

01-40B CONTROL SYSTEM [FS]

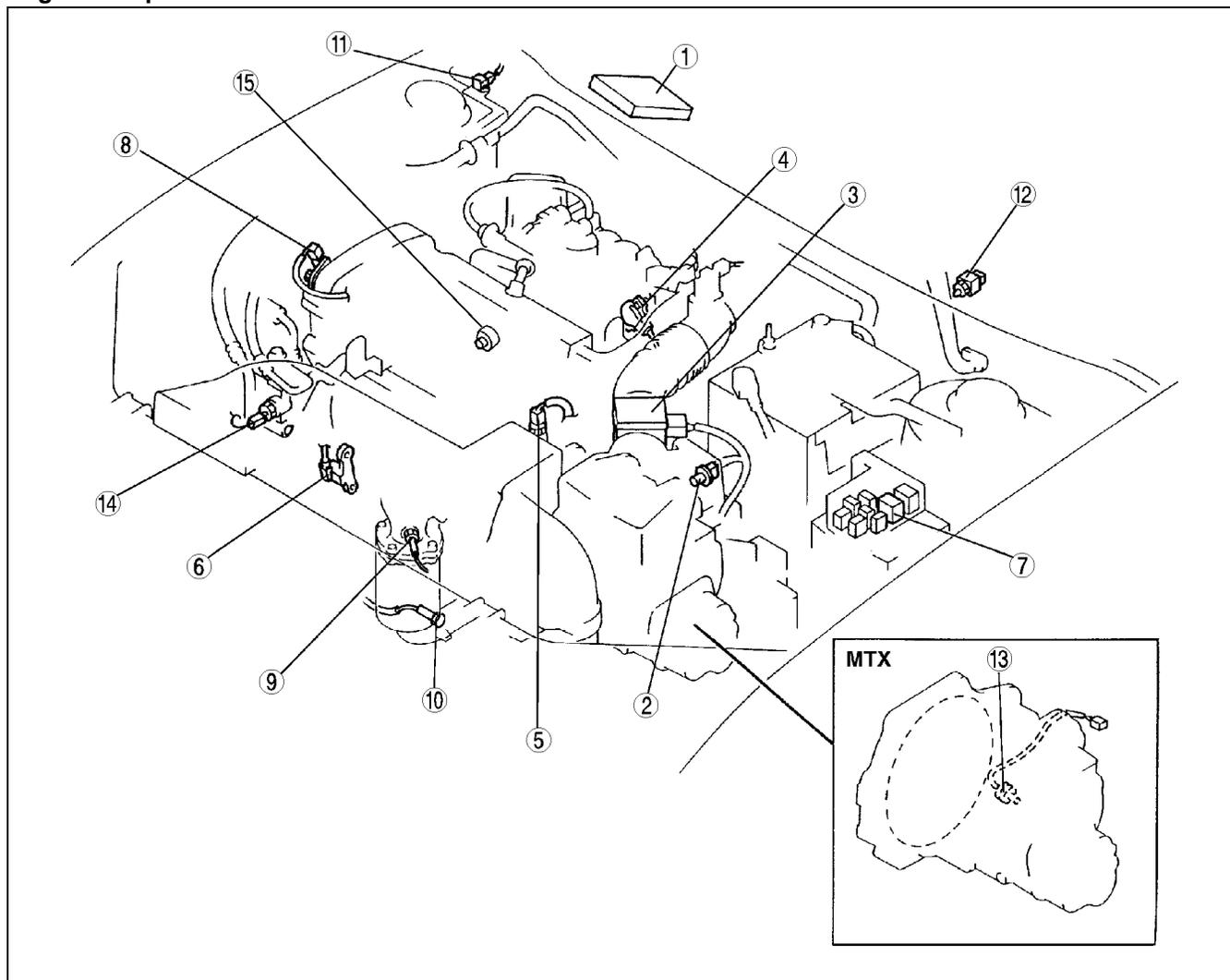
CONTROL SYSTEM COMPONENT		CRANKSHAFT POSITION (CKP) SENSOR	
LOCATION INDEX [FS]	01-40B-2	INSPECTION [FS]	01-40B-32
CONTROL SYSTEM DIAGRAM [FS] . . .	01-40B-4	Air Gap Inspection	01-40B-32
CONTROL SYSTEM WIRING		Resistance Inspection	01-40B-33
DIAGRAM [FS]	01-40B-5	Circuit Open/Short Inspection	01-40B-33
PCM REMOVAL/INSTALLATION [FS] . .	01-40B-7	CRANKSHAFT POSITION (CKP) SENSOR	
PCM INSPECTION [FS]	01-40B-7	REMOVAL/INSTALLATION [FS]	01-40B-34
PCM Inspection Using the SST		CAMSHAFT POSITION (CMP) SENSOR	
(WDS or equivalent)	01-40B-7	REMOVAL/INSTALLATION [FS]	01-40B-34
PCM Inspection Using the SST		CAMSHAFT POSITION (CMP) SENSOR	
(104 Pin Breakout Box)	01-40B-12	INSPECTION [FS]	01-40B-35
Inspection Using An Oscilloscope		Resistance Inspection	01-40B-35
(Reference)	01-40B-22	Circuit Open/Short Inspection	01-40B-35
INSPECTION USING AN OSCILLOSCOPE		KNOCK SENSOR INSPECTION [FS] . . .	01-40B-36
(REFERENCE) [FS]	01-40B-26	Resistance Inspection	01-40B-36
Purpose	01-40B-26	Circuit Open/Short Inspection	01-40B-36
When Normal	01-40B-26	KNOCK SENSOR	
When Plunger Stuck	01-40B-26	REMOVAL/INSTALLATION [FS]	01-40B-37
INTAKE AIR TEMPERATURE (IAT)		HEATED OXYGEN SENSOR (HO2S)	
SENSOR INSPECTION [FS]	01-40B-27	INSPECTION [FS]	01-40B-37
Resistance Inspection	01-40B-27	HO2S (Front and Rear) Voltage	
Circuit Open/Short Inspection	01-40B-27	Inspection	01-40B-37
MASS AIR FLOW (MAF) SENSOR		HO2S Heater (Front and Rear)	
INSPECTION [FS]	01-40B-28	Resistance Inspection	01-40B-38
Circuit Open/Short Inspection	01-40B-28	EGR BOOST SENSOR	
THROTTLE POSITION (TP) SENSOR		INSPECTION [FS]	01-40B-39
INSPECTION [FS]	01-40B-29	Circuit Open/Short Inspection	01-40B-40
Resistance Inspection	01-40B-29	FUEL TANK PRESSURE SENSOR	
Circuit Open/Short Inspection	01-40B-30	INSPECTION [FS]	01-40B-40
ENGINE COOLANT TEMPERATURE (ECT)		Circuit Open/Short Inspection	01-40B-41
SENSOR REMOVAL/INSTALLATION		CLUTCH SWITCH INSPECTION [FS] . . .	01-40B-42
[FS]	01-40B-30	Circuit Open/Short Inspection	01-40B-42
ENGINE COOLANT TEMPERATURE (ECT)		NEUTRAL SWITCH INSPECTION [FS] . .	01-40B-43
SENSOR INSPECTION [FS]	01-40B-31	Circuit Open/Short Inspection	01-40B-43
ECT Sensor Resistance Inspection . . .	01-40B-31	POWER STEERING PRESSURE (PSP)	
Circuit Open/Short Inspection	01-40B-32	SWITCH INSPECTION [FS]	01-40B-44
		Continuity Inspection	01-40B-44
		Circuit Open/Short Inspection	01-40B-44

CONTROL SYSTEM [FS]

CONTROL SYSTEM COMPONENT LOCATION INDEX [FS]

A3U014018881W01

Engine compartment side



Z3U0140W101

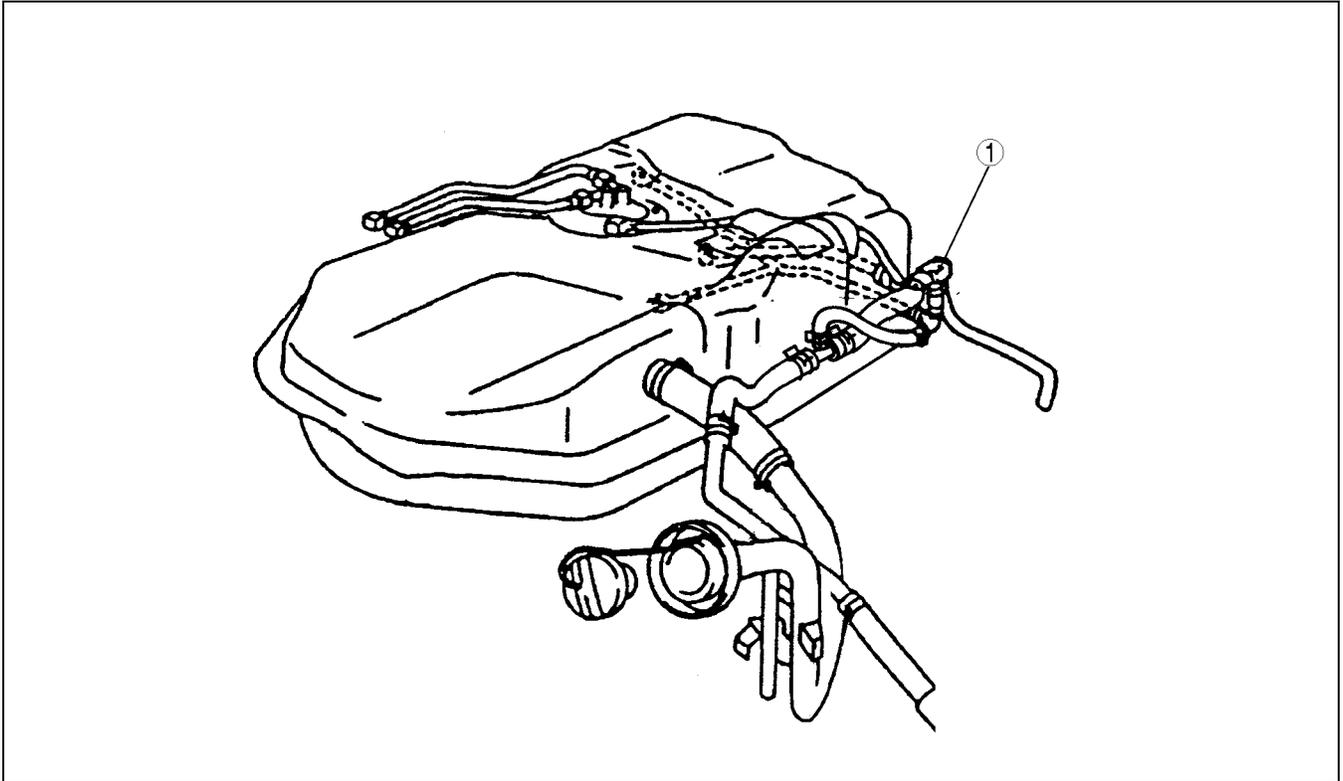
1	PCM (See 01-40B-7 PCM REMOVAL/INSTALLATION [FS].) (See 01-40B-7 PCM INSPECTION [FS])
2	Intake air temperature (IAT) sensor (See 01-40B-27 INTAKE AIR TEMPERATURE (IAT) SENSOR INSPECTION [FS])
3	Mass air flow (MAF) sensor (See 01-40B-28 MASS AIR FLOW (MAF) SENSOR INSPECTION [FS])
4	Throttle position (TP) sensor (See 01-40B-29 THROTTLE POSITION (TP) SENSOR INSPECTION [FS])
5	Engine coolant temperature (ECT) sensor (See 01-40B-30 ENGINE COOLANT TEMPERATURE (ECT) SENSOR REMOVAL/INSTALLATION [FS]) (See 01-40B-31 ENGINE COOLANT TEMPERATURE (ECT) SENSOR INSPECTION [FS])
6	Crankshaft position (CKP) sensor (See 01-40B-32 CRANKSHAFT POSITION (CKP) SENSOR INSPECTION [FS]) (See 01-40B-34 CRANKSHAFT POSITION (CKP) SENSOR REMOVAL/INSTALLATION [FS])

7	Main relay (See 09-21-5 RELAY INSPECTION)
8	Camshaft position (CMP) sensor (See 01-40B-34 CAMSHAFT POSITION (CMP) SENSOR REMOVAL/INSTALLATION [FS]) (See 01-40B-35 CAMSHAFT POSITION (CMP) SENSOR INSPECTION [FS])
9	Heated oxygen sensor (front) (See 01-40B-37 HEATED OXYGEN SENSOR (HO2S) INSPECTION [FS])
10	Heated oxygen sensor (rear) (See 01-40B-37 HEATED OXYGEN SENSOR (HO2S) INSPECTION [FS])
11	EGR boost sensor (See 01-40B-39 EGR BOOST SENSOR INSPECTION [FS])
12	Clutch switch (See 01-40B-42 CLUTCH SWITCH INSPECTION [FS])
13	Neutral switch (See 01-40B-43 NEUTRAL SWITCH INSPECTION [FS])
14	Power steering pressure (PSP) switch (See 01-40B-44 POWER STEERING PRESSURE (PSP) SWITCH INSPECTION [FS])

CONTROL SYSTEM [FS]

- | | |
|----|--|
| 15 | Knock sensor
(See 01-40B-36 KNOCK SENSOR INSPECTION [FS]) |
|----|--|

Fuel tank side



01-40B

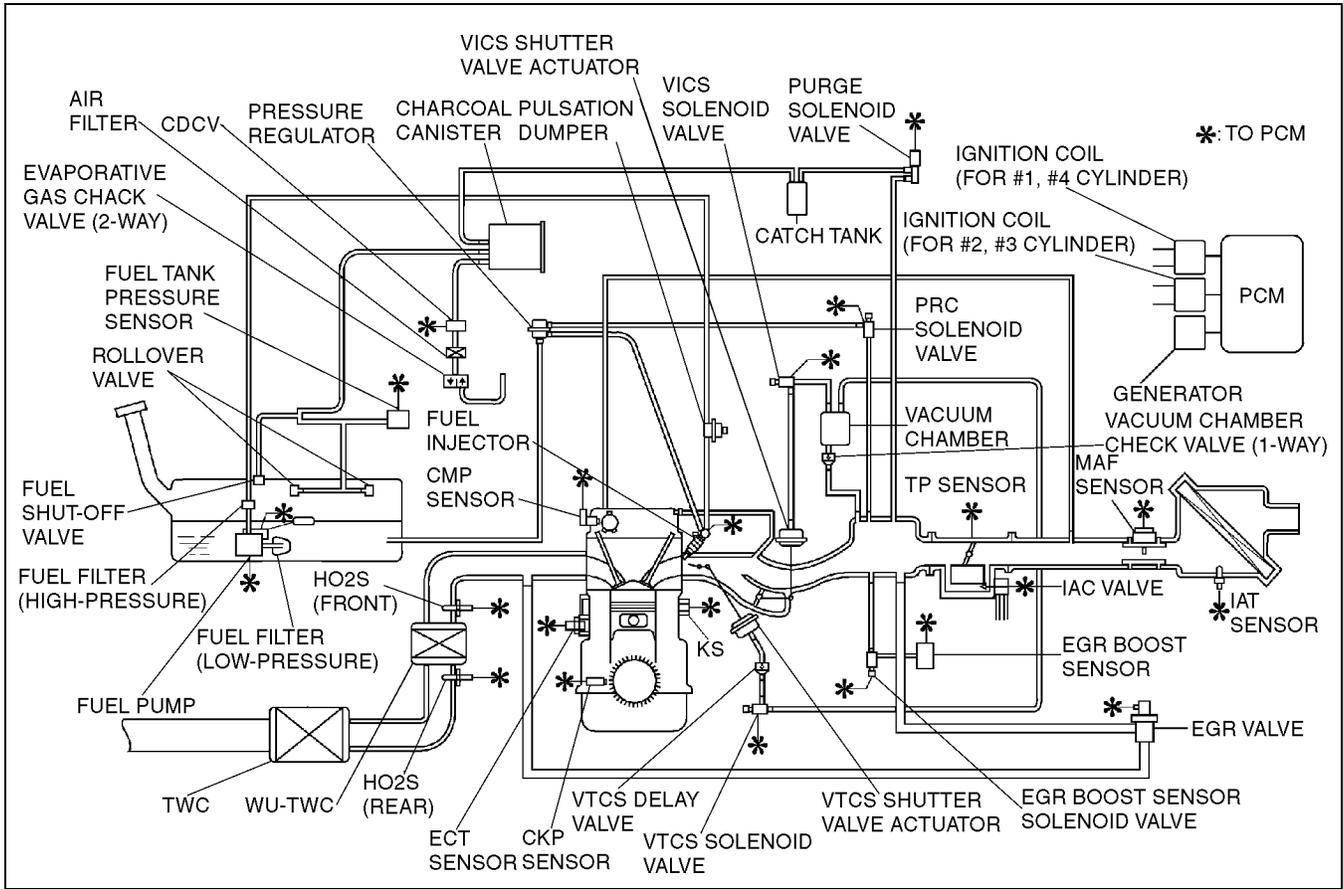
- | | |
|---|--|
| 1 | Fuel tank pressure sensor
(See 01-40B-40 FUEL TANK PRESSURE SENSOR INSPECTION [FS]) |
|---|--|

Z3U0140W002

CONTROL SYSTEM [FS]

CONTROL SYSTEM DIAGRAM [FS]

A3U014018881W02



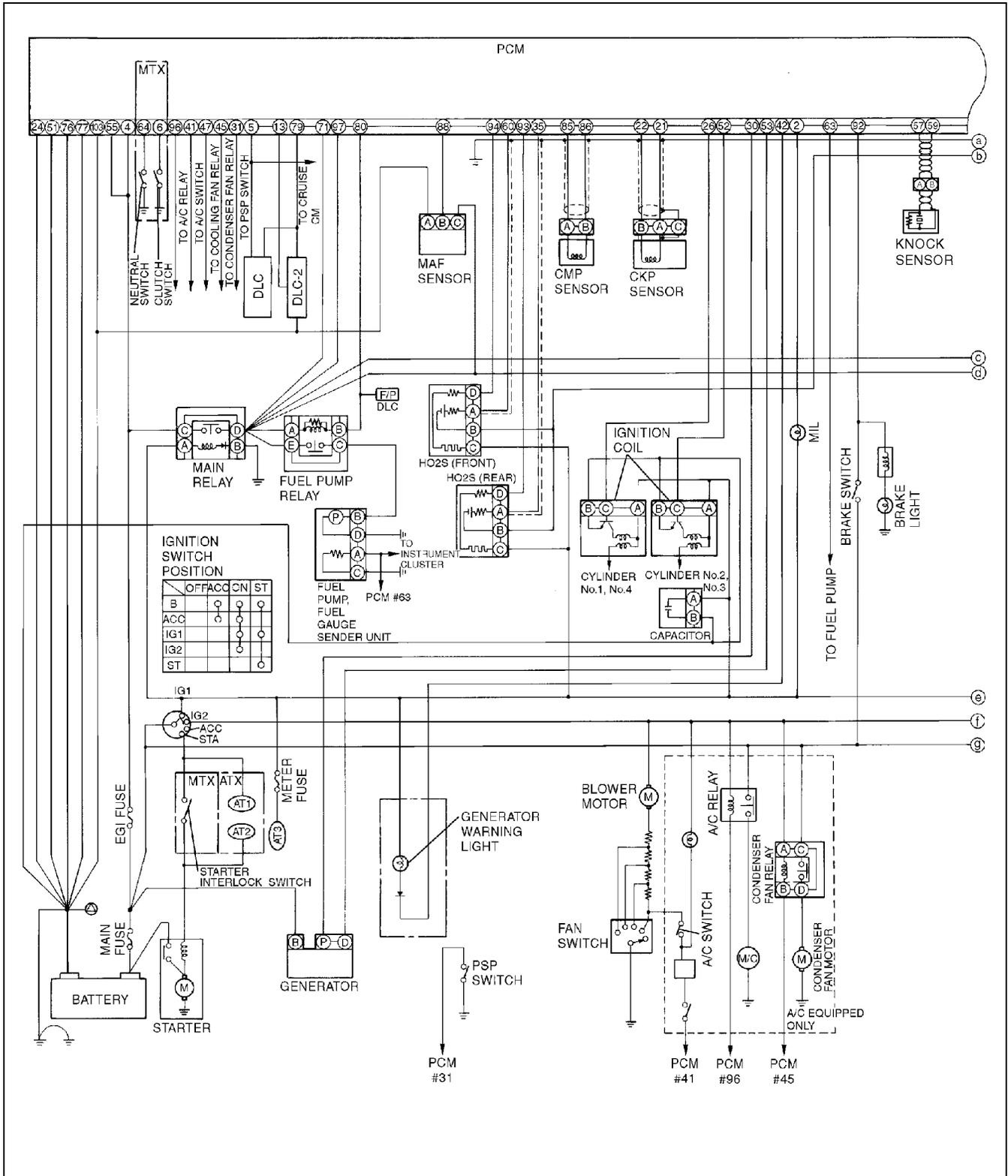
Z3U0140W102

CONTROL SYSTEM [FS]

CONTROL SYSTEM WIRING DIAGRAM [FS]

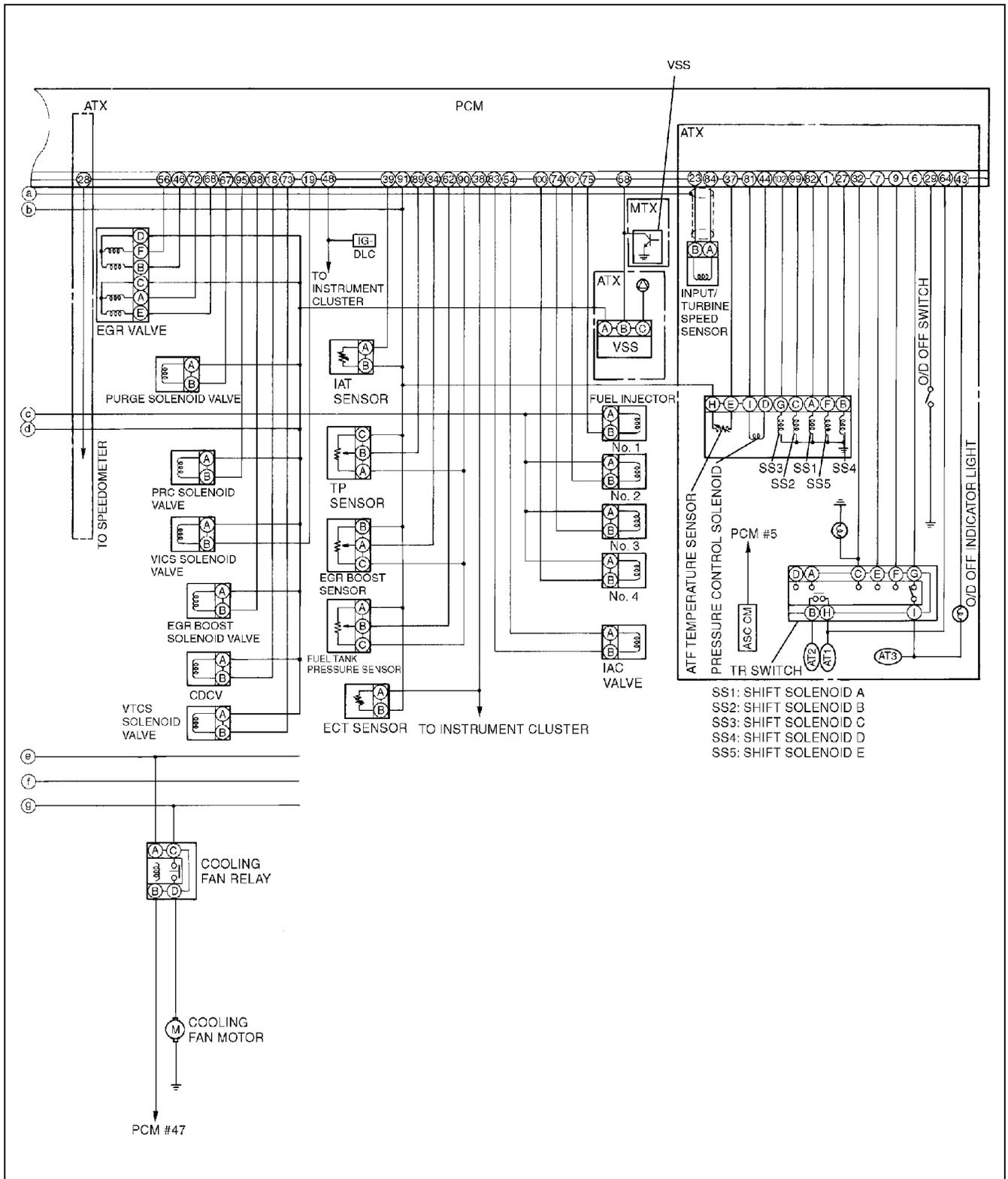
A3U014018881W03

01-40B



A3U0140W001

CONTROL SYSTEM [FS]



Z3U0140W104

CONTROL SYSTEM [FS]

PCM REMOVAL/INSTALLATION [FS]

A3U014018880W01

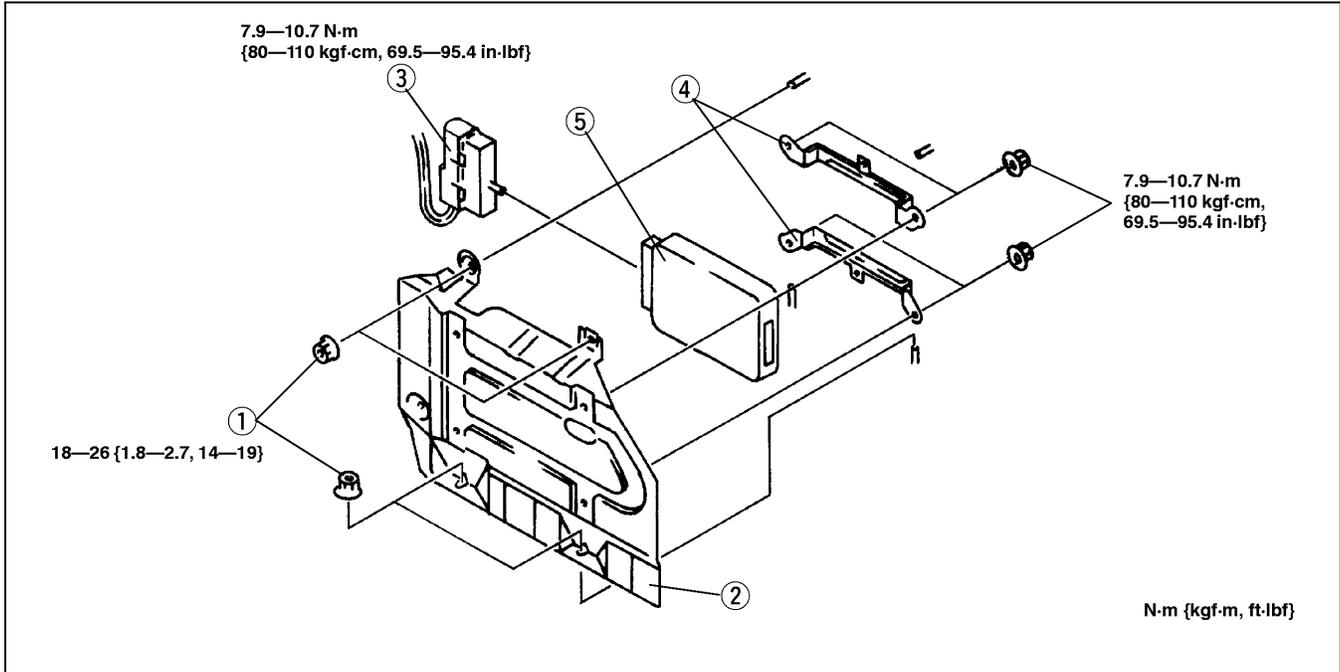
1. Disconnect the negative battery cable.
2. Remove the front passenger side scuff plate.
3. Remove the front passenger side trim.
4. Partially peel off the floor covering from the front of the passenger's side.

Warning

- The edge of the PCM plate is sharp. Be careful not to cut yourself when handling the PCM plate.

01-40B

5. Remove in the order indicated in the table.
6. Install in the reverse order of removal.



1	Nut
2	PCM panel
3	PCM connector

4	Bracket
5	PCM

PCM INSPECTION [FS]

A3U014018880W02

Caution

- The PCM terminal voltages vary with change in measuring conditions and vehicle conditions. Always complete the inspection of the input systems, output systems, and PCM to determine the cause of trouble. Otherwise, diagnosis will fail.

PCM Inspection Using the SST (WDS or equivalent)

Note

- PIDs for the following parts are not available on this model. Go to the appropriate part inspection page.
 - CMP sensor (See 01-40B-35 CAMSHAFT POSITION (CMP) SENSOR INSPECTION [FS].)
 - Main relay (See 09-21-5 RELAY INSPECTION.)

1. Connect the WDS or equivalent to the DLC-2. (See 01-02B-7 ON-BOARD DIAGNOSTIC TEST [FS].)
2. Turn the ignition switch on.
3. Measure the value.
 - If the value is not within the specification, follow the instruction in Action column.

CONTROL SYSTEM [FS]

PID/DATA MONITOR table (Reference)

Monitor item (Definition)	Unit/ Condition		Condition/Specification (Reference)	Action	PCM terminal
ACCS (A/C relay)	ON/OFF		A/C operating: ON Ignition switch ON: OFF	Inspect following PIDs: RPM, TP, ECT, ACSW Inspect A/C relay (See 09-21-5 RELAY INSPECTION)	96
ACSW (A/C switch)	ON/OFF		A/C switch and fan switch ON: ON A/C switch OFF: OFF	Inspect A/C switch (See 07-40-11 CLIMATE CONTROL UNIT INSPECTION)	41
ALTF (Generator field coil control duty value)	%		Ignition switch ON: 0% Idle: 0—100% Generator operating → E/L ON: Duty value rise	Inspect following PIDs: IAT, RPM, VPWR, B+2, ALTT V Inspect generator (See 01-17-3 GENERATOR INSPECTION)	53
ALTT V (Generator output voltage)	V		Ignition switch ON: 0 V Idle: 14—16 V	Inspect following PIDs: IAT, RPM, VPWR, B+2, ALTF Inspect generator (See 01-17-3 GENERATOR INSPECTION)	30
ARPMDES (Target engine speed)	rpm		Idle (No load): 650—750 rpm	Perform "On-Board Diagnostic Test" (See 01-02B-7 ON-BOARD DIAGNOSTIC TEST [FS])	—
BARO (Barometric pressure)	kPa	Hg	Below 400 m {0.25 mile} above sea level: 99—103 kPa {29—30 inHg}	Inspect EGR boost sensor (See 01-40B-39 EGR BOOST SENSOR INSPECTION [FS])	34
	V		Below 400 m {0.25 mile} above sea level: 4.1—4.3 V	Inspect EGR boost sensor (See 01-40B-39 EGR BOOST SENSOR INSPECTION [FS])	34
BOO (Brake switch)	ON/OFF		Brake pedal depressed: ON Brake pedal released: OFF	Inspect brake switch (See 04-11-5 BRAKE SWITCH INSPECTION)	92
B+2 (PCM back-up positive voltage)	V		Constant: B+	Inspect battery (See 01-17-1 BATTERY INSPECTION)	4
CDCV (Canister drain cut valve)	ON/OFF		Ignition switch ON: OFF Idle: OFF	Inspect CDCV (See 01-16-10 CANISTER DRAIN CUT VALVE (CDCV) INSPECTION)	18
CHRGLP (Generator warning light)	ON/OFF		Ignition switch ON: ON Idle: OFF	Inspect generator warning light	42
CPP*2 (Clutch switch)	ON/OFF		Clutch pedal depressed: ON Clutch pedal released: OFF	Inspect clutch switch (See 01-40B-42 CLUTCH SWITCH INSPECTION [FS])	6
ECT (Engine coolant temperature)	°C	°F	ECT 20 °C {68 °F}: 20 °C {68 °F} ECT 60 °C {140 °F}: 60 °C {140 °F}	Inspect ECT sensor (See 01-40B-31 ENGINE COOLANT TEMPERATURE (ECT) SENSOR INSPECTION [FS])	38
	V		ECT 20 °C {68 °F}: 2.9—3.1 V After warm up: 0.2—1.0 V	Inspect ECT sensor (See 01-40B-31 ENGINE COOLANT TEMPERATURE (ECT) SENSOR INSPECTION [FS])	38
EGRCHK (EGR boost sensor solenoid valve)	ON/OFF		Ignition switch ON: OFF Idle: OFF	Inspect EGR boost sensor solenoid valve (See 01-16-17 EGR BOOST SENSOR SOLENOID VALVE INSPECTION)	98
EVAPCP (Purge solenoid valve duty value)	%		Ignition switch ON: 0% Idle: 0%	Inspect following PIDs: IAT, RPM, ECT, MAF, TP, BARO, O2S11, VPWR Inspect purge solenoid valve (See 01-16-12 PURGE SOLENOID VALVE INSPECTION)	67
FAN2 (Condenser fan control)	ON/OFF		A/C operated: ON Others: OFF	Inspect following PIDs: RPM, TP, ECT, ACSW, TEST Inspect condenser fan relay (See 09-21-5 RELAY INSPECTION)	45

CONTROL SYSTEM [FS]

Monitor item (Definition)	Unit/ Condition	Condition/Specification (Reference)	Action	PCM terminal
FAN3 (Cooling fan control)	ON/OFF	Cooling fan operating (ECT above 97 °C {207 °F}) or terminal TEN grounded and throttle valve open or A/C relay on: ON Others: OFF	Inspect following PIDs: RPM, TP, ECT, ACSW, TEST Inspect cooling fan relay (See 09-21-5 RELAY INSPECTION)	47
FP (Fuel pump relay)	ON/OFF	Ignition switch ON: OFF Idle: ON Cranking: ON	Inspect following PID: RPM Inspect fuel pump relay (See 09-21-5 RELAY INSPECTION)	80
FPRC (PRC solenoid valve)	ON/OFF	Ignition switch ON: OFF Idle: OFF After hot start: ON	Inspect PRC solenoid valve (See 01-14-31 PRC SOLENOID VALVE INSPECTION)	95
FTL V (Fuel tank level signal voltage)	V	Idle condition <ul style="list-style-type: none"> Fuel tank full: 1.0—1.5 V Fuel tank empty: 4.4—4.8 V Fuel tank half: 2.8—3.4 V Note <ul style="list-style-type: none"> The voltages above will be measured when the battery positive voltage is between 12V and 14 V. 	Inspect fuel gauge sender unit (See 09-22-4 Fuel Gauge)	63
FTP (Fuel tank pressure)	kPa	Ignition switch ON: 0—1.0 kPa {0—0.3 inHg} Idle: 0—1.0 kPa {0—0.3 inHg}	Inspect fuel tank pressure sensor (See 01-40B-40 FUEL TANK PRESSURE SENSOR INSPECTION [FS])	62
	Hg	Note <ul style="list-style-type: none"> The pressure and output voltage varies according to the fuel temperature. 		
FTP1SV	kPa	Ignition switch ON: 2.5—2.8 V Idle: 2.5—2.8 V	Inspect fuel tank pressure sensor (See 01-40B-40 FUEL TANK PRESSURE SENSOR INSPECTION [FS])	62
		Fuel tank pressure 0 kPa {0 mmHg, 0 inHg}: 2.5 V Fuel tank pressure 1 kPa {7.5 mmHg, 0.3 inHg}: 2.8 V		
FTP2SV	V	Note <ul style="list-style-type: none"> The pressure and output voltage vary according to the fuel temperature. 		
FTP1SV	kPa	Perform "DTC INSPECTION". (See 01-02B-15 DTC TABLE [FS])		—
FUELPW1 (Fuel injection duration)	ms	Ignition switch ON: 0 msec Idle: 2.5—4.0 msec	Inspect following PIDs: MAF, IAT, RPM, TP, ECT, PNP, CPP, O2S11, PSP, BOO, ACSW, VPWR Inspect CMP sensor (See 01-40B-35 CAMSHAFT POSITION (CMP) SENSOR INSPECTION [FS])	74, 75, 100, 101
GEAR (Gear position)	1/2/3/4	1GR: 1 2GR: 2 3GR: 3 4GR: 4	Inspect following PIDs: SSA/SS1, SSB/SS2, SSC/SS3, SSD/SS4, SSE/SS5	1, 27, 82, 99, 102
HTR11 (HO2S heater (Front))	ON/OFF	Ignition switch ON (engine stopped): OFF Approx. 15 seconds after engine start with ECT 20—30 °C {68—86°F}* : ON Others: ON ⇔ OFF	Inspect following PIDs: ECT V, MAF V. Inspect HO2S heater (See 01-40B-38 HO2S Heater (Front and Rear) Resistance Inspection)	94
HTR12 (HO2S heater (Rear))	ON/OFF	ECT above 70 °C {158 °F}: ON HO2S (Rear) heater is malfunctioning: OFF	Inspect following PIDs: ECT V, MAF V Inspect HO2S heater (See 01-40B-38 HO2S Heater (Front and Rear) Resistance Inspection)	93

CONTROL SYSTEM [FS]

Monitor item (Definition)	Unit/ Condition		Condition/Specification (Reference)	Action	PCM terminal
IAC (IAC valve)	%		Ignition switch ON: 0% Idle: 25—35%	Inspect following PIDs: IAT V, RPM, ECT V, MAF V, TP V, NL SW, CLT SW, PSP SW, A/C SW, TEN Inspect IAC valve (See 01-13B-8 IDLE AIR CONTROL (IAC) VALVE INSPECTION [FS])	54, 83
IAT (Intake air temperature)	°C	°F	IAT 20 °C {68 °F}: 20 °C {68 °F}	Inspect IAT sensor (See 01-40B-27 INTAKE AIR TEMPERATURE (IAT) SENSOR INSPECTION [FS])	39
	V		IAT 20 °C {68 °F}: 2.3—2.4 V IAT 30 °C {86 °F}: 1.7—1.9 V	Inspect IAT sensor (See 01-40B-27 INTAKE AIR TEMPERATURE (IAT) SENSOR INSPECTION [FS])	39
IMRC (VTCS solenoid valve)	ON/OFF		ECT above 65 °C {149 °F} while idling: OFF ECT below 65 °C {149 °F} and engine speed at 1,500 rpm: ON	Inspect VTCS solenoid valve (See 01-13B-15 VARIABLE TUMBLE CONTROL SYSTEM (VTCS) SOLENOID VALVE INSPECTION [FS])	19
IVC (VICS solenoid valve)	ON/OFF		Engine speed above 4,750 rpm: OFF Engine speed below 4,750 rpm: ON	Inspect VICS solenoid valve (See 01-13B-12 VARIABLE INERTIA CHARGING SYSTEM (VICS) SOLENOID VALVE INSPECTION [FS])	—
LOAD (Load)	%		Idle: 13—20% (MTX), 14—22% (ATX) Engine speed at 2,500 rpm: 11—17% (MTX), 13—19% (ATX)	Perform "On-Board Diagnostic Test" (See 01-02B-7 ON-BOARD DIAGNOSTIC TEST [FS])	—
LONGFT1 (Long fuel trim)	%		Idle: -5—5%	Perform "On-Board Diagnostic Test" (See 01-02B-7 ON-BOARD DIAGNOSTIC TEST [FS])	—
LPS*1 (Pressure control solenoid)	A		Change current value according to throttle opening angle	Inspect pressure control solenoid (See 05-17-28 SOLENOID VALVES INSPECTION)	44, 81
MAF (Intake MAF)	gm/s		Idle: 1.6—2.2 g/s (MTX), 1.6—2.4 g/s (ATX) Engine speed at 2,500 rpm: 5.1—6.5 g/s (MTX), 5.6—7.2 g/s (ATX)	Inspect MAF sensor (See 01-40B-28 MASS AIR FLOW (MAF) SENSOR INSPECTION [FS])	88
	V		Ignition switch ON: 0.6—2.0 V Idle: 0.8—2.2 V	Inspect MAF sensor (See 01-40B-28 MASS AIR FLOW (MAF) SENSOR INSPECTION [FS])	88
MIL (Malfunction indicator light)	ON/OFF		Ignition switch ON: ON DTC output: ON No DTC output: OFF	Inspect MIL	2
MODE1 (Readiness Function Code)	ON/OFF		RFC exists: ON No RFC: OFF	—	—
O2S11 (HO2S (Front))	V		Ignition switch ON: 0—1.0 V After warm up: 0—1.0 V Acceleration: 0.5—1.0 V Deceleration: 0—0.5 V	Inspect HO2S (See 01-40B-37 HO2S (Front and Rear) Voltage Inspection)	60
O2S12 (HO2S (Rear))	V		Ignition switch ON: 0—1.0 V Idle (After warm up): 0—1.0 V Idle (Engine cold): 0—0.5 V Accelerate: 0.5—1.0 V Decelerate: 0—0.5 V	Inspect HO2S (See 01-40B-37 HO2S (Front and Rear) Voltage Inspection)	35
PNP*1 (TR switch)	ON/OFF		P or N range: ON Others: OFF	Inspect TR switch (See 05-17-20 TRANSAXLE RANGE (TR) SWITCH INSPECTION)	64
PNP*2 (Neutral switch)	ON/OFF		Shift position at neutral: ON Others: OFF	Inspect neutral switch (See 01-40B-43 NEUTRAL SWITCH INSPECTION [FS])	64
PSP (PSP switch)	ON/OFF		Steering wheel is at straight ahead position: OFF Steering wheel is fully turned: ON	Inspect PSP switch (See 01-40B-44 POWER STEERING PRESSURE (PSP) SWITCH INSPECTION [FS])	31

CONTROL SYSTEM [FS]

Monitor item (Definition)	Unit/ Condition	Condition/Specification (Reference)	Action	PCM terminal
RPM (Engine speed)	rpm	Idle: 650—750 rpm	Inspect CKP sensor (See 01-40B-32 CRANKSHAFT POSITION (CKP) SENSOR INSPECTION [FS])	21, 22
SEGRP (EGR valve (stepping motor) position)	step	Ignition switch ON: 0 step Idle: 0 step Cranking: 0—60 steps	Inspect following PIDs: ECT V, TP V. Inspect EGR valve (See 01-16-15 EGR VALVE INSPECTION)	46, 56, 68, 72
SHRTFT1 (Short fuel trim)	%	Idle: -10—10%	Perform “On-Board Diagnostic Test” (See 01-02B-7 ON-BOARD DIAGNOSTIC TEST [FS])	—
SPARKADV (Ignition timing)	BTDC	Idle: BTDC 6—18° Idle (Terminal TEN ground): BTDC 9—11°	Inspect following PIDs: MAF, IAT, RPM, TP, ECT, PSP, PNP, CPP, ACSW, TEST Perform Engine tune-up. (See 01-10B-25 ENGINE TUNE-UP [FS])	26, 52
SSA/SS1*1 (Shift solenoid A)	%	Fourth gear: 100% Others: 0%	Inspect shift solenoid A (See 05-17-28 SOLENOID VALVES INSPECTION)	82
SSB/SS2*1 (Shift solenoid B)	%	First gear: 100% Others: 0%	Inspect shift solenoid B (See 05-17-28 SOLENOID VALVES INSPECTION)	99
SSC/SS3*1 (Shift solenoid C)	%	First gear: 100% Second gear: 100% N position: ON Others: 0%	Inspect shift solenoid C (See 05-17-28 SOLENOID VALVES INSPECTION)	102
SSD/SS4*1 (Shift solenoid D)	ON/OFF	P or N position: ON 1 range: ON Others: OFF	Inspect shift solenoid D (See 05-17-28 SOLENOID VALVES INSPECTION)	27
SSE/SS5*1 (Shift solenoid E)	ON/OFF	TCC operating: ON 1 range: ON Others: OFF	Inspect shift solenoid E (See 05-17-28 SOLENOID VALVES INSPECTION)	1
TCIL (O/D OFF indicator light)	ON/OFF	O/D OFF mode: ON Others: OFF	Inspect O/D OFF indicator light	43
TCS (O/D OFF switch)	ON/OFF	O/D OFF switch pressed: ON Others: OFF	Inspect O/D OFF switch (See 05-17-19 O/D OFF SWITCH INSPECTION)	29
TEST (TEN terminal (DLC))	ON/OFF	Open terminal TEN: OFF Short terminal TEN: ON	Inspect DLC TEN terminal and PCM connector terminal 5	5
TFT*1 (Transaxle fluid temperature)	°C °F	TFT 20 °C {68 °F}: 20 °C {68 °F} TFT 130 °C {266 °F}: 130 °C {266 °F}	Inspect TFT sensor (See 05-17-25 TRANSAXLE FLUID TEMPERATURE (TFT) SENSOR INSPECTION)	37
TFTV*1 (TFT sensor signal voltage)	V	TFT 20 °C {68 °F}: 3.4—3.6 V TFT 130 °C {266 °F}: 0.4—0.5 V	Inspect TFT sensor (See 05-17-25 TRANSAXLE FLUID TEMPERATURE (TFT) SENSOR INSPECTION)	37
TPOD*1 (TP)	%	CTP: 0% WOT: 100%	Inspect TP sensor (See 01-40B-29 THROTTLE POSITION (TP) SENSOR INSPECTION [FS])	89
TP (TP sensor signal voltage)	V	CTP: 0.1—1.1 V WOT: 3.0—4.6 V	Inspect TP sensor (See 01-40B-29 THROTTLE POSITION (TP) SENSOR INSPECTION [FS])	89
TRL*1 (TR switch [1 range])	ON/OFF	1 range: ON Others: OFF	Inspect TR switch (See 05-17-20 TRANSAXLE RANGE (TR) SWITCH INSPECTION)	7
TROD*1 (TR switch [D range])	ON/OFF	D range: ON Others: OFF	Inspect TR switch (See 05-17-20 TRANSAXLE RANGE (TR) SWITCH INSPECTION)	6

01-40B

CONTROL SYSTEM [FS]

Monitor item (Definition)	Unit/ Condition		Condition/Specification (Reference)	Action	PCM terminal
TRR* ¹ (TR switch [R position])	ON/OFF		R position: ON Others: OFF	Inspect TR switch (See 05-17-20 TRANSAXLE RANGE (TR) SWITCH INSPECTION)	32
TRD* ¹ (TR switch [2range])	ON/OFF		2 range: ON Others: OFF	Inspect TR switch (See 05-17-20 TRANSAXLE RANGE (TR) SWITCH INSPECTION)	9
TSS* ¹ (Input/turbine speed signal)	rpm		Ignition switch ON: 0 rpm Idle: 650—750 rpm	Inspect input/turbine speed sensor (See 05-17-26 INPUT/TURBINE SPEED SENSOR INSPECTION)	23, 84
VPWR (Battery positive voltage)	V		Ignition switch ON: B+	Inspect main relay (See 09-21-5 RELAY INSPECTION) Inspect battery (See 01-17-1 BATTERY INSPECTION)	71, 97
VSS (Vehicle speed)	km/h	mph	Vehicle speed 20 km/h {12.5 mph}; 20 km/h {12.5 mph} Vehicle speed 40 km/h {25 mph}; 40km/h {25 mph}	Inspect VSS MTX: (See 09-22-4 Speedometer) ATX: (See 05-17-27 VEHICLE SPEEDOMETER SENSOR (VSS) INSPECTION [ATX])	58

*1 : ATX only

*2 : MTX only

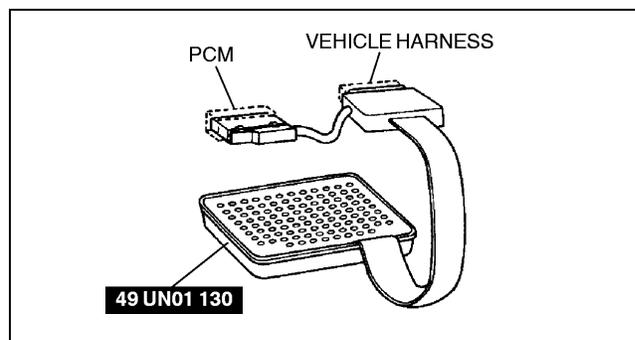
PCM Inspection Using the SST (104 Pin Breakout Box)

1. Disconnect the negative battery cable.
2. Disconnect the PCM connector.
3. Connect the **SST** (104 Pin Breakout Box) to the PCM as shown.
4. Tighten the connector bolt.

Tightening torque

7.9—10.7 N·m
{80—110 kgf·m, 69.5—95.4 in·lbf}

5. Connect the negative battery cable.
6. Measure the voltage at each terminal.
 - If any incorrect voltage is detected, inspect the related system(s), wiring harnesses and connector(s) referring to the action column in the terminal voltage table.



CONTROL SYSTEM [FS]

Terminal voltage table (Reference)

Terminal	Signal	Connected to	Test condition		Voltage (V)	Action
1*1	Shift solenoid E control	Shift solenoid E	Idle (P position)		Below 1.0	<ul style="list-style-type: none"> Inspect shift solenoid E (See 05-17-28 SOLENOID VALVES INSPECTION) Inspect related harness
			1 range (1GR)		B+	
2	MIL control	MIL (in instrument cluster)	Ignition switch ON		Below 1.0	<ul style="list-style-type: none"> Inspect MIL Inspect related harness
			Idle		B+	
3	—	—	—		—	—
4	B+ monitor	Battery	Under any condition		B+	<ul style="list-style-type: none"> Inspect battery (See 01-17-1 BATTERY INSPECTION) Inspect EGI fuse Inspect related harness
5	Diagnostic test mode	DLC terminal TEN	Ignition switch ON	Open terminal TEN	B+	<ul style="list-style-type: none"> Inspect related harness
				Short to ground terminal TEN	Below 1.0	
6	Clutch operation (MTX)	Clutch switch	Clutch pedal depressed		Below 1.0	<ul style="list-style-type: none"> Inspect clutch switch (See 01-40B-42 CLUTCH SWITCH INSPECTION [FS]) Inspect related harness
			Clutch pedal released		B+	
	D range (ATX)	TR switch (terminal G)	Ignition switch ON	Selector lever is at D range	B+	<ul style="list-style-type: none"> Inspect TR switch (See 05-17-20 TRANSAXLE RANGE (TR) SWITCH INSPECTION) Inspect related harness
		Selector lever is at other than D range		Below 1.0		
7*1	1 range	TR switch (terminal E)	Ignition switch ON	Selector lever is at 1 range	B+	<ul style="list-style-type: none"> Inspect TR switch (See 05-17-20 TRANSAXLE RANGE (TR) SWITCH INSPECTION) Inspect related harness
				Selector lever is at other than 1 range	Below 1.0	
8	—	—	—		—	—
9*1	2 range	TR switch (terminal F)	Ignition switch ON	Selector lever is at 2 range	B+	<ul style="list-style-type: none"> Inspect TR switch (See 05-17-20 TRANSAXLE RANGE (TR) SWITCH INSPECTION) Inspect related harness
				Selector lever is at other than 2 range	Below 1.0	
10	—	—	—		—	—
11	—	—	—		—	—
12	—	—	—		—	—
13	EPROM flashing	DLC-2 terminal FEPS	Because this terminal is for serial communication, good/no good judgment by terminal voltage is not possible.			<ul style="list-style-type: none"> Inspect related harness
14	—	—	—		—	—
15	—	—	—		—	—
16	—	—	—		—	—
17	—	—	—		—	—

01-40B

CONTROL SYSTEM [FS]

Terminal	Signal	Connected to	Test condition		Voltage (V)	Action
18	CDCV control	CDCV	Ignition switch ON		B+	<ul style="list-style-type: none"> Inspect CDCV (See 01-16-10 CANISTER DRAIN CUT VALVE (CDCV) INSPECTION) Inspect related harness
			Diagnosis executed (while on-board device control is carried out)		Below 1.0	
19	VICS control	VICS solenoid valve	Engine speed: above 4,750 rpm		B+	<ul style="list-style-type: none"> Inspect VICS solenoid valve (See 01-13B-12 VARIABLE INERTIA CHARGING SYSTEM (VICS) SOLENOID VALVE INSPECTION [FS]) Inspect related harness
			Engine speed: below 4,750 rpm		Below 1.0	
20	—	—	—		—	—
21	NE (+)	CKP sensor	<ul style="list-style-type: none"> Inspect using the wave profile. (See 01-40B-22 Inspection Using An Oscilloscope (Reference)) 			<ul style="list-style-type: none"> Inspect CKP sensor (See 01-40B-32 CRANKSHAFT POSITION (CKP) SENSOR INSPECTION [FS]) Inspect related harness
22	NE (-)	CKP sensor	<ul style="list-style-type: none"> Inspect using the wave profile. (See 01-40B-22 Inspection Using An Oscilloscope (Reference)) 			<ul style="list-style-type: none"> Inspect CKP sensor (See 01-40B-32 CRANKSHAFT POSITION (CKP) SENSOR INSPECTION [FS]) Inspect related harness
23*1	Input/turbine speed (-)	Input/turbine speed sensor	<ul style="list-style-type: none"> Inspect using the wave profile. (See 01-40B-22 Inspection Using An Oscilloscope (Reference)) 			<ul style="list-style-type: none"> Inspect input/turbine speed sensor (See 05-17-26 INPUT/TURBINE SPEED SENSOR INSPECTION) Inspect related harness
24	GND	GND	Under any condition		Below 1.0	<ul style="list-style-type: none"> Inspect related harness
25	—	—	—		—	—
26	IGT1	Ignition coil (No. 1, 4 cylinders)	<ul style="list-style-type: none"> Inspect using the wave profile. (See 01-40B-22 Inspection Using An Oscilloscope (Reference)) 			<ul style="list-style-type: none"> Inspect ignition coil (See 01-18-2 IGNITION COIL INSPECTION) Inspect related harness
27*1	Shift solenoid D control	Shift solenoid D	Idle	Selector lever is at P, N position and 1 range	B+	<ul style="list-style-type: none"> Inspect shift solenoid D (See 05-17-28 SOLENOID VALVES INSPECTION) Inspect related harness
				Others	Below 1.0	
28*1	Vehicle speed output	Speedometer (in instrument cluster)	<ul style="list-style-type: none"> Inspect using the wave profile. (See 01-40B-22 Inspection Using An Oscilloscope (Reference)) 			<ul style="list-style-type: none"> Inspect speedometer (See 09-22-4 Speedometer) Inspect related harness

CONTROL SYSTEM [FS]

Terminal	Signal	Connected to	Test condition		Voltage (V)	Action
29*1	O/D OFF signal	O/D OFF switch	Ignition switch ON	O/D OFF switch pushed	Below 1.0	<ul style="list-style-type: none"> Inspect O/D OFF switch (See 05-17-19 O/D OFF SWITCH INSPECTION) Inspect related harness
				O/D OFF switch released	B+	
30	Generator output voltage	Generator (terminal P)	<ul style="list-style-type: none"> Inspect using the wave profile. (See 01-40B-22 Inspection Using An Oscilloscope (Reference)) 			<ul style="list-style-type: none"> Inspect generator (See 01-17-3 GENERATOR INSPECTION) Inspect related harness
31	PSP	PSP switch	Ignition switch ON		B+	<ul style="list-style-type: none"> Inspect PSP switch (See 01-40B-44 POWER STEERING PRESSURE (PSP) SWITCH INSPECTION [FS]) Inspect power steering system Inspect related harness
			Idle	Steering wheel at straight ahead position	B+	
				While turning steering wheel	Below 1.0	
32*1	R position	TR switch (terminal C)	Ignition switch ON	Selector lever is at R position	B+	<ul style="list-style-type: none"> Inspect TR switch (See 05-17-20 TRANSAXLE RANGE (TR) SWITCH INSPECTION) Inspect related harness
				Selector lever is at other then R position	Below 1.0	
33	—	—	—		—	—
34	BARO/EGR boost	EGR boost sensor	Ignition switch ON (Barometric pressure at 102 kPa {765 mmHg, 30 inHg})		Approx. 4.0	<ul style="list-style-type: none"> Inspect EGR boost sensor (See 01-40B-39 EGR BOOST SENSOR INSPECTION [FS]) Inspect related harness
35	Catalytic converter efficiency	HO2S (Rear)	Ignition switch ON		Below 1.0	<ul style="list-style-type: none"> Inspect HO2S (Rear) (See 01-40B-37 HO2S (Front and Rear) Voltage Inspection) Inspect related harness
			Idle	Engine cold	Approx. 0	
				After warm up	0.1—0.9	
36	—	—	—		—	—
37*1	TFT	TFT sensor	Ignition switch ON	TFT 20 °C {68 °F}	3—4	<ul style="list-style-type: none"> Inspect TFT sensor (See 05-17-25 TRANSAXLE FLUID TEMPERATURE (TFT) SENSOR INSPECTION) Inspect related harness
				TFT 130 °C {266 °F}	0.2—0.7	
38	ECT	ECT sensor	Ignition switch ON	ECT 20 °C {68 °F}	2.9—3.1	<ul style="list-style-type: none"> Inspect ECT sensor (See 01-40B-31 ENGINE COOLANT TEMPERATURE (ECT) SENSOR INSPECTION [FS]) Inspect related harness
				After warm up	0.2—1.0	

01-40B

CONTROL SYSTEM [FS]

Terminal	Signal	Connected to	Test condition		Voltage (V)	Action
39	IAT	IAT sensor (integrated with MAF sensor)	Ignition switch ON	IAT 20 °C {68 °F}	2.3—2.4	<ul style="list-style-type: none"> Inspect IAT sensor (See 01-40B-27 INTAKE AIR TEMPERATURE (IAT) SENSOR INSPECTION [FS]) Inspect related harness
				IAT 30 °C {86 °F}	1.7—1.9	
40	—	—	—		—	—
41	A/C on signal	Refrigerant pressure switch	Idle	A/C switch and fan switch on	Below 1.0	<ul style="list-style-type: none"> Inspect A/C switch (See 07-40-9 REFRIGERANT PRESSURE SWITCH INSPECTION) Inspect related harness
				A/C switch off	B+	
42	Generator warning light control	Generator warning light (in instrument cluster)	Ignition switch ON		Below 1.0	<ul style="list-style-type: none"> Inspect generator warning light Inspect related harness
			Idle		B+	
43*1	O/D OFF indicator light signal	O/D OFF indicator light	Ignition switch ON	O/D OFF indicator light illuminates	Below 1.0	<ul style="list-style-type: none"> Inspect O/D OFF indicator light Inspect related harness
				O/D OFF indicator light does not illuminate	B+	
44*1	Pressure control solenoid control (+)	Pressure control solenoid	<ul style="list-style-type: none"> Inspect using the wave profile. (See 01-40B-22 Inspection Using An Oscilloscope (Reference)) 			<ul style="list-style-type: none"> Inspect pressure control solenoid (See 05-17-28 SOLENOID VALVES INSPECTION) Inspect related harness
45	Condenser fan control	Condenser fan relay	Ignition switch ON		B+	<ul style="list-style-type: none"> Inspect condenser fan relay (See 09-21-5 RELAY INSPECTION) Inspect related harness
			Idle	Condenser fan operating	Below 1.0	
				Others	B+	
46	EGR valve #3 coil control	EGR valve (terminal B)	Ignition switch ON		B+	<ul style="list-style-type: none"> Inspect EGR valve (See 01-16-15 EGR VALVE INSPECTION) Inspect related harness
			Idle		B+	
47	Cooling fan control	Cooling fan relay	Ignition switch ON		B+	<ul style="list-style-type: none"> Inspect cooling fan relay (See 09-21-5 RELAY INSPECTION) Inspect related harness
			Idle	Cooling fan operating	Below 1.0	
				Others	B+	
48	Engine speed	Tachometer (in instrument cluster), DLC terminal IG-	<ul style="list-style-type: none"> Inspect using the wave profile. (See 01-40B-22 Inspection Using An Oscilloscope (Reference)) 			<ul style="list-style-type: none"> Inspect tachometer (See 09-22-4 Tachometer) Inspect related harness
49	—	—	—		—	—
50	—	—	—		—	—
51	GND	GND	Under any condition		Below 1.0	<ul style="list-style-type: none"> Inspect related harness

CONTROL SYSTEM [FS]

Terminal	Signal	Connected to	Test condition	Voltage (V)	Action
52	IGT2	Ignition coil (No. 2, 3 cylinders)	<ul style="list-style-type: none"> Inspect using the wave profile. (See 01-40B-22 Inspection Using An Oscilloscope (Reference)) 		<ul style="list-style-type: none"> Inspect ignition coil (See 01-18-2 IGNITION COIL INSPECTION) Inspect related harness
53	Generator field coil control	Generator (terminal D)	<ul style="list-style-type: none"> Inspect using the wave profile. (See 01-40B-22 Inspection Using An Oscilloscope (Reference)) 		<ul style="list-style-type: none"> Inspect generator (See 01-17-3 GENERATOR INSPECTION) Inspect related harness
54	IAC (+)	IAC valve	Ignition switch ON	B+	<ul style="list-style-type: none"> Inspect IAC valve (See 01-13B-8 IDLE AIR CONTROL (IAC) VALVE INSPECTION [FS]) Inspect related harness
			Idle (After warm up and E/L off)	B+	
55	Back-up power supply	Battery (positive terminal)	Under any condition	B+	<ul style="list-style-type: none"> Inspect battery (See 01-17-1 BATTERY INSPECTION) Inspect EGI fuse Inspect related harness
56	EGR valve #4 coil control	EGR valve (terminal F)	Ignition switch ON	Below 1.0	<ul style="list-style-type: none"> Inspect EGR valve (See 01-16-15 EGR VALVE INSPECTION) Inspect related harness
			Idle	Below 1.0	
57	Knocking	Knock sensor (+)	Ignition switch ON (Use digital type voltmeter, because measurement voltage will be detected less than true voltage when using analog type voltmeter)	Below 1.0	<ul style="list-style-type: none"> Inspect knock sensor (See 01-40B-36 KNOCK SENSOR INSPECTION [FS]) Inspect related harness
58	Vehicle speed	Speedometer (MTX)	<ul style="list-style-type: none"> Inspect using the wave profile. (See 01-40B-22 Inspection Using An Oscilloscope (Reference)) 		<ul style="list-style-type: none"> Inspect VSS (See 09-22-4 Speedometer) Inspect related harness
		VSS (ATX)			<ul style="list-style-type: none"> Inspect VSS (See 05-17-27 VEHICLE SPEEDOMETER SENSOR (VSS) INSPECTION [ATX]) Inspect related harness
59	Knocking	Knock sensor (-)	Ignition switch ON (Use digital type voltmeter, because measurement voltage will be detected less than true voltage when using analog type voltmeter)	Below 1.0	<ul style="list-style-type: none"> Inspect knock sensor (See 01-40B-36 KNOCK SENSOR INSPECTION [FS]) Inspect related harness
60	HO2S (Front)	HO2S (Front)	Ignition switch ON	0—1.0	<ul style="list-style-type: none"> Inspect HO2S (Front) (See 01-40B-37 HO2S (Front and Rear) Voltage Inspection) Inspect related harness
			Idle	0—1.0	
			Acceleration	0.5—1.0	
			Deceleration	0—0.5	
61	—	—	—	—	—

01-40B

CONTROL SYSTEM [FS]

Terminal	Signal	Connected to	Test condition		Voltage (V)	Action	
62	Fuel tank pressure	Fuel tank pressure sensor	Ignition switch ON	Fuel tank pressure 0 kPa {0 mmHg, 0 inHg}	Approx. 2.5	<ul style="list-style-type: none"> Inspect fuel tank pressure sensor (See 01-40B-40 FUEL TANK PRESSURE SENSOR INSPECTION [FS]) Inspect related harness 	
				Fuel tank pressure 1 kPa {7.5 mmHg, 0.3 inHg}	Approx. 2.8		
63	Fuel tank level	Fuel gauge sender unit	Full fuel		0.2—0.5	<ul style="list-style-type: none"> Inspect fuel gauge sender unit (See 09-22-4 Fuel Gauge) Inspect related harness 	
			Half fuel		2.0—2.8		
			Empty fuel		3.4—4.4		
64	Neutral position (MTX)	Neutral switch	Shift lever is at neutral position		Below 1.0	<ul style="list-style-type: none"> Inspect neutral switch (See 01-40B-43 NEUTRAL SWITCH INSPECTION [FS]) Inspect related harness 	
			Shift lever is not at neutral position		B+		
	Load/no load signal (ATX)	TR switch (terminal H)	Ignition switch ON	Selector lever is at P or N position		Below 1.0	<ul style="list-style-type: none"> Inspect TR switch (See 05-17-20 TRANSAXLE RANGE (TR) SWITCH INSPECTION) Inspect related harness
				Others		B+	
65	—	—	—	—	—	—	
66	—	—	—	—	—	—	
67	Purge control	Purge solenoid valve	<ul style="list-style-type: none"> Inspect using the wave profile. (See 01-40B-22 Inspection Using An Oscilloscope (Reference)) 			<ul style="list-style-type: none"> Inspect purge solenoid valve (See 01-16-12 PURGE SOLENOID VALVE INSPECTION) Inspect related harness 	
68	EGR valve #1 coil control	EGR valve (terminal E)	Ignition switch ON		Below 1.0	<ul style="list-style-type: none"> Inspect EGR valve (See 01-16-15 EGR VALVE INSPECTION) Inspect related harness 	
			Idle		Below 1.0		
69	—	—	—	—	—	—	
70	—	—	—	—	—	—	
71	Power supply	Main relay	Ignition switch ON		B+	<ul style="list-style-type: none"> Inspect main relay (See 09-21-5 RELAY INSPECTION) Inspect EGI fuse Inspect related harness 	
			Ignition switch OFF		Below 1.0		
72	EGR valve #2 coil control	EGR valve (terminal A)	Ignition switch ON		B+	<ul style="list-style-type: none"> Inspect EGR valve (See 01-16-15 EGR VALVE INSPECTION) Inspect related harness 	
			Idle		B+		
73	VTCS control	VTCS solenoid valve	ECT above 67.5 °C {154 °F} while idling		B+	<ul style="list-style-type: none"> Inspect VTCS solenoid valve (See 01-13B-15 VARIABLE TUMBLE CONTROL SYSTEM (VTCS) SOLENOID VALVE INSPECTION [FS]) Inspect related harness 	
			ECT below 67.5 °C {154 °F} and engine speed below 3,250 rpm		Below 1.0		

CONTROL SYSTEM [FS]

Terminal	Signal	Connected to	Test condition	Voltage (V)	Action
74	Fuel injection (#3)	Fuel injector No.3	<ul style="list-style-type: none"> Inspect using the wave profile. (See 01-40B-22 Inspection Using An Oscilloscope (Reference)) 		<ul style="list-style-type: none"> Inspect fuel injector No.3 (See 01-14-24 FUEL INJECTOR INSPECTION) Inspect related harness
75	Fuel injection (#1)	Fuel injector No.1	<ul style="list-style-type: none"> Inspect using the wave profile. (See 01-40B-22 Inspection Using An Oscilloscope (Reference)) 		<ul style="list-style-type: none"> Inspect fuel injector No.1 (See 01-14-24 FUEL INJECTOR INSPECTION) Inspect related harness
76	GND	GND	Under any condition	Below 1.0	<ul style="list-style-type: none"> Inspect related harness
77	GND	GND	Under any condition	Below 1.0	<ul style="list-style-type: none"> Inspect related harness
78	—	—	—	—	—
79	K-LINE (serial communication)	DLC terminal KLN	Because this terminal is for serial communication, good/no good judgment by terminal voltage is not possible.		<ul style="list-style-type: none"> Inspect related harness
80	Fuel pump control	Fuel pump relay	Ignition switch ON	B+	<ul style="list-style-type: none"> Inspect fuel pump relay (See 09-21-5 RELAY INSPECTION) Inspect related harness
			Cranking	Below 1.0	
			Idle	Below 1.0	
81*1	Pressure control solenoid control (-)	Pressure control solenoid	<ul style="list-style-type: none"> Inspect using the wave profile. (See 01-40B-22 Inspection Using An Oscilloscope (Reference)) 		<ul style="list-style-type: none"> Inspect pressure control solenoid (See 05-17-28 SOLENOID VALVES INSPECTION) Inspect related harness
82*1	Shift solenoid A control	Shift solenoid A	<ul style="list-style-type: none"> Inspect using the wave profile. (See 01-40B-22 Inspection Using An Oscilloscope (Reference)) 		<ul style="list-style-type: none"> Inspect shift solenoid A (See 05-17-28 SOLENOID VALVES INSPECTION) Inspect related harness
83	IAC (-)	IAC valve	<ul style="list-style-type: none"> Inspect using the wave profile. (See 01-40B-22 Inspection Using An Oscilloscope (Reference)) 		<ul style="list-style-type: none"> Inspect IAC valve (See 01-13B-8 IDLE AIR CONTROL (IAC) VALVE INSPECTION [FS]) Inspect related harness
84*1	Input/turbine speed (+)	Input/turbine speed sensor	<ul style="list-style-type: none"> Inspect using the wave profile. (See 01-40B-22 Inspection Using An Oscilloscope (Reference)) 		<ul style="list-style-type: none"> Inspect input/turbine speed sensor (See 05-17-26 INPUT/TURBINE SPEED SENSOR INSPECTION) Inspect related harness
85	SGC(+)	CMP sensor	<ul style="list-style-type: none"> Inspect using the wave profile. (See 01-40B-22 Inspection Using An Oscilloscope (Reference)) 		<ul style="list-style-type: none"> Inspect CMP sensor (See 01-40B-35 CAMSHAFT POSITION (CMP) SENSOR INSPECTION [FS]) Inspect related harness

01-40B

CONTROL SYSTEM [FS]

Terminal	Signal	Connected to	Test condition	Voltage (V)	Action	
86	SGC(-)	CMP sensor	<ul style="list-style-type: none"> Inspect using the wave profile. (See 01-40B-22 Inspection Using An Oscilloscope (Reference)) 		<ul style="list-style-type: none"> Inspect CMP sensor (See 01-40B-35 CAMSHAFT POSITION (CMP) SENSOR INSPECTION [FS]) Inspect related harness 	
87	—	—	—	—	—	
88	MAF	MAF sensor	Ignition switch ON	0.9—2.0	<ul style="list-style-type: none"> Inspect MAF sensor (See 01-40B-28 MASS AIR FLOW (MAF) SENSOR INSPECTION [FS]) Inspect related harness 	
			Idle	1.7—2.4		
89	Throttle position	TP sensor	Ignition switch ON	CTP	0.1—1.1	<ul style="list-style-type: none"> Inspect TP sensor (See 01-40B-29 THROTTLE POSITION (TP) SENSOR INSPECTION [FS]) Inspect related harness
				WOT	3.0—4.6	
90	Constant voltage (Vref)	TP sensor, EGR boost sensor, Fuel tank pressure sensor	Ignition switch ON	Approx. 5.0	<ul style="list-style-type: none"> Inspect related harness 	
91	Sensor GND	ECT sensor, IAT sensor, EGR boost sensor, Fuel tank pressure sensor, TP sensor, HO2S (Front, Rear), TFT sensor	Under any condition	Below 1.0	<ul style="list-style-type: none"> Inspect related harness 	
92	Brake	Brake switch	Brake pedal depressed	B+	<ul style="list-style-type: none"> Inspect brake switch (See 04-11-5 BRAKE SWITCH INSPECTION) Inspect related harness 	
			Brake pedal released	Below 1.0		
93	HO2S (Rear) heater control	HO2S (Rear)	Idle	ECT above 70°C {158 °F}	Below 1.0	<ul style="list-style-type: none"> Inspect HO2S (Rear) (See 01-40B-38 HO2S Heater (Front and Rear) Resistance Inspection) Inspect related harness
				HO2S (Rear) is malfunctioning	B+	
94	HO2S (Front) heater control	HO2S (Front)	Ignition switch ON (engine stopped)	B+	<ul style="list-style-type: none"> Inspect HO2S (Front) heater. (See 01-40B-38 HO2S Heater (Front and Rear) Resistance Inspection) Inspect related harness 	
			Approx. 15 s after engine start with ECT 20—30°C {68—86 °F}	Below 1.0		
			Others	Below 1.0 ↔ B+		
95	PRC	PRC solenoid valve	Ignition switch ON	B+	<ul style="list-style-type: none"> Inspect PRC solenoid valve (See 01-14-31 PRC SOLENOID VALVE INSPECTION) Inspect related harness 	
			After hot start	Below 1.0		

CONTROL SYSTEM [FS]

Terminal	Signal	Connected to	Test condition	Voltage (V)	Action	
96	A/C control	A/C relay	Idle	A/C switch and fan switch on	Below 1.0	<ul style="list-style-type: none"> Inspect A/C relay (See 09-21-5 RELAY INSPECTION) Inspect related harness
				A/C switch off	B+	
97	Power supply	Main relay	Ignition switch ON	B+	<ul style="list-style-type: none"> Inspect main relay (See 09-21-5 RELAY INSPECTION) Inspect related harness 	
			Ignition switch off	Below 1.0		
98	EGR boost sensor switching control	EGR boost solenoid valve	Ignition switch ON	B+	<ul style="list-style-type: none"> Inspect EGR boost solenoid valve (See 01-16-17 EGR BOOST SENSOR SOLENOID VALVE INSPECTION) Inspect related harness 	
			Idle	B+		
99*1	Shift solenoid B control	Shift solenoid B	<ul style="list-style-type: none"> Inspect using the wave profile. (See 01-40B-22 Inspection Using An Oscilloscope (Reference)) 		<ul style="list-style-type: none"> Inspect shift solenoid B (See 05-17-28 SOLENOID VALVES INSPECTION) Inspect related harness 	
100	Fuel injection (#4)	Fuel injector No.4	<ul style="list-style-type: none"> Inspect using the wave profile. (See 01-40B-22 Inspection Using An Oscilloscope (Reference)) 		<ul style="list-style-type: none"> Inspect fuel injector No.4 (See 01-14-24 FUEL INJECTOR INSPECTION) Inspect related harness 	
101	Fuel injection (#2)	Fuel injector No.2	<ul style="list-style-type: none"> Inspect using the wave profile. (See 01-40B-22 Inspection Using An Oscilloscope (Reference)) 		<ul style="list-style-type: none"> Inspect fuel injector No.2 (See 01-14-24 FUEL INJECTOR INSPECTION) Inspect related harness 	
102*1	Shift solenoid C Control	Shift solenoid C	<ul style="list-style-type: none"> Inspect using the wave profile. (See 01-40B-22 Inspection Using An Oscilloscope (Reference)) 		<ul style="list-style-type: none"> Inspect shift solenoid C (See 05-17-28 SOLENOID VALVES INSPECTION) Inspect related harness 	
103	GND	GND	Under any condition	Below 1.0	<ul style="list-style-type: none"> Inspect related harness 	
104	—	—	—	—	—	

*1 : ATX only

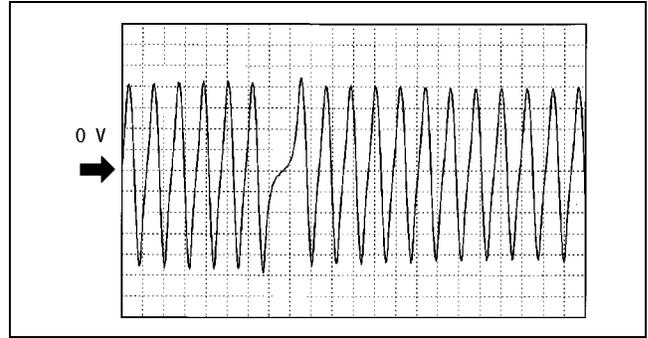
01-40B

CONTROL SYSTEM [FS]

Inspection Using An Oscilloscope (Reference)

Ne signal

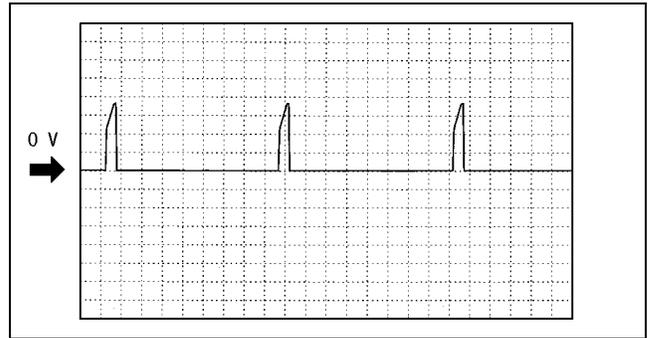
- PCM terminal: 21(+)-22(-)
- Oscilloscope setting: 2 V/DIV(Y), 2 ms/DIV(X), DC range
- Vehicle condition: idle after warm up



Z3U0140W006

IGT signal

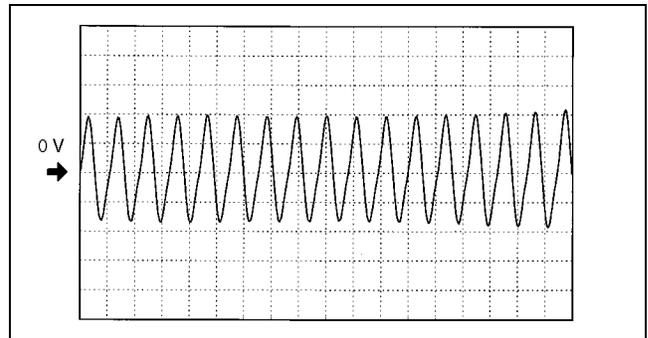
- PCM terminal:
 - IGT1: 26(+)-103(-)
 - IGT2: 52(+)-103(-)
- Oscilloscope setting: 1 V/DIV(Y), 10ms/DIV(X), DC range
- Vehicle condition: idle after warm up



Z3U0140W007

Input/turbine speed signal

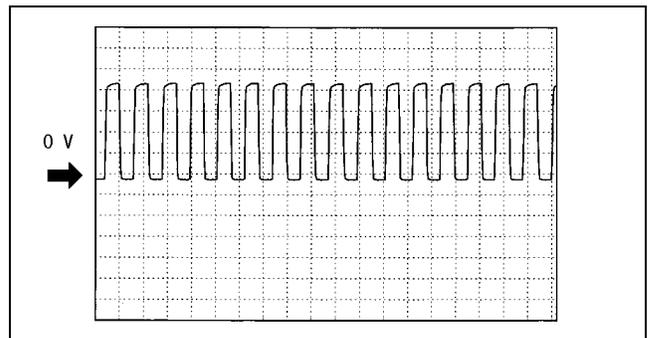
- PCM terminal: 84(+)-23(-)
- Oscilloscope setting: 0.4 V/DIV(Y), 2.5 ms/DIV(X), DC range
- Vehicle condition: idle after warm up



Z3U0140W008

Generator output voltage signal

- PCM terminal: 30(+)-103(-)
- Oscilloscope setting: 2 V/DIV(Y), 5 ms/DIV(X), DC range
- Vehicle condition: idle after warm up

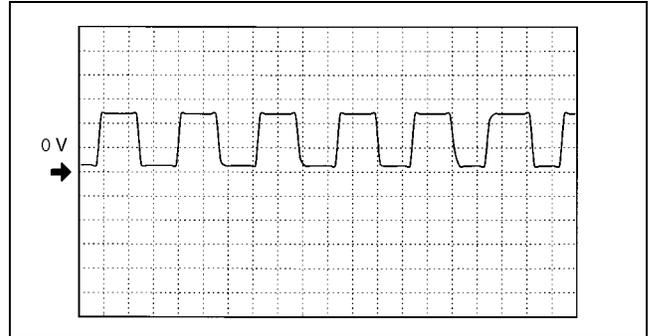


Z3U0140W009

Pressure control solenoid control signal

CTP

- PCM terminal: 81(+)-103(-)
- Oscilloscope setting: 0.5 V/DIV(Y), 0.1 ms/DIV(X), DC range
- Vehicle condition: ignition key at ON (Engine OFF) and closed throttle position

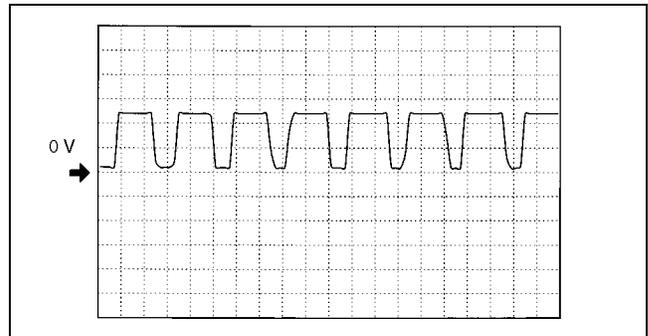


Z3U0140W010

01-40B

WOT

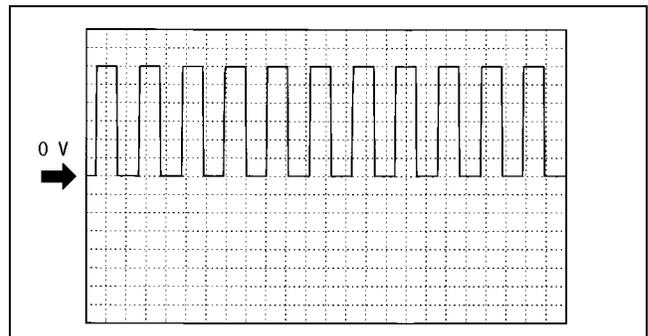
- PCM terminal: 81(+)-103(-)
- Oscilloscope setting: 0.5 V/DIV(Y), 0.1 ms/DIV(X), DC range
- Vehicle condition: ignition key at ON (Engine OFF) and wide open throttle



Z3U0140W019

Engine speed signal

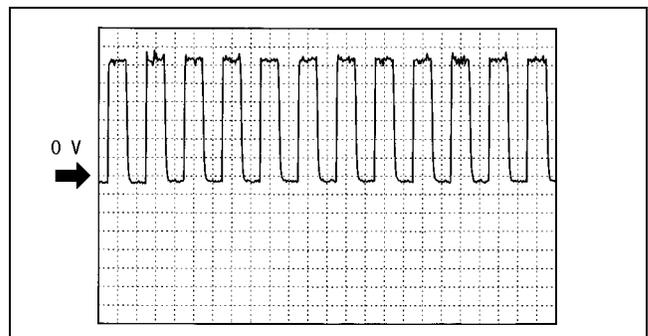
- PCM terminal: 48(+)-103(-)
- Oscilloscope setting: 2 V/DIV(Y), 20 ms/DIV(X), DC range
- Vehicle condition: idle after warm up



Z3U0140W011

Generator field coil control signal

- PCM terminal: 53(+)-103(-)
- Oscilloscope setting: 0.2 V/DIV(Y), 2ms/DIV(X), DC range
- Vehicle condition: idle after warm up

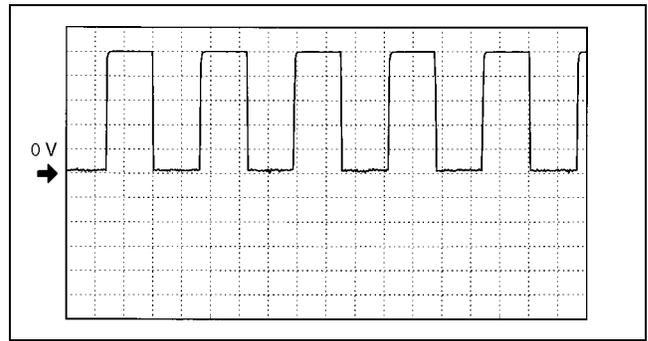


Z3U0140W012

CONTROL SYSTEM [FS]

Vehicle speed signal

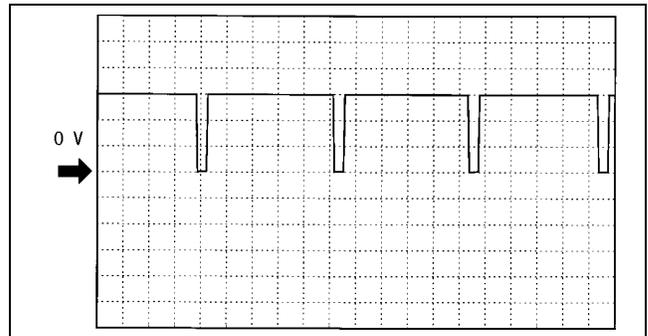
- PCM terminal: 58(+)-103(-)
- Oscilloscope setting: 1 V/DIV(Y), 2.5 ms/DIV(X), DC range
- Vehicle condition: drive the vehicle with 32 km/h [20 mph]



Z3U0140W013

Purge control signal

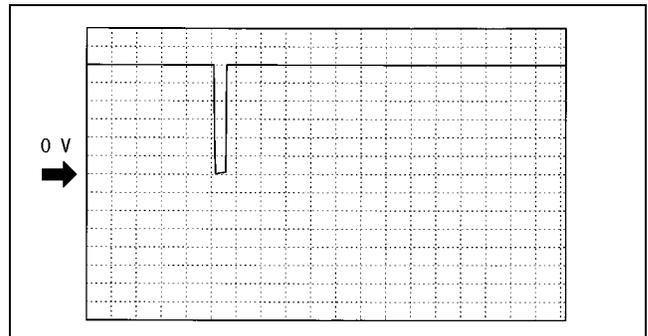
- PCM terminal: 67(+)-103(-)
- Oscilloscope setting: 4 V/DIV(Y), 20 ms/DIV(X), DC range
- Vehicle condition: idle after warm up



Z3U0140W014

Fuel injection signal

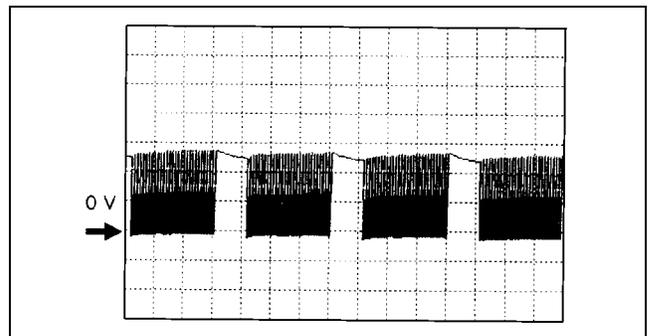
- PCM terminal
 - No.1:75(+)-103(-)
 - No.2:101(+)-103(-)
 - No.3:74(+)-103(-)
 - No.4:100(+)-103(-)
- Oscilloscope setting: 2 V/DIV(Y), 5 ms/DIV(X), DC range
- Vehicle condition: idle after warm up



Z3U0140W015

Shift solenoid A control

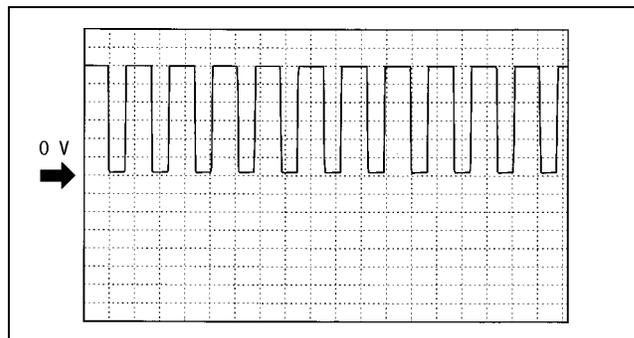
- PCM terminal: 82(+)-103(-)
- Oscilloscope setting: 5 V/DIV(Y), 5 ms/DIV(X), DC range
- Vehicle condition: drive in the 4th gear



Z3U0140W016

IAC signal

- PCM terminal: 83(+)-103(-)
- Oscilloscope setting: 2 V/DIV(Y), 0.5 ms/DIV(X), DC range
- Vehicle condition: idle after warm up

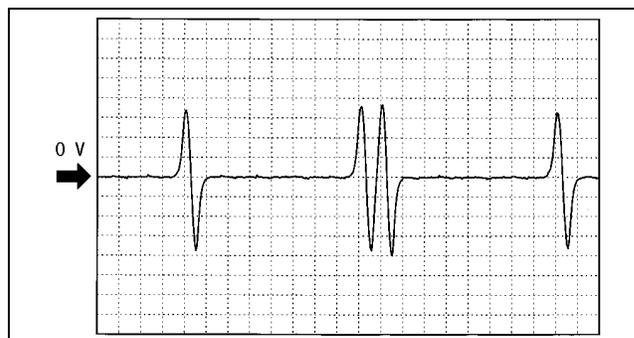


Z3U0140W017

01-40B

SGC signal

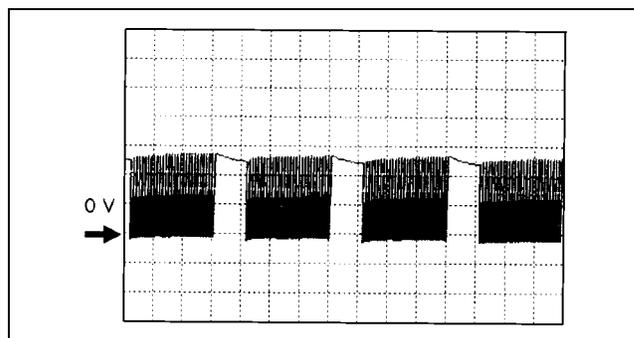
- PCM terminal: 85(+)-86(-)
- Oscilloscope setting: 1 V/DIV(Y), 10 ms/DIV(X), AC range
- Vehicle condition: idle after warm up



Z3U0140W032

Shift solenoid B control signal

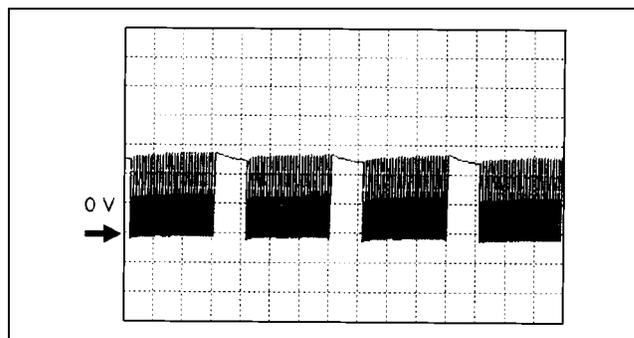
- PCM terminal: 99(+)-103(-)
- Oscilloscope setting: 5 V/DIV(Y), 5ms/DIV(X), DC range
- Vehicle condition: Drive in D range, 1st gear



Z3U0140W016

Shift solenoid C control signal

- PCM terminal: 102(+)-103(-)
- Oscilloscope setting: 5 V/DIV(Y), 5 ms/DIV(X), DC range
- Vehicle condition: Drive in 1st or 2nd gear



Z3U0140W016

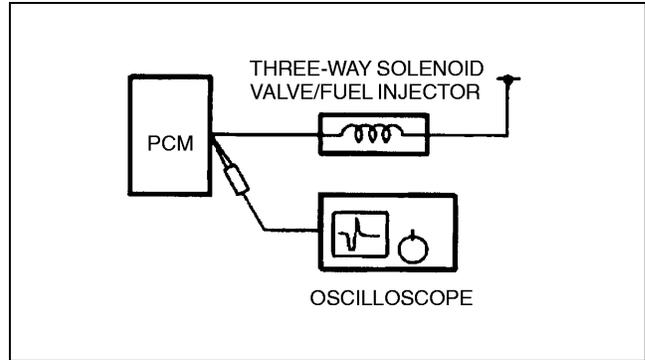
CONTROL SYSTEM [FS]

INSPECTION USING AN OSCILLOSCOPE (REFERENCE) [FS]

A3U014018881W04

Purpose

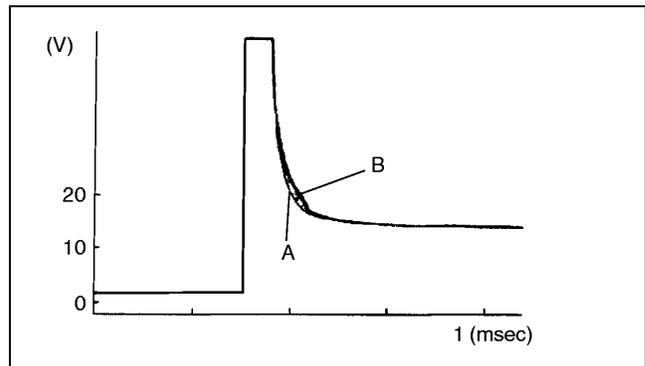
The use of oscilloscope makes the inspection of a part such as a stuck solenoid valve possible without actually removing parts.



X3U101WNT

When Normal

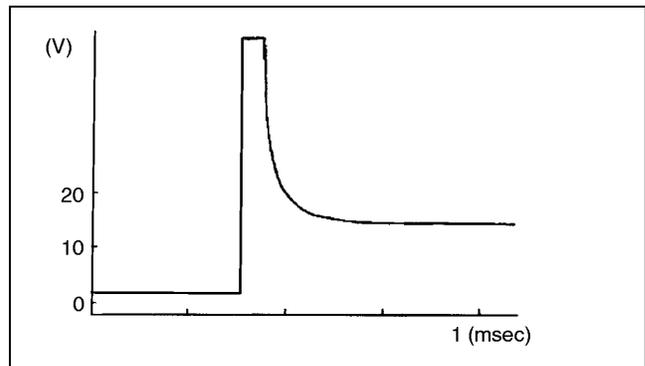
Counter electromotive voltage A, generated when the three-way solenoid valve or the fuel injector is turned off from on, shows irregular convergence because induced electromotive voltage B, generated by the plunger return operation, is added to it.



X3U101WNU

When Plunger Stuck

When the plunger is stuck, pulse convergence is smooth because no induced electromotive voltage B is generated.



X3U101WNV

INTAKE AIR TEMPERATURE (IAT) SENSOR INSPECTION [FS]

A3U014018845W01

Resistance Inspection

Note

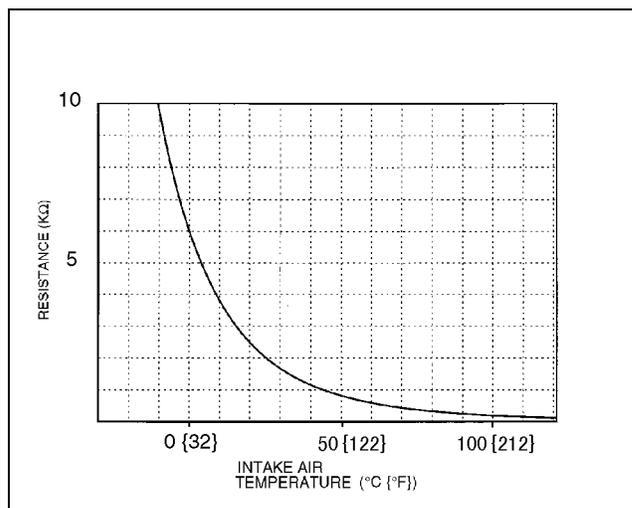
- Perform the following test only when directed.

1. Remove the IAT sensor.
2. Measure the resistance of the IAT sensor terminals A and B using an ohmmeter.
 - If not as specified, replace the IAT sensor.
 - If IAT sensor is okay, but PID value or PCM terminal 39 voltage is out of specification, carry out the "Circuit Open/Short Inspection".

Specification

Ambient temperature (°C {°F})	Resistance (kilohm)
20 {68}	2.0—2.9
80 {176}	0.27—0.37

IAT sensor signal characteristic (reference)



Z3U0140W021

Circuit Open/Short Inspection

1. Disconnect the PCM connector. (See 01-40B-7 PCM REMOVAL/INSTALLATION [FS].)
2. Connect the **SST** (104 Pin Breakout Box) to the PCM as shown.
3. Tighten the connector attaching screw.

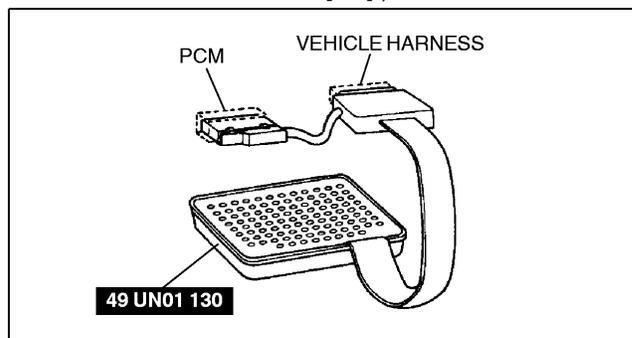
Tightening torque

7.9—10.7 N·m
{80—110 kgf·cm, 69.5—95.4 in·lbf}

4. Inspect for an open or short circuit in the following wiring harnesses by probing the applicable sensor and **SST** (104 Pin Breakout Box) terminals with ohmmeter leads.
 - If there is an open or short circuit, repair or replace wiring harnesses.
 - If there is no open or short circuit, replace the IAT sensor.

Open circuit

- IAT signal circuit (IAT sensor connector terminal A and PCM connector terminal 39)
- GND circuit (IAT sensor connector terminal B and PCM connector terminal 91)

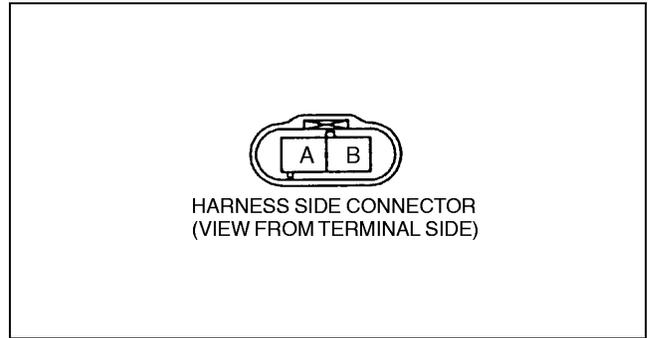


X3U140WE8

CONTROL SYSTEM [FS]

Short circuit

- IAT signal circuit (IAT sensor connector terminal A and PCM connector terminal 39 to GND)
5. Install the IAT sensor.



Y3U140WB1

MASS AIR FLOW (MAF) SENSOR INSPECTION [FS]

A3U014013210W01

Note

- Perform the following test only when directed.
- Visually inspect for damage, cracks, terminal bends and terminal rust on the MAF sensor.
 - If any of the above is found, replace the MAF sensor.
 - If the MAF sensor is okay, but PID value or PCM terminal 88 voltage is out of specification, carry out the "Circuit Open/Short Inspection".

Circuit Open/Short Inspection

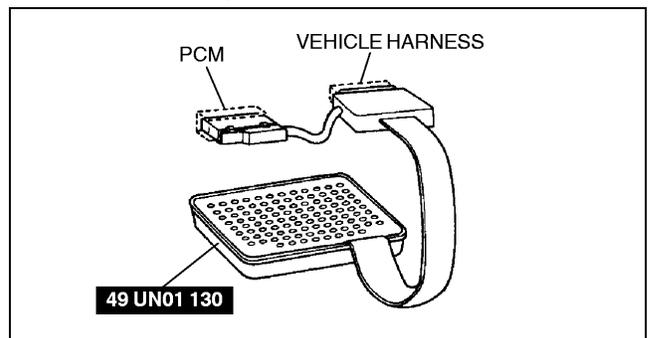
- Remove the PCM. (See 01-40B-7 PCM REMOVAL/INSTALLATION [FS].)
- Connect the **SST** (104 Pin Breakout Box) to the PCM as shown.
- Tighten the connector attaching screw.

Tightening torque

7.9—10.7 N·m

{80—110 kgf·cm, 69.5—95.4 in·lbf}

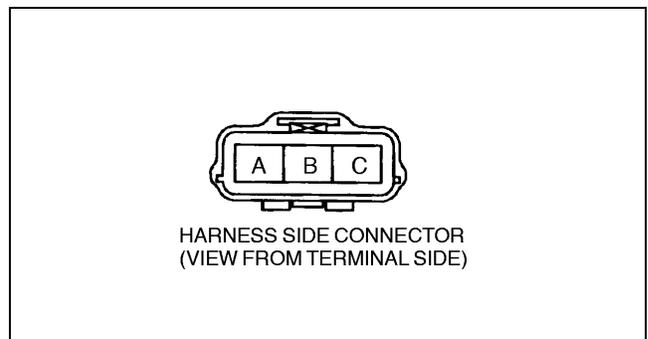
- Inspect for an open or short circuit in the following wiring harnesses by probing the applicable sensor and **SST** (104 Pin Breakout Box) terminals with ohmmeter leads.
 - If there is an open or short circuit, repair or replace wiring harnesses.
 - If there is no open or short circuit, replace the MAF sensor.



X3U140WE8

Open circuit

- MAF signal circuit (MAF sensor connector terminal B and PCM connector terminal 88)
- Power circuit (MAF sensor connector terminal C and main relay terminal D through common connector)
- GND circuit (MAF sensor connector terminal A and PCM connector terminal 103 through common connector)



Y3U140WB2

Short circuit

- MAF signal circuit (MAF sensor connector terminal B and PCM connector terminal 88 to GND)
- Power circuit (MAF sensor connector terminal C and main relay terminal D through common connector to GND)

5. Reconnect the MAF sensor connector.

Note

- The scan tool shows the MAF rate and load value.

Specification

	Intake MAF (g/s)		Engine load calculated value (%)	
	MTX	ATX	MTX	ATX
Idle*1	1.6—2.5	1.8—2.6	13.0— 18.0	14.5— 19.0
Engine speed 2,500 rpm*2	6.2—7.4	6.5—7.9	12.5— 17.0	13.0— 17.0

*1 : 650—750 rpm

*2 : No load, neutral or P position

THROTTLE POSITION (TP) SENSOR INSPECTION [FS]

A3U014018910W01

Resistance Inspection

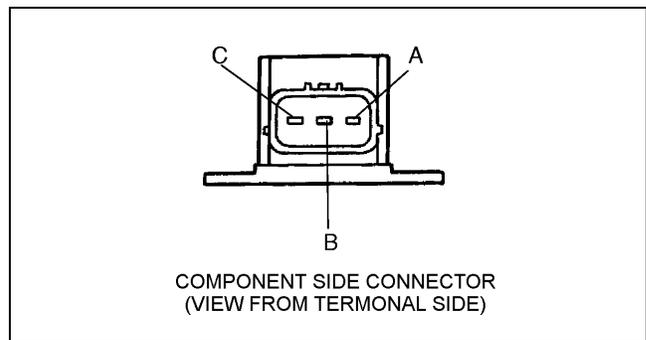
Note

- Perform the following test only when directed.

1. Inspect throttle valve CTP and accelerator cable free play (See 01-13B-17 ACCELERATOR CABLE INSPECTION [FS].)
 - If as specified, inspect resistance of the TP sensor.
2. Disconnect the TP sensor connector.
3. Measure the resistance between the TP sensor terminals A and C using an ohmmeter.
 - If not as specified, replace the TP sensor. (See 01-13B-6 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [FS].)
 - If as specified, but PID value or PCM terminal 89 voltage is out of specification, carry out the "Circuit Open/Short Inspection".

Specification

4—6 kilohms



Y3U140WB3

CONTROL SYSTEM [FS]

Circuit Open/Short Inspection

1. Remove the PCM. (See 01-40B-7 PCM REMOVAL/INSTALLATION [FS].)
2. Connect the **SST** (104 Pin Breakout Box) to the PCM as shown.
3. Tighten the connector attaching screw.

Tightening torque

7.9—10.7 N·m

{80—110 kgf·cm, 69.5—95.4 in·lbf}

4. Inspect for an open or short circuit in the following wiring harnesses by probing the applicable sensor and **SST** (104 Pin Breakout Box) terminals with ohmmeter leads.
 - If there is an open or short circuit, repair or replace wiring harnesses.
 - If there is no open or short circuit, replace the TP sensor.

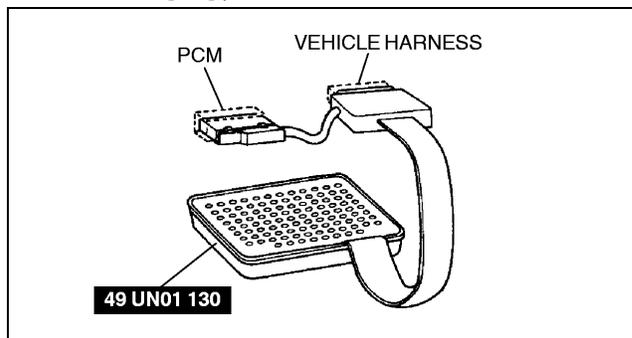
Open circuit

- Constant voltage circuit (TP sensor connector terminal A and PCM connector terminal 90)
- TP signal circuit (TP sensor connector terminal B and PCM connector terminal 89)
- GND circuit (TP sensor connector terminal C and PCM connector terminal 91)

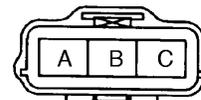
Short circuit

- Constant voltage circuit (TP sensor connector terminal A and PCM connector terminal 90)
- TP signal circuit (TP sensor connector terminal B and PCM connector terminal 89)

5. Reconnect the TP sensor connector.



X3U140WE8



HARNESS SIDE CONNECTOR
(VIEW FROM TERMINAL SIDE)

Y3U140WB4

ENGINE COOLANT TEMPERATURE (ECT) SENSOR REMOVAL/INSTALLATION [FS]

A3U014018840W01

Warning

- When the engine is hot, it can badly burn. Turn off the engine and wait until it is cool before removing the ECT sensor.

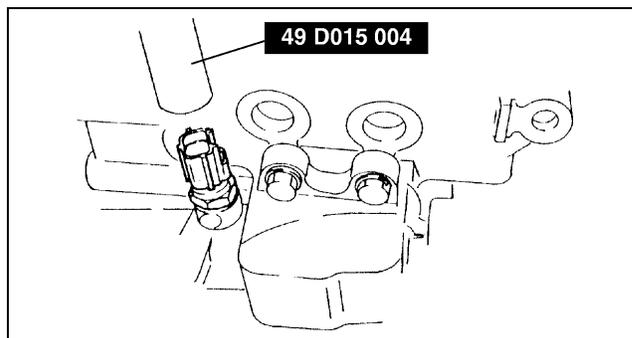
1. Drain the engine coolant. (See 01-12-2 COOLING SYSTEM SERVICE WARNINGS.) (See 01-12-3 ENGINE COOLANT REPLACEMENT.)
2. Disconnect the ECT sensor connector.
3. Remove the ECT sensor using the **SST**.
4. Replace the gasket.
5. Install in the reverse order of removal.

Tightening torque

16—23 N·m

{1.6—2.4 kgf·m, 12—17 ft·lbf}

6. Refill the engine coolant. (See 01-12-2 COOLING SYSTEM SERVICE WARNINGS.) (See 01-12-3 ENGINE COOLANT REPLACEMENT.)



X3U140WDC

CONTROL SYSTEM [FS]

ENGINE COOLANT TEMPERATURE (ECT) SENSOR INSPECTION [FS]

A3U014018840W02

Note

- Perform the following test only when directed.

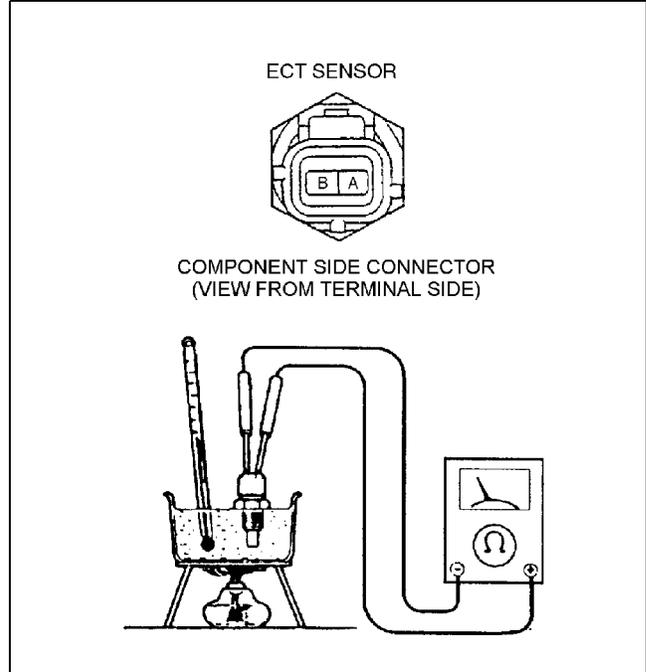
ECT Sensor Resistance Inspection

1. Drain the engine coolant. (See 01-12-2 COOLING SYSTEM SERVICE WARNINGS.) (See 01-12-3 ENGINE COOLANT REPLACEMENT.)
2. Remove the ECT sensor.
3. Place the ECT sensor in water with a thermometer, and heat the water gradually.
4. Measure the resistance between the ECT sensor terminals A and B using an ohmmeter.
 - If not as specified, replace the ECT sensor.
 - If the ECT sensor is okay, but PID value or PCM terminal 38 voltage is out of specification, carry out the "Circuit Open/Short Inspection".

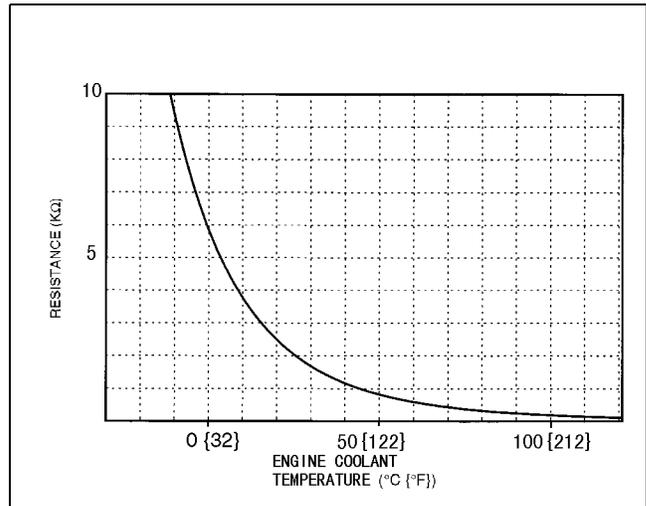
Specification

Water temperature (°C {°F})	Resistance (kilohm)
20 {68}	2.2—2.6
80 {176}	0.29—0.34

01-40B



ECT sensor signal characteristic (reference)



CONTROL SYSTEM [FS]

Circuit Open/Short Inspection

1. Remove the PCM. (See 01-40B-7 PCM REMOVAL/INSTALLATION [FS].)
2. Connect the **SST** (104 Pin Breakout Box) to the PCM as shown.
3. Tighten the connector attaching screw.

Tightening torque

16—23 N·m

{1.6—2.4 kgf·m, 12—17 ft·lbf}

4. Inspect for an open or short circuit in the following wiring harnesses by probing the applicable sensor and **SST** (104 Pin Breakout Box) terminals with ohmmeter leads.
 - If there is an open or short circuit, repair or replace wiring harnesses.
 - If there is no open or short circuit, replace the ECT sensor.

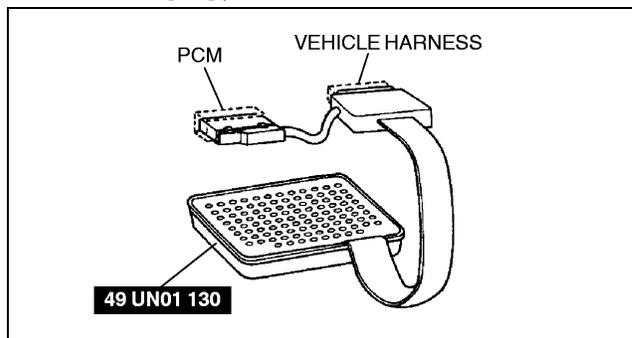
Open circuit

- ECT signal circuit (ECT sensor connector terminal A and PCM connector terminal 38 through common connector)
- GND circuit (ECT sensor connector terminal B and PCM connector terminal 91)

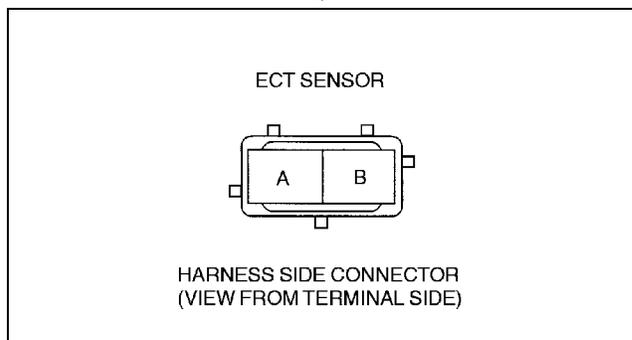
Short circuit

- ECT signal circuit (ECT sensor connector terminal A and PCM connector terminal 38 to GND)

5. Install the ECT sensor.



X3U140WE8



Z3U0140W026

CRANKSHAFT POSITION (CKP) SENSOR INSPECTION [FS]

A3U014018230W01

Air Gap Inspection

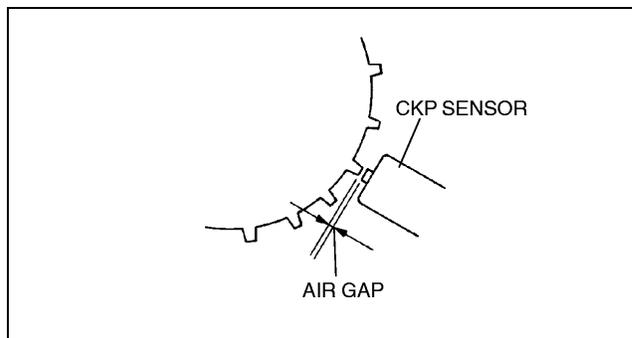
Note

- Perform the following test only when directed.

1. Verify that the CKP sensor is installed properly.
2. Measure the air gap between the crankshaft pulley teeth and the CKP sensor using a feeler gauge.
 - If not as specified, replace the CKP sensor or inspect the crankshaft pulley teeth for being twisted and/or chipped.
 - If any of the crankshaft pulley teeth is twisted and/or chipped, replace the crankshaft pulley (See 01-10B-10 Crankshaft Pulley Removal Note.)

Specification

0.5—1.5 mm {0.020—0.059 in}

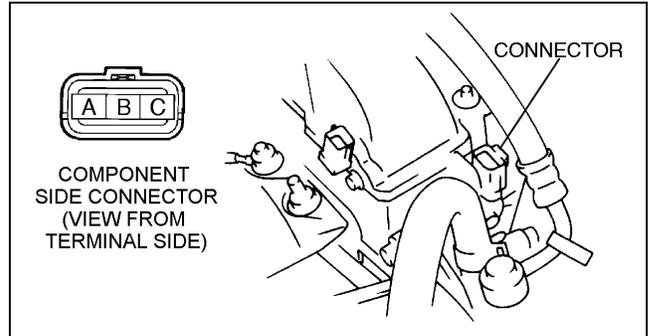


X3U140WDF

Resistance Inspection

1. Disconnect the CKP sensor connector.
2. Measure the resistance between the CKP sensor terminals A and B using an ohmmeter.
 - If not as specified, replace the CKP sensor.
 - If CKP sensor resistance is okay, but PID value or PCM terminal 21 and 22 voltage is out of specification, carry out the "Circuit Open/Short Inspection".

Specification
Approx. 550 ohms

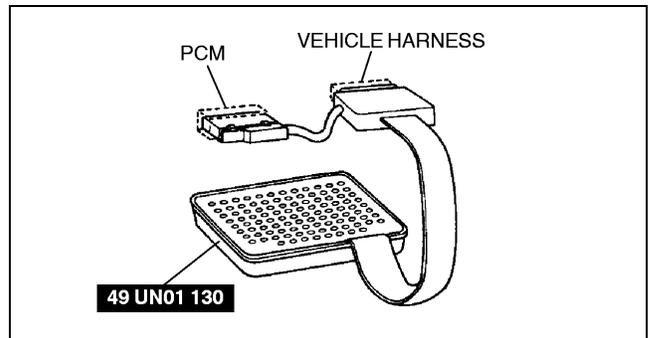


Y3U140WB8

Circuit Open/Short Inspection

1. Remove the PCM. (See 01-40B-7 PCM REMOVAL/INSTALLATION [FS].)
2. Connect the **SST** (104 Pin Breakout Box) to the PCM as shown.
3. Tighten the connector attaching screw.

Tightening torque
7.9—10.7 N·m
{80—110 kgf·cm, 69.5—95.4 in·lbf}



X3U140WE8

4. Inspect for an open or short circuit in the following wiring harnesses by probing the applicable sensor and **SST** (104 Pin Breakout Box) terminals with ohmmeter leads.
 - If there is an open or short circuit, repair or replace wiring harnesses.
 - If there is no open or short circuit, replace the CKP sensor.

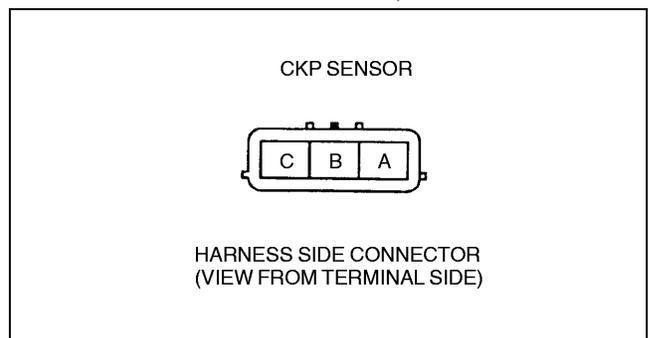
Open circuit

- CKP signal circuit (CKP sensor connector terminal A and PCM connector terminal 21)
- CKP signal circuit (CKP sensor connector terminal B and PCM connector terminal 22)

Short circuit

- CKP signal circuit (CKP sensor connector terminal A and PCM connector terminal 21 to GND)
- CKP signal circuit (CKP sensor connector terminal B and PCM connector terminal 22 to GND)

5. Reconnect the CKP sensor connector.



Y3U140WBP

CONTROL SYSTEM [FS]

CRANKSHAFT POSITION (CKP) SENSOR REMOVAL/INSTALLATION [FS]

A3U014018230W02

Caution

- When foreign material such as an iron chip is on the CKP sensor, it can cause abnormal output from the sensor because of flux turbulence and adversely affect the engine control. Be sure there is no foreign material on the CKP sensor when replacing.

1. Disconnect the CKP sensor connector.
2. Remove the undercover.
3. Remove the CKP sensor installation bolt.
4. Install in the reverse order of removal.

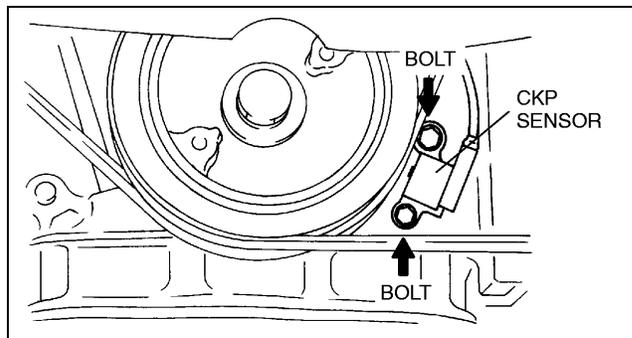
Tightening torque

7.9—10.7 N·m
{80—110 kgf·cm, 69.5—95.4 in·lbf}

5. Reconnect the CKP sensor connector.

Caution

- Do not forcefully pull the wiring harness of the CKP sensor, or harness will be damaged.



X3U140WDH

CAMSHAFT POSITION (CMP) SENSOR REMOVAL/INSTALLATION [FS]

A3U014018200W01

Caution

- When foreign material such as an iron chip is on the CMP sensor, it can cause abnormal output from the sensor because of flux turbulence and adversely affect the engine control. Be sure there is no foreign material on the CMP sensor when replacing.

1. Disconnect the negative battery cable.
2. Disconnect the CMP sensor connector.
3. Remove the CMP sensor installation bolt.
4. Remove the spacer.
5. Remove the CMP sensor.
6. Make sure that the CMP sensor is free of any metallic shavings or particles.
 - If metallic shavings or particles are found on the sensor, clean them off.
7. Install in the reverse order of removal.

Tightening torque

7.9—10.7 N·m
{80—110 kgf·cm, 69.5—95.4 in·lbf}

CAMSHAFT POSITION (CMP) SENSOR INSPECTION [FS]

A3U014018200W02

Resistance Inspection

Note

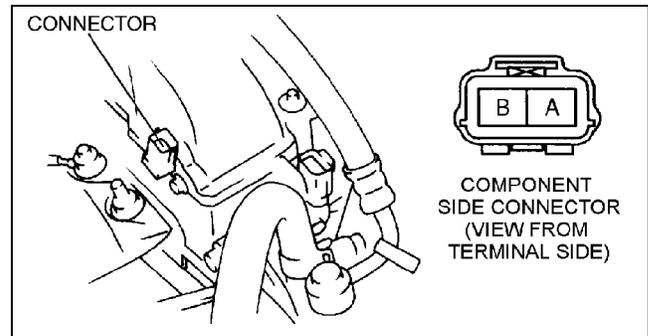
- Perform the following test only when directed.

1. Disconnect the CMP sensor connector.
2. Measure the resistance between the CMP sensor connector terminals A and B using an ohmmeter.
 - If not as specified, replace the CMP sensor.
 - If CMP sensor resistance is okay, but PID value or PCM terminal 85 and 86 voltage are out of specification, carry out the "Circuit Open/Short Inspection".

Specification

0.95—1.25 kilohms

01-40B



A3U0140W006

Circuit Open/Short Inspection

1. Remove the PCM. (See 01-40B-7 PCM REMOVAL/INSTALLATION [FS].)
2. Connect the **SST** (104 Pin Breakout Box) to the PCM as shown.
3. Tighten the connector attaching screw.

Tightening torque

7.9—10.7 N·m

{80—110 kgf·cm, 69.5—95.4 in·lbf}

4. Inspect for an open or short circuit in the following wiring harnesses by probing the applicable sensor and **SST** (104 Pin Breakout Box) terminals with ohmmeter leads.
 - If there is an open or short circuit, repair or replace wiring harnesses.
 - If there is no open or short circuit, replace the CMP sensor.

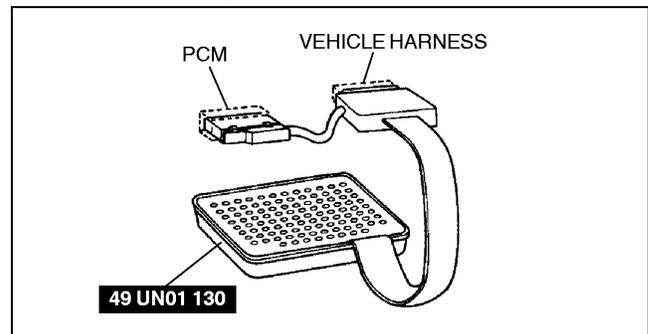
Open circuit

- CMP signal circuit (CMP sensor connector terminal A and PCM connector terminal 85)
- CMP signal circuit (CMP sensor connector terminal B and PCM connector terminal 86)

Short circuit

- CMP signal circuit (CMP sensor connector terminal A and PCM connector terminal 85 to GND)
- CMP signal circuit (CMP sensor connector terminal B and PCM connector terminal 86 to GND)

5. Reconnect the CMP sensor connector.



X3U140WE8

KNOCK SENSOR INSPECTION [FS]

A3U014018921W01

Note

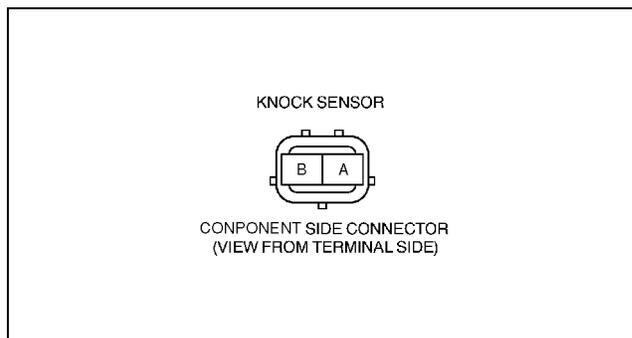
- Perform the following test only when directed.

Resistance Inspection

1. Turn the ignition switch to LOCK.
2. Disconnect the knock sensor connector.
3. Measure the resistance between the knock sensor terminals A and B.
 - If not as specified, replace the knock sensor.
 - If the knock sensor is okay, but PCM terminals 57 and 59 voltages are out of specification, perform the "Circuit Open/Short Inspection".

Specification

532—588 kilohms (20 °C {68 °F})



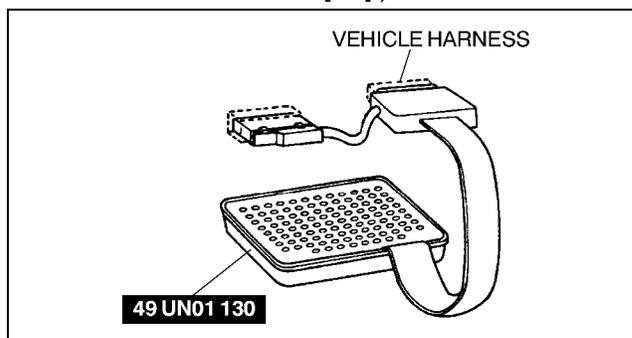
A3U0140W003

Circuit Open/Short Inspection

1. Disconnect the PCM connector. (See 01-40B-7 PCM REMOVAL/INSTALLATION [FS].)
2. Connect the **SST** (104 Pin Breakout Box) with the PCM disconnected.
3. Tighten the connector attaching bolt.

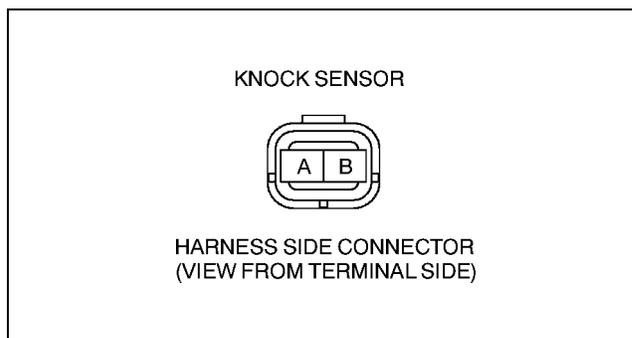
Tightening torque

7.9—10.7 N·m
{80—110 kgf·cm, 69.5—95.4 in·lbf}



YMU116WAQ

4. Inspect the following wiring harness for open or short (Continuity check).



A3U0140W002

Open circuit

- If there is no continuity, the circuit is open. Repair or replace the harness.
 - Signal circuit (Knock sensor terminal A and PCM connector terminal 57)
 - Signal circuit (Knock sensor terminal B and PCM connector terminal 59)

Short circuit

- If there is continuity, the circuit is shorted. Repair or replace the harness.
 - Signal circuit (Knock sensor terminal A and PCM connector terminal 57 to GND)
 - Signal circuit (Knock sensor terminal B and PCM connector terminal 59 to GND)

KNOCK SENSOR REMOVAL/INSTALLATION [FS]

A3U014018921W02

1. Disconnect the knock sensor connector.
2. Remove the knock sensor.
3. Install in the reverse order of removal.

Tightening torque

19.6—34.3 N·m {2.00—3.49 kgf·m, 14.5—25.2 ft·lbf}

01-40B

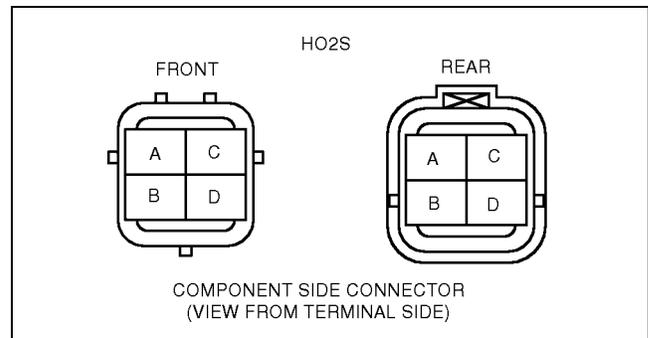
HEATED OXYGEN SENSOR (HO2S) INSPECTION [FS]

A3U014018861W01

HO2S (Front and Rear) Voltage Inspection

Note

- Perform the following test only when directed.
1. Warm up the engine and run it at idle.
 2. Disconnect the HO2S (Front or Rear) connector.
 3. Connect a voltmeter test leads to the following HO2S terminals:
 - (+) lead—HO2S terminal A
 - (-) lead—HO2S terminal B
 4. Run the engine at **3,000 rpm** until the voltmeter indicates **approx. 0.5—0.7 V**.
 5. Verify that the voltmeter needle moves when the engine speed increases and decreases suddenly several times.
 - If not as specified, replace the HO2S.
 - If the HO2S is okay, but PID value or PCM terminal 60 (Front), 35 (Rear) voltage are out of specification, carry out the "Circuit Open/Short Inspection".



Z3U0140W023

Specification

Engine condition	Voltage (V)
Acceleration	0.5—1.0
Deceleration	0—0.5

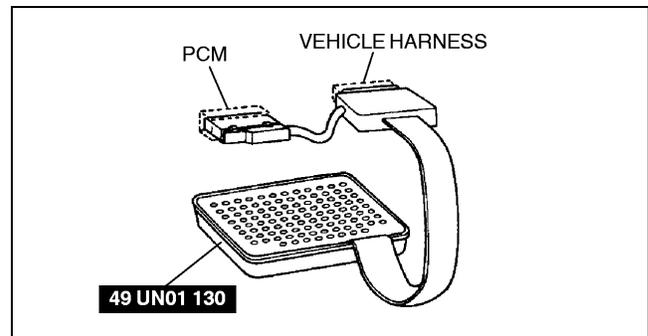
Circuit Open/Short Inspection

1. Remove the PCM. (See 01-40B-7 PCM REMOVAL/INSTALLATION [FS].)
2. Connect the **SST** (104 Pin Breakout Box) to the PCM as shown.
3. Tighten the connector attaching screw.

Tightening torque

7.9—10.7 N·m
{80—110 kgf·cm, 69.5—95.4 in·lbf}

4. Inspect for an open or short circuit in the following wiring harnesses by probing the applicable sensor and **SST** (104 Pin Breakout Box) terminals with ohmmeter leads.
 - If there is an open or short circuit, repair or replace wiring harnesses.
 - If there is no open or short circuit, replace the HO2S.



X3U140WE8

CONTROL SYSTEM [FS]

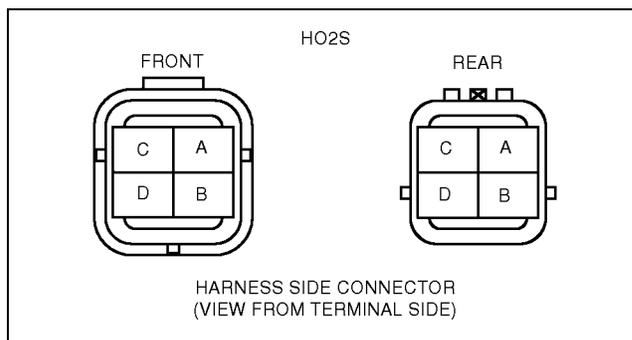
Open circuit

- HO2S signal circuit (HO2S connector terminal A and PCM connector terminal 60 (Front), 35 (Rear))
- GND circuit (HO2S connector terminal B and PCM connector terminal 91)

Short circuit

- HO2S signal circuit (HO2S terminal A and PCM connector terminal 60 (Front), 35 (Rear) to GND)

5. Reconnect the HO2S connector.



Z3U0140W024

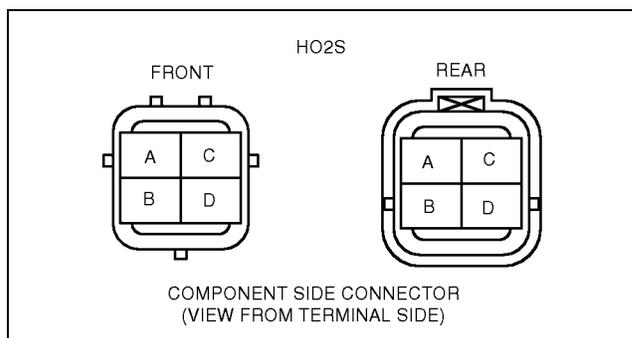
HO2S Heater (Front and Rear) Resistance Inspection

1. Disconnect the HO2S (Front or Rear) connector.
2. Measure the resistance between HO2S terminals C and D using an ohmmeter.
 - If not as specified, replace the HO2S.
 - If the HO2S heater is okay, but PID value or PCM terminal 94 (Front), 93 (Rear) voltage are out of specification, carry out the "Circuit Open/Short Inspection".

Specification

Front: Approx. 5.6 ohms

Rear: Approx. 15.7 ohms



Z3U0140W023

Circuit Open/Short Inspection

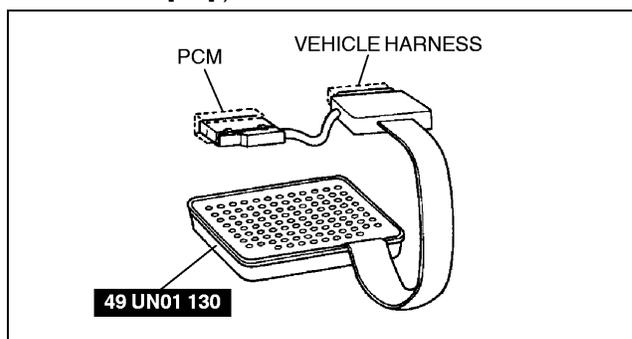
1. Remove the PCM. (See 01-40B-7 PCM REMOVAL/INSTALLATION [FS].)
2. Connect the **SST** (104 Pin Breakout Box) to the PCM as shown.
3. Tighten the connector attaching screw.

Tightening torque

7.9—10.7 N·m

{80—110 kgf·cm, 69.5—95.4 in·lbf}

4. Inspect for an open or short circuit in the following wiring harnesses by probing the applicable sensor and **SST** (104 Pin Breakout Box) terminals with ohmmeter leads.
 - If there is an open or short circuit, repair or replace wiring harnesses.
 - If there is no open or short circuit, replace the HO2S.



X3U0140WE8

CONTROL SYSTEM [FS]

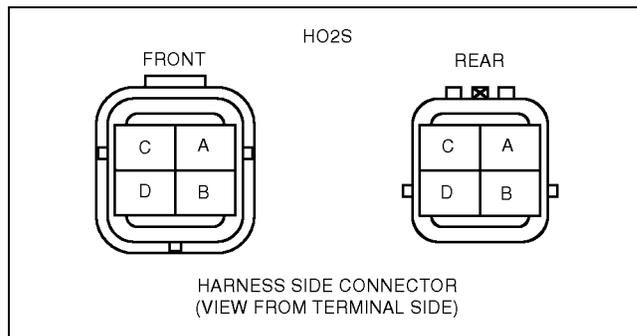
Open circuit

- Control circuit (HO2S connector terminal C and ignition switch (IG1) circuit through common connector)
- GND circuit (HO2S connector terminal D and PCM connector terminal 94 (Front), 93 (Rear))

Short circuit

- Control circuit (HO2S connector terminal C and ignition switch (IG1) circuit through common connector to GND)
- GND circuit (HO2S connector terminal D and PCM connector terminal 94 (Front), 93 (Rear) to GND)

5. Reconnect the HO2S connector.



Z3U0140W024

01-40B

EGR BOOST SENSOR INSPECTION [FS]

A3U014018211W01

Note

- Perform the following test only when directed.
- The following vacuum values are indicated by relative pressure from barometric pressure.

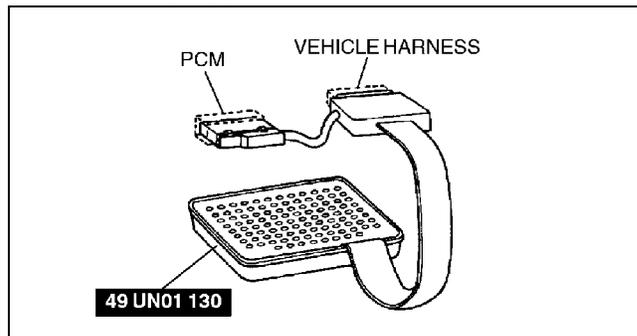
1. Remove the PCM. (See 01-40B-7 PCM REMOVAL/INSTALLATION [FS].)
2. Connect the **SST** (104 Pin Breakout Box) to the PCM as shown.
3. Tighten the connector bolt.

Tightening torque

7.9—10.7 N·m
{80—110 kgf·cm, 69.5—95.4 in·lbf}

Caution

- Do not apply vacuum outside of the specified limits, or the EGR boost sensor will be damaged.



X3U140WAX

4. Turn the ignition switch to ON.
5. Disconnect the vacuum hose between the EGR boost sensor and intake manifold.

Note

- The output voltage varies with the measuring condition.

6. Verify that the PCM 34 terminal voltage is within specification.

Measuring condition:

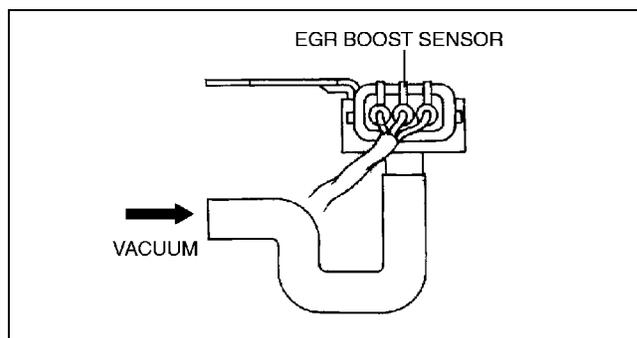
Input voltage: 4.5—5.5 V

Ambient temperature: 10—50 °C {50—122 °F}

Sea level: -20—3,000 m {-656—9,840 ft}

Specification

Measuring voltage: 2.3—4.7 V



X3U140WAY

7. Apply vacuum of **-26.6 kPa {-200 mmHg, -7.85 inHg}** to EGR boost sensor and verify that the PCM 34 terminal voltage variation from the specified voltage in Step 6 is within specification.
 - If not as specified, carry out the "Circuit Open/Short Inspection".

Specification

Monitoring voltage variation: 0.8—1.3 V

CONTROL SYSTEM [FS]

Circuit Open/Short Inspection

1. Remove the PCM. (See 01-40B-7 PCM REMOVAL/INSTALLATION [FS].)
2. Connect the **SST** (104 Pin Breakout Box) to the PCM as shown.
3. Tighten the connector attaching screw.

Tightening torque

7.9—10.7 N·m

{80—110 kgf·cm, 69.5—95.4 in·lbf}

4. Inspect for an open or short circuit in the following wiring harnesses by probing the applicable sensor and **SST** (104 Pin Breakout Box) terminals with ohmmeter leads.
 - If there is an open or short circuit, repair or replace wiring harnesses.
 - If there is no open or short circuit, replace the EGR boost sensor.

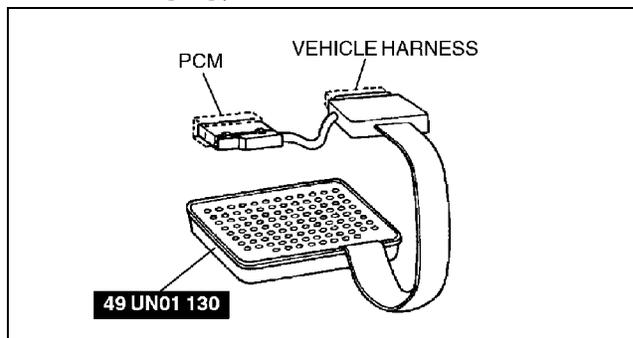
Open circuit

- EGR boost (Barometric pressure) signal circuit (EGR boost sensor connector terminal A and PCM connector terminal 34)
- Constant voltage circuit (EGR boost sensor connector terminal C and PCM connector terminal 90)
- GND circuit (EGR boost sensor connector terminal B and PCM connector terminal 91)

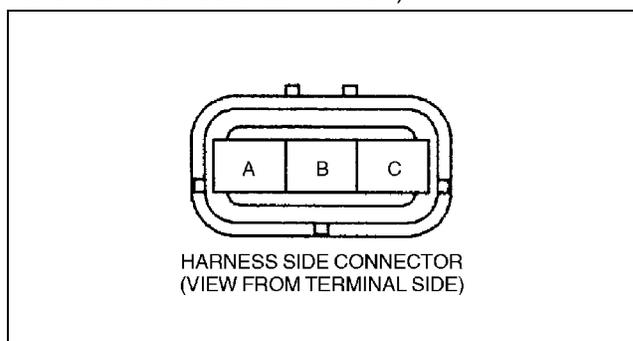
Short circuit

- EGR boost (Barometric pressure) signal circuit (EGR boost sensor connector terminal A and PCM connector terminal 34)
- Constant voltage circuit (EGR boost sensor connector terminal C and PCM connector terminal 90)

5. Reconnect the EGR boost sensor connector.



X3U140WAX



Y3U140WA7

FUEL TANK PRESSURE SENSOR INSPECTION [FS]

A3U014018212W01

Note

- Perform the following test only when directed.
- The following vacuum values are indicated by relative pressure from barometric pressure.

1. Remove the PCM. (See 01-40B-7 PCM REMOVAL/INSTALLATION [FS].)
2. Connect the **SST** (104 Pin Breakout Box) to the PCM as shown.
3. Tighten the connector bolt.

Tightening torque

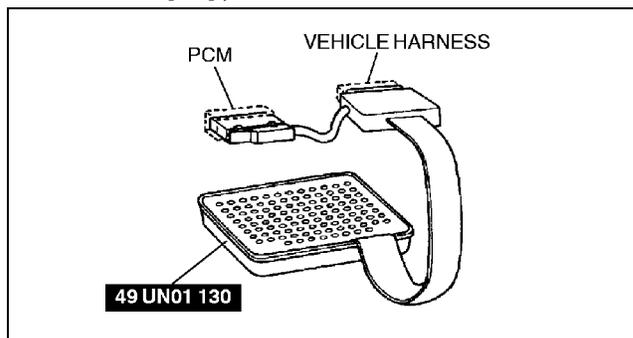
7.9—10.7 N·m

{80—110 kgf·cm, 69.5—95.4 in·lbf}

Caution

- Do not apply vacuum outside of the specified limits, or the fuel tank pressure sensor will be damaged.

4. Turn the ignition switch to ON.



X3U140WB3

CONTROL SYSTEM [FS]

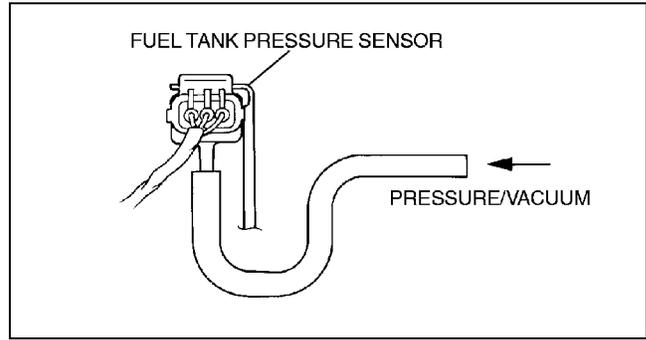
- Apply pressure then vacuum to the fuel tank pressure sensor according to the following procedure.

Note

- The output voltage varies with the measuring condition.

- Decrease the applied pressure from **+6.66 kPa {+50 mmHg, +1.97 inHg}** to **-6.66 kPa {-50 mmHg, -1.97 inHg}** and verify that the PCM terminal 62 voltage decreases accordingly as specified.

- If not as specified, replace the fuel tank pressure sensor.
- If fuel tank pressure sensor is okay, but PCM terminal 62 voltage is out of specification, carry out the "Circuit Open/Short Inspection".



X3U140WB4

01-40B

Specification

Applied pressure	Output voltage (V)*
-6.66 kPa {-50 mmHg, -1.97 inHg}	0.45—0.55
0 kPa {0 mmHg, 0 inHg}	2.25—2.75
+6.66 kPa {+50 mmHg, +1.97 inHg}	4.05—4.95

* : Measuring condition is as follows

Input voltage: 5.0 V

Barometric pressure: 101.3 kPa {760 mmHg, 29.9 inHg} (Absolute pressure)

Barometric temperature: 30—100 °C {0—182 °F}

Circuit Open/Short Inspection

- Remove the PCM. (See 01-40B-7 PCM REMOVAL/INSTALLATION [FS].)
- Connect the **SST** (104 Pin Breakout Box) to the PCM as shown.
- Tighten the connector attaching screw.

Tightening torque

7.9—10.7 N·m

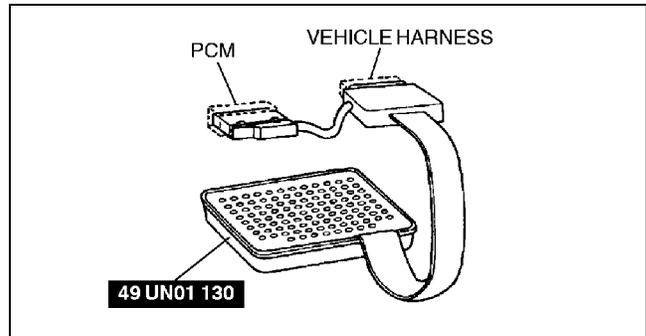
{80—110 kgf·cm, 69.5—95.4 in·lbf}

- Inspect for an open or short circuit in the following wiring harnesses by probing the applicable sensor and **SST** (104 Pin Breakout Box) terminals with ohmmeter leads.

- If there is an open or short circuit, repair or replace wiring harnesses.
- If there is no open or short circuit, replace the fuel tank pressure sensor.

Open circuit

- Fuel tank pressure signal circuit (Fuel tank pressure sensor connector terminal B and PCM connector terminal 62)
- Constant voltage circuit (Fuel tank pressure sensor connector terminal C and PCM connector terminal 90)
- GND circuit (Fuel tank pressure sensor connector terminal A and PCM connector terminal 91)

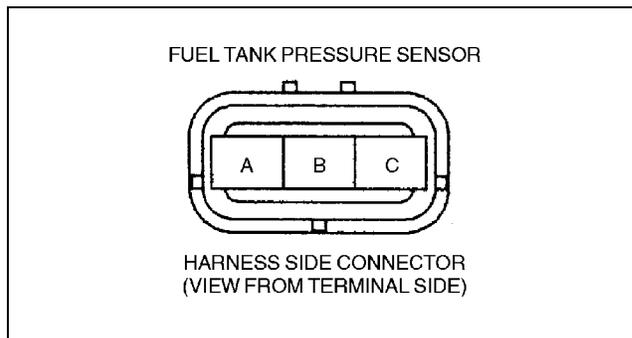


X3U140WB3

CONTROL SYSTEM [FS]

Short circuit

- Fuel tank pressure signal circuit (Fuel tank pressure sensor connector terminal B and PCM connector terminal 62)
 - Constant voltage circuit (Fuel tank pressure sensor connector terminal C and PCM connector terminal 90)
5. Reconnect the fuel tank pressure sensor connector.



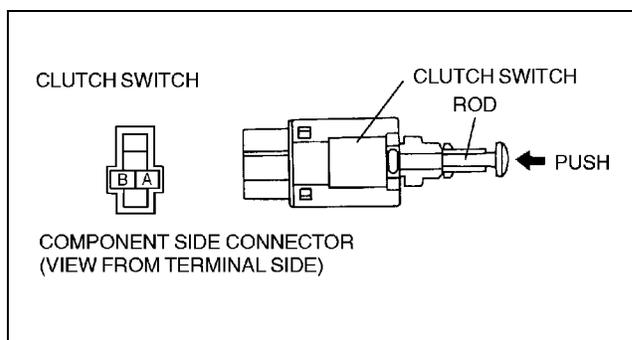
X3U140WB5

CLUTCH SWITCH INSPECTION [FS]

A3U014018660W01

Note

- Perform the following test only when directed.
1. Verify that the clutch switch is installed properly.
 2. Disconnect the negative battery cable.
 3. Remove the clutch switch. (See 05-10-5 CLUTCH PEDAL REMOVAL/INSTALLATION.)
 4. Inspect the continuity between the clutch switch terminals using an ohmmeter.
 - If not as specified, replace the clutch switch.
 - If the clutch switch is okay, but PID value or PCM terminal 6 voltage is out of specification, carry out the "Circuit Open/Short Inspection".



Z3U0140W029

○—○ : Continuity

Condition	Terminal	
	A	B
The rod is pushed		
Except above	○—○	○—○

Z3U0140W030

Circuit Open/Short Inspection

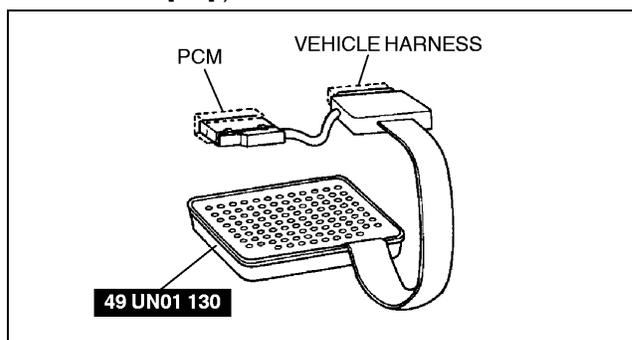
1. Remove the PCM. (See 01-40B-7 PCM REMOVAL/INSTALLATION [FS].)
2. Connect the **SST** (104 Pin Breakout Box) to the PCM as shown.
3. Tighten the connector attaching screw.

Tightening torque

7.9—10.7 N·m

{80—110 kgf·cm, 69.5—95.4 in·lbf}

4. Inspect for an open or short circuit in the following wiring harnesses by probing the applicable sensor and **SST** (104 Pin Breakout Box) terminals with ohmmeter leads.
 - If there is an open or short circuit, repair or replace wiring harnesses.
 - If there is no open or short circuit, replace the clutch switch.



X3U140WE8

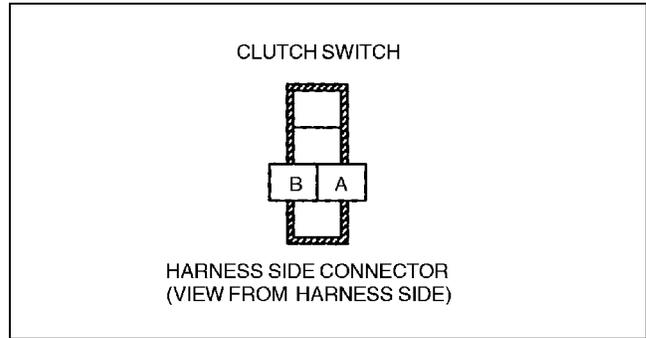
Open circuit

- Signal circuit (Clutch switch connector terminal B and PCM connector terminal 6 through common connector)
- GND circuit (Clutch switch connector terminal A and GND)

Short circuit

- Signal circuit (Clutch switch connector terminal B and PCM connector terminal 6 through common connector to GND)

5. Install the clutch switch.



Z3U0140W031

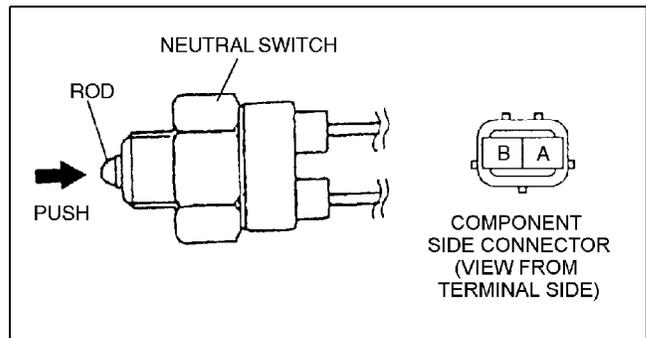
A3U014017640W01

NEUTRAL SWITCH INSPECTION [FS]

Note

- Perform the following test only when directed.

1. Disconnect the negative battery cable.
2. Remove the neutral switch.
3. Inspect for continuity between the neutral switch terminals using an ohmmeter.
 - If not as specified, replace the neutral switch.
 - If the neutral switch is okay, but PID value or PCM terminal 64 voltage is out of specification, carry out the "Circuit Open/Short Inspection".



A3U0140W004

○—○ : Continuity

Condition	Terminal	
	A	B
The rod is pushed	○—○	○—○
Except above		

X3U140WE3

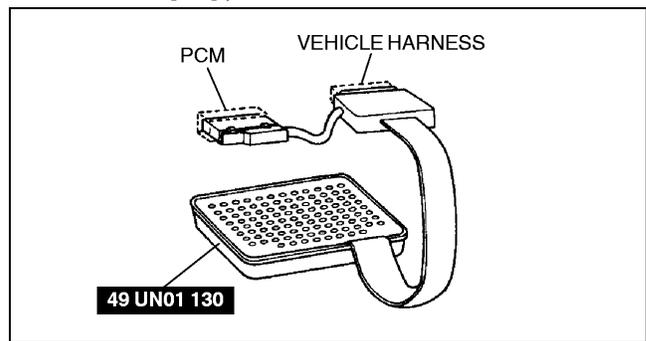
Circuit Open/Short Inspection

1. Remove the PCM. (See 01-40B-7 PCM REMOVAL/INSTALLATION [FS].)
2. Connect the **SST** (104 Pin Breakout Box) to the PCM as shown.
3. Tighten the connector attaching screw.

Tightening torque

7.9—10.7 N·m
{80—110 kgf·cm, 69.5—95.4 in·lbf}

4. Inspect for an open or short circuit in the following wiring harnesses by probing the applicable sensor and **SST** (104 Pin Breakout Box) terminals with ohmmeter leads.
 - If there is an open or short circuit, repair or replace wiring harnesses.
 - If there is no open or short circuit, replace the neutral switch.



X3U140WE8

Open circuit

- Signal circuit (Neutral switch connector terminal A and PCM connector terminal 64 through common connector)
- GND circuit (Neutral switch connector terminal B and GND through common connector)

Short circuit

- Signal circuit (Neutral switch connector terminal A and PCM terminal 64 through common connector to GND)

CONTROL SYSTEM [FS]

5. Install the neutral switch.

POWER STEERING PRESSURE (PSP) SWITCH INSPECTION [FS]

A3U014032230W01

Continuity Inspection

Note

- Perform the following test only when directed.

1. Inspect as follows if the power steering is inoperative. (See 06–12–3 POWER STEERING FLUID INSPECTION.)
 - Power steering fluid level
 - Power steering fluid leakage
 - Power steering fluid pressure
2. Disconnect the PSP switch connector.
3. Start the engine.
4. Inspect for continuity between the PSP switch terminal and GND using an ohmmeter.
 - If not as specified, replace the PSP switch.
 - If the PSP switch is okay, but PID value or PCM terminal 31 voltage are out of specification, carry out the "Circuit Open/Short Inspection".

○—○ : Continuity

Condition	Terminal	GND
Steering wheel is in straight ahead position		
Steering wheel is fully turned	○—○	○—○

X3U140WE4

Circuit Open/Short Inspection

1. Remove the PCM. (See 01–40B–7 PCM REMOVAL/INSTALLATION [FS].)
2. Connect the **SST** (104 Pin Breakout Box) to the PCM as shown.
3. Tighten the connector attaching screw.

Tightening torque

7.9—10.7 N·m
{80—110 kgf·cm, 69.5—95.4 in·lbf}

4. Inspect for an open or short circuit in the following wiring harnesses by probing the applicable sensor and **SST** (104 Pin Breakout Box) terminals with ohmmeter leads.
 - If there is an open or short circuit, repair or replace wiring harnesses.
 - If there is no open or short circuit, replace the PSP switch.

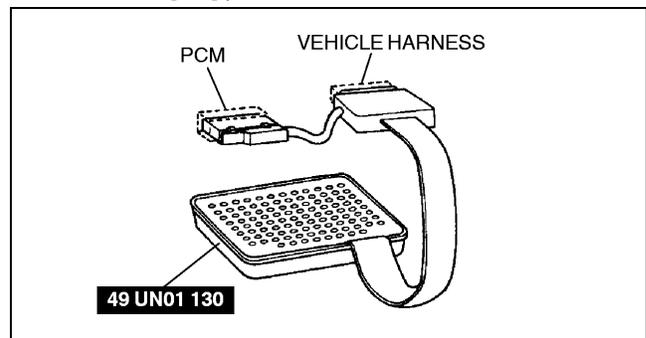
Open circuit

- PSP signal circuit (PSP switch connector terminal and PCM connector terminal 31 through common connector)
- GND circuit (PSP switch body and GND)

Short circuit

- PSP signal circuit (PSP switch connector terminal and PCM connector terminal 31 through common connector to GND)

5. Reconnect the PSP switch connector.



X3U140WE8