

FUEL AND EMISSION CONTROL SYSTEMS (FUEL INJECTION F2 ENGINE)

INDEX	F5- 2
-------------	-------

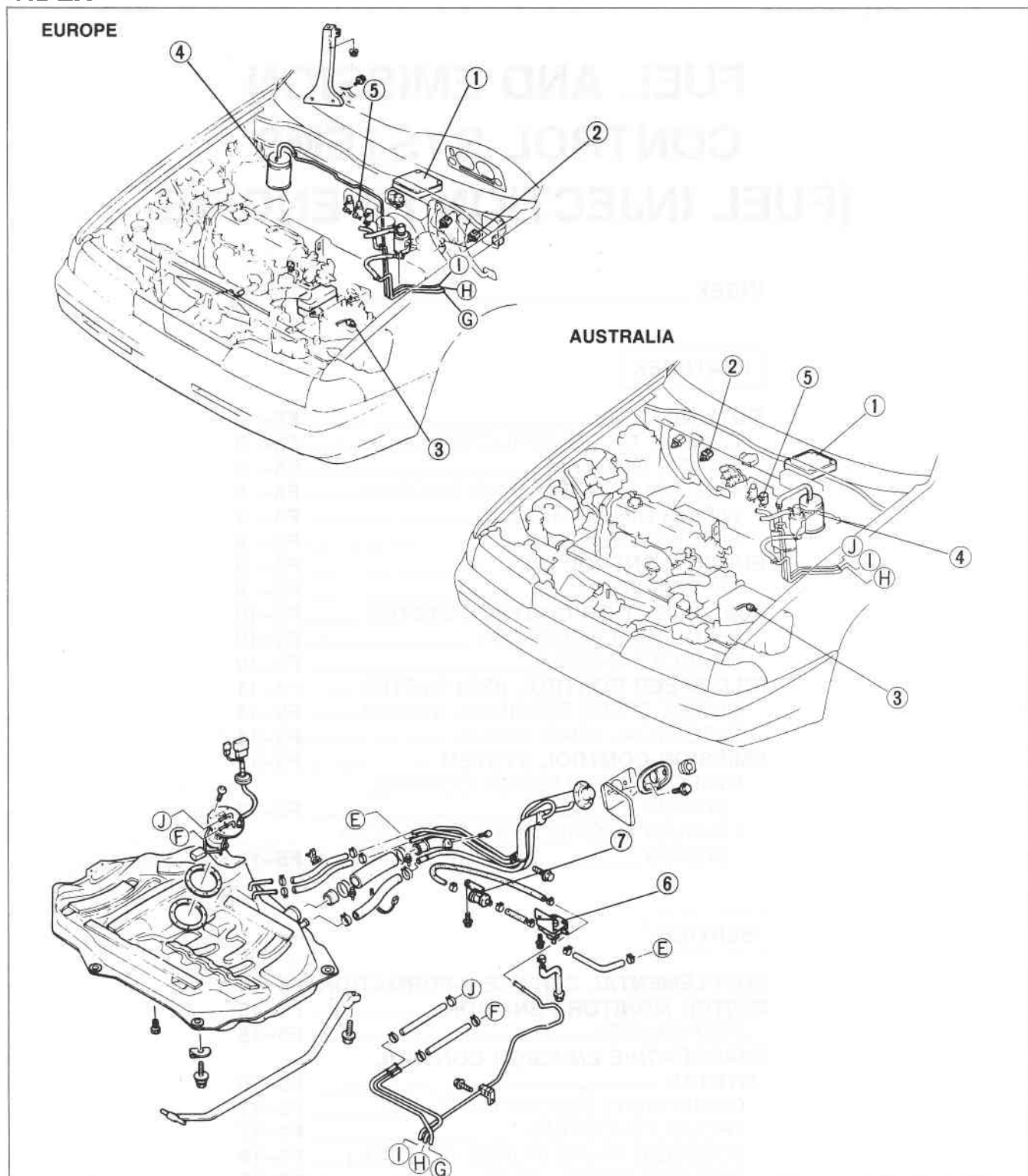
FEATURES

OUTLINE	F5- 3
OUTLINE OF CONSTRUCTION	F5- 3
SYSTEM DIAGRAM	F5- 4
VACUUM HOSE ROUTING DIAGRAM.....	F5- 5
WIRING DIAGRAM.....	F5- 7
SPECIFICATIONS.....	F5- 8
ENGINE CONTROL UNIT	F5- 9
SERVICE POINT	F5- 9
FUEL INJECTION CONTROL SYSTEM	F5-10
FEEDBACK CORRECTION	F5-10
DECHOKE SYSTEM	F5-10
IDLE SPEED CONTROL (ISC) SYSTEM	F5-11
ENGINE SPEED FEEDBACK SYSTEM.....	F5-11
ELECTRICAL LOAD SIGNAL	F5-11
EMISSION CONTROL SYSTEM	F5-12
EVAPORATIVE EMISSION CONTROL SYSTEM	F5-12
EXHAUST GAS RECIRCULATION (EGR) SYSTEM	F5-13

SERVICE

SUPPLEMENTAL SERVICE INFORMATION.	F5-14
SWITCH MONITOR FUNCTION.....	F5-15
PREPARATION.....	F5-15
EVAPORATIVE EMISSION CONTROL SYSTEM	F5-16
COMPONENT DESCRIPTIONS.....	F5-17
TROUBLESHOOTING	F5-17
SOLENOID VALVE (PURGE CONTROL)	F5-18
TWO-WAY CHECK VALVE.....	F5-18
CHECK-AND-CUT VALVE.....	F5-19
CHARCOAL CANISTER	F5-19
CONTROL SYSTEM	F5-20
PREPARATION.....	F5-20
RELATIONSHIP CHART	F5-21
ENGINE CONTROL UNIT.....	F5-23
NEUTRAL SWITCH (MTX)	F5-30
CLUTCH SWITCH (MTX)	F5-30

INDEX



96G0F5-502

1. Engine control unit
Inspection page F5-23
2. Clutch switch (MTX)
Inspection page F5-30
3. Neutral switch (MTX)
Inspection page F5-30
4. Charcoal canister
Inspection page F5-19
Replacement..... page F5-19

5. Solenoid valve (Purge control)
On-vehicle inspection page F5-18
Inspection page F5-18
6. Check-and-cut valve
Inspection page F5-19
7. Two-way check valve
Inspection page F5-18

OUTLINE

OUTLINE OF CONSTRUCTION

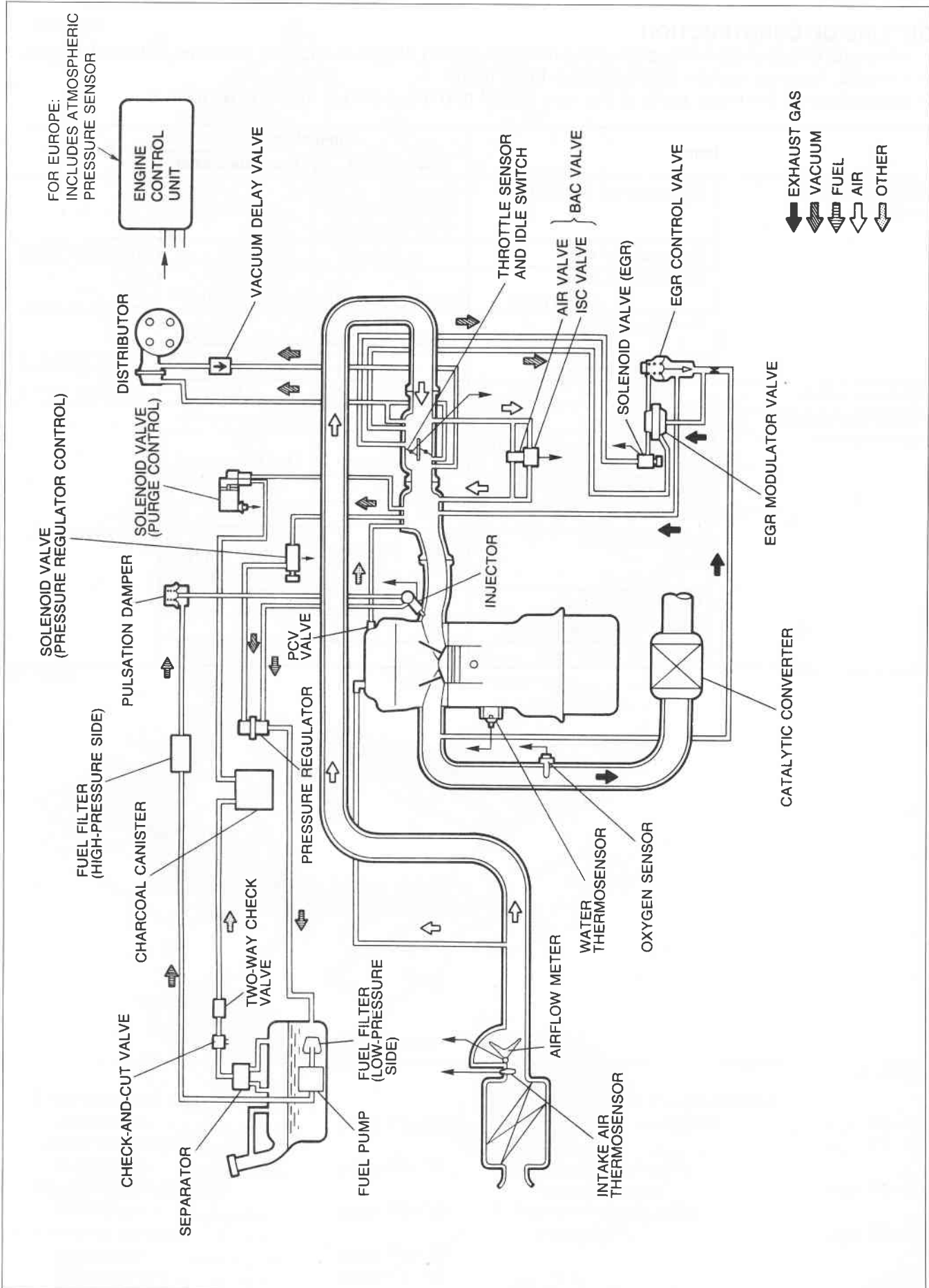
The fuel and emission control system of the new 626 Station Wagon is basically the same as that of the previous model, however certain changes have been made.

A comparison of the major parts of the new model and the previous model is as follows.

Item		Application		Purpose
		New model	Previous model	
Input sensors and switches	Engine control unit (ECU)	○ 48-pin type (MTX) 64-pin type (ATX)	○ 52-pin type	—
	Electrical load unit	X	○	System simplified
	Clutch switch (MTX)	○ Normally open type	○ Normally closed type	For high durability
	Neutral switch (MTX)	○ Normally open type	○ Normally closed type	
	Water thermoswitch	X	○	System simplified
Dechoke system		○	X	For good starting
Evaporative emission control system	System operation	Duty control	Vacuum control	For emission
	Solenoid valve (Purge control)	○ Duty solenoid	○ ON-OFF solenoid	
	Two-way check valve	○	X	
	Check-and-cut valve	○	X	
	Charcoal canister	○	○ With No.1 and No.2 purge control valve	
	Vacuum switch valve	X	○	
	Water thermovalve	X	○	
	Three-way check valve	X	○	

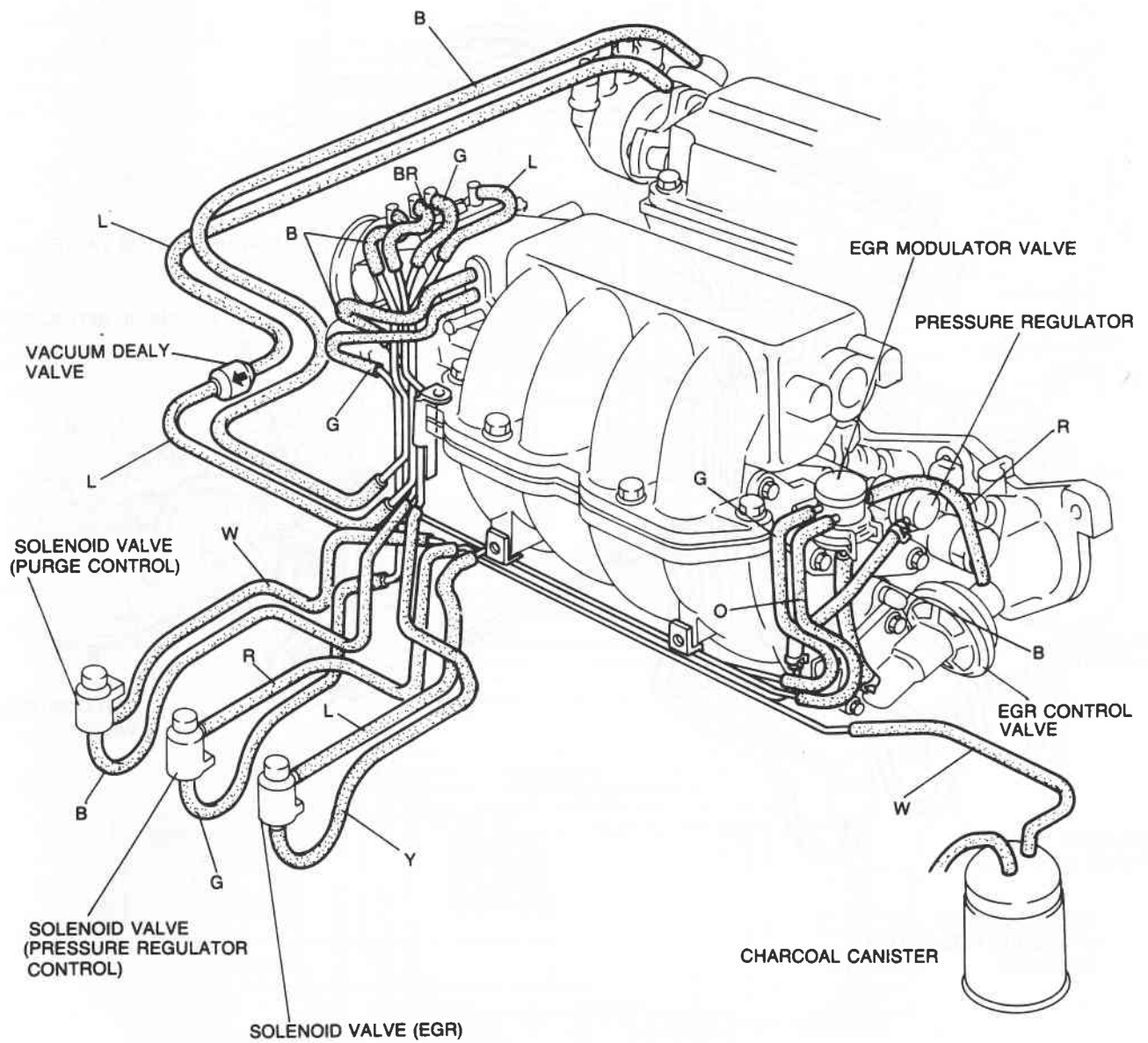
96G0F5-503

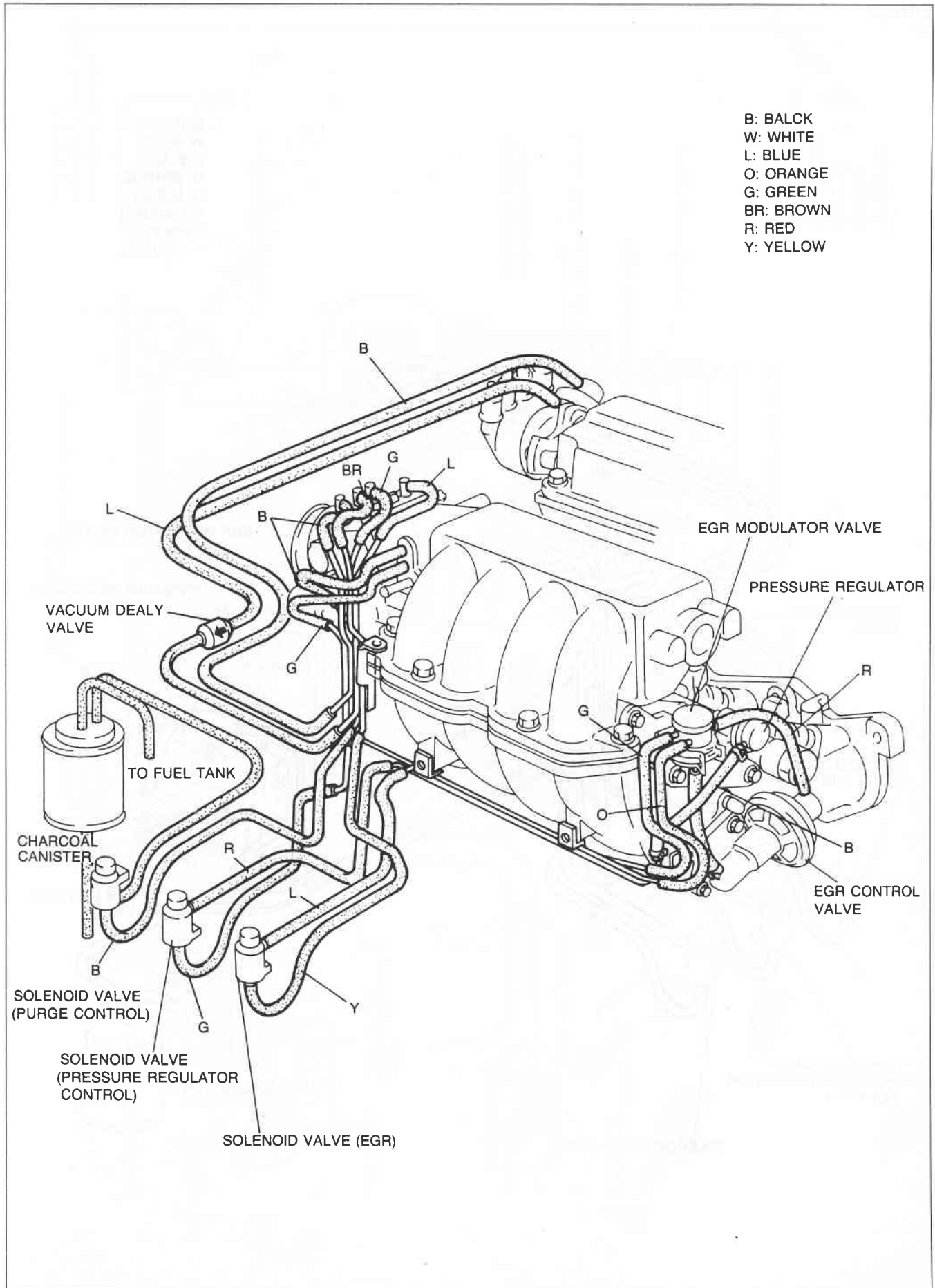
SYSTEM DIAGRAM



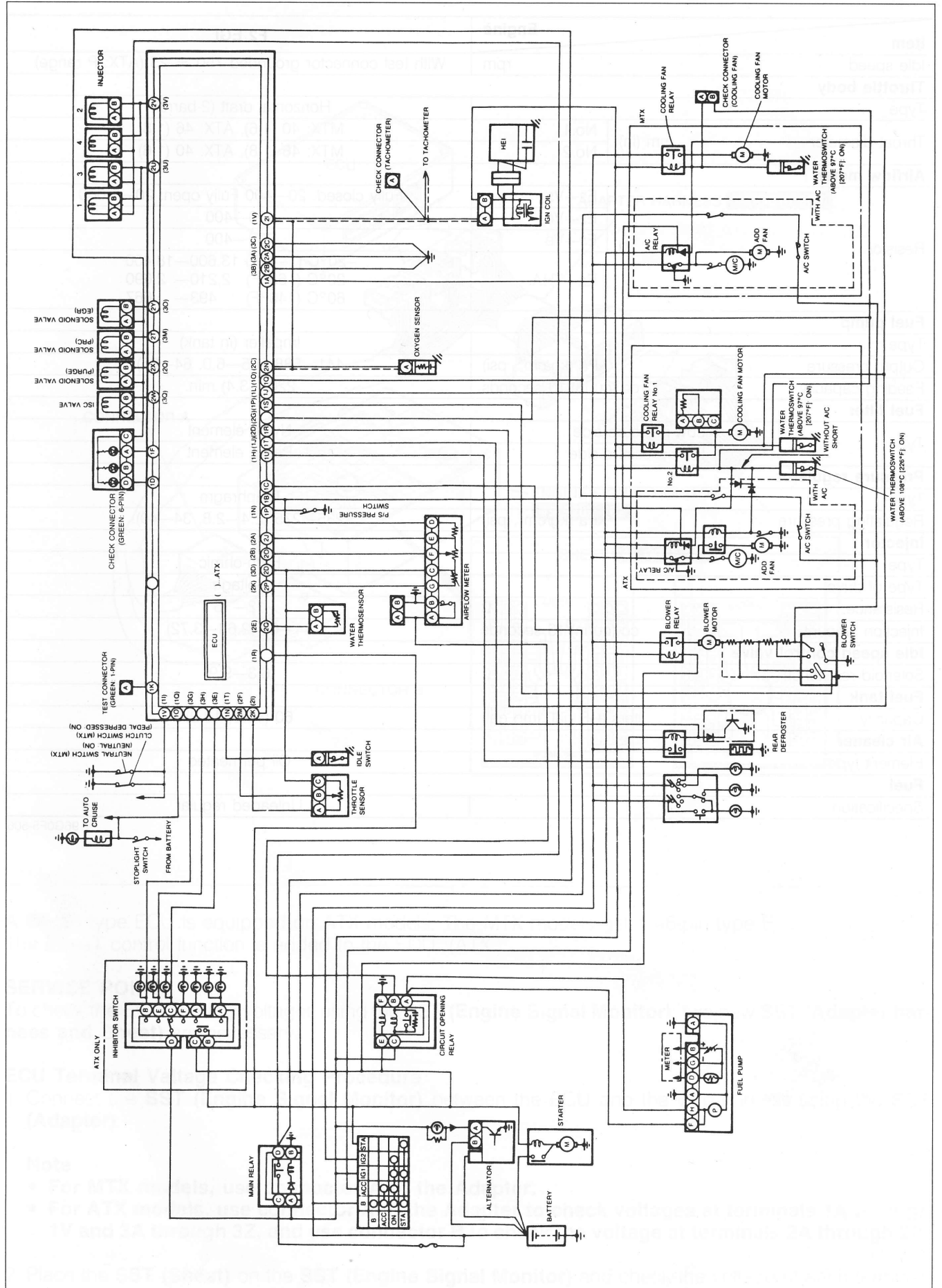
VACUUM HOSE ROUTING DIAGRAM
Europe

B: BLACK
W: WHITE
L: BLUE
O: ORANGE
G: GREEN
BR: BROWN
R: RED
Y: YELLOW





WIRING DIAGRAM

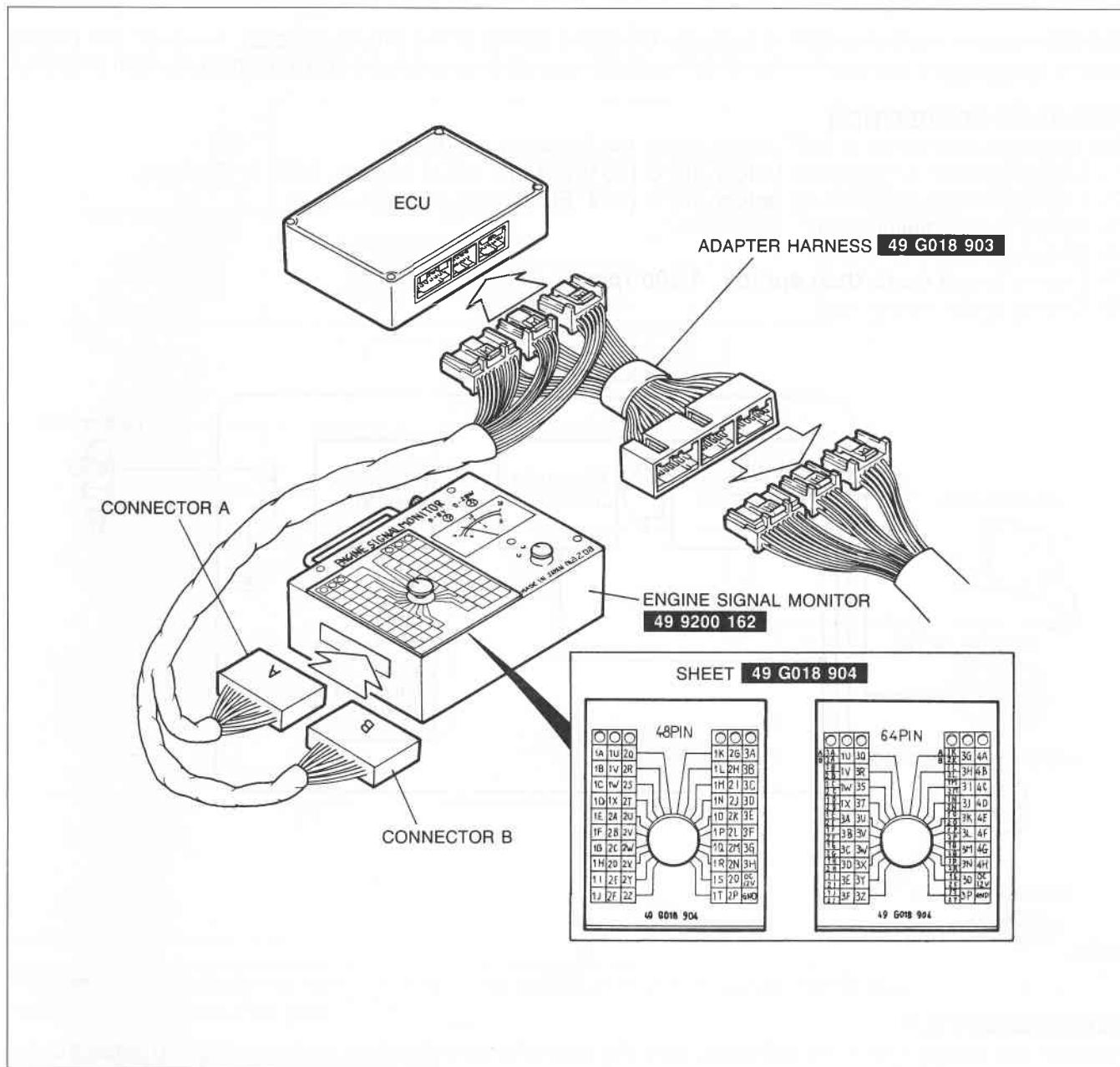


SPECIFICATIONS

Item		Engine	F2 EGI
Idle speed		rpm	With test connector grounded 750 ± 25 (ATX: P range)
Throttle body			
Type			Horizontal draft (2-barrel)
Throat diameter	mm (in)	No.1	MTX: 40 (1.6), ATX: 46 (1.8)
		No.2	MTX: 46 (1.8), ATX: 40 (1.6)
Airflow meter			
Resistor	Ω	E2—Vs	Fully closed: 20—400 Fully open: 20—1,000
		E2—Vc	100—400
		E2—VB	200—400
		E2—THA	−20°C (−4°F) 13,600—18,400 20°C (68°F) 2,210— 2,690 60°C (140°F) 493— 667
Fuel pump			
Type			Impeller (in tank)
Output pressure		kPa (kg/cm ² , psi)	441—588 (4.5—6.0, 64—85)
Feeding capacity		cc (cu in)/10 seconds	220 (13.4) min.
Fuel filter			
Type	Low-pressure side		Nylon element
	High-pressure side		Paper element
Pressure regulator			
Type			Diaphragm
Regulating pressure		kPa (kg/cm ² , psi)	235—275 (2.4—2.8, 34—40)
Injector			
Type			High-ohmic
Type of drive			Voltage
Resistance		Ω	12—16
Injection amount		cc (cu in)/15 seconds	44—61 (2.68—3.72)
Idle speed control valve			
Solenoid resistance		Ω	6.3—9.9
Fuel tank			
Capacity		liters (US gal, Imp gal)	60 (15.9, 13.2)
Air cleaner			
Element type			Oil permeated
Fuel			
Specification			Unleaded regular

96G0F5-506

ENGINE CONTROL UNIT



96E0F4-007

A 64-pin type ECU is equipped on ATX models. The MTX models get a 48-pin type ECU. The EC-AT control function is added to the ECU. (ATX.)

SERVICE POINT

To check the ECU terminal voltages using the **SST (Engine Signal Monitor)**, two new **SST (Adapter harness and Sheet)** are necessary.

ECU Terminal Voltage Checking Procedure

1. Connect the **SST (Engine Signal Monitor)** between the ECU and the wire harness using the **SST (Adapter)**.

Note

- For MTX models, use connector A of the Adapter.
- For ATX models, use connector A of the Adapter to check voltages at terminals 1A through 1V and 3A through 3Z, and use connector B to check the voltage at terminals 2A through 2P.

2. Place the **SST (Sheet)** on the **SST (Engine Signal Monitor)** and check the voltage at each terminal.

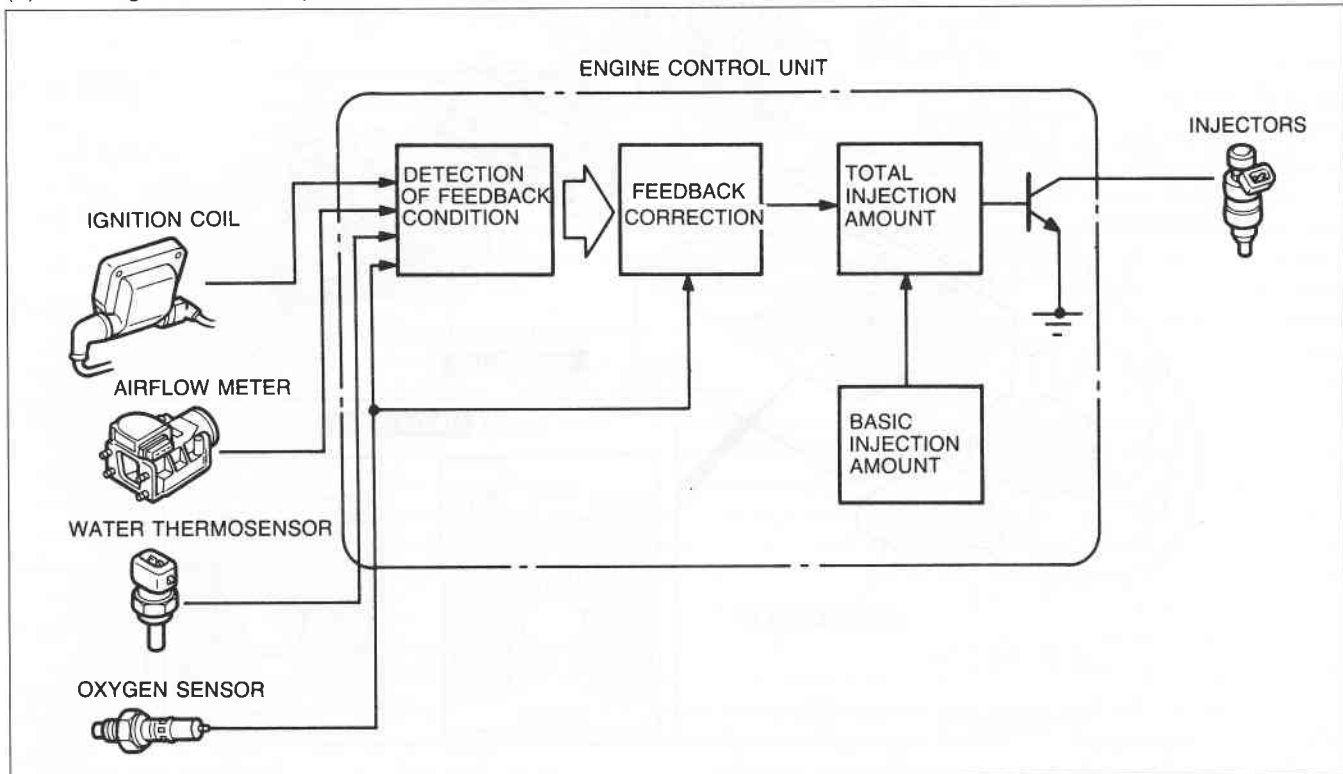
FUEL INJECTION CONTROL SYSTEM

The fuel injection control system is basically the same as that of the previous model, however, the engine coolant temperature specification to inhibit feedback correction is changed and a dechoke system is added.

FEEDBACK CORRECTION

The feedback correction is NOT made under the following conditions:

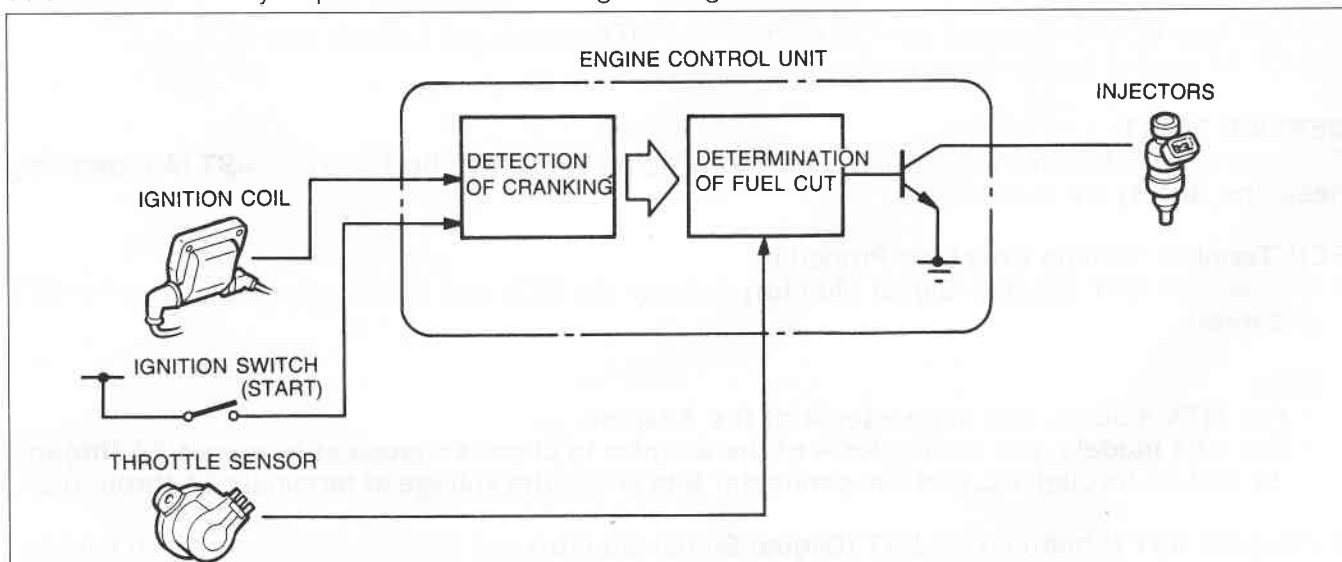
- (1) Engine coolant temperature **below 30°C (86°F)** at idle (MTX: in gear, ATX: in D range).
- (2) Engine coolant temperature **below 50°C (122°F)** cruising.
- (3) Airflow meter malfunction.
- (4) Oxygen sensor malfunction.
- (5) Engine speed **more than approx. 4,200 rpm**.
- (6) Driving under heavy load.



96E0F4-008

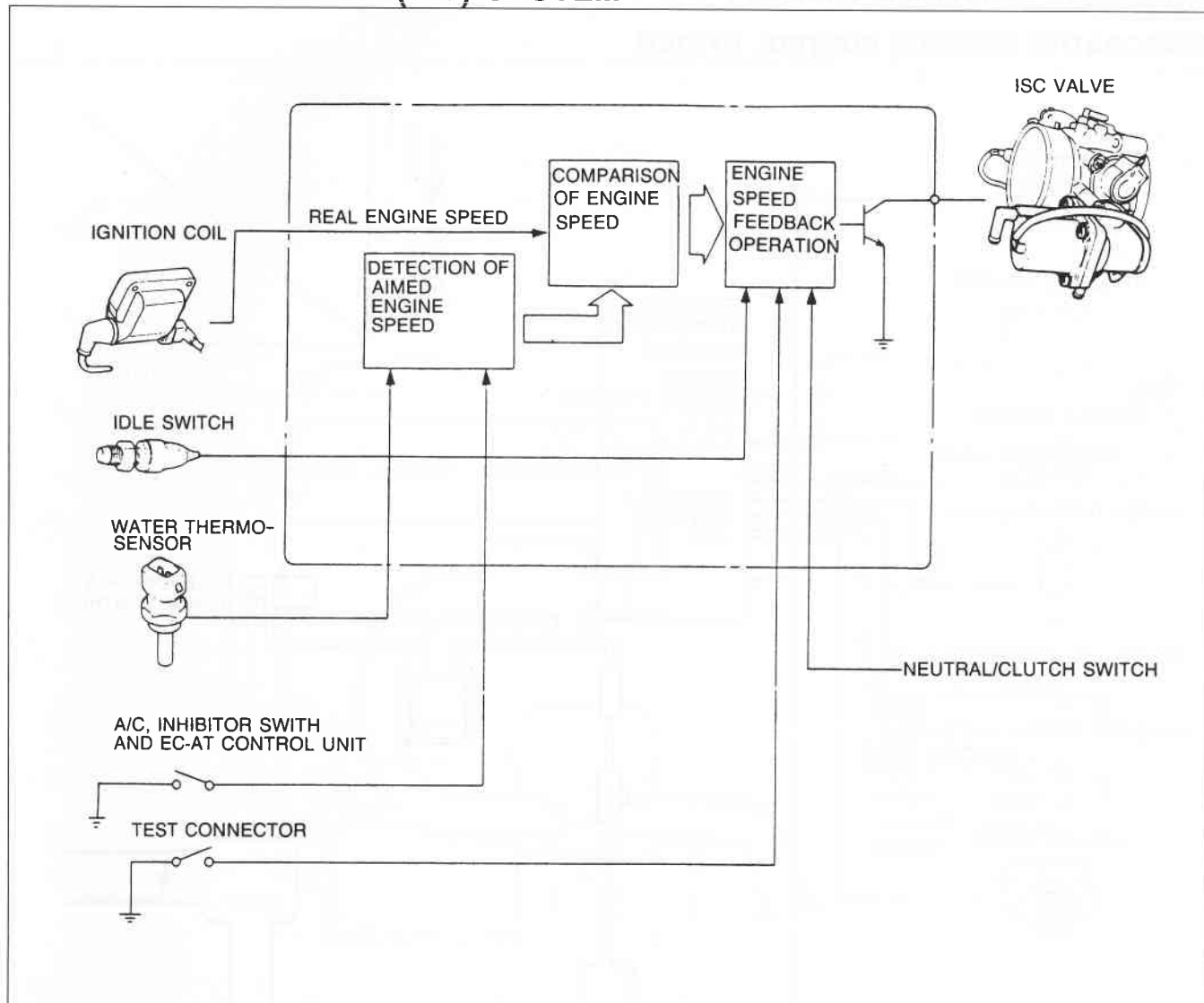
DECHOKE SYSTEM

To clean out excess fuel in the cylinders, as is the case of engine flooding, no fuel is injected when the accelerator is held fully depressed while cranking the engine.



06U0FX-526

IDLE SPEED CONTROL (ISC) SYSTEM



96E0F4-009

This system is basically the same as that of the previous model, however, some specifications for engine speed feedback are changed.

ENGINE SPEED FEEDBACK SYSTEM

Engine speed is controlled as follows:

Engine condition	Engine speed		Remark
	New model	Previous model	
During warm-up	Set according to coolant temperature		MTX: Neutral, ATX: N or P range
Idle (after warm-up)	Approx. 750 rpm		Including P/S or E/L operation
A/C: ON	MTX: Approx. 800 rpm ATX (N or P range): Approx. 850 rpm ATX (D range): Approx. 825 rpm	Approx. 800 rpm	At idle
ATX: D, 1, 2 and R ranges	Set according to coolant temperature		—

96E0F4-010

Note

- When the test connector is grounded, this system is canceled.
- The test connector must be grounded to adjust base idle speed.

ELECTRICAL LOAD SIGNAL

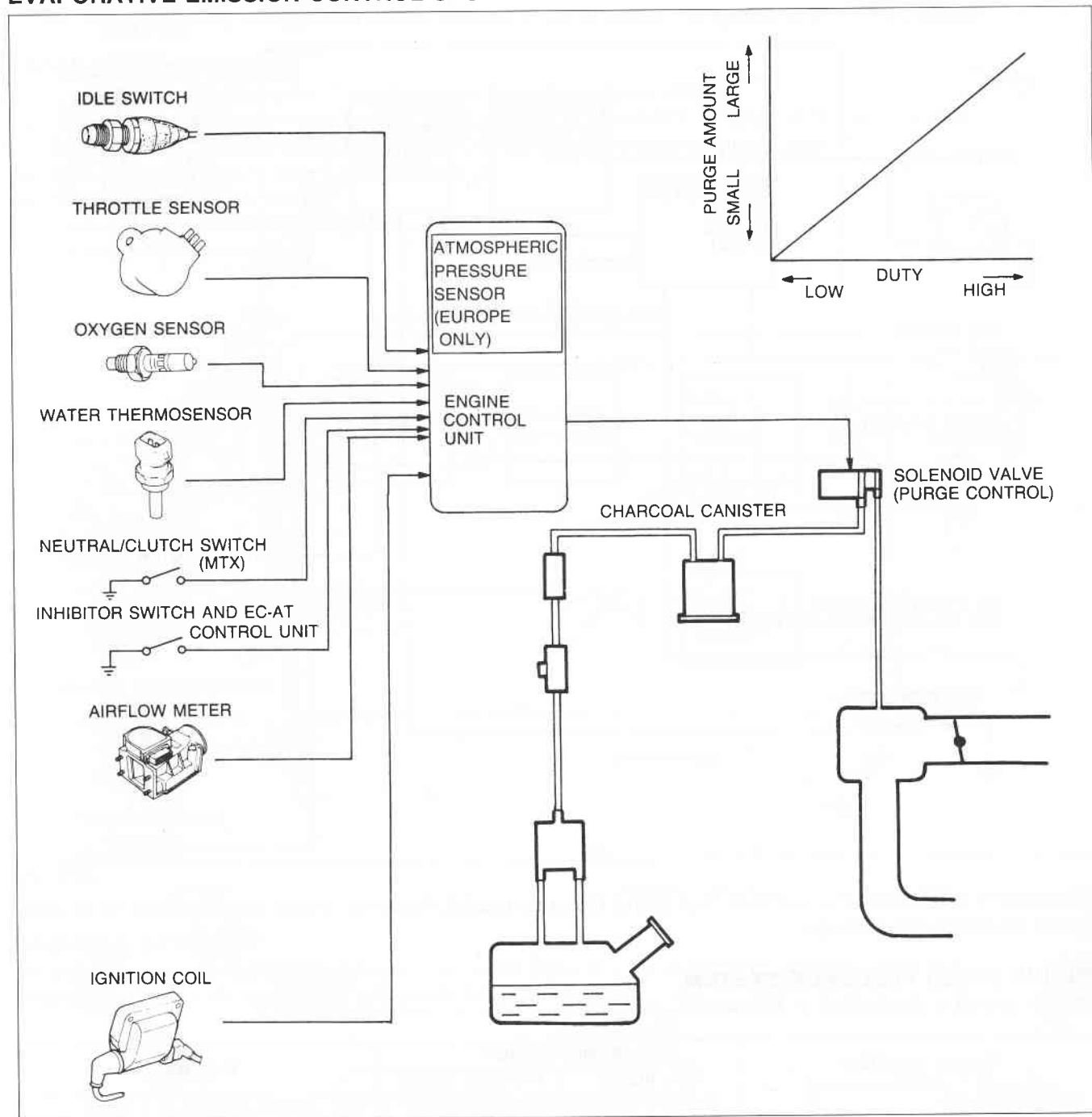
The electrical load is detected directly by the ECU.

06U0FX-519

F5-11

EMISSION CONTROL SYSTEM

EVAPORATIVE EMISSION CONTROL SYSTEM



96G0F5-507

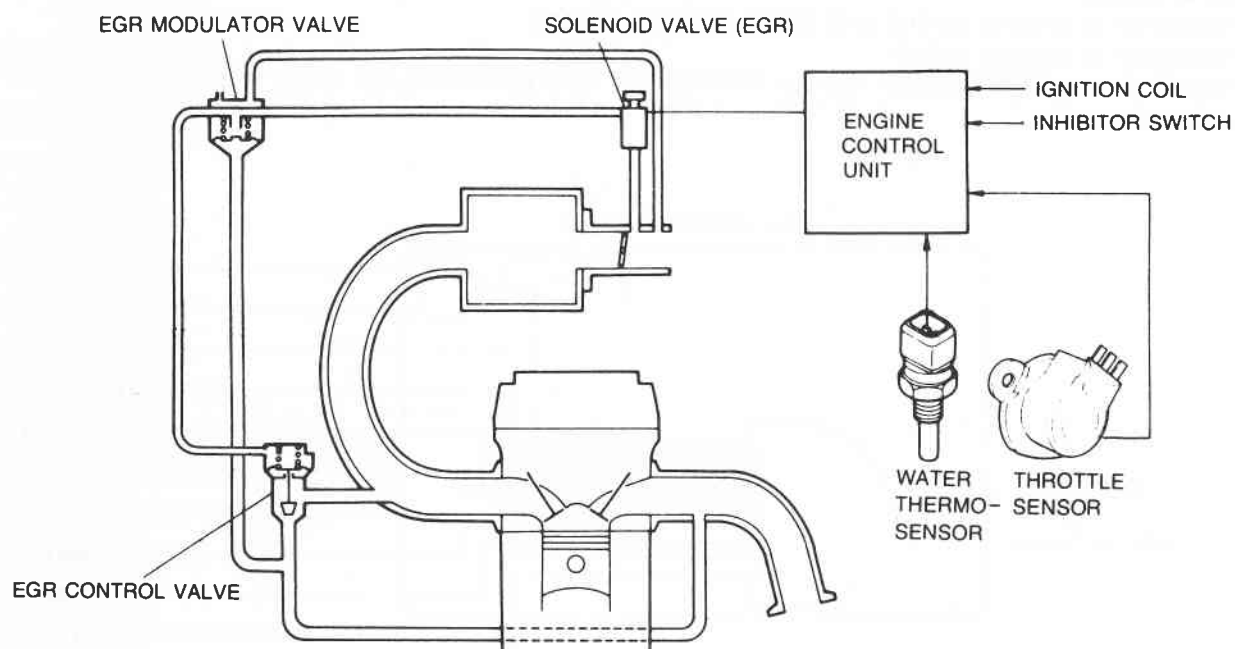
The evaporative emission control system for New 626 Station Wagon is duty controlled. It consists of the solenoid valve (purge control), the charcoal canister, the two-way check valve, the check-and-cut valve, the separator, the ECU, and the input devices. The amount of evaporative gases drawn into the engine and burned is regulated by the solenoid valve.

The engine control unit detects the engine's operating condition by the various input devices. It also contains preset values for the purge amount to correspond to the operating conditions, and controls the solenoid valve operation by electrical signals (duty signals) according to these values.

The solenoid valve operates when the following conditions are met.

- (1) After warm-up.
- (2) Driving in gear.
- (3) Accelerator depressed (Idle switch: OFF).
- (4) Oxygen sensor functioning normally.

EXHAUST GAS RECIRCULATION (EGR) SYSTEM



96E0F4-012

This system is basically the same as that of the previous model, however, the EGR cut-off specification for coolant temperature is changed.

EGR cut-off

Condition	New model	Previous model
Driving	Sudden acceleration or deceleration	
Coolant temperature	Engine coolant: Below 50°C (122°F)	Radiator coolant: Below 17°C (63°F) Engine coolant: Below 70°C (158°F)
Engine speed* (MTX, ATX N and P ranges)	Below 1,500 rpm	

* At idle in D range: EGR is cut-off because the vacuum applied to the EGR modulator valve is then not produced at the throttle body.

SUPPLEMENTAL SERVICE INFORMATION

The following points shown in this section are changed in comparison Mazda 626 Workshop Manual Supplement (1179-10-87K) (Europe), Workshop Manual (1175-10-87F) (Australia), and Mazda 626 Station Wagon Workshop Manual Supplement (1182-10-88B).

Switch monitor function

- Inspection procedure of switch monitor function

Evaporative emission control system

- Inspection of solenoid valve (Purge control)
- Newly equipped two-way check valve
- Newly equipped check-and-cut valve
- Inspection of charcoal canister

Control system

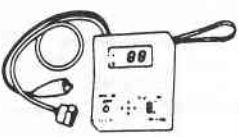
- Inspection of engine control unit (ECU) terminal voltage
- Inspection of neutral switch
- Inspection of clutch switch

96G0F5-508

SWITCH MONITOR FUNCTION

PREPARATION

SST

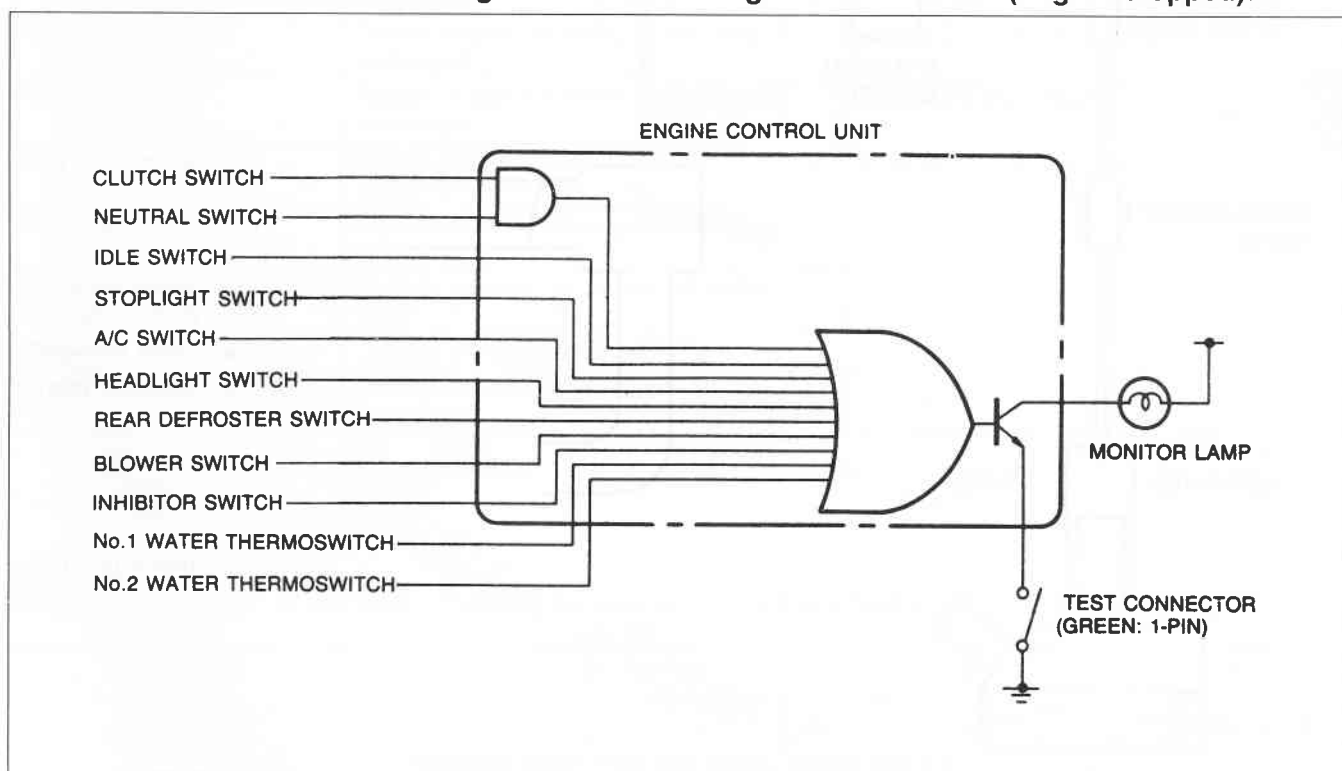
49 H018 9A1 Self-Diagnosis Checker		For diagnosis
--	---	------------------

06U0F2-031

Individual switches can be monitored by the **SST**.

Note

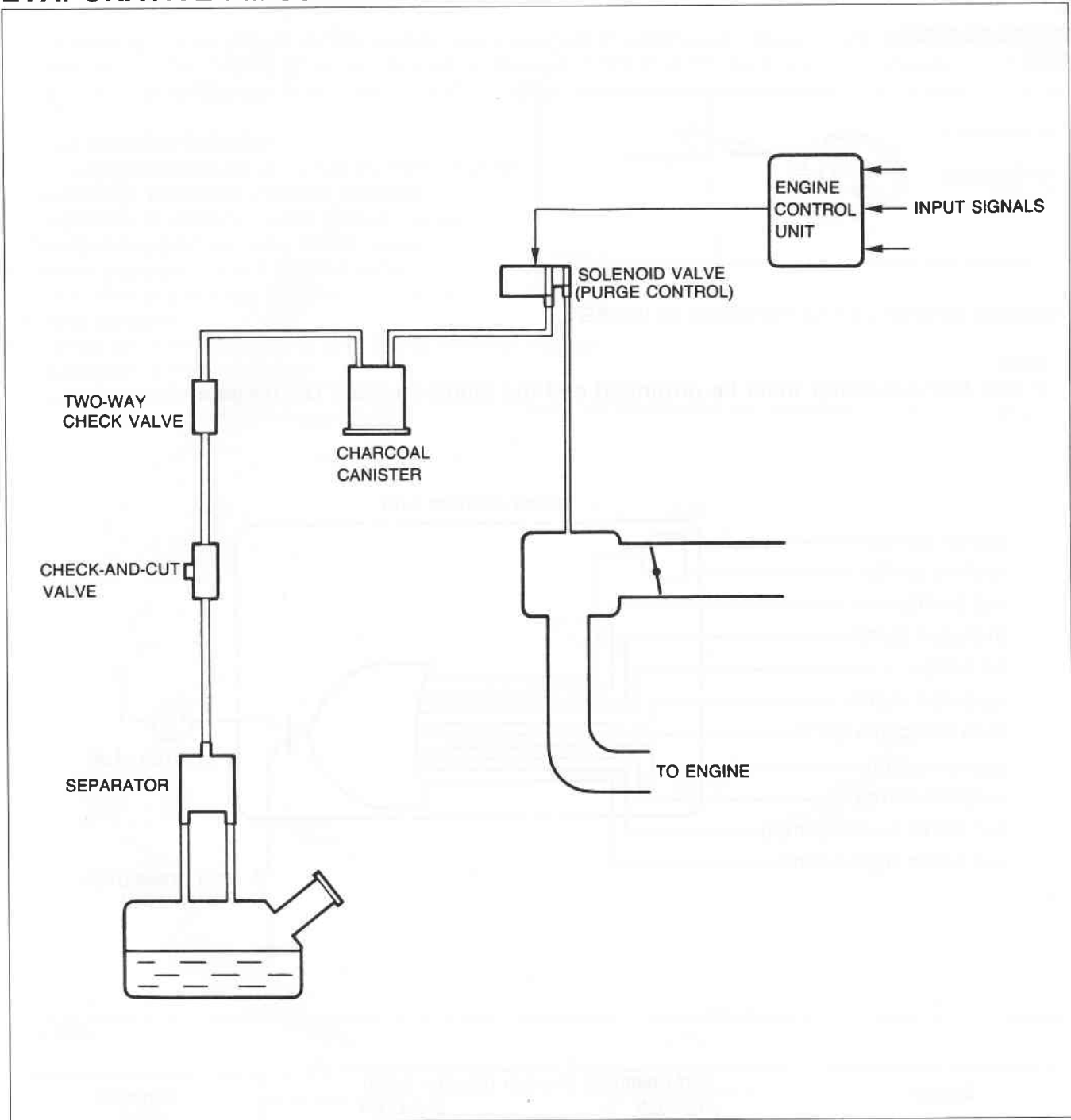
- The test connector must be grounded and the ignition switch ON (engine stopped).



96E0F4-014

Switch	Self-Diagnosis Checker (Monitor lamp)		Remarks
	Light ON	Light OFF	
Clutch switch	Pedal released	Pedal depressed	Gear: IN
Neutral switch	In gear	Neutral	Clutch pedal released
Idle switch	Pedal depressed	Pedal released	—
Stoplight switch (MTX)	Pedal depressed	Pedal released	—
A/C switch	ON	OFF	Blower motor position: "1" position
Headlight switch	ON	OFF	—
Rear defroster switch	ON	OFF	—
Blower switch	ON	OFF	Blower motor position: "3" or "4" position
Inhibitor switch	D, 1, 2, and R ranges	P and N ranges	—
No.1 water thermoswitch (Electrical fan)	Check connector (for electrical fan) (B/L) terminal grounded	Check connector (for electrical fan) (B/L) terminal not grounded	While fan not operating
No.2 water thermoswitch (Electrical fan) (ATX)	Check connector (for electrical fan) (L/R) terminal grounded	Check connector (for electrical fan) (L/R) terminal not grounded	While fan not operating

EVAPORATIVE EMISSION CONTROL SYSTEM



06U0F1-089

The evaporative emission control system consists of the separator, the check-and-cut valve, the two-way check valve, the charcoal canister, the solenoid valve (purge control), the engine control unit, and the input devices. The amount of evaporative fumes introduced into the engine and burned is controlled by the solenoid valve to correspond to the engine's operating conditions. To maintain best engine performance, the solenoid valve is controlled by the engine control unit.

Operation

The solenoid valve (purge control) is controlled by duty signals from the engine control unit to perform purging of the charcoal canister. Purging is done when these conditions are met:

- (1) After warm up
- (2) Driving in gear
- (3) Accelerator pedal depressed (idle switch OFF)
- (4) Oxygen sensor functioning normally

COMPONENT DESCRIPTIONS

Component	Function	Remarks
Airflow meter	Detects amount of intake air; sends signal to control unit	Intake air temp sensor and fuel pump switch are integrated
Charcoal canister	Stores gas tank fumes when engine stopped	
Check-and-cut valve	Releases excessive pressure or vacuum in fuel tank to atmosphere	
Clutch switch	Detects in-gear condition; sends signal to control unit	Switch ON when clutch pedal released
Engine control unit	Detects signals from input sensors and switches; controls solenoid valve (Purge control)	
Idle switch	Detects when throttle valve fully closed; sends signal to control unit	Installed on throttle body
Ignition coil (–) terminal	Detects engine speed; sends signal to control unit	
Inhibitor switch	Detects in-gear condition; sends signal to control unit	Switch On in "N" or "P" range
Neutral switch	Detects in-gear condition; sends signal to control unit	Switch ON when in-gear
Oxygen sensor	Detects Oxygen concentration; sends signal to control unit	Zirconia ceramic and platinum coating
Separator	Prevents fuel from flowing into charcoal canister	
Solenoid valve (Purge control)	Controls vacuum line to vacuum switch valve	
Two-way check valve	Controls pressure in fuel tank	
Water thermosensor	Detects coolant temperature; sends signal to control unit	

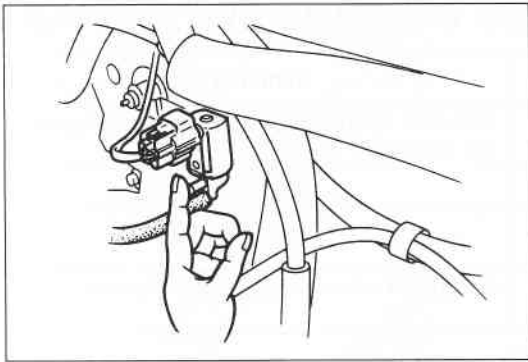
06U0F1-090

TROUBLESHOOTING

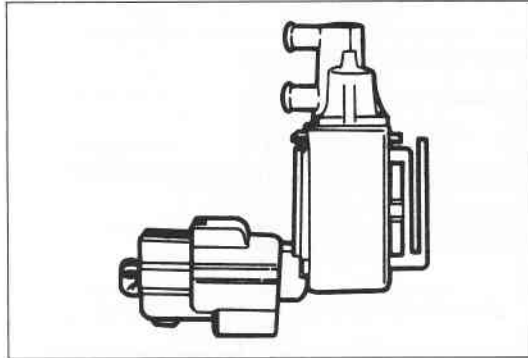
Check the condition of the wiring harness or connectors before checking the sensors or switches.

Possible cause	Solenoid valve (Purge control)	Two-way check valve	Check-and-cut valve	Separator	Engine control unit
					2X (MTX) 20 (ATX)
Page	F5–18	F5–18	F5–19	—	F5–25 F5–27
Checking order	1	3	4	5	2

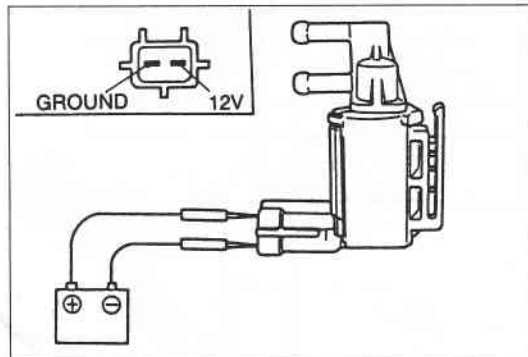
96G0F5-509



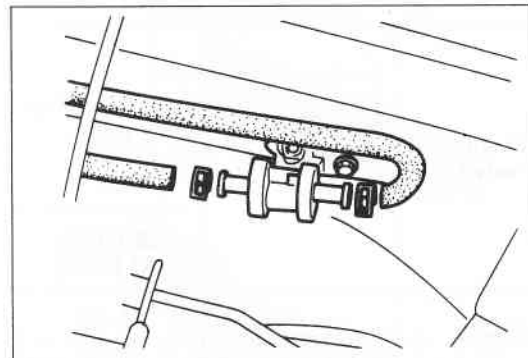
96E0F4-018



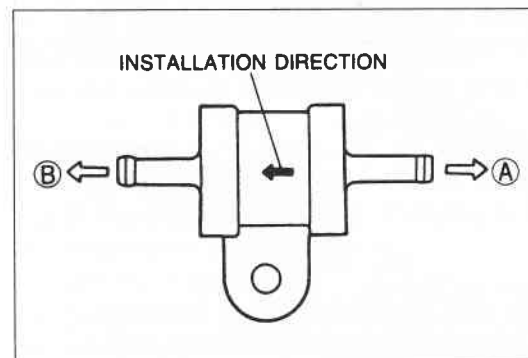
96E0F4-019



9MU0F2-188



96E0F4-020



06U0F1-095

SOLENOID VALVE (PURGE CONTROL)

On-vehicle Inspection

1. Warm up the engine to normal operating temperature.
2. Run the engine at idle.
3. Disconnect the vacuum hose (White) from the solenoid valve and check that no vacuum is felt at the solenoid valve.
4. If not as specified, check the solenoid valve.

Inspection

1. Disconnect the vacuum hoses from the charcoal canister and the dynamic chamber.
2. Check that no air flows through the valve.

3. Disconnect the solenoid valve connector and connect **12V** and a ground to the terminals of the solenoid valve.
4. Check that the air flows through the valve.
5. If not as specified, replace the solenoid valve.

TWO-WAY CHECK VALVE

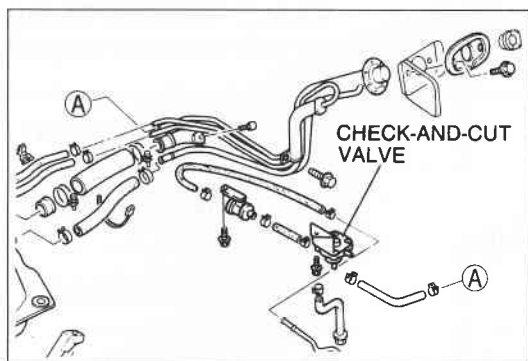
Inspection

1. Remove the valve.

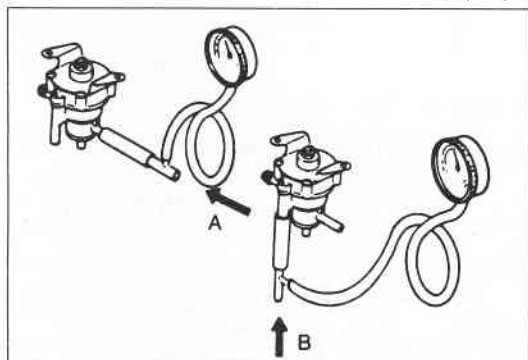
2. Check the operation of the valve with a vacuum pump.

Apply approx. 37 mmHg (1.46 inHg) vacuum at port A	Airflow
Apply approx. 44 mmHg (1.73 inHg) vacuum at port B	Airflow

3. Replace the valve, if necessary.



96A0FX-017



06U0F1-097

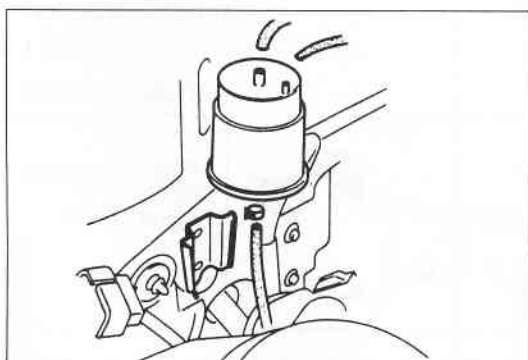
CHECK-AND-CUT VALVE

Inspection

1. Remove the check-and-cut valve.
2. Connect a pressure gauge to the passage connected to the fuel tank.
3. Blow through the valve from port A and verify that the valve opens at **5.39—6.87 kPa (0.055—0.07 kg/cm², 0.78—1.00 psi)**.
4. Remove the pressure gauge and connect it to the passage to atmosphere.
5. Blow through the valve from port B and verify that the valve opens at **0.98—4.91 kPa (0.01—0.05 kg/cm², 0.14—0.71 psi)**.

Note

- The test must be performed with the valve held horizontally. Otherwise, the ball in the valve will move out of position and close the passage.



96A0FX-018

CHARCOAL CANISTER

Inspection

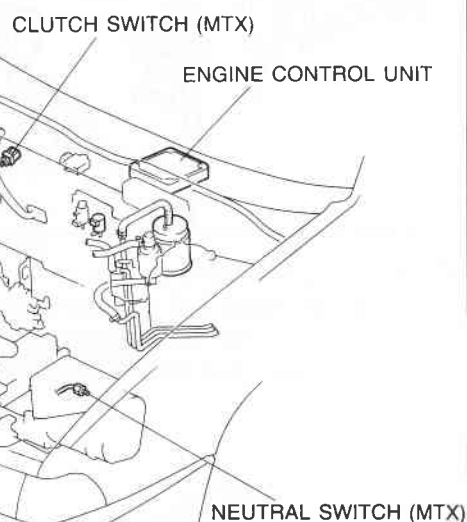
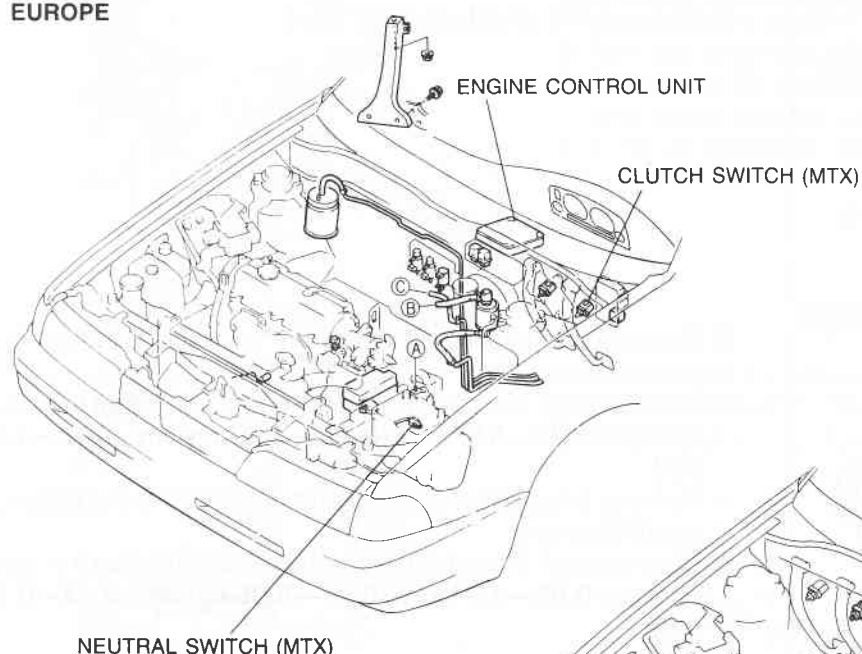
Visually check for damage and replace the charcoal canister if necessary.

Replacement

1. Slide the charcoal canister out of the bracket.
2. Disconnect the three hoses.
3. Install in the reverse order of removal.

CONTROL SYSTEM


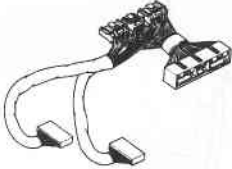
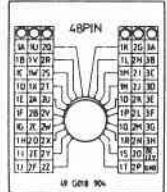
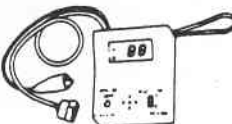
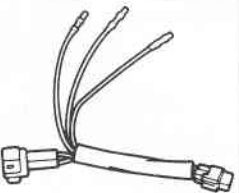
EUROPE



AUSTRALIA

96E0F4-024

PREPARATION SST

49 9200 162 Engine Signal Monitor		For inspection of engine control unit	49 G018 903 Adapter harness		For inspection of engine control unit
49 G018 904 Sheet		For inspection of engine control unit	49 H018 9A1 Self-Diagnosis Checker		For inspection of oxygen sensor
49 G018 901 Adapter harness		For inspection of throttle sensor			

06U0F1-100

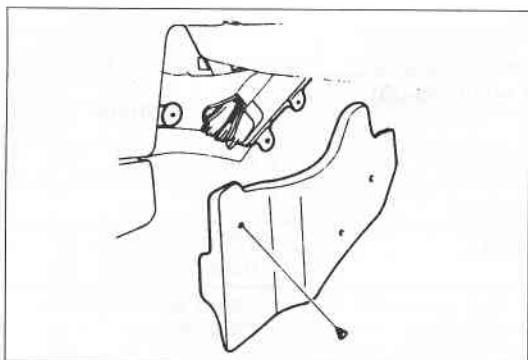
RELATIONSHIP CHART
Output Devices and Input Devices

○: Related ×: Not related

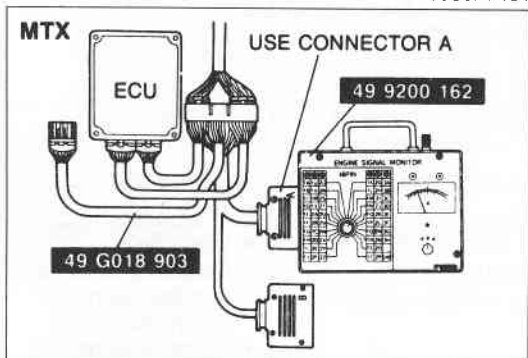
TEST CONNECTOR	×	×	×	○	×	×	×	
STOPLIGHT SWITCH	○	×	×	×	×	×	×	
ELECTRICAL LOAD	×	×	×	○	×	×	×	
P/S PRESSURE SWITCH	×	×	×	○	×	×	×	
A/C SWITCH	○	×	×	○	×	×	×	
IGNITION SWITCH (STA POSITION)	○	○	×	×	×	×	○	
INHIBITOR SWITCH	○	×	×	○	○	○	×	
NEUTRAL AND CLUTCH SWITCH	○	×	×	○	×	○	×	
OXYGEN SENSOR	○	×	×	×	×	○	×	
ATMOSPHERIC PRESSURE SENSOR (EUROPE ONLY)	○	×	×	○	×	○	×	
INTAKE AIR THERMOSENSOR	○	×	×	○	×	○	○	
WATER THERMOSENSOR	○	×	×	○	○	○	○	
IDLE SWITCH	○	○	×	○	×	×	×	
THROTTLE SENSOR	○	○	×	○	○	○	○	
AIRFLOW METER	○	×	×	×	×	○	×	
IGNITION COIL	○	○	×	○	○	○	○	
INPUT DEVICES	OUTPUT DEVICES	FUEL INJECTION AMOUNT	FUEL INJECTION TIMING	AIR VALVE	ISC VALVE	SOLENOID VALVE (EGR)	SOLENOID VALVE (PURGE)	SOLENOID VALVE (PRESSURE REGULATOR)
		INJECTOR		BAC VALVE				

Output Devices and Engine Conditions

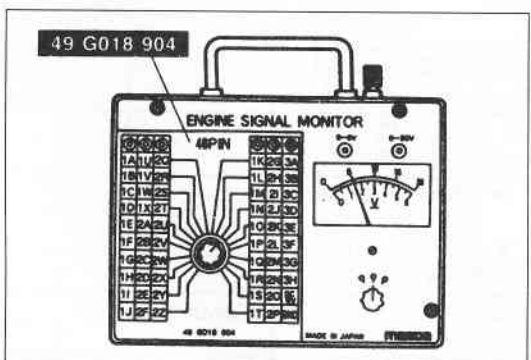
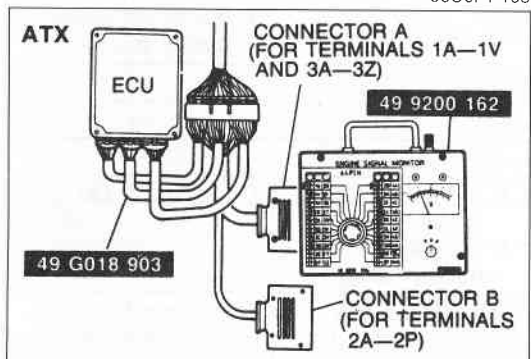
ENGINE CONDITIONS		CRANKING (COLD ENGINE)	WARNING UP (DURING IDLE)	MEDIUM LOAD		ACCEL- ERATION	HEAVY LOAD	DECEL- ERATION	IDLE (THROT- TLE VALVE FULLY CLOSED)	IGN: ON (ENGINE NOT RUNNING)	REMARKS
OUTPUT DEVICES				COLD	WARM						
INJECTOR	INJECTION	Rich	Rich and lean	Rich	Rich	Fuel cut	Rich and lean	No injection			
	INJECTION TIMING	1 group (once per revolution)	1 group (once per revolution)	1 group (once per two revolutions)*	1 group (once per revolution)				1 group (once per revolution)		Above 6,300 rpm: fuel cut *Above 4,500 rpm
BAC VALVE	AIR VALVE	Open*				Close					*Coolant temp: below 50°C (122°F)
	ISC VALVE	Large amount of bypass air	Large amount of bypass air*			Small amount of bypass air		No bypass			*In extreme cold condition
SOLENOID VALVE (EGR)		ON (EGR cut)	OFF (EGR)	ON (EGR cut)	OFF (EGR)	ON (EGR cut)	OFF (EGR)	ON (EGR cut)	ON (EGR cut)*	ON	*ATX D range: OFF (NO EGR due to no vacuum to system)
	SOLENOID VALVE (PURGE)	OFF (Purge cut)	Operates (Duty valves [purge gas amount] change*)			OFF (Purge cut)					*Depends on engine condition
SOLENOID VALVE (PRESSURE REGULATOR CONTROL)		OFF (Vacuum to pressure regulator)									*During hot start only



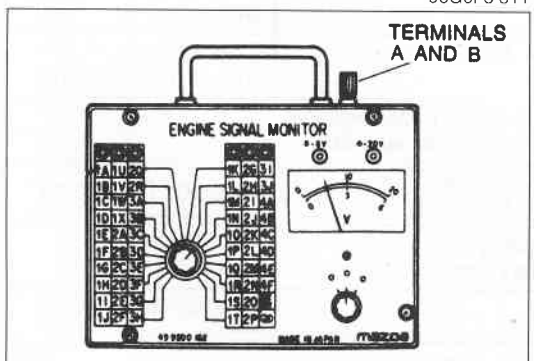
06U0F1-104



06U0F1-105



96G0F5-511



9MU0F2-191

ENGINE CONTROL UNIT**Inspection**

1. Remove the front console cover of the passenger's side.

2. Connect the **SST (Engine Signal Monitor)** between the engine control unit and the wiring harness using the **SST (Adapter)** as shown.

Note

- For MTX models, use connector A of the Adapter.
- For ATX models, use connector A of the Adapter to check voltages at the terminals 1A through 1V and 3A through 3Z, and use connector B to check the voltages at the terminals 2A through 2P.

3. Place the **SST (Sheet)** on the **SST (Engine Signal Monitor)**.
4. Measure the voltage at each terminal.
(Refer to pages F5-24 to F5-28.)
5. If any engine control unit terminal voltage is incorrect, check the input or output device and related wiring.
If they are normal, replace the engine control unit.

Caution

- Never apply voltage to SST terminals A and B.

**Terminal voltage
MTX**

Terminal	Input	Output	Connected to	Voltage (After warming-up)		Remark
				IGN: ON	Idle	
1A	—	—	Battery	Battery voltage		For back-up
1B	—	—	Main relay	Battery voltage		—
1C	○		Ign. switch (START)	Below 2.5V		While cranking: Battery voltage
1D		○	Self-Diagnosis Checker (Monitor lamp)	Test connector grounded	Test connector not grounded	Using Self-Diagnosis Checker
				<ul style="list-style-type: none"> For 3 sec. after ign. switch OFF→ON: Below 6.2V (lamp illuminates) After 3 sec.: Battery voltage (lamp not illuminate) 	<ul style="list-style-type: none"> Lamp illuminates: Below 6.2V Lamp not illuminate: Battery voltage 	
					Test connector grounded: Approx. 5V	
1E	—	—	—	—		—
1F		○	Self-Diagnosis Checker (Code number)	<ul style="list-style-type: none"> For 3 sec. after ign. switch OFF→ON: Below 6.2V (Buzzer sounds) After 3 sec.: Battery voltage (Buzzer not sound) 		<ul style="list-style-type: none"> Using Self-Diagnosis Checker and test connector grounded Buzzer sounds: Below 6.2V Buzzer not sound: Battery voltage
1G	—	—	—	—		—
1H	—	—	—	—		—
1I	—	—	—	—		—
1J		○	A/C relay	Battery voltage	<ul style="list-style-type: none"> A/C switch ON: Below 2.5V A/C switch OFF: Battery voltage 	Blower motor ON
1K	○		Test connector	<ul style="list-style-type: none"> Test connector grounded: Below 1.5V Test connector not grounded: Above 10.5V 		Test connector: 1-pin, Green connector
1L	—	—	—	—		—
1M	—	—	—	—		—
1N	○		Idle switch	<ul style="list-style-type: none"> Accelerator pedal released: Below 0.5V Accelerator pedal depressed: Above 7.7V 		—
1O	○		Stoplight switch	<ul style="list-style-type: none"> Brake pedal released: Below 3.6V Brake pedal depressed: Above 10.0V 		—
1P	○		Power steering pressure switch	Above 10.5V	<ul style="list-style-type: none"> P/S ON: Below 1.5V P/S OFF: Above 10.5V 	—
1Q			A/C switch	<ul style="list-style-type: none"> A/C switch ON: Below 1.5V A/C switch OFF: Above 10.0V 		Blower motor ON
1R	○		Electrical fan (Water thermoswitch)	Battery voltage		Coolant temp. : Below 97°C (207°F)
				Below 1.5V		Coolant temp. : Above 97°C (207°F)
1S	○		Blower fan switch	<ul style="list-style-type: none"> Switch less than 2nd position: Battery voltage Switch 3rd or 4th position: Below 1.5V 		—
1T	○		Rear window defroster switch	<ul style="list-style-type: none"> Switch OFF: Battery voltage Switch ON: Below 1.5V 		—
1U	○		Headlight switch	<ul style="list-style-type: none"> Headlight OFF: Below 1.5V Headlight ON: Battery voltage 		—
1V	○		Neutral and clutch switch	In-gear condition <ul style="list-style-type: none"> Clutch pedal depressed: Below 0.5V Clutch pedal released: Battery voltage 		Neutral: Below 0.5V

Terminal	Input	Output	Connected to	Voltage (After warming-up)		Remark
				IGN: ON	Idle	
2A	—	—	Ground (EO1)	0V		—
2B	—	—	Ground (EO2)	0V		—
2C	—	—	Ground (E1)	0V		—
2D	—	—	Ground (E2)	0V		—
2E	—	—	—	—		—
2F	—	—	—	—		—
2G	—	—	—	—		—
2H	—	—	—	—		—
2I	○		ignition coil-terminal	Battery voltage	*Battery voltage	*Engine signal monitor green and red lamp flash
2J	○		Airflow meter (Vc)	7—9V		—
2K	—	—	Vref	4.5—5.5V		—
2L	—	—	—	—		—
2M	○		Throttle sensor	Accelerator pedal released: Approx. 0.5V (depends on 2K terminal voltage)		Throttle valve fully open: 4.3V
2N	○		Oxygen sensor	0V	0—1.0V	<ul style="list-style-type: none"> • Cold engine at idle: 0V • After warming-up Acceleration: 0.5—1.0V Deceleration: 0—0.4V
2O	○		Airflow meter (Vs)	Approx. 1.7V	Approx. 3—5V	Increase engine speed: voltage increase
2P	○		Airflow meter (Intake air thermosensor)	Approx. 2.5V at 20°C (68°F)		—
2Q	○		Water thermosensor	0.3—0.6V		Coolant temp. 20°C (68°F): Approx. 2.5V
2R	—	—	—	—		—
2S	—	—	—	—		—
2T		○	Solenoid valve (Pressure regulator control)	For 120 sec. after ign. switch OFF ON: Below 3.5V	For 120 sec. after starting: Below 3.5V	Coolant temp. above 70°C (158°F) and intake air temp. above 20°C (68°F)
2U		○	Injector (No.1 and No.3)	Battery voltage	*Battery voltage	*Engine signal monitor green and red lamps flash
2V		○	Injector (No.2 and No.4)	Battery voltage	*Battery voltage	*Engine signal monitor green and red lamps flash
2W		○	ISC valve	Engine signal monitor green and red lamps flash		—
2X		○	Solenoid valve (Purge control)	Battery voltage		—
2Y		○	Solenoid valve (EGR)	Below 3.5V		<ul style="list-style-type: none"> • Engine coolant temp. —below 50°C (122°F) Below 3.5V • Engine speed above approx. 1,500 rpm: Battery voltage
2Z	—	—	—	—		—

Terminal locations

2Y	2W	2U	2S	2Q	2O	2M	2K	2I	2G	2E	2C	2A	1U	1S	1Q	1O	1M	1K	1I	1G	1E	1C	1A
2Z	2X	2V	2T	2R	2P	2N	2L	2J	2H	2F	2D	2B	1V	1T	1R	1P	1N	1L	1J	1H	1F	1D	1B

ATX

Terminal	Input	Output	Connected to	Voltage (After warming-up)		Remark
				IGN: ON	Idle	
1A	—	—	Battery	Battery voltage		For back-up
1B	—	—	Main relay	Battery voltage		—
1C	○		Inhibitor switch	Below 2.5V		While cranking: Battery voltage
1D		○	Self-Diagnosis Cheker (Monitor lamp)	Test connect grounded	Test connector not grounded	Using Self-Diagnosis Checker
				<ul style="list-style-type: none"> For 3 sec. after ign. switch OFF→ON: Below 6.2V (lamp illuminates) After 3 sec.: Battery voltage (lamp not illuminate) 	<ul style="list-style-type: none"> Lamp illuminates: Below 6.2V Lamp not illuminate: Battery voltage 	
					Test connector grounded: Approx. 5V	
1E	—	—	—	—		—
1F		○	Self-Diagnosis Checker (Code number)	<ul style="list-style-type: none"> For 3 sec. after ign. switch OFF→ON: Below 6.2V (Buzzer sounds) After 3 sec.: Battery voltage (Buzzer not sound) 		<ul style="list-style-type: none"> Using Self-Diagnosis Checker and test connector grounded Buzzer sounds: Below 6.2V Buzzer not sound: Battery voltage
1G	—	—	—	—		—
1H	○		Headlight switch	<ul style="list-style-type: none"> Headlight OFF: Below 1.5V Headlight ON: Battery voltage 		—
1I	○		Test connector	<ul style="list-style-type: none"> Test connector grounded: Below 1.5V Test connector not grounded: Above 10.5V 		Test connector: 1-pin, Green connector
1J	○		Rear window defroster switch	<ul style="list-style-type: none"> Switch OFF: Battery voltage Switch ON: Below 1.5V 		—
1K	—	—	—	—		—
1L		○	A/C relay	Battery voltage	<ul style="list-style-type: none"> A/C switch ON: Below 2.5V A/C switch OFF: Battery voltage 	Blower motor ON
1M	○		Vehicle speed sensor	Approx. 4.5V or below 1.5V		During driving: Approx. 4.5V
1N	○		Power steering pressure switch	Above 10.5V	<ul style="list-style-type: none"> P/S ON: Below 1.5V P/S OFF: Above 10.5V 	—
1O			A/C switch	<ul style="list-style-type: none"> A/C switch ON: Below 1.5V A/C switch OFF: above 10.0V 		Blower motor ON
1P	○		Blower fan switch	<ul style="list-style-type: none"> Switch less than 2nd position: Battery voltage Switch 3rd or 4th position: Below 1.5V 		—
1Q	○		Stoplight switch	<ul style="list-style-type: none"> Brake pedal released: Below 3.6V Brake pedal depressed: Above 10.0V 		—
1R	○		Inhibitor switch (N and P range)	<ul style="list-style-type: none"> N or P range: Below 1.5V Others: Battery voltage 		—
1S	—	—	—	—		—
1T	○		Idle switch	<ul style="list-style-type: none"> Accelerator pedal released: Below 0.5V Accelerator pedal depressed: Above 7.7V 		—
1U	—	—	Ignition switch (IG1)	Battery voltage		For EC-AT shift-solenoid valves
1V	○		Ignition coil ⊖ terminal	Battery voltage	*Battery voltage	*Engine signal monitor: green and red lamp flash

Terminal	Input	Output	Connected to	Voltage (After warming-up)		Remark
				IGN: ON	Idle	
2A	○		Airflow meter (Vc)	7—9V		—
2B	○		Airflow meter (Vs)	Approx. 1.7V	Approx. 3—5V	Increase engine speed: voltage increase
2C	○		Oxygen sensor	0V	0—10V	<ul style="list-style-type: none"> Cold engine at idle: 0V After warming-up Acceleration: 0.5—1.0V Deceleration: 0—0.4V
2D	○		Electrical fan [Low] (No.1 water thermoswitch)	Battery voltage		Coolant temp.: Below 97°C (207°F)
				Below 1.5V		Coolant temp.: Above 97°C (207°F)
2E	○		Water thermosensor	0.3—0.6V		Coolant temp. 20°C (68°F): Approx. 2.5V
2F	○		Throttle sensor	Accelerator pedal released: Approx. 0.5V (depends on 2I terminal voltage)		Throttle valve fully open: 4.3V
2G	○		Electrical fan [High] (No.2 thermoswitch)	Battery voltage		Coolant temp.: Below 108°C (226°F)
				Below 1.5V		Coolant temp.: Above 108°C (226°F)
2H	○		Hold switch	<ul style="list-style-type: none"> Switch depressed: Battery voltage Switch released: Below 1.5V 		—
2I	—	—	Vref	4.5—5.5V		—
2J	—	—	—	—		—
2K	○		Airflow meter (Intake air thermosensor)	Approx. 2.5V at 20°C (68°F)		—
2L	○		Mode switch (Power side)	<ul style="list-style-type: none"> POWER mode: Below 1.5V ECONOMY mode or HOLD mode: Battery voltage 		—
2M	○		Pulse generator	Below 1.5V	*Battery voltage	*P or N range
2N	—	—	Pulse generator	Below 1.5V		Ground
2O		○	Solenoid valve (Purge control)	Battery voltage		—
2P		○	Hold indicator	<ul style="list-style-type: none"> Hold mode: Below 1.5V Other modes: Battery voltage 		—
3A	—	—	Ground (EO1)	0V		—
3B	—	—	Ground (EO2)	0V		—
3C	—	—	Ground (E1)	0V		—
3D	—	—	Ground (E2)	0V		—
3E	○		Inhibitor switch (D range)	<ul style="list-style-type: none"> D range: Battery voltage Other range: Below 1.5V 		—
3F	—	—	—	—		—
3G	○		Inhibitor switch (L range)	<ul style="list-style-type: none"> L range: Battery voltage Other range: Below 1.5V 		—
3H	○		Inhibitor switch (S range)	<ul style="list-style-type: none"> S range: Battery voltage Other range: Below 1.5V 		—
3I	—	—	—	—		—
3J	—	—	—	—		—
3K	—	—	—	—		—
3L		○	Mode indicator	<ul style="list-style-type: none"> HOLD mode: Battery voltage POWER or ECONOMY mode: Below 1.5V 		—

Terminal	Input	Output	Connected to	Voltage (After warming-up)		Remark
				IGN: ON	Idle	
3M		○	Solenoid valve (Pressure regulator control)	For 120 sec. after ign. Switch OFF→ON: Below 3.5V	For 120 sec. after starting: Below 3.5V	Coolant temp. above 70°C (158°F) and intake air temp. above 20°C (63°F)
3N	○		Fluid thermoswitch	<ul style="list-style-type: none"> Fluid temp. below 143°C (389°F): Approx. 10—12V Fluid temp. above 150°C (302°F): Below 1.5V 		—
3O		○	Solenoid valve (EGR)	Below 3.5V		<ul style="list-style-type: none"> Engine coolant temp. —below 50°C Below 3.5V Engine speed above approx. 1,500 rpm: Battery voltage
3P	—	—	—	—		—
3Q		○	ISC valve	Engine signal monitor green and red lamps flash		—
3R	—	—	—	—		—
3S	—	—	—	—		—
3T	—	—	—	—		—
3U		○	Injector (No.1 and No.3)	Battery voltage	*Battery voltage	*Engine signal monitor green and red lamps flash
3V		○	Injector (No.2 and No.4)	Battery voltage	*Battery voltage	*Engine signal monitor green and red lamps flash
3W		○	1—2 shift solenoid valve	<ul style="list-style-type: none"> Solenoid valve ON: Battery voltage Solenoid valve OFF: Below 1.5V 		Refer to next page
3X		○	2—3 shift solenoid valve	<ul style="list-style-type: none"> Solenoid valve ON: Battery voltage Solenoid valve OFF: Below 1.5V 		Refer to next page
3Y		○	3—4 shift solenoid valve	<ul style="list-style-type: none"> Solenoid valve ON: Battery voltage Solenoid valve OFF: Below 1.5V 		Refer to next page
3Z		○	Lockup solenoid valve	<ul style="list-style-type: none"> Lock-up: Battery voltage Not lock-up: Below voltage 		Refer to next page

Terminal locations

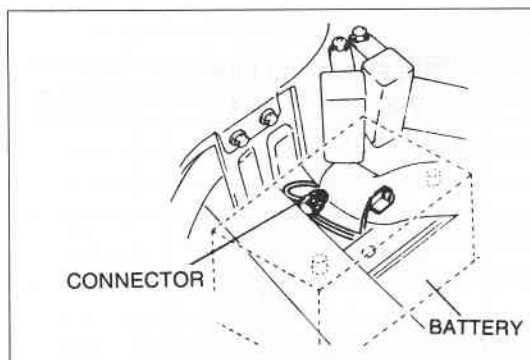
3Y	3W	3U	3S	3Q	3O	3M	3K	3I	3G	3E	3C	3A	2O	2M	2K	2I	2G	2E	2C	2A	1U	1S	1Q	1O	1M	1K	1I	1G	1E	1C	1A
3Z	3X	3V	3T	3R	3P	3N	3L	3J	3H	3F	3D	3B	2P	2N	2L	2J	2H	2F	2D	2B	1V	1T	1R	1P	1N	1L	1J	1H	1F	1D	1B

96G0F5-513

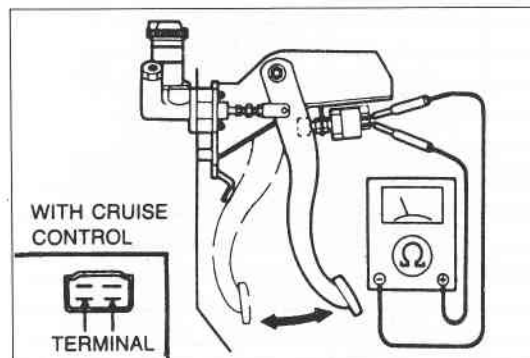
Solenoid valve operation table

RANGE		GEAR		SOLENOID VALVES			
				1-2	2-3	3-4	Lock-up
P		Non				ON	
R		Reverse		ON			
N	—	Below approx. 6 km/h (3.7 mph)				ON	
		Above approx. 6 km/h (3.7 mph)		ON			
D		1st			ON	ON	
		2nd		ON	ON	ON	
	3rd	Below approx. 40 km/h (25 mph)					
		Above approx. 40 km/h (25 mph)		ON			
	OD	Lock-up OFF		ON		ON	
		Lock-up ON		ON		ON	ON
S		1st			ON	ON	
		2nd		ON	ON	ON	
	3rd	Below approx. 40 km/h (25 mph)					
		Above approx. 40 km/h (25 mph)		ON			
L	2nd	1st			ON	ON	
		Below approx. 110 km/h (68 mph)		ON	ON		
		Above approx. 110 km/h (68 mph)		ON			
HOLD	D	2nd		ON	ON	ON	
		3rd	Below approx. 40 km/h (25 mph)				
			Above approx. 40 km/h (25 mph)	ON			
	S	2nd		ON	ON		
		3rd	Below approx. 40 km/h (25 mph)				
			Above approx. 40 km/h (25 mph)	ON			
	L	1st			ON		
		2nd	Below approx. 110 km/h (68 mph)	ON	ON		
			Above approx. 110 km/h (68 mph)	ON			

06U0F1-110



06U0F1-111



06U0F1-112

NEUTRAL SWITCH (MTX)**Inspection**

1. Disconnect the neutral switch connector.
2. Connect an ohmmeter to the switch.
3. Check continuity of the switch.

Transmission	Continuity
In neutral	Yes
In other ranges	No

4. After checking, connect the switch connector.

Note

- Refer to Section J for replacement of the neutral switch.

CLUTCH SWITCH (MTX)**Inspection**

1. Disconnect the clutch switch connector.
2. Connect an ohmmeter to the switch.
3. Check continuity of the switch.

Pedal	Continuity
Depressed	Yes
Released	No

4. After checking, connect the switch connector.

Note

- Refer to Section H for replacement of the clutch switch.