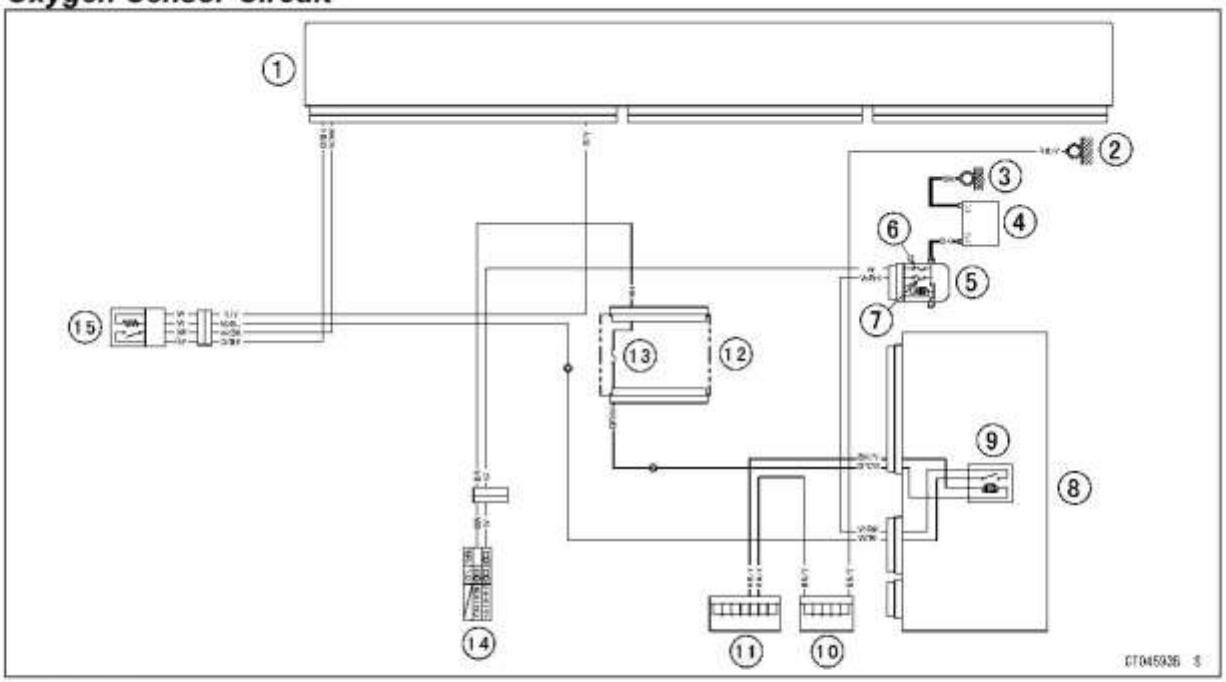
Wiring Continuity Inspection
ECU Connector [A] ⟷
Oxygen Sensor Connector [B]
ECU Terminal 56 [C] ⟷ Sensor Terminal [D]

★If the wiring is good, check the ECU for its ground and power supply (see ECU Power Supply Inspection(3-40)).

★If the ground and power supply are good, replace the ECU.

Oxygen Sensor Heater (Service Code 67) (DTC P0030)

Oxygen Sensor Circuit



1. ECU
2. Frame Ground (2)
3. Engine Ground
4. Battery
5. Starter Relay
6. Main Fuse 30 A
7. ECU Fuse 15 A
8. Relay Box
9. ECU Main Relay
10. Joint Connector (7)
11. Joint Connector (8)
12. Fuse Box (1)
13. Ignition Fuse 15 A
14. Ignition Switch
15. Oxygen Sensor

Knock Sensor (Service Code 69) (DTC P0325)

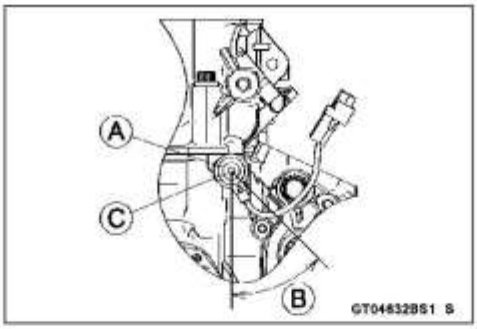
Knock Sensor Removal

NOTICE

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

- Remove:
  Rear Intake Duct (see Intake Duct Removal(15-23))
- Remove the knock sensor lead connector [A] from the bracket.
- Disconnect the knock sensor lead connector.
- Remove:
  Knock Sensor Bolt [B]
  Knock Sensor [C]

Knock Sensor Installation



- Install the knock sensor [A] as shown.

○When installing the sensor which is fastened by bolt, tighten the bolt after placing the sensor on the bottom surface completely.

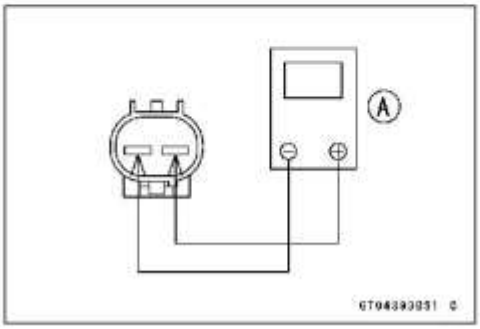
○Make sure that the knock sensor lead is within 45 degrees [B].

- Tighten:

Torque - Knock Sensor Bolt [C]: 25 N·m (2.5 kgf·m, 18 ft·lb)

- Connect the knock sensor lead connector.
- Install the removed parts.

Knock Sensor Resistance Inspection



- Turn the ignition switch off.
- Remove:
  Rear Intake Duct (see Intake Duct Removal(15-23))
- Remove the knock sensor lead connector from the bracket.
- Disconnect the knock sensor lead connector.
- Connect a digital meter [A] to the terminals of the knock sensor.
- Measure the knock sensor resistance.

Knock Sensor Resistance
Standard: 504 ~ 616 kΩ

★If the reading is out of the standard, replace the knock sensor.

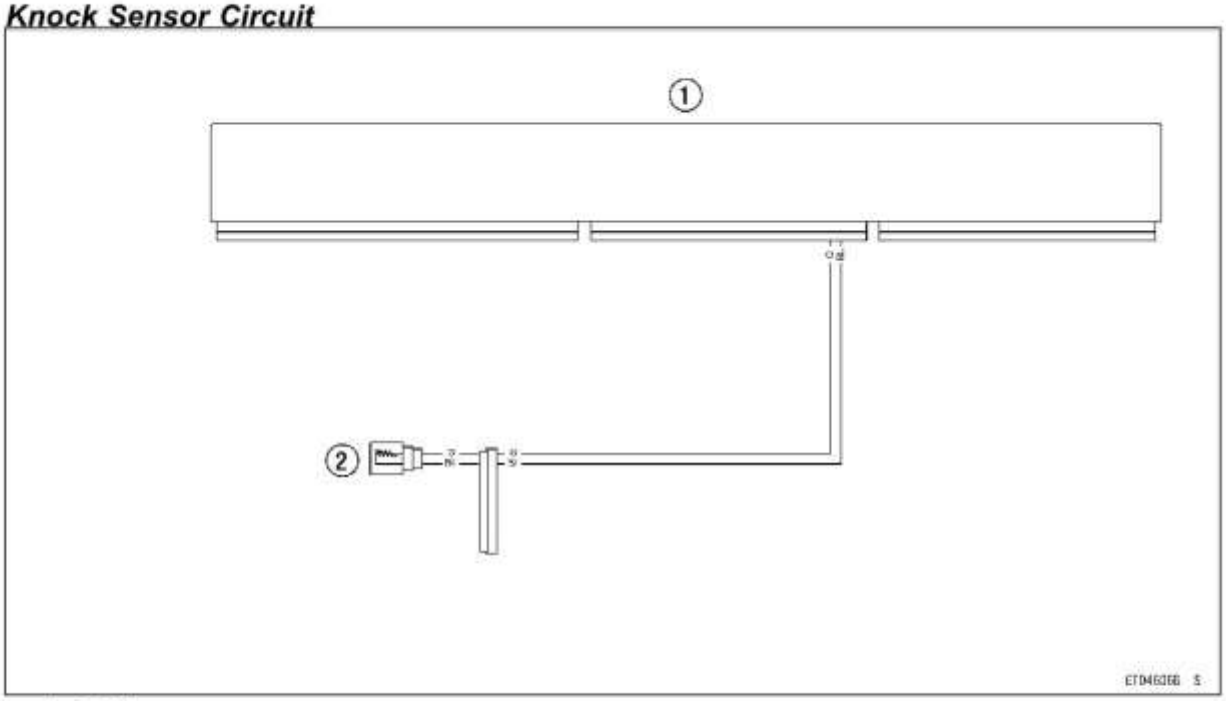
★If the reading is within the standard, check the wiring for continuity (see Knock Sensor Circuit(17-111)).

★If the wiring is good, check the ECU for its ground and power supply (see ECU Power Supply Inspection(3-40)).

★If the ground and power supply are good, replace the ECU.

Knock Sensor (Service Code 69) (DTC P0325)

Knock Sensor Circuit

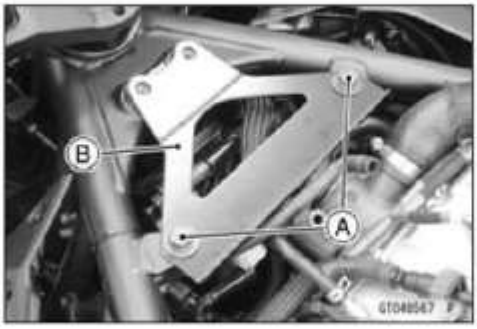


1. ECU
2. Knock Sensor

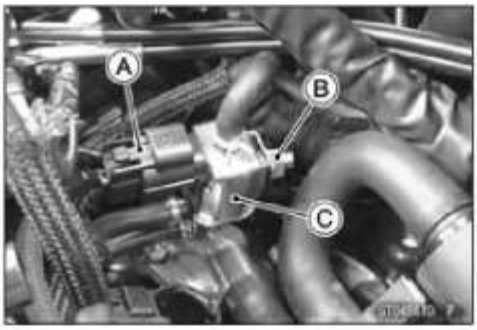
Purge Valve (for Supercharger) (Service Code 6A) (DTC P0045)

Purge Valve (for Supercharger) Removal

- Remove:
  Fuel Tank (see Fuel Tank Removal(3-75))
  Fuel Tank Bracket Bolts [A]
  Fuel Tank Bracket [B]



- For other than US and CA models, remove the canister bracket (see Evaporative Emission Control System Inspection (Other than US and CA Models)(2-25)).
- Disconnect:
  Purge Valve Connector [A]
- Remove the purge valve nut [B].
- Remove the purge valve [C] from the bracket.



- Slide the clamps, and disconnect the hoses [A].

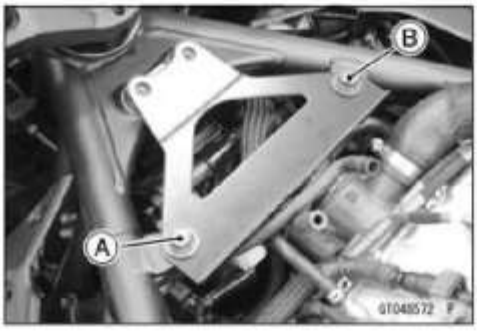
Purge Valve (for Supercharger) Installation

- Installation is the reverse of removal.
- Run the hoses correctly (see Cable, Wire, and Hose Routing section (18-2)).
- Tighten:

Torque - Purge Valve Nut: 7.0 N·m (0.71 kgf·m, 62 in·lb)

- Tighten the left fuel tank bracket bolt [A] first, and then tighten the right fuel tank bracket bolt [B].

Torque - Fuel Tank Bracket Bolts: 25 N·m (2.5 kgf·m, 18 ft·lb)

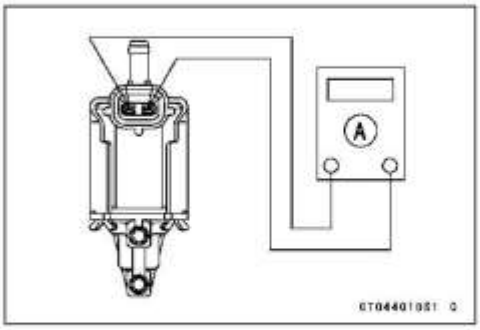


Purge Valve (for Supercharger) Inspection

- Remove the purge valve (see Purge Valve (for Supercharger) Removal(17-112)).
- Connect a digital meter [A] to the purge valve terminals as shown.

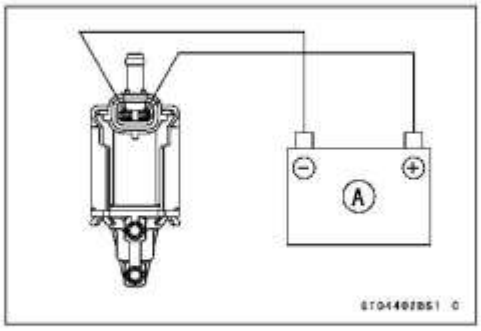
Purge Valve Resistance
Standard: 22 ~ 26 Ω @20°C (68°F)

★If the resistance reading is out of the specified value, replace it with a new one.

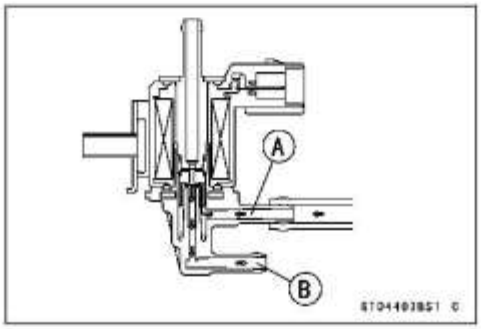


Purge Valve (for Supercharger) (Service Code 6A) (DTC P0045)

- Connect the 12 V battery [A] to the purge valve terminals as shown.



- Blow the air to the intake air duct [A], and make sure that the air flows from the outlet air duct [B].



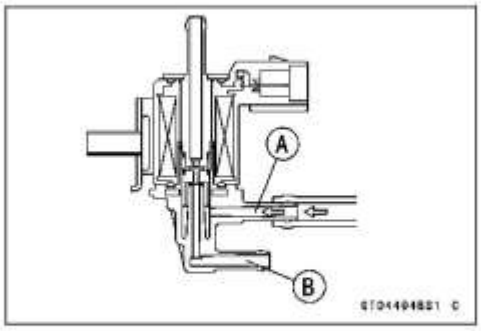
- Disconnect the 12 V battery.
- Blow the air to the intake air duct [A] again, and make sure that the air does not flow from the outlet air duct [B].

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

★If the purge valve is good, check the wiring for continuity (see Purge Valve (for Supercharger) Circuit(17-114)).

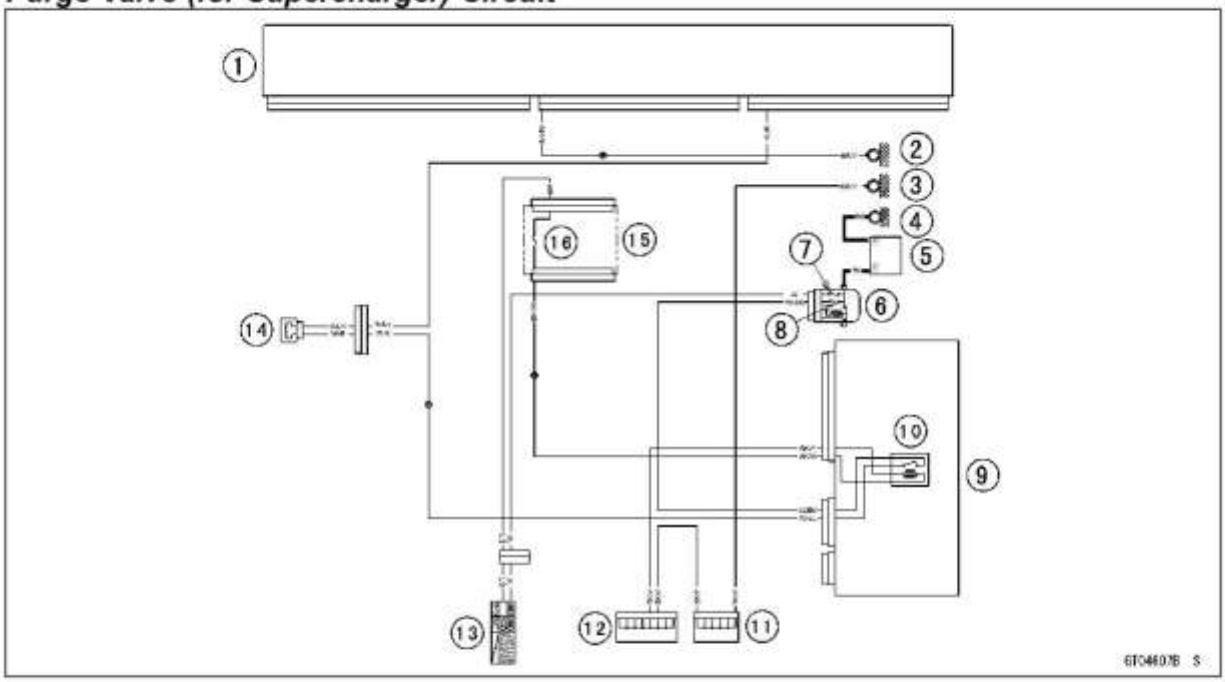
★If the wiring is good, check the ECU for its ground and power supply (see ECU Power Supply Inspection(3-40)).

★If the ground and power supply are good, replace the ECU.



Purge Valve (for Supercharger) (Service Code 6A) (DTC P0045)

Purge Valve (for Supercharger) Circuit



1. ECU
2. Frame Ground (4)
3. Frame Ground (2)
4. Engine Ground
5. Battery
6. Starter Relay
7. Main Fuse 30 A
8. ECU Fuse 15 A
9. Relay Box
10. ECU Main Relay
11. Joint Connector (7)
12. Joint Connector (8)
13. Ignition Switch
14. Purge Valve (for Supercharger)
15. Fuse Box (1)
16. Ignition Fuse 15 A

Engine Knocking Warning (Service Code 7B) (DTC P2336)

Engine Knocking Warning Inspection

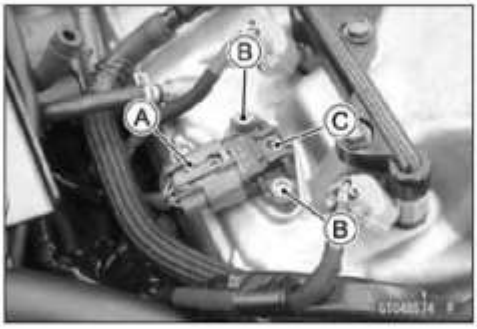
● Inspect the following items.
Carbon built up in combustion chamber
Fuel poor quality or incorrect
Spark plug incorrect
Overheating

★If the above items are good, check the ECU for its ground and power supply (see ECU Power Supply Inspection(3-40)).

★If the ground and power supply are good, replace the ECU.

Air Intake Chamber Pressure Sensor (Service Code 7E) (DTC P0235, P0237)

Air Intake Chamber Pressure/Temperature Sensor Removal

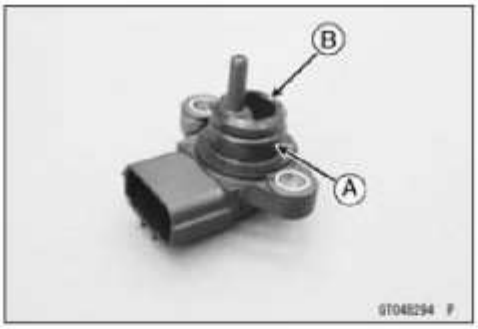


NOTICE

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

- Remove the fuel tank (see Fuel Tank Removal(3-75)).
- Disconnect the air intake chamber pressure/temperature sensor connector [A].
- Remove:
  Air Intake Chamber Pressure/Temperature Sensor Bolts [B]
  Air Intake Chamber Pressure/Temperature Sensor [C]

Air Intake Chamber Pressure/Temperature Sensor Installation



- Be sure to install the O-ring [A].
- Apply engine oil to the O-ring.

NOTE

○*Do not apply engine oil into the hole [B] that senses the pressure.*

- Install the air intake chamber pressure/temperature sensor to the air intake chamber.

○When installing the sensor which is fastened by bolts, tighten the bolts after placing the sensor on the bottom surface completely.

- Tighten:

Torque - Air Intake Chamber Pressure/Temperature Sensor Bolts: 5.0 N·m (0.51 kgf·m, 44 in·lb)

- Connect the air intake chamber pressure/temperature sensor connector.
- Install the fuel tank (see Fuel Tank Installation(3-77)).

Air Intake Chamber Pressure Sensor (Service Code 7E) (DTC P0235, P0237)

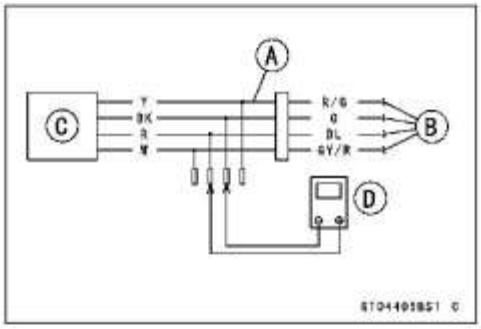
Air Intake Chamber Pressure Sensor Input Voltage Inspection

NOTE

○*Be sure the battery is fully charged.*

- Turn the ignition switch off.
- Remove fuel tank (see Fuel Tank Removal(3-75)).
- Disconnect the air intake chamber pressure/temperature sensor connector and connect the measuring adapter [A] between these connectors as shown.
  Main Harness [B]
  Air Intake Chamber Pressure/Temperature Sensor [C]

Special Tool - Measuring Adapter: 57001-1700



- Connect a digital meter [D] to the measuring adapter leads.

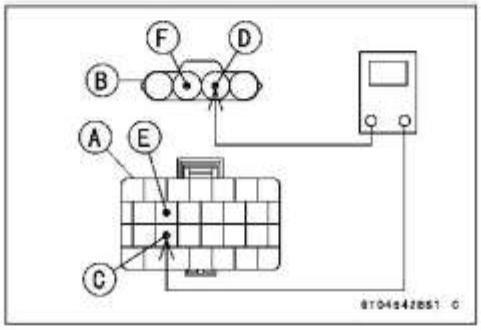
Air Intake Chamber Pressure Sensor Input Voltage
Connections to Adapter:
Digital Meter (+) → R (sensor BL) lead
Digital Meter (–) → BK (sensor G) lead

- Measure the input voltage with the engine stopped and with the connector joined.
- Turn the ignition switch on.

Input Voltage
Standard: DC 4.75 ~ 5.25 V

- Turn the ignition switch off.

★If the reading is within standard, check the output voltage (see Air Intake Chamber Pressure Sensor Output Voltage Inspection(17-118)).



★If the reading is out of the standard, remove the ECU and check the wiring for continuity between main harness connectors.

○Disconnect the ECU and sensor connectors.

Wiring Continuity Inspection
ECU Connector [A] ⟷
Air Intake Chamber Pressure/Temperature Sensor Connector [B]
ECU Terminal 44 [C] ⟷ Sensor Terminal [D]
ECU Terminal 38 [E] ⟷ Sensor Terminal [F]

★If the wiring is good, check the ECU for its ground and power supply (see ECU Power Supply Inspection(3-40)).

★If the ground and power supply are good, replace the ECU.

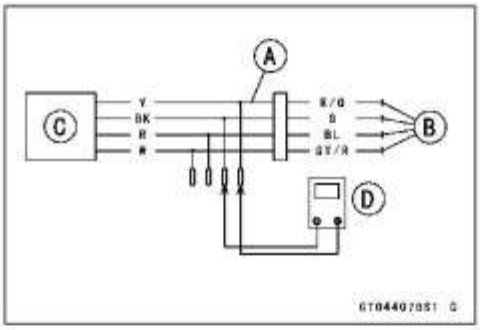
Air Intake Chamber Pressure Sensor (Service Code 7E) (DTC P0235, P0237)

Air Intake Chamber Pressure Sensor Output Voltage Inspection

- Measure the output voltage at the air intake chamber pressure sensor in the same way as input voltage inspection, note the following.

○Disconnect the air intake chamber pressure/temperature sensor connector and connect the measuring adapter [A] between these connectors.
Main Harness [B]
Air Intake Chamber Pressure/Temperature Sensor [C]
Digital Meter [D]

Special Tool - Measuring Adapter: 57001-1700



Air Intake Chamber Pressure Sensor Output Voltage
Connections to Adapter:
Digital Meter (+) → Y (sensor R/G) lead
Digital Meter (–) → BK (sensor G) lead

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

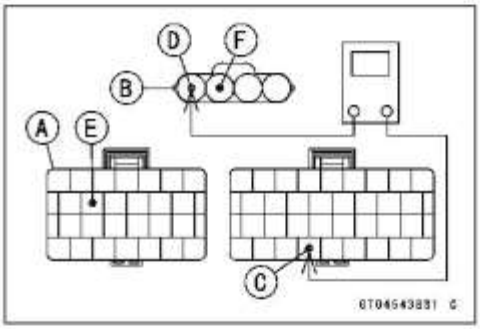
Output Voltage
Usable Range: DC 1.43 ~ 1.55 V at standard atmospheric pressure (101.32 kPa, 76 cmHg)

NOTE

○*The output voltage changes according to local atmospheric pressure.*

- Turn the ignition switch off.

★If the reading is out of the usable range, replace the sensor.



★If the reading is within the usable range, remove the ECU and check the wiring for continuity between main harness connectors.

○Disconnect the ECU and sensor connectors.

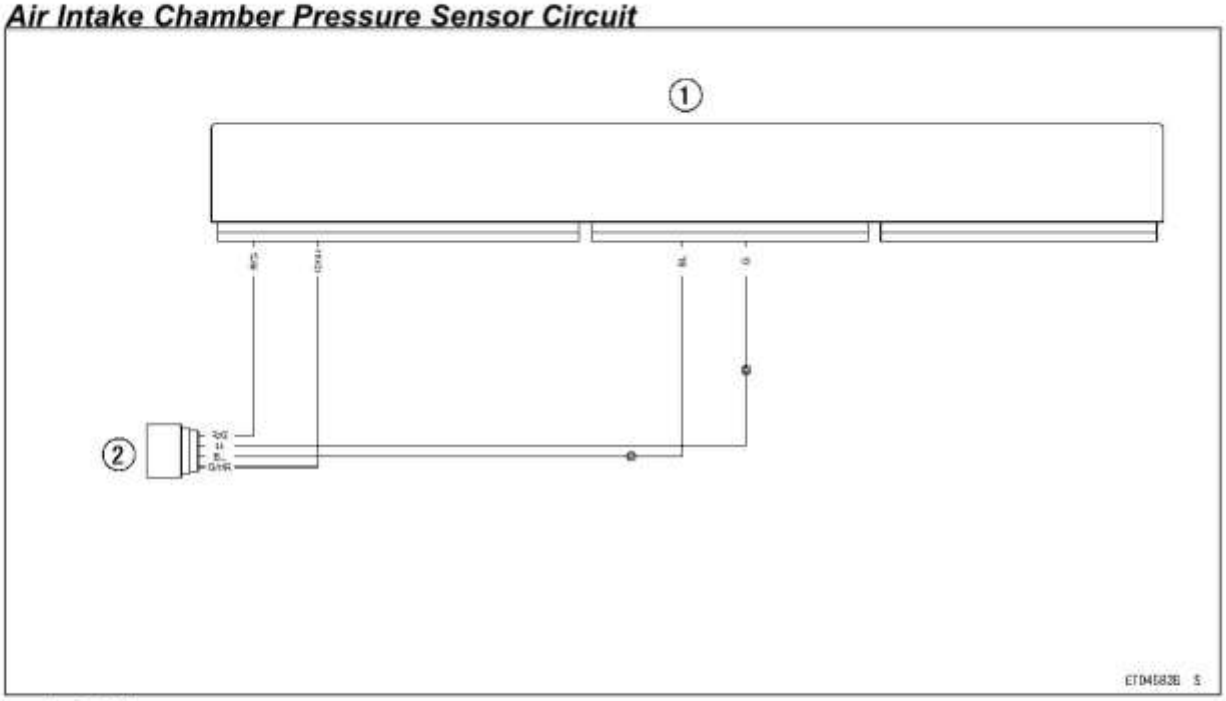
Wiring Continuity Inspection
ECU Connector [A] ⟷
Air Intake Chamber Pressure/Temperature Sensor Connector [B]
ECU terminal 83 [C] ⟷ Sensor Terminal [D]
ECU terminal 38 [E] ⟷ Sensor Terminal [F]

★If the wiring is good, check the ECU for its ground and power supply (see ECU Power Supply Inspection(3-40)).

★If the ground and power supply are good, replace the ECU.

Air Intake Chamber Pressure Sensor (Service Code 7E) (DTC P0235, P0237)

Air Intake Chamber Pressure Sensor Circuit



1. ECU
2. Air Intake Chamber Pressure/Temperature Sensor

Fuel Supply System (Service Code 94) (DTC P0170)

Fuel Supply System Inspection

NOTE

○*If the motorcycle has any other service code, first inspect the other service code.*

- Inspect the General fuel system (throttle body assy, air cleaner, fuel tank etc.).

★If the General fuel system is good, check the ECU for its ground and power supply (see ECU Power Supply Inspection(3-40)).

★If the ground and power supply are good, replace the ECU.

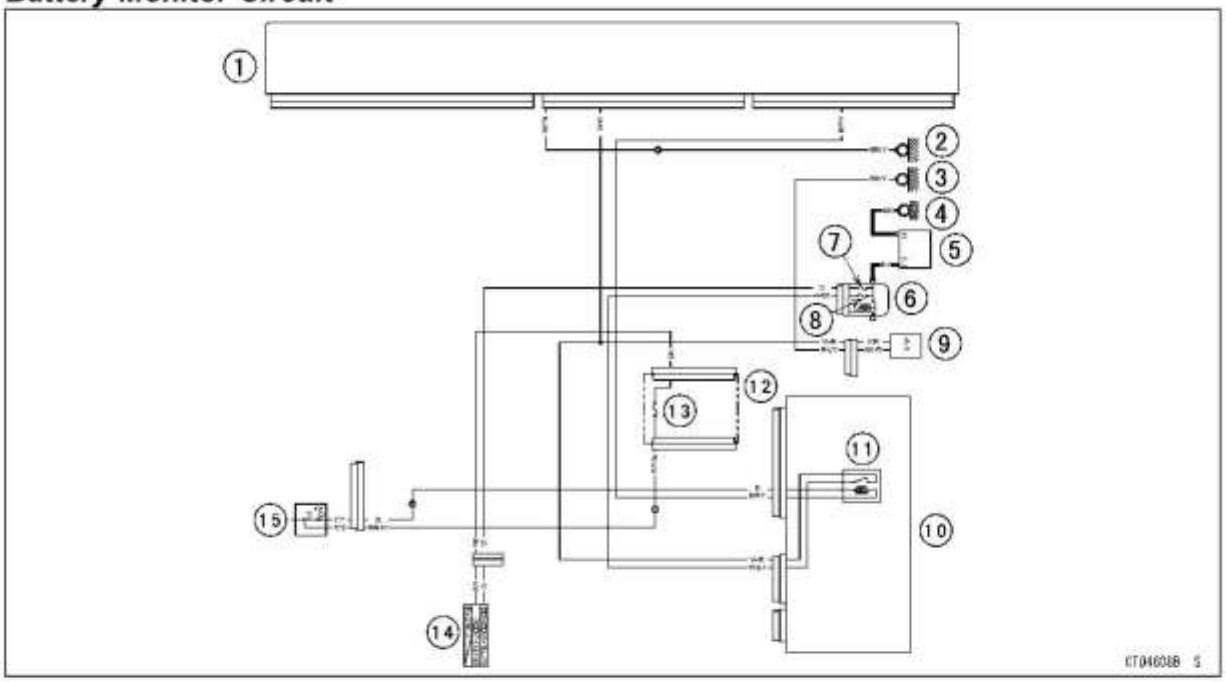
Battery Voltage (Service Code 97) (DTC P0562)

Battery Voltage Inspection

- Refer to the Charging Condition Inspection (see Charging Condition Inspection(16-29)).

★If the battery voltage is good condition, replace the ECU.

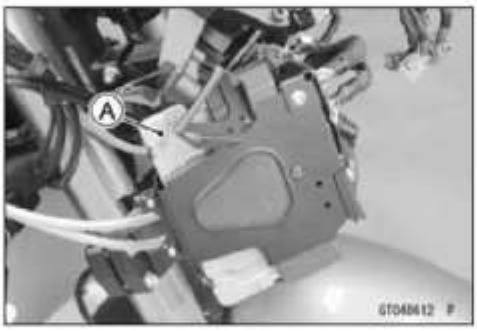
Battery Monitor Circuit



1. ECU
2. Frame Ground (4)
3. Frame Ground (3)
4. Engine Ground
5. Battery
6. Starter Relay
7. Main Fuse 30 A
8. ECU Fuse 15 A
9. Fuel Pump
10. Relay Box
11. Fuel Pump Relay
12. Fuse Box (1)
13. Ignition Fuse 15 A
14. Ignition Switch
15. Engine Start/Stop Switch (Engine Stop)

ETV Control Circuit (Service Code 98) (DTC P0607)

ETV Control Circuit Inspection



○The ETV control circuit is controlled in the ECU [A].
So, the ETV control circuit cannot be inspected.

- When the service code 98 is displayed on the LCD, replace the ECU.

IMU (Inertial Measurement Unit) (Service Code E8E)

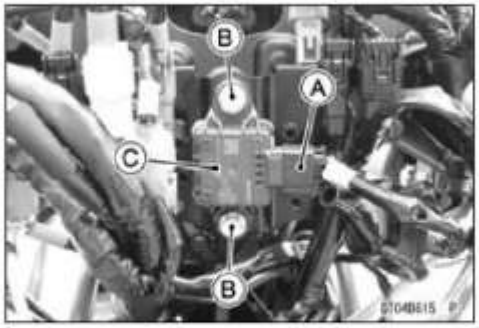
IMU Removal

NOTICE

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

- Remove:
  Upper Fairing (see Upper Fairing Removal(15-18))
- Remove the front brake light switch lead connector [A] from the bracket.

- Remove:
  Bolts [A]

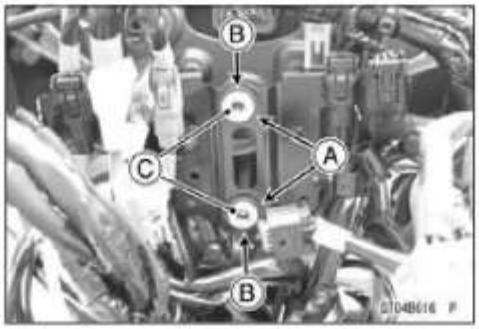


- Disconnect:
  IMU Connector [A]
- Remove:
  IMU Mounting Bolts [B], Nuts and Washers
  IMU [C]

IMU Installation

- Installation is the reverse of removal.
- Be sure to install the rubber dampers [A], washers [B] and collars [C] on the bracket.
- Tighten:

Torque - IMU Mounting Bolts: 6.5 N·m (0.66 kgf·m, 58 in·lb)



IMU Power Supply Inspection

NOTE

○*Be sure the battery is fully charged.*

- Turn the ignition switch off.
- Remove:
  Upper Fairing (see Upper Fairing Removal(15-18))
- Connect a digital meter to the IMU connector [A] with needle adapter set.

Special Tool - Needle Adapter Set: 57001-1874

IMU Power Supply Voltage
Connections to IMU Connector:
Digital Meter (+) → BR/W lead
Digital Meter (–) → BK/Y lead

IMU (Inertial Measurement Unit) (Service Code E8E)

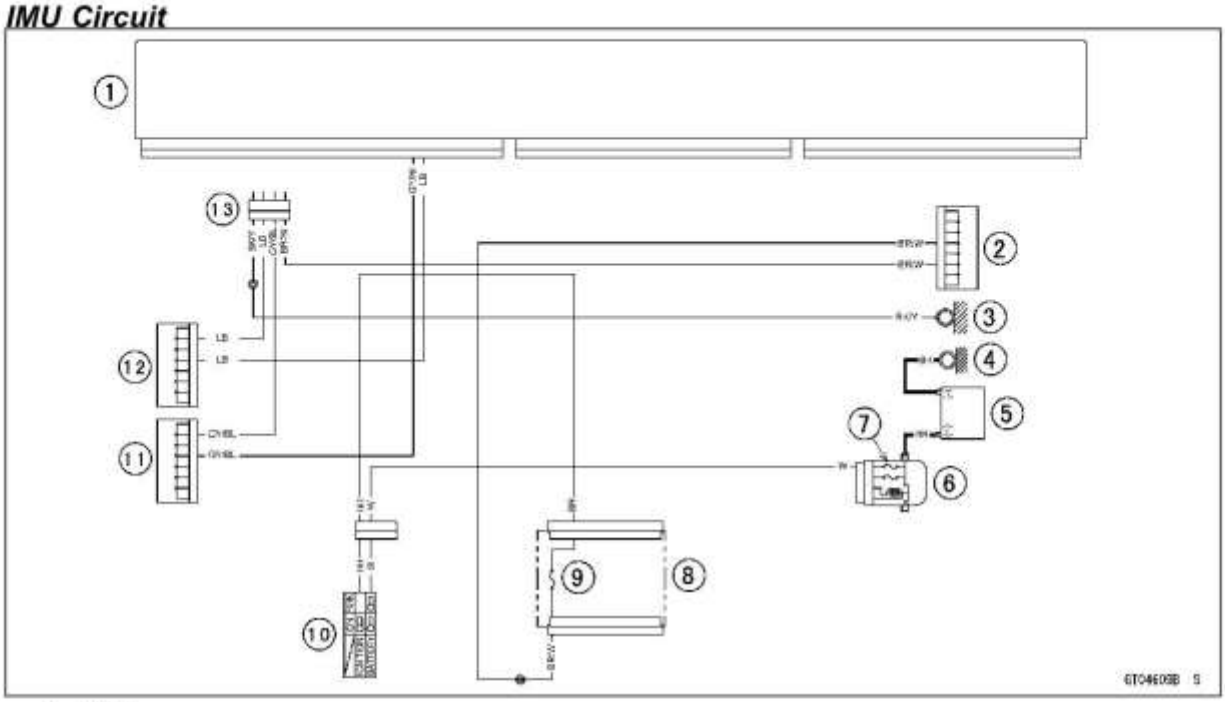
- Measure the power supply voltage with the engine stopped and with the connector joined.
- Turn the ignition switch on.

Power Supply Voltage
Standard: Battery Voltage

- Turn the ignition switch off.

★If the reading is out of the specification, check the following.
Main Fuse 30 A (see Fuse Inspection(16-131))
Ignition Fuse 15 A (see Fuse Inspection(16-131))
Power Source and Ground Wirings (see IMU Circuit(17-124))
★If the fuses and wirings are good, replace the IMU.
★If the IMU is normal, check the ECU for its ground and power supply (see ECU Power Supply Inspection(3-40)).
★If the ground and power supply are good, replace the ECU.

IMU Circuit

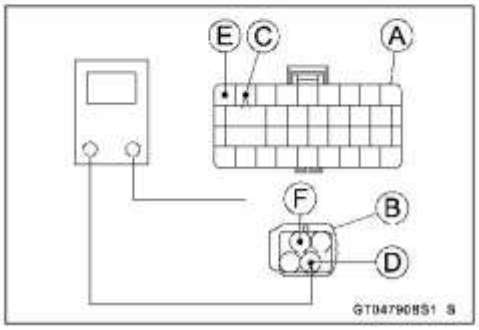


1. ECU
2. Joint Connector (3)
3. Frame Ground (4)
4. Engine Ground
5. Battery
6. Starter Relay
7. Main Fuse 30 A
8. Fuse Box (1)
9. Ignition Fuse 15 A
10. Ignition Switch
11. Joint Connector (CAN High)
12. Joint Connector (CAN Low)
13. IMU

IMU (Inertial Measurement Unit) Communication Error (Service Code E8F)

IMU Communication Line Inspection

○When the data (for status of IMU) is not sent from the IMU to the ECU, the service code E8F is displayed.
○The data is sent through the CAN communication line.
○The service code E8F is detected with the ECU.

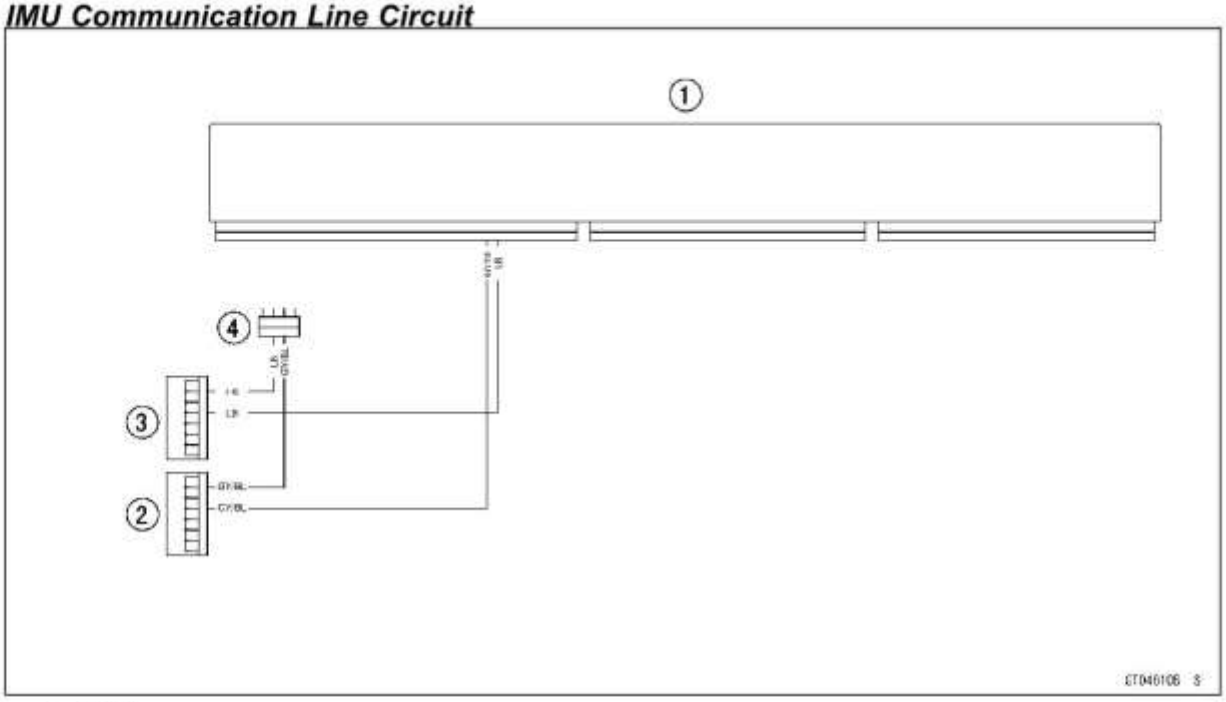


- Disconnect the ECU and IMU connectors, and check the wiring for continuity between main harness connectors.

Wiring Continuity Inspection
ECU Connector [A] ⟷ IMU Connector [B]
ECU Terminal 60 [C] ⟷ IMU Terminal [D]
ECU Terminal 61 [E] ⟷ IMU Terminal [F]

★If the wiring is good, replace the IMU.
★If the IMU is normal, check the ECU for its ground and power supply (see ECU Power Supply Inspection(3-40)).
★If the ground and power supply are good, replace the ECU.

IMU Communication Line Circuit



1. ECU
2. Joint Connector (CAN High)
3. Joint Connector (CAN Low)
4. IMU

Rear Shock Absorber Solenoid Coil/Rear Shock Absorber Spring Preload Actuator/Rear Shock Absorber Stroke Sensor/Rear Shock Absorber Spring Preload Position Sensor (Service Code E3D) (DTC C2020, C2023, C2030, C2033)

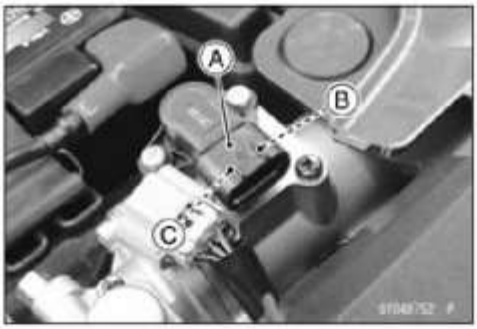
Rear Shock Absorber Spring Preload Position Sensor Inspection

NOTE

○*Be sure the battery is fully charged.*

- Turn the ignition switch off.
- Remove:
  Front Seat (see Front Seat Removal(15-13))
- Disconnect the rear shock absorber spring preload position sensor connector [A].

- Connect a digital meter to the rear shock absorber spring preload position sensor connector [A].
- Measure the rear shock absorber spring preload position sensor resistance.

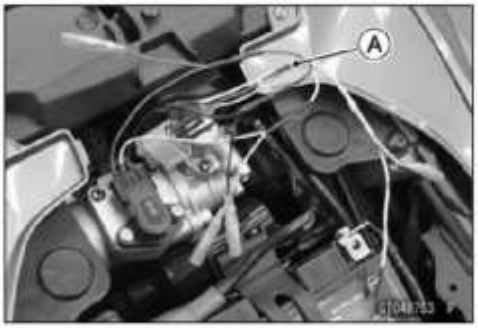


Rear Shock Absorber Spring Preload Position Sensor Resistance
Connections: R/W lead [B] ←→ BK/Y Lead [C]
Standard: 3.5 ~ 6.5 kΩ

★If the reading is out of the standard, replace the rear shock absorber.

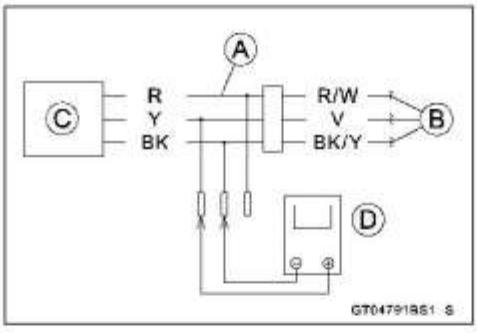
★If the reading is within the standard, check the rear shock absorber spring preload position sensor output voltage.

- Connect the measuring adapter [A] to the rear shock absorber spring preload position sensor connectors as shown.
  Main Harness [B]
  Rear Shock Absorber Spring Preload Position Sensor [C]



Special Tool - Measuring Adapter: 57001-1700

- Connect a digital meter [D] to the measuring adapter leads.



Rear Shock Absorber Spring Preload Position Sensor Output Voltage
Connection to Adapter:
Digital Meter (+) → Y (sensor V) lead
Digital Meter (–) → BK (sensor BK/Y) lead

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

Output Voltage
Standard: DC 0.20 ~ 4.65 V

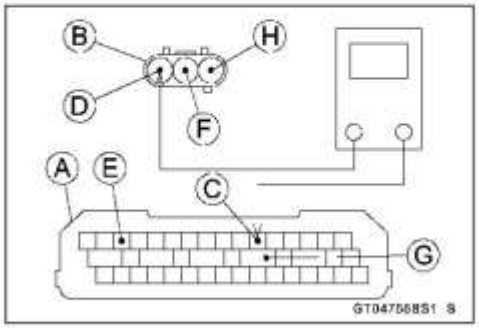
- Turn the ignition off.

★If the reading is out of the standard, replace the rear shock absorber.

Rear Shock Absorber Solenoid Coil/Rear Shock Absorber Spring Preload Actuator/Rear Shock Absorber Stroke Sensor/Rear Shock Absorber Spring Preload Position Sensor (Service Code E3D) (DTC C2020, C2023, C2030, C2033)

★If the reading is within the standard, remove the KECS ECU and check the wiring for continuity between main harness connectors.

○Disconnect the KECS ECU and sensor connectors.



Wiring Continuity Inspection

KECS ECU Connector [A] ←→ Rear Shock Absorber Spring Preload Position Sensor Connector [B]

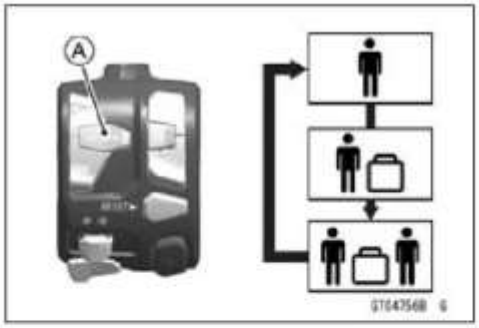
KECS ECU Terminal 6 [C] ←→ Sensor Terminal [D]

KECS ECU Terminal 14 [E] ←→ Sensor Terminal [F]

KECS ECU Terminal 22 [G] ←→ Sensor Terminal [H]

★If the wiring is good, check the rear shock absorber spring preload actuator (see Rear Shock Absorber Spring Preload Actuator Inspection(17-127)).

Rear Shock Absorber Spring Preload Actuator Inspection



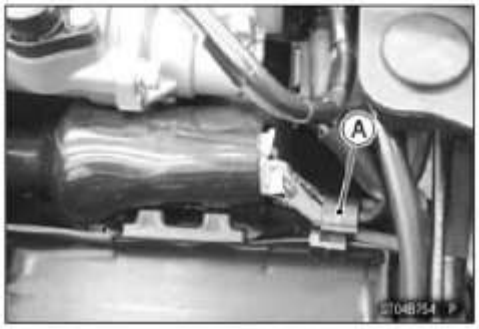
NOTE

○*Be sure the battery is fully charged.*

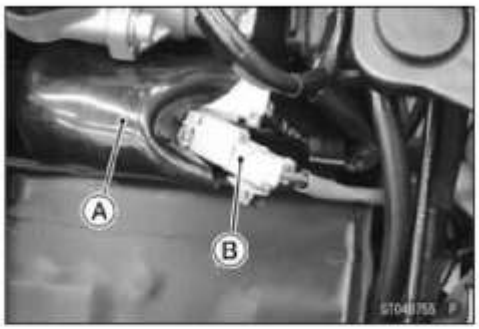
- Turn the ignition switch on.
- Push and hold the PRELOAD button [A], make sure that the rear shock absorber spring preload actuator operates (make light sounds).

★If the rear shock absorber spring preload actuator does not operate, check the rear shock absorber spring preload actuator resistance.

- Remove:
  Front Seat (see Front Seat Removal(15-13))
  Battery (see Battery Removal(16-28))
- Open the clamp [A].



- Slide the dust cover [A].
- Disconnect the rear shock absorber spring preload actuator lead connector [B].
- Connect a digital meter to the terminals in the rear shock absorber spring preload actuator lead connector.
- Measure the rear shock absorber spring preload actuator resistance.



Rear Shock Absorber Spring Preload Actuator Resistance
Standard: 0.5 ~ 5 Ω

★If the reading is out of the standard, replace the rear shock absorber.

Rear Shock Absorber Solenoid Coil/Rear Shock Absorber Spring Preload Actuator/Rear Shock Absorber Stroke Sensor/Rear Shock Absorber Spring Preload Position Sensor (Service Code E3D) (DTC C2020, C2023, C2030, C2033)

★If the reading is within the standard, remove the KECS ECU and check the wiring for continuity between main harness connectors.

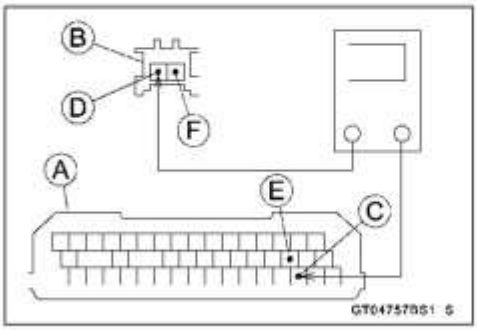
○Disconnect the KECS ECU and actuator connectors.

Wiring Continuity Inspection

KECS ECU Connector [A] ⟷ Rear Shock Absorber Spring Preload Actuator Connector [B]

KECS ECU Terminal 35 [C] ⟷ Actuator Terminal [D]

KECS ECU Terminal 19 [E] ⟷ Actuator Terminal [F]



★If the wiring is good, check the rear shock absorber solenoid coil resistance (see Rear Shock Absorber Solenoid Coil Resistance Inspection(17-128)).

Rear Shock Absorber Solenoid Coil Resistance Inspection

- Turn the ignition switch off.
- Remove:

  Fuel Tank (see Fuel Tank Removal(3-75))
- Disconnect the rear shock absorber solenoid coil lead connector [A].
- Connect a digital meter to the terminals in the rear shock absorber solenoid coil lead connector.
- Measure the rear shock absorber solenoid coil resistance.

Rear Shock Absorber Solenoid Coil Resistance

Standard: 2 ~ 6 Ω

★If the reading is out of the standard, replace the rear shock absorber solenoid coil (see Rear Shock Absorber Solenoid Coil Removal(13-28)) (see Rear Shock Absorber Solenoid Coil Installation(13-28)).

★If the reading is within the standard, remove the KECS ECU and check the wiring for continuity between main harness connectors.

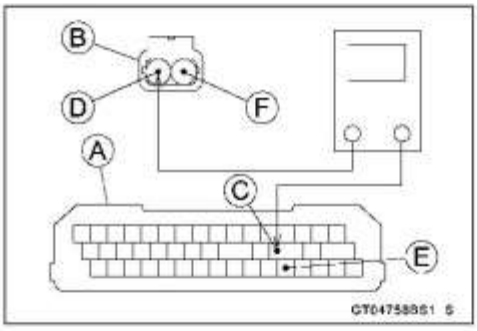
○Disconnect the KECS ECU and solenoid coil connectors.

Wiring Continuity Inspection

KECS ECU Connector [A] ⟷ Rear Shock Absorber Solenoid Coil Connector [B]

KECS ECU Terminal 21 [C] ⟷ Solenoid Coil Terminal [D]

KECS ECU Terminal 37 [E] ⟷ Solenoid Coil Terminal [F]



★If the wiring is good, check the rear shock absorber stroke sensor resistance (see Rear Shock Absorber Stroke Sensor Resistance Inspection(17-129)).

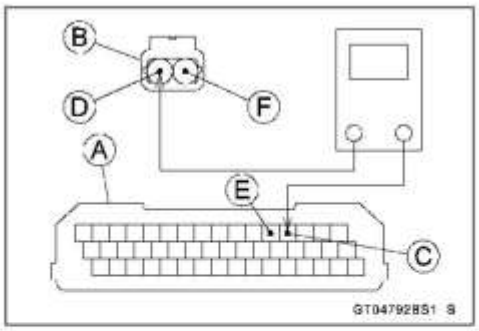
Rear Shock Absorber Solenoid Coil/Rear Shock Absorber Spring Preload Actuator/Rear Shock Absorber Stroke Sensor/Rear Shock Absorber Spring Preload Position Sensor (Service Code E3D) (DTC C2020, C2023, C2030, C2033)

Rear Shock Absorber Stroke Sensor Resistance Inspection

- Turn the ignition switch off.
- Remove:
  Fuel Tank (see Fuel Tank Removal(3-75))
- Disconnect the rear shock absorber stroke sensor lead connector [A].
- Connect a digital meter to the terminals in the rear shock absorber stroke sensor lead connector.
- Measure the rear shock absorber stroke sensor resistance.

Rear Shock Absorber Stroke Sensor Resistance
Standard: 10 ~ 30 Ω

★If the reading is out of the standard, replace the rear shock absorber.



★If the reading is within the standard, remove the KECS ECU and check the wiring for continuity between main harness connectors.

○Disconnect the KECS ECU and sensor connectors.

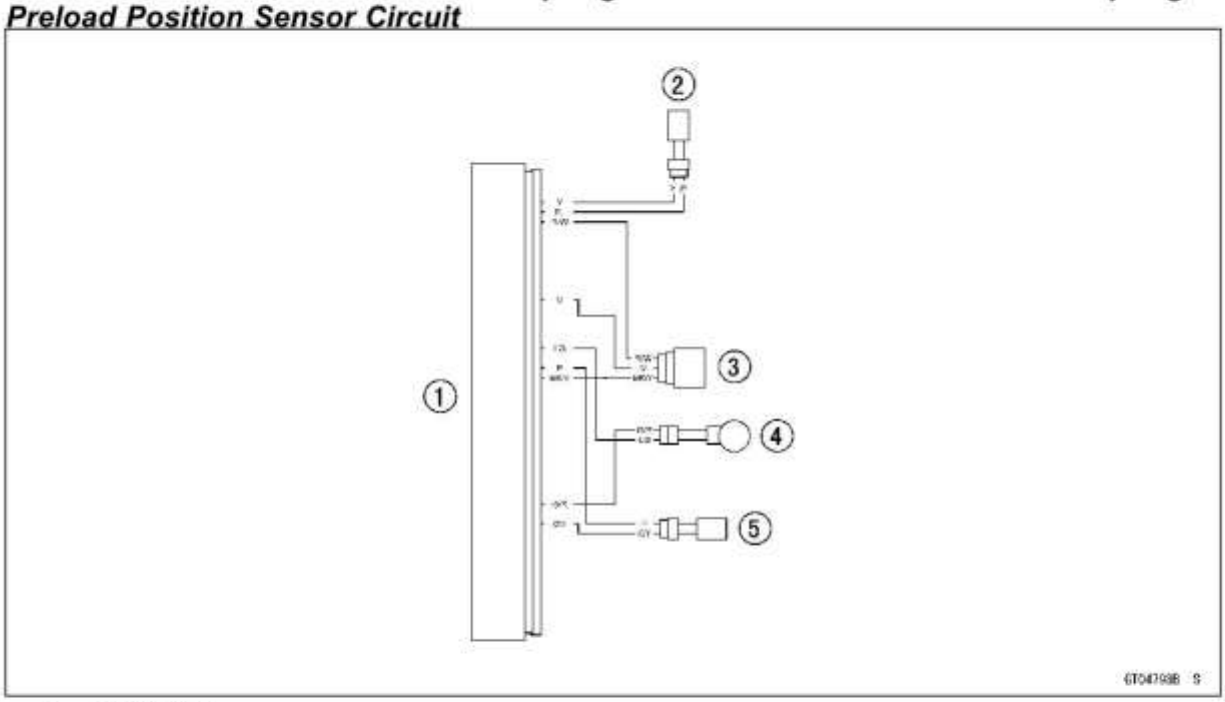
Wiring Continuity Inspection
KECS ECU Connector [A] ⟷ Rear Shock Absorber Stroke Sensor Connector [B]
KECS ECU Terminal 4 [C] ⟷ Sensor Terminal [D]
KECS ECU Terminal 5 [E] ⟷ Sensor Terminal [F]

★If the wiring is good, check the KECS ECU for its ground and power supply (see KECS ECU Power Supply Inspection(17-136)).

★If the ground and power supply are good, replace the KECS ECU.

Rear Shock Absorber Solenoid Coil/Rear Shock Absorber Spring Preload Actuator/Rear Shock Absorber Stroke Sensor/Rear Shock Absorber Spring Preload Position Sensor (Service Code E3D) (DTC C2020, C2023, C2030, C2033)

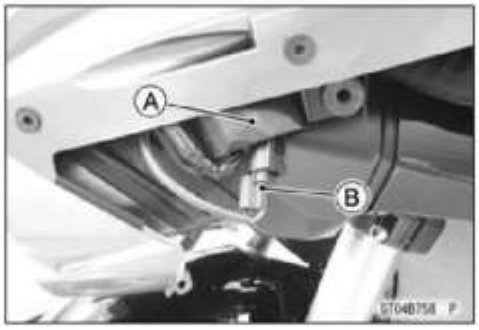
Rear Shock Absorber Solenoid Coil/Spring Preload Actuator/Stroke Sensor/Spring Preload Position Sensor Circuit



1. KECS ECU
2. Rear Shock Absorber Stroke Sensor
3. Rear Shock Absorber Spring Preload Position Sensor
4. Rear Shock Absorber Spring Preload Actuator
5. Rear Shock Absorber Solenoid Coil

Front Fork Solenoid Coil (Service Code E8A) (DTC C2021)

Front Fork Solenoid Coil Resistance Inspection



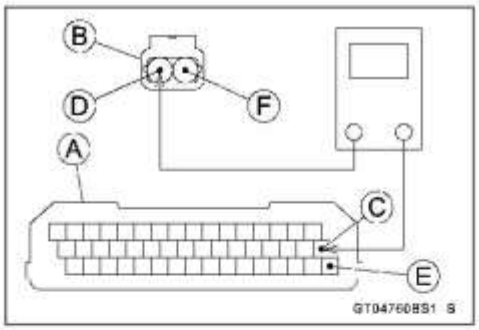
- Turn the ignition switch off.
- Remove:
  Left Lower Fairing (see Lower Fairing Removal(15-14))
- Slide the dust cover [A].
- Disconnect the front fork solenoid coil lead connector [B].
- Connect a digital meter to the terminals in the front fork solenoid coil lead connector.
- Measure the front fork solenoid coil resistance.

Front Fork Solenoid Coil Resistance
Standard: 2 ~ 6 Ω

★If the reading is out of the standard, replace the front fork solenoid coil (see Front Fork Solenoid Coil Replacement(13-27)).

★If the reading is within the standard, remove the KECS ECU and check the wiring for continuity between main harness connectors.

○Disconnect the KECS ECU and solenoid coil connectors.

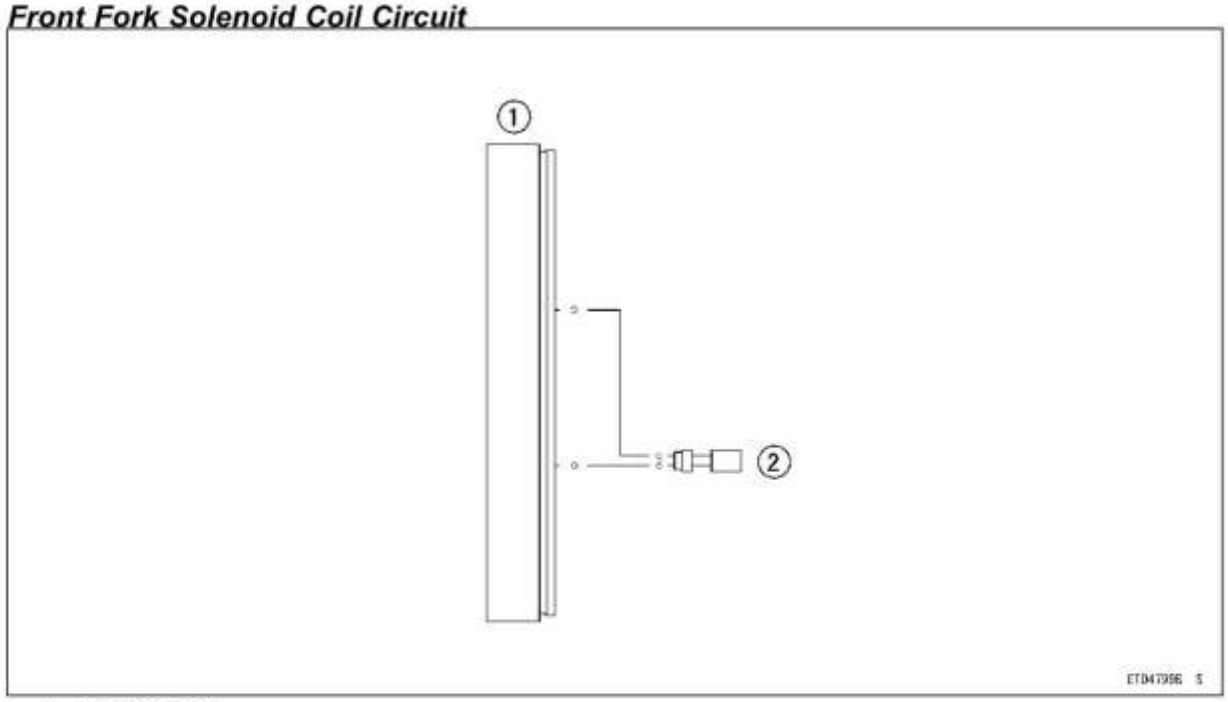


Wiring Continuity Inspection
KECS ECU Connector [A] ⟷ Front Fork Solenoid Coil Connector [B]
KECS ECU Terminal 17 [C] ⟷ Solenoid Coil Terminal [D]
KECS ECU Terminal 33 [E] ⟷ Solenoid Coil Terminal [F]

★If the wiring is good, check the KECS ECU for its ground and power supply (see KECS ECU Power Supply Inspection(17-136)).

★If the ground and power supply are good, replace the KECS ECU.

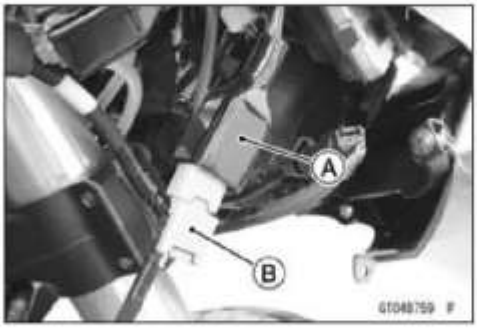
Front Fork Solenoid Coil Circuit



1. KECS ECU
2. Front Fork Solenoid Coil

Front Fork Stroke Sensor (Service Code E8B) (DTC C2032)

Front Fork Stroke Sensor Resistance Inspection



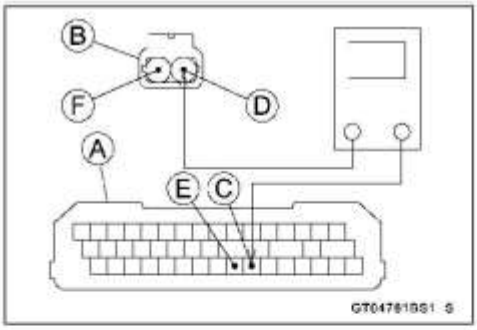
- Turn the ignition switch off.
- Remove:
  Right Lower Fairing (see Lower Fairing Removal(15-14))
- Slide the dust cover [A].
- Disconnect the front fork stroke sensor lead connector [B].
- Connect a digital meter to the terminals in the front fork stroke sensor lead connector.
- Measure the front fork stroke sensor resistance.

Front Fork Stroke Sensor Resistance
Standard: 10 ~ 30 Ω

★If the reading is out of the standard, replace the front fork top plug assembly (see Front Fork Stroke Sensor Replacement(13-27)).

★If the reading is within the standard, remove the KECS ECU and check the wiring for continuity between main harness connectors.

○Disconnect the KECS ECU and sensor connectors.

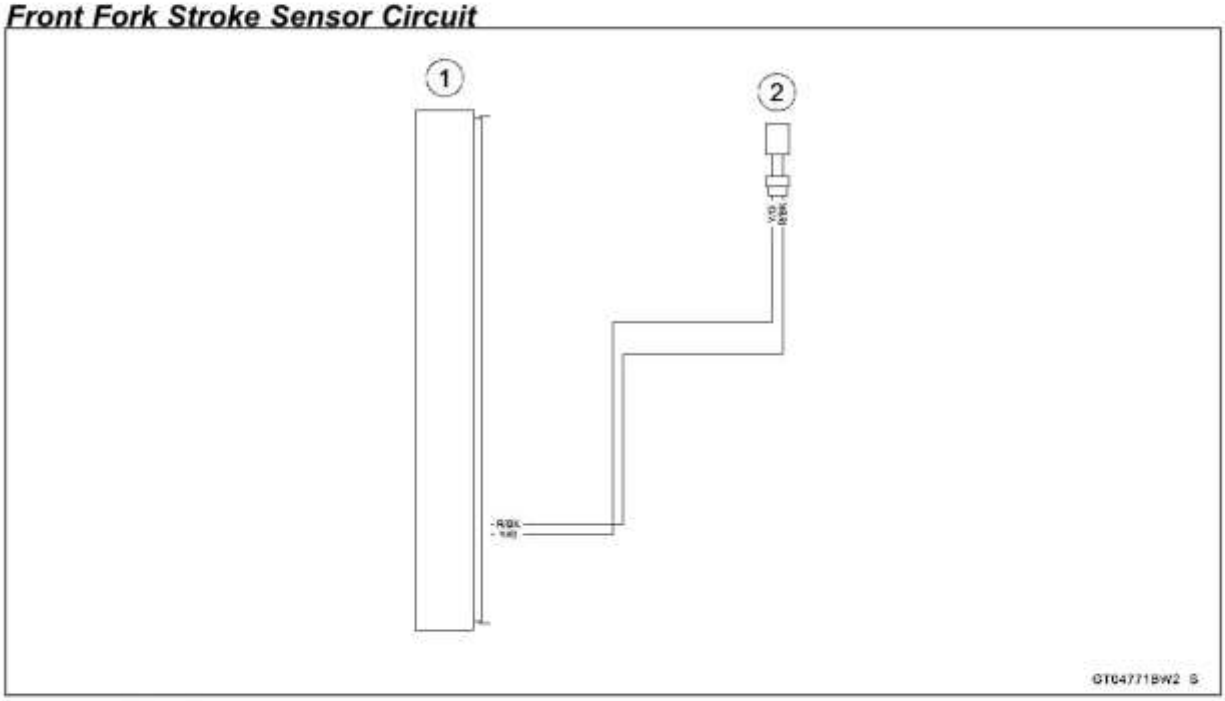


Wiring Continuity Inspection
KECS ECU Connector [A] ⟷ Front Fork Stroke Sensor Connector [B]
KECS ECU Terminal 39 [C] ⟷ Sensor Terminal [D]
KECS ECU Terminal 40 [E] ⟷ Sensor Terminal [F]

★If the wiring is good, check the KECS ECU for its ground and power supply (see KECS ECU Power Supply Inspection(17-136)).

★If the ground and power supply are good, replace the KECS ECU.

Front Fork Stroke Sensor Circuit



1. KECS ECU
2. Front Fork Stroke Sensor

KECS ECU (Service Code E8C) (DTC C2010, C2029)

KECS ECU Inspection

● Check the following parts.
Front Fork Solenoid Coil (see Front Fork Solenoid Coil Resistance Inspection(17-131))
Rear Shock Absorber Solenoid Coil (see Rear Shock Absorber Solenoid Coil Resistance Inspection(17-128))
Rear Shock Absorber Spring Preload Actuator (see Rear Shock Absorber Spring Preload Actuator Inspection(17-127))

★If the all parts are good, check the KECS ECU for its ground and power supply (see KECS ECU Power Supply Inspection(17-136)).

★If the ground and power supply are good, replace the KECS ECU.

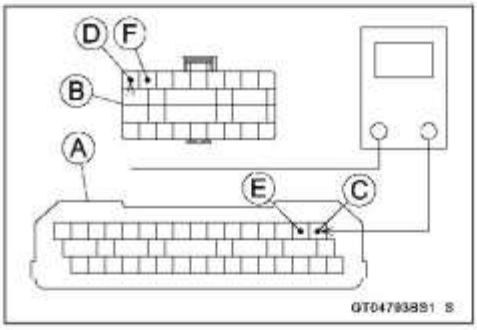
KECS ECU CAN Communication/CAN Bus Monitor, Front/Rear Wheel Rotation Sensor, Front Brake Fluid Pressure Sensor (Service Code E8D) (DTC C2080, C2081, C2082, C2083, C2084, C2090, C2092)

KECS ECU CAN Communication/CAN Bus Monitor Inspection

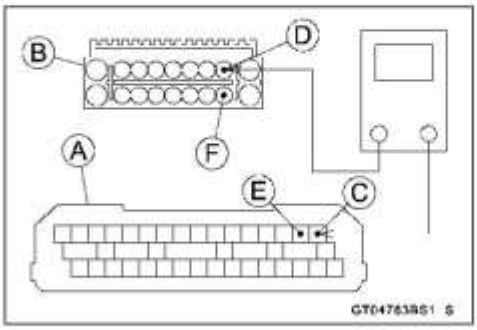
- Disconnect:
  KECS ECU Connector (see KECS ECU Removal(13-28))
  FI ECU Connector (see ECU Removal(3-39))
  ABS Hydraulic Unit Connector (see ABS Hydraulic Unit Removal(12-47))
  Meter Unit Connector (see Meter Unit Removal(16-76))
  IMU Connector (see IMU Removal(17-123))

- Check the wiring for continuity between main harness connectors.

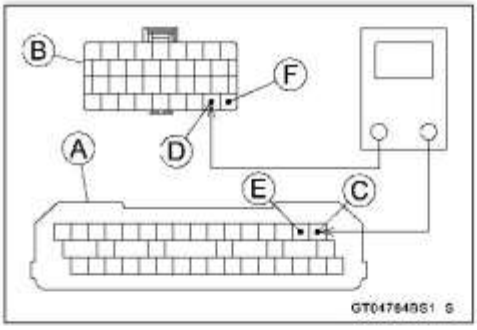
Wiring Continuity Inspection
KECS ECU Connector [A] ⟷ FI ECU Connector [B]
KECS ECU Terminal 1 [C] ⟷ FI ECU Terminal 61 [D]
KECS ECU Terminal 2 [E] ⟷ FI ECU Terminal 60 [F]



Wiring Continuity Inspection
KECS ECU Connector [A] ⟷ ABS Hydraulic Unit Connector [B]
KECS ECU Terminal 1 [C] ⟷ ABS Hydraulic Unit Terminal 2 [D]
KECS ECU Terminal 2 [E] ⟷ ABS Hydraulic Unit Terminal 11 [F]



Wiring Continuity Inspection
KECS ECU Connector [A] ⟷ Meter Unit Connector [B]
KECS ECU Terminal 1 [C] ⟷ Meter Unit Terminal 27 [D]
KECS ECU Terminal 2 [E] ⟷ Meter Unit Terminal 26 [F]



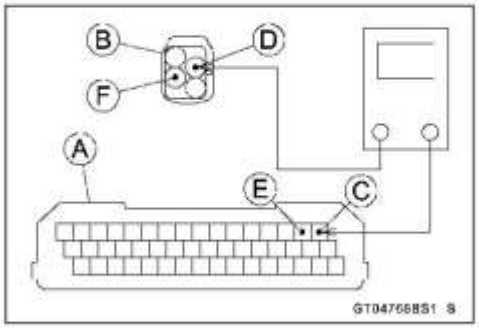
KECS ECU CAN Communication/CAN Bus Monitor, Front/Rear Wheel Rotation Sensor, Front Brake Fluid Pressure Sensor (Service Code E8D) (DTC C2080, C2081, C2082, C2083, C2084, C2090, C2092)

Wiring Continuity Inspection

KECS ECU Connector [A] ⟷ IMU Connector [B]

KECS ECU Terminal 1 [C] ⟷ IMU Terminal [D]

KECS ECU Terminal 2 [E] ⟷ IMU Terminal [F]

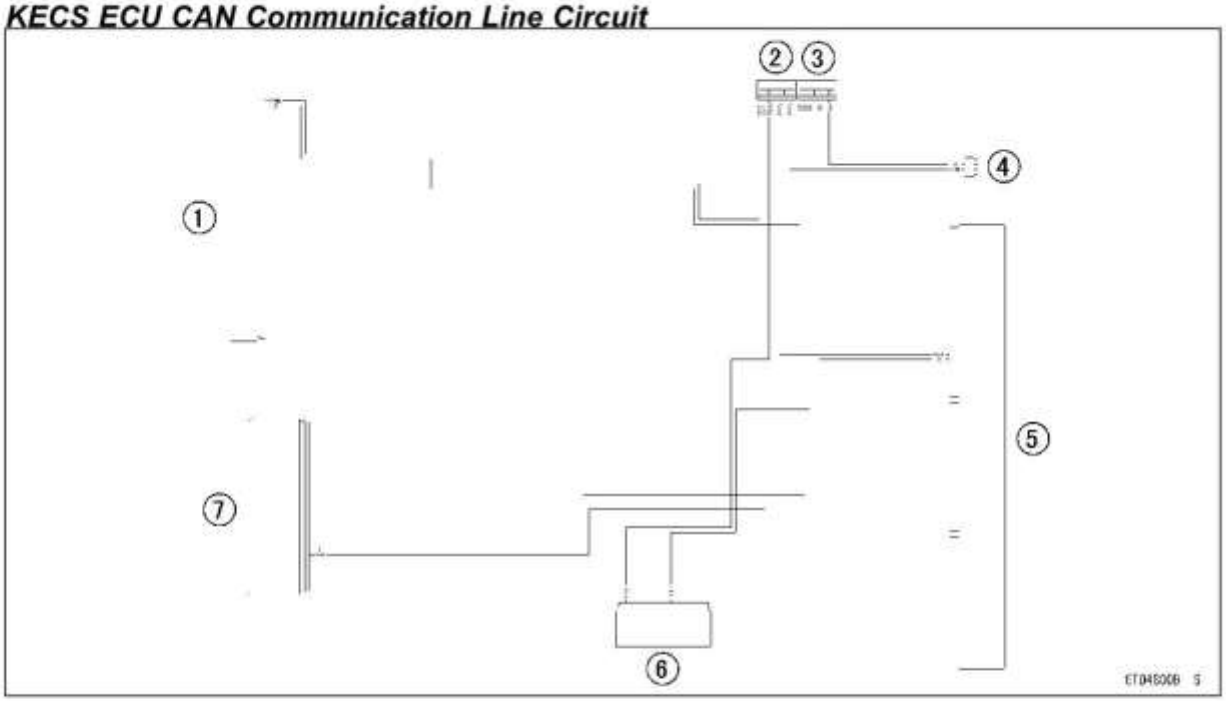


★If the wiring is good, check the following parts.
Rear Wheel Rotation Sensor (see Rear Wheel Rotation Sensor Signal Inspection(17-57))
Front Wheel Rotation Sensor (see Front Wheel Rotation Sensor Signal Inspection(17-62))
Front Brake Fluid Pressure Sensor (see Output Fluid Pressure Sensor (Front Brake) Wiring Inspection (Service Code B83)(17-154)) (see Output Fluid Pressure Sensor (Front Brake) Offset Abnormal (Service Code B84)(17-154))

★If the above parts are good, check the KECS ECU for its ground and power supply (see KECS ECU Power Supply Inspection(17-136)).

★If the ground and power supply are good, replace the KECS ECU.

KECS ECU CAN Communication Line Circuit



1. KECS ECU
2. Joint Connector (CAN High)
3. Joint Connector (CAN Low)
4. IMU
5. FI ECU
6. ABS Hydraulic Unit
7. Meter Unit

KECS ECU Power Supply Circuit (Service Code EEB) (DTC C2000, C2001)

KECS ECU Power Supply Inspection

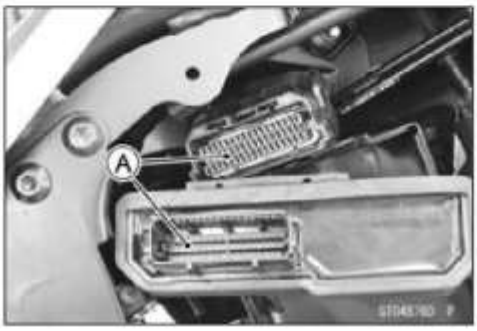
- Remove:
  Front Seat (see Front Seat Removal(15-13))
- Visually inspect the KECS ECU connectors.

★If the connector is clogged with mud or dust, blow it off with compressed air.

- Remove the KECS ECU (see KECS ECU Removal(13-28)).
- Visually inspect the terminals [A] of the KECS ECU and main harness connectors.

★If the terminals of the main harness connectors are damaged, replace the main harness.

★If the terminals of the KECS ECU connectors are damaged, replace the KECS ECU.



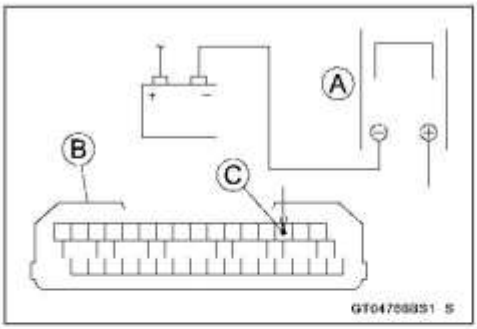
- Connect a digital meter [A] and check the following wiring for continuity.
  KECS ECU Connector [B]

KECS ECU Grounding Inspection

Connections:

BK/Y lead [C] (KECS ECU terminal 3) ⟷ Battery (–) Terminal

Criteria: 0 Ω



★If no continuity, check the connectors, the engine ground lead, or main harness, and repair or replace them if necessary.

KECS ECU Power Supply Circuit (Service Code EEB) (DTC C2000, C2001)

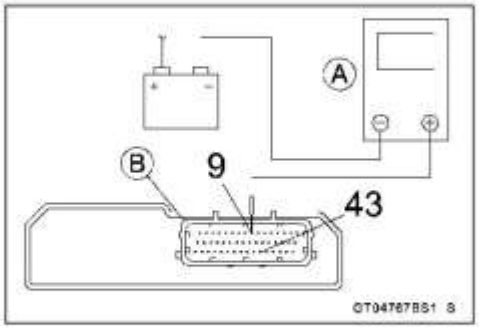
★If the wiring is good, check the power source voltage of the KECS ECU.

NOTE

○*Be sure the battery is fully charged.*

- Connect the KECS ECU connectors.
- Connect a digital meter [A] to the connector [B] with the needle adapter set.

Special Tool - Needle Adapter Set: 57001-1874



KECS ECU Power Supply Inspection

Connections:

(I) Digital Meter (+) → Terminal 9 (BR/W lead)

Digital Meter (–) → Battery (–) Terminal

(II) Digital Meter (+) → Terminal 43 (R/Y lead)

Digital Meter (–) → Battery (–) Terminal

Ignition Switch off:

(I) Terminal 9 (BR/W lead): 0 V

(II) Terminal 43 (R/Y lead): Battery Voltage

Ignition Switch on:

All: Battery Voltage

★If the reading is out of the specification, check the following.

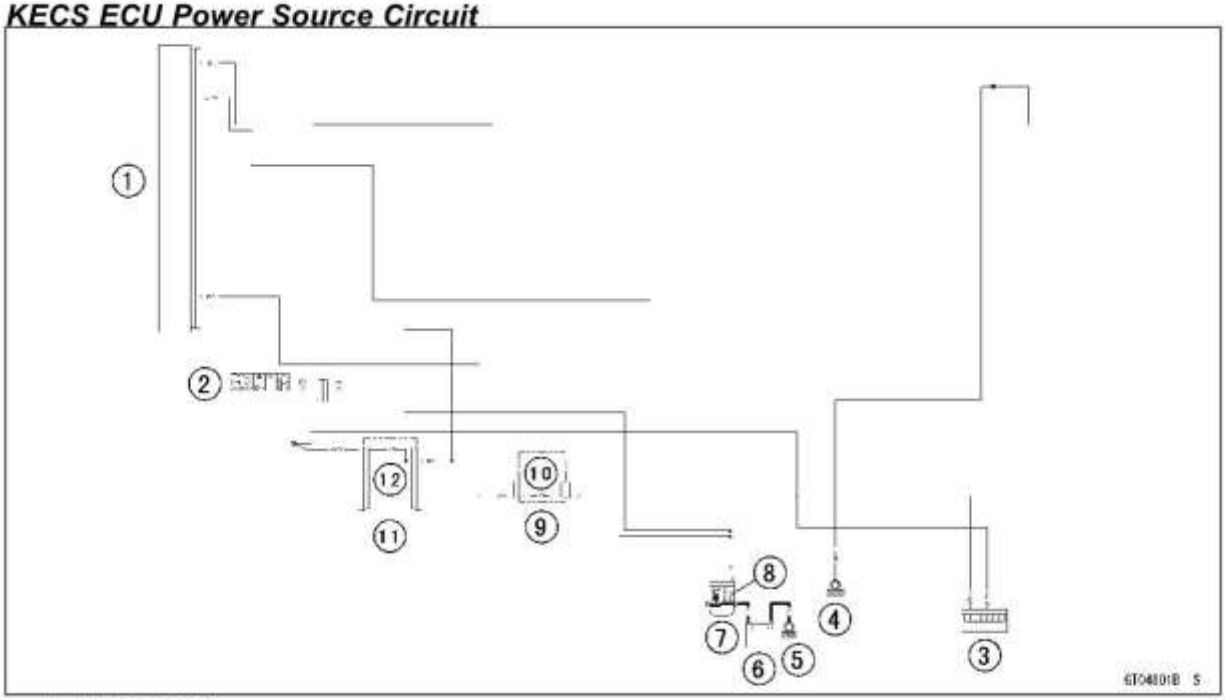
KECS Fuse 10 A (see Fuse Inspection(16-131))

Power Source Wiring (see KECS ECU Power Source Circuit(17-138))

★If the fuse and wiring are good, replace the KECS ECU.

KECS ECU Power Supply Circuit (Service Code EEB) (DTC C2000, C2001)

KECS ECU Power Source Circuit

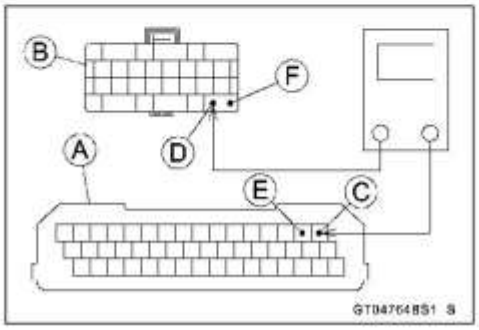


1. KECS ECU
2. Ignition Switch
3. Joint Connector (3)
4. Frame Ground (4)
5. Engine Ground
6. Battery
7. Starter Relay
8. Main Fuse 30 A
9. Fuse Box (4)
10. KECS Fuse 10 A
11. Fuse Box (1)
12. Ignition Fuse 15 A

KECS ECU Communication Error (Service Code EC)

KECS ECU Communication Line Inspection

○When the data is not sent from the KECS ECU to the meter unit, the service code EC is displayed.
○The data is sent through the CAN communication line.
○The service code EC is detected with the meter unit.

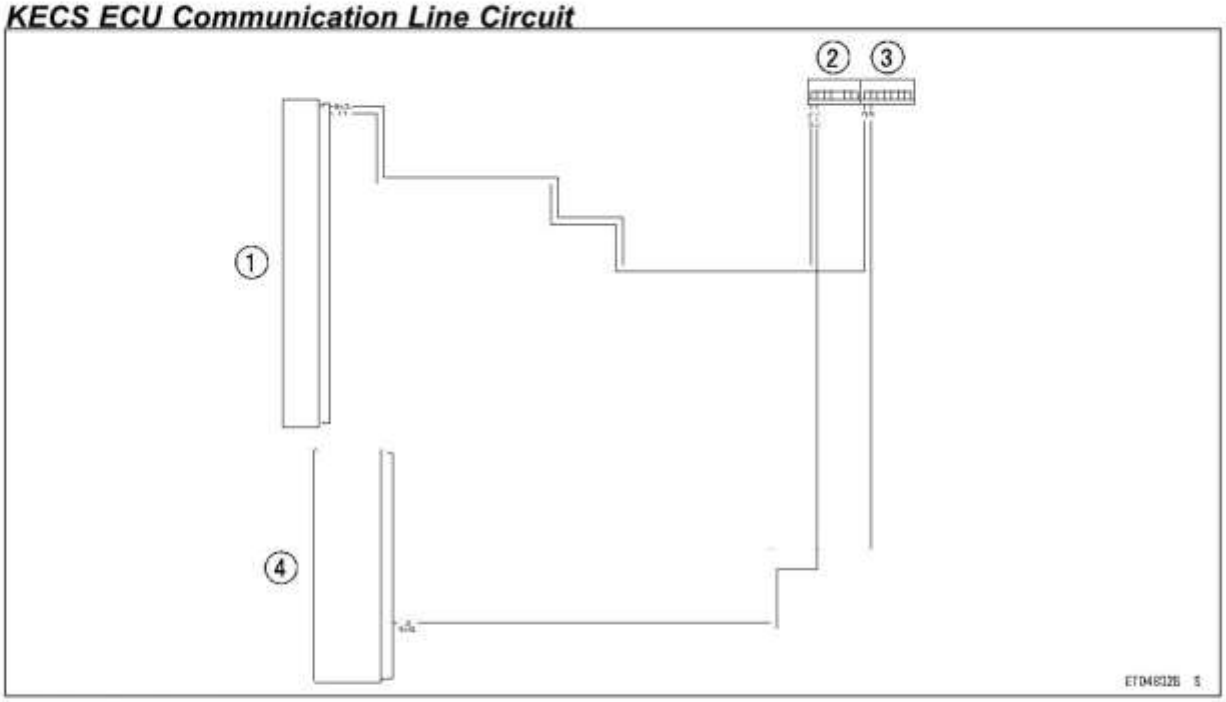


- Disconnect:
  KECS ECU Connector (see KECS ECU Removal(13-28))
  Meter Unit Connector (see Meter Unit Removal(16-76))
- Check the wiring for continuity between main harness connectors.

Wiring Continuity Inspection
KECS ECU Connector [A] ←→Meter Unit Connector [B]
KECS ECU Terminal 1 [C] ←→ Meter Unit Terminal 27 [D]
KECS ECU Terminal 2 [E] ←→ Meter Unit Terminal 26 [F]

★If the wiring is good, check the meter unit (see Meter Unit Inspection(16-83)).
★If the meter unit is normal, replace the KECS ECU.

KECS ECU Communication Line Circuit



1. KECS ECU
2. Joint Connector (CAN High)
3. Joint Connector (CAN Low)
4. Meter Unit

IMU Power Supply (Service Code EED) (DTC 2091)

IMU Power Supply Inspection

- Refer to the IMU Power Supply Inspection (see IMU Power Supply Inspection(17-123)).

★If the IMU is normal, check the KECS ECU for its ground and power supply (see KECS ECU Power Supply Inspection(17-136)).

★If the ground and power supply are good, replace the KECS ECU.

KECS ECU Solenoid Coil Low Voltage (Service Code EEF) (DTC 2002)

KECS ECU Solenoid Coil Voltage Inspection

- Check the battery condition (see Charging Condition Inspection(16-29)).

★If the battery is good condition, check the KECS ECU for its ground and power supply (see KECS ECU Power Supply Inspection(17-136)).

★If the ground and power supply are good, replace the KECS ECU.

Cornering Light ECU (Service Code EFA)

Cornering Light ECU Inspection

○The cornering light ECU is built in the left cornering light. The cornering light ECU cannot be inspected.

- When the service code EFA is displayed on the LCD, replace the left cornering light.

Right Cornering Light (Service Code EFB)

Right Cornering Light Inspection

○The right cornering light cannot be inspected.

● When the service code EFB is displayed on the LCD, replace the right cornering light.

★If the right cornering light replace, but the problem still exists, replace the left cornering light.

Left Cornering Light (Service Code EFC)

Left Cornering Light Inspection

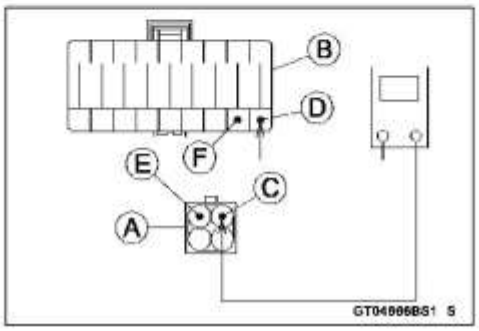
○The left cornering light cannot be inspected.

- When the service code EFC is displayed on the LCD, replace the left cornering light.

Cornering Light ECU Communication Error (Service Code EFD)

Cornering Light ECU Communication Line Inspection

○When the data is not sent from the cornering light ECU to the meter unit, the service code EFD is displayed.
○The data is sent through the CAN communication line.
○The service code EFD is detected with the meter unit.

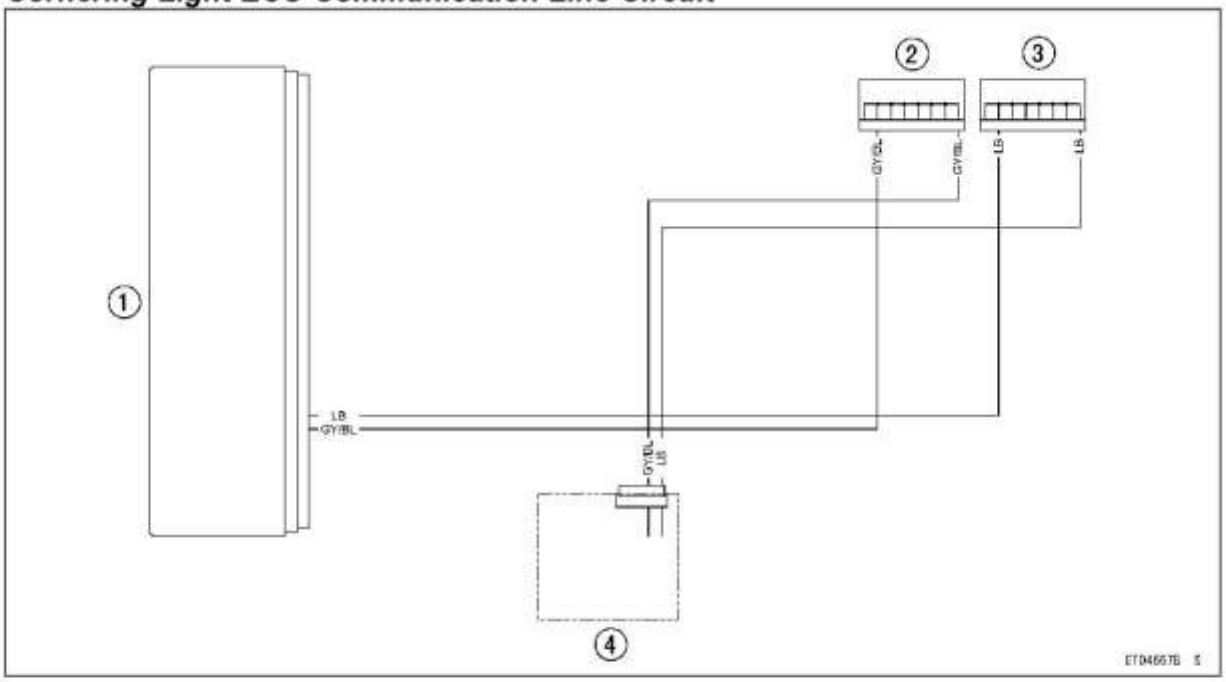


● Disconnect the left cornering light lead connector and meter unit connector, and check the wiring fir continuity between main harness connectors.

Wiring Continuity Inspection
Cornering Light Connector [A] ⟷ Meter Unit Connector [B]
Cornering Light Terminal [C] ⟷ Meter Unit Terminal [D]
Cornering Light Terminal [E] ⟷ Meter Unit Terminal [F]

★If the wiring is good, check the meter unit (see Meter Unit Inspection(16-83)).
★If the meter unit is normal, replace the left cornering light.

Cornering Light ECU Communication Line Circuit



1. Meter Unit
2. Joint Connector (CAN High)
3. Joint Connector (CAN Low)
4. Left Cornering Light

Front/Rear Wheel Rotation Sensor, IMU (Service Code EFE)

Front/Rear Wheel Rotation Sensor and/or IMU Inspection

- Inspect the following items.
  Rear Wheel Rotation Sensor (see Rear Wheel Rotation Sensor Signal Inspection(17-57))
  Front Wheel Rotation Sensor (see Front Wheel Rotation Sensor Signal Inspection(17-62))
  IMU (see IMU Power Supply Inspection(17-123)) (see IMU Communication Line Inspection(17-125))

★If the above items are good, replace the left cornering light.

IMU (Service Code EFF)

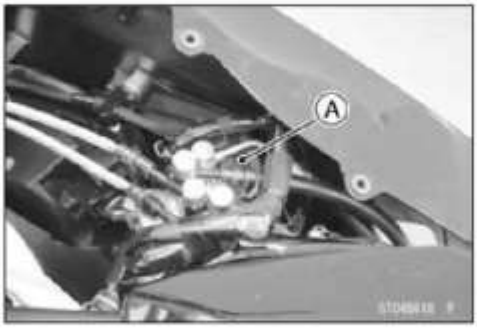
IMU Inspection

● Inspect the IMU.
Service Code B63 (see IMU Communication Line Inspection (Service Code B63)(17-154))
Service Code B94 (see IMU Inspection (Service Code B94)(17-155))

★If the IMU is good, replace the left cornering light.

ABS Service Codes

Solenoid Valve Inspection (Service Code B13, B14, B17, B18)



○The solenoid valve is built in the ABS hydraulic unit [A]. Therefore the solenoid valve cannot be checked directly.

- Perform the Pre-Diagnosis Inspection 1 and 2 (see Inquiries to Rider(12-42)).

★If any of these service codes appears even if all checks are ended, replace the ABS hydraulic unit.

★If the service code does not appear, the ABS system normal (temporary failure).

ABS Solenoid Valve Relay Inspection (Service Code B19)

○The ABS solenoid valve relay is built in the ABS hydraulic unit. Therefore the relay cannot be checked directly.

- Perform the Pre-Diagnosis Inspection 1 and 2 (see Inquiries to Rider(12-42)).

★If this service code appears even if all checks are ended, replace the ABS hydraulic unit.

★If the service code does not appear, the ABS system normal (temporary failure).

Front, Rear Wheel Rotation Difference Abnormal Inspection (Service Code B25)

- Check the following and correct the faulty part.
  Incorrect Tire Pressure
  Tires not recommended for the motorcycle were installed (incorrect tire size).
  Deformation of Wheel or Tire
  Missing Teeth or Clogging with Foreign Matter of Sensor Rotor ((see Wheel Rotation Sensor Rotor Inspection(12-54))

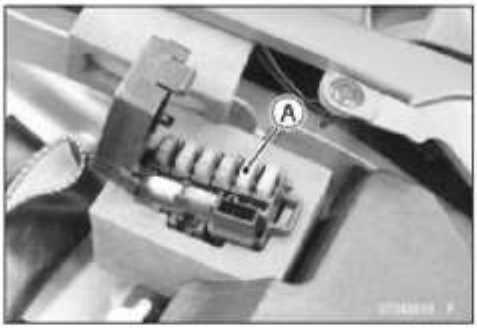
★If the all parts corrected, go to next step.

- Perform the Pre-Diagnosis Inspection 1 and 2 (see Inquiries to Rider(12-42)).

★If this service code appears even if all checks are ended, replace the ABS hydraulic unit.

★If the service code does not appear, the ABS system normal (temporary failure).

ABS Motor Relay Inspection (Service Code B35)

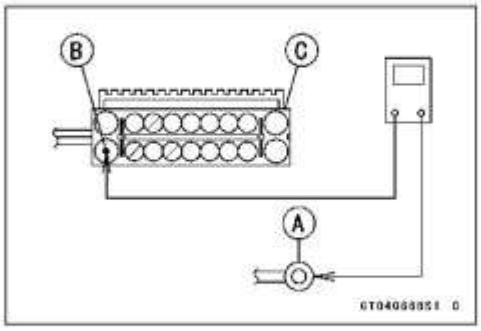


- Check the ABS motor relay fuse (25 A) [A] (see Fuse Inspection(16-131)).

★If the fuse is good, check the wiring continuity as follows.

○Disconnect:
  Battery Positive Cable (see Battery Removal(16-28))
  ABS Hydraulic Unit Connector (see ABS Hydraulic Unit Removal(12-47))

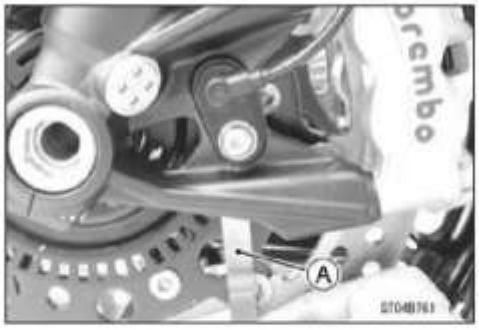
ABS Service Codes



○Check the wiring continuity between the positive cable terminal [A] of the battery and R/W lead terminal [B] in the ABS hydraulic unit connector [C].
★If the wiring is open, replace or repair the harness (see ABS System Circuit(12-34)).
★If the wiring is good, go to next step.

○The ABS motor relay is built in the ABS hydraulic unit. Therefore the relay cannot be checked directly.
● Perform the Pre-Diagnosis Inspection 1 and 2 (see Inquiries to Rider(12-42)).
★If this service code appears even if all checks are ended, replace the ABS hydraulic unit.
★If the service code does not appear, the ABS system normal (temporary failure).

Front Wheel Rotation Sensor Signal Abnormal (Service Code B42)



● Measure the air gap between the front wheel rotation sensor and sensor rotor.
Thickness Gauge [A]

Air Gap
Standard: About 1.3 mm (0.05 in.)

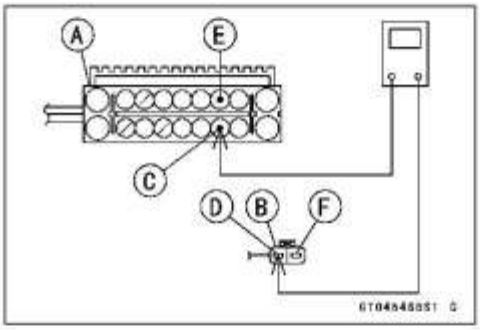
★If the measurement is not the standard, check each part for deformation and looseness and correct accordingly.
★If the measurement is the standard, go to next step.

● Check that there is iron or other magnetic deposits between the sensor and sensor rotor, and the sensor rotor slots for obstructions.
● Check the installation condition of the sensor for looseness.
● Check the sensor and sensor rotor tip for deformation or damage (e.g., chipped sensor rotor teeth).
★If the sensor and sensor rotor in bad condition, remove the any deposits. Install the proper part or replace faulty part.
★If the all items are good, go to next step.
● Perform the Pre-Diagnosis Inspection 1 and 2 (see Inquiries to Rider(12-42)).
★If this service code appears even if all checks are ended, replace the ABS hydraulic unit.
★If the service code does not appear, the ABS system normal (temporary failure).

ABS Service Codes

Front Wheel Rotation Sensor Wiring Inspection (Service Code B43)

- Disconnect the front wheel rotation sensor lead connector [A] (see Front Wheel Rotation Sensor Removal(12-50)).



- Disconnect the ABS hydraulic unit connector (see ABS Hydraulic Unit Removal(12-47)).
- Check the wiring continuity between main harness connectors

Wiring Continuity Inspection

ABS Hydraulic Unit Connector [A] ⟷ Front Wheel Rotation Sensor Connector [B]

ABS Hydraulic Unit Terminal 12 [C] ⟷ Sensor Terminal [D]

ABS Hydraulic Unit Terminal 3 [E] ⟷ Sensor Terminal [F]

★If the wiring is open, replace or repair the harness (see ABS System Circuit(12-34)).

★If the wiring is good, go to next step.

- Perform the Pre-Diagnosis Inspection 1 and 2 (see Inquiries to Rider(12-42)).

★If this service code appears even if all checks are ended, replace the front wheel rotation sensor.

- Still, when it is not good, replace the ABS hydraulic unit.

★If the service code does not appear, the ABS system normal (temporary failure).

Rear Wheel Rotation Sensor Signal Abnormal (Service Code B44)

- Measure the air gap between the rear wheel rotation sensor and sensor rotor.
  Thickness Gauge [A]

Air Gap

Standard: 1.0 ~ 2.0 mm (0.04 ~ 0.08 in.)

★If the measurement is not the standard, adjust the air gap with the spacer.

Spacer Thickness	Part Number
0.5 mm (0.020 in.)	92026-0789
1.0 mm (0.039 in.) (STD)	92026-0790
1.5 mm (0.059 in.)	92026-0791

★If the air gap can not be adjusted by spacer, check each part for deformation and looseness and correct accordingly.

★If the measurement is the standard, go to next step.

ABS Service Codes

- Check that there is iron or other magnetic deposits between the sensor and sensor rotor, and the sensor rotor slots for obstructions.
- Check the installation condition of the sensor for looseness.
- Check the sensor and sensor rotor tip for deformation or damage (e.g., chipped sensor rotor teeth).

★If the sensor and sensor rotor in bad condition, remove the any deposits. Install the proper part or replace faulty part.

★If the all items are good, go to next step.

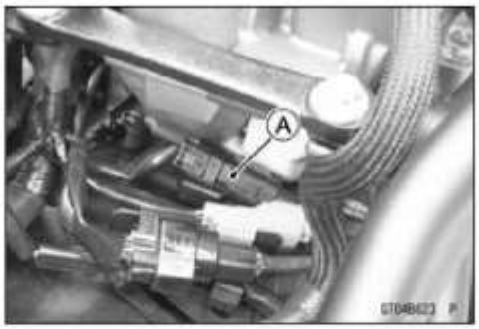
- Perform the Pre-Diagnosis Inspection 1 and 2 (see Inquiries to Rider(12-42)).

★If this service code appears even if all checks are ended, replace the ABS hydraulic unit.

★If the service code does not appear, the ABS system normal (temporary failure).

Rear Wheel Rotation Sensor Wiring Inspection (Service Code B45)

- Disconnect the rear wheel rotation sensor lead connector [A] (see Rear Wheel Rotation Sensor Removal(12-51)).



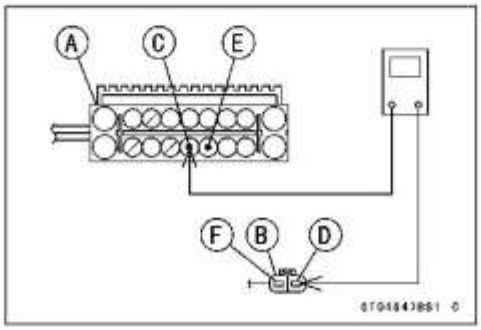
- Disconnect the ABS hydraulic unit connector (see ABS Hydraulic Unit Removal(12-47)).
- Check the wiring continuity between main harness connector.

Wiring Continuity Inspection

ABS Hydraulic Unit Connector [A] ⟷ Rear Wheel Rotation Sensor Connector [B]

ABS Hydraulic Unit Terminal 14 [C] ⟷ Sensor Terminal [D]

ABS Hydraulic Unit Terminal 13 [E] ⟷ Sensor Terminal [F]



★If the wiring is open, replace or repair the harness (see ABS System Circuit(12-34)).

★If the wiring is good, go to next step.

- Perform the Pre-Diagnosis Inspection 1 and 2 (see Inquiries to Rider(12-42)).

★If this service code appears even if all checks are ended, replace the rear wheel rotation sensor.

- Still, when it is not good, replace the ABS hydraulic unit.

★If the service code does not appear, the ABS system normal (temporary failure).

ABS Service Codes

Power Supply Voltage Inspection (Low-Voltage) (Service Code B52)

- Check the battery condition (see Charging Condition Inspection(16-29)).

★If the battery is good condition, perform the Pre-Diagnosis Inspection 1 and 2 (see Inquiries to Rider(12-42)).

★If this service code appears even if all checks are ended, replace the ABS hydraulic unit.

★If the service code does not appear, the ABS system normal (temporary failure).

Power Supply Voltage Inspection (Over-Voltage) (Service Code B53)

- Check the charging voltage (see Charging Voltage Inspection(16-34)).

★If the charging voltage is good, perform the Pre-Diagnosis Inspection 1 and 2 (see Inquiries to Rider(12-42)).

★If this service code appears even if all checks are ended, replace the ABS hydraulic unit.

★If the service code does not appear, the ABS system normal (temporary failure).

ECU Inspection (Service Code B55)

○This ECU is built in the ABS hydraulic unit. Therefore the ECU cannot be checked directly.

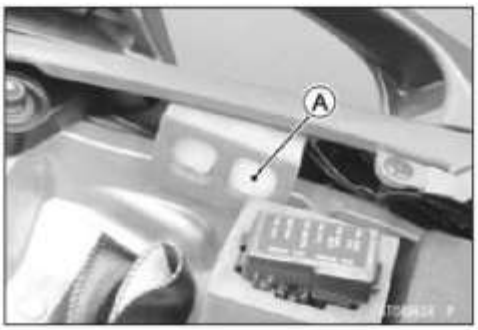
- Perform the Pre-Diagnosis Inspection 1 and 2 (see Inquiries to Rider(12-42)).

★If this service code appears even if all checks are ended, replace the ABS hydraulic unit.

★If the service code does not appear, the ABS system normal (temporary failure).

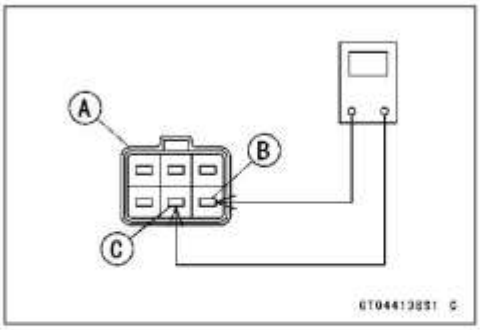
CAN Communication (Transmission)/CAN Bus OFF Monitor Inspection (Service Code B57)
CAN Communication (Reception) Monitor Inspection (Service Code B58)

- Remove:
  Rear Seat (see Rear Seat Removal(15-13))
  Connector Cap [A]



- Measure the CAN communication line resistance.
  Immobilizer (Equipped Models)/Kawasaki Diagnostic System Connector [A]
  GY/BL Terminal [B]
  LB Terminal [C]

CAN Communication Line Resistance
Standard: 30 ~ 70 Ω



★If the reading is out of the standard, go to Check 1.

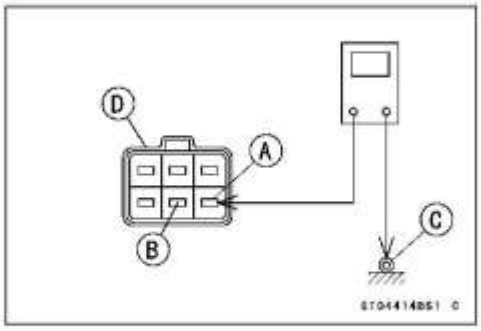
★If the reading is the standard, go to Check 2.

Check 1

- Check the CAN communication line resistance of following parts.
  Meter Unit (see Meter Unit Inspection(16-83))
  ECU (see ECU Communication Line Inspection(17-78))

ABS Service Codes

Check 2



- Measure the resistance between the GY/BL [A] or LB [B] terminal and ground [C].
  Immobilizer (Equipped Models)/Kawasaki Diagnostic System Connector [D]

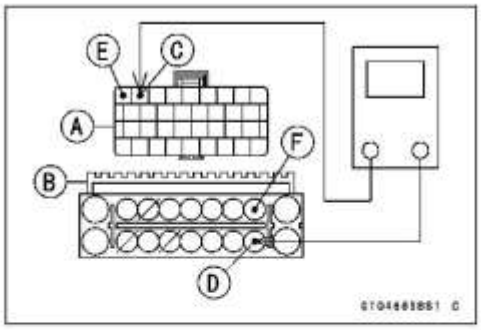
CAN Communication Line/Ground Resistance
Standard: 4 ~ 30 kΩ

★If the reading is out of the standard, replace or repair the main harness.
★If the reading is the standard, go to next step.

- Perform the Pre-Diagnosis Inspection 1 and 2 (see Inquiries to Rider(12-42)).

★If this service code appears even if all checks are ended, replace the ABS hydraulic unit.
★If the service code does not appear, the ABS system normal (temporary failure).

ECU Communication Line Inspection (Service Code B62)



- Check the wiring continuity between the main harness connectors.
- Disconnect:
  ECU Connector (see ECU Removal(3-39))
  ABS Hydraulic Unit Connector (see ABS Hydraulic Unit Removal(12-47))

Wiring Continuity Inspection
ECU Connector [A] ⟷ ABS Hydraulic Unit Connector [B]
ECU Terminal 60 [C] ⟷ ABS Hydraulic Unit Terminal 11 [D]
ECU Terminal 61 [E] ⟷ ABS Hydraulic Unit Terminal 2 [F]

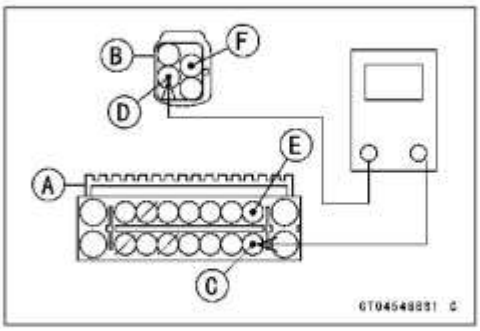
★If the wiring is open, replace or repair the harness (see ABS System Circuit(12-34)).
★If the wiring is good, check the ECU for its ground and power supply (see ECU Power Supply Inspection(3-40)).
★If the ground and power supply are good, go to next step.

- Perform the Pre-Diagnosis Inspection 1 and 2 (see Inquiries to Rider(12-42)).

★If this service code appears even if all checks are ended, replace the ABS hydraulic unit.
★If the service code does not appear, the ABS system normal (temporary failure).

ABS Service Codes

IMU Communication Line Inspection (Service Code B63)



- Check the wiring continuity between the main harness connectors.
- Disconnect:
  IMU Connector (see IMU Removal(17-123))
  ABS Hydraulic Unit Connector (see ABS Hydraulic Unit Removal(12-47))

Wiring Continuity Inspection
ABS Hydraulic Unit Connector [A] ⟷ IMU Connector [B]
ABS Hydraulic Unit Terminal 11 [C] ⟷ IMU Terminal [D]
ABS Hydraulic Unit Terminal 2 [E] ⟷ IMU Terminal [F]

★If the wiring is open, replace or repair the harness (see ABS System Circuit(12-34)).
★If the wiring is good, go to next step.

- Perform the Pre-Diagnosis Inspection 1 and 2 (see Inquiries to Rider(12-42)).

★If this service code appears even if all checks are ended, replace the ABS hydraulic unit.
★If the service code does not appear, the ABS system normal (temporary failure).

Output Fluid Pressure Sensor (Front Brake) Wiring Inspection (Service Code B83)

○The output fluid pressure sensor is built in the ABS hydraulic unit. Therefore the sensor cannot be checked directly.

- Perform the Pre-Diagnosis Inspection 1 and 2 (see Inquiries to Rider(12-42)).

★If this service code appears even if all checks are ended, replace the ABS hydraulic unit.

Output Fluid Pressure Sensor (Front Brake) Offset Abnormal (Service Code B84)

○The output fluid pressure sensor is built in the ABS hydraulic unit. Therefore the sensor cannot be checked directly.

- Perform the Pre-Diagnosis Inspection 1 and 2 (see Inquiries to Rider(12-42)).

★If this service code appears even if all checks are ended, replace the ABS hydraulic unit.
★If the service code does not appear, the ABS system normal (temporary failure).

ABS Service Codes

Fluid Pressure Sensor Supply Voltage Inspection (Service Code B89)

○The fluid pressure sensors are built in the ABS hydraulic unit. Therefore the voltage cannot be checked directly.

- Perform the Pre-Diagnosis Inspection 1 and 2 (see Inquiries to Rider(12-42)).

★If this service code appears even if all checks are ended, replace the ABS hydraulic unit.

★If the service code does not appear, the ABS system normal (temporary failure).

IMU Inspection (Service Code B94)

- Check the IMU power supply voltage (see IMU Power Supply Inspection(17-123)).

★If the IMU is good, perform the Pre-Diagnosis Inspection 1 and 2 (see Inquiries to Rider(12-42)).

★If this service code appears even if all checks are ended, replace the ABS hydraulic unit.

★If the service code does not appear, the ABS system normal (temporary failure).