

Section 1

Engine

CONTENTS

Precautions	1-1	DTC "C28" (P1655): Secondary Throttle Valve Actuator (STVA) Malfunction.....	1A-73
Precautions	1-1	DTC "C29" (P1654-H/L): Secondary Throttle Position Sensor (STPS) Circuit Malfunction....	1A-77
Precautions for Engine.....	1-1	DTC "C31" (P0705): GP Switch Circuit Malfunction.....	1A-85
Engine General Information and Diagnosis	1A-1	DTC "C32" (P0201), "C33" (P0202), "C34" (P0203) or "C35" (P0204): Fuel Injector Circuit Malfunction.....	1A-87
General Description	1A-1	DTC "C40" (P0505 / P0506 / P0507): ISC Valve Circuit Malfunction.....	1A-91
Injection Timing Description.....	1A-1	DTC "C41" (P0230-H/L): FP Relay Circuit Malfunction.....	1A-97
Self-Diagnosis Function	1A-2	DTC "C41" (P2505): ECM Power Input Signal Malfunction.....	1A-100
Schematic and Routing Diagram	1A-4	DTC "42" (P1650): IG Switch Circuit Malfunction.....	1A-102
FI System Wiring Diagram	1A-4	DTC "C44" (P0130/P0135): HO2 Sensor (HO2S) Circuit Malfunction	1A-102
Terminal Alignment of ECM Coupler.....	1A-5	DTC "C49" (P1656): PAIR Solenoid Valve Circuit Malfunction.....	1A-108
Component Location	1A-6	DTC "C60" (P0480): Cooling Fan Relay Circuit Malfunction.....	1A-111
FI System Parts Location	1A-6	Specifications	1A-114
Diagnostic Information and Procedures	1A-7	Service Data.....	1A-114
Engine Symptom Diagnosis	1A-7	Special Tools and Equipment	1A-115
Self-Diagnostic Procedures	1A-11	Special Tool	1A-115
Use of SDS Diagnosis Reset Procedures.....	1A-13	Emission Control Devices	1B-1
Show Data When Trouble (Displaying Data at the Time of DTC)	1A-14	Precautions	1B-1
SDS Check	1A-15	Precautions for Emission Control Devices	1B-1
DTC Table.....	1A-18	General Description	1B-1
Fail-Safe Function Table.....	1A-20	Fuel Injection System Description.....	1B-1
FI System Troubleshooting	1A-21	Crankcase Emission Control System Description	1B-2
Malfunction Code and Defective Condition Table	1A-22	Exhaust Emission Control System Description	1B-3
DTC "C12" (P0335): CKP Sensor Circuit Malfunction.....	1A-25	Noise Emission Control System Description	1B-3
DTC "C13" (P0105-H/L): IAP Sensor (No.1) Circuit Malfunction	1A-28	Schematic and Routing Diagram	1B-4
DTC "C14" (P0120-H/L): TP Sensor Circuit Malfunction.....	1A-37	PAIR System Hose Routing Diagram	1B-4
DTC "C15" (P0115-H/L): ECT Sensor Circuit Malfunction.....	1A-45	Repair Instructions	1B-5
DTC "C17" (P1750-H/L): IAP Sensor (No.2) Circuit Malfunction	1A-52	Heated Oxygen Sensor (HO2S) Removal and Installation	1B-5
DTC "C21" (P0110-H/L): IAT Sensor Circuit Malfunction.....	1A-60	Heated Oxygen Sensor (HO2S) Inspection	1B-5
DTC "C23" (P1651-H/L): TO Sensor Circuit Malfunction.....	1A-67	PAIR Reed Valve Removal and Installation.....	1B-6
DTC "C24" (P0351), "C25" (P0352), "C26" (P0353) or "C27" (P0354): Ignition System Malfunction.....	1A-73		

1-ii Table of Contents

PAIR Control Solenoid Valve Removal and Installation.....	1B-6	Compression Pressure Check	1D-3
PAIR System Inspection	1B-6	Repair Instructions	1D-4
Crankcase Breather (PCV) Hose Inspection.....	1B-8	Engine Components Removable with the Engine in Place	1D-4
Crankcase Breather (PCV) Hose / Cover / Separator Removal and Installation	1B-8	Air Cleaner Element Removal and Installation	1D-6
Crankcase Breather (PCV) Cover Inspection	1B-9	Air Cleaner Element Inspection and Cleaning	1D-6
Specifications	1B-10	Air Cleaner Box Removal and Installation.....	1D-6
Service Data.....	1B-10	Throttle Cable Removal and Installation	1D-6
Tightening Torque Specifications.....	1B-10	Throttle Cable Inspection	1D-7
Special Tools and Equipment	1B-10	Throttle Cable Play Inspection and Adjustment	1D-7
Recommended Service Material	1B-10	Throttle Body Components	1D-7
Special Tool	1B-10	Throttle Body Construction.....	1D-8
Engine Electrical Devices	1C-1	Throttle Body Removal and Installation	1D-9
Precautions.....	1C-1	Throttle Body Disassembly and Assembly	1D-10
Precautions for Engine Electrical Device	1C-1	Throttle Body Inspection and Cleaning	1D-15
Component Location	1C-1	Throttle Valve Synchronization	1D-15
Engine Electrical Components Location	1C-1	Engine Assembly Removal	1D-17
Diagnostic Information and Procedures.....	1C-1	Engine Assembly Installation	1D-21
Engine Symptom Diagnosis	1C-1	Engine Top Side Disassembly	1D-24
Repair Instructions	1C-1	Engine Top Side Assembly	1D-28
ECM Removal and Installation.....	1C-1	Valve Clearance Inspection and Adjustment	1D-36
CKP Sensor Inspection	1C-1	Camshaft Inspection	1D-36
CKP Sensor Removal and Installation	1C-1	Camshaft Sprocket Inspection	1D-38
IAP Sensor (No.1) Inspection.....	1C-1	Camshaft Sprocket Removal and Installation ...	1D-38
IAP Sensor (No.1) Removal and Installation.....	1C-2	Cam Chain Tension Adjuster Inspection	1D-39
IAP / TP / IAT Sensor Inspection	1C-2	Cam Chain Guide Removal and Installation	1D-39
IAP / TP / IAT Sensor Removal and Installation	1C-2	Cam Chain Guide Inspection	1D-39
ECT Sensor Removal and Installation	1C-2	Cam Chain Tensioner Inspection	1D-40
ECT Sensor Inspection	1C-3	Cylinder Head Disassembly and Assembly	1D-40
TO Sensor Removal and Installation	1C-3	Cylinder Head Related Parts Inspection	1D-44
TO Sensor Inspection	1C-3	Valve Guide Replacement	1D-47
STP Sensor Inspection	1C-3	Valve Seat Repair	1D-48
STP Sensor Adjustment.....	1C-4	Cylinder Disassembly and Assembly	1D-48
STP Sensor Removal and Installation	1C-4	Cylinder Inspection.....	1D-50
STV Actuator Inspection	1C-5	Piston Ring Removal and Installation	1D-51
STV Actuator Removal and Installation	1C-5	Piston and Piston Ring Inspection	1D-52
ISC Valve Inspection.....	1C-5	Engine Bottom Side Disassembly	1D-53
ISC Valve Removal and Installation.....	1C-5	Engine Bottom Side Assembly	1D-61
ISC Valve Preset and Opening Initialization	1C-6	Crank Balancer Disassembly and Assembly	1D-72
HO2 Sensor Inspection	1C-6	Crank Balancer Inspection	1D-73
HO2 Sensor Removal and Installation	1C-6	Conrod Removal and Installation	1D-74
GP Switch Inspection.....	1C-6	Conrod and Crankshaft Inspection.....	1D-75
GP Switch Removal and Installation	1C-6	Conrod Crank Pin Bearing Inspection and Selection	1D-76
Specifications	1C-7	Crankshaft Journal Bearing Inspection and Selection	1D-78
Service Data.....	1C-7	Crankshaft Thrust Clearance Inspection and Selection	1D-80
Tightening Torque Specifications.....	1C-8	Specifications	1D-83
Special Tools and Equipment	1C-8	Service Data.....	1D-83
Recommended Service Material	1C-8	Tightening Torque Specifications	1D-84
Special Tool	1C-8	Special Tools and Equipment	1D-85
Engine Mechanical	1D-1	Recommended Service Material	1D-85
Schematic and Routing Diagram.....	1D-1	Special Tool	1D-86
Camshaft and Sprocket Assembly Diagram	1D-1	Engine Lubrication System	1E-1
Throttle Cable Routing Diagram.....	1D-2	Precautions.....	1E-1
Diagnostic Information and Procedures.....	1D-3	Precautions for Engine Oil	1E-1
Engine Mechanical Symptom Diagnosis.....	1D-3		

Schematic and Routing Diagram	1E-2	Water Pump Disassembly and Assembly	1F-14
Engine Lubrication System Chart Diagram	1E-2	Water Pump Related Parts Inspection	1F-17
Diagnostic Information and Procedures	1E-3	Specifications	1F-18
Engine Lubrication Symptom Diagnosis	1E-3	Service Data.....	1F-18
Oil Pressure Check	1E-3	Tightening Torque Specifications.....	1F-18
Repair Instructions	1E-4	Special Tools and Equipment	1F-19
Engine Oil and Filter Replacement	1E-4	Recommended Service Material	1F-19
Engine Oil Level Inspection	1E-4	Special Tool	1F-19
Oil Pan / Oil Strainer / Oil Pressure Regulator Removal and Installation.....	1E-4	Fuel System	1G-1
Oil Pressure Regulator / Oil Strainer Inspection.....	1E-6	Precautions	1G-1
Oil Cooler Removal and Installation.....	1E-7	Precautions for Fuel System	1G-1
Oil Pressure Switch Removal and Installation	1E-7	General Description	1G-2
Oil Pressure Switch Inspection	1E-8	Fuel System Description	1G-2
Oil Jet Removal and Installation	1E-8	Schematic and Routing Diagram	1G-3
Oil Gallery Jet Removal and Installation	1E-10	Fuel Tank Drain Hose and Breather Hose Routing Diagram	1G-3
Oil Jet / Oil Gallery Jet Inspection	1E-10	Diagnostic Information and Procedures	1G-4
Oil Pump Removal and Installation	1E-11	Fuel System Diagnosis	1G-4
Oil Pump Inspection.....	1E-13	Repair Instructions	1G-5
Specifications	1E-13	Fuel Pressure Inspection	1G-5
Service Data	1E-13	Fuel Pump Inspection	1G-5
Tightening Torque Specifications.....	1E-13	Fuel Discharge Amount Inspection	1G-6
Special Tools and Equipment	1E-14	Fuel Pump Relay Inspection	1G-7
Recommended Service Material	1E-14	Fuel Hose Inspection	1G-7
Special Tool	1E-14	Fuel Level Gauge Inspection	1G-7
Engine Cooling System	1F-1	Fuel Level Indicator Inspection	1G-7
Precautions	1F-1	Fuel Level Indicator Switch (Thermistor) Inspection.....	1G-7
Precautions for Engine Cooling System.....	1F-1	Fuel Tank Construction	1G-8
Precautions for Engine Coolant	1F-1	Fuel Tank Removal and Installation.....	1G-9
General Description	1F-1	Fuel Pump Components	1G-10
Engine Coolant Description	1F-1	Fuel Pump Assembly / Fuel Level Gauge Removal and Installation.....	1G-11
Schematic and Routing Diagram	1F-2	Fuel Pump Disassembly and Assembly.....	1G-12
Cooling Circuit Diagram	1F-2	Fuel Mesh Filter Inspection and Cleaning.....	1G-14
Water Hose Routing Diagram	1F-3	Fuel Injector / Fuel Delivery Pipe / T-joint Removal and Installation.....	1G-14
Diagnostic Information and Procedures	1F-4	Fuel Injector Inspection and Cleaning.....	1G-14
Engine Cooling Symptom Diagnosis.....	1F-4	Specifications	1G-15
Repair Instructions	1F-4	Service Data.....	1G-15
Cooling Circuit Inspection	1F-4	Tightening Torque Specifications.....	1G-15
Radiator Cap Inspection	1F-5	Special Tools and Equipment	1G-16
Radiator Inspection and Cleaning.....	1F-5	Recommended Service Material	1G-16
Radiator / Cooling Fan Motor Removal and Installation.....	1F-5	Special Tool	1G-16
Water Hose Inspection.....	1F-6	Ignition System	1H-1
Water Hose Removal and Installation.....	1F-7	Schematic and Routing Diagram	1H-1
Radiator Reservoir Tank Inspection.....	1F-7	Ignition System Diagram	1H-1
Radiator Reservoir Tank Removal and Installation	1F-8	Ignition System Components Location.....	1H-1
Cooling Fan Inspection	1F-8	Diagnostic Information and Procedures	1H-2
Cooling Fan Relay Inspection	1F-9	Ignition System Symptom Diagnosis.....	1H-2
ECT Sensor Removal and Installation	1F-9	No Spark or Poor Spark.....	1H-3
ECT Sensor Inspection	1F-9	Repair Instructions	1H-4
Thermostat Connector / Thermostat Removal and Installation.....	1F-9	Ignition Coil / Plug Cap and Spark Plug Removal and Installation.....	1H-4
Thermostat Inspection	1F-11	Spark Plug Inspection and Cleaning	1H-5
Water pump Components	1F-12	Ignition Coil / Plug Cap Inspection	1H-5
Water Pump Construction.....	1F-12	CKP Sensor Inspection	1H-7
Water Pump Removal and Installation.....	1F-13		

CKP Sensor Removal and Installation.....	1H-8	Charging System.....	1J-1
Engine Stop Switch Inspection.....	1H-8	Schematic and Routing Diagram.....	1J-1
Ignition Switch Inspection.....	1H-9	Charging System Diagram.....	1J-1
Ignition Switch Removal and Installation.....	1H-9	Component Location.....	1J-1
Specifications.....	1H-11	Charging System Components Location.....	1J-1
Service Data.....	1H-11	Diagnostic Information and Procedures.....	1J-1
Tightening Torque Specifications.....	1H-11	Charging System Symptom Diagnosis.....	1J-1
Special Tools and Equipment.....	1H-11	Battery Runs Down Quickly.....	1J-2
Special Tool.....	1H-11	Repair Instructions.....	1J-3
Starting System.....	1I-1	Battery Current Leakage Inspection.....	1J-3
Schematic and Routing Diagram.....	1I-1	Regulated Voltage Inspection.....	1J-3
Starting System Diagram.....	1I-1	Generator Inspection.....	1J-3
Component Location.....	1I-1	Generator Removal and Installation.....	1J-4
Starting System Components Location.....	1I-1	Regulator / Rectifier Construction.....	1J-8
Diagnostic Information and Procedures.....	1I-1	Regulator / Rectifier Inspection.....	1J-8
Starting System Symptom Diagnosis.....	1I-1	Battery Components.....	1J-9
Starter motor will not run.....	1I-2	Battery Charging.....	1J-9
Starter Motor Runs but Does not Crank the Engine.....	1I-2	Battery Removal and Installation.....	1J-12
Repair Instructions.....	1I-3	Battery Visual Inspection.....	1J-12
Starter Motor Components.....	1I-3	Specifications.....	1J-13
Starter Motor Removal and Installation.....	1I-4	Service Data.....	1J-13
Starter Motor Disassembly and Assembly.....	1I-5	Tightening Torque Specifications.....	1J-13
Starter Motor Inspection.....	1I-6	Special Tools and Equipment.....	1J-14
Starter Relay Removal and Installation.....	1I-7	Recommended Service Material.....	1J-14
Starter Relay Inspection.....	1I-7	Special Tool.....	1J-14
Turn Signal / Side-stand Relay Removal and Installation.....	1I-8	Exhaust System.....	1K-1
Side-stand / Ignition Interlock System Parts Inspection.....	1I-8	Precautions.....	1K-1
Starter Clutch Removal and Installation.....	1I-10	Precautions for Exhaust System.....	1K-1
Starter Clutch Inspection.....	1I-12	Repair Instructions.....	1K-2
Starter Button Inspection.....	1I-13	Exhaust System Construction.....	1K-2
Specifications.....	1I-13	Exhaust Pipe / Muffler Removal and Installation.....	1K-3
Service Data.....	1I-13	Exhaust System Inspection.....	1K-6
Tightening Torque Specifications.....	1I-13	Specifications.....	1K-6
Special Tools and Equipment.....	1I-14	Tightening Torque Specifications.....	1K-6
Recommended Service Material.....	1I-14	Special Tools and Equipment.....	1K-6
Special Tool.....	1I-14	Recommended Service Material.....	1K-6

Precautions

Precautions

Precautions for Engine

B718H11000001

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

Engine General Information and Diagnosis

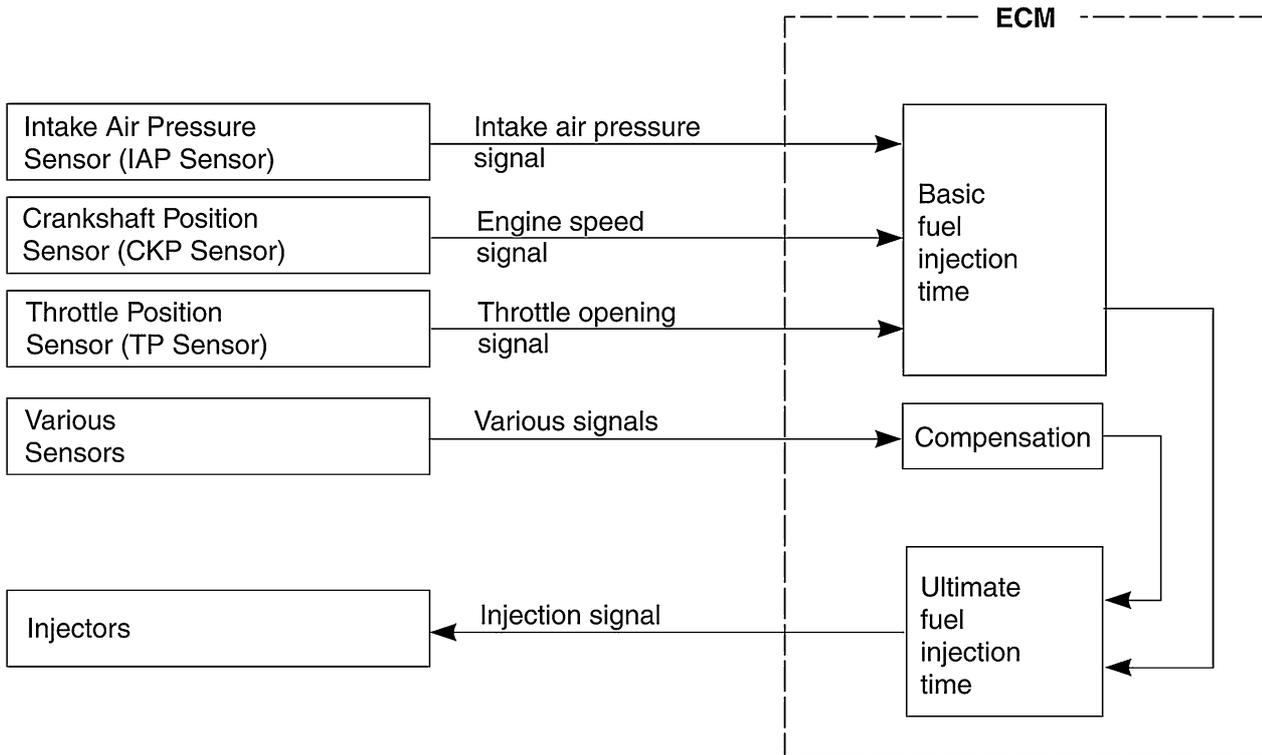
General Description

Injection Timing Description

B718H11101001

Injection Time (Injection Volume)

The factors to determine the injection time include the basic fuel injection time, which is calculated on the basis of the intake air pressure, engine speed and throttle opening angle, and various compensations. These compensations are determined according to the signals from various sensors that detect the engine and driving conditions.



I718H1110268-03

Compensation of Injection Time (Volume)

The following different signals are output from the respective sensors for compensation of the fuel injection time (volume).

Signal	Descriptions
ENGINE COOLANT TEMPERATURE SENSOR SIGNAL	When engine coolant temperature is low, injection time (volume) is increased.
INTAKE AIR TEMPERATURE SENSOR SIGNAL	When intake air temperature is low, injection time (volume) is increased.
HEATED OXYGEN SENSOR SIGNAL	Air/fuel ratio is compensated to the theoretical ratio from density of oxygen in exhaust gasses. The compensation occurs in such a way that more fuel is supplied if detected air/fuel ratio is lean and less fuel is supplied if it is rich.
BATTERY VOLTAGE SIGNAL	ECM operates on the battery voltage and at the same time, it monitors the voltage signal for compensation of the fuel injection time (volume). A longer injection time is needed to adjust injection volume in the case of low voltage.
ENGINE RPM SIGNAL	At high speed, the injection time (volume) is increased.
STARTING SIGNAL	When starting engine, additional fuel is injected during cranking engine.
ACCELERATION SIGNAL/ DECELERATION SIGNAL	During acceleration, the fuel injection time (volume) is increased, in accordance with the throttle opening speed and engine rpm. During deceleration, the fuel injection time (volume) is decreased.

Injection Stop Control

Signal	Descriptions
TIP-OVER SENSOR SIGNAL (FUEL SHUT-OFF)	When the motorcycle tips over, the tip-over sensor sends a signal to the ECM. Then, this signal cuts OFF current supplied to the fuel pump, fuel injectors and ignition coils.
OVER-REV. LIMITER SIGNAL	The fuel injector stops operation when engine rpm reaches rev. limit rpm.

Self-Diagnosis Function

B718H11101002

The self-diagnosis function is incorporated in the ECM. The function has two modes, "User mode" and "Dealer mode". The user can only be notified by the LCD (DISPLAY) panel and LED (FI indicator light). To check the function of the individual FI system devices, the dealer mode is provided. In this check, the special tool is necessary to read the code of the malfunction items.

User Mode

Malfunction		LCD (display) indication "A"	FI indicator light indication "B"	Indication mode
"NO"		Odometer *1	—	—
"YES"	Engine can start	Odometer (*1) and "FI" letters *2	FI indicator light turns ON.	Each 2 sec. Odometer (*1) and "FI" is indicated alternately.
	Engine can not start	"FI" letters *3	FI indicator light turns ON and blinks.	"FI" is indicated continuously.

*1

Current letter displayed any one of the odometer or tripmeter.

*2

When one of the signals is not received by ECM, the fail-safe circuit works and injection is not stopped. In this case, "FI" and odometer (*1) are indicated in the LCD panel and motorcycle can run.

*3

The injection signal is stopped, when the crankshaft position sensor signal, tip-over sensor signal, ignition signal, #1, #2, #3 and #4 injector signals, fuel pump relay signal or ignition switch signal is not sent to ECM. In this case, "FI" is indicated in the LCD panel. Motorcycle does not run.

"CHEC":

The LCD panel indicates "CHEC" when no communication signal from the ECM is received for 5 seconds and more.

1A-3 Engine General Information and Diagnosis:

For Example:

The ignition switch is turned ON, and the engine stop switch is turned OFF. In this case, the speedometer does not receive any signal from the ECM, and the panel indicates "CHEC".

If CHEC is indicated, the LCD does not indicate the trouble code. It is necessary to check the wiring harness between ECM and speedometer couplers.

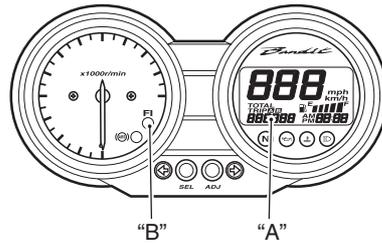
The possible cause of this indication is as follows:

Engine stop switch is in OFF position. Side-Stand/ignition inter-lock system is not working. Ignition fuse is burnt.

NOTE

Until starting the engine, the FI light turns ON.

The FI indicator light is also turned ON when engine temperature is high or oil pressure is low.



I718H1110002-03

Dealer Mode

The defective function is memorized in the computer. Use the special tool's coupler to connect to the mode select switch. The memorized malfunction code is displayed on LCD (DISPLAY) panel. Malfunction means that the ECM does not receive signal from the devices. These affected devices are indicated in the code form.

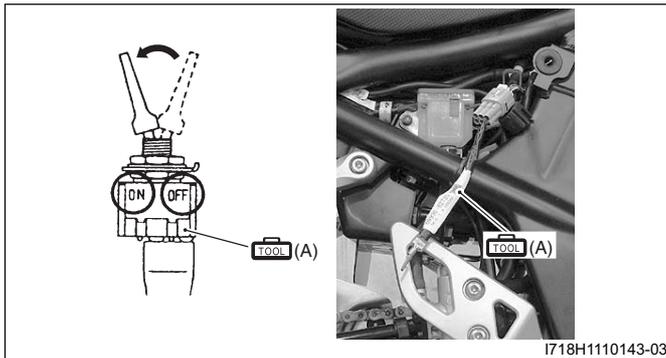
CAUTION

Before checking the malfunction code, do not disconnect the ECM coupler.

If the coupler from the ECM is disconnected, the malfunction code memory is erased and the malfunction code can not be checked.

Special tool

TOOL (A): 09930-82720 (Mode select switch)



I718H1110143-03



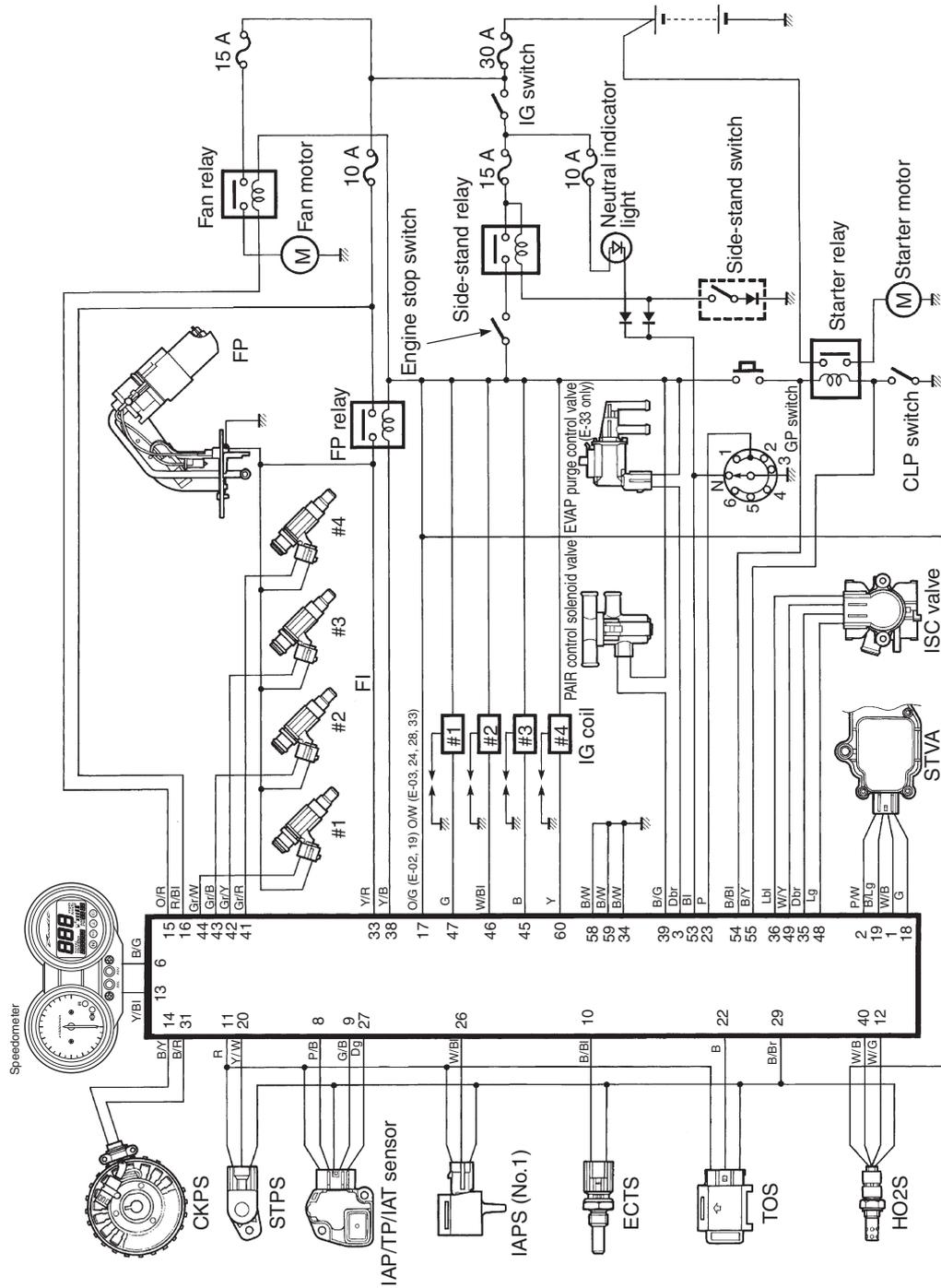
I718H1110144-01

Malfunction	LCD (display) indication	FI light indication	Indication mode
"NO"	C00		—
"YES"	C** code is indicated from small numeral to large one.	FI indicator light turns OFF.	For each 2 sec., code is indicated.

Schematic and Routing Diagram

FI System Wiring Diagram

B718H11102001

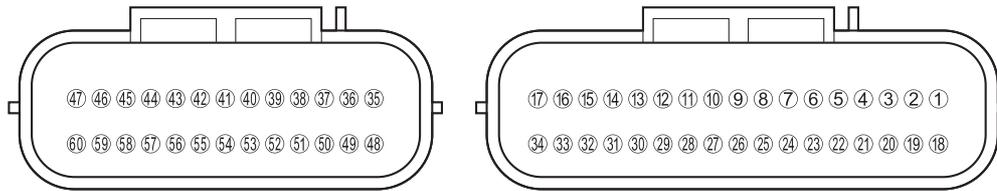


I718H1110249-04

1A-5 Engine General Information and Diagnosis:

Terminal Alignment of ECM Coupler

B718H11102002



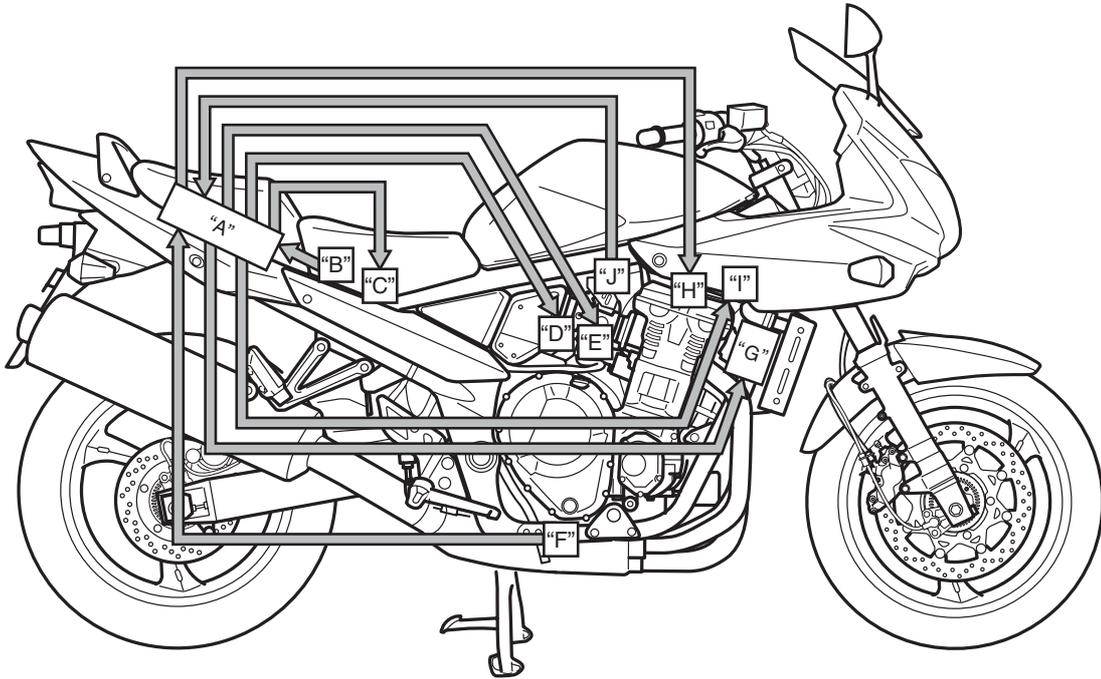
I718H1110004-02

TERMINAL NO.	CIRCUIT	TERMINAL NO.	CIRCUIT
1	STVA signal (STVA, 2A)	31	CKP sensor signal (CKP-)
2	STVA signal (STVA, 1A)	32	Serial data for self-diagnosis
3	EVAP purge control valve [E-33 only]	33	Power source for fuel injector (VM)
4	—	34	ECM ground (E1)
5	—	35	ISC signal (ISC, 2A)
6	Serial data for speedometer	36	ISC signal (ISC, 1A)
7	—	37	—
8	TP sensor signal (TP)	38	Fuel pump relay (FP Relay)
9	IAP sensor signal No.2 (IAP, 2)	39	PAIR control solenoid valve (PAIR)
10	ECT sensor signal (ECT)	40	HO2 sensor heater (HO2, H)
11	Power source for sensors (Vcc)	41	Fuel injector #4 (#4, 1)
12	HO2 sensor signal (HO2S)	42	Fuel injector #3 (#3, 1)
13	Tachometer	43	Fuel injector #2 (#2, 1)
14	CKP sensor signal (CKP+)	44	Fuel injector #1 (#1, 1)
15	Cooling fan relay (FAR)	45	Ignition coil #3
16	Power source for back-up	46	Ignition coil #2
17	Power source	47	Ignition coil #1
18	STVA signal (STVA, 2B)	48	ISC signal (ISC, 2B)
19	STVA signal (STVA, 1B)	49	ISC signal (ISC, 1B)
20	STP sensor (STP)	50	—
21	Ignition switch signal	51	—
22	TO sensor signal (TOS)	52	—
23	GP sensor signal (GP)	53	Neutral switch
24	—	54	Starter relay
25	—	55	Clutch position switch
26	IAP sensor signal No.1 (IAP, 1)	56	—
27	IAT sensor signal (IAT)	57	—
28	—	58	Ground
29	Sensors ground (E2)	59	Ground for ignition system
30	Mode select switch	60	Ignition coil #4

Component Location

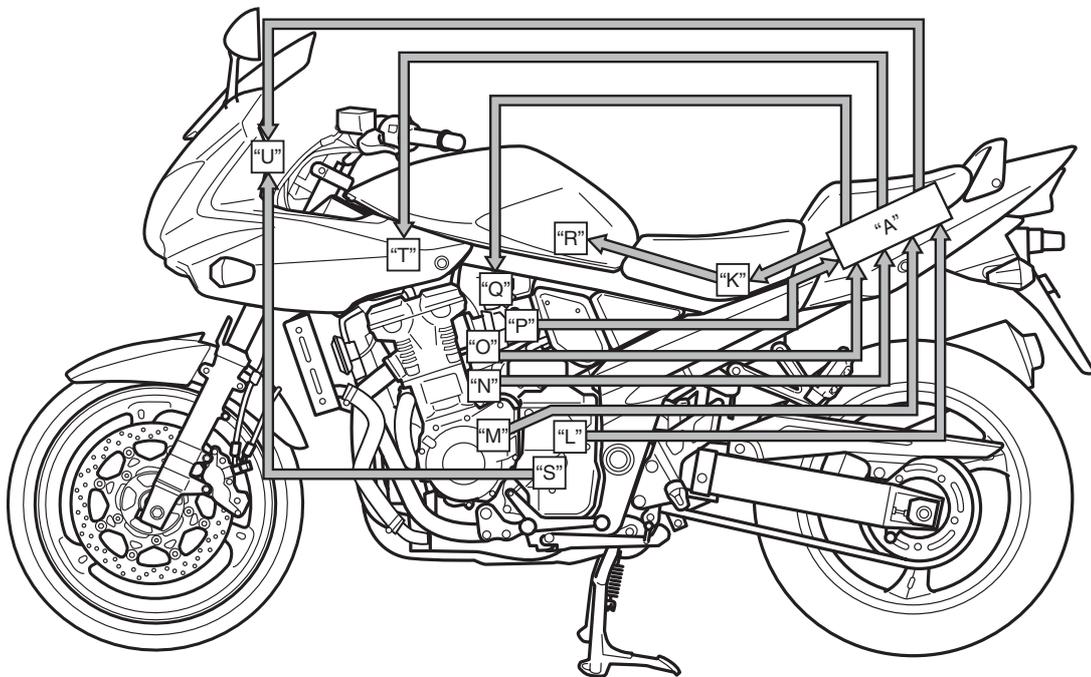
FI System Parts Location

B718H11103001



I718H1110146-04

"A": ECM	"C": Cooling fan relay	"E": ISC valve	"G": Cooling fan	"I": PAIR control solenoid valve
"B": TO sensor	"D": STV actuator	"F": HO2 sensor	"H": Ignition coil	"J": IAP sensor (No.1)



I718H1110147-03

"A": ECM	"M": CKP sensor	"P": STP sensor	"S": Speed sensor
"K": Fuel pump relay	"N": ECT sensor	"Q": Fuel injector	"T": EVAP purge control valve (E-33 only)
"L": GP switch	"O": IAP/TP/IAT sensor	"R": Fuel pump	"U": Speedometer

Diagnostic Information and Procedures

Engine Symptom Diagnosis

B718H11104001

Condition	Possible cause	Correction / Reference Item
Engine will not start or is hard to start (Compression too low)	Valve clearance out of adjustment.	<i>Adjust.</i>
	Worn valve guides or poor seating of valves.	<i>Repair or replace.</i>
	Mistimed valves.	<i>Adjust.</i>
	Excessively worn piston rings.	<i>Replace.</i>
	Worn-down cylinder bores.	<i>Replace.</i>
	Starter motor cranks too slowly.	<i>Refer to "Starting System Diagram in Section 1I (Page 1I-1)".</i>
	Poor seating of spark plugs.	<i>Retighten.</i>
	Blown cylinder head gasket.	<i>Replace.</i>
Engine will not start or is hard to start (Plugs not sparking)	Fouled spark plugs.	<i>Clean.</i>
	Wet spark plugs.	<i>Clean and dry.</i>
	Defective ignition coil/plug cap.	<i>Replace.</i>
	Defective CKP sensor.	<i>Replace.</i>
	Defective ECM.	<i>Replace.</i>
	Open-circuited wiring connections.	<i>Repair or replace.</i>
Engine will not start or is hard to start (No fuel reaching the intake manifold)	Clogged fuel filter or fuel hose.	<i>Clean or replace.</i>
	Defective fuel pump.	<i>Replace.</i>
	Defective fuel pressure regulator.	<i>Replace.</i>
	Defective fuel injectors.	<i>Replace.</i>
	Defective fuel pump relay.	<i>Replace.</i>
	Defective ECM.	<i>Replace.</i>
	Open-circuited wiring connections.	<i>Check and repair.</i>
Engine will not start or is hard to start (Incorrect fuel/air mixture)	Defective fuel pump.	<i>Replace.</i>
	Defective fuel pressure regulator.	<i>Replace.</i>
	Defective TP sensor.	<i>Replace.</i>
	Defective CKP sensor.	<i>Replace.</i>
	Defective IAP sensor.	<i>Replace.</i>
	Defective ECM.	<i>Replace.</i>
	Defective ECT sensor.	<i>Replace.</i>
	Defective IAT sensors.	<i>Replace.</i>
	Dirty throttle body.	<i>Clean.</i>
	Defective ISC valve.	<i>Replace.</i>
Engine idles poorly	Valve clearance out of adjustment.	<i>Adjust.</i>
	Poor seating of valves.	<i>Replace or repair.</i>
	Defective valve guides.	<i>Replace.</i>
	Worn down camshafts.	<i>Replace.</i>
	Too wide spark plug gaps.	<i>Adjust or replace.</i>
	Defective ignition coil/plug caps.	<i>Replace.</i>
	Defective CKP sensor.	<i>Replace.</i>
	Defective ECM.	<i>Replace.</i>
	Defective TP sensor.	<i>Replace.</i>
	Defective fuel pump.	<i>Replace.</i>
	Imbalanced throttle valve.	<i>Adjust.</i>
	Dirty throttle body.	<i>Clean.</i>
	Damaged or cranked vacuum hose.	<i>Replace.</i>
	Sucking air from intake pipe joint.	<i>Repair or replace.</i>
	Damaged or clogged ISC valve.	<i>Repair or replace.</i>
	ISC bad leaning.	<i>Reset learned value.</i>

Condition	Possible cause	Correction / Reference Item
Engine stalls often (Incorrect fuel/air mixture)	Defective IAP sensor or circuit.	<i>Repair or replace.</i>
	Clogged fuel filter.	<i>Clean or replace.</i>
	Defective fuel pump.	<i>Replace.</i>
	Defective fuel pressure regulator.	<i>Replace.</i>
	Damaged or cracked vacuum hose.	<i>Replace.</i>
	Defective ECT sensor.	<i>Replace.</i>
	Defective thermostat.	<i>Replace.</i>
	Defective IAT sensors.	<i>Replace.</i>
Engine stalls often (Fuel injector improperly operating)	Defective ISC valve.	<i>Replace.</i>
	Defective fuel injectors.	<i>Replace.</i>
	No injection signal from ECM.	<i>Repair or replace.</i>
	Open or short circuited wiring connection.	<i>Repair or replace.</i>
Engine stalls often (Control circuit or sensor improperly operating)	Defective battery or low battery voltage.	<i>Replace or recharge.</i>
	Defective ECM.	<i>Replace.</i>
	Defective fuel pressure regulator.	<i>Replace.</i>
	Defective TP sensor.	<i>Replace.</i>
	Defective IAT sensors.	<i>Replace.</i>
	Defective CKP sensor.	<i>Replace.</i>
	Defective ECT sensor.	<i>Replace.</i>
	Defective fuel pump relay.	<i>Replace.</i>
Engine stalls often (Engine parts improperly operating)	Defective ISC valve.	<i>Replace.</i>
	ISC bad learning.	<i>Reset learned value.</i>
	Fouled spark plugs.	<i>Clean.</i>
	Defective CKP sensor or ECM.	<i>Replace.</i>
	Clogged fuel hose.	<i>Clean.</i>
Engine noisy (Excessive valve chatter)	Out of adjustment tappet clearance.	<i>Adjust.</i>
	Dirty throttle body.	<i>Clean.</i>
	Too large tappet clearance.	<i>Adjust.</i>
	Weakened or broken valve springs.	<i>Replace.</i>
Engine noisy (Noise seems to come from piston)	Worn tappet or cam surface.	<i>Replace.</i>
	Worn and burnt camshaft journal.	<i>Replace.</i>
	Worn down pistons or cylinders.	<i>Replace.</i>
	Combustion chambers fouled with carbon.	<i>Clean.</i>
Engine noisy (Noise seems to come from timing chain)	Worn piston pins or piston pin bores.	<i>Replace.</i>
	Worn piston rings or ring grooves.	<i>Replace.</i>
	Stretched chain.	<i>Replace.</i>
Engine noisy (Noise seems to come from crankshaft)	Worn sprockets.	<i>Replace.</i>
	Tension adjuster not working.	<i>Repair or replace.</i>
	Rattling bearings due to wear.	<i>Replace.</i>
	Worn and burnt big-end bearings.	<i>Replace.</i>
Engine noisy (Noise seems to come from balancer)	Worn and burnt journal bearings.	<i>Replace.</i>
	Worm bearings.	<i>Replace thrust bearing.</i>
	Rattling bearings due to wear.	<i>Replace.</i>
Engine noisy (Noise seems to come from clutch)	Worn splines of countershaft or hub.	<i>Replace.</i>
	Worn teeth of clutch plates.	<i>Replace.</i>
	Distorted clutch plate, driven and drive.	<i>Replace.</i>
	Worn clutch release bearing.	<i>Replace.</i>
	Weakened clutch dampers.	<i>Replace the primary driven gear.</i>
Engine noisy (Noise seems to come from transmission)	Worn or rubbing gears.	<i>Replace.</i>
	Worn splines.	<i>Replace.</i>
	Worn or rubbing primary gears.	<i>Replace.</i>
	Worn bearings.	<i>Replace.</i>

1A-9 Engine General Information and Diagnosis:

Condition	Possible cause	Correction / Reference Item
Engine noisy (Noise seems to come from water pump)	Worn or damaged impeller shaft.	<i>Replace.</i>
	Worn or damaged mechanical seal.	<i>Replace.</i>
	Contact between pump case and impeller.	<i>Replace.</i>
	Too much play on pump shaft bearing.	<i>Replace.</i>
Engine runs poorly in high speed range (Defective engine internal/electrical parts)	Weakened valve springs.	<i>Replace.</i>
	Worn camshafts.	<i>Replace.</i>
	Valve timing out of adjustment.	<i>Adjust.</i>
	Too narrow spark plug gap.	<i>Adjust.</i>
	Ignition not advanced sufficiently due to poorly working timing advance circuit.	<i>Replace ECM.</i>
	Defective ignition coil/plug gap.	<i>Replace.</i>
	Defective CKP sensor.	<i>Replace.</i>
	Defective ECM.	<i>Replace.</i>
	Clogged air cleaner element.	<i>Clean.</i>
	Clogged fuel hose, resulting in inadequate fuel supply to injector.	<i>Clean and prime.</i>
	Defective fuel pump.	<i>Replace.</i>
	Defective TP sensor.	<i>Replace.</i>
	Defective STP sensor or STVA.	<i>Replace.</i>
Engine runs poorly in high speed range (Defective air flow system)	Clogged air cleaner element.	<i>Clean or replace.</i>
	Defective throttle valves.	<i>Adjust or replace.</i>
	Defective ISC valve.	<i>Replace.</i>
	Sucking air from throttle body joint.	<i>Repair or replace.</i>
	Defective ECM.	<i>Replace.</i>
	Imbalancing throttle valve synchronization.	<i>Adjust.</i>
	Defective STP sensor or STVA.	<i>Replace.</i>
Engine runs poorly in high speed range (Defective control circuit or sensor)	Low fuel pressure.	<i>Repair or replace.</i>
	Defective TP sensor.	<i>Replace.</i>
	Defective IAT sensors.	<i>Replace.</i>
	Defective IAP sensor.	<i>Replace.</i>
	Defective ECM.	<i>Replace.</i>
	TP sensor out of adjustment.	<i>Adjust.</i>
	Defective STP sensor or STVA.	<i>Replace.</i>
	Defective GP sensor.	<i>Replace.</i>
Defective CKP sensor.	<i>Replace.</i>	
Engine lacks power (Defective engine internal/electrical parts)	Loss of tappet clearance.	<i>Adjust.</i>
	Weakened valve springs.	<i>Replace.</i>
	Valve timing out of adjustment.	<i>Adjust.</i>
	Worn piston rings or cylinders.	<i>Replace.</i>
	Poor seating of valves.	<i>Repair.</i>
	Fouled spark plugs.	<i>Clean or replace.</i>
	Incorrect spark plugs.	<i>Adjust or replace.</i>
	Clogged fuel injectors.	<i>Replace.</i>
	Defective TP sensor.	<i>Replace.</i>
	Clogged air cleaner element.	<i>Clean.</i>
	Sucking air from throttle valve or vacuum hose.	<i>Retighten or replace.</i>
	Too much engine oil.	<i>Drain out excess oil.</i>
	Defective fuel pump or ECM.	<i>Replace.</i>
	Defective CKP sensor and ignition coil/plug caps.	<i>Replace.</i>
	Imbalancing throttle valve synchronization.	<i>Adjust.</i>
Defective STP sensor or STVA.	<i>Replace.</i>	

Condition	Possible cause	Correction / Reference Item
Engine lacks power (Defective control circuit or sensor)	Low fuel pressure.	<i>Repair or replace.</i>
	Defective TP sensor.	<i>Replace.</i>
	Defective IAT sensor.	<i>Replace.</i>
	Defective CKP sensor.	<i>Replace.</i>
	Defective GP sensor.	<i>Replace.</i>
	Defective IAP sensor.	<i>Replace.</i>
	Defective ECM.	<i>Replace.</i>
Engine overheats (Defective engine internal parts)	Defective STP sensor or STVA.	<i>Replace.</i>
	Heavy carbon deposit on piston crown.	<i>Clean.</i>
	Not enough oil in the engine.	<i>Add oil.</i>
	Defective oil pump or clogged oil circuit.	<i>Replace or clean.</i>
	Use of incorrect engine oil.	<i>Change.</i>
	Sucking air from intake pipe.	<i>Retighten or replace.</i>
Engine overheats (Lean fuel/air mixture)	Defective cooling system.	<i>Refer to "Cooling Circuit Diagram in Section 1F (Page 1F-2)".</i>
	Short-circuited IAP sensor/lead wire.	<i>Repair or replace.</i>
	Short-circuited IAT sensor/lead wire.	<i>Repair or replace.</i>
	Sucking air from intake pipe joint.	<i>Repair or replace.</i>
	Defective fuel injector.	<i>Replace.</i>
Engine overheats (The other factors)	Defective ECT sensor.	<i>Replace.</i>
	Ignition timing too advanced due to defective timing advance system (ECT sensor, CKP sensor, GP sensor and ECM.)	<i>Replace.</i>
	Drive chain is too tight.	<i>Adjust.</i>
	ISC bad learning.	<i>Reset learned value.</i>
Dirty or heavy exhaust smoke	Worn piston rings or cylinders.	<i>Replace.</i>
	Too much engine oil in the engine.	<i>Check and drain excess oil.</i>
	Worn valve guides.	<i>Replace.</i>
	Scored or scuffed cylinder walls.	<i>Replace.</i>
	Worn valves stems.	<i>Replace.</i>
	Defective stem seals.	<i>Replace.</i>
Worn oil ring side rails.	<i>Replace.</i>	

1A-11 Engine General Information and Diagnosis:

Self-Diagnostic Procedures

B718H11104005

Use of Mode Select Switch

NOTE

- Do not disconnect coupler from ECM, the battery cable from the battery, ECM ground wire harness from the engine or main fuse before confirming DTC (Diagnostic Trouble Code) stored in memory. Such disconnection will erase memorized information in ECM memory.
- DTC stored in ECM memory can be checked by the special tool.
- Before checking DTC, read self-diagnosis function "User mode and dealer mode" (Refer to "Self-Diagnosis Function (Page 1A-2)".) carefully to have good understanding as to what functions are available and how to use it.
- Be sure to read "Precautions for Electrical Circuit Service" (Refer to "Precautions for Electrical Circuit Service in Section 00 (Page 00-2)".) before inspection and observe what is written there.

- 1) Remove the right frame cover. Refer to "Exterior Parts Removal and Installation in Section 9D (Page 9D-6)".
- 2) Connect the special tool to the mode select switch at the wiring harness.

Special tool

 (A): 09930-82720 (Mode select switch)



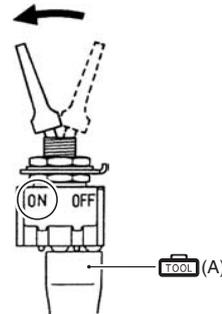
I718H1110145-02

- 3) Start the engine or crank the engine for more than 4 seconds.
- 4) Turn the special tool's switch ON.

- 5) Check the DTC to determine the malfunction part. Refer to "DTC Table (Page 1A-18)".

Special tool

 (A): 09930-82720 (Mode select switch)



I718H1110006-04



I718H1110144-01

- 6) After repairing the trouble, turn OFF the ignition switch and turn ON again. If DTC is indicated (C00), the malfunction is cleared.

NOTE

- Even though DTC (C00) is indicated, the previous malfunction history DTC still remains stored in the ECM. Therefore, erase the history DTC memorized in the ECM using SDS.
- DTC is memorized in the ECM also when the wire coupler of any sensor is disconnected. Therefore, when a wire coupler has been disconnected at the time of diagnosis, erase the stored history DTC using SDS. Refer to "Use of SDS Diagnosis Reset Procedures (Page 1A-13)".

- 7) Turn the ignition switch OFF and disconnect the special tool from the mode select switch.
- 8) Reinstall the right frame cover.

Use of SDS

NOTE

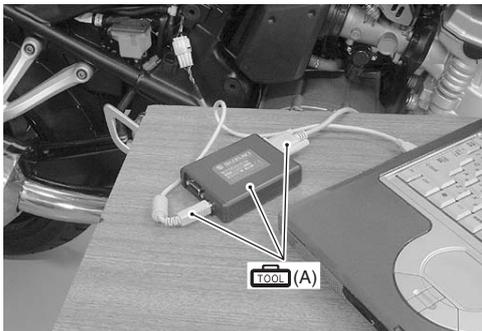
- Do not disconnect the coupler from ECM, the battery cable from the battery, ECM ground wire harness from the engine or main fuse before confirming DTC (Diagnostic Trouble Code) stored in memory. Such disconnection will erase the memorized information in ECM memory.
- DTC stored in ECM memory can be checked by the SDS.
- Be sure to read “Precautions for Electrical Circuit Service in Section 00 (Page 00-2)” before inspection and observe what is written there.

- 1) Remove the right frame cover. Refer to “Exterior Parts Removal and Installation in Section 9D (Page 9D-6)”.
- 2) Set up the SDS tools. (Refer to the SDS operation manual for further details.)

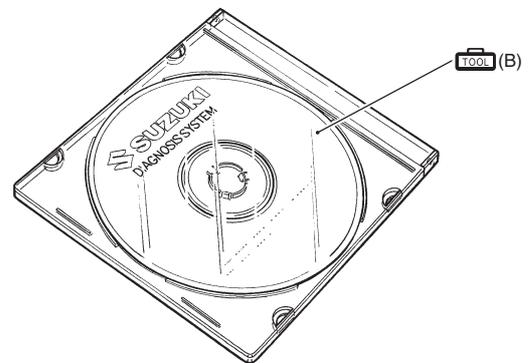
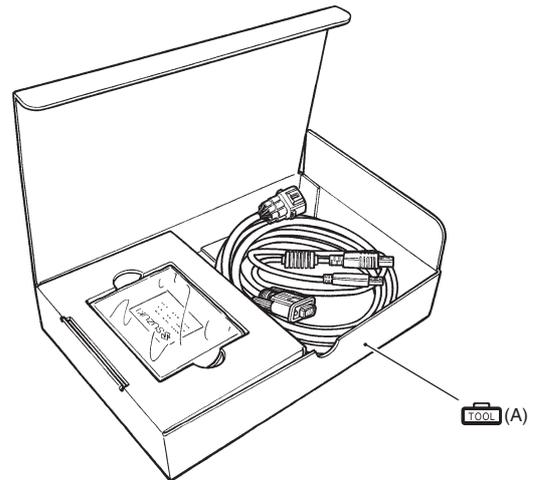
Special tool

 (A): 09904-41010 (SDS Set)

 (B): 99565-01010-010 (CD-ROM Ver.10)

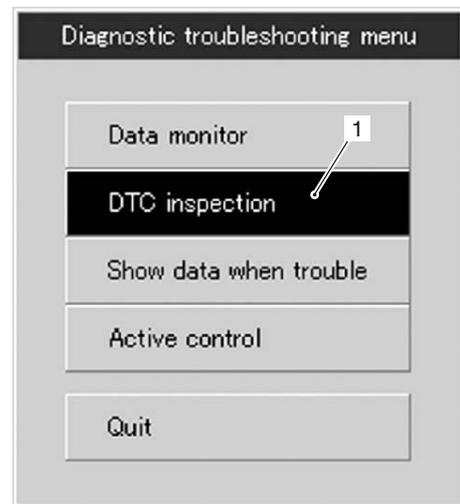


I718H1110148-02



I705H1110116-03

- 3) Click the DTC inspection button (1).



I705H1110003-01

1A-13 Engine General Information and Diagnosis:

- 4) Start the engine or crank the engine for more than 4 seconds.
- 5) Check the DTC to determine the malfunction part. Refer to "DTC Table (Page 1A-18)".

NOTE

- **Read the DTC (Diagnostic Trouble Code) and show data when trouble (displaying data at the time of DTC) according to instructions displayed on SDS.**
- **Not only SDS is used for detecting Diagnostic Trouble Codes but also for reproducing and checking on screen the failure condition as described by customers using the trigger. (Refer to "Show Data When Trouble (Displaying Data at the Time of DTC) (Page 1A-14)".)**
- **How to use trigger. (Refer to the SDS operation manual for further details.)**

- 6) After repairing the trouble, clear to delete history code (Past DTC). Refer to "Use of SDS Diagnosis Reset Procedures (Page 1A-13)".
- 7) Close the SDS tool and turn the ignition switch OFF.
- 8) Disconnect the SDS tool and install the right frame cover.

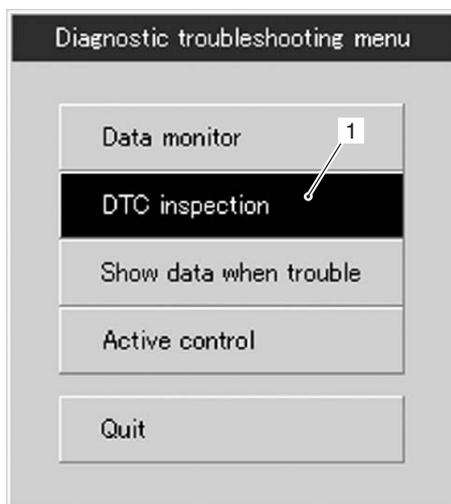
Use of SDS Diagnosis Reset Procedures

B718H11104007

NOTE

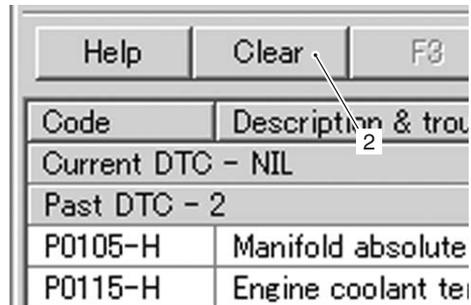
The malfunction code is memorized in the ECM also when the wire coupler of any sensor is disconnected. Therefore, when a wire coupler has been disconnected at the time of diagnosis, erase the stored malfunction history code using SDS.

- 1) After repairing the trouble, turn OFF the ignition switch and turn ON again.
- 2) Click the DTC inspection button (1).



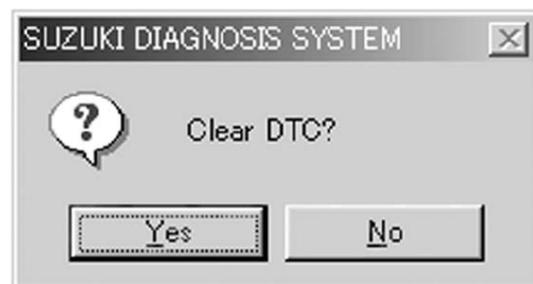
I705H1110003-01

- 3) Check the DTC.
- 4) The previous malfunction history code (Past DTC) still remains stored in the ECM. Therefore, erase the history code memorized in the ECM using SDS tool.
- 5) Click "Clear" (2) to delete history code (Past DTC).

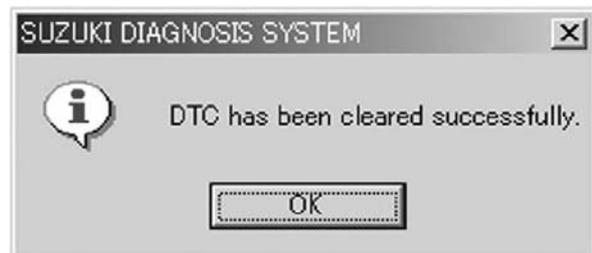


I705H1110005-01

- 6) Follow the displayed instructions.

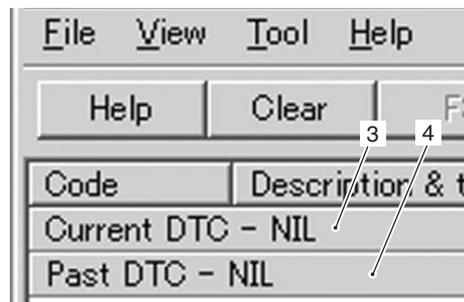


I705H1110006-01



I705H1110009-01

- 7) Check that both "Current DTC" (3) and "Past DTC" (4) are deleted (NIL).



I705H1110008-01

- 8) Close the SDS tool and turn the ignition switch OFF.
- 9) Disconnect the SDS tool and install the right frame cover.

Show Data When Trouble (Displaying Data at the Time of DTC)

B718H11104008

Use of SDS

ECM stores the engine and driving conditions (in the form of data as shown in the figure) at the moment of the detection of a malfunction in its memory. This data is called "Show data when trouble".

Therefore, it is possible to know engine and driving conditions (e.g., whether the engine was warm or not, where the motorcycle was running or stopped) when a malfunction was detected by checking the show data when trouble. This show data when trouble function can record the maximum of two Diagnostic Trouble Codes in the ECM.

Also, ECM has a function to store each show data when trouble for two different malfunctions in the order of occurrence as the malfunction is detected. Utilizing this function, it is possible to know the order of malfunctions that have been detected. Its use is helpful when rechecking or diagnosing a trouble.

Item	Pre-detect	Detect poi...	Post-dete...
Engine speed	0	0	0
Throttle position	28.9	28.9	28.9
Manifold absolute pressure 1	135.2	144.3	145.6
Engine coolant / oil temperature	24.0	24.0	24.0
Gear position	N	N	N
Secondary throttle actuator position sensor	96.1	96.1	98.4

I705H1110010-01

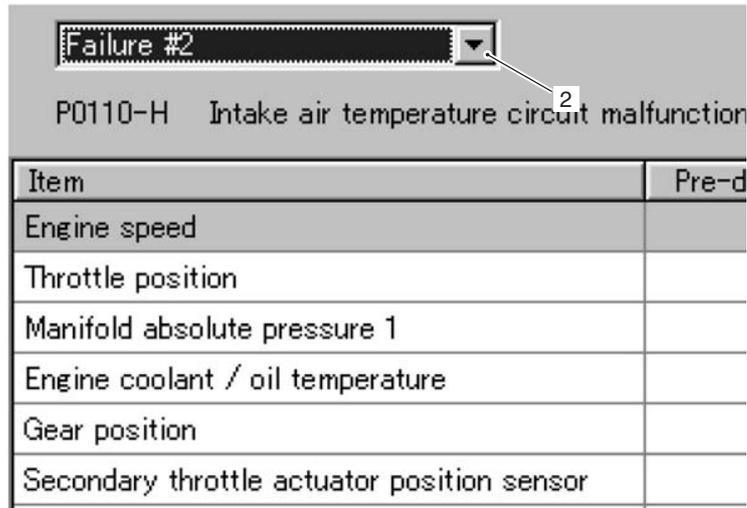
1) Click "Show data when trouble" (1) to display the data.



I718H1110269-02

1A-15 Engine General Information and Diagnosis:

2) Click the drop down button (2), either "Failure #1" or "Failure #2" can be selected.



I718H1110270-01

SDS Check

B718H11104009

Using SDS, sample the data at the time of new and periodic vehicle inspections.

After saving the sampled data in the computer, file them by model and by user.

The periodically filed data help improve the accuracy of troubleshooting since they can indicate the condition of vehicle functions that has changed with time.

For example, when a vehicle is brought in for service but the troubleshooting of a failure is not easy, comparing the current data value to past filed data value at time of normal condition can allow the specific engine failure to be determined.

Also, in the case of a customer vehicle which is not periodically brought in for service with no past data value having been saved, if the data value of a good vehicle condition have been already saved as a master (STD), comparison between the same models helps to facilitate the troubleshooting.

- 1) Remove the right frame cover. Refer to "Exterior Parts Removal and Installation in Section 9D (Page 9D-6)".
- 2) Set up the SDS tool. (Refer to the SDS operation manual for further details.)

Special tool

 : 09904-41010 (SDS set)

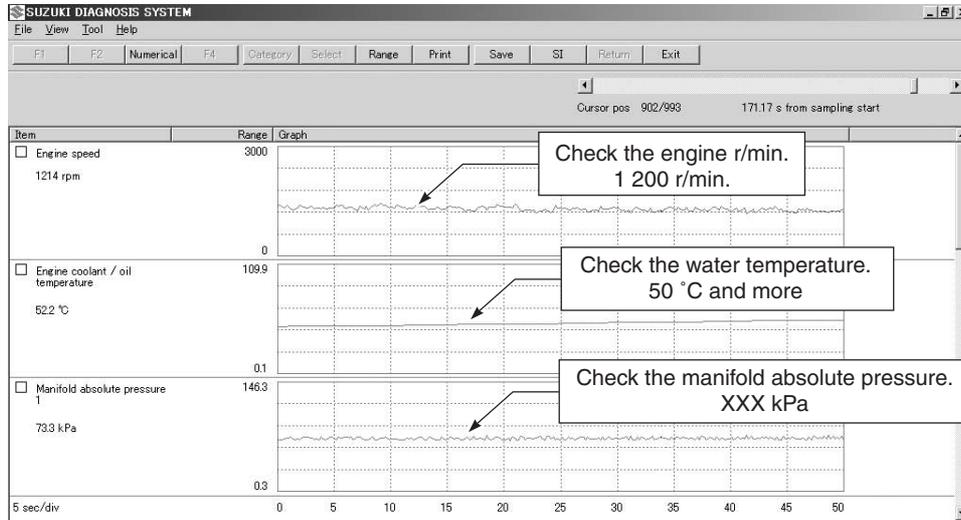
 : 99565-01010-010 (CD-ROM Ver.10)

NOTE

- Before taking the sample of data, check and clear the Past DTC.
 - A number of different data under a fixed condition as shown should be saved or filed as sample.
-

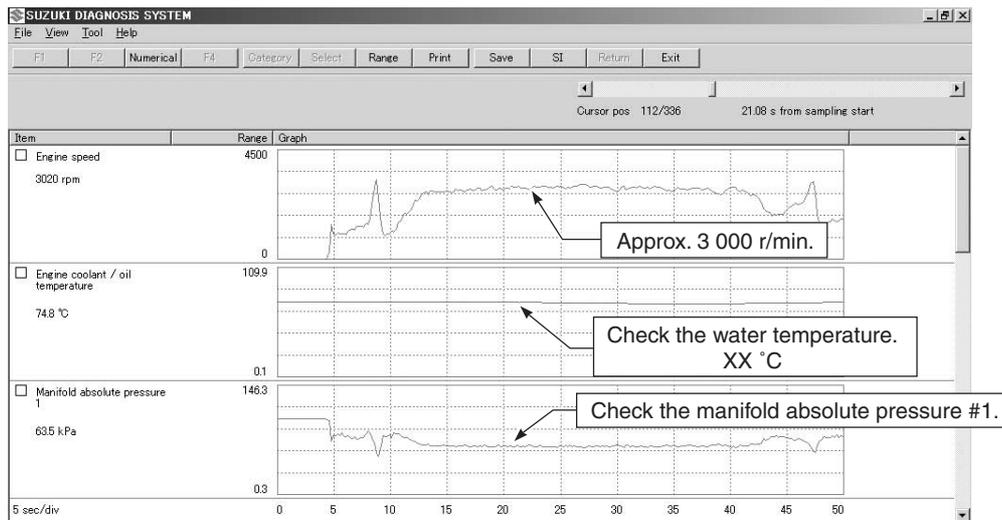
Sample

Data sampled from cold starting through warm-up



I718H1110149-01

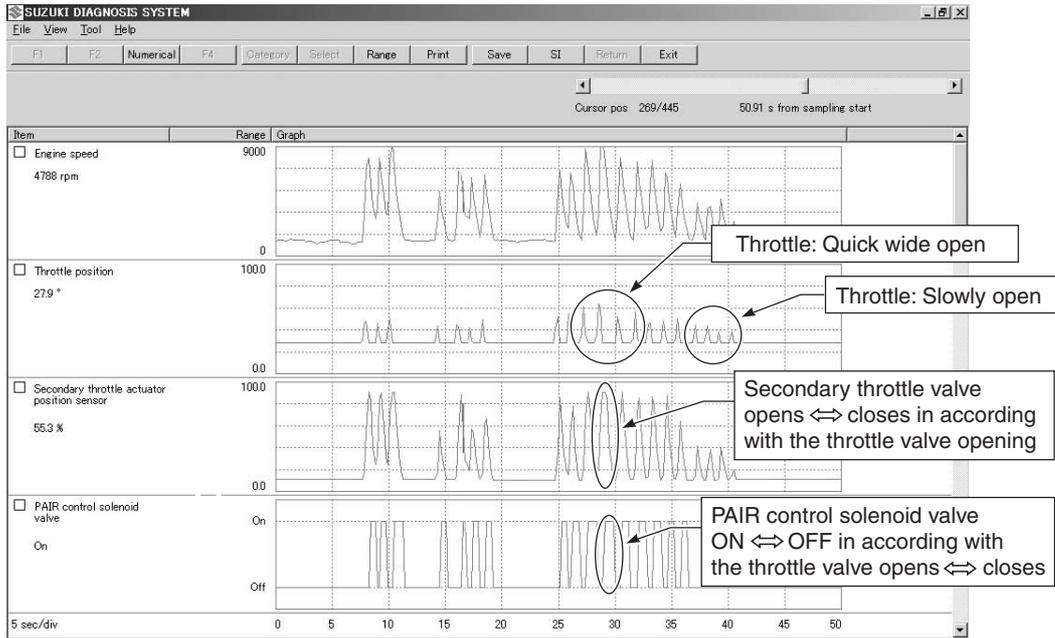
Data at 3 000 r/min under no load



I718H1110150-01

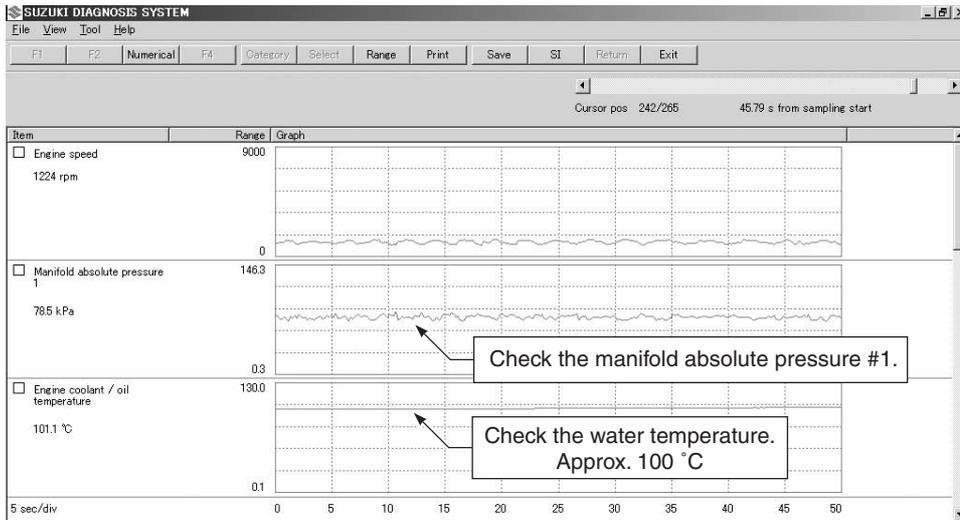
1A-17 Engine General Information and Diagnosis:

Data at the time of racing



I718H1110151-01

Data of intake negative pressure during idling (100 °C)



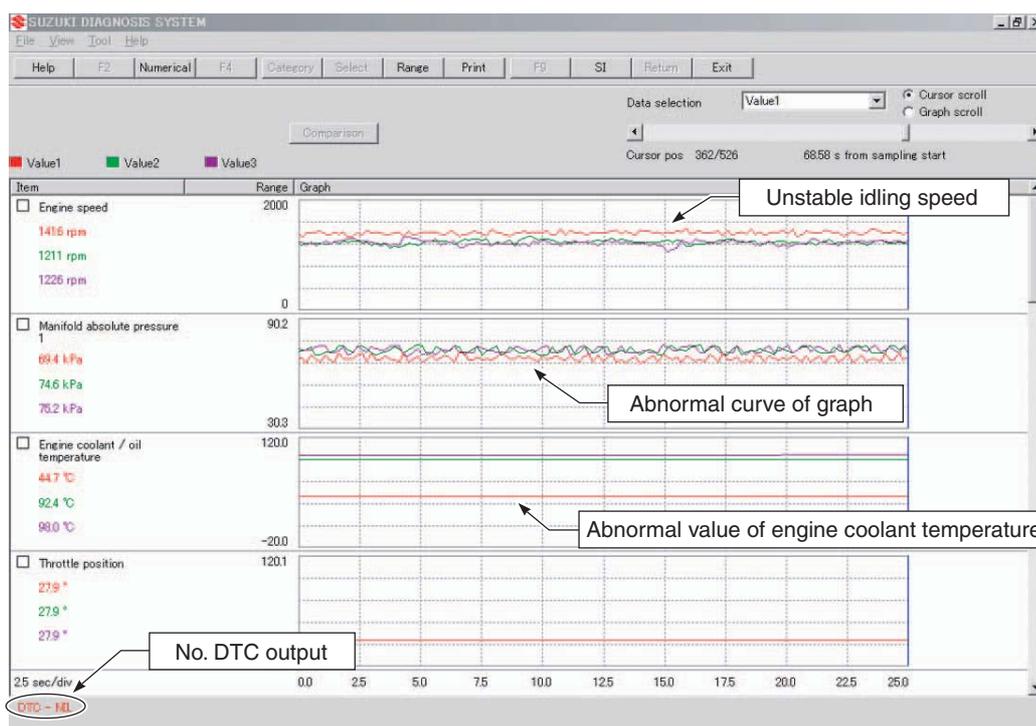
I718H1110152-01

Example of Trouble

Three data; value 1 (current data 1), value 2 (past data 2) and value 3 (past data 3); can be made in comparison by showing them in the graph. Read the change of value by comparing the current data to the past data that have been saved under the same condition, then you may determine how changes have occurred with the passing of time and identify what problem is currently occurring.

NOTE

With DTC not output, if the value of engine coolant temperature is found to be lower than the data saved previously, the possible cause may probably lie in a sensor circuit opened, ground circuit opened or influence of internal resistance value changes, etc.



I718H1110153-03

DTC Table

B718H11104002

Code	Malfunction Part	Remarks
C00	None	No defective part
C12 (P0335) ☞ (Page 1A-25)	Crankshaft position sensor (CKPS)	Pick-up coil signal, signal generator
C13 (P0105-H/L) ☞ (Page 1A-28)	Intake air pressure sensor No.1 (IAPS)	
C14 (P0120-H/L) ☞ (Page 1A-37)	Throttle position sensor (TPS)	
C15 (P0115-H/L) ☞ (Page 1A-45)	Engine coolant temperature sensor (ECTS)	
C17 (P1750/-H/L) ☞ (Page 1A-52)	Intake air pressure sensor No.2 (IAPS)	
C21(P0110-H/L) ☞ (Page 1A-60)	Intake air temperature sensor (IATS)	
C23 (P1651-H/L) ☞ (Page 1A-67)	Tip-over sensor (TOS)	
C24 (P0351) ☞ (Page 1A-73)	Ignition signal #1 (IG coil #1)	For #1 cylinder
C25 (P0352) ☞ (Page 1A-73)	Ignition signal #2 (IG coil #2)	For #2 cylinder

1A-19 Engine General Information and Diagnosis:

Code	Malfunction Part	Remarks
C26 (P0353) ☞ (Page 1A-73)	Ignition signal #3 (IG coil #3)	For #3 cylinder
C27 (P0354) ☞ (Page 1A-73)	Ignition signal #4 (IG coil #4)	For #4 cylinder
C28 (P1655) ☞ (Page 1A-73)	Secondary throttle valve actuator (STVA)	*1
C29 (P1654-H/L) ☞ (Page 1A-77)	Secondary throttle position sensor (STPS)	
C31 (P0705) ☞ (Page 1A-85)	Gear position signal (GP switch)	
C32 (P0201) ☞ (Page 1A-87)	Injector signal #1 (FI #1)	For #1 cylinder
C33 (P0202) ☞ (Page 1A-87)	Injector signal #2 (FI #2)	For #2 cylinder
C34 (P0203) ☞ (Page 1A-87)	Injector signal #3 (FI #3)	For #3 cylinder
C35 (P0204) ☞ (Page 1A-87)	Injector signal #4 (FI #4)	For #4 cylinder
C40 (P0505/P0506/ 0507) ☞ (Page 1A-91)	Idle speed control valve (ISC valve)	
C41 (P0230-H/L, P2505) ☞ (Page 1A-97) / ☞ (Page 1A-100)	Fuel pump control system (FP control system), ECM/PCM power input signal	Fuel pump, Fuel pump relay
C42 (P1650) ☞ (Page 1A-102)	Ignition switch signal (IG switch signal)	Anti-theft
C44 (P0130, P0135) ☞ (Page 1A-102)	Heated oxygen sensor (HO2S)	
C49 (P1656) ☞ (Page 1A-108)	PAIR control solenoid valve	
C60 (P0480) ☞ (Page 1A-111)	Cooling fan control system	Cooling fan relay
P62 (P0443)	EVAP system purge control valve (E-33 only)	

In the LCD (DISPLAY) panel, the malfunction code is indicated from small code to large code.

*1

When the secondary throttle valve actuator and secondary throttle position sensor signals are not sent to ECM. In this case, C28 and C29 are indicated alternately.

Fail-Safe Function Table

FI system is provided with fail-safe function to allow the engine to start and the motorcycle to run in a minimum performance necessary even under malfunction condition.

Item	Fail-Safe Mode	Starting Ability	Running Ability
IAP sensor (No.1)	Intake air pressure is fixed to 101 kPa (760 mmHg).	“YES”	“YES”
IAP sensor (No.2)	Intake air pressure is fixed to 101 kPa (760 mmHg).	“YES”	“YES”
TP sensor	The throttle opening is fixed to full open position. Ignition timing is also fixed.	“YES”	“YES”
ECT sensor	Engine coolant temperature value is fixed to 80 °C (176 °F).	“YES”	“YES”
IAT sensor	Intake air temperature value is fixed to 40 °C (104 °F).	“YES”	“YES”
Ignition signal	#1 ignition – off and #1 Fuel-cut	“YES”	“YES”
		#2, #3 & #4 cylinder can run.	
	#2 ignition – off and #2 Fuel-cut	“YES”	“YES”
		#1, #3 & #4 cylinder can run.	
	#3 ignition – off and #3 Fuel-cut	“YES”	“YES”
	#1, #2 & #4 cylinder can run.		
	#4 ignition – off and #4 Fuel-cut	“YES”	“YES”
		#1, #2 & #3 cylinder can run.	
Injection signal	#1 Fuel – cut	“YES”	“YES”
		#2, #3 & #4 cylinder can run.	
	#2 Fuel – cut	“YES”	“YES”
		#1, #3 & #4 cylinder can run.	
	#3 Fuel – cut	“YES”	“YES”
	#1, #2 & #4 cylinder can run.		
	#4 Fuel – cut	“YES”	“YES”
		#1, #2 & #3 cylinder can run.	
Secondary throttle valve actuator	When motor disconnection or lock occurs, power from ECM is shut off.	“YES”	“YES”
STP sensor	Secondary throttle valve is fixed to full close position.	“YES”	“YES”
Gear position signal	Gear position signal is fixed to 6th gear.	“YES”	“YES”
HO2 sensor	Feedback compensation is inhibited. (Air/ fuel ratio is fixed to normal.)	“YES”	“YES”
PAIR control solenoid valve	ECM stops controlling PAIR control solenoid valve.	“YES”	“YES”
ISC valve	When motor disconnection or lock occurs, power from ECM is shut off.	“YES”	“YES”
EVAP purge control valve (E-33 only)	ECM stops controlling EVAP purge control valve.	“YES”	“YES”

The engine can start and can run even if the signal in the table is not received from each sensor. But, the engine running condition is not complete, providing only emergency help (by fail-safe circuit). In this case, it is necessary to bring the motorcycle to the workshop for complete repair.

When two ignition signals or two injector signals are not received by ECM, the fail-safe circuit can not work and ignition or injection is stopped.

1A-21 Engine General Information and Diagnosis:

FI System Troubleshooting

B718H11104004

Customer Complaint Analysis

Record details of the problem (failure, complaint) and how it occurred as described by the customer. For this purpose, use of such an inspection form such as following will facilitate collecting information to the point required for proper analysis and diagnosis.

NOTE

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

EXAMPLE: CUSTOMER PROBLEM INSPECTION FORM

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

Malfunction indicator light condition (LED)	<input type="checkbox"/> Always ON / <input type="checkbox"/> Sometimes ON / <input type="checkbox"/> Always OFF / <input type="checkbox"/> Good condition
Malfunction display/code (LCD)	User mode: <input type="checkbox"/> No display / <input type="checkbox"/> Malfunction display ()
	Dealer mode: <input type="checkbox"/> No code / <input type="checkbox"/> Malfunction code ()

PROBLEM SYMPTOMS	
<input type="checkbox"/> Difficult Starting <input type="checkbox"/> No cranking	<input type="checkbox"/> Poor Driveability <input type="checkbox"/> Hesitation on acceleration
<input type="checkbox"/> No initial combustion <input type="checkbox"/> No combustion	<input type="checkbox"/> Back fire / <input type="checkbox"/> After fire <input type="checkbox"/> Lack of power
<input type="checkbox"/> Poor starting at <input type="checkbox"/> cold / <input type="checkbox"/> warm / <input type="checkbox"/> always) <input type="checkbox"/> Other	<input type="checkbox"/> Surging <input type="checkbox"/> Abnormal knocking <input type="checkbox"/> Engine rpm jumps briefly <input type="checkbox"/> Other
<input type="checkbox"/> Poor Idling <input type="checkbox"/> Poor fast Idle <input type="checkbox"/> Abnormal idling speed <input type="checkbox"/> High / <input type="checkbox"/> Low) (r/min) <input type="checkbox"/> Unstable <input type="checkbox"/> Hunting (r/min to r/min) <input type="checkbox"/> Other	<input type="checkbox"/> Engine Stall when <input type="checkbox"/> Immediately after start <input type="checkbox"/> Throttle valve is opened <input type="checkbox"/> Throttle valve is closed <input type="checkbox"/> Load is applied <input type="checkbox"/> Other
<input type="checkbox"/> OTHERS:	

MOTORCYCLE/ENVIRONMENTAL CONDITION WHEN PROBLEM OCCURS	
Environmental condition	
Weather	<input type="checkbox"/> Fair / <input type="checkbox"/> Cloudy / <input type="checkbox"/> Rain / <input type="checkbox"/> Snow / <input type="checkbox"/> Always / <input type="checkbox"/> Other
Temperature	<input type="checkbox"/> Hot / <input type="checkbox"/> Warm / <input type="checkbox"/> Cool / <input type="checkbox"/> Cold (°C / °F) / <input type="checkbox"/> Always
Frequency	<input type="checkbox"/> Always / <input type="checkbox"/> Sometimes (times / day, month) / <input type="checkbox"/> Only once <input type="checkbox"/> Under certain condition
Road	<input type="checkbox"/> Urban / <input type="checkbox"/> Suburb / <input type="checkbox"/> Highway / <input type="checkbox"/> Mountainous (<input type="checkbox"/> Uphill / <input type="checkbox"/> Downhill) <input type="checkbox"/> Tarmacadam / <input type="checkbox"/> Gravel / <input type="checkbox"/> Other
Motorcycle condition	
Engine condition	<input type="checkbox"/> Cold / <input type="checkbox"/> Warming up phase / <input type="checkbox"/> Warmed up / <input type="checkbox"/> Always / <input type="checkbox"/> Other at starting <input type="checkbox"/> Immediately after start / <input type="checkbox"/> Racing without load / <input type="checkbox"/> Engine speed (r/min)
Motorcycle condition	During driving: <input type="checkbox"/> Constant speed / <input type="checkbox"/> Accelerating / <input type="checkbox"/> Decelerating <input type="checkbox"/> Right hand corner / <input type="checkbox"/> Left hand corner <input type="checkbox"/> At stop / <input type="checkbox"/> Motorcycle speed when problem occurs (km/h, mile/h) <input type="checkbox"/> Other:

Visual Inspection

Prior to diagnosis using the mode select switch or SDS, perform the following visual inspections. The reason for visual inspection is that mechanical failures (such as oil leakage) cannot be displayed on the screen with the use of mode select switch or SDS.

- Engine oil level and leakage. Refer to “Engine Oil and Filter Replacement in Section 0B (Page 0B-10)”.
- Engine coolant level and leakage. Refer to “Cooling Circuit Inspection in Section 1F (Page 1F-4)”.
- Fuel level and leakage. Refer to “Fuel Line Inspection in Section 0B (Page 0B-10)”.
- Clogged air cleaner element. Refer to “Air Cleaner Element Inspection and Cleaning in Section 0B (Page 0B-3)”.
- Battery condition.
- Throttle cable play. Refer to “Throttle Cable Play Inspection and Adjustment in Section 0B (Page 0B-12)”.
- Vacuum hose looseness, bend and disconnection.
- Broken fuse.
- FI light operation. Refer to “Combination Meter Inspection in Section 9C (Page 9C-5)”.
- Each warning light operation. Refer to “Combination Meter Inspection in Section 9C (Page 9C-5)”.
- Speedometer operation. Refer to “Speedometer Inspection in Section 9C (Page 9C-8)”.
- Exhaust gas leakage and noise. Refer to “Exhaust System Inspection in Section 1K (Page 1K-6)”.
- Each coupler disconnection.
- Clogged radiator fins. Refer to “Radiator Inspection and Cleaning in Section 1F (Page 1F-5)”.

Malfunction Code and Defective Condition Table

B718H11104010

Malfunction Code	Detected Item		Detected Failure Condition	Check For	
C00	NO FAULT		—	—	
C12	CKP sensor		The signal does not reach ECM for 3 sec. or more, after receiving the starter signal.	CKP sensor wiring and mechanical parts CKP sensor, lead wire/coupler connection	
P0335					
C13	IAP sensor (No.1)		The sensor should produce following voltage. $0.5\text{ V} \leq \text{sensor voltage} < 4.85\text{ V}$ In other than the above range, C13 (P0105) is indicated.	IAP sensor (No.1), lead wire/coupler connection	
P0105			H	Sensor voltage is higher than specified value.	IAP sensor (No.1) circuit open or shorted to Vcc or ground circuit open
			L	Sensor voltage is lower than specified value.	IAP sensor (No.1) circuit shorted to the ground or Vcc circuit open
C14	TP sensor		The sensor should produce following voltage. $0.2\text{ V} \leq \text{sensor voltage} < 4.8\text{ V}$ In other than the above range, C14 (P0120) is indicated.	TP sensor, lead wire/coupler connection	
P0120			H	Sensor voltage is higher than specified value.	TP sensor circuit shorted to Vcc or ground circuit open
			L	Sensor voltage is lower than specified value.	TP sensor circuit open or shorted to the ground or Vcc circuit open
C15	ECT sensor		The sensor voltage should be the following. $0.15\text{ V} \leq \text{sensor voltage} < 4.85\text{ V}$ In other than the above range, C15 (P0115) is indicated.	ECT sensor, lead wire/coupler connection	
P0115			H	Sensor voltage is higher than specified value.	ECT sensor circuit open or ground circuit open
			L	Sensor voltage is lower than specified value.	ECT sensor circuit shorted to the ground

1A-23 Engine General Information and Diagnosis:

Malfunction Code		Detected Item	Detected Failure Condition	Check For
C17		IAP sensor (No.2)	The sensor should produce following voltage. 0.5 V ≤ sensor voltage < 4.85 V In other than the above range, C17 (P1750) is indicated.	IAP sensor (No.2), lead wire/coupler connection
P1750	H		Sensor voltage is higher than specified value.	IAP sensor (No.2) circuit open or shorted to Vcc or ground circuit open
	L		Sensor voltage is lower than specified value.	IAP sensor (No.2) circuit shorted to the ground or Vcc circuit open
C17/P1750			If the pressure variation (voltage variation) does not exist even under the engine operating condition, this malfunction code is output.	Make sure to check that IAP sensor (No.2) is securely installed on the throttle body.
C21		IAT sensor	The sensor voltage should be the following. 0.15 V ≤ sensor voltage < 4.85 V In other than the above range, C21 (P0110) is indicated.	IAT sensor, lead wire/coupler connection
P0110	H		Sensor voltage is higher than specified value.	IAT sensor circuit open or ground circuit open
	L		Sensor voltage is lower than specified value.	IAT sensor circuit shorted to the ground
C23		TO sensor	The sensor voltage should be the following for 2 sec. and more, after ignition switch is turned ON. 0.2 V ≤ sensor voltage < 4.8 V In other than the above value, C23 (P1651) is indicated.	TO sensor, lead wire/coupler connection
P1651	H		Sensor voltage is higher than specified value.	TO sensor circuit shorted to Vcc or ground circuit open
	L		Sensor voltage is lower than specified value.	TO sensor circuit open or shorted to the ground or Vcc circuit open
C24/C25 C26/C27		Ignition signal	CKP sensor (pick-up coil) signal is produced, but signal from ignition coil is interrupted 8 times or more continuously. In this case, the code C24 (P0351), C25 (P0352), C26 (P0353) or C27 (P0354) is indicated.	Ignition coil, wiring/coupler connection, power supply from the battery
P0351/P0352 P0353/P0354				
C28		Secondary throttle valve actuator	When no actuator control signal is supplied from the ECM, communication signal does not reach ECM or operation voltage does not reach STVA motor, C28 (P1655) is indicated. STVA can not operate.	STVA motor, STVA lead wire/coupler
P1655				
C29		STP sensor	The sensor should produce following voltage. 0.15 V ≤ sensor voltage < 4.85 V In other than the above range, C29 (P1654) is indicated.	STP sensor, lead wire/coupler connection
P1654	H		Sensor voltage is higher than specified value.	STP sensor circuit shorted to Vcc or ground circuit open
	L		Sensor voltage is lower than specified value.	STP sensor circuit open or shorted to the ground or Vcc circuit open
C31		Gear position signal	Gear position signal voltage should be higher than the following for 3 seconds and more. Gear position sensor voltage > 0.6 V If lower than the above value, C31 (P0705) is indicated.	GP switch, wiring/coupler connection, gearshift cam, etc.
P0705				

Malfunction Code	Detected Item	Detected Failure Condition	Check For	
C32/C33 C34/C35	Fuel injector	CKP sensor (pickup coil) signal is produced, but fuel injector signal is interrupted 4 times or more continuously. In this case, the code C32 (P0201), C33 (P0202), C34 (P0203) or C35 (P0204) is indicated.	Primary fuel injector, wiring/coupler connection, power supply to the injector.	
P0201/P0202 P0203/P0204				
C40 /P0505	ISC valve	The circuit voltage of motor drive is unusual.	ISC valve circuit open or shorted to the ground	
C40 /P0506		Idle speed is lower than the desired idle speed.	Air passage clogged ISC valve fixed ISC valve preset position is incorrect	
C40 /P0507		Idle speed is higher than the desired idle speed.	ISC valve hose connection ISC valve is fixed ISC valve preset position is incorrect	
C41	Fuel pump relay	No voltage is applied to the fuel pump, although fuel pump relay is turned ON, or voltage is applied to fuel pump although fuel pump relay is turned OFF.	Fuel pump relay, lead wire/coupler connection, power source to fuel pump relay and fuel injectors	
P0230		H	Voltage is applied to fuel pump although fuel pump relay is turned OFF.	Fuel pump relay switch circuit shorted to power source Fuel pump relay (switch side)
		L	No voltage is applied to the fuel pump, although fuel pump relay is turned ON.	Fuel pump relay circuit open or short Fuel pump relay (coil side)
C41/P2505	ECM/PCM power input signal	No voltage is applied to the ECM, although FP relay is turned ON.	Lead wire/coupler connection of ECM terminal to fuel fuse, Fuel fuse, Power source of speedometer shorted to ground	
C42 P1650	Ignition switch	Ignition switch signal is not input to the ECM.	Ignition switch, lead wire/coupler, etc.	
C44/P0130	HO2 sensor (HO2S)	HO2 sensor output voltage is not input to ECM during engine operation and running condition. (Sensor voltage > 1.0 V) In other than the above value, C44 (P0130) is indicated.	HO2S lead sensor circuit open or shorted to the power source, HO2 sensor lead wire/coupler connection	
C44/P0135		The Heater can not operate so that heater operation voltage is not supply to the oxygen heater circuit, C44 (P0135) is indicated.	HO2 sensor circuit open or shorted to the ground Battery voltage supply to the HO2 sensor	
C49 P1656	PAIR control solenoid valve	PAIR control solenoid valve ampere is not input to ECM.	PAIR control solenoid valve, lead wire/coupler	
C60 P0480	Cooling fan relay	Cooling fan relay signal is not input to ECM.	Cooling fan relay, lead wire/coupler connection	
C62 P0443	EVAP purge control valve (E-33 only)	EVAP purge control valve voltage is not input to ECM	EVAP purge control valve, lead wire/coupler	

1A-25 Engine General Information and Diagnosis:

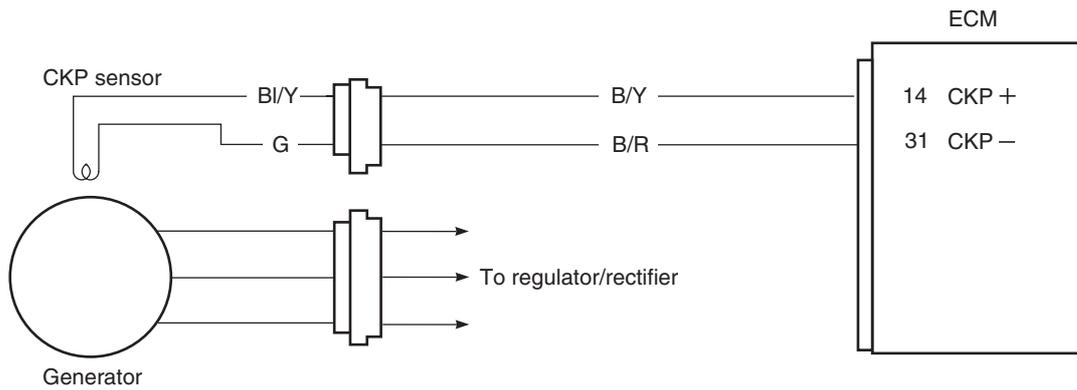
DTC “C12” (P0335): CKP Sensor Circuit Malfunction

B718H11104011

Detected Condition and Possible Cause

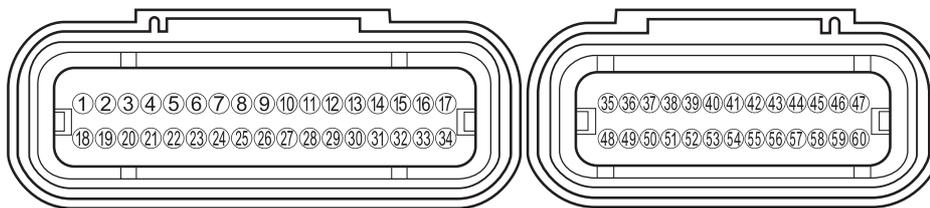
Detected Condition	Possible Cause
The signal does not reach ECM for 3 sec. or more, after receiving the starter signal.	<ul style="list-style-type: none"> • Metal particles or foreign material being stuck on the CKP sensor and rotor tip. • CKP sensor circuit open or short. • CKP sensor malfunction. • ECM malfunction.

Wiring Diagram



I718H1110262-01

ECM coupler (Harness side)

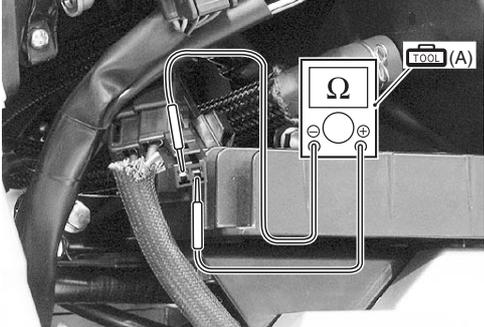
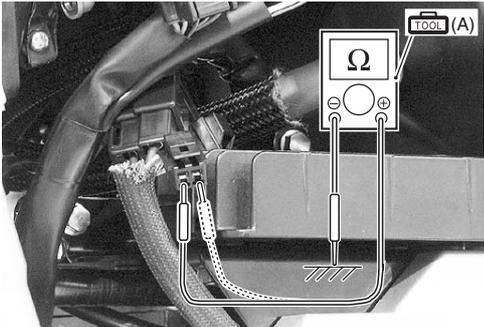


I718H1110240-01

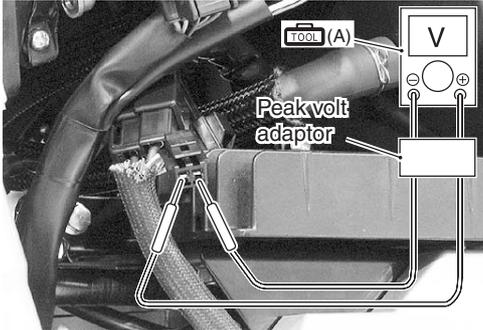
Troubleshooting

NOTE

After repairing the trouble, clear the DTC using SDS tool. Refer to “Use of SDS Diagnosis Reset Procedures (Page 1A-13)”.

Step	Action	Yes	No
1	<p>1) Turn the ignition switch OFF.</p> <p>2) Check the CKP sensor coupler for loose or poor contacts. If OK, then measure the CKP sensor resistance.</p>  <p style="text-align: right; font-size: small;">I718H1110154-02</p> <p>3) Disconnect the CKP sensor coupler and measure the resistance.</p> <p>Special tool  (A): 09900-25008 (Multi-circuit tester set)</p> <p>Tester knob indication Resistance (Ω)</p> <p>CKP sensor resistance 90 – 150 Ω (BI /Y– G)</p>  <p style="text-align: right; font-size: small;">I718H1110156-03</p> <p>4) If OK, then check the continuity between each terminal and ground.</p> <p>CKP sensor continuity $\infty \Omega$ (Infinity) (BI/Y – Ground, G – Ground)</p>  <p style="text-align: right; font-size: small;">I718H1110157-04</p> <p>Are the resistance and continuity OK?</p>	Go to Step 2.	Replace the CKP sensor with a new one.

1A-27 Engine General Information and Diagnosis:

Step	Action	Yes	No
2	<p>1) Crank the engine several seconds with the starter motor, and measure the CKP sensor peak voltage at the coupler.</p> <p>Special tool  (A): 09900-25008 (Multi-circuit tester set)</p> <p>Tester knob indication Voltage (---)</p> <p>CKP sensor peak voltage 2.0 V and more (+) terminal: Bl/Y – (-) terminal: G)</p>  <p style="text-align: right; font-size: small;">I718H1110158-03</p> <p>2) Repeat the 1) test procedures several times and measure the highest peak voltage.</p> <p><i>Is the voltage OK?</i></p>	<ul style="list-style-type: none"> • G/Y or Br wire open or shorted to the ground. • Loose or poor contacts on the CKP sensor coupler or ECM coupler (terminal “14” or “31”). • If wire and connection are OK, intermittent trouble or faulty ECM. • Recheck each terminal and wire harness for open circuit and poor connection. • Replace the ECM with a known good one, and inspect it again. Refer to “ECM Removal and Installation in Section 1C (Page 1C-1)”. 	<ul style="list-style-type: none"> • Inspect that metal particles or foreign material stuck on the CKP sensor and rotor tip. • If there are no metal particles and foreign material, then replace the CKP sensor with a new one. Refer to “CKP Sensor Removal and Installation in Section 1C (Page 1C-1)”.

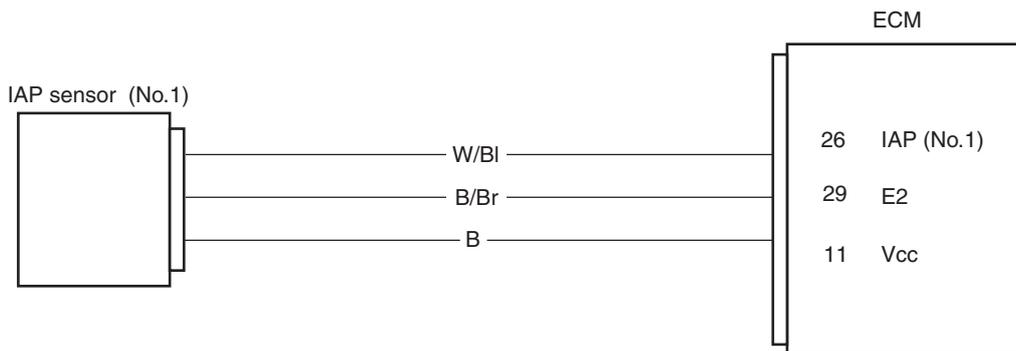
DTC “C13” (P0105-H/L): IAP Sensor (No.1) Circuit Malfunction

B718H11104012

Detected Condition and Possible Cause

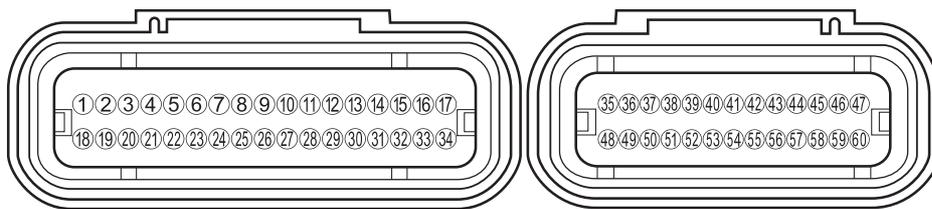
Detected Condition		Possible Cause
C13	IAP sensor (No.1) voltage is not within the following range. 0.5 V ≤ Sensor voltage < 4.85 V	<ul style="list-style-type: none"> • Clogged vacuum passage between throttle body and IAP sensor (No.1). • Air being drawn from vacuum passage between throttle body and IAP sensor (No.1). • IAP sensor (No.1) circuit open or shorted to the ground. • IAP sensor (No.1) malfunction. • ECM malfunction.
	<p>NOTE</p> <p>Note that atmospheric pressure varies depending on weather conditions as well as altitude. Take that into consideration when inspecting voltage.</p>	
P0105	H Sensor voltage is higher than specified value.	<ul style="list-style-type: none"> • IAP sensor (No.1) circuit is open or shorted to Vcc or ground circuit open. • IAP sensor (No.1) circuit is shorted to the ground or Vcc circuit open.
	L Sensor voltage is lower than specified value.	

Wiring Diagram



I718H1110017-08

ECM coupler (Harness side)



I718H1110240-01

Troubleshooting

⚠ CAUTION

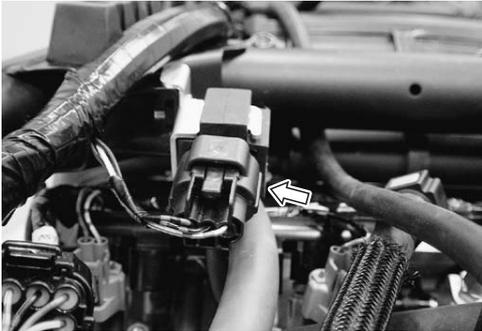
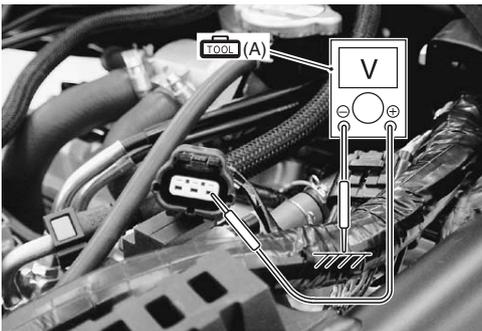
When using the multi-circuit tester, do not strongly touch the terminal of the ECM coupler with a needle pointed tester probe to prevent the terminal damage or terminal bend.

NOTE

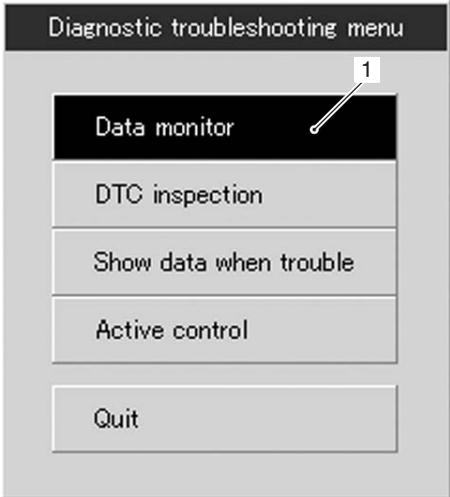
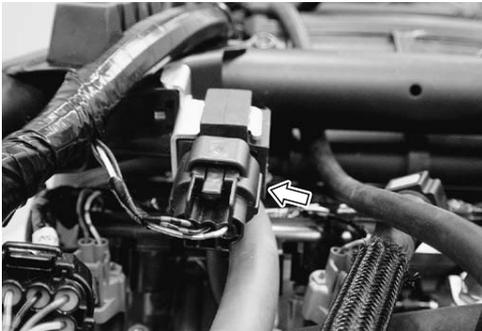
After repairing the trouble, clear the DTC using SDS tool. Refer to “Use of SDS Diagnosis Reset Procedures (Page 1A-13)”.

1A-29 Engine General Information and Diagnosis:

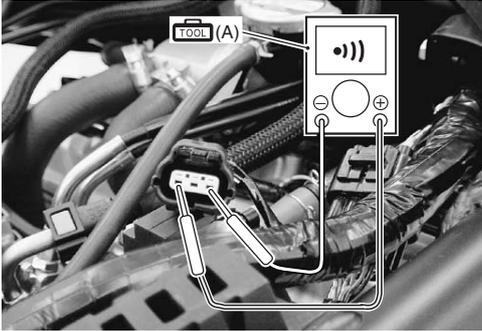
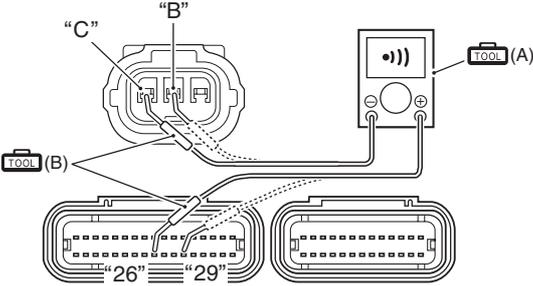
C13 for IAP sensor No.1 (Use of mode select switch)

Step	Action	Yes	No
1	<p>1) Turn the ignition switch OFF.</p> <p>2) Lift and support the fuel tank. Refer to “Fuel Tank Removal and Installation in Section 1G (Page 1G-9)”.</p> <p>3) Check the IAP sensor coupler for loose or poor contacts. If OK, then measure the IAP sensor (No.1) input voltage.</p>  <p style="text-align: right; font-size: small;">I718H1110257-01</p> <p>4) Disconnect the IAP sensor (No.1) coupler.</p> <p>5) Turn the ignition switch ON.</p> <p>6) Measure the voltage at the B wire and ground. If OK, then measure the voltage at the B wire and B/Br wire.</p> <p>Special tool TOOL (A): 09900-25008 (Multi-circuit tester set)</p> <p>Tester knob indication Voltage (---)</p> <p>IAP sensor (No.1) input voltage 4.5 – 5.5 V ((+) terminal: B – (-) terminal: Ground, (+) terminal: B – (-) terminal: B/Br)</p>  <p style="text-align: right; font-size: small;">I718H1110258-01</p> <p><i>Is the voltage OK?</i></p>	<p>Go to Step 4.</p>	<ul style="list-style-type: none"> • Loose or poor contacts on the ECM coupler. • Open or short circuit in the B wire or B/Br wire.

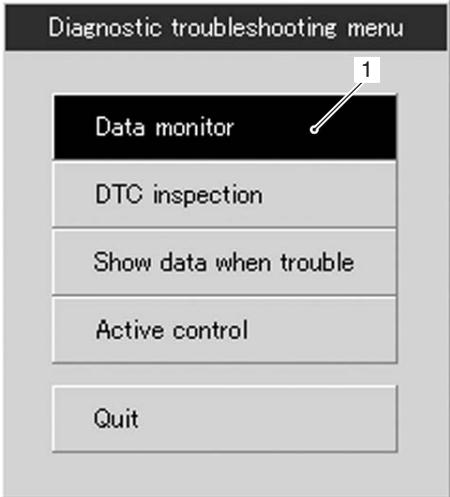
P0105-H for IAP sensor (No.1) (Use of SDS)

Step	Action	Yes	No																		
1	<p>1) Click the data monitor button (1).</p>  <p style="text-align: right; font-size: small;">I718H1110251-01</p> <p>2) Check the manifold absolute pressure 1 data.</p> <table border="1" data-bbox="274 943 866 1131"> <thead> <tr> <th>Item</th> <th>Value</th> <th>Unit</th> </tr> </thead> <tbody> <tr> <td><input type="checkbox"/> Engine speed</td> <td>0</td> <td>rpm</td> </tr> <tr> <td><input type="checkbox"/> Manifold absolute pressure 1</td> <td>146.3</td> <td>kPa</td> </tr> <tr> <td><input type="checkbox"/> Manifold absolute pressure 2</td> <td>1131</td> <td>kPa</td> </tr> <tr> <td><input type="checkbox"/> Engine coolant / oil temperature</td> <td>72.3</td> <td>°C</td> </tr> <tr> <td><input type="checkbox"/> Throttle position</td> <td>27.9</td> <td>°</td> </tr> </tbody> </table> <p style="text-align: right; font-size: small;">I718H1110161-02</p> <p><i>Approx. 146 kPa (1.46 kgf/cm³, 21 psi) and more OK?</i></p>	Item	Value	Unit	<input type="checkbox"/> Engine speed	0	rpm	<input type="checkbox"/> Manifold absolute pressure 1	146.3	kPa	<input type="checkbox"/> Manifold absolute pressure 2	1131	kPa	<input type="checkbox"/> Engine coolant / oil temperature	72.3	°C	<input type="checkbox"/> Throttle position	27.9	°	Go to Step 2.	Go to Step 4.
Item	Value	Unit																			
<input type="checkbox"/> Engine speed	0	rpm																			
<input type="checkbox"/> Manifold absolute pressure 1	146.3	kPa																			
<input type="checkbox"/> Manifold absolute pressure 2	1131	kPa																			
<input type="checkbox"/> Engine coolant / oil temperature	72.3	°C																			
<input type="checkbox"/> Throttle position	27.9	°																			
2	<p>1) Turn the ignition switch OFF.</p> <p>2) Lift and support the fuel tank. Refer to "Fuel Tank Removal and Installation in Section 1G (Page 1G-9)".</p> <p>3) Check the IAP sensor (No.1) coupler for loose or poor contacts. If OK, then check the IAP sensor (No.1) lead wire continuity.</p>  <p style="text-align: right; font-size: small;">I718H1110257-01</p>	Go to Step 4.	W/BI wire shorted to Vcc, or B/Br wire open.																		

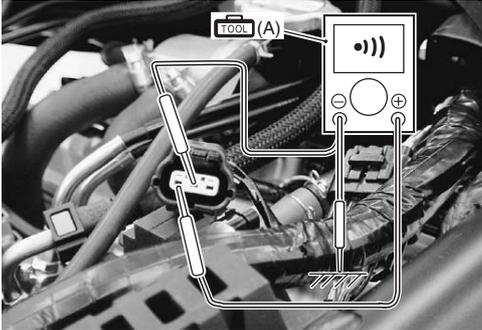
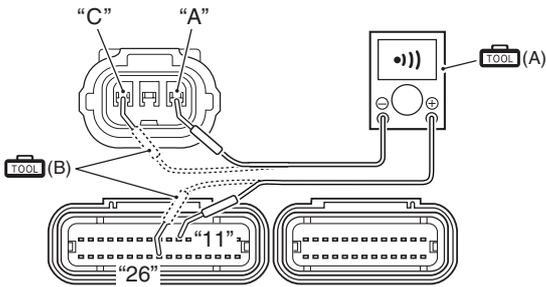
1A-31 Engine General Information and Diagnosis:

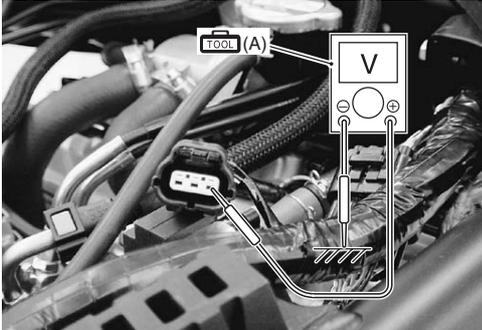
Step	Action	Yes	No
2	<p>4) Disconnect the IAP sensor (No.1) coupler.</p> <p>5) Check the continuity between the B wire and W/BI wire. If the sound is not heard from the tester, the circuit condition is OK.</p> <p>Special tool TOOL (A): 09900-25008 (Multi-circuit tester set)</p> <p>Tester knob indication Continuity (•))</p>  <p style="text-align: right; font-size: small;">I718H1110259-01</p> <p>6) Disconnect the ECM coupler. Refer to “ECM Removal and Installation in Section 1C (Page 1C-1)”.</p> <p>7) Insert the needle pointed probes to the lead wire coupler.</p> <p>8) Check the continuity between the W/BI wire “C” and terminal “26”. If OK, then check the continuity between the B/Br wire “B” and terminal “29”.</p> <p>Special tool TOOL (A): 09900-25008 (Multi-circuit tester set) TOOL (B): 09900-25009 (Needle pointed probe set)</p> <p>Tester knob indication Continuity test (•))</p>  <p style="text-align: right; font-size: small;">I718H1110024-03</p> <p><i>Is the continuity OK?</i></p>	Go to Step 4.	W/BI wire shorted to Vcc, or B/Br wire open.

P0105-L for IAP sensor (No.1) (Use of SDS)

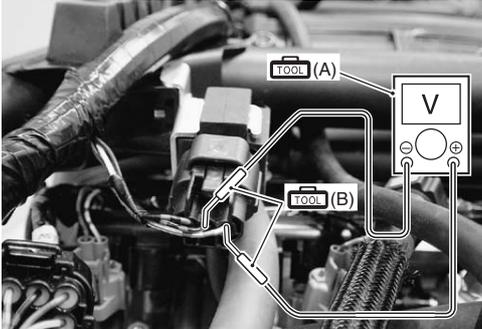
Step	Action	Yes	No																		
1	<p>1) Click the data monitor button (1).</p>  <p style="text-align: right; font-size: small;">I718H1110251-01</p> <p>2) Check the manifold absolute pressure 1 data.</p> <table border="1" data-bbox="276 943 866 1077"> <thead> <tr> <th>Item</th> <th>Value</th> <th>Unit</th> </tr> </thead> <tbody> <tr> <td><input type="checkbox"/> Engine speed</td> <td>0</td> <td>rpm</td> </tr> <tr> <td><input type="checkbox"/> Manifold absolute pressure 1</td> <td>-20.0</td> <td>kPa</td> </tr> <tr> <td><input type="checkbox"/> Manifold absolute pressure 2</td> <td>113.7</td> <td>kPa</td> </tr> <tr> <td><input type="checkbox"/> Intake air temperature</td> <td>34.6</td> <td>°C</td> </tr> <tr> <td><input type="checkbox"/> Engine coolant / oil temperature</td> <td>54.7</td> <td>°C</td> </tr> </tbody> </table> <p style="text-align: right; font-size: small;">I718H1110163-02</p> <p><i>Approx. -20 kPa (-0.2 kgf/cm³, -2.8 psi) and less OK?</i></p>	Item	Value	Unit	<input type="checkbox"/> Engine speed	0	rpm	<input type="checkbox"/> Manifold absolute pressure 1	-20.0	kPa	<input type="checkbox"/> Manifold absolute pressure 2	113.7	kPa	<input type="checkbox"/> Intake air temperature	34.6	°C	<input type="checkbox"/> Engine coolant / oil temperature	54.7	°C	Go to Step 2.	Go to Step 4.
Item	Value	Unit																			
<input type="checkbox"/> Engine speed	0	rpm																			
<input type="checkbox"/> Manifold absolute pressure 1	-20.0	kPa																			
<input type="checkbox"/> Manifold absolute pressure 2	113.7	kPa																			
<input type="checkbox"/> Intake air temperature	34.6	°C																			
<input type="checkbox"/> Engine coolant / oil temperature	54.7	°C																			
2	<p>1) Turn the ignition switch OFF.</p> <p>2) Lift and support the fuel tank. Refer to "Fuel Tank Removal and Installation in Section 1G (Page 1G-9)".</p> <p>3) Check the IAP sensor (No.1) coupler for loose or poor contacts. If OK, then check the IAP sensor (No.1) lead wire continuity.</p>  <p style="text-align: right; font-size: small;">I718H1110257-01</p>	Go to Step 3.	R and W/BI wire open, W/BI wire shorted to the ground.																		

1A-33 Engine General Information and Diagnosis:

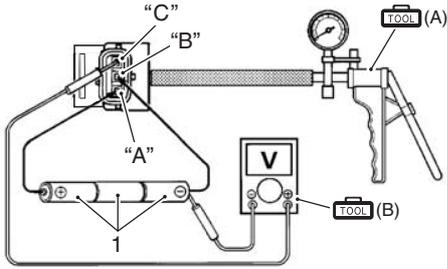
Step	Action	Yes	No
2	<p>4) Disconnect the IAP sensor (No.1) coupler.</p> <p>5) Check the continuity between the W/BI wire and ground. Also, check the continuity between the W/BI wire and B/Br wire. If the sound is not heard from the tester, the circuit condition is OK.</p> <p>Special tool TOOL (A): 09900-25008 (Multi-circuit tester set)</p> <p>Tester knob indication Continuity (•))</p>  <p>I718H1110260-02</p> <p>6) Disconnect the ECM coupler. Refer to "ECM Removal and Installation in Section 1C (Page 1C-1)".</p> <p>7) Insert the needle pointed probes to the lead wire coupler.</p> <p>8) Check the continuity between the B wire "A" and terminal "11". Also, check the continuity between the W/BI wire "C" and terminal "26".</p> <p>Special tool TOOL (A): 09900-25008 (Multi-circuit tester set) TOOL (B): 09900-25009 (Needle pointed probe set)</p> <p>Tester knob indication Continuity (•))</p>  <p>I718H1110241-01</p> <p><i>Is the continuity OK?</i></p>	Go to Step 3.	B and W/BI wire open, W/BI wire shorted to the ground.

Step	Action	Yes	No
3	<p>1) Connect the ECM coupler.</p> <p>2) Turn the ignition switch ON.</p> <p>3) Measure the input voltage at the B wire and ground with the needle pointed probes. If OK, the measure the input voltage at the B wire and B/Br wire.</p> <p>Special tool  (A): 09900-25008 (Multi-circuit tester set)</p> <p>Tester knob indication Voltage (---)</p> <p>IAP sensor input voltage (No.1) 4.5 – 5.5 V ((+) terminal: B – (-) terminal: Ground,(+) terminal: B – (-) terminal: B/Br)</p>  <p style="text-align: right; font-size: small;">I718H1110258-01</p> <p><i>Is the voltage OK?</i></p>	Go to Step 4.	Open or short circuit in the B wire or B/Br wire.

1A-35 Engine General Information and Diagnosis:

Step	Action	Yes	No
4	<p>1) Turn the ignition switch OFF.</p> <p>2) Connect the ECM coupler and IAP sensor (No.1) coupler.</p> <p>3) Insert the needle pointed probes to the lead wire coupler.</p> <p>4) Start the engine at idle speed and measure the IAP sensor (No.1) output voltage at the wire side coupler between the W/BI wire and B/Br wire.</p> <p>Special tool  (A): 09900-25008 (Multi-circuit tester set)  (B): 09900-25009 (Needle pointed probe set)</p> <p>Tester knob indication Voltage (---)</p> <p>IAP sensor (No.1) output voltage Approx. 2.7 V at idle speed (+) terminal: W/BI – (-) terminal: B/Br)</p>  <p style="text-align: right; font-size: small;">I718H1110261-01</p>	<p>Go to Step 5.</p>	<ul style="list-style-type: none"> • Check the vacuum hose for crack or damage. • Open or short circuit in the W/BI wire. • If vacuum hose and wire is OK, replace the IAP sensor (No.1) with a new one. Refer to "IAP Sensor (No.1) Removal and Installation in Section 1C (Page 1C-2)".

Is the voltage OK?

Step	Action	Yes	No																														
5	<p>1) Turn the ignition switch OFF.</p> <p>2) Remove the IAP sensor (No.1). Refer to "IAP Sensor (No.1) Removal and Installation in Section 1C (Page 1C-2)".</p> <p>3) Connect the vacuum pump gauge to the vacuum port of the IAP sensor (No.1).</p> <p>4) Arrange 3 new 1.5 V batteries in series (1) (check that total voltage is 4.5 – 5.0 V) and connect (–) terminal to the ground terminal "B" and (+) terminal to the Vcc terminal "A".</p> <p>5) Check the voltage between Vout terminal "C" and ground. Also, check if voltage reduces when vacuum is applied by using vacuum pump gauge.</p> <p>Special tool TOOL (A): 09917-47011 (Vacuum pump gauge) TOOL (B): 09900-25008 (Multi-circuit tester set)</p> <p>Tester knob indication Voltage (---)</p>  <p style="text-align: right;">I718H1110030-02</p> <table border="1" data-bbox="260 1249 879 1420"> <thead> <tr> <th colspan="2">ALTITUDE (Reference)</th> <th colspan="2">ATMOSPHERIC PRESSURE</th> <th>OUTPUT VOLTAGE</th> </tr> <tr> <th>ft</th> <th>m</th> <th>mmHg</th> <th>kPa</th> <th>V</th> </tr> </thead> <tbody> <tr> <td>0 – 2 000</td> <td>0 – 610</td> <td>760 – 707</td> <td>100 – 94</td> <td>3.4 – 4.0</td> </tr> <tr> <td>2 001 – 5 000</td> <td>611 – 1 524</td> <td>707 – 634</td> <td>94 – 85</td> <td>3.0 – 3.7</td> </tr> <tr> <td>5 001 – 8 000</td> <td>1 525 – 2 438</td> <td>634 – 567</td> <td>85 – 76</td> <td>2.6 – 3.4</td> </tr> <tr> <td>8 001 – 10 000</td> <td>2 439 – 3 048</td> <td>567 – 526</td> <td>76 – 70</td> <td>2.4 – 3.1</td> </tr> </tbody> </table> <p style="text-align: right;">I718H1110167-02</p>	ALTITUDE (Reference)		ATMOSPHERIC PRESSURE		OUTPUT VOLTAGE	ft	m	mmHg	kPa	V	0 – 2 000	0 – 610	760 – 707	100 – 94	3.4 – 4.0	2 001 – 5 000	611 – 1 524	707 – 634	94 – 85	3.0 – 3.7	5 001 – 8 000	1 525 – 2 438	634 – 567	85 – 76	2.6 – 3.4	8 001 – 10 000	2 439 – 3 048	567 – 526	76 – 70	2.4 – 3.1	<ul style="list-style-type: none"> • B, W/BI or B/Br wire open or shorted to the ground, or poor "11", "26" or "29" connection. • If wire and connection are OK, intermittent trouble or faulty ECM. • Recheck each terminal and wire harness for open circuit and poor connection. • Replace the ECM with a known good one, and inspect it again. Refer to "ECM Removal and Installation in Section 1C (Page 1C-1)". 	<p>If check result is not satisfactory, replace the IAP sensor (No.1) with a new one. Refer to "IAP Sensor (No.1) Removal and Installation in Section 1C (Page 1C-2)".</p>
ALTITUDE (Reference)		ATMOSPHERIC PRESSURE		OUTPUT VOLTAGE																													
ft	m	mmHg	kPa	V																													
0 – 2 000	0 – 610	760 – 707	100 – 94	3.4 – 4.0																													
2 001 – 5 000	611 – 1 524	707 – 634	94 – 85	3.0 – 3.7																													
5 001 – 8 000	1 525 – 2 438	634 – 567	85 – 76	2.6 – 3.4																													
8 001 – 10 000	2 439 – 3 048	567 – 526	76 – 70	2.4 – 3.1																													
<p><i>Is the voltage OK?</i></p>																																	

1A-37 Engine General Information and Diagnosis:

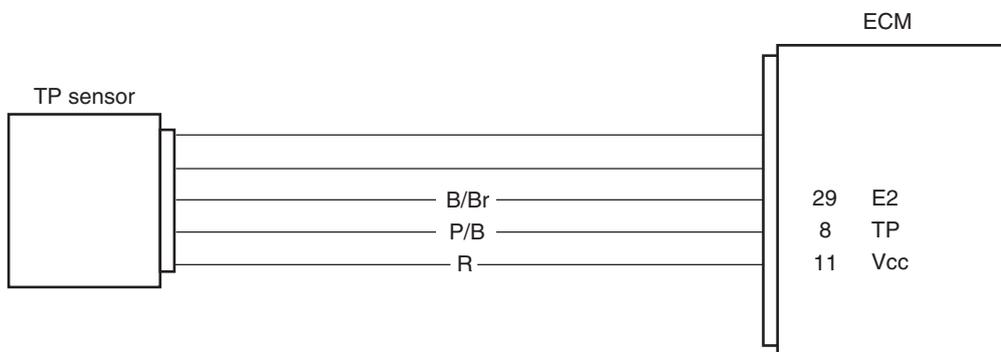
DTC “C14” (P0120-H/L): TP Sensor Circuit Malfunction

B718H11104013

Detected Condition and Possible Cause

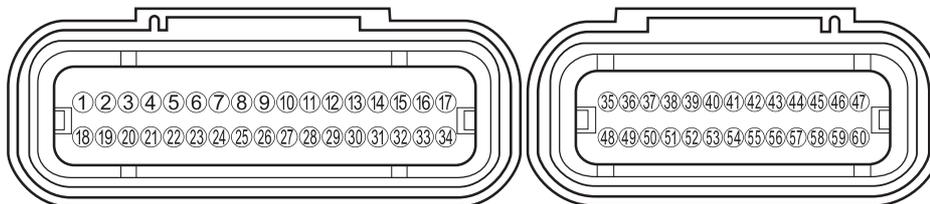
Detected Condition		Possible Cause
C14	Output voltage is not within the following range. Difference between actual throttle opening and opening calculated by ECM is larger than specified value. $0.2\text{ V} \leq \text{Sensor voltage} < 4.8\text{ V}$	<ul style="list-style-type: none"> TP sensor maladjusted. TP sensor circuit open or short. TP sensor malfunction. ECM malfunction.
P0120	H Sensor voltage is higher than specified value.	<ul style="list-style-type: none"> TP sensor circuit is shorted to Vcc or ground circuit is open.
	L Sensor voltage is lower than specified value.	<ul style="list-style-type: none"> TP sensor circuit is open or shorted to the ground or Vcc circuit is open.

Wiring Diagram



I718H1110031-05

ECM coupler (Harness side)



I718H1110240-01

Troubleshooting

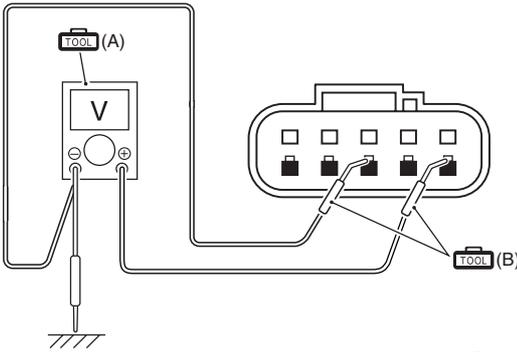
⚠ CAUTION

When using the multi-circuit tester, do not strongly touch the terminal of the ECM coupler with a needle pointed tester probe to prevent the terminal damage or terminal bend.

NOTE

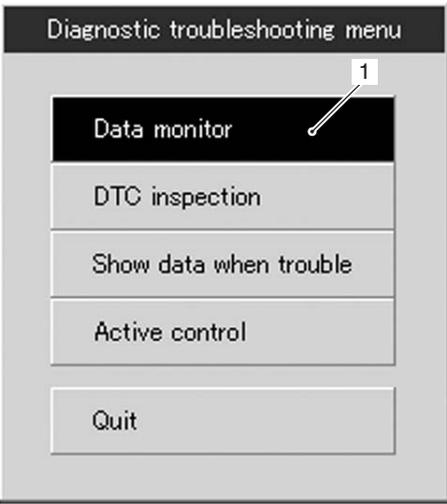
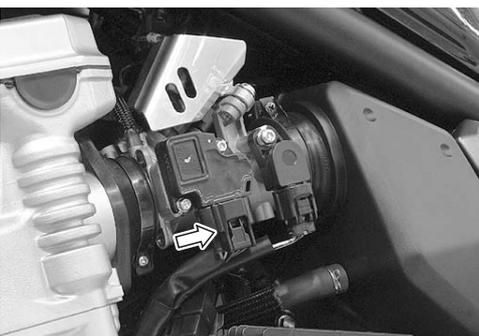
- After repairing the trouble, clear the DTC using SDS tool. Refer to “Use of SDS Diagnosis Reset Procedures (Page 1A-13)”.
- TP sensor is incorporated in the IAP sensor/IAT sensor.

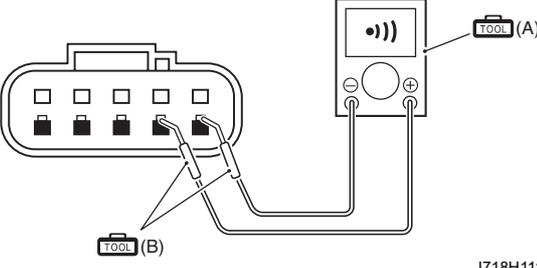
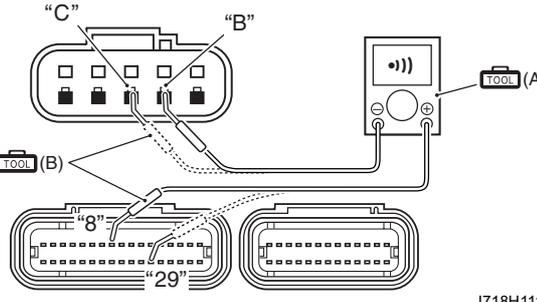
C14 (Use of mode select switch)

Step	Action	Yes	No
1	<p>1) Turn the ignition switch OFF.</p> <p>2) Check the TP sensor coupler for loose or poor contacts. If OK, then measure the TP sensor input voltage.</p>  <p style="text-align: right; font-size: small;">I718H1110168-03</p> <p>3) Disconnect the TP sensor coupler.</p> <p>4) Turn the ignition switch ON.</p> <p>5) Insert the needle pointed probes to the lead wire coupler.</p> <p>6) Measure the input voltage at the R wire and ground. If OK, then measure the input voltage at the R wire and B/Br wire.</p> <p>Special tool TOOL (A): 09900-25008 (Multi-circuit tester set) TOOL (B): 09900-25009 (Needle pointed probe set)</p> <p>Tester knob indication Voltage (---)</p> <p>TP sensor input voltage 4.5 – 5.5 V ((+) terminal: R – (–) terminal: Ground, (+) terminal: R – (–) terminal: B/Br)</p>  <p style="text-align: right; font-size: small;">I718H1110035-03</p> <p><i>Is the voltage OK?</i></p>	<p>Go to Step 4.</p>	<ul style="list-style-type: none"> • Loose or poor contacts on the ECM coupler. • Open or short circuit in the R or B/Br wire.

1A-39 Engine General Information and Diagnosis:

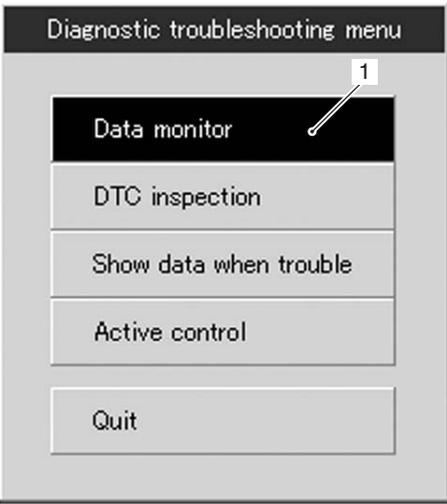
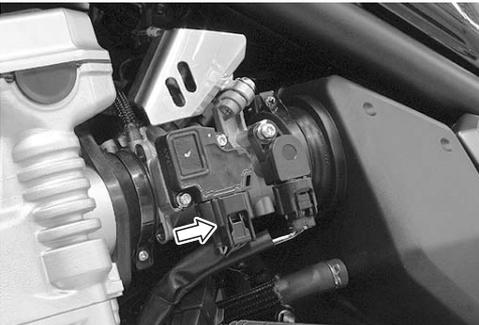
P0120-H (Use of SDS)

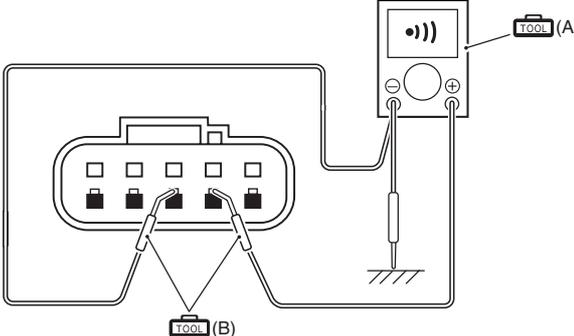
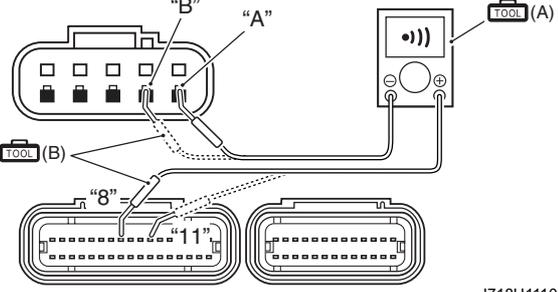
Step	Action	Yes	No															
1	<p>1) Click the data monitor button (1).</p>  <p style="text-align: right; font-size: small;">I718H1110251-01</p> <p>2) Check the throttle position data.</p> <table border="1" data-bbox="223 940 813 1064"> <thead> <tr> <th>Item</th> <th>Value</th> <th>Unit</th> </tr> </thead> <tbody> <tr> <td><input type="checkbox"/> Engine speed</td> <td>0</td> <td>rpm</td> </tr> <tr> <td><input type="checkbox"/> Engine coolant / oil temperature</td> <td>37.1</td> <td>°C</td> </tr> <tr> <td><input type="checkbox"/> Throttle position</td> <td>125.0</td> <td>°</td> </tr> <tr> <td><input type="checkbox"/> Secondary throttle actuator position sensor</td> <td>10.2</td> <td>%</td> </tr> </tbody> </table> <p style="text-align: right; font-size: small;">I718H1110169-01</p> <p><i>Throttle position approx. 125° and more OK?</i></p>	Item	Value	Unit	<input type="checkbox"/> Engine speed	0	rpm	<input type="checkbox"/> Engine coolant / oil temperature	37.1	°C	<input type="checkbox"/> Throttle position	125.0	°	<input type="checkbox"/> Secondary throttle actuator position sensor	10.2	%	Go to Step 2.	Go to Step 4.
Item	Value	Unit																
<input type="checkbox"/> Engine speed	0	rpm																
<input type="checkbox"/> Engine coolant / oil temperature	37.1	°C																
<input type="checkbox"/> Throttle position	125.0	°																
<input type="checkbox"/> Secondary throttle actuator position sensor	10.2	%																
2	<p>1) Turn the ignition switch OFF.</p> <p>2) Check the TP sensor coupler for loose or poor contacts. If OK, then check the TP sensor lead wire continuity.</p>  <p style="text-align: right; font-size: small;">I718H1110168-03</p> <p>3) Disconnect the TP sensor coupler.</p>	Go to Step 4.	P/B wire shorted to Vcc, or B/Br wire open.															

Step	Action	Yes	No
2	<p>4) Insert the needle pointed probes to the lead wire coupler.</p> <p>5) Check the continuity between the P/B wire and R wire. If the sound is not heard from the tester, the circuit condition is OK.</p> <p>Special tool TOOL (A): 09900-25008 (Multi-circuit tester set) TOOL (B): 09900-25009 (Needle pointed probe set)</p> <p>Tester knob indication Continuity (•))</p>  <p style="text-align: right; font-size: small;">I718H1110170-02</p> <p>6) Disconnect the ECM coupler. Refer to “ECM Removal and Installation in Section 1C (Page 1C-1)”.</p> <p>7) Check the continuity between the P/B wire “B” and terminal “8”. Also, check the continuity between the B/Br wire “C” and terminal “29”.</p> <p>Special tool TOOL (A): 09900-25008 (Multi-circuit tester set) TOOL (B): 09900-25009 (Needle pointed probe set)</p> <p>Tester knob indication Continuity (•))</p>  <p style="text-align: right; font-size: small;">I718H1110171-02</p> <p><i>Is the continuity OK?</i></p>	<p>Go to Step 4.</p>	<p>P/B wire shorted to Vcc, or B/Br wire open.</p>

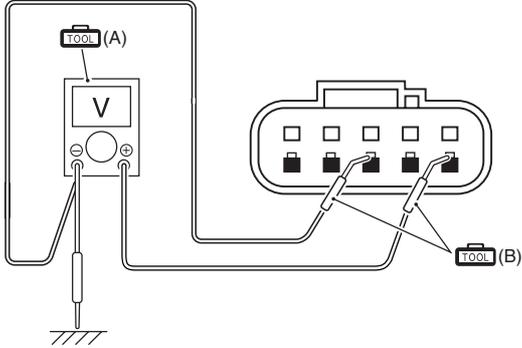
1A-41 Engine General Information and Diagnosis:

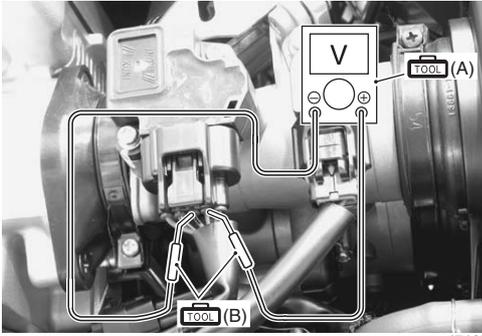
P0120-L (Use of SDS)

Step	Action	Yes	No															
1	<p>1) Click the data monitor button (1).</p>  <p style="text-align: right; font-size: small;">I718H1110251-01</p> <p>2) Check the throttle position data.</p> <table border="1" data-bbox="223 940 813 1108"> <thead> <tr> <th>Item</th> <th>Value</th> <th>Unit</th> </tr> </thead> <tbody> <tr> <td><input type="checkbox"/> Engine speed</td> <td>0</td> <td>rpm</td> </tr> <tr> <td><input type="checkbox"/> Engine coolant / oil temperature</td> <td>37.8</td> <td>°C</td> </tr> <tr> <td><input type="checkbox"/> Throttle position</td> <td>0.0</td> <td>°</td> </tr> <tr> <td><input type="checkbox"/> Secondary throttle actuator position sensor</td> <td>10.2</td> <td>%</td> </tr> </tbody> </table> <p style="font-size: x-small;">DTC - 1 Current P0120-L Throttle position sensor A circuit malfunction</p> <p style="text-align: right; font-size: x-small;">I718H1110172-01</p> <p><i>Throttle position approx. 0° OK?</i></p>	Item	Value	Unit	<input type="checkbox"/> Engine speed	0	rpm	<input type="checkbox"/> Engine coolant / oil temperature	37.8	°C	<input type="checkbox"/> Throttle position	0.0	°	<input type="checkbox"/> Secondary throttle actuator position sensor	10.2	%	Go to Step 2.	Go to Step 4.
Item	Value	Unit																
<input type="checkbox"/> Engine speed	0	rpm																
<input type="checkbox"/> Engine coolant / oil temperature	37.8	°C																
<input type="checkbox"/> Throttle position	0.0	°																
<input type="checkbox"/> Secondary throttle actuator position sensor	10.2	%																
2	<p>1) Turn the ignition switch OFF.</p> <p>2) Check the TP sensor coupler for loose or poor contacts. If OK, then check the TP sensor lead wire continuity.</p>  <p style="text-align: right; font-size: x-small;">I718H1110168-03</p> <p>3) Disconnect the TP sensor coupler.</p> <p>4) Insert the needle pointed probes to the lead wire coupler.</p>	Go to Step 3.	R and P/B wire open, or P/B wire shorted to the ground.															

Step	Action	Yes	No
2	<p>5) Check the continuity between the P/B wire and ground. Also, check the continuity between the P/B wire and B/Br wire. If the sound is not heard from the tester, the circuit condition is OK.</p> <p>Special tool TOOL (A): 09900-25008 (Multi-circuit tester set) TOOL (B): 09900-25009 (Needle pointed probe set)</p> <p>Tester knob indication Continuity test (•))</p>  <p style="text-align: right; font-size: small;">I718H1110040-03</p> <p>6) Disconnect the ECM coupler. Refer to "ECM Removal and Installation in Section 1C (Page 1C-1)".</p> <p>7) Check the continuity between the P/B wire "B" and terminal "8". Also, check the continuity between the R wire "A" and terminal "11".</p> <p>Special tool TOOL (A): 09900-25008 (Multi-circuit tester set) TOOL (B): 09900-25009 (Needle pointed probe set)</p>  <p style="text-align: right; font-size: small;">I718H1110041-03</p> <p><i>Is the continuity OK?</i></p>	<p>Go to Step 3.</p>	<p>R and P/B wire open, or P/B wire shorted to the ground.</p>

1A-43 Engine General Information and Diagnosis:

Step	Action	Yes	No
3	<p>1) Connect the ECM coupler.</p> <p>2) Turn the ignition switch ON.</p> <p>3) Measure the input voltage at the R wire and ground. If OK, the measure the input voltage at the R and B/Br wire.</p> <p>Special tool  (A): 09900–25008 (Multi-circuit tester set)</p> <p>Tester knob indication Voltage (---)</p> <p>TP sensor input voltage 4.5 – 5.5 V (+) terminal: R – (–) terminal: Ground, (+) terminal: R – (–) terminal: B/Br</p>  <p style="text-align: right;">I718H1110035-03</p> <p><i>Is the voltage OK?</i></p>	Turn the ignition switch OFF and go to Step 4.	Open or short circuit in the R or B/Br wire.

Step	Action	Yes	No
4	<p>1) Turn the ignition switch OFF. 2) Connect the ECM coupler and TP sensor coupler. 3) Insert the needle pointed probes to the lead wire coupler. 4) Turn the ignition switch ON. 5) Measure the TP sensor output voltage at the P/B wire and B/Br wire by turning the throttle grip.</p> <p>Special tool TOOL (A): 09900-25008 (Multi-circuit tester set) TOOL (B): 09900-25009 (Needle pointed probe set)</p> <p>Tester knob indication Voltage (---)</p> <p>TP sensor output voltage Throttle valve is closed: Approx. 1.1 V Throttle valve is opened: Approx. 4.3 V ((+) terminal: P/B – (-) terminal: B/Br)</p>	<ul style="list-style-type: none"> • P/B, R or B/Br wire open or shorted to the ground, or poor “8”, “11” or “29” connection. • If wire and connection are OK, intermittent trouble or faulty ECM. • Recheck each terminal and wire harness for open circuit and poor connection. • Replace the ECM with a known good one, and inspect it again. Refer to “ECM Removal and Installation in Section 1C (Page 1C-1)”. 	<p>If check result is not satisfactory, replace TP sensor with a new one. Refer to “Throttle Body Disassembly and Assembly in Section 1D (Page 1D-10)”.</p>
		<p>I718H1110173-03</p>	
<p>Is the voltage OK?</p>			

1A-45 Engine General Information and Diagnosis:

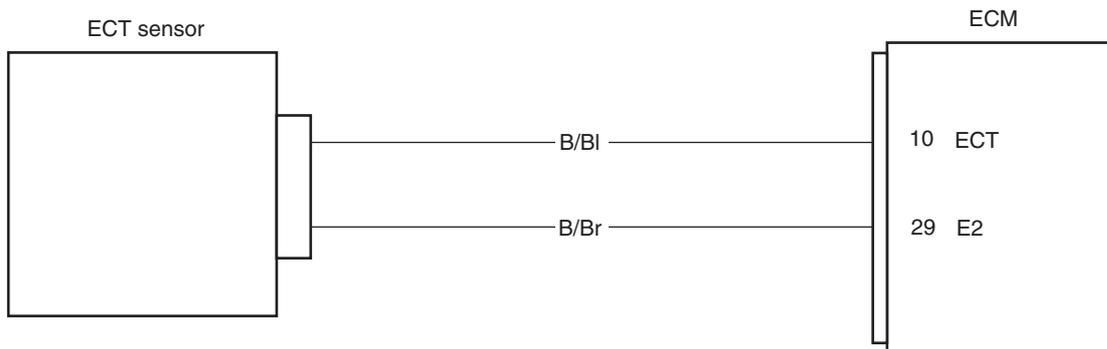
DTC “C15” (P0115-H/L): ECT Sensor Circuit Malfunction

B718H11104014

Detected Condition and Possible Cause

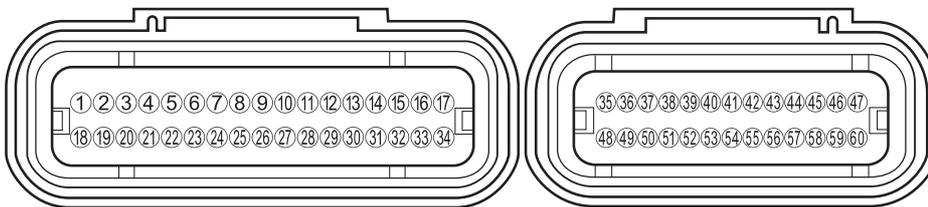
Detected Condition		Possible Cause
C15	Output voltage is not with in the following range. $0.15\text{ V} \leq \text{Sensor voltage} < 4.85\text{ V}$	<ul style="list-style-type: none"> ECT sensor circuit open or short. ECT sensor malfunction. ECM malfunction.
P0115	H Sensor voltage is higher than specified value.	<ul style="list-style-type: none"> ECT sensor circuit is open or ground circuit open.
	L Sensor voltage is lower than specified value.	<ul style="list-style-type: none"> ECT sensor circuit shorted to the ground.

Wiring Diagram



I718H1110046-02

ECM coupler (Harness side)



I718H1110240-01

Troubleshooting

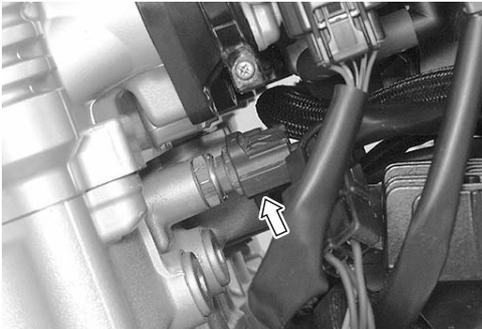
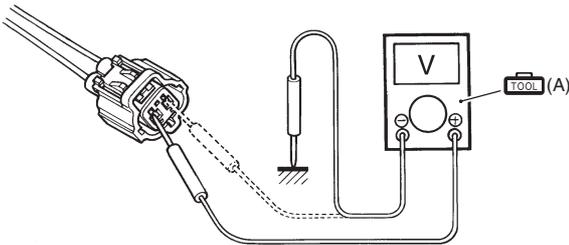
⚠ CAUTION

When using the multi-circuit tester, do not strongly touch the terminal of the ECM coupler with a needle pointed tester probe to prevent the terminal damage or terminal bend.

NOTE

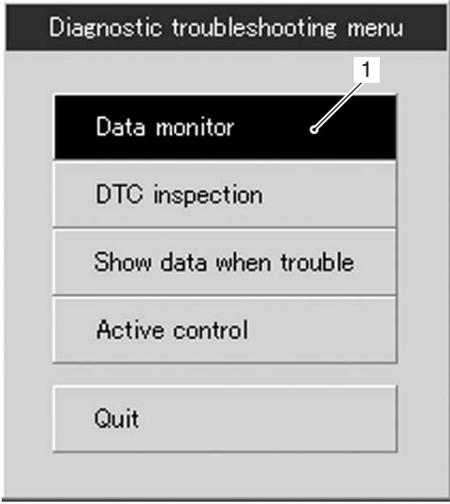
After repairing the trouble, clear the DTC using SDS tool. Refer to “Use of SDS Diagnosis Reset Procedures (Page 1A-13)”.

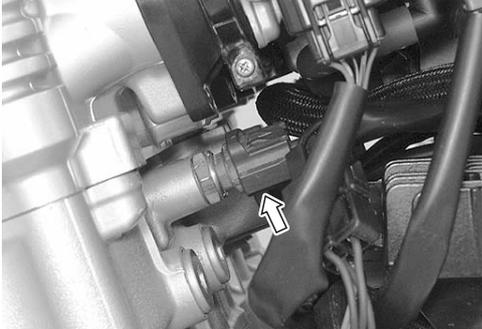
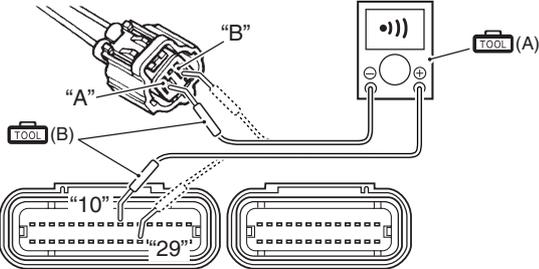
C15 (Use of mode select switch)

Step	Action	Yes	No
1	<p>1) Turn the ignition switch OFF.</p> <p>2) Check the ECT sensor coupler for loose or poor contacts. If OK, then measure the ECT sensor input voltage at the wire side coupler.</p>  <p style="text-align: right; font-size: small;">I718H1110174-02</p> <p>3) Disconnect the coupler and turn the ignition switch ON.</p> <p>4) Measure the input voltage between the B/BI wire terminal and ground. If OK, then measure the input voltage between the B/BI wire terminal and B/Br wire terminal.</p> <p>Special tool  (A): 09900-25008 (Multi-circuit tester set)</p> <p>Tester knob indication Voltage (---)</p> <p>ECT sensor input voltage 4.5 – 5.5 V ((+) terminal: B/BI – (-) terminal: Ground, (+) terminal: B/BI – (-) terminal: B/Br)</p>  <p style="text-align: right; font-size: small;">I718H1110048-03</p> <p><i>Is the voltage OK?</i></p>	<p>Go to Step 3.</p>	<ul style="list-style-type: none"> • Loose or poor contacts on the ECM coupler. • Open or short circuit in the B/BI or B/Br wire.

1A-47 Engine General Information and Diagnosis:

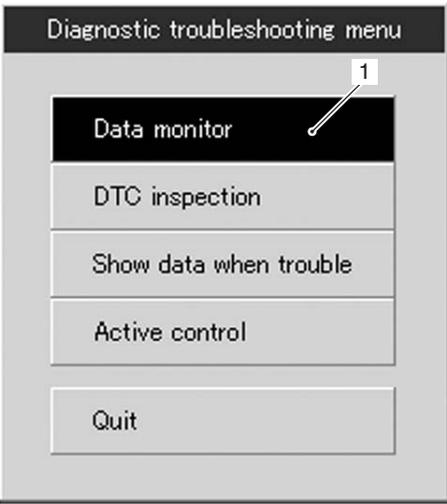
P0115-H (Use of SDS)

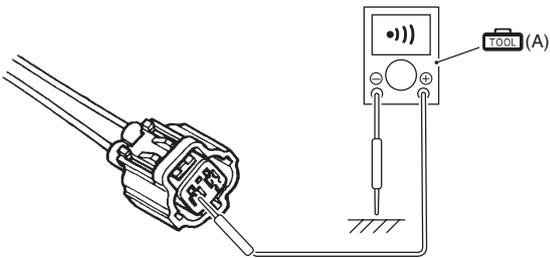
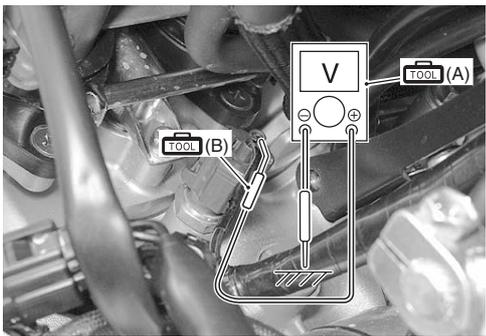
Step	Action	Yes	No															
1	<p>1) Click the data monitor button (1).</p>  <p style="text-align: right; font-size: small;">I718H1110251-01</p> <p>2) Check the engine coolant/oil temperature data.</p> <table border="1" data-bbox="221 943 815 1055"> <thead> <tr> <th>Item</th> <th>Value</th> <th>Unit</th> </tr> </thead> <tbody> <tr> <td><input type="checkbox"/> Engine speed</td> <td>0</td> <td>rpm</td> </tr> <tr> <td><input type="checkbox"/> Engine coolant / oil temperature</td> <td>-30.0</td> <td>°C</td> </tr> <tr> <td><input type="checkbox"/> Throttle position</td> <td>27.9</td> <td>°</td> </tr> <tr> <td><input type="checkbox"/> Secondary throttle actuator position sensor</td> <td>10.2</td> <td>%</td> </tr> </tbody> </table> <p>DTC - 1 Current P0115-H Engine coolant / oil temperature circuit malfunction</p> <p style="text-align: right; font-size: small;">I718H1110175-01</p> <p><i>Approx. -30 °C (-22 °F) and less OK?</i></p>	Item	Value	Unit	<input type="checkbox"/> Engine speed	0	rpm	<input type="checkbox"/> Engine coolant / oil temperature	-30.0	°C	<input type="checkbox"/> Throttle position	27.9	°	<input type="checkbox"/> Secondary throttle actuator position sensor	10.2	%	Go to Step 2.	Go to Step 3.
Item	Value	Unit																
<input type="checkbox"/> Engine speed	0	rpm																
<input type="checkbox"/> Engine coolant / oil temperature	-30.0	°C																
<input type="checkbox"/> Throttle position	27.9	°																
<input type="checkbox"/> Secondary throttle actuator position sensor	10.2	%																

Step	Action	Yes	No
2	<p>1) Turn the ignition switch OFF.</p> <p>2) Check the ECT sensor coupler for loose or poor contacts. If OK, then check the ECT sensor lead wire continuity.</p>  <p style="text-align: right; font-size: small;">I718H1110174-02</p> <p>3) Disconnect the ECT coupler.</p> <p>4) Disconnect the ECM coupler. Refer to "ECM Removal and Installation in Section 1C (Page 1C-1)".</p> <p>5) Insert the needle pointed probes to the lead wire coupler.</p> <p>6) Check the continuity between the B/BI wire "A" and terminal "10". Also, check the continuity between the B/Br wire "B" and terminal "29".</p> <p>Special tool TOOL (A): 09900-25008 (Multi-circuit tester set) TOOL (B): 09900-25009 (Needle pointed probe set)</p> <p>Tester knob indication Continuity test (•)))</p>  <p style="text-align: right; font-size: small;">I718H1110051-02</p> <p><i>Is the continuity OK?</i></p>	Go to Step 3.	B/BI or B/Br wire open.

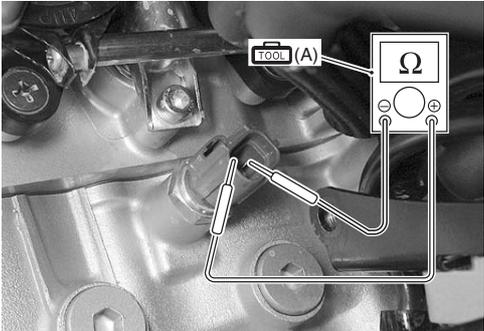
1A-49 Engine General Information and Diagnosis:

P0115-L (Use of SDS)

Step	Action	Yes	No															
1	<p>1) Click the data monitor button (1).</p>  <p style="text-align: right; font-size: small;">I718H1110251-01</p> <p>2) Check the engine coolant/oil temperature data.</p> <table border="1" data-bbox="223 940 813 1052"> <thead> <tr> <th>Item</th> <th>Value</th> <th>Unit</th> </tr> </thead> <tbody> <tr> <td><input type="checkbox"/> Engine speed</td> <td>0</td> <td>rpm</td> </tr> <tr> <td><input type="checkbox"/> Engine coolant / oil temperature</td> <td>120.0</td> <td>°C</td> </tr> <tr> <td><input type="checkbox"/> Throttle position</td> <td>27.9</td> <td>°</td> </tr> <tr> <td><input type="checkbox"/> Secondary throttle actuator position sensor</td> <td>102</td> <td>%</td> </tr> </tbody> </table> <p style="font-size: x-small;">DTC - 1 Current P0115-L Engine coolant / oil temperature circuit malfunction</p> <p style="text-align: right; font-size: x-small;">I718H1110176-01</p> <p><i>Approx. 120 °C (248 °F) and more OK?</i></p>	Item	Value	Unit	<input type="checkbox"/> Engine speed	0	rpm	<input type="checkbox"/> Engine coolant / oil temperature	120.0	°C	<input type="checkbox"/> Throttle position	27.9	°	<input type="checkbox"/> Secondary throttle actuator position sensor	102	%	Go to Step 2.	Go to Step 3.
Item	Value	Unit																
<input type="checkbox"/> Engine speed	0	rpm																
<input type="checkbox"/> Engine coolant / oil temperature	120.0	°C																
<input type="checkbox"/> Throttle position	27.9	°																
<input type="checkbox"/> Secondary throttle actuator position sensor	102	%																
2	<p>1) Turn the ignition switch OFF.</p> <p>2) Check the ECT sensor coupler for loose or poor contacts. If OK, then check the ECT sensor lead wire.</p>  <p style="text-align: right; font-size: x-small;">I718H1110174-02</p> <p>3) Disconnect the ECT sensor coupler.</p>	Go to Step 3.	<ul style="list-style-type: none"> • B/BI wire shorted to the ground. • If wire is OK, go to Step 3. 															

Step	Action	Yes	No
2	<p>4) Check the continuity between the B/BI wire and ground. If the sound is not heard from the tester, the circuit condition is OK.</p> <p>Special tool TOOL (A): 09900-25008 (Multi-circuit tester set)</p> <p>Tester knob indication Continuity test (•)))</p>  <p style="text-align: right; font-size: small;">I718H1110054-03</p> <p>5) Connect the ECT sensor coupler. 6) Remove the regulator/rectifier. Refer to “Regulator / Rectifier Inspection in Section 1J (Page 1J-8)”. 7) Insert the needle pointed probes to the lead wire coupler. 8) Turn the ignition switch ON. 9) Measure the output voltage between the B/BI wire and ground.</p> <p>Special tool TOOL (A): 09900-25008 (Multi-circuit tester set) TOOL (B): 09900-25009 (Needle pointed probe set)</p> <p>Tester knob indication Voltage (---)</p> <p>ECT sensor output voltage 0.15 – 4.85 V ((+) terminal: B/BI – (-) terminal: Ground)</p>  <p style="text-align: right; font-size: small;">I718H1110177-05</p> <p>Are the continuity and voltage OK?</p>	<p>Go to Step 3.</p>	<ul style="list-style-type: none"> • B/BI wire shorted to the ground. • If wire is OK, go to Step 3.

1A-51 Engine General Information and Diagnosis:

Step	Action	Yes	No
3	<p>1) Turn the ignition switch OFF.</p> <p>2) Connect the ECM coupler.</p> <p>3) Remove the regulator/rectifier. Refer to “Regulator / Rectifier Inspection in Section 1J (Page 1J-8)”.</p> <p>4) Disconnect the ECT sensor coupler.</p> <p>5) Measure the ECT sensor resistance.</p> <p>Special tool  (A): 09900–25008 (Multi-circuit tester set)</p> <p>Tester knob indication Resistance (Ω)</p> <p>ECT sensor resistance Approx. 2.45 kΩ at 20 °C (68 °F) (Terminal – Terminal)</p>  <p style="text-align: right; font-size: small;">I718H1110178-03</p> <p>NOTE</p> <p>Refer to “ECT Sensor Inspection in Section 1C (Page 1C-3)” for details.</p> <hr/> <p><i>Is the resistance OK?</i></p>	<ul style="list-style-type: none"> • B/BI or B/Br wire open or shorted to the ground, or poor “10” or “29” connection. • If wire and connection are OK, intermittent trouble or faulty ECM. • Recheck each terminal and wire harness for open circuit and poor connection. • Replace the ECM with a known good one, and inspect it again. Refer to “ECM Removal and Installation in Section 1C (Page 1C-1)”. 	<p>Replace the ECT sensor with a new one. Refer to “ECT Sensor Removal and Installation in Section 1C (Page 1C-2)”.</p>

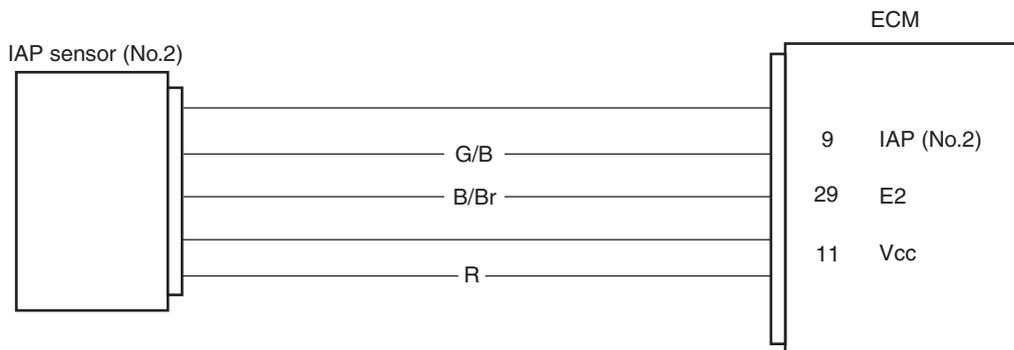
DTC “C17” (P1750-H/L): IAP Sensor (No.2) Circuit Malfunction

B718H11104030

Detected Condition and Possible Cause

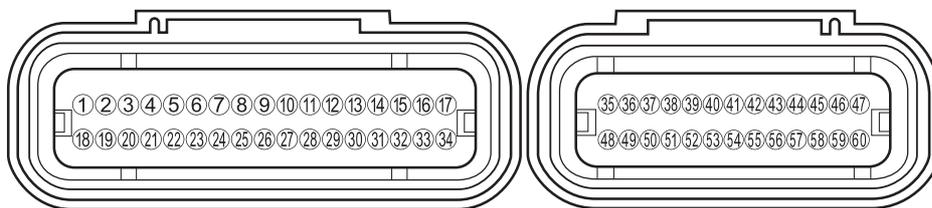
Detected Condition		Possible Cause
C17	<p>IAP sensor (No.2) voltage is not within the following range. $0.5\text{ V} \leq \text{Sensor voltage} < 4.85\text{ V}$</p> <p>NOTE Note that atmospheric pressure varies depending on weather conditions as well as altitude. Take that into consideration when inspecting voltage.</p>	<ul style="list-style-type: none"> • Clogged vacuum passage. • IAP sensor (No.2) circuit open or shorted to the ground. • IAP sensor (No.2) malfunction. • ECM malfunction.
P1750	H	Sensor voltage is higher than specified value.
	L	Sensor voltage is lower than specified value.
C17/P1750	When the sensor has unfastened (or being unfastened) from the throttle body or the pressure variation (voltage variation) cannot be detected, this malfunction code is output.	<ul style="list-style-type: none"> • Loosen the IAP sensor (No.2) mounting. • IAP sensor (No.2) malfunction.

Wiring Diagram



I718H1110179-04

ECM coupler (Harness side)



I718H1110240-01

Troubleshooting

⚠ CAUTION

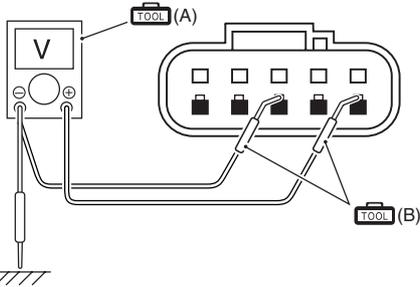
When using the multi-circuit tester, do not strongly touch the terminal of the ECM coupler with a needle pointed tester probe to prevent the terminal damage or terminal bend.

1A-53 Engine General Information and Diagnosis:

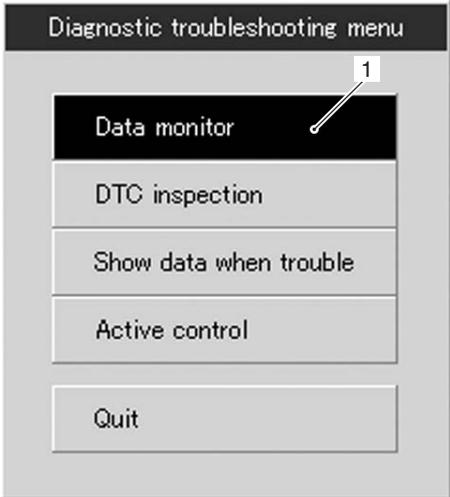
NOTE

- After repairing the trouble, clear the DTC using SDS tool. Refer to “Use of SDS Diagnosis Reset Procedures (Page 1A-13)”.
- IAP sensor (No.2) is incorporated in the TP sensor/IAT sensor.

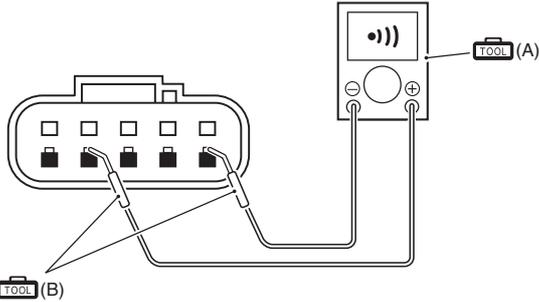
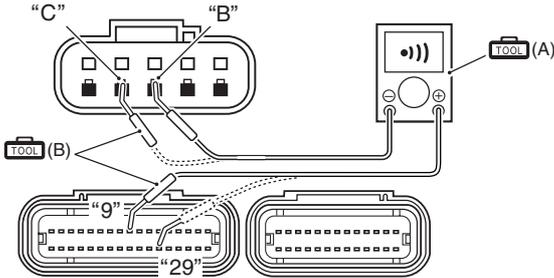
C17 for IAP sensor No.2 (Use of mode select switch)

Step	Action	Yes	No
1	<p>1) Turn the ignition switch OFF.</p> <p>2) Check the IAP sensor (No.2) coupler for loose or poor contacts. If OK, then measure the IAP sensor (No.2) input voltage.</p>  <p>3) Disconnect the IAP sensor (No.2) coupler.</p> <p>4) Turn the ignition switch ON.</p> <p>5) Insert the needle pointed probes to the lead wire coupler.</p> <p>6) Measure the voltage at the R wire and ground. If OK, then measure the voltage at the R wire and B/Br wire.</p> <p>Special tool  (A): 09900-25008 (Multi-circuit tester set)  (B): 09900-25009 (Needle pointed probe set)</p> <p>Tester knob indication Voltage (---)</p> <p>IAP sensor (No.2) input voltage 4.5 – 5.5 V ((+) terminal: B – (-) terminal: Ground, (+) terminal: R – (-) terminal: B/Br)</p>  <p>Is the voltage OK?</p>	<p>Go to Step 4 (or P1750 for IAP sensor No.2 (Use of SDS)).</p>	<ul style="list-style-type: none"> • Loose or poor contacts on the ECM coupler. • Open or short circuit in the R or B/Br wire.

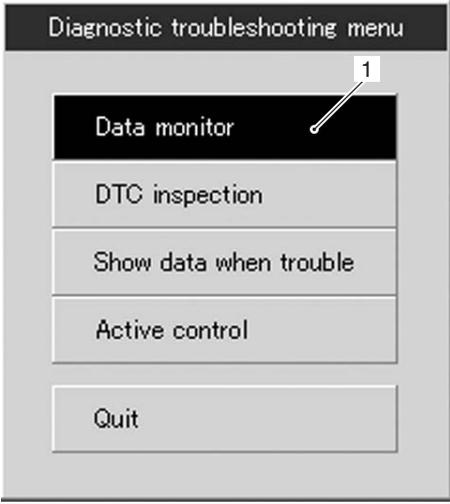
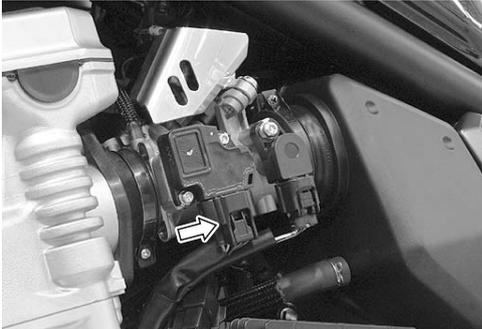
P1750-H for IAP sensor No.2 (Use of SDS)

Step	Action	Yes	No																				
1	<p>1) Click the data monitor button (1).</p>  <p style="text-align: right; font-size: small;">I718H1110251-01</p> <p>2) Check the manifold absolute pressure 2 data.</p> <table border="1" data-bbox="274 943 866 1059"> <thead> <tr> <th>Item</th> <th>Value</th> <th>Unit</th> <th></th> </tr> </thead> <tbody> <tr> <td><input type="checkbox"/> Engine speed</td> <td>0</td> <td>rpm</td> <td></td> </tr> <tr> <td><input type="checkbox"/> Manifold absolute pressure 1</td> <td>102.2</td> <td>kPa</td> <td></td> </tr> <tr> <td><input type="checkbox"/> Manifold absolute pressure 2</td> <td>126.7</td> <td>kPa</td> <td></td> </tr> <tr> <td><input type="checkbox"/> Engine coolant / oil temperature</td> <td>20.2</td> <td>°C</td> <td></td> </tr> </tbody> </table> <p style="text-align: right; font-size: small;">I718H1110181-03</p> <p>DTC - 1 Current: P1750-H Manifold absolute pressure circuit malfunction 2</p> <p><i>Approx. 126 kPa (1.26 kgf/cm³, 18 psi) and more OK?</i></p>	Item	Value	Unit		<input type="checkbox"/> Engine speed	0	rpm		<input type="checkbox"/> Manifold absolute pressure 1	102.2	kPa		<input type="checkbox"/> Manifold absolute pressure 2	126.7	kPa		<input type="checkbox"/> Engine coolant / oil temperature	20.2	°C		Go to Step 2.	Go to Step 4.
Item	Value	Unit																					
<input type="checkbox"/> Engine speed	0	rpm																					
<input type="checkbox"/> Manifold absolute pressure 1	102.2	kPa																					
<input type="checkbox"/> Manifold absolute pressure 2	126.7	kPa																					
<input type="checkbox"/> Engine coolant / oil temperature	20.2	°C																					
2	<p>1) Turn the ignition switch OFF.</p> <p>2) Lift and support the fuel tank. Refer to “Fuel Tank Removal and Installation in Section 1G (Page 1G-9)”.</p> <p>3) Check the IAP sensor (No.2) coupler for loose or poor contacts. If OK, then check the IAP sensor (No.2) lead wire continuity.</p>  <p style="text-align: right; font-size: small;">I718H1110168-03</p> <p>4) Disconnect the IAP sensor (No.2) coupler.</p> <p>5) Insert the needle pointed probes to the lead wire coupler.</p>	Go to Step 4.	W/BI wire shorted to Vcc, or B/Br wire open.																				

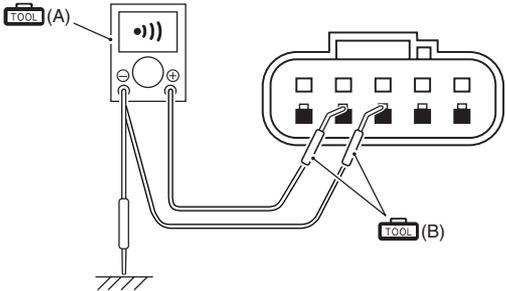
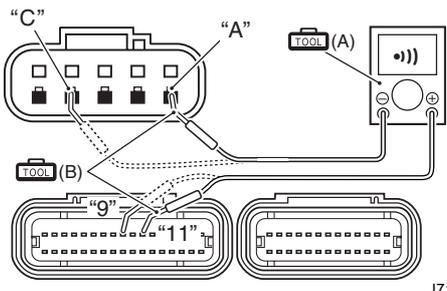
1A-55 Engine General Information and Diagnosis:

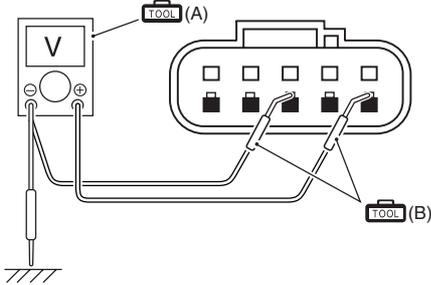
Step	Action	Yes	No
2	<p>6) Check the continuity between the R and G/B wire. If the sound is not heard from the tester, the circuit condition is OK.</p> <p>Special tool TOOL (A): 09900-25008 (Multi-circuit tester set) TOOL (B): 09900-25009 (Needle pointed probe set)</p> <p>Tester knob indication Continuity (•))</p>  <p style="text-align: right; font-size: small;">I718H1110023-03</p> <p>7) Disconnect the ECM coupler. Refer to “ECM Removal and Installation in Section 1C (Page 1C-1)”.</p> <p>8) Check the continuity between the G/B wire “C” and terminal “9”. If OK, then check the continuity between the B/Br wire “B” and terminal “29”.</p> <p>Special tool TOOL (A): 09900-25008 (Multi-circuit tester set) TOOL (B): 09900-25009 (Needle pointed probe set)</p> <p>Tester knob indication Continuity test (•))</p>  <p style="text-align: right; font-size: small;">I718H1110182-02</p> <p><i>Is the continuity OK?</i></p>	<p>Go to Step 4.</p>	<p>W/BI wire shorted to Vcc, or B/Br wire open.</p>

P1750-L for IAP sensor No.2 (Use of SDS)

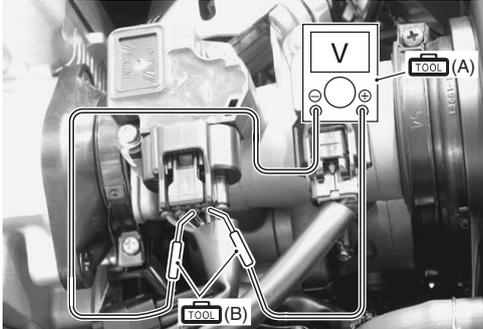
Step	Action	Yes	No																								
1	<p>1) Click the data monitor button (1).</p>  <p style="text-align: right; font-size: small;">I718H1110251-01</p> <p>2) Check the manifold absolute pressure 2 data.</p> <table border="1" data-bbox="272 943 866 1144"> <thead> <tr> <th>Item</th> <th>Value</th> <th>Unit</th> <th></th> </tr> </thead> <tbody> <tr> <td><input type="checkbox"/> Engine speed</td> <td>0</td> <td>rpm</td> <td></td> </tr> <tr> <td><input type="checkbox"/> Manifold absolute pressure 1</td> <td>102.2</td> <td>kPa</td> <td></td> </tr> <tr> <td><input type="checkbox"/> Manifold absolute pressure 2</td> <td>0.0</td> <td>kPa</td> <td></td> </tr> <tr> <td><input type="checkbox"/> Engine coolant / oil temperature</td> <td>20.2</td> <td>°C</td> <td></td> </tr> <tr> <td><input type="checkbox"/> Intake air temperature</td> <td>20.8</td> <td>°C</td> <td></td> </tr> </tbody> </table> <p style="text-align: right; font-size: small;">I718H1110183-02</p> <p><i>Approx. 0 kPa (0 kgf/cm³, 0 psi) and less OK?</i></p>	Item	Value	Unit		<input type="checkbox"/> Engine speed	0	rpm		<input type="checkbox"/> Manifold absolute pressure 1	102.2	kPa		<input type="checkbox"/> Manifold absolute pressure 2	0.0	kPa		<input type="checkbox"/> Engine coolant / oil temperature	20.2	°C		<input type="checkbox"/> Intake air temperature	20.8	°C		Go to Step 2.	Go to Step 4.
Item	Value	Unit																									
<input type="checkbox"/> Engine speed	0	rpm																									
<input type="checkbox"/> Manifold absolute pressure 1	102.2	kPa																									
<input type="checkbox"/> Manifold absolute pressure 2	0.0	kPa																									
<input type="checkbox"/> Engine coolant / oil temperature	20.2	°C																									
<input type="checkbox"/> Intake air temperature	20.8	°C																									
2	<p>1) Turn the ignition switch OFF.</p> <p>2) Check the IAP sensor (No.2) coupler for loose or poor contacts. If OK, then check the IAP sensor (No.2) lead wire continuity.</p>  <p style="text-align: right; font-size: small;">I718H1110168-03</p>	Go to Step 3.	R and G/B wire open, W/BI wire shorted to the ground.																								

1A-57 Engine General Information and Diagnosis:

Step	Action	Yes	No
2	<p>3) Disconnect the IAP sensor (No.2) coupler.</p> <p>4) Insert the needle pointed probes to the lead wire coupler.</p> <p>5) Check the continuity between the G/B wire and ground. Also, check the continuity between the G/B wire and B/Br wire. If the sound is not heard from the tester, the circuit condition is OK.</p> <p>Special tool TOOL (A): 09900-25008 (Multi-circuit tester set) TOOL (B): 09900-25009 (Needle pointed probe set)</p> <p>Tester knob indication Continuity (•)))</p>  <p style="text-align: right; font-size: small;">I718H1110027-04</p> <p>6) Disconnect the ECM coupler. Refer to “ECM Removal and Installation in Section 1C (Page 1C-1)”.</p> <p>7) Check the continuity between the R wire “A” and terminal “11”. Also, check the continuity between the G/B wire “C” and terminal “9”.</p> <p>Tester knob indication Continuity (•)))</p>  <p style="text-align: right; font-size: small;">I718H1110028-03</p> <p><i>Is the continuity OK?</i></p>	Go to Step 3.	R and G/B wire open, W/BI wire shorted to the ground.

Step	Action	Yes	No
3	<p>1) Connect the ECM coupler.</p> <p>2) Turn the ignition switch ON.</p> <p>3) Insert the needle pointed probes to the lead wire coupler.</p> <p>4) Measure the input voltage at the R wire and ground with the needle pointed probes. If OK, the measure the input voltage at the R wire and B/Br wire.</p> <p>Special tool</p> <p> (A): 09900-25008 (Multi-circuit tester set)</p> <p> (B): 09900-25009 (Needle pointed probe set)</p> <p>Tester knob indication</p> <p>Voltage (---)</p> <p>IAP sensor (No.2) input voltage</p> <p>4.5 – 5.5 V</p> <p>(+) terminal: R – (-) terminal: Ground, (+) terminal: R</p> <p>- (-) terminal: B/Br</p>  <p>I718H1110180-03</p> <p><i>Is the voltage OK?</i></p>	Go to Step 4.	Open or short circuit in the R wire or B/Br wire.

1A-59 Engine General Information and Diagnosis:

Step	Action	Yes	No
4	<p>1) Turn the ignition switch OFF.</p> <p>2) Connect the ECM coupler and IAP sensor (No.2) coupler.</p> <p>3) Insert the needle pointed probes to the lead wire coupler.</p> <p>4) Starter the engine at idle speed and measure the IAP sensor (No.2) output voltage at the wire side coupler between G/B wire and B/Br wire.</p> <p>Special tool  (A): 09900-25008 (Multi-circuit tester set)  (B): 09900-25009 (Needle pointed probe set)</p> <p>Tester knob indication Voltage (---)</p> <p>IAP sensor (No.2) output voltage 2.0 – 3.0 V at idle speed (+) terminal: G/BI – (-) terminal: B/Br</p>  <p style="text-align: right; font-size: small;">I718H1110173-03</p> <p><i>Is the voltage OK?</i></p>	<ul style="list-style-type: none"> • G/B, R or B/Br wire open or shorted to the ground, or poor “9”, “11” or “29” connection. • If wire and connection are OK, intermittent trouble or faulty ECM. • Recheck each terminal and wire harness for open circuit and poor connection. • Replace the ECM with a known good one, and inspect it again. Refer to “ECM Removal and Installation in Section 1C (Page 1C-1)”. 	<ul style="list-style-type: none"> • Open or short circuit in the G/B wire. • If wire is OK, replace the IAP sensor (No.2) with a new one. Refer to “Throttle Body Disassembly and Assembly in Section 1D (Page 1D-10)”.

P1750 for IAP sensor No.2 (Use of SDS)

Step	Action	Yes	No
1	<p>1) Check the IAP sensor (No.2) is installed securely on the throttle body.</p>  <p style="text-align: right; font-size: small;">I718H1110242-02</p> <p><i>Is the IAP sensor (No.2) installed securely?</i></p>	Intermittent trouble.	<ul style="list-style-type: none"> • Retighten the IAP sensor (No.2). • Replace the IAP sensor (No.2) with a new one. Refer to “Throttle Body Disassembly and Assembly in Section 1D (Page 1D-10)”.

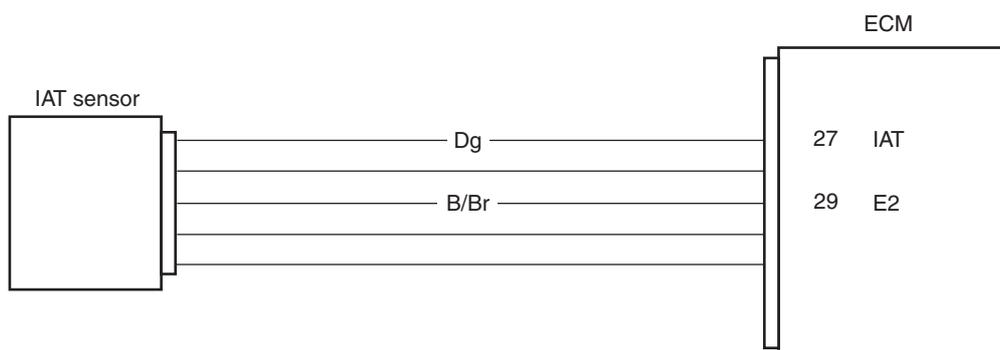
DTC “C21” (P0110-H/L): IAT Sensor Circuit Malfunction

B718H11104015

Detected Condition and Possible Cause

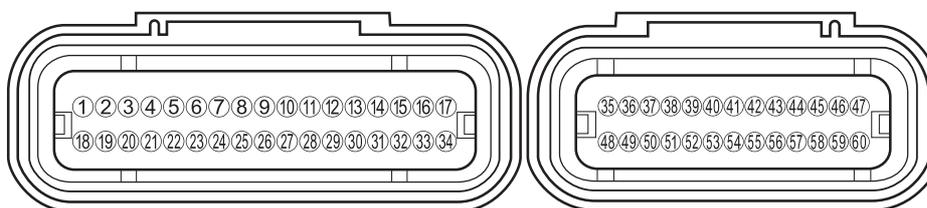
Detected Condition		Possible Cause
C21	Output voltage is not with in the following range. $0.15\text{ V} \leq \text{Sensor voltage} < 4.85\text{ V}$	<ul style="list-style-type: none"> IAT sensor circuit open or short. IAT sensor malfunction. ECM malfunction.
P0110	H Sensor voltage is higher than specified value.	<ul style="list-style-type: none"> IAT sensor circuit open or ground circuit open.
	L Sensor voltage is lower than specified value.	<ul style="list-style-type: none"> IAT sensor circuit shorted to the ground.

Wiring Diagram



I718H1110056-04

ECM coupler (Harness side)



I718H1110240-01

Troubleshooting

⚠ CAUTION

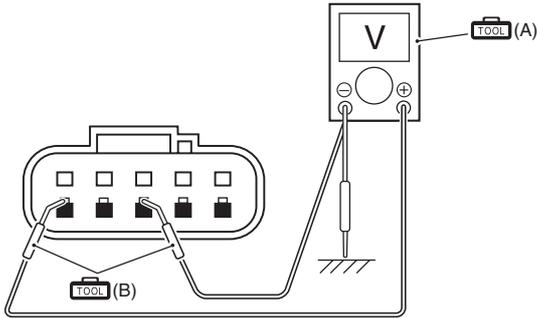
When using the multi-circuit tester, do not strongly touch the terminal of the ECM coupler with a needle pointed tester probe to prevent the terminal damage or terminal bend.

NOTE

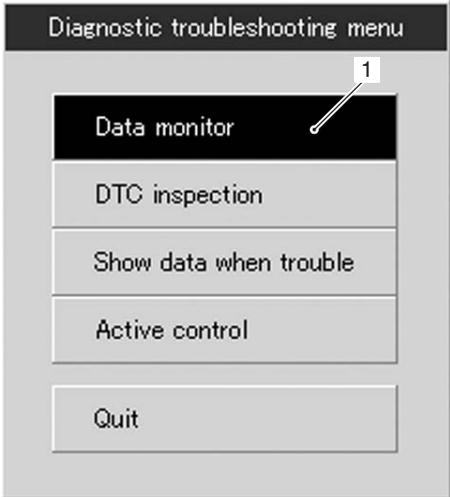
- After repairing the trouble, clear the DTC using SDS tool. Refer to “Use of SDS Diagnosis Reset Procedures (Page 1A-13)”.
- IAT sensor is incorporated in the IAP sensor/TP sensor.

1A-61 Engine General Information and Diagnosis:

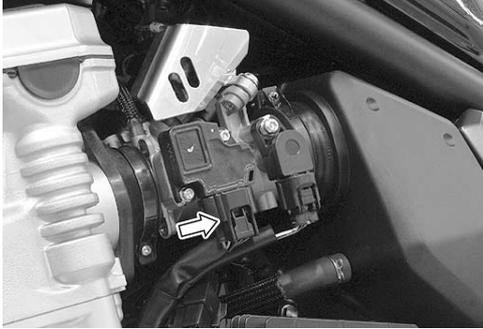
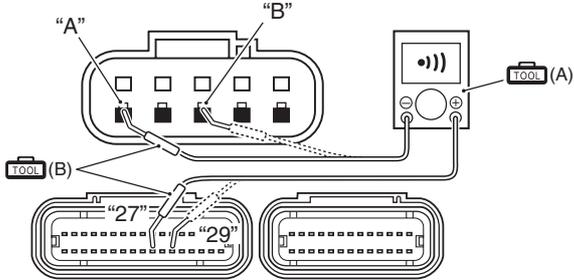
C21 (Use of mode select switch)

Step	Action	Yes	No
1	<p>1) Turn the ignition switch OFF.</p> <p>2) Check the IAT sensor coupler for loose or poor contacts. If OK, then measure the IAT sensor input voltage.</p>  <p style="text-align: right; font-size: small;">I718H1110252-02</p> <p>3) Disconnect the IAT sensor coupler and turn the ignition switch ON.</p> <p>4) Insert the needle pointed probes to the lead wire coupler.</p> <p>5) Measure the voltage between the Dg wire terminal and ground. If OK, then measure the input voltage between the Dg wire terminal and B/Br wire terminal.</p> <p>Special tool  (A): 09900-25008 (Multi-circuit tester set)  (B): 09900-25009 (Needle pointed probe set)</p> <p>Tester knob indication Voltage (---)</p> <p>IAT sensor input voltage 4.5 – 5.5 V (+) terminal: Dg – (-) terminal: Ground, (+) terminal: Dg – (-) terminal: B/Br)</p>  <p style="text-align: right; font-size: small;">I718H1110057-04</p> <p><i>Is the voltage OK?</i></p>	Go to Step 3.	<ul style="list-style-type: none"> • Loose or poor contacts on the ECM coupler. • Open or short circuit in the Dg or B/Br wire.

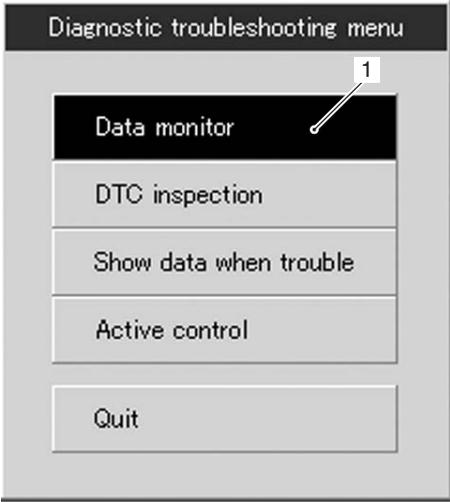
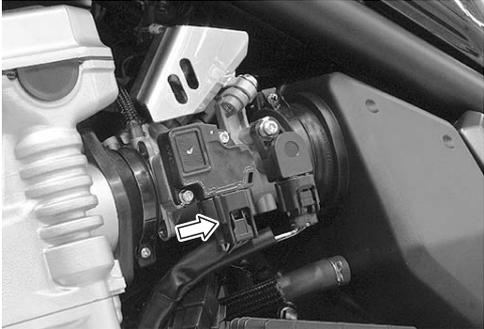
P0110-H (Use of SDS)

Step	Action	Yes	No																				
1	<p>1) Click the data monitor button (1).</p>  <p style="text-align: right; font-size: small;">I718H1110251-01</p> <p>2) Check the intake air temperature data.</p> <table border="1" data-bbox="272 943 866 1059"> <thead> <tr> <th>Item</th> <th>Value</th> <th>Unit</th> <th></th> </tr> </thead> <tbody> <tr> <td><input type="checkbox"/> Engine speed</td> <td>0</td> <td>rpm</td> <td></td> </tr> <tr> <td><input type="checkbox"/> Intake air temperature</td> <td>-30.0</td> <td>°C</td> <td></td> </tr> <tr> <td><input type="checkbox"/> Engine coolant / oil temperature</td> <td>74.2</td> <td>°C</td> <td></td> </tr> <tr> <td><input type="checkbox"/> Throttle position</td> <td>27.9</td> <td>°</td> <td></td> </tr> </tbody> </table> <p style="text-align: right; font-size: small;">I718H1110184-02</p> <p>DTC - 1 Current P0110-H Intake air temperature circuit malfunction</p> <p><i>Approx. -30 °C (-22 °F) and less OK?</i></p>	Item	Value	Unit		<input type="checkbox"/> Engine speed	0	rpm		<input type="checkbox"/> Intake air temperature	-30.0	°C		<input type="checkbox"/> Engine coolant / oil temperature	74.2	°C		<input type="checkbox"/> Throttle position	27.9	°		Go to Step 2.	Go to Step 3.
Item	Value	Unit																					
<input type="checkbox"/> Engine speed	0	rpm																					
<input type="checkbox"/> Intake air temperature	-30.0	°C																					
<input type="checkbox"/> Engine coolant / oil temperature	74.2	°C																					
<input type="checkbox"/> Throttle position	27.9	°																					

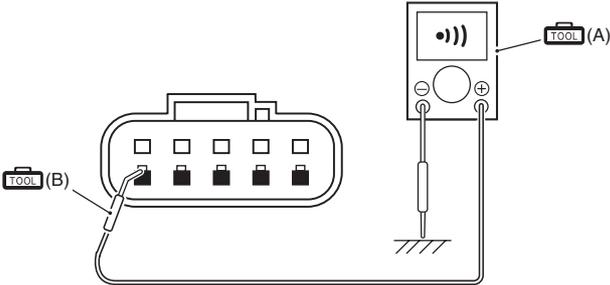
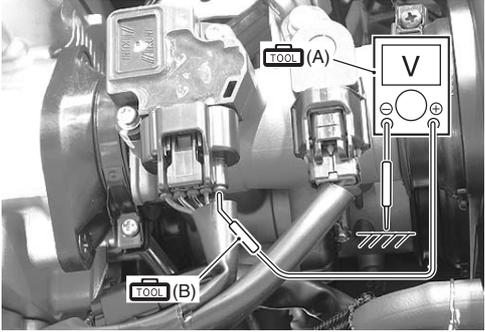
1A-63 Engine General Information and Diagnosis:

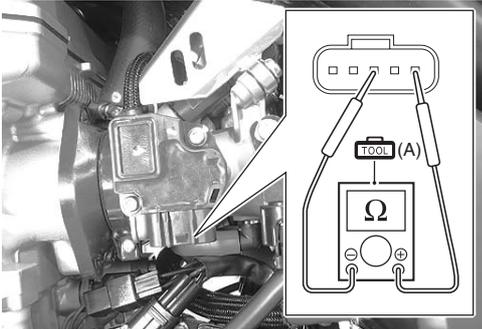
Step	Action	Yes	No
2	<p>1) Turn the ignition switch OFF.</p> <p>2) Check the IAT sensor coupler for loose or poor contacts. If OK, then check the IAT sensor lead wire continuity.</p>  <p style="text-align: right; font-size: small;">I718H1110168-03</p> <p>3) Disconnect the IAT sensor coupler.</p> <p>4) Disconnect the ECM coupler. Refer to "ECM Removal and Installation in Section 1C (Page 1C-1)".</p> <p>5) Insert the needle pointed probes to the lead wire coupler.</p> <p>6) Check the continuity between the Dg wire "B" and terminal "27". Also, check the continuity between the B/ Br wire "A" and terminal "29".</p> <p>Special tool TOOL (A): 09900-25008 (Multi-circuit tester set) TOOL (B): 09900-25009 (Needle pointed probe set)</p> <p>Tester knob indication Continuity test (•)))</p>  <p style="text-align: right; font-size: small;">I718H1110060-03</p> <p><i>Is the continuity OK?</i></p>	<p>Connect the ECM coupler and go to Step 3.</p>	<p>Dg or B/Br wire open.</p>

P0110-L (Use of SDS)

Step	Action	Yes	No															
1	<p>1) Click the data monitor button (1).</p>  <p style="text-align: right; font-size: small;">I718H1110251-01</p> <p>2) Check the intake air temperature data.</p> <table border="1" data-bbox="272 943 866 1131"> <thead> <tr> <th>Item</th> <th>Value</th> <th>Unit</th> </tr> </thead> <tbody> <tr> <td><input type="checkbox"/> Engine speed</td> <td>0</td> <td>rpm</td> </tr> <tr> <td><input type="checkbox"/> Intake air temperature</td> <td>125.6</td> <td>°C</td> </tr> <tr> <td><input type="checkbox"/> Engine coolant / oil temperature</td> <td>72.9</td> <td>°C</td> </tr> <tr> <td><input type="checkbox"/> Throttle position</td> <td>27.9</td> <td>°</td> </tr> </tbody> </table> <p style="text-align: right; font-size: small;">I718H1110185-02</p> <p><i>Approx. 125 °C (257 °F) and more OK?</i></p>	Item	Value	Unit	<input type="checkbox"/> Engine speed	0	rpm	<input type="checkbox"/> Intake air temperature	125.6	°C	<input type="checkbox"/> Engine coolant / oil temperature	72.9	°C	<input type="checkbox"/> Throttle position	27.9	°	Go to Step 2.	Go to Step 3.
Item	Value	Unit																
<input type="checkbox"/> Engine speed	0	rpm																
<input type="checkbox"/> Intake air temperature	125.6	°C																
<input type="checkbox"/> Engine coolant / oil temperature	72.9	°C																
<input type="checkbox"/> Throttle position	27.9	°																
2	<p>1) Turn the ignition switch OFF.</p> <p>2) Check the IAT sensor coupler for loose or poor contacts. If OK, then check the IAT sensor lead wire continuity.</p>  <p style="text-align: right; font-size: small;">I718H1110168-03</p> <p>3) Disconnect the IAT sensor coupler.</p>	Go to Step 3.	<ul style="list-style-type: none"> • Dg wire shorted to the ground. • If wire is OK, go to Step 3. 															

1A-65 Engine General Information and Diagnosis:

Step	Action	Yes	No
2	<p>4) Insert the needle pointed probes to the lead wire coupler.</p> <p>5) Check the continuity between the Dg wire and ground. If the sound is not heard from the tester, the circuit condition is OK.</p> <p>Special tool TOOL (A): 09900-25008 (Multi-circuit tester set) TOOL (B): 09900-25009 (Needle pointed probe set)</p> <p>Tester knob indication Continuity test (•)))</p>  <p>6) Connect the IAT sensor coupler.</p> <p>7) Turn the ignition switch ON.</p> <p>8) Insert the needle pointed probes to the lead wire coupler.</p> <p>9) Measure the output voltage between the Dg wire and ground.</p> <p>Special tool TOOL (A): 09900-25008 (Multi-circuit tester set) TOOL (B): 09900-25009 (Needle pointed probe set)</p> <p>Tester knob indication Voltage (---)</p> <p>IAT sensor output voltage 2.4 V at 23 °C (68 °F) (+) terminal: Dg – (-) terminal: Ground)</p>  <p><i>Are the continuity and voltage OK?</i></p>	<p>Go to Step 3.</p>	<ul style="list-style-type: none"> • Dg wire shorted to the ground. • If wire is OK, go to Step 3.

Step	Action	Yes	No
3	<p>1) Turn the ignition switch OFF.</p> <p>2) Disconnect the IAT sensor coupler.</p> <p>3) Measure the IAT sensor resistance.</p> <p>Special tool  (A): 09900-25008 (Multi-circuit tester set)</p> <p>Tester knob indication Resistance (Ω)</p> <p>IAT sensor resistance Approx. 2.56 kΩ at 20 °C (68 °F) (Terminal – Terminal)</p>  <p style="text-align: right; font-size: small;">I718H1110186-02</p> <p><i>Is the resistance OK?</i></p>	<ul style="list-style-type: none"> • Dg or B/Br wire open or shorted to the ground, or poor “27” or “29” connection. • If wire and connection are OK, intermittent trouble or faulty ECM. • Recheck each terminal and wire harness for open circuit and poor connection. • Replace the ECM with a known good one, and inspect it again. Refer to “ECM Removal and Installation in Section 1C (Page 1C-1)”. 	<p>Replace the IAT sensor with a new one. Refer to “Throttle Body Disassembly and Assembly in Section 1D (Page 1D-10)”.</p>

1A-67 Engine General Information and Diagnosis:

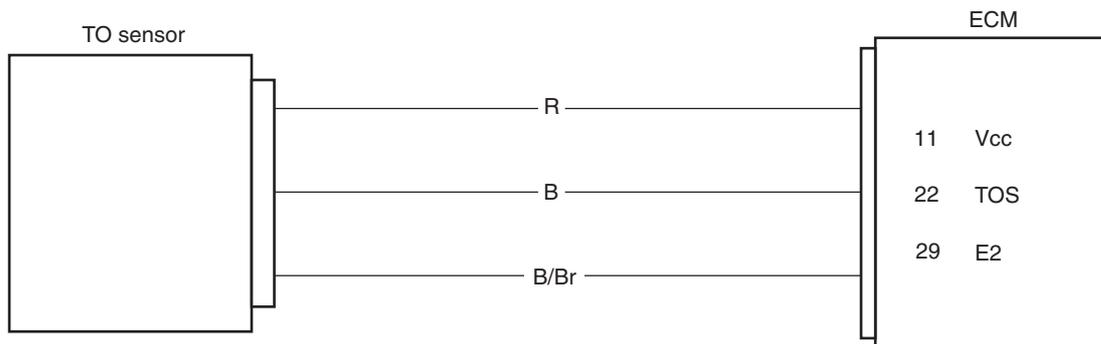
DTC “C23” (P1651-H/L): TO Sensor Circuit Malfunction

B718H11104016

Detected Condition and Possible Cause

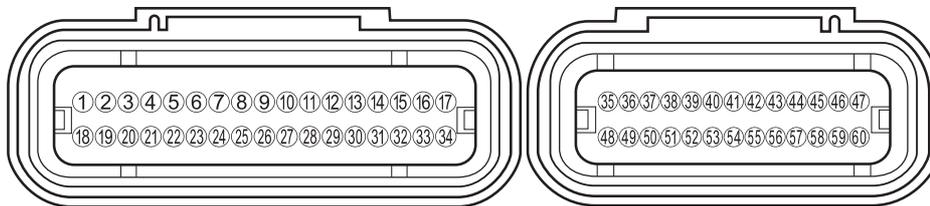
Detected Condition		Possible Cause
C23	The sensor voltage should be the following for 2 sec. and more, after ignition switch is turned ON. 0.2 V ≤ Sensor voltage < 4.8 V	<ul style="list-style-type: none"> IAT sensor circuit open or short. IAT sensor malfunction. ECM malfunction.
P1651	H Sensor voltage is higher than specified value.	<ul style="list-style-type: none"> IAT sensor circuit open or ground circuit open.
	L Sensor voltage is lower than specified value.	<ul style="list-style-type: none"> IAT sensor circuit shorted to the ground.

Wiring Diagram



I718H1110066-02

ECM coupler (Harness side)



I718H1110240-01

Troubleshooting

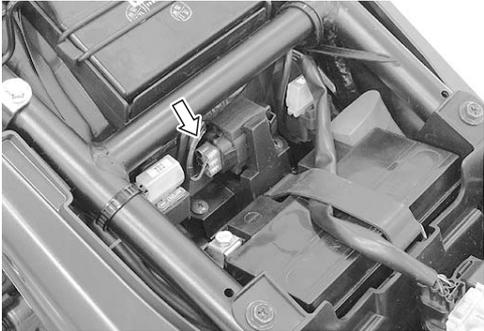
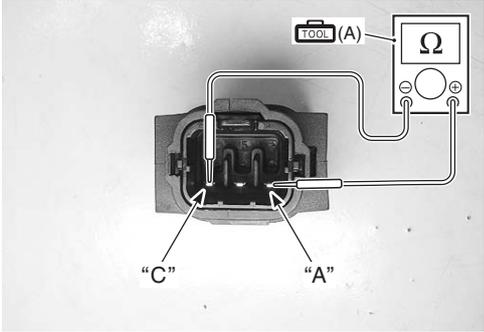
⚠ CAUTION

When using the multi-circuit tester, do not strongly touch the terminal of the ECM coupler with a needle pointed tester probe to prevent the terminal damage or terminal bend.

NOTE

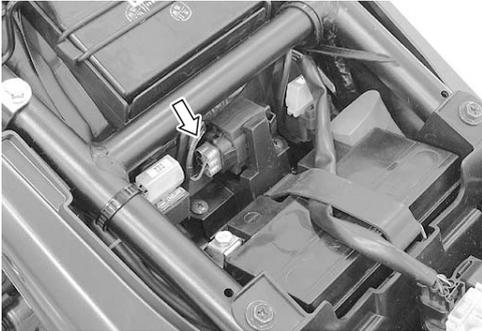
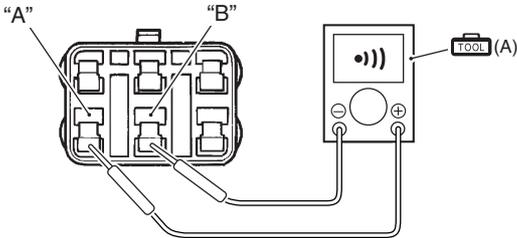
After repairing the trouble, clear the DTC using SDS tool. Refer to “Use of SDS Diagnosis Reset Procedures (Page 1A-13)”.

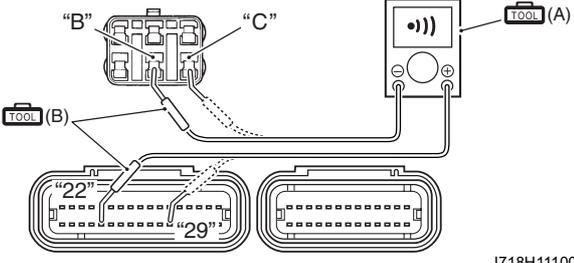
C23 (Use of mode select switch)

Step	Action	Yes	No
1	<p>1) Turn the ignition switch OFF.</p> <p>2) Remove the seat. Refer to "Exterior Parts Removal and Installation in Section 9D (Page 9D-6)".</p> <p>3) Check the TO sensor coupler for loose or poor contacts. If OK, then measure the TO sensor resistance.</p>  <p>4) Disconnect the TO sensor coupler and dismantle the TO sensor. Refer to "TO Sensor Removal and Installation in Section 1C (Page 1C-3)".</p> <p>5) Measure the resistance between terminal "A" and terminal "C".</p> <p>Special tool  (A): 09900-25008 (Multi-circuit tester set)</p> <p>TO sensor resistance 16.5 – 22.3 kΩ (Terminal "A" – Terminal "C")</p> <p>Tester knob indication Resistance (Ω)</p>  <p><i>Is the resistance OK?</i></p>	<p>Go to Step 2.</p>	<p>Replace the TO sensor with a new one. Refer to "TO Sensor Removal and Installation in Section 1C (Page 1C-3)".</p>

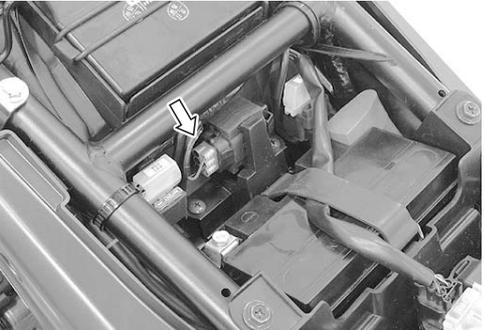
1A-69 Engine General Information and Diagnosis:

P1651-H (Use of SDS)

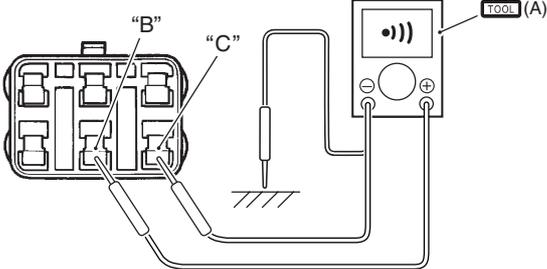
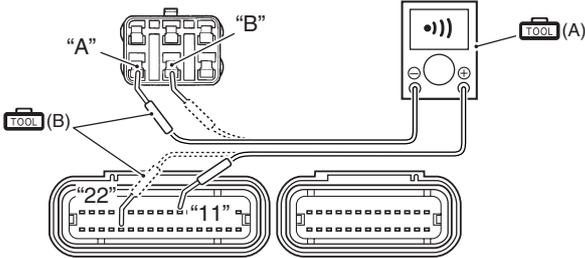
Step	Action	Yes	No
1	<p>1) Turn the ignition switch OFF.</p> <p>2) Remove the seat. Refer to “Exterior Parts Removal and Installation in Section 9D (Page 9D-6)”.</p> <p>3) Check the TO sensor coupler for loose or poor contacts. If OK, then check the IAT sensor lead wire continuity.</p>  <p style="text-align: right; font-size: small;">I718H1110187-02</p> <p>4) Disconnect the TO sensor coupler.</p> <p>5) Check the continuity between the R wire “A” and B wire “B”. If the sound is not heard from the tester, the circuit condition is OK.</p> <p>Special tool  (A): 09900–25008 (Multi-circuit tester set)</p> <p>Tester knob indication Continuity test (•)))</p>  <p style="text-align: right; font-size: small;">I718H1110070-02</p> <p>6) Disconnect the ECM coupler. Refer to “ECM Removal and Installation in Section 1C (Page 1C-1)”.</p> <p>7) Insert the needle pointed probes to the lead wire coupler.</p>	Go to Step 2.	B wire shorted to Vcc, or B/Br wire open.

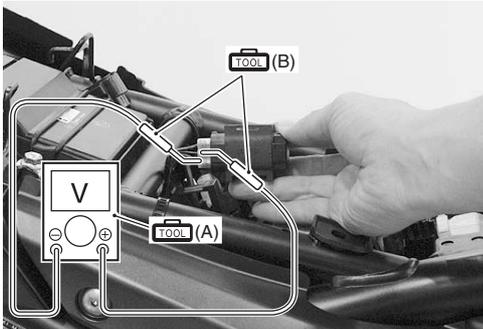
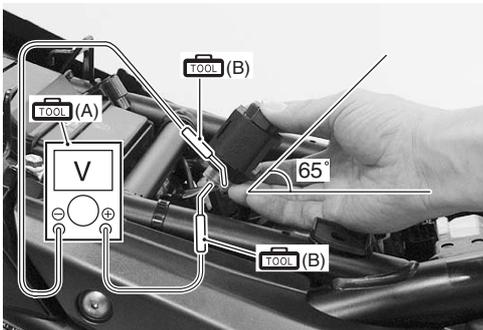
Step	Action	Yes	No
1	<p>8) Check the continuity between the B wire "B" and terminal "22". Also, check the continuity between B/Br wire "C" and terminal "29".</p> <p>Special tool TOOL (A): 09900-25008 (Multi-circuit tester set) TOOL (B): 09900-25009 (Needle pointed probe set)</p> <p>Tester knob indication Continuity test (•)))</p>  <p>I718H1110071-02</p> <p><i>Is the continuity OK?</i></p>	Go to Step 2.	B wire shorted to Vcc, or B/Br wire open.

P1651-L (Use of SDS)

Step	Action	Yes	No
1	<p>1) Turn the ignition switch OFF.</p> <p>2) Remove the seat. Refer to "Exterior Parts Removal and Installation in Section 9D (Page 9D-6)".</p> <p>3) Check the TO sensor coupler for loose or poor contacts. If OK, then check the TO sensor lead wire continuity.</p>  <p>I718H1110187-02</p>	Go to Step 2.	R or B wire open, or B wire shorted to the ground.

1A-71 Engine General Information and Diagnosis:

Step	Action	Yes	No
1	<p>4) Disconnect the TO sensor coupler.</p> <p>5) Check the continuity between the B wire "B" and ground. Also, check the continuity between the B wire "B" and B/Br wire "C". If the sound is not heard from the tester, the circuit condition is OK.</p> <p>Special tool TOOL (A): 09900-25008 (Multi-circuit tester set)</p> <p>Tester knob indication Continuity test (•))</p>  <p style="text-align: right; font-size: small;">I718H1110073-02</p> <p>6) Disconnect the ECM coupler. Refer to "ECM Removal and Installation in Section 1C (Page 1C-1)".</p> <p>7) Insert the needle pointed probes to the lead wire coupler.</p> <p>8) Check the continuity between the R wire "A" and terminal "11". Also, then check the continuity between B wire "B" and terminal "22".</p> <p>Special tool TOOL (A): 09900-25008 (Multi-circuit tester set) TOOL (B): 09900-25009 (Needle pointed probe set)</p> <p>Tester knob indication Continuity test (•))</p>  <p style="text-align: right; font-size: small;">I718H1110074-02</p> <p><i>Is the continuity OK?</i></p>	Go to Step 2.	R or B wire open, or B wire shorted to the ground.

Step	Action	Yes	No
2	<p>1) Connect the ECM coupler and TO sensor coupler.</p> <p>2) Dismount the TO sensor from its bracket. Refer to "TO Sensor Removal and Installation in Section 1C (Page 1C-3)".</p> <p>3) Insert the needle pointed probes to the lead wire coupler.</p> <p>4) Turn the ignition switch ON.</p> <p>5) Measure the voltage at the wire side coupler between B and B/Br wire.</p> <p>Special tool TOOL (A): 09900-25008 (Multi-circuit tester set) TOOL (B): 09900-25009 (Needle pointed probe set)</p> <p>Tester knob indication Voltage (---)</p> <p>TO sensor voltage (Normal) 0.4 – 1.4 V (+) terminal: B – (-) terminal: B/Br)</p>  <p style="text-align: right; font-size: small;">I718H1110189-03</p> <p>6) Measure the voltage when it is leaned 65° and more to left and right, from the horizontal level.</p> <p>TO sensor voltage (Leaning) 3.7 – 4.4 V (+) terminal: B – (-) terminal: B/Br)</p>  <p style="text-align: right; font-size: small;">I718H1110190-03</p> <p><i>Is the voltage OK?</i></p>	<ul style="list-style-type: none"> • R, B or B/Br wire open or shorted to the ground, or poor "11", "22" or "29" connection. • If wire and connection are OK, intermittent trouble or faulty ECM. • Recheck each terminal and wire harness for open circuit and poor connection. • Replace the ECM with a known good one, and inspect it again. Refer to "ECM Removal and Installation in Section 1C (Page 1C-1)". 	<ul style="list-style-type: none"> • Loosen or poor contacts on the ECM coupler. • Open or short circuit. • Replace the TO sensor with a new one. Refer to "TO Sensor Removal and Installation in Section 1C (Page 1C-3)".

1A-73 Engine General Information and Diagnosis:

DTC “C24” (P0351), “C25” (P0352), “C26” (P0353) or “C27” (P0354): Ignition System Malfunction

B718H11104017

NOTE

Refer to “No Spark or Poor Spark in Section 1H (Page 1H-3)” for details.

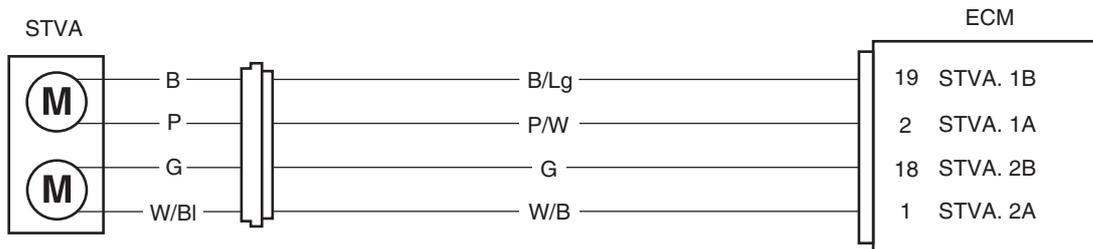
DTC “C28” (P1655): Secondary Throttle Valve Actuator (STVA) Malfunction

B718H11104018

Detected Condition and Possible Cause

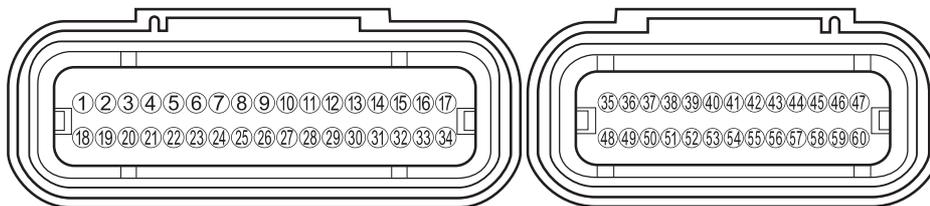
Detected Condition	Possible Cause
The operation voltage does not reach the STVA. ECM does not receive communication signal from the STVA.	<ul style="list-style-type: none"> • STVA malfunction. • STVA circuit open or short. • STVA motor malfunction.

Wiring Diagram



I718H1110077-04

ECM coupler (Harness side)



I718H1110240-01

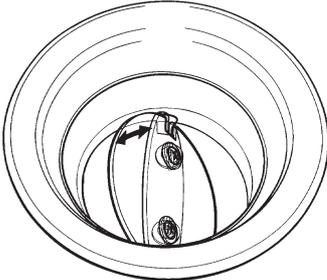
Troubleshooting

⚠ CAUTION

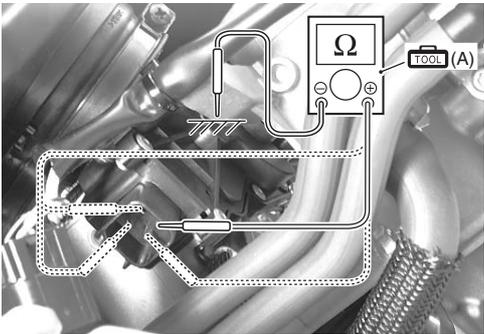
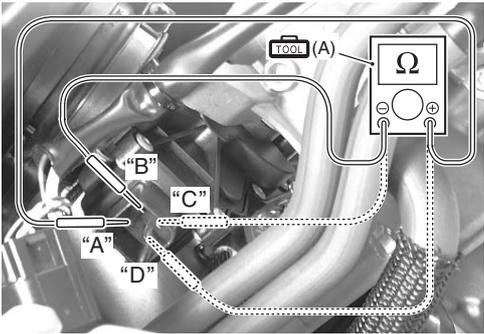
When using the multi-circuit tester, do not strongly touch the terminal of the ECM coupler with a needle pointed tester probe to prevent the terminal damage or terminal bend.

NOTE

After repairing the trouble, clear the DTC using SDS tool. Refer to “Use of SDS Diagnosis Reset Procedures (Page 1A-13)”.

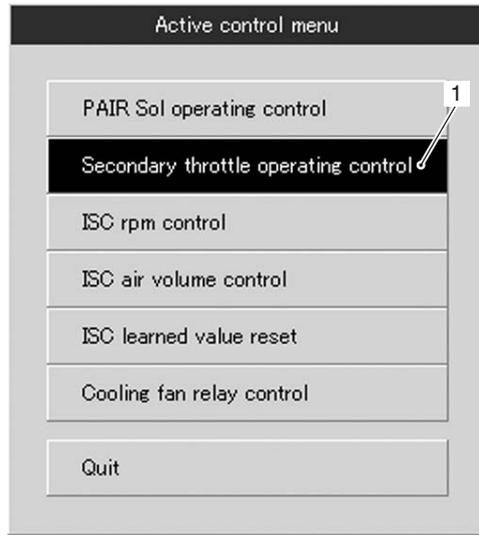
Step	Action	Yes	No
1	<p>1) Remove the regulator/rectifier. Refer to "Regulator / Rectifier Construction in Section 1J (Page 1J-8)".</p> <p>2) Check the STVA lead wire coupler for loose or poor contacts.</p>  <p style="text-align: right; font-size: small;">I718H1110191-01</p> <p>3) Move the air cleaner backward. Refer to "Air Cleaner Element Removal and Installation in Section 1D (Page 1D-6)".</p> <p>4) Turn the ignition switch ON to check the STV operation. (STVA operating order: Full open → 15% open)</p>  <p style="text-align: right; font-size: small;">I705H1110063-01</p> <p><i>Is the operating OK?</i></p>	Go to Step 2.	<ul style="list-style-type: none"> • Loose or poor contacts on the coupler. • Open or short circuit in the B/Lg, P/W, W/B or G wire. • If wire and connection are OK, go to Step 2.

1A-75 Engine General Information and Diagnosis:

Step	Action	Yes	No
2	<p>1) Turn the ignition switch OFF.</p> <p>2) Move the throttle body right side. Refer to "Throttle Body Removal and Installation in Section 1D (Page 1D-9)".</p> <p>3) Disconnect the STVA lead wire coupler.</p> <p>4) Check the continuity between each terminal and ground.</p> <p>Special tool  (A): 09900-25008 (Multi-circuit tester set)</p> <p>Tester knob indication Resistance (Ω)</p> <p>STVA continuity $\infty \Omega$ (Infinity) (Terminal – Ground)</p>  <p style="text-align: right; font-size: small;">I718H1110192-02</p> <p>5) If OK, then measure the STVA resistance (between the B wire "A" and P wire "B") and (between the G wire "C" and W/BI wire "D").</p> <p>STVA resistance Approx. 7.0 Ω (Terminal "A" – Ground "B", Terminal "C" – Ground "D")</p>  <p style="text-align: right; font-size: small;">I718H1110193-02</p> <p><i>Is the resistance OK?</i></p>	<ul style="list-style-type: none"> • W/B, P/W, G and B/Lg wire open or shorted to the ground, or poor "1", "2", "18" and "19" connection. • If wire and connection are OK, intermittent trouble or faulty ECM. • Recheck each terminal and wire harness for open circuit and poor connection. • Replace the ECM with a known good one, and inspect it again. Refer to "ECM Removal and Installation in Section 1C (Page 1C-1)". 	<ul style="list-style-type: none"> • Loose or poor contacts on the ECM coupler. • Replace the STVA with a new one. Refer to "Throttle Body Disassembly and Assembly in Section 1D (Page 1D-10)".

Active Control Inspection

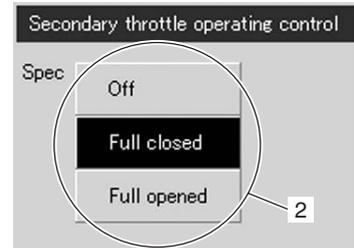
- 1) Set up the SDS tool. (Refer to the SDS operation manual for further details.)
- 2) Turn the ignition switch ON.
- 3) Click "Secondary throttle operating control" (1).



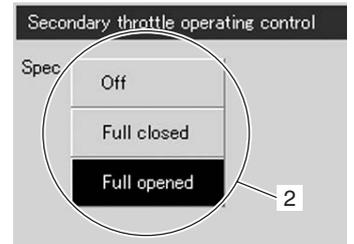
I718H1110247-01

- 4) Click each button (2).
At this time, if an operation sound is heard from the STVA, the function is normal.

Item	Value	Unit	
<input type="checkbox"/> Engine speed	0	rpm	
<input type="checkbox"/> Secondary throttle full opened	Except full opn		
<input type="checkbox"/> Secondary throttle full closed	Full closed		
<input type="checkbox"/> Intake air temperature	52.8	°C	
<input type="checkbox"/> Engine coolant / oil temperature	67.3	°C	
<input type="checkbox"/> Throttle position	27.9	°	



Item	Value	Unit	
<input type="checkbox"/> Engine speed	0	rpm	
<input type="checkbox"/> Secondary throttle full opened	Full opened		
<input type="checkbox"/> Secondary throttle full closed	Except full cls		
<input type="checkbox"/> Intake air temperature	52.8	°C	
<input type="checkbox"/> Engine coolant / oil temperature	67.3	°C	
<input type="checkbox"/> Throttle position	27.9	°	



I718H1110195-02

1A-77 Engine General Information and Diagnosis:

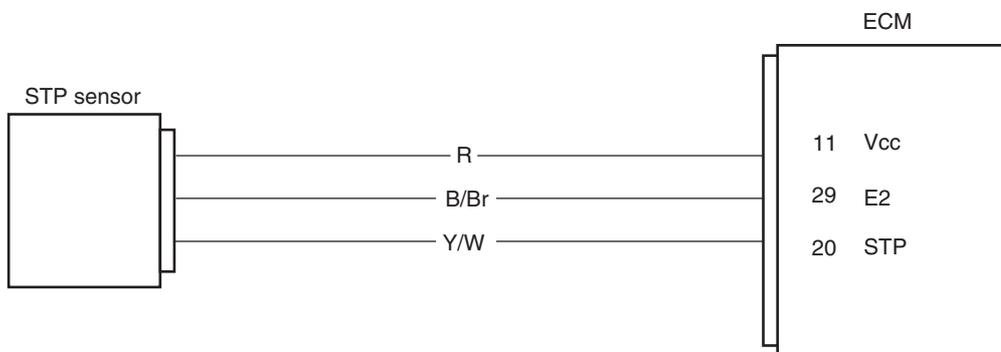
DTC “C29” (P1654-H/L): Secondary Throttle Position Sensor (STPS) Circuit Malfunction

B718H11104019

Detected Condition and Possible Cause

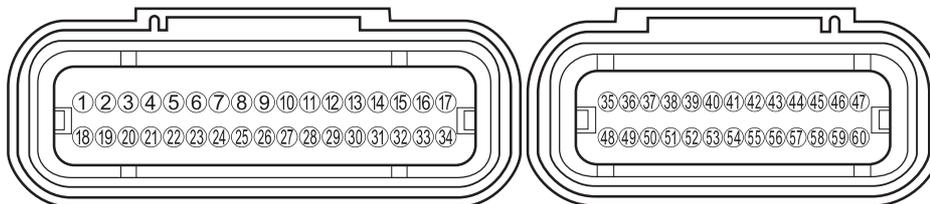
Detected Condition		Possible Cause
C29	Signal voltage is not within the following range. Difference between actual throttle opening and opening calculated by ECM is larger than specified value. $0.15\text{ V} \leq \text{Sensor voltage} < 4.85\text{ V}$	<ul style="list-style-type: none"> • STP sensor maladjusted. • STP sensor circuit open or short. • STP sensor malfunction. • ECM malfunction.
P1654	H Sensor voltage is higher than specified value.	• STP sensor circuit shorted to Vcc or ground circuit open.
	L Sensor voltage is lower than specified value.	• STP sensor circuit open or shorted to the ground or Vcc circuit open.

Wiring Diagram



I718H1110083-02

ECM coupler (Harness side)



I718H1110240-01

Troubleshooting

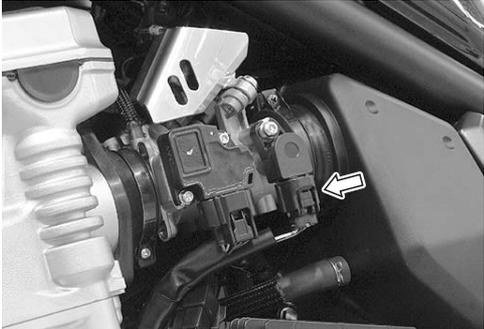
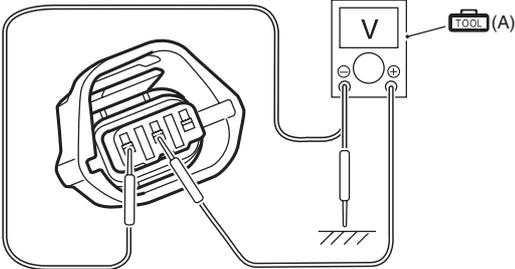
⚠ CAUTION

When using the multi-circuit tester, do not strongly touch the terminal of the ECM coupler with a needle pointed tester probe to prevent the terminal damage or terminal bend.

NOTE

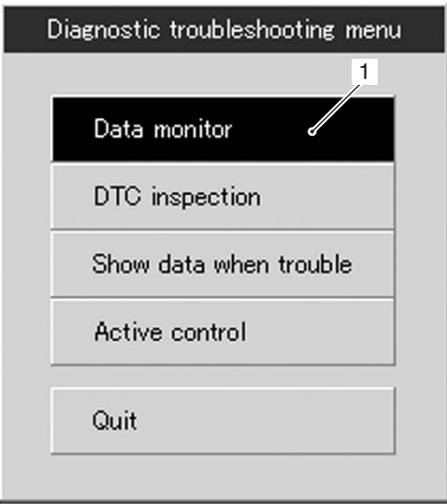
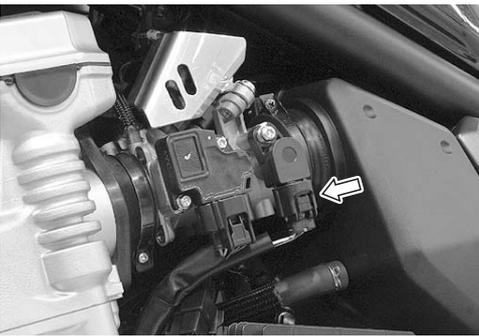
After repairing the trouble, clear the DTC using SDS tool. Refer to “Use of SDS Diagnosis Reset Procedures (Page 1A-13)”.

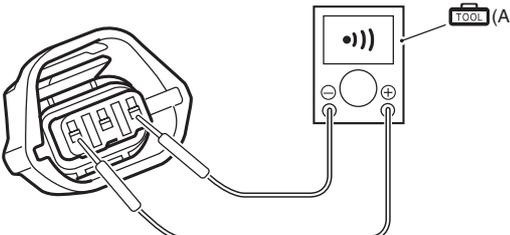
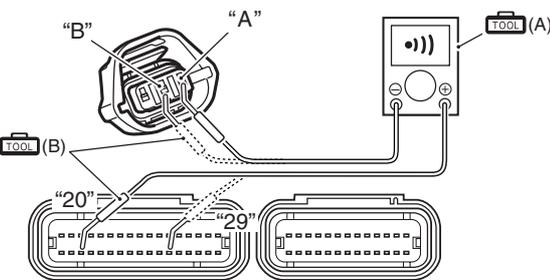
C29 (Use of mode select switch)

Step	Action	Yes	No
1	<p>1) Turn the ignition switch OFF.</p> <p>2) Check the STP sensor coupler for loose or poor contacts. If OK, then measure the STP sensor input voltage.</p>  <p style="text-align: right; font-size: small;">I718H1110253-01</p> <p>3) Disconnect the STP sensor coupler.</p> <p>4) Turn the ignition switch ON.</p> <p>5) Measure the voltage at the R wire and ground. Also, measure the voltage at the R wire and B/Br wire.</p> <p>Special tool  (A): 09900-25008 (Multi-circuit tester set)</p> <p>Tester knob indication Voltage (---)</p> <p>STP sensor input voltage 4.5 – 5.5 V (+) terminal: R – (-) terminal: Ground, (+) terminal: R – (-) terminal: B/Br)</p>  <p style="text-align: right; font-size: small;">I718H1110197-02</p> <p><i>Is the voltage OK?</i></p>	<p>Go to Step 4.</p>	<ul style="list-style-type: none"> • Loose or poor contacts on the ECM coupler. • Open or short circuit in the R wire or B/Br wire.

1A-79 Engine General Information and Diagnosis:

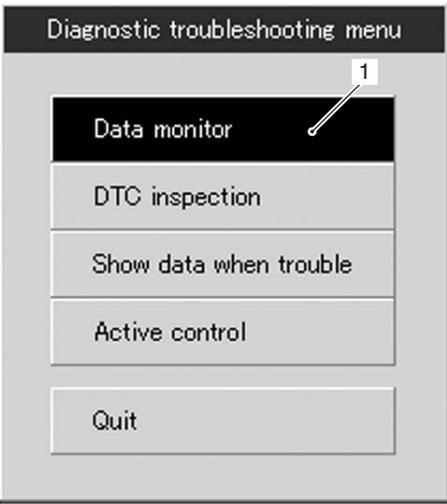
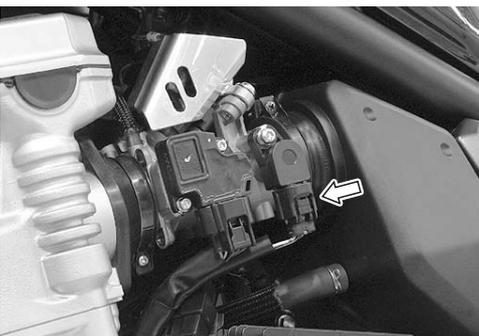
P1654-H (Use of SDS)

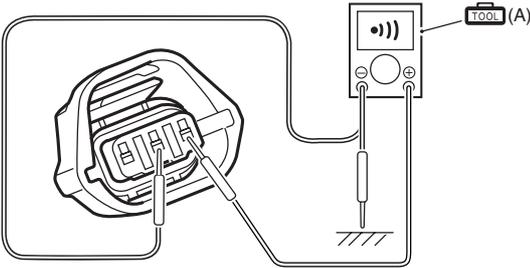
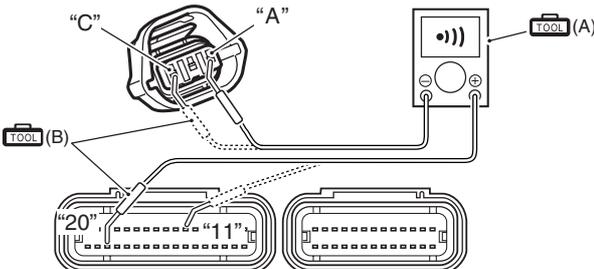
Step	Action	Yes	No															
1	<p>1) Click the data monitor button (1).</p>  <p style="text-align: right; font-size: small;">I718H1110251-01</p> <p>2) Check the secondary throttle actuator position sensor data.</p> <table border="1" data-bbox="223 974 813 1120"> <thead> <tr> <th>Item</th> <th>Value</th> <th>Unit</th> </tr> </thead> <tbody> <tr> <td><input type="checkbox"/> Engine speed</td> <td>0</td> <td>rpm</td> </tr> <tr> <td><input type="checkbox"/> Engine coolant / oil temperature</td> <td>35.3</td> <td>°C</td> </tr> <tr> <td><input type="checkbox"/> Throttle position</td> <td>27.9</td> <td>°</td> </tr> <tr> <td><input type="checkbox"/> Secondary throttle actuator position sensor</td> <td>100.0</td> <td>%</td> </tr> </tbody> </table> <p style="font-size: x-small;">DTC - 1 Current P1654-H Secondary throttle actuator position sensor circuit malfunction</p> <p style="text-align: right; font-size: small;">I718H1110198-01</p> <p><i>Secondary throttle position approx. 100% and more OK?</i></p>	Item	Value	Unit	<input type="checkbox"/> Engine speed	0	rpm	<input type="checkbox"/> Engine coolant / oil temperature	35.3	°C	<input type="checkbox"/> Throttle position	27.9	°	<input type="checkbox"/> Secondary throttle actuator position sensor	100.0	%	Go to Step 2.	Go to Step 4.
Item	Value	Unit																
<input type="checkbox"/> Engine speed	0	rpm																
<input type="checkbox"/> Engine coolant / oil temperature	35.3	°C																
<input type="checkbox"/> Throttle position	27.9	°																
<input type="checkbox"/> Secondary throttle actuator position sensor	100.0	%																
2	<p>1) Turn the ignition switch OFF.</p> <p>2) Check the STP sensor coupler for loose or poor contacts. If OK, then check the STP sensor lead wire continuity.</p>  <p style="text-align: right; font-size: small;">I718H1110253-01</p>	Go to Step 4.	Y/W wire shorted to Vcc, or B/Br wire open.															

Step	Action	Yes	No
2	<p>3) Disconnect the STP sensor coupler.</p> <p>4) Check the continuity between the Y/W wire and R wire. If the sound is not heard from the tester, the circuit condition is OK.</p> <p>Special tool TOOL (A): 09900-25008 (Multi-circuit tester set)</p> <p>Tester knob indication Continuity (•))</p>  <p style="text-align: right; font-size: small;">I718H1110088-04</p> <p>5) Disconnect the ECM coupler. Refer to "ECM Removal and Installation in Section 1C (Page 1C-1)".</p> <p>6) Check the continuity between the Y/W wire "A" and terminal "20". Also, check the continuity between the B/Br wire "B" and terminal "29".</p> <p>Special tool TOOL (A): 09900-25008 (Multi-circuit tester set) TOOL (B): 09900-25009 (Needle pointed probe set)</p> <p>Tester knob indication Continuity test (•))</p>  <p style="text-align: right; font-size: small;">I718H1110089-04</p> <p><i>Is the continuity OK?</i></p>	<p>Go to Step 4.</p>	<p>Y/W wire shorted to Vcc, or B/Br wire open.</p>

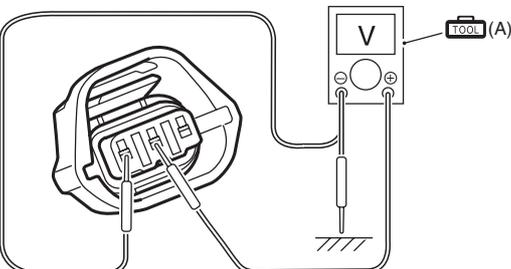
1A-81 Engine General Information and Diagnosis:

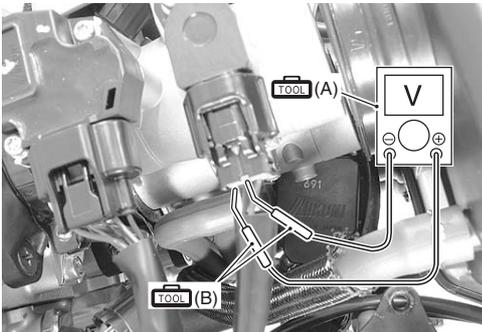
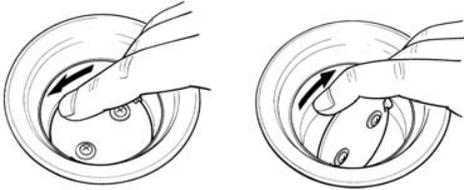
P1654-L (Use of SDS)

Step	Action	Yes	No															
1	<p>1) Click the data monitor button (1).</p>  <p style="text-align: right; font-size: small;">I718H1110251-01</p> <p>2) Check the secondary throttle actuator position sensor data.</p> <table border="1" data-bbox="223 974 813 1131"> <thead> <tr> <th>Item</th> <th>Value</th> <th>Unit</th> </tr> </thead> <tbody> <tr> <td><input type="checkbox"/> Engine speed</td> <td>0</td> <td>rpm</td> </tr> <tr> <td><input type="checkbox"/> Engine coolant / oil temperature</td> <td>35.3</td> <td>°C</td> </tr> <tr> <td><input type="checkbox"/> Throttle position</td> <td>27.9</td> <td>°</td> </tr> <tr> <td><input type="checkbox"/> Secondary throttle actuator position sensor</td> <td>0.0</td> <td>%</td> </tr> </tbody> </table> <p style="font-size: x-small;">DTC - 1 Current (P1654-L Secondary throttle actuator position sensor circuit malfunction)</p> <p style="text-align: right; font-size: small;">I718H1110199-01</p> <p><i>Secondary throttle position approx. 0% OK?</i></p>	Item	Value	Unit	<input type="checkbox"/> Engine speed	0	rpm	<input type="checkbox"/> Engine coolant / oil temperature	35.3	°C	<input type="checkbox"/> Throttle position	27.9	°	<input type="checkbox"/> Secondary throttle actuator position sensor	0.0	%	Go to Step 2.	Go to Step 4.
Item	Value	Unit																
<input type="checkbox"/> Engine speed	0	rpm																
<input type="checkbox"/> Engine coolant / oil temperature	35.3	°C																
<input type="checkbox"/> Throttle position	27.9	°																
<input type="checkbox"/> Secondary throttle actuator position sensor	0.0	%																
2	<p>1) Turn the ignition switch OFF.</p> <p>2) Check the STP sensor coupler for loose or poor contacts. If OK, then check the STP sensor lead wire continuity.</p>  <p style="text-align: right; font-size: small;">I718H1110253-01</p> <p>3) Disconnect the STP sensor coupler.</p>	Go to Step 3.	R or Y/W wire open, or Y/W wire shorted to the ground.															

Step	Action	Yes	No
2	<p>4) Check the continuity between the Y/W wire and ground. Also, check the continuity between the Y/W wire and B/Br wire. If the sound is not heard from the tester, the circuit condition is OK.</p> <p>Special tool  (A): 09900-25008 (Multi-circuit tester set)</p> <p>Tester knob indication Continuity test (•)))</p>  <p style="text-align: right; font-size: small;">I718H1110092-03</p> <p>5) Disconnect the ECM coupler. Refer to “ECM Removal and Installation in Section 1C (Page 1C-1)”.</p> <p>6) Check the continuity between the Y/W wire “A” and terminal “20”. Also, check the continuity between the R wire “C” and terminal “11”.</p> <p>Special tool  (A): 09900-25008 (Multi-circuit tester set)  (B): 09900-25009 (Needle pointed probe set)</p> <p>Tester knob indication Continuity test (•)))</p>  <p style="text-align: right; font-size: small;">I718H1110093-02</p> <p><i>Is the continuity OK?</i></p>	<p>Go to Step 3.</p>	<p>R or Y/W wire open, or Y/W wire shorted to the ground.</p>

1A-83 Engine General Information and Diagnosis:

Step	Action	Yes	No
3	<p>1) Connect the ECM coupler.</p> <p>2) Disconnect the STP sensor coupler.</p> <p>3) Turn the ignition switch ON.</p> <p>4) Measure the input voltage at the R wire and ground. Also, measure the input voltage at the R wire and B/Br wire.</p> <p>Special tool  (A): 09900-25008 (Multi-circuit tester set)</p> <p>Tester knob indication Voltage (---)</p> <p>STP sensor input voltage 4.5 – 5.5 V ((+) terminal: R – (-) terminal: Ground, (+) terminal: R – (-) terminal: B/Br)</p>  <p style="text-align: right; font-size: small;">I718H1110197-02</p> <p><i>Is the voltage OK?</i></p>	Go to Step 4.	Open or short circuit in the R or B/Br wire.

Step	Action	Yes	No
4	<p>1) Turn the ignition switch OFF.</p> <p>2) Connect the ECM coupler and STP sensor coupler.</p> <p>3) Move the air cleaner box backward. Refer to "Throttle Body Removal and Installation in Section 1D (Page 1D-9)".</p> <p>4) Disconnect the STVA lead wire coupler. Refer to "DTC "C28" (P1655): Secondary Throttle Valve Actuator (STVA) Malfunction (Page 1A-73)".</p> <p>5) Insert the needle point probes to the lead wire coupler.</p> <p>6) Turn the ignition switch ON.</p> <p>7) Measure the STP sensor output voltage at the coupler (between the (+) Y/W wire and (-) B/Br wire) by turning the secondary throttle valve (close and open) with your finger.</p> <p>Special tool  (A): 09900-25008 (Multi-circuit tester set)  (B): 09900-25009 (Needle pointed probe set)</p> <p>Tester knob indication Voltage (---)</p> <p>STP sensor output voltage Secondary throttle valve is closed: Approx. 0.6 V Secondary throttle valve is opened: Approx. 4.5 V (+) terminal: Y/W – (-) terminal: B/Br)</p>  <p style="text-align: right; font-size: small;">I718H1110201-03</p>  <p style="text-align: right; font-size: small;">I705H1110071-01</p> <p><i>Is the voltage OK?</i></p>	<ul style="list-style-type: none"> • R, Y/W or B/Br wire open or shorted to the ground, or poor "11", "20" or "29" connection. • If wire and connection are OK, intermittent trouble or faulty ECM. • Recheck each terminal and wire harness for open circuit and poor connection. • Replace the ECM with a known good one, and inspect it again. Refer to "ECM Removal and Installation in Section 1C (Page 1C-1)". 	<p>If check result is not satisfactory, replace the STP sensor with a new one. Refer to "STP Sensor Removal and Installation in Section 1C (Page 1C-4)".</p>

1A-85 Engine General Information and Diagnosis:

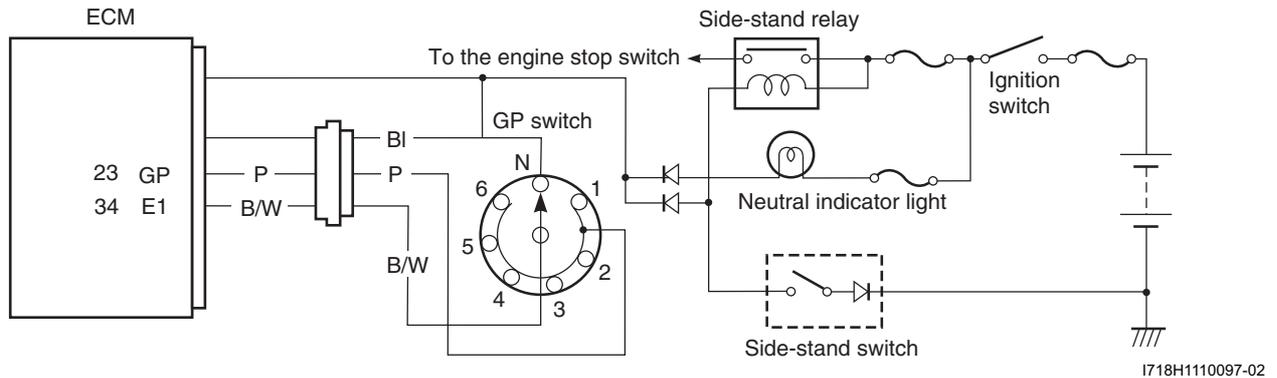
DTC “C31” (P0705): GP Switch Circuit Malfunction

B718H11104020

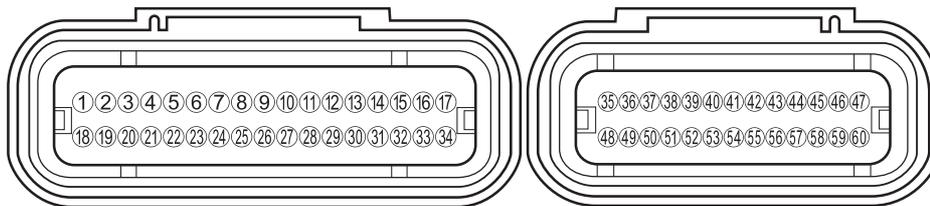
Detected Condition and Possible Cause

Detected Condition	Possible Cause
No Gear Position switch voltage Switch voltage is not within the following range. Switch voltage > 0.6 V	<ul style="list-style-type: none"> • Gear position switch circuit open or short. • Gear position switch malfunction. • ECM malfunction.

Wiring Diagram



ECM coupler (Harness side)



I718H1110240-01

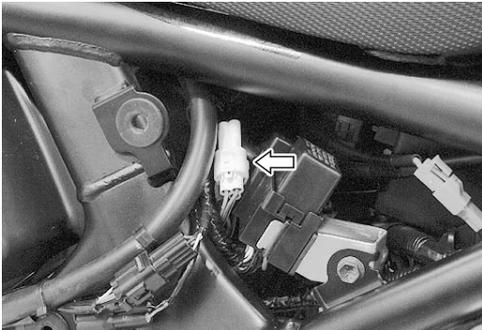
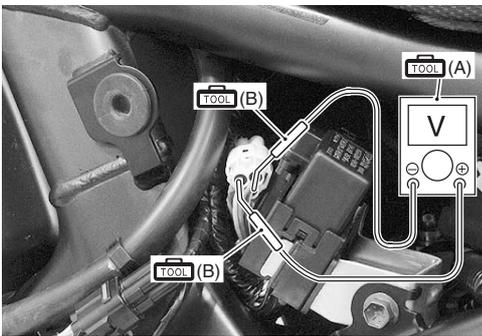
Troubleshooting

⚠ CAUTION

When using the multi-circuit tester, do not strongly touch the terminal of the ECM coupler with a needle pointed tester probe to prevent the terminal damage or terminal bend.

NOTE

After repairing the trouble, clear the DTC using SDS tool. Refer to “Use of SDS Diagnosis Reset Procedures (Page 1A-13)”.

Step	Action	Yes	No
1	<p>1) Turn the ignition switch OFF.</p> <p>2) Remove the left frame cover. Refer to “Exterior Parts Removal and Installation in Section 9D (Page 9D-6)”.</p> <p>3) Check the GP switch coupler for loose or poor contacts. If OK, then measure the GP switch voltage.</p>  <p style="text-align: right; font-size: small;">I718H1110254-01</p> <p>4) Support the motorcycle with a jack.</p> <p>5) Fold the side-stand to up position.</p> <p>6) Make sure the engine stop switch is in the “RUN” position.</p> <p>7) Insert the needle pointed probe to the lead wire coupler.</p> <p>8) Turn the ignition switch ON.</p> <p>9) Measure the voltage at the wire side coupler between the P and B/W wire, when shifting the gearshift lever from 1st to Top.</p> <p>Special tool</p> <p> (A): 09900-25008 (Multi-circuit tester set)</p> <p> (B): 09900-25009 (Needle pointed probe set)</p> <p>Tester knob indication</p> <p>Voltage (---)</p> <p>GP switch voltage</p> <p>0.6 V and more</p> <p>(+) terminal: P – (-) terminal: B/W</p>  <p style="text-align: right; font-size: small;">I718H1110203-03</p> <p><i>Is the voltage OK?</i></p>	<ul style="list-style-type: none"> • P wire open or shorted to the ground. • If wire and connection are OK, intermittent trouble or faulty ECM. • Recheck each terminal and wire harness for open circuit and poor connection. • Replace the ECM with a known good one, and inspect it again. Refer to “ECM Removal and Installation in Section 1C (Page 1C-1)”. 	<ul style="list-style-type: none"> • P or B/W wire open, or P wire shorted to the ground. • Loose or poor contacts on the ECM coupler. • If wire and connection are OK, replace the GP switch with a new one. Refer to “Gear Position (GP) Switch Removal and Installation in Section 5B (Page 5B-12)”.

1A-87 Engine General Information and Diagnosis:

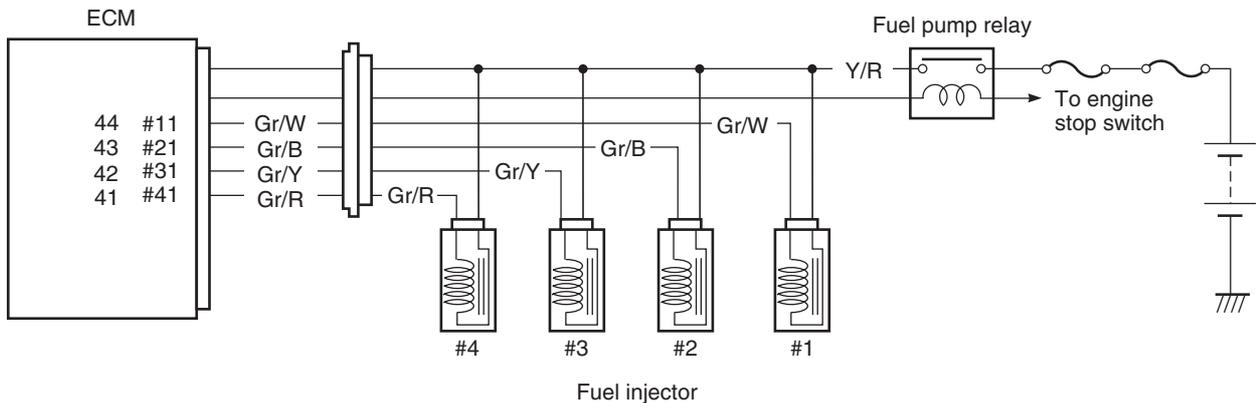
DTC “C32” (P0201), “C33” (P0202), “C34” (P0203) or “C35” (P0204): Fuel Injector Circuit Malfunction

B718H11104021

Detected Condition and Possible Cause

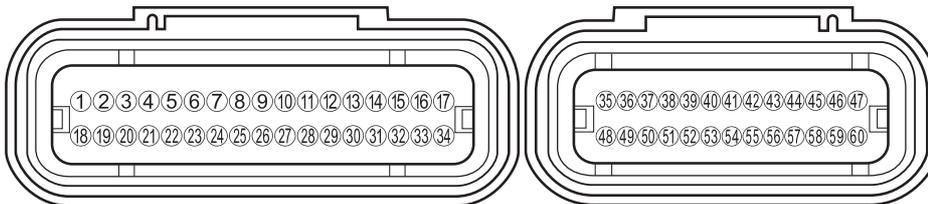
Detected Condition	Possible Cause
CKP signal is produced but fuel injector signal is interrupted by 4 times or more continuity.	<ul style="list-style-type: none"> • Injector circuit open or short. • Injector malfunction. • ECM malfunction.

Wiring Diagram



I718H1110100-03

ECM coupler (Harness side)



I718H1110240-01

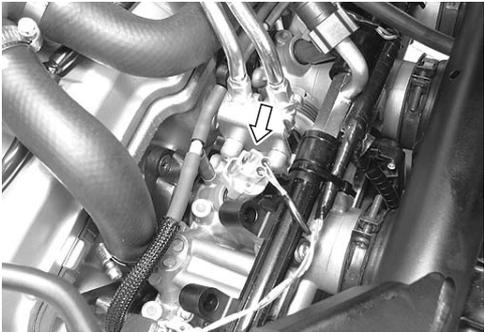
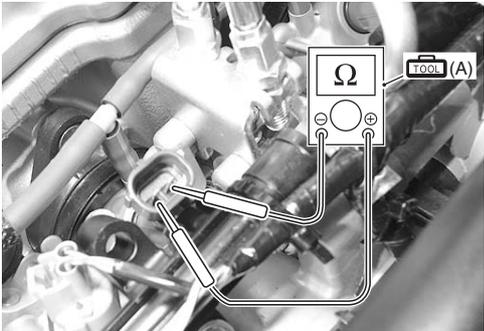
Troubleshooting

⚠ CAUTION

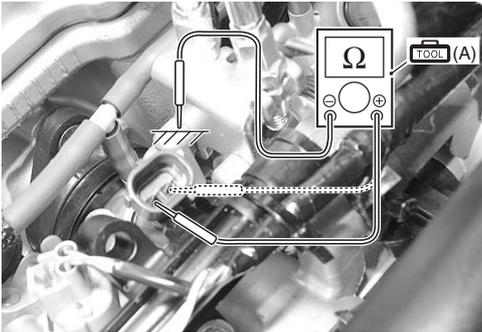
When using the multi-circuit tester, do not strongly touch the terminal of the ECM coupler with a needle pointed tester probe to prevent the terminal damage or terminal bend.

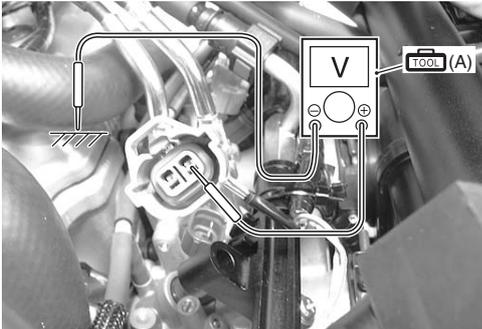
NOTE

- After repairing the trouble, clear the DTC using SDS tool. Refer to “Use of SDS Diagnosis Reset Procedures (Page 1A-13)”.
- Injector voltage can be detected only for 3 seconds after ignition switch is turned ON.

Step	Action	Yes	No
1	<p>1) Turn the ignition switch OFF.</p> <p>2) Lift and support the fuel tank. Refer to “Fuel Tank Removal and Installation in Section 1G (Page 1G-9)”.</p> <p>3) Check the injector coupler for loose or poor contacts. If OK, then measure the injector resistance.</p>  <p style="text-align: right; font-size: small;">I718H1110204-01</p> <p>4) Disconnect the injector coupler and measure the resistance between terminals.</p> <p>Special tool  (A): 09900-25008 (Multi-circuit tester set)</p> <p>Tester knob indication Resistance (Ω)</p> <p>Injector resistance 11 – 13 Ω at 20 °C (68 °F) (Terminal – Terminal)</p>  <p style="text-align: right; font-size: small;">I718H1110205-02</p>	Go to Step 2.	Replace the injector with a new one. Refer to “Throttle Body Disassembly and Assembly in Section 1D (Page 1D-10)”.

1A-89 Engine General Information and Diagnosis:

Step	Action	Yes	No
1	<p>5) If OK, then check the continuity between each terminal and ground.</p> <p>Special tool  (A): 09900-25008 (Multi-circuit tester set)</p> <p>Injector continuity $\infty \Omega$ (Infinity)</p>  <p style="text-align: right; font-size: small;">I718H1110206-02</p> <p><i>Are the resistance and continuity OK?</i></p>	Go to Step 2.	Replace the injector with a new one. Refer to "Throttle Body Disassembly and Assembly in Section 1D (Page 1D-10)".

Step	Action	Yes	No
2	<p>1) Turn the ignition switch ON.</p> <p>2) Measure the injector voltage between the Y/R wire and ground.</p> <p>Special tool TOOL (A): 09900-25008 (Multi-circuit tester set)</p> <p>Tester knob indication Voltage (---)</p> <p>Injector voltage Battery voltage (+) terminal: Y/R – (-) terminal: Ground)</p>  <p style="text-align: right; font-size: small;">I718H1110207-03</p> <p><i>Is the voltage OK?</i></p>	<ul style="list-style-type: none"> • Gr/W wire open or shorted to the ground, or poor “44” connection (#1 cylinder side). • Gr/B wire open or shorted to the ground, or poor “43” connection (#2 cylinder side). • Gr/Y wire open or shorted to the ground, or poor “42” connection (#3 cylinder side). • Gr/R wire open or shorted to the ground, or poor “41” connection (#4 cylinder side). • If wire and connection are OK, intermittent trouble or faulty ECM. • Recheck each terminal and wire harness for open circuit and poor connection. • Replace the ECM with a known good one, and inspect it again. Refer to “ECM Removal and Installation in Section 1C (Page 1C-1)”. 	<p>Open circuit in the Y/R wire.</p>

1A-91 Engine General Information and Diagnosis:

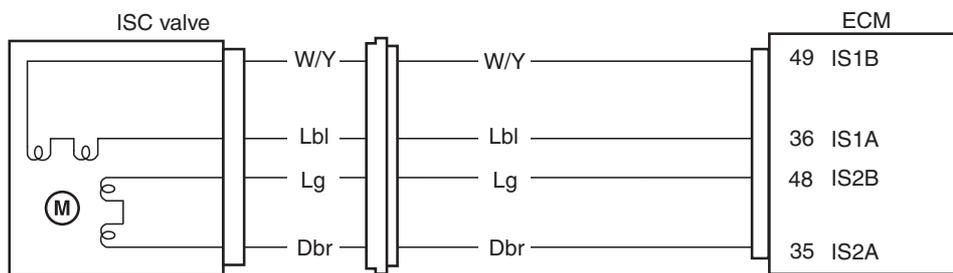
DTC “C40” (P0505 / P0506 / P0507): ISC Valve Circuit Malfunction

B718H11104022

Detected Condition and Possible Cause

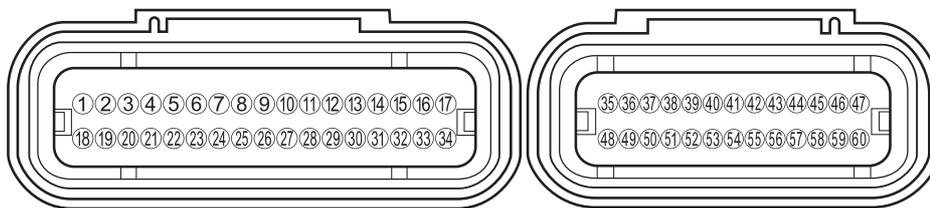
Detected Condition		Possible Cause
C40/P0505	The circuit voltage of motor drive is unusual.	<ul style="list-style-type: none"> ISC valve circuit open or shorted to the ground.
C40/P0506	Idle speed is lower than the desired idle speed.	<ul style="list-style-type: none"> Air passage clogged. ISC valve is fixed. ISC valve preset position is incorrect.
C40/P0507	Idle speed is high than the desired idle speed.	<ul style="list-style-type: none"> Disconnect ISC valve hose. ISC valve is fixed. ISC valve preset position is incorrect.

Wiring Diagram



I718H1110105-03

ECM coupler (Harness side)



I718H1110240-01

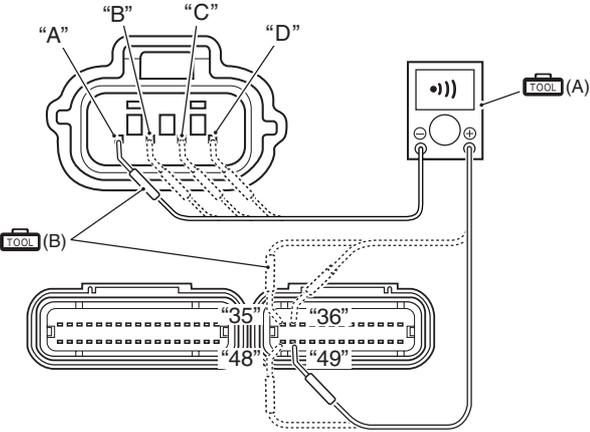
Troubleshooting

⚠ CAUTION

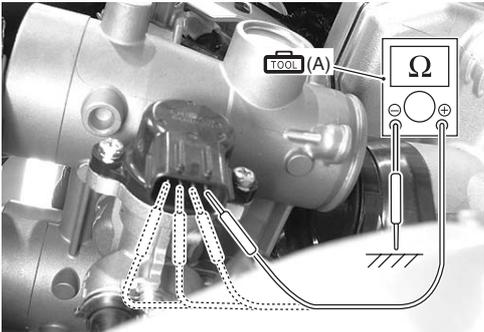
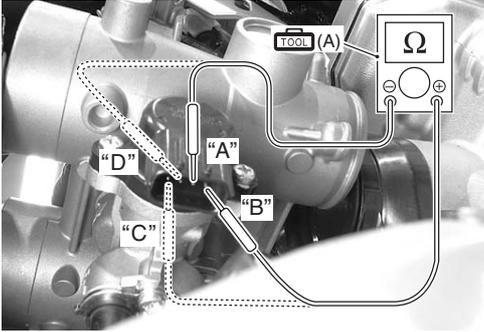
- Be careful not to disconnect the ISC valve coupler at least 5 seconds after ignition switch is turned to OFF.
If the ECM coupler is disconnected within 5 seconds after ignition switch is turned to OFF, there is a possibility of an usual valve being written in ECM and causing an error of ISC valve operation.
- When using the multi-circuit tester, do not strongly touch the terminal of the ECM coupler with a needle pointed tester probe to prevent the terminal damage or terminal bend.

NOTE

After repairing the trouble, clear the DTC using SDS tool. Refer to “Use of SDS Diagnosis Reset Procedures (Page 1A-13)”.

Step	Action	Yes	No
1	<p>1) Turn the ignition switch OFF.</p> <p>2) Check the ISC valve coupler for loose or poor contacts. If OK, then check the ISC valve lead wire continuity.</p>  <p style="text-align: right; font-size: small;">I718H1110208-02</p> <p>3) Disconnect the ISC valve coupler and ECM coupler. Refer to "ECM Removal and Installation in Section 1C (Page 1C-1)".</p> <p>4) Check the continuity between terminals "A" and "49", terminals "B" and "36", terminals "C" and "48", terminals "D" and "35".</p> <p>Special tool</p> <p> (A): 09900-25008 (Multi-circuit tester set)</p> <p> (B): 09900-25009 (Needle pointed probe set)</p> <p>Tester knob indication</p> <p>Continuity test (•)))</p>  <p style="text-align: right; font-size: small;">I718H1110209-03</p> <p><i>Is the continuity OK?</i></p>	Go to Step 2.	Lbl, W/Y, Dgr or Lg wire open.

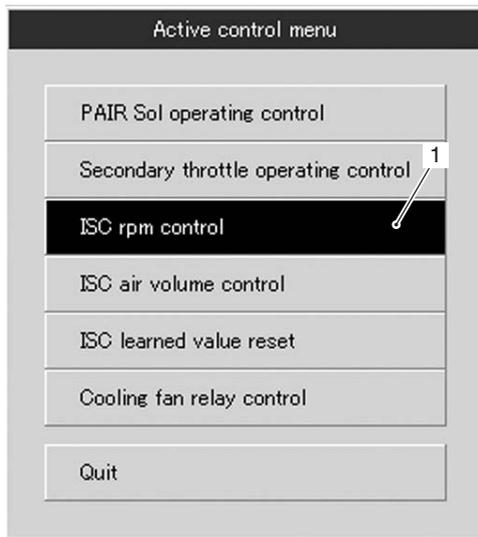
1A-93 Engine General Information and Diagnosis:

Step	Action	Yes	No
2	<p>1) Move the throttle body right side. Refer to "Throttle Body Removal and Installation in Section 1D (Page 1D-9)".</p> <p>2) Disconnect the ISC valve coupler.</p> <p>3) Check the continuity between each terminal and ground.</p> <p>Special tool  (A): 09900-25008 (Multi-circuit tester set)</p> <p>Tester knob indication Resistance (Ω)</p> <p>ISC valve continuity $\infty \Omega$ (Infinity) (Terminal – Ground)</p>  <p style="text-align: right; font-size: small;">I718H1110210-02</p> <p>4) If OK, then measure the resistance (between the Lbl wire "A" and W/Y wire "B") and (between the Dbr wire "C" and Lg wire "D").</p> <p>ISC valve resistance Approx. 20 Ω at 20 °C (68 °F) (Terminal: Lg – Terminal: W/Y, Terminal: Dbr – Terminal: Lg)</p>  <p style="text-align: right; font-size: small;">I718H1110211-02</p> <p><i>Is the resistance OK?</i></p>	<p>If wire is OK, intermittent trouble or faulty ECM.</p>	<p>Replace the ISC valve with a new one. Refer to "Throttle Body Disassembly and Assembly in Section 1D (Page 1D-10)".</p>

ACTIVE CONTROL INSPECTION (ISC RPM CONTROL)

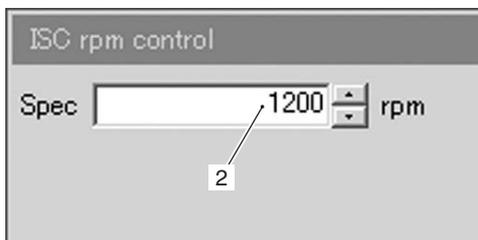
Check 1

- 1) Set up the SDS tool. (Refer to the SDS operation manual for further details.)
- 2) Check that the engine is running.
- 3) Click the "Active control".
- 4) Click the "ISC rpm control" (1).



I718H1110246-01

- 5) Check that the "Spec" (2) is idle speed $1\ 200 \pm 100$ rpm.
- 6) Check that the "Desired idle speed" (3) is within the specified idle rpm.



I718H1110213-01

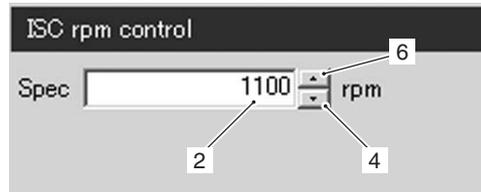
Item	Value	Unit
<input type="checkbox"/> Engine speed	1268	rpm
<input type="checkbox"/> Desired idle speed	3 → 1205	rpm
<input type="checkbox"/> ISC valve position	80	step
<input type="checkbox"/> Manifold absolute pressure 1	68.9	kPa
<input type="checkbox"/> Manifold absolute pressure 2	64.1	kPa

I718H1110214-02

1A-95 Engine General Information and Diagnosis:

Check 2

- 1) Click the button (4) and decrease the "Spec" (2) to 1 100 rpm slowly.
- 2) Check that the "Desired idle speed" (3) is nearly equal to the "Spec" (2). At the same time, check that the number of steps (5) in the ISC valve position decreases.
- 3) Click the button (6) and increase the "Spec" (2) slowly.
- 4) Check that the "Desired idle speed" (3) is nearly equal to the "Spec" (2). Also, check that the number of steps (5) in the ISC valve position increases.



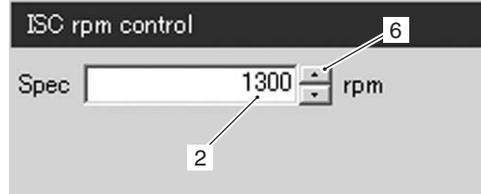
I718H1110215-01

Item	Value	Unit
<input type="checkbox"/> Engine speed	1054	rpm
<input type="checkbox"/> Desired idle speed	3 → 1104	rpm
<input type="checkbox"/> ISC valve position	5 → 74	step
<input type="checkbox"/> Manifold absolute pressure 1	72.8	kPa
<input type="checkbox"/> Manifold absolute pressure 2	64.1	kPa

I718H1110216-02

Check 3

- 1) Click the button (6) and increase the "Spec" (2) to 1 300 rpm slowly.
- 2) Check that the "Desired idle speed" (3) is nearly equal to the "Spec" (2). Also, check that the number of steps (5) in the ISC valve position increases.



I718H1110217-01

Item	Value	Unit
<input type="checkbox"/> Engine speed	1356	rpm
<input type="checkbox"/> Desired idle speed	3 → 1305	rpm
<input type="checkbox"/> ISC valve position	5 → 84	step
<input type="checkbox"/> Manifold absolute pressure 1	69.6	kPa
<input type="checkbox"/> Manifold absolute pressure 2	80.0	kPa

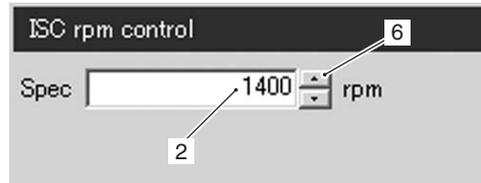
I718H1110218-02

Check 4

- 1) Click the button (6) and increase the "Spec" (2) to 1 400 rpm.
- 2) Check that the "Desired idle speed" (3) is approx. 1 400 rpm.
- 3) Check that the "Engine speed" (7) is close to 1 400 rpm.

NOTE

Be careful not to increase the "Spec" to 1 700 rpm, or the "Engine speed" may reach the upper limit.



I718H1110219-01

Item	Value	Unit
<input type="checkbox"/> Engine speed	7 → 1418	rpm
<input type="checkbox"/> Desired idle speed	3 → 1405	rpm
<input type="checkbox"/> ISC valve position	90	step
<input type="checkbox"/> Manifold absolute pressure 1	65.0	kPa
<input type="checkbox"/> Manifold absolute pressure 2	85.9	kPa

I718H1110220-02

If the ISC valve does not function properly, replace the ISC valve or inspect the ISC valve. Refer to "Throttle Body Disassembly and Assembly in Section 1D (Page 1D-10)".

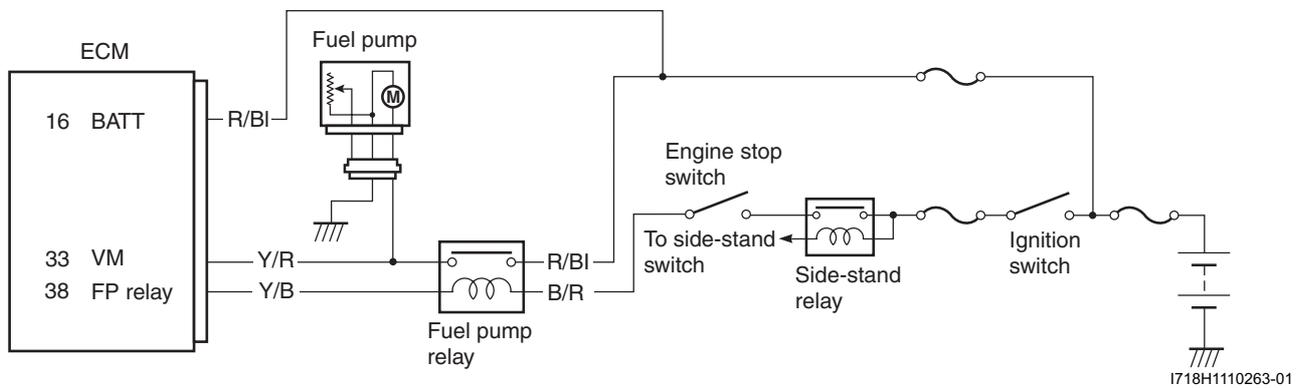
DTC “C41” (P0230-H/L): FP Relay Circuit Malfunction

B718H11104023

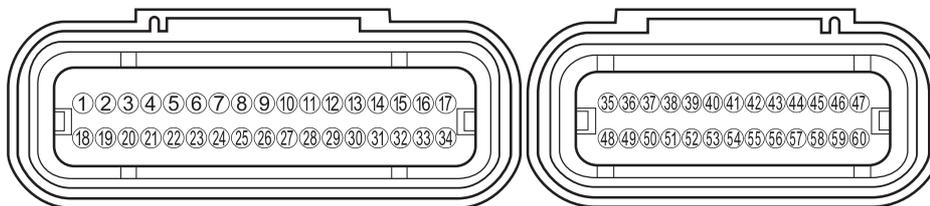
Detected Condition and Possible Cause

Detected Condition		Possible Cause
C41	No voltage is applied to fuel pump although fuel pump relay is turned ON, or voltage is applied to fuel pump, although fuel pump relay is turned OFF.	<ul style="list-style-type: none"> Fuel pump relay circuit open or short. Fuel pump relay malfunction. ECM malfunction.
P0230	H Voltage is applied to fuel pump although fuel pump relay is turned OFF.	<ul style="list-style-type: none"> Fuel pump relay switch circuit is shorted to power source. Faulty pump relay (switch side).
	L No voltage is applied to fuel pump although fuel pump relay is turned ON.	<ul style="list-style-type: none"> Fuel pump relay coil circuit open or short. Faulty pump relay (coil side).

Wiring Diagram



ECM coupler (Harness side)



I718H1110240-01

Troubleshooting

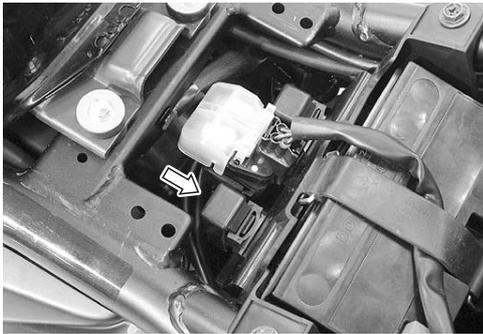
⚠ CAUTION

When using the multi-circuit tester, do not strongly touch the terminal of the ECM coupler with a needle pointed tester probe to prevent the terminal damage or terminal bend.

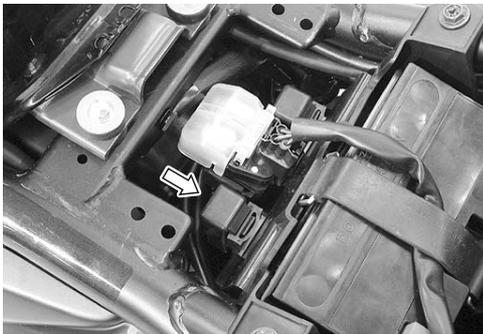
NOTE

After repairing the trouble, clear the DTC using SDS tool. Refer to “Use of SDS Diagnosis Reset Procedures (Page 1A-13)”.

C41 (Use of mode select switch)

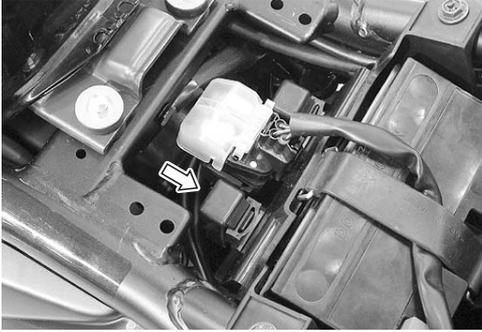
Step	Action	Yes	No
1	1) Turn the ignition switch OFF. 2) Remove the seat. Refer to "Exterior Parts Removal and Installation in Section 9D (Page 9D-6)". 3) Check the FP relay coupler for loose or poor contacts. If OK, then check the FP relay. Refer to "Fuel Pump Relay Inspection in Section 1G (Page 1G-7)".  <p style="text-align: right; font-size: small;">I718H1110221-03</p> <p><i>Is the FP relay OK?</i></p>	<ul style="list-style-type: none"> • ECM power input signal malfunction. Refer to "DTC "C41" (P2505): ECM Power Input Signal Malfunction (Page 1A-100)". • Y/B or B/R wire open or short or poor "38" connection. • Y/R or R/Bl wire open, shorted or poor "33" connection. • If wire and connection are OK, intermittent trouble or faulty ECM. • Recheck each terminal and wire harness for open circuit and poor connection. • Replace the ECM with a known good one, and inspect it again. Refer to "ECM Removal and Installation in Section 1C (Page 1C-1)". 	Replace the FP relay with a new one.

P0230-H (Use of SDS)

Step	Action	Yes	No
1	1) Turn the ignition switch OFF. 2) Remove the seat. Refer to "Exterior Parts Removal and Installation in Section 9D (Page 9D-6)". 3) Check the FP relay coupler for loose or poor contacts. If OK, then check the FP relay. Refer to "Fuel Pump Relay Inspection in Section 1G (Page 1G-7)".  <p style="text-align: right; font-size: small;">I718H1110221-03</p> <p><i>Is the FP relay OK?</i></p>	<ul style="list-style-type: none"> • Y/B wire shorted to power source. • Y/B wire shorted to the ground. • If wire and connection are OK, intermittent trouble or faulty ECM. • Recheck each terminal and wire harness for open circuit and poor connection. • Replace the ECM with a known good one, and inspect it again. Refer to "ECM Removal and Installation in Section 1C (Page 1C-1)". 	Replace the FP relay with a new a new one.

1A-99 Engine General Information and Diagnosis:

P0230-L (Use of SDS)

Step	Action	Yes	No
1	<p>1) Turn the ignition switch OFF.</p> <p>2) Remove the seat. Refer to "Exterior Parts Removal and Installation in Section 9D (Page 9D-6)".</p> <p>3) Check the FP relay coupler for loose or poor contacts. If OK, then check the FP relay. Refer to "Fuel Pump Relay Inspection in Section 1G (Page 1G-7)".</p>  <p style="text-align: right; font-size: small;">I718H1110221-03</p> <p><i>Is the FP relay OK?</i></p>	<ul style="list-style-type: none"> • Y/B wire open or poor "38" connection. • B/R wire open or shorted to the ground. • R/Bl or Y/R wire open or shorted to the ground or poor "33" connection. • If wire and connection are OK, intermittent trouble of faulty ECM. • Recheck each terminal and wire harness for open circuit and poor connection. • Replace the ECM with a known good one, and inspect it again. Refer to "ECM Removal and Installation in Section 1C (Page 1C-1)". 	<p>Replace the FP relay with a new one.</p>

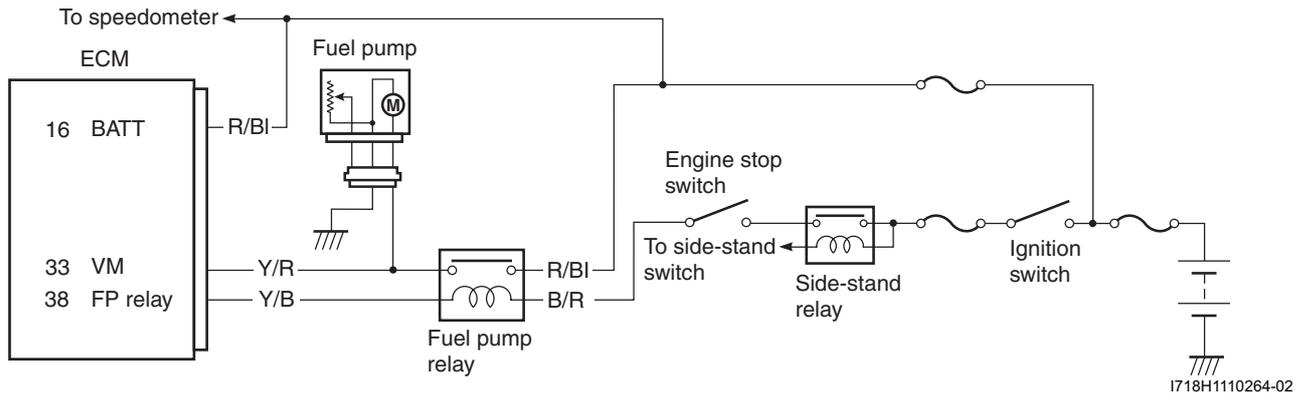
DTC “C41” (P2505): ECM Power Input Signal Malfunction

B718H11104031

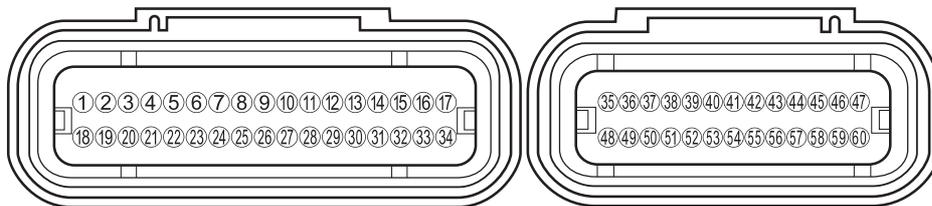
Detected Condition and Possible Cause

Detected Condition		Possible Cause
C41/P2505	No voltage is applied to the ECM, although FP relay is turned ON.	<ul style="list-style-type: none"> Lead wire/coupler connection of ECM terminal to fuel fuse Fuel fuse Power source of speedometer shorted to ground

Wiring Diagram



ECM coupler (Harness side)



I718H1110240-01

Troubleshooting

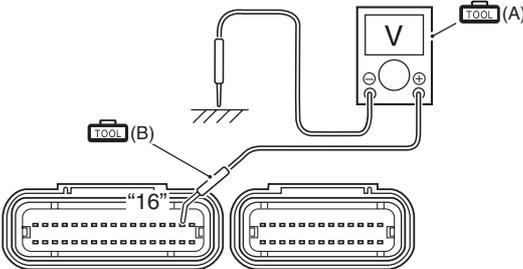
⚠ CAUTION

When using the multi-circuit tester, do not strongly touch the terminal of the ECM coupler with a needle pointed tester probe to prevent the terminal damage or terminal bend.

NOTE

After repairing the trouble, clear the DTC using SDS tool. Refer to “Use of SDS Diagnosis Reset Procedures (Page 1A-13)”.

1A-101 Engine General Information and Diagnosis:

Step	Action	Yes	No
1	<p>1) Turn the ignition switch OFF.</p> <p>2) Remove the seat. Refer to “Exterior Parts Removal and Installation in Section 9D (Page 9D-6)”.</p> <p>3) Check the ECM coupler for loose or poor contacts. If OK, then measure the ECM input voltage.</p>  <p style="text-align: right; font-size: small;">I718H1110256-01</p> <p>4) Disconnect the ECM coupler.</p> <p>5) Insert the needle pointed probe to ECM coupler.</p> <p>6) Measure the voltage between terminal “16” and ground.</p> <p>Special tool TOOL (A): 09900-25008 (Multi-circuit tester set) TOOL (B): 09900-25009 (Needle pointed probe set)</p> <p>Tester knob indication Voltage (---)</p> <p>ECM input voltage Battery voltage (+) terminal: “16” – (-) terminal: Ground)</p>  <p style="text-align: right; font-size: small;">I718H1110250-01</p> <p><i>Is the voltage OK?</i></p>	<ul style="list-style-type: none"> • Fuel pump relay circuit malfunction. Refer to “DTC “C41” (P0230-H/L): FP Relay Circuit Malfunction (Page 1A-97)”. • R/BI wire open or short or poor “16” connection. • If wire and connection are OK, intermittent trouble or faulty ECM. • Recheck each terminal and wire harness for open circuit and poor connection. • Replace the ECM with a known good one, and inspect it again. Refer to “ECM Removal and Installation in Section 1C (Page 1C-1)”. 	<p>Open or short circuit in the R/BI wire.</p>

DTC “42” (P1650): IG Switch Circuit Malfunction

B718H11104024

Detected Condition and Possible Cause

Detected Condition	Possible Cause
Ignition switch signal is not input in the ECM.	<ul style="list-style-type: none"> Ignition system circuit open or short. ECM malfunction.

Troubleshooting

NOTE

- Refer to “Ignition Switch Inspection in Section 9C (Page 9C-10)” for details.
- After repairing the trouble, clear the DTC using SDS tool. Refer to “Use of SDS Diagnosis Reset Procedures (Page 1A-13)”.

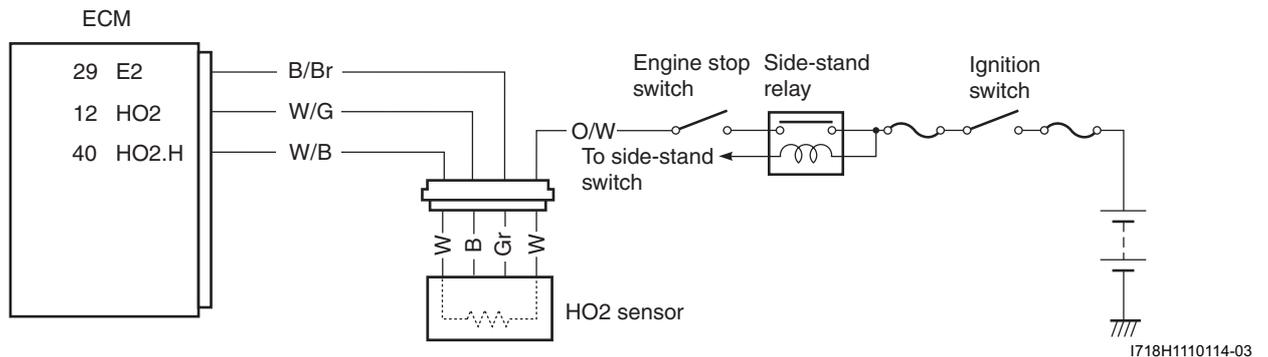
DTC “C44” (P0130/P0135): HO2 Sensor (HO2S) Circuit Malfunction

B718H11104025

Detected Condition and Possible Cause

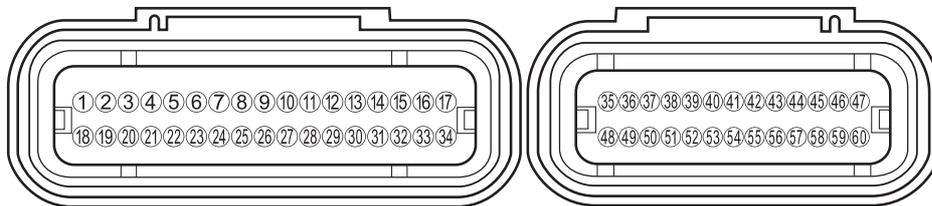
Detected Condition	Possible Cause
HO2 sensor output voltage is not input to ECM during engine operation and running condition. Sensor voltage > 1.0 V The heater can not operate so that heater operation voltage is not supplied to the oxygen heater circuit.	<ul style="list-style-type: none"> HO2 sensor circuit open or short. ECM malfunction. HO2 sensor lead wire/coupler connection. Battery voltage supply to the HO2 sensor

Wiring Diagram



I718H1110114-03

ECM coupler (Harness side)



I718H1110240-01

1A-103 Engine General Information and Diagnosis:

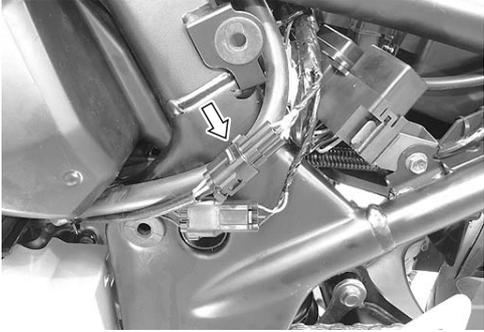
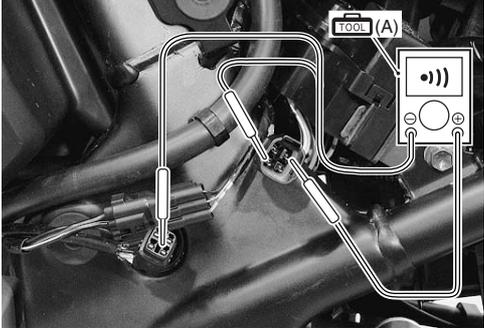
Troubleshooting (When Indicating C44/P0130:)

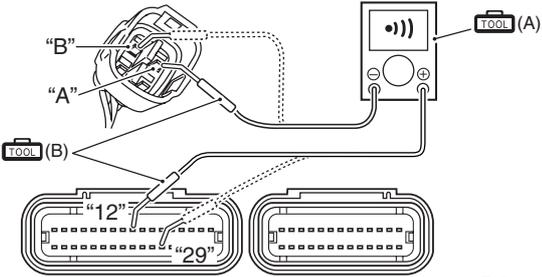
⚠ CAUTION

When using the multi-circuit tester, do not strongly touch the terminal of the ECM coupler with a needle pointed tester probe to prevent the terminal damage or terminal bend.

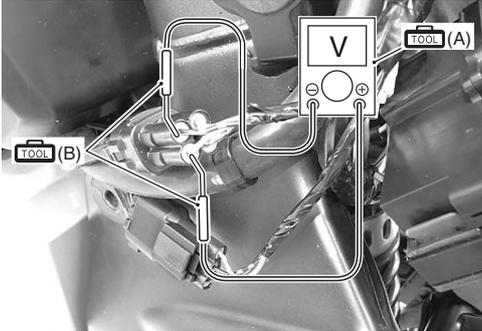
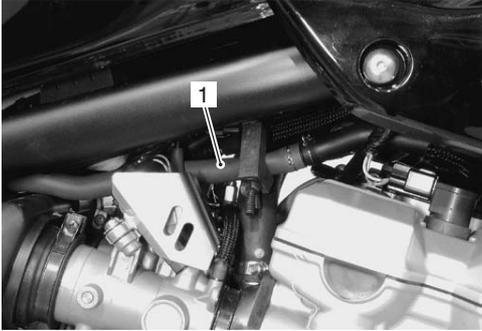
NOTE

After repairing the trouble, clear the DTC using SDS tool. Refer to “Use of SDS Diagnosis Reset Procedures (Page 1A-13)”.

Step	Action	Yes	No
1	<p>1) Turn the ignition switch OFF.</p> <p>2) Remove the left frame cover. Refer to “Exterior Parts Removal and Installation in Section 9D (Page 9D-6)”.</p> <p>3) Check the HO2 sensor coupler for loose or poor contacts. If OK, then check the HO2 sensor lead wire continuity.</p>  <p style="text-align: right; font-size: small;">I718H1110223-01</p> <p>4) Disconnect the HO2 sensor coupler.</p> <p>5) Check the continuity between the W/G wire and O/W wire. Also, check the continuity between the W/G wire and W wire. If the sound is not heard from the tester, the circuit condition is OK.</p> <p>Special tool  (A): 09900-25008 (Multi-circuit tester set)</p> <p>Tester knob indication Continuity test (•))</p>  <p style="text-align: right; font-size: small;">I718H1110265-01</p>	Go to Step 2.	W/G wire shorted to the power source, or W/G or B/Br wire open.

Step	Action	Yes	No
1	<p>6) Disconnect the ECM coupler. Refer to "ECM Removal and Installation in Section 1C (Page 1C-1)".</p> <p>7) Check the continuity between the W/G wire "A" and terminal "12". Also, check the continuity between the B/Br wire "B" and terminal "29".</p> <p>Special tool TOOL (A): 09900-25008 (Multi-circuit tester set) TOOL (B): 09900-25009 (Needle pointed probe set)</p> <p>Tester knob indication Continuity (•))</p>  <p>I718H1110229-02</p> <p><i>Is the continuity OK?</i></p>	Go to Step 2.	W/G wire shorted to the power source, or W/G or B/Br wire open.

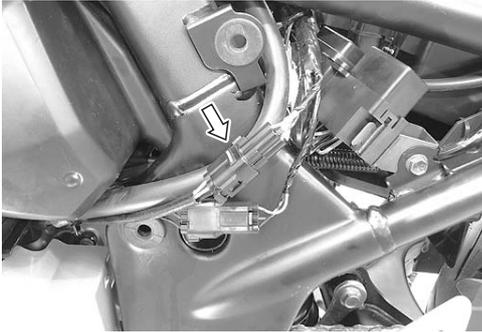
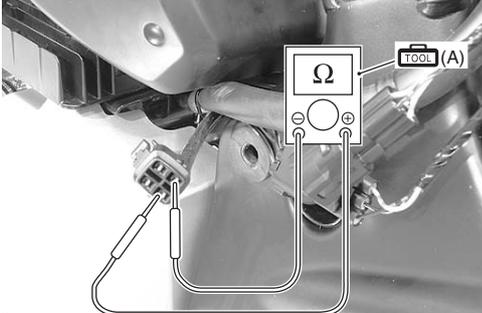
1A-105 Engine General Information and Diagnosis:

Step	Action	Yes	No
2	<p>1) Connect the ECM coupler and HO2 sensor coupler.</p> <p>2) Warm up the engine enough.</p> <p>3) Insert the needle pointed probes to the lead wire coupler.</p> <p>4) Measure the HO2 sensor output voltage between the W/G wire and B/Br wire, when idling condition.</p> <p>Special tool  (A): 09900-25008 (Multi-circuit tester set)  (B): 09900-25009 (Needle pointed probe set)</p> <p>Tester knob indication Voltage (---)</p> <p>HO2 sensor output voltage at idle speed 0.3 V and less (+) terminal: W/G – (-) terminal: B/Br)</p>  <p style="text-align: right; font-size: small;">I718H1110230-02</p> <p>5) If OK, then pinch the PAIR hose (1) with a proper hose clamp.</p>  <p style="text-align: right; font-size: small;">I718H1110266-01</p> <p>6) Measure the HO2 sensor output voltage while holding the engine speed at 3 000 r/min.</p> <p>HO2 sensor output voltage at 3 000 r/min 0.6 V and more (+) terminal: W/G – (-) terminal: B/Br)</p> <p><i>Is the voltage OK?</i></p>	<ul style="list-style-type: none"> • W/G or B/Br wire open or shorted to the power source, or poor “12” or “29” connection. • If wire and connection are OK, intermittent trouble or faulty ECM. • Recheck each terminal and wire harness for open circuit and poor connection. • Replace the ECM with a known good one, and inspection it again. Refer to “ECM Removal and Installation in Section 1C (Page 1C-1)”. 	<p>Replace the HO2 sensor with a new one. Refer to “Heated Oxygen Sensor (HO2S) Removal and Installation in Section 1B (Page 1B-5)”.</p>

Troubleshooting (When Indicating C44/P0135:)

NOTE

After repairing the trouble, clear the DTC using SDS tool. Refer to “Use of SDS Diagnosis Reset Procedures (Page 1A-13)”.

Step	Action	Yes	No
1	1) Turn the ignition switch OFF. 2) Remove the left frame cover. Refer to “Exterior Parts Removal and Installation in Section 9D (Page 9D-6)”. 3) Check the HO2 sensor for loose or poor contacts. If OK, then measure the HO2 sensor resistance.	Go to Step 2.	Replace the HO2 sensor with a new one. Refer to “HO2 Sensor Removal and Installation in Section 1C (Page 1C-6)”.
			
I718H1110223-01			
4) Disconnect the HO2 sensor coupler and measure the resistance between terminals.			
<p>⚠ CAUTION</p>			
<ul style="list-style-type: none"> • Temperature of the sensor affects resistance value largely. • Make sure that the sensor heater is in correct temperature. 			
<p>Special tool  (A): 09900–25008 (Multi-circuit tester set)</p>			
<p>Tester knob indication Resistance (Ω)</p>			
<p>HO2 heater resistance Approx. 8 Ω at 23 °C (73 °F) (W – W)</p>			
			
I718H1110243-01			
<p>Is the resistance OK?</p>			

1A-107 Engine General Information and Diagnosis:

Step	Action	Yes	No
2	<p>1) Connect the HO2 sensor coupler.</p> <p>2) Insert the needle pointed probes to the lead wire coupler.</p> <p>3) Turn the ignition switch ON and measure the heater voltage between the W/B wire and ground. If the tester voltage indicates the battery voltage, it is good condition.</p> <p>NOTE</p> <hr/> <p>Battery voltage can be detected only before starting the engine.</p> <hr/> <p>Special tool</p> <p> (A): 09900-25008 (Multi-circuit tester set)</p> <p> (B): 09900-25009 (Needle pointed probe set)</p> <p>Tester knob indication</p> <p>Voltage (---)</p> <p>Heater voltage</p> <p>Battery voltage</p> <p>(+) terminal: W/B – (-) terminal: Ground)</p> <div data-bbox="276 925 759 1256" data-label="Image"> <p>The diagram shows a multi-circuit tester (Tool A) with a voltmeter (V) and two probes. One probe (Tool B) is inserted into the W/B wire coupler, and the other is connected to ground. The tester is connected to the engine's electrical system.</p> </div> <p style="text-align: right; font-size: small;">I718H1110232-02</p>	<ul style="list-style-type: none"> • O/W or W/B wire open or shorted to the ground, or poor “40” connection. • Recheck each terminal and wire harness for open circuit and poor connection. • If wire and connection are OK, intermittent trouble or faulty ECM. • Replace the ECM with a known good one, and inspect it again. Refer to “ECM Removal and Installation in Section 1C (Page 1C-1)”. 	<ul style="list-style-type: none"> • Open or short circuit in the W/B wire or O/W wire. • Loose or poor contacts on the ECM coupler or HO2 sensor coupler.
<p><i>Is the voltage OK?</i></p>			

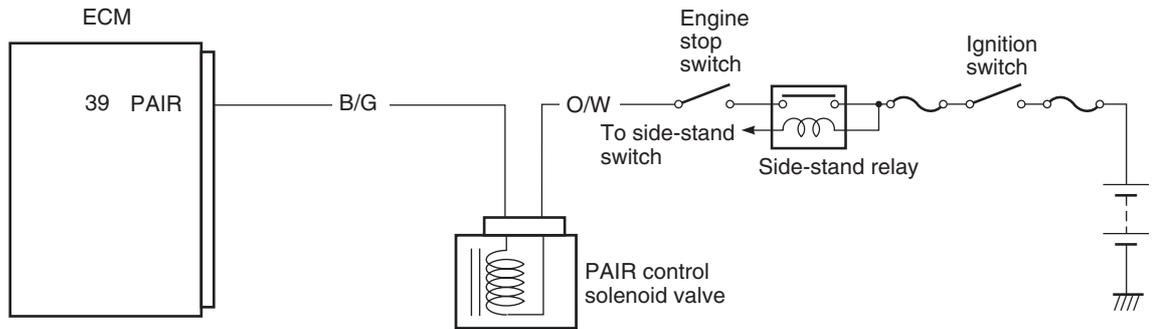
DTC “C49” (P1656): PAIR Solenoid Valve Circuit Malfunction

B718H11104028

Detected Condition and Possible Cause

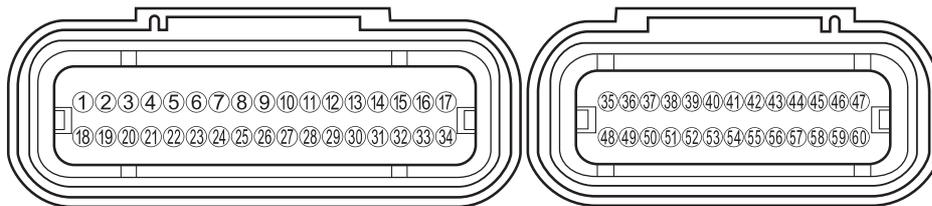
Detected Condition	Possible Cause
PAIR control solenoid valve ampere is not input to ECM.	<ul style="list-style-type: none"> PAIR control solenoid valve circuit open or short. PAIR control solenoid valve malfunction. ECM malfunction.

Wiring Diagram



I718H1110124-02

ECM coupler (Harness side)



I718H1110240-01

Troubleshooting

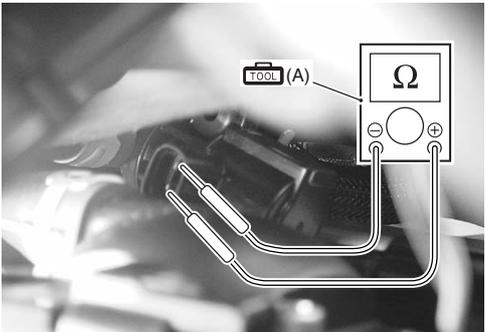
⚠ CAUTION

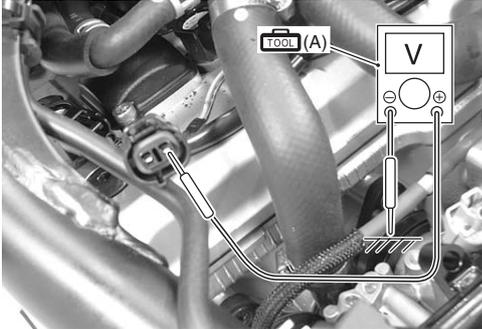
When using the multi-circuit tester, do not strongly touch the terminal of the ECM coupler with a needle pointed tester probe to prevent the terminal damage or terminal bend.

NOTE

After repairing the trouble, clear the DTC using SDS tool. Refer to “Use of SDS Diagnosis Reset Procedures (Page 1A-13)”.

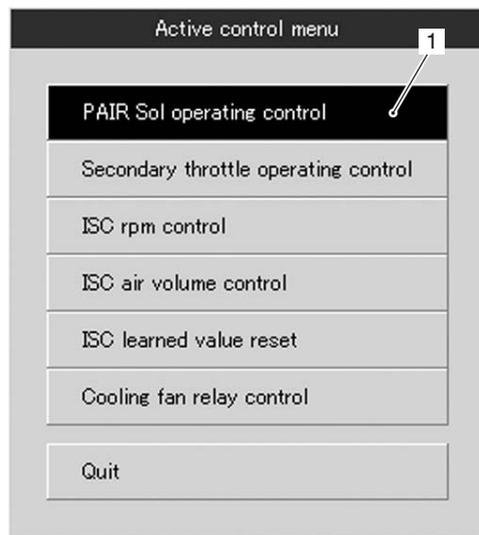
1A-109 Engine General Information and Diagnosis:

Step	Action	Yes	No
1	<p>1) Turn the ignition switch OFF.</p> <p>2) Remove the fuel tank. Refer to "Fuel Tank Removal and Installation in Section 1G (Page 1G-9)".</p> <p>3) Check the PAIR control solenoid valve coupler for loose or poor contacts. If OK, then measure the PAIR solenoid valve resistance.</p>  <p style="text-align: right; font-size: small;">I718H1110233-01</p> <p>4) Disconnect the PAIR control solenoid valve coupler.</p> <p>5) Measure the resistance between terminals.</p> <p>Special tool  (A): 09900-25008 (Multi-circuit tester set)</p> <p>Tester knob indication Resistance (Ω)</p> <p>PAIR control solenoid valve resistance 18 – 22 Ω at 20 – 30 °C (68 – 86 °F) (Terminal – Terminal)</p>  <p style="text-align: right; font-size: small;">I718H1110234-02</p> <p><i>Is the resistance OK?</i></p>	Go to Step 2.	Replace the PAIR control solenoid with a new one. Refer to "PAIR Control Solenoid Valve Removal and Installation in Section 1B (Page 1B-6)".

Step	Action	Yes	No
2	<p>1) Turn the ignition switch ON.</p> <p>2) Measure the voltage between the O/W wire and ground.</p> <p>Special tool  (A): 09900-25008 (Multi-circuit tester set)</p> <p>Tester knob indication Voltage (---)</p> <p>PAIR control solenoid valve voltage Battery voltage ((+) terminal: O/W – (-) terminal: Ground)</p>  <p style="text-align: right; font-size: small;">I718H1110235-02</p> <p><i>Is the voltage OK?</i></p>	<ul style="list-style-type: none"> • B/G wire open or shorted to the ground, or poor “39” connection failure. • If wire and connection are OK, intermittent trouble or faulty ECM. • Recheck each terminal and wire harness for open circuit and poor connection. • Replace the ECM with a known good one, and inspect it again. Refer to “ECM Removal and Installation in Section 1C (Page 1C-1)”. 	<p>Open or short circuit in the O/W wire.</p>

Active Control Inspection

- 1) Set up the SDS tool. (Refer to SDS operation manual for further details.)
- 2) Turn the ignition switch ON.
- 3) Click “PAIR Sol operating control” (1).

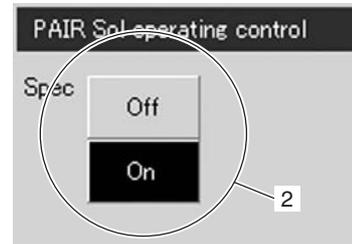


I718H1110245-01

1A-111 Engine General Information and Diagnosis:

4) Click each button (2). At this time, if an operating sound is heard from the PAIR control solenoid valve, the function is normal.

<input type="checkbox"/> Throttle position	27.9	°
<input type="checkbox"/> Manifold absolute pressure 1	101.3	kPa
<input type="checkbox"/> Engine coolant / oil temperature	22.1	°C
<input type="checkbox"/> PAIR control solenoid valve	On	
<input type="checkbox"/> Intake air temperature	23.4	°C



I718H1110236-01

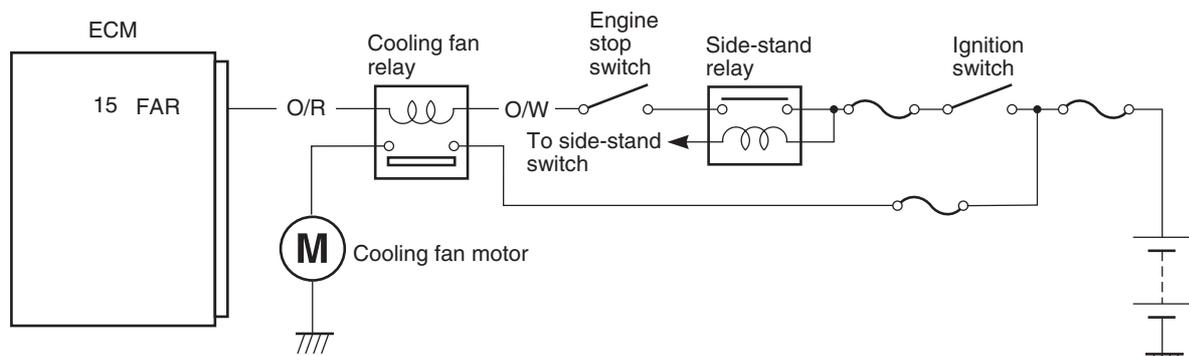
DTC "C60" (P0480): Cooling Fan Relay Circuit Malfunction

B718H11104029

Detected Condition and Possible Cause

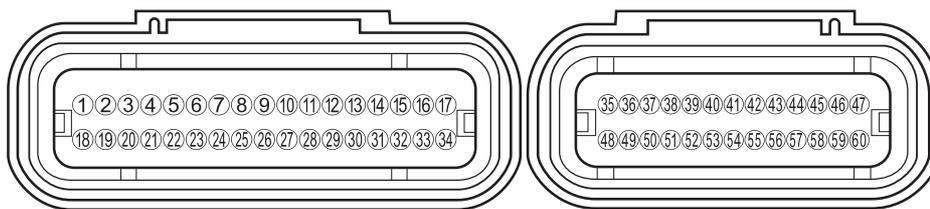
Detected Condition	Possible Cause
Cooling fan relay signal is not input to ECM.	<ul style="list-style-type: none"> Cooling fan relay circuit open or short. ECM malfunction.

Wiring Diagram



I718H1110125-03

ECM coupler (Harness side)



I718H1110240-01

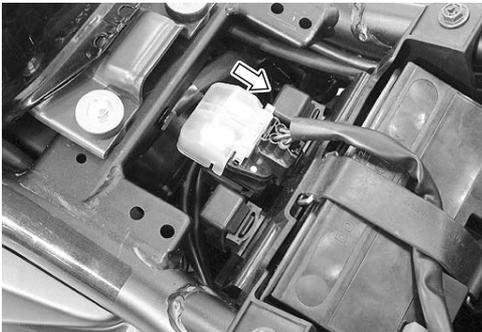
Troubleshooting

⚠ CAUTION

When using the multi-circuit tester, do not strongly touch the terminal of the ECM coupler with a needle pointed tester probe to prevent the terminal damage or terminal bend.

NOTE

After repairing the trouble, clear the DTC using SDS tool. Refer to “Use of SDS Diagnosis Reset Procedures (Page 1A-13)”.

Step	Action	Yes	No
1	1) Turn the ignition switch OFF. 2) Remove the seat. Refer to “Exterior Parts Removal and Installation in Section 9D (Page 9D-6)”. 3) Check the cooling fan relay coupler for loose or poor contacts. If OK, then inspection the cooling fan relay. Refer to “Cooling Fan Inspection in Section 1F (Page 1F-8)”.  <small>I718H1110255-01</small> Is the cooling fan relay OK?	<ul style="list-style-type: none"> • O/W and O/R wire open or shorted to the ground, or poor “15” connection. • If wire and connection are OK, intermittent trouble or faulty ECM. • Recheck each terminal and wire harness for open circuit and poor connection. • Replace the ECM with a known good one, and inspect it again. Refer to “ECM Removal and Installation in Section 1C (Page 1C-1)”. 	Replace the cooling fan relay with a new one.

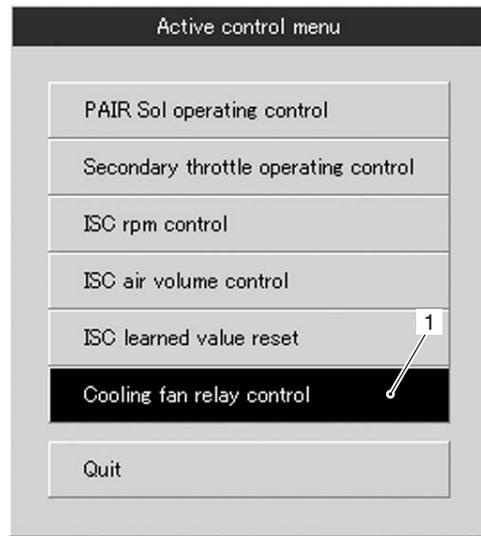
1A-113 Engine General Information and Diagnosis:

Active Control Inspection

NOTE

Cooling fan relay and cooling fan motor operation can be checked until the engine coolant temperature is less than 100 °C (212 °F) after starting the engine.

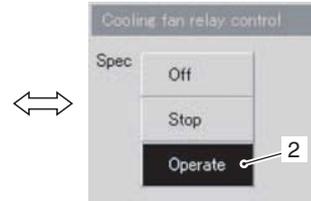
- 1) Set up the SDS tool. (Refer to SDS operation manual for further details.)
- 2) Start the engine and run it in idling condition.
- 3) Click "Cooling fan relay control" (1).



I718H1110244-01

- 4) Click the operate button (2).
At this time, if an operation sound is heard from the cooling fan relay and cooling fan motor is operated, the function is normal.

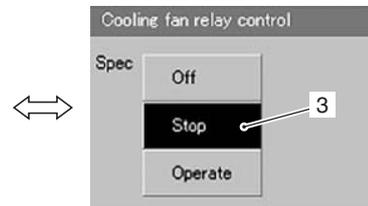
<input type="checkbox"/> Manifold absolute pressure 1	75.9	kPa
<input type="checkbox"/> Cooling fan relay	On	
<input type="checkbox"/> Secondary throttle actuator position sensor	10.2	%
<input type="checkbox"/> Engine coolant / oil temperature	47.8	°C



I718H1110237-02

- 5) Click the stop button (3) to check the operation properly.

<input type="checkbox"/> Secondary throttle actuator position sensor	31.0	%
<input type="checkbox"/> Cooling fan relay	Off	
<input type="checkbox"/> Manifold absolute pressure 1	75.0	kPa
<input type="checkbox"/> PAIR control solenoid valve	Off	



I718H1110138-02

Specifications

Service Data

B718H11107001

Injector

Item	Specification	Note
Injector resistance	11 – 13 Ω at 20 °C (68 °F)	—

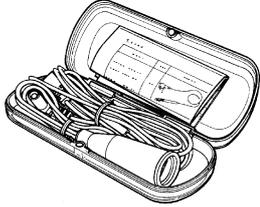
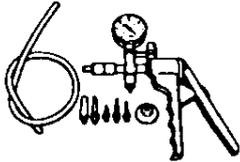
FI Sensors

Item	Specification	Note
CKP sensor resistance	90 – 150 Ω	
CKP sensor peak voltage	2.0 V and more	When cranking
IAP sensor input voltage (No.1)	4.5 – 5.5 V	
IAP sensor output voltage (No.1)	Approx. 2.7 V at idle speed	
IAP sensor input voltage (No.2)	4.5 – 5.5 V	
IAP sensor output voltage (No.2)	2.0 – 3.0 V at idle speed	
TP sensor input voltage	4.5 – 5.5 V	
TP sensor output voltage	Closed	Approx. 1.1 V
	Opened	Approx. 4.3 V
ECT sensor input voltage	4.5 – 5.5 V	
ECT sensor output voltage	0.15 – 4.85 V	
ECT sensor resistance	Approx. 2.45 k Ω at 20 °C (68 °F)	
IAT sensor input voltage	4.5 – 5.5 V	
IAT sensor output voltage	Approx. 2.4 V at 20 °C (68 °F)	
IAT sensor resistance	Approx. 2.56 k Ω at 20 °C (68 °F)	
TO sensor resistance	16.5 – 22.3 k Ω	
TO sensor output voltage	Normal	0.4 – 1.4 V
	Leaning	3.7 – 4.4 V
GP switch voltage	0.6 V and more	When leaning 65° From 1st to Top
Injector voltage	Battery voltage	
Injection coil primary peak voltage	80 V and more	When cranking
STP sensor input voltage	4.5 – 5.5 V	
STP sensor output voltage	Closed	Approx. 0.6 V
	Opened	Approx. 4.5 V
STV actuator resistance	Approx. 7.0 Ω	
ISC valve resistance	Approx. 20 Ω at 20 °C (68 °F)	
HO2 sensor resistance	Approx. 8 Ω at 23 °C (73 °F)	
HO2 sensor output voltage	0.3 V and less at idle speed	
	0.6 V and more at 3 000 r/min	
PAIR control solenoid valve resistance	Approx. 18 – 22 Ω at 20 – 30 °C (68 – 86 °F)	
EVAP purge control valve	Approx. 32 Ω at 20 °C (68 °F)	E-33 only

Special Tools and Equipment

Special Tool

B718H11108001

<p>09900-25008 Multi-circuit tester set ☞ (Page 1A-26) / ☞ (Page 1A-27) / ☞ (Page 1A-29) / ☞ (Page 1A-109) / ☞ (Page 1A-110) / ☞ (Page 1A-31) / ☞ (Page 1A-31) / ☞ (Page 1A-33) / ☞ (Page 1A-33) / ☞ (Page 1A-34) / ☞ (Page 1A-35) / ☞ (Page 1A-36) / ☞ (Page 1A-38) / ☞ (Page 1A-40) / ☞ (Page 1A-40) / ☞ (Page 1A-42) / ☞ (Page 1A-42) / ☞ (Page 1A-43) / ☞ (Page 1A-44) / ☞ (Page 1A-46) / ☞ (Page 1A-48) / ☞ (Page 1A-50) / ☞ (Page 1A-50) / ☞ (Page 1A-51) / ☞ (Page 1A-53) / ☞ (Page 1A-55) / ☞ (Page 1A-55) / ☞ (Page 1A-57) / ☞ (Page 1A-58) / ☞ (Page 1A-59) / ☞ (Page 1A-61) / ☞ (Page 1A-63) / ☞ (Page 1A-65) / ☞ (Page 1A-65)</p>  <p>☞ (Page 1A-66) / ☞ (Page 1A-68) / ☞ (Page 1A-69) / ☞ (Page 1A-70) / ☞ (Page 1A-71) / ☞ (Page 1A-71) / ☞ (Page 1A-72) / ☞ (Page 1A-75) / ☞ (Page 1A-78) / ☞ (Page 1A-80) / ☞ (Page 1A-80) / ☞ (Page 1A-82) / ☞ (Page 1A-82) / ☞ (Page 1A-83) / ☞ (Page 1A-84) / ☞ (Page 1A-86) / ☞ (Page 1A-88) / ☞ (Page 1A-89) / ☞ (Page 1A-90) / ☞ (Page 1A-92) / ☞ (Page 1A-93) / ☞ (Page 1A-101) / ☞ (Page 1A-103) / ☞ (Page 1A-104) / ☞ (Page 1A-105) / ☞ (Page 1A-106) / ☞ (Page 1A-107)</p>	<p>09900-25009 Needle pointed probe set ☞ (Page 1A-107) / ☞ (Page 1A-31) / ☞ (Page 1A-33) / ☞ (Page 1A-35) / ☞ (Page 1A-38) / ☞ (Page 1A-40) / ☞ (Page 1A-40) / ☞ (Page 1A-42) / ☞ (Page 1A-42) / ☞ (Page 1A-44) / ☞ (Page 1A-48) / ☞ (Page 1A-50) / ☞ (Page 1A-53) / ☞ (Page 1A-55) / ☞ (Page 1A-55) / ☞ (Page 1A-57) / ☞ (Page 1A-58) / ☞ (Page 1A-59) / ☞ (Page 1A-61) / ☞ (Page 1A-63) / ☞ (Page 1A-65) / ☞ (Page 1A-65) / ☞ (Page 1A-70) / ☞ (Page 1A-71) / ☞ (Page 1A-72) / ☞ (Page 1A-80) / ☞ (Page 1A-82) / ☞ (Page 1A-84) / ☞ (Page 1A-86) / ☞ (Page 1A-92) / ☞ (Page 1A-101) / ☞ (Page 1A-104) / ☞ (Page 1A-105)</p> 
<p>09904-41010 SDS set ☞ (Page 1A-12) / ☞ (Page 1A-15)</p> 	<p>09917-47011 Vacuum pump gauge ☞ (Page 1A-36)</p> 
<p>09930-82720 Mode select switch ☞ (Page 1A-3) / ☞ (Page 1A-11) / ☞ (Page 1A-11)</p> 	<p>99565-01010-010 CD-ROM Ver.10 ☞ (Page 1A-12) / ☞ (Page 1A-15)</p> 